Utah Wildlife Board Meeting

December 1, 2014, DNR Auditorium
1594 West North Temple, Salt Lake City, Utah

Monday, December 1, 2014 – 9:00 am

1. Approval of Agenda **ACTION**
   – Jake Albrecht, Chairman

2. Approval of Minutes **ACTION**
   – Jake Albrecht, Chairman

3. Old Business/Action Log **CONTINGENT**
   – Bill Fenimore, Vice-Chair

4. DWR Update **INFORMATION**
   – Greg Sheehan, DWR Director

5. Deer Survey **INFORMATION**
   - Kent Hersey, Big Game Project Leader

6. Statewide Mule Deer Management Plan Revisions **ACTION**
   - Justin Shannon, Wildlife Program Coordinator

7. Bucks, Bulls & OIAL 2015 Season Dates and Application Timeline and Amendments to Rule R657-5 **ACTION**
   - Justin Shannon, Wildlife Program Coordinator

8. Big Game Preference Point Recommendations **ACTION**
   - Lindy Varney, Licensing Specialist

9. CWMU Management Plans and Permit Numbers for 2015 **ACTION**
   - Scott McFarlane, Public Wildlife/Private Lands Coordinator

10. Landowner Permit Numbers for 2015 **ACTION**
    - Scott McFarlane, Public Wildlife/Private Lands Coordinator

11. Landowner Permit Rule Amendments R657-43 (New permit type) **ACTION**
    - Scott McFarlane, Public Wildlife/Private Lands Coordinator

12. Certification Review Committee Recommendation – iGroEco LLC **ACTION**
    - Staci Coons, CRC Chairman

13. Stipulation and Order **ACTION**
    - Greg Hansen, Attorney

14. Other Business **CONTINGENT**
    – Jake Albrecht, Chairman

In compliance with the Americans with Disabilities Act - Persons needing special accommodations (including auxiliary communicative aids and services) for this meeting, should contact Staci Coons at 801-538-4718, giving her at least five working days notice.

Wildlife Board Motions

Following is a summary of Wildlife Board motions directing the Division to take action and the response to date:

Spring 2013 – Target Date – Preference Point Presentation

MOTION: I move that we ask the Division to give a presentation on the preference point system relative to the new 30 unit deer plan.

Motion made by: John Bair
Assigned to: Judi Tutorow / Lindy Varney
Action: Under Study
Status: Will be presented at the December 1, 2014 meeting
Placed on Action Log: June 6, 2012

Late Fall 2013 – Target Date – Premium Limited-entry deer tags

MOTION: I move that we have placed on the action log that the Division look into a premium limited entry deer tag similar to the premium limited entry elk tag.

Motion made by: Calvin Crandall
Assigned to: Bill Bates/Judi Tutorow
Action: Under Study
Status: Will be presented at the December 1, 2014 meeting
Placed on Action Log: May 3, 2012

Late Fall 2013 – Target Date – Mineral Mountain Range

MOTION: I move that we ask the division to study the issues and concerns of making the Mineral Mountain Range (west side of Beaver unit) a limited entry buck deer unit and that it be discussed during the revision of the deer plan with the Deer Management Committee. This is to be placed on the action log.

Motion made by: Jake Albrecht
Assigned to: Bill Bates
Action: Under Study
Status: Will be presented at the December 1, 2014 meeting
Placed on Action Log: December 6, 2012

Late Fall 2013 – Target Date – Additional muzzleloader Pronghorn hunting opportunity

MOTION I move that we ask the division to study additional muzzleloader pronghorn hunting opportunity as presented in the November RAC meetings by Mr. Zundel. This is to be placed on the action log.

Motion made by: Ernie Perkins
Assigned to: Bill Bates
Action: Under Study
Status: Will be presented at the December 1, 2014 meeting
Placed on Action Log: December 6, 2012

Fall 2014 – Target Date – Management Buck Tags on the Book Cliffs

MOTION: I move that the Division be asked to review the buck management tags on the Book Cliffs. People are always reporting the presence of big two and three point bucks in that area. Perhaps these permits could be given to youth. This is to be addressed during the revision of the Deer Management Plan in 2014.

Motion made by: Del Brady
Assigned to: Bill Bates
Action: Under Study
Status: Will be presented at the December 1, 2014 meeting
Placed on Action Log: December 1, 2011

Fall 2014 – Target Date – Goat Seasons

MOTION: I move that we add Ben Lowder's request to extend the goat hunt season to the action log and have the Division evaluate the hunt structure and report on their findings at the same time next year.

Motion made by: John Bair
Assigned to: Bill Bates
Action: Under Study
Status: Will be presented at the December 1, 2014 meeting
Placed on Action Log: December 5, 2013

Utah Wildlife Board Meeting

October 2, 2014, DNR Auditorium
1594 W. North Temple, Salt Lake City, Utah
Revised September 30, 2014

Thursday, October 2, 2014, Board Meeting 9:00 am

1. Approval of Agenda **ACTION**
   – Jake Albrecht, Chairman
2. Approval of Minutes **ACTION**
   – Jake Albrecht, Chairman
3. Old Business/Action Log **CONTINGENT**
   – Bill Fenimore, Vice-Chair
   - Update on Premium Limited Entry deer tags action log item
   - Update on Management Buck Tags on the Book Cliffs action log item
   - Update on additional muzzleloader pronghorn hunting opportunities
   - Update on Goat Seasons action log item
   - Update on Non-resident Sheep Permit Quota action log item
   - Update on Mineral Mountain Range action log item
4. DWR Update **INFORMATION**
   – Greg Sheehan, DWR Director
5. Fishing Guidebook and Rule R657-13 **ACTION**
   – Drew Cushing, Aquatic Program Coordinator
6. Native Cutthroat Trout New Introductions **ACTION**
   – Richard Hepworth, Regional Aquatic Program Manager
7. Conservation Permit Annual Report **ACTION**
   – Kenny Johnson, Administrative Services Section Chief
8. Conservation Permit Audit **ACTION**
   – Bill Bates, Wildlife Section Chief
9. Conservation Permit Allocation – 1 year **ACTION**
   – Bill Bates, Wildlife Section Chief
10. 2015 RAC/Board Dates **ACTION**
    – Staci Coons, Wildlife Board Coordinator
11. Other Business **CONTINGENT**
    – Jake Albrecht, Chairman
    - Winter WAFWA

Board Appeal at 1:00 p.m.
Brad Turner – postponed to a later date

Board Appeal at 5:00 p.m.
Chauncey Filler – postponed to a later date

In compliance with the Americans with Disabilities Act - Persons needing special accommodations (including auxiliary communicative aids and services) for this meeting, should contact Staci Coons at 801-538-4718, giving her at least five working days notice.

Utah Wildlife Board Meeting
October 2, 2014, DNR Auditorium
1594 West North Temple, Salt Lake City, Utah
Summary of Motions

1) Approval of Agenda **(Action)**

The following motion was made by Bill Fenimore, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we approve the agenda as presented.

2) Approval of Minutes **(Action)**

The following motion was made by Calvin Crandall, seconded by Steve Dalton and passed unanimously.

MOTION: I move that we approve the minutes of the August 28, 2014 Wildlife Board Meeting as presented.

3) Action Log Items **(Action)**

6 Action Log Items were addressed by Justin Shannon:

Premium Limited Entry Deer Tags Action Log Item

The following motion was made by Steve Dalton, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we include the Premium Limited Entry Deer Tags action log item in the Mule Deer Plan and run it through the 2014 RAC process.

Management Buck Tags on the Book Cliffs Action Log Item

Additional muzzleloader pronghorn hunting opportunities

Goat Seasons Action Log Item

Non-resident Sheep Permit Quota Action Log Item

Mineral Mountain Range Action Log Item

4) Fishing Guidebook and Rule R657-13 **(Action)**

The following motion was made by Mike King, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we accept the Fishing Recommendations and Rule R657-13 as presented by the Division.

The following amended motion was made by Calvin Crandall, seconded by Steve Dalton and passed 3 to 1. Mike King dissented.

MOTION: I move that we amend the motion to include trout in the no-possession limit allowed at a permanent residence.

5) Native Cutthroat Trout New Introductions (Action)

The following motion was made by Steve Dalton, seconded by Mike King and passed unanimously.

MOTION: I move that we accept the Native Cutthroat Trout New Introductions as presented by the Division.

6) Conservation Permit Annual Report (Action)

The following motion was made by Steve Dalton, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we accept the findings of the Conservation Permit Annual Report as presented by the Division.

7) Conservation Permit Audit (Action)

The following motion was made by Bill Fenimore, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we accept the findings of the Conservation Permit Audit as presented by the Division.

8) Conservation Permit Allocation – 1 year (Action)

The following motion was made by Steve Dalton, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we approve the Conservation Permit Allocation for 1 year as presented by the Division.

9) 2015 RAC/Board Dates (Action)

The following motion was made by Bill Fenimore, seconded by Mike King and passed unanimously.

MOTION: I move that we approve 2015 RAC/Board Dates as presented by the Division.

Utah Wildlife Board Meeting
October 2, 2014, DNR Auditorium
1594 West North Temple, Salt Lake City, Utah
http://wildlife.utah.gov/public_meetings/board_minutes/audio/14-10-2.mp3

Wildlife Board Members Present
Jake Albrecht – Chair
Bill Fenimore
Greg Sheehan – Exec Sec
Mike King
Calvin Crandall
John Bair (excused)
Kirk Woodward (excused)
Steve Dalton

RAC Chairs Present
Central – Gary Nielson
Southern – Dave Black
Southeastern – Kevin Albrecht
Northeastern – Wayne McAllister
Northern – Robert Byrnes

Division Personnel Present
Mike Fowlks
Mike Canning
Staci Coons
Judi Tutorow
Drew Cushing
Paul Birdsey
Chris Crockett
Riley Peck
Kenny Johnson
Rick Olson
Boyde Blackwell
Chris Wood
John Fairchild
Paul Thompson
Kevin Bunnell
Roger Wilson
Bill Bates
Matt Burgess
Lindy Varney
Greg Hansen
Justin Shannon
Phil Gray
Richard Hepworth
Scott White
Anita Candelaria
Mark Hadley
Reed Chaston
Sarah Scott
Cory Noble
Richard Gibbs

Public Present
Clifford Sackett
Paul Dremann, UT Angler Coalition
Adrian Woodman
Quinn Woodman
Brent Daybell
Roy Hampton, UT Bowman's Assoc
Byron Bateman, SFW
Chris Carling
Ken Strong, SFW
Jim Carter, SAA
Lee Tracy, UWC
Eric Tycksen, MDF
Wesley Tactin
Doyle Perkin
Ryan Thompson
Bill Grayson
Jon Larson

Chairman Albrecht welcomed the audience and introduced the Wildlife board and RAC Chairs.

1) Approval of Agenda **(Action) 00:01:53 – 00:02:09 of 03:23:24**

The following motion was made by Bill Fenimore, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we approve the agenda as presented.

2) Approval of Minutes **(Action) 00:02:12 – 00:02:43 of 03:23:24**

The following motion was made by Calvin Crandall, seconded by Steve Dalton and passed unanimously.

MOTION: I move that we approve the minutes of the August 28, 2014 Wildlife Board Meeting as presented.

3) Old Business/Action Log **(Contingent) 00:02:46 – 00:07:00 of 03:23:24**

6 Action Log Items were addressed by Justin Shannon:

Premium Limited Entry Deer Tags Action Log Item 00:03:56 – 00:12:09

The Division supports the multi-season deer permit and will be presenting the plan at the December board meeting. The Crawford Mountains and Dolores Triangle units would not be included in this due to weapon type used or limited number of permits. This plan can be implemented immediately, but a fee schedule change will be needed in the future.

The following motion was made by Steve Dalton, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we include the Premium Limited Entry Deer Tags action log item in the Mule Deer Plan and run it through the 2014 RAC process.

Management Buck Tags on the Book Cliffs Action Log Item 00:12:14 – 00:16:33

Committees were formed to address buck to doe ratio discrepancies. They all agreed that the Book Cliffs should be split north and south during the any weapon hunt. The Board passed this request last December and the Division will implement it this next month. The Division recommends splitting the units and does not recommend a management buck hunt on the Book Cliffs.

Additional Muzzleloader Pronghorn Hunting Opportunities 00:16:37 – 00:21:58

The Division believes that more pronghorn opportunities can be achieved with more muzzleloader hunting units. At the next RAC/Board meeting DWR will propose a muzzleloader hunt on the Cache, Morgan, South Rich-Ogden, and Southwest Desert units. This will help reduce hunter crowding during any weapon hunts and provide more opportunity with a lower success rate and get hunters through the muzzleloader point system quicker. The plan would mirror the permit breakdown in the Plateau: 20% archery, 20% muzzleloader, and 60% rifle.

Goat Seasons Action Log Item 00:22:00 – 00:29:06

The Division supports extending the goat season dates; however, there are some issues to address such as hunter safety issues due to deer hunt overlap, Forest Service road closures that would prevent access points, and transplants coinciding with the date extension (Willard Peak - Oct 12 to beginning of deer hunt).

Non-resident Sheep Permit Quota Action Log Item 00:29:18 – 00:34:08

There was some concern about how bighorn sheep permits were allocated and a misconception that residents weren't getting the fair 90/10 split. Justin provided a handout that explains the percentages and the grouping of smaller permit units. Grouping smaller units allows the Division to provide non-residents and convention permit holders the chance to hunt these units. The intent of grouping the smaller units was to get a more accurate count.

Mineral Mountain Range Action Log Item 00:34:10 – 00:40:08

The Division does not recommend making the west side of Mineral Mountain Range Unit into a limited entry buck deer unit. Many petitions and surveys support this conclusion. The unit is split east and west by I-15. There is limited migration between the split units. Buck to doe ratio is starting to correct. The best approach would be to take it through the RAC process.

Public Comments 00:40:10 – 00:42:06

Public comments were taken at this time.

The Board agreed that they should wait to see how the Mule Deer Management plan would play out during the RAC process before making any decisions.

4) DWR Update **(Informational) 00:43:22 – 01:15:24 of 03:23:24**

Greg Sheehan updated the Board on a wolf the Division is tracking, bear depredation issues, hatchery closures and openings, tiger muskie production, fishing license fee changes, upcoming hunts, and a Division Smartphone app. Calvin Crandall was reconfirmed on the Board by the senate.

Greg proposed a March board discussion on aquatics.

AFWA annual awards recognized Chris Penne, Northern Region aquatic biologist.

Calvin Crandall asked the division, hunters, and public for help in the shooting of livestock between Utah and Juab County. The Central Utah Livestock Association is offering a $20,000 reward.

Jake Albrecht mentioned some reports on helicopter harassment on the Beaver and Tushar Mountains. Kevin Bunnell had his law enforcement section address the issue; there was also one incident near Lyman which involved DWR biologists out tagging bighorn sheep with radio collars.

5) Fishing Guidebook and Rule R657-13 **(Action) 01:16:06 – 02:34:34 of 03:23:24**

Drew Cushing presented the fishing guidebook and rule R657-13.

Board Questions 01:48:21 – 01:59:14

The Board asked for further explanation about trout possession limit and how it could be enforced.

RAC Recommendations 01:59:36 – 02:02:52

All RACs, except Southeastern, passed the Fishing Guidebook and Rule R657-13 with varying dissent. Southeastern RAC did not have a full quorum to make a motion, but were supportive of the Division's recommendation.

Southern and Northeastern RAC proposed additions.

Public Comments 02:02:56 – 02:13:24

Public comments were accepted at this time.

Board Discussion 02:13:28 – 02:34:34

Chairman Albrecht summarized the RAC votes. The Board continued a discussion on trout possession limit. Greg Hansen expounded on the definition of permanent residence/primary domicile.

The following motion was made by Mike King, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we accept the Fishing Recommendations and Rule R657-13 as presented by the Division.

The following amended motion was made by Calvin Crandall, seconded by Steve Dalton and passed 3 to 1. Mike King dissented.

MOTION: I move that we amend the motion to include trout as a no possession limit.

6) Native Cutthroat Trout New Introductions **(Action) 02:34:36 – 2:44:50 of 03:23:24**

Richard Hepworth presented the Native Cutthroat Trout New Introduction.

Board Questions 02:36:44 – 02:42:54

The Board asked for a timeline of the proposal and the process that would take place.

RAC Recommendation 02:42:59 – 02:43:22

Southern RAC unanimously supported the Native Cutthroat Trout New Introductions.

Board Discussion 02:43:26 – 02:44:50

Chairman Albrecht summarized the Southern RAC's motion.

The following motion was made by Steve Dalton, seconded by Mike King and passed unanimously.

MOTION: I move that we accept the Native Cutthroat Trout New Introductions as presented by the Division.

7) Conservation Permit Annual Report **(Action) 02:45:08 – 02:57:38 of 03:23:24**

Bill Bates presented the annual report for the conservation permits.

Board Questions/Discussion 02:53:48 – 02:57:38

Board asked about funding, project proposals, and who works on them.

The following motion was made by Steve Dalton, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we accept the findings of the Conservation Permit Annual Report as presented by the Division.

8) Conservation Permit Audit **(Action) 02:57:39 – 03:15:06 of 03:23:24**

Kenny Johnson presented the conservation permit audit.

Board/RAC/Public Questions 03:03:29 – 03:15:06

Bill Fenimore asked if unused funds could be carried over to the following year; it can be as long as it is expended or committed to projects within three years.

Robert Byrnes asked if the Division's fiscal year is the same as other fiscal years. It is different and runs through September to allow conservation groups to complete their banquet season.

Some conservation groups reported on the funding and projects that were accomplished through this program.

Mike Canning explained that the Division, in its efforts to maintain transparency, has posted all the conservation permit reports online for anyone to view.

The following motion was made by Bill Fenimore, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we accept the findings of the Conservation Permit Audit as presented.

9) Conservation Permit Allocation – 1 year **(Action) 03:15:07 – 03:18:36 of 03:23:24**

Bill Bates presented the conservation permit allocation for one year.

The following motion was made by Steve Dalton, seconded by Calvin Crandall and passed unanimously.

MOTION: I move that we approve the Conservation Permit Allocation for 1 year as presented by the Division.

10) 2015 RAC/Board Dates **(Action) 03:18:38 – 03:21:59 of 03:23:24**

Staci Coons presented the 2015 RAC/Board dates.

There was discussion about adding a March meeting for the Board.

The following motion was made by Bill Fenimore, seconded by Mike King and passed unanimously.

MOTION: I move that we approve 2015 RAC/Board Dates as presented by the Division.

11) Other Business **(Contingent) 03:22:00 – 03:23:24 of 03:23:24**

The Board discussed the upcoming winter WAFWA conference in Las Vegas, NV. The conference runs January 8-11, 2015. Greg Sheehan said at least two Board members should attend the conference. Steve Dalton agreed to attend. The other possible board member may be Kirk Woodward.

Summary of Motions
November 2014

Statewide Mule Deer Management Plan Revisions

NRO: Motion: Recommend the Wildlife Board approve the Statewide Mule Deer Management Plan revision as presented.
Motion to Amend: Add a strategy that the Division would study antler shed hunting closures with the potential of May 1 season opening.
Motion to Amend Passes: Unanimous

Amended Motion: Recommend the Wildlife Board approve the Statewide Mule Deer Management Plan revision as presented with a strategy that the Division would study antler shed hunting closures with the potential of May 1 season opening.
Motion Passes: Unanimous

CRO: Motion: Recommend the Wildlife Board approve the Statewide Mule Deer Management Plan revision as presented.
Motion Passes: Unanimous

SERO: No quorum present

NERO: Motion: Recommend the Wildlife Board approve the Statewide Mule Deer Management Plan revision as presented.
Motion Passes: 7 - 1

Bucks, Bulls & OIAL 2015 Season Dates and Application Timeline and Amendments to Rule R657-5

NRO: Motion: Recommend the Wildlife Board clarify language defining a mature goat in the wording of R657-5-40(3). E.g. delete the last sentence of section three.
Motion Passes: For: 12, Against: 1

Motion: Recommend the Wildlife Board approve the remainder of the presentation with the inclusion of no harvesting of collared bighorn sheep in Unit 8.

Motion to Amend: Eliminate the LE late season (November) muzzle loader deer hunt.
Motion to Amend Fails: For: 5, Against: 8
Motion Passes: For: 10, Against: 3

CRO: MOTION: For the reasons stated to accept plan as presented with the addition that the Wasatch moose boundary be extended to include the Manti and Nebo units
Motion Passes: 8 to 3

SERO: No quorum present

NERO: MOTION to approve, and (1) to extend the southern border of the Wasatch Unit moose hunt, (2) for the late muzzleloader deer hunt to have those permits available for draw not for landowners (3) to add eight days to the Zion, Nine-Mile bighorn sheep hunt
Motion Passes: Unanimous

Big Game Preference Point Recommendations

NRO: Motion: Recommend the Wildlife Board approve Big Game Preference Point Recommendations as presented.
Motion Passes: For: 10, Against: 2

CRO: FIRST MOTION: To keep status quo and ask that the Division explore other options for next year
Passed 10 to 1
SECOND MOTION: The preference point system be changed to start with the highest and fill all the first choices and then go to the next. When all of the first choices are filled go to the second choice but you do not lose your point(s) if you draw second through fifth choices
Passed 7 to 3, 1 abstention

SERO: No quorum present

NERO: Motion: Recommend the Wildlife Board approve Big Game Preference Point Recommendations as presented.
Motion Passes: Unanimous

CWMU Management Plans and Landowner Association Permit Numbers for 2015

NRO: Motion: Recommend the Wildlife Board approve the CWMU Management Plans and Permit Numbers for 2015 with the noted corrections as presented.
Motion Passes: For: 11, Against: 1

Motion: Recommend the Wildlife Board approve the Landowner Association Permit Numbers for 2015 as presented with the DWR recommendations and 1bull elk tag per three years for the Pilot Mountain Landowner Association.
Motion Passes: For: 10, Against: 2
Motion: Recommend the Wildlife Board encourage the Division to set up a variance procedure for landowner association permits.
Motion Passes: For: 10, Against: 2

CRO: Motion: To approve the CWMU permit numbers as presented
Motion Passes: Unanimous
Motion: to accept the landowner association recommendations as presented
Motion Passes: Unanimous

SERO: No quorum present

NERO: CWMU Management Plans MOTION to accept as presented
Motion Passes: Unanimous
Landowner Association Permit Numbers for 2015 MOTION to accept the Division's recommendation on CWMU and Landowner Association
Motion Passes: Unanimous

Landowner Permit Rule Amendments R657-43 (New permit type)

NRO: Motion: Recommend the Wildlife Board approve Landowner Permit Rule Amendments R657-43 as presented.
Motion Passes: Unanimous

CRO: Motion: To recommend that the rule be adopted
Motion Passed 7 to 3 (one RAC member left)

SERO: No quorum present

NERO: Motion: Recommend the Wildlife Board approve Landowner Permit Rule Amendments R657-43 as presented.
Motion Passes: Unanimous

Northern Regional Advisory Council Meeting
November 05, 2014
Brigham City Community Center
Brigham City, Utah

Summary of Motions

Meeting Begins: 6:01 p.m.

Approval of the Agenda
Motion: Move to approve the agenda for tonight's meeting.
Motion Passes: Unanimous

Approval of the Sept 17, 2014 Meeting Minutes
Motion: Approve the Sept 17, 2014 Northern Regional Advisory Council Meeting Minutes.
Motion Passes: Unanimous

Statewide Mule Deer Management Plan Revisions
Motion: Recommend the Wildlife Board approve the Statewide Mule Deer Management Plan revision as presented.
Motion to Amend: Add a strategy that the Division would study antler shed hunting closures with the potential of May 1 season opening.
Motion to Amend Passes: Unanimous

Amended Motion: Recommend the Wildlife Board approve the Statewide Mule Deer Management Plan revision as presented with a strategy that the Division would study antler shed hunting closures with the potential of May 1 season opening.
Motion Passes: Unanimous

Bucks, Bulls & OIAL 2015 Season Dates and Application Timeline and Amendments to Rule R657-5
Motion: Recommend the Wildlife Board clarify language defining a mature goat in the wording of R 657-5-40(3). E.g. delete the last sentence of section three.
Motion Passes: For: 12, Against: 1

Motion: Recommend the Wildlife Board approve the remainder of the presentation with the inclusion of no harvesting of collared bighorn sheep in Unit 8.

Motion to Amend: Eliminate the LE late season (November) muzzle loader deer hunt.
Motion to Amend Fails: For: 5, Against: 8
Motion Passes: For: 10, Against: 3

***RAC Member Joel Ferry left.**

Big Game Preference Point Recommendations
Motion: Recommend the Wildlife Board approve Big Game Preference Point Recommendations as presented.
Motion Passes: For: 10, Against: 2

CWMU Management Plans and Landowner Association Permit Numbers for 2015
Motion: Recommend the Wildlife Board approve the CWMU Management Plans and Permit Numbers for 2015 with the noted corrections as presented.
Motion Passes: For: 11, Against: 1

Motion: Recommend the Wildlife Board approve the Landowner Association Permit Numbers for 2015 as presented with the DWR recommendations and 1bull elk tag per three years for the Pilot Mountain Landowner Association.
Motion Passes: For: 10, Against: 2
Motion: Recommend the Wildlife Board encourage the Division to set up a variance procedure for landowner association permits.
Motion Passes: For: 10, Against: 2

Landowner Permit Rule Amendments R657-43 (New permit type)
Motion: Recommend the Wildlife Board approve Landowner Permit Rule Amendments R657-43 as presented.
Motion Passes: Unanimous

Meeting Adjournment
Motion: Move we adjourn.
Motion Passes: Acclamation by RAC Chair
Meeting Ends: 10:55 pm.

Northern Regional Advisory Council Meeting
November 05, 2014
Brigham City Community Center
Brigham City, Utah

Draft Meeting Minutes

Meeting Begins: 6:01 p.m.

RAC Present	DWR Present	Wildlife Board
Robert Byrnes- Chair, At Large	Jodie Anderson	Bill Fenimore
John Blazzard- Agriculture	Justin Dolling	
John Cavitt- Nonconsumptive	Randy Wood	
Paul Cowley- Forest Service	Brandon Baron	
Joel Ferry- Agriculture	Darren Debloois	
James Gaskill- At Large	Justin Shannon	
R. Jefre Hicks- At Large	Kent Hersey	
Russ Lawrence- At Large	Karen Caldwell	
Jon Leonard- Sportsman	Scott McFarlane	
Kristin Purdy- Nonconsumptive	Chad Wilson	
Bruce Sillitoe- BLM	Jim Christensen	
Bryce Thurgood- At Large	David Beveridge	
Craig VanTassell- Sportsman	Scott Walker	
John Wall- At Large	Greg Sheehan	
	Kenny Johnson	
	Bill Bates	
	Lindy Varney	

RAC Excused
G. Lynn Nelson- Elected

Agenda:
Welcome, RAC Introductions and RAC Procedure
Approval of Agenda
Approval of Sept 17, 2014 Meeting Minutes
Old Business
Regional Update
Deer Survey
Statewide Mule Deer Management Plan Revisions
Bucks, Bulls & OIAL 2015 Season Dates and Application Timeline and Amendments to Rule R657-5 Big Game Preference Point Recommendations
CWMU Management Plans and Landowner Association Permit Numbers for 2015
Landowner Permit Rule Amendments R657-43 (New permit type)

Item 1. Welcome, RAC Introductions and RAC Procedure
Welcome: Robert Byrnes, Chair
Introduction of RAC Members
RAC Procedure: Robert Byrnes, Chair

Item 2. Approval of Agenda
Motion: Paul Cowley- Move to approve the agenda for tonight's meeting.
Second- Jim Gaskill
Motion Passes: Unanimous

Item 3. Approval of Sept 17, 2014 Minutes
Motion: John Blazzard- Approve the Sept 17, 2014 Northern Regional Advisory Council Meeting Minutes.
Second- Paul Cowley
Motion Passes: Unanimous

Item 4. Old Business
Robert Byrnes- RAC Chair No old business.

Item 5. Regional Update
Justin Dolling, Regional Supervisor

Aquatics- Biologist received national award. Staff finished gill netting Willard Reservoir. Wiper numbers up, walleye are down just a little bit. Emergency fish salvage below Echo Reservoir.
Law Enforcement- Deer season steady but not crazy. One administrative road block outside of Bear River Refuge visitors center for waterfowl compliance. Administrative road block also at Hardware Ranch. Moose illegally shot, probably mistaken for elk. Confusion with boundary between Kamas unit and South Slope unit pertaining to general deer hunt. New Officer Dominick Barrett.
Outreach– Northern Region will be the first RAC in 2015 with the exception of one of the spring meetings.
Wildlife- Checked more deer this year at check stations. Deer numbers doing well. Deer classifications coming up. Releasing 11,000 pheasants statewide. DWR leased lands will be open for the extended pheasant hunt this year.
Habitat- Biologists are working on finishing habitat projects and fire rehab projects. Large expansive juniper removal in Park Valley. Reseeding cold water WMA this winter. Division released mobile app. Go to iTunes and type in "Utah DWR" to download app. Android device by way of Google play. There is a calendar section to look at all upcoming events for DWR, RAC and Board meetings as well as events we are sponsoring. Illustrations of different species of fish. Upland game including bird species and rabbits. Waterfowl illustrations of different duck species. You can also find out when shooting hours open and close for that particular day. You can download your combination license on to this mobile app and it counts as your license in the field.

RAC Comment/Questions

James Gaskill- I recently found out there has been a big project on Ogden Bay replacing head gates and bridges. I was quite impressed with that.
Justin Dolling- During 2008, we had a heavy runoff and had to breach some of the dikes at Ogden Bay. As they were breached, the water went through some of the smaller impoundments and created problems. We were able to work with the County and put together a grant through the NRCS to fund flood work control. As a result, we now have 3 brand new large radial arm gates that can pass a significant amount of water plus secondary gates that can move that water during flood events. That project just wrapped up a month or so ago.
James Gaskill- Val claims he can sit in his office and release water and impound water from his computer.
Justin Dolling- There is a feature where he can do it remotely but I have encouraged him not to rely on that.
Jon Leonard- I understand the county was going to shift to the Little Weber River drainage out through there which you guys acquired a waterfowl management area out there but have not done much. We have been talking

to the county how we may enhance the entire marsh land using their efforts to build on. Have you entered into any discussion or negotiation about what could be done out there to improve the situation?
Justin Dolling- We have had some discussions with the county about how to move water and move it more effectively once it gets lower in the system. The county has had some challenges where the Little Weber hooks to the main Weber and trying to get permission to cross some landowners up in there. I share your concerns that the lower reaches are pretty full of phragmites and we need to do something down there to move that water through the system and get it back into the Great Salt Lake.
Jon Leonard- It silted it up from previous floods and it has been taken over almost entirely by phragmites. What use to be a great waterfowl hunting area is now virtually sterile because of the phragmites and siltation.
Justin Dolling- That brings up another good point. We have been managing phragmites along the Great Salt Lake and we are doing it with a multiple pronged approach. We have herbicide applications each fall. We are using grazing as an experimental tool to munch them down and hopefully allow some of the more desirable vegetation to invade. We are using controlled burns and mechanical treatments. It is an area we would like to work in and we need to do something out there.
James Gaskill- I understand you are also cutting and bailing it to sell as feed.
Justin Dolling- We did an experiment this year and had someone come in and cut and bail it. The protein content was extremely high in that. That might be a market out there too, doing some cutting and bailing. Grazing has shown some great promise. We are trying everything we can, it is a big challenge for us.

Introduction of RAC Member Bruce Sillitoe

Item 5. Deer survey
Kent Hersey, Big Game Project Leader

See Handout

Item 6. Statewide Mule Deer Management Plan Revisions
Justin Shannon, Big Game Coordinator

See Handout

RAC Questions

James Gaskill- I am assuming on that mountain lion opportunity, they would still have to purchase a license for a mountain lion. They wouldn't be able to shoot one because they were deer hunting right?
Justin Shannon- That will be worked out and taken through public process. In some neighboring states, you can tag your mountain lion with your deer tag. In Utah, we might have difficulties tracking harvest and demand for that. We have talked internally about maybe having a permit for a reduced price or something like that so you can track it a little better. We have not worked out those details at all. That is something that would have to come before the RAC.
R. Jefre Hicks- You were talking about the multi-season permit and said you might be able to charge a premium for that. How much of a premium could you charge and how much money would it bring to the DWR?
Justin Shannon- It is something we will have to take through the fee schedule and present. For elk, for a premium or multi-season tags, is about 1.8 times the amount of a normal tag. If a limited entry tag is $80, you would times that by 1.8 and that may be where it lands. When we work out the fine details, we will bring that back through the public process. That is my initial thoughts.
Paul Cowley- I have a concern as we look at the population management goal and then the population objective. Under the goal, we are saying that we are going to set the goal for the populations based on habitat that is available. Then, the objective, we say that we are going to add up all of the unit objectives to get a population objective.
Justin Shannon- Correct.

Paul Cowley- As we have talked about some of those population objectives, one of those is the Cache Unit, which seems to be larger than what the habitat can support. Is there going to be an effort to pull those unit objectives to balance out with habitat availability.
Justin Shannon- One of the first strategies that we talked about was monitoring our habitats. We don't want to grow these deer at the detriment of the deer habitat that we have. That is why some of our strategies are to do habitat improvement projects. If you have a population objective on a given unit that is unrealistic, then there might be cases that we lower those. In the same breath, if you have population objectives on some units that are being exceeded, those can be adjusted higher. From my perspective, you have to be realistic to know what the units can hold.
Paul Cowley- I think that is really important, otherwise you get two contradictory ways on how you are going to measure success in this plan.
Justin Shannon- As unit plans come through, be keeping an eye on those objectives and how realistic they are.
Bryce Thurgood- On the November hunt that you have proposed, you went through the survey and everyone wants the world but no one wants to give up anything. They all like the idea of the November hunt but they like the idea of seeing a higher buck to doe ratio on these units. It is a bit contradictory that they want both. They want to see bucks during the regular season but also in October so you are going to let them shoot in October. It seems they want a bit of both. How many tags?
Justin Shannon- That is tough. We are not setting numbers tonight and I know you are aware of that. We are trying to build the framework to see if this is the idea we like. Some units we manage for 18-20 bucks per 100 doe that we are exceeding and you could throw more general season hunters at it but there are issues that throwing more permits, may not get you any additional harvest during that timeframe. This is a situation that we felt like if we are managing for 18-20 and have a surplus, this would be a great opportunity to get limited entry hunters the opportunity and not harm the resource. It is not something they would have to give up because that surplus already exists. I can't answer your permit question. I would like those recommendations coming from the regional biologist and not dictate that for them.
John Cavitt- We are still conducting research on the translocations and their effectiveness right?
Justin Shannon- Yes.
John Cavitt- If we are still trying to look at the effectiveness of those, why are they listed as a strategy in the plan? What is the rationale for listing them as an overall strategy to get to our population objectives?
Justin Shannon- The idea behind it is if we are seeing success and survival rates that we are comfortable with, then we have options. Just because we put it as a potential release site or strategy, if it fails and deer are dying, maybe it is something we can pull back on. If it is working, we have options to move forward and not reopen the plan.
John Cavitt- What are we expecting in terms of the study? How long is it going and where are we in that?
Justin Shannon- Kent, can you respond to that a little more?
Kent Hersey- The initial study was off of Parowan Front. We moved 100 deer in year one, 50 in March and 50 in January up to the Phavant unit. About half of those died and half lived. Once the deer made it to year two, the survival was 85% which is comparable to that of the resident deer. Year two of that study which is going on currently, we are seeing much higher survival in 70-80% range which is a bit surprising but very good. That study is going to conclude on December 31st in terms of monitoring. In addition to that, we moved 100 deer off Antelope Island which we marked all of them and so survival around the 70% range as well. We are constantly having these projects looking at survival. We had a population that was completely wild and mountain deer that were overpopulated. We saw habitat damage and they weren't in great body condition. Antelope Island deer were very fat and healthy and did well in the transplant. We are starting a new project looking at urban deer from Bountiful. We are moving 200 of them to a couple of places and see how they do. Preliminary results show that it can be effective. It takes about one year for them to acclimate to the new area but then act like resident deer. We are going to keep gathering information to learn more.
Justin Shannon- We are learning that when you release mule deer on these winter ranges, the following year they come back to those winter ranges. We have a lot of areas in the state that deer walk right through. If we can use translocation as a tool to get deer to use habitats that are already in good shape, that is something we want to explore. We still have a lot to learn in five years.
R. Jefre Hicks- How are you going to protect migration corridors?

Justin Shannon- We need to identify them and then we know what our challenges are. We have areas that we know deer spend a lot of time in the summer range and we classify them on the winter range. The first challenge is to find out the migrational route, where does it go, how long does it last and how much time are they spending in some of these areas. It is building partnerships with landowners and agencies where these exist. We need to be realistic about the limited tools we have. I think we need to identify the areas first.
R. Jefre Hicks- Do you anticipate having to pay for this access?
Justin Shannon- I don't know if I have a good answer for that. That is a good question.
James Gaskill- Is this going to be a long enough term study to determine whether in fact translocating deer really has the potential to increase the population? Survival of the ones you put out for one year or two years, does not necessarily mean the herd is going to get bigger. It may be that you are putting healthy deer out that the deer are not so healthy so they are going to replace them rather than increase the overall population. I am not excited about making big changes based on that.
Justin Shannon- I know some of the areas we are looking to put these deer, areas like Elk Ridge, we already have radio collars out there and have for the last 5 years. We will be able to tell whether the population is increasing or staying stable in addition to the radio collar transplants. If we are putting these deer in a location where deer are already competing with one another, it does not make a lot of sense. That is why we are trying to find winter ranges that historically hold more deer and have low densities and could support additional deer. We are selective where we are trying to put them and give the best chance for success.
James Gaskill- These new locations, you have gone through that process and found they are areas where there use to be more deer but do we know why there use to be more than there is now? It is a complicated issue. We need to make sure it is a big study and not just a couple of times we take deer and see how they live for a year.
Justin Shannon- We are looking to put deer in areas that have recently had habitat improvement projects. We are trying to grow the potential habitat to allow for what you are talking about. We want to help the resident population that was there. We have to start by seeing if the deer are surviving. If not, we are not helping any population.
James Gaskill- The one area on the survey that received the highest score was that we want to go deer hunting because we want to go with our family and have a good experience. That far outweighed any other. Does that far outweigh any other consideration in talking about how we manage by limited entry? We have a conflict there and I am wondering if you are saying that limited entry is more important or is having the opportunity of going with your family more important?
Justin Shannon- I don't want to put the two against each other. In Utah, and in most western states, is a pendulum. Some people want to hunt every year and other who want extreme quality. We have general season hunts who want to hunt more often and maintain family tradition. If they are further along that pendulum, we have limited entry units where you have to wait a while but can draw and have the potential to kill an older buck. On the other side, we have areas like the Henrys and Paunsaugunt. We want to provide the demands that are there.
James Gaskill- I object to the use of "quality" to indicate shooting the big deer because 70% of us consider real quality to go out with our children and grandchildren to hunt. I don't like that word when you say "quality". Stick with large antler deer instead of quality.
Paul Cowley- As we look at habitat objective #2, that is 500,000 acres over 5 years improved. Do you know what we are currently averaging now per year?
Justin Shannon- I think it is over 100,000 acres on average. It is just a goal we are trying to get to. We want to have quality projects.
Paul Cowley- Commend the division on this plan.
John Blazzard- When you talked about the multiple season premium hunt or special hunt. What kind of effect is it going to have on dedicated hunter?
Justin Shannon- It would not have any.
John Blazzard- Basically, you are putting out a dedicated hunter you can hunt for a year right?
Justin Shannon- It is only good for limited entry and premium limited entry. It would not apply to general season at all.
John Blazzard- You had designated Cedar Hollow on the Kamas unit as a transplant area. I also noticed that the Kamas unit was mentioned as being an area for the late muzzleloader hunt?
Justin Shannon- Yes.

John Blazzard- The reason for the muzzleloader hunt was because Kamas was over objective. Why would you want to transplant deer there?
Justin Shannon- There are two objectives. One is a population objective. We also have a buck to doe ratio objective which is 18-20. When we talk about late season hunts for units that are over objective, those are for units that are managed for 18-20 bucks per 100 doe and we are exceeding that. It is independent relative to the population objective.
Robert Byrnes- Basically, they are over objective on bucks but the population probably is not at the objective yet.
John Blazzard- I hope it is.
Kristin Purdy- I am looking at the first population objective that by 2019 we want to increase the mule deer population in the state to the 425,400 animals. Considering that it has taken us since 1992 to increase the herd by about 100,000 animals, it seems unlikely to do that in 5 years.
Justin Shannon- That is why we are not setting this 425,000 number in the plan. That is a sum of all the unit plans. If you have a unit that isn't realistic and it is 10,000 deer over and above what we think that can hold, maybe that needs to be lowered. This plan is a goal and if we can get there, that would be ideal. And to get there in a way that does not hurt the habitat. We have been aggressive with habitat restoration. We are seeing results play out. If we have room to grow deer and can do it in an appropriate way, that is what we are trying to do with this plan.

Public Comment

Bud Theurer- Boundary between Cache and Box Elder unit from the freeway to the state line. Limits those from the Box Elder County from hunting our side of the Wellsville Mountain which is a favorite area for a lot of people. Use the county line instead of the freeway. Extending and adding hunts is a big problem with the deer population we have. The best program we could have for managing deer is to have a ten day hunt, any weapon and that is the end of the hunt. The best time to start that is the closest Saturday to the 20th of October. I am all for people and their property rights.
Troy Justensen- Sportsman for Fish and Wildlife- Commend and support all those that put together this plan. We ask that, on the multiple tag for deer, that it only applies to those who draw the permit.

RAC Comment

Robert Byrnes- I represented the Northern Regional Advisory Council on this committee. There were a lot of different viewpoints. Not everyone got what they wanted but we also tried to respect the opinion of the public from the survey. All the questions and data are in the packet sent out. We have changed mule deer management a lot lately. There was some push to change it a lot again. Most of us felt it would be best to try and stay the course with some of the changes that were made. I don't think the intention on the multi-season permit is to allow anyone other than who drew that, to have that opportunity.
Paul Cowley- Address questions that are proposed as far as when the appropriate time would be to look at a unit boundary change based on Mr. Theurer's comments.
Justin Shannon- I will let the region answer that. It is a local boundary change.
Randy Wood- Probably when you would want to do that is when we redo unit plans which will follow the approval of this. We could then look into that and adjust the boundaries if needs be.
Robert Byrnes- We have a litany about how you draw boundaries right?
Randy Wood- Something like a county line, we try to avoid because it is hard to tell what side you are on. A freeway, road or river sometimes is a more distinguishable boundary for someone to see. We want something you can define and is easier to enforce a highway rather than a county line.
Robert Byrnes- We also try to draw around habitat or where deer live right?
Randy Wood- Yes, we have been collecting data on the unit boundaries for quite some time. It does not mean you can’t adjust a boundary. We try to look at migration routes and where they are. Also, landownership and how that fits into it to get the units that we have now.
Robert Byrnes- We can try and answer a question for you Mr. Theurer.

Public Comment

Bud Theurer- The Wellsville Mountain has the narrowest base to the height of the mountain. Once you are on the top, you are either looking into Cache valley or Box Elder County. You know it is a better boundary than the freeway.

RAC Comment

James Gaskill- We did not see many of those graphs in here that we saw in the RAC packet regarding populations. When I was a kid, there was one page in the newspaper of the deer proclamation. That is when we had the most deer. We need to be careful as we make this more and more complicated and difficult for us to understand. Hunters sometimes don't sit down and pour over the guidelines as we probably should. I worry about things like a small change that make things more difficult.
Bryce Thurgood- Strongly agree that we not allow the landowner tags to be a part of that. It is a horrible idea. Would like to look into the consolidation of preference and bonus points. One of the biggest things that I would like them to possibly look at that I think they have done everything they can with habitat and predators. It seems like one of the biggest problems is horn hunting. They are harassing the deer on the winter range when they are most susceptible to having a chance of living through the winter. I asked Justin and I don't know if it is a problem or not right now. It seems like a few other states put a rule down before May 1st, you cannot pick up horns. I think that would be another tool to help get guys off the hill and quit harassing the deer and elk while they are most susceptible. I think we should look into that.
Russ Lawrence-Amen.
Joel Ferry- Clarification on landowners and the issue of multiple season.
Justin Shannon- If we have this 3% of permits that go to limited entry and premium limited entry deer hunters. They would go to those who have the public draw permit. They would not go to landowner associations or CWMU's. Right now, when we do this for elk, that is how it is fashioned. The premium elk permits are for those that draw them through the draw process only.
Joel Ferry- How does that correspond with the landowner tag?
Justin Shannon- It doesn't, this would be available to the landowner association.
Joel Ferry- I don't understand why it is an issue then.
Justin Shannon- Maybe it was just a point that I did not clarify. These will not be valid for landowner associations. This are for public draw only.
Robert Byrnes- For that to be possible, we would have to go back and change the rule that applies to landowner tags correct?
Justin Shannon- I don't think we would have to but let me have Scott clarify. The way the rule is written right now for landowner associations, it does not allow premium permits to go to landowner associations for elk correct?
Scott McFarlane- That is correct. Premium permits are not allowed by rule for landowner associations. They have requested them but do not qualify by rule.
Justin Shannon- We would not have to tweak it because by rule it is already set up that way.
Bill Bates- The multi-season permits will be just like the premium elk permits. It will be a separate draw that you have to apply for but will be separate from landowner permits. There is no way to mix them together.
Joel Ferry- So, it is its own unique draw and does not cross over?
Bill Bates- Right.
Joel Ferry- Being a landowner myself, it is important to incentivize the landowners to help promote the habitat and feed for these wildlife during the critical times is a benefit and pays dividends in the long run.
Robert Byrnes- We have included several strategies.
Joel Ferry- To incentivize.
Robert Byrnes- And to help educate the public on the value of the programs that we are operating and help them learn about what it does for them also.
James Gaskill- The proposal to combine the two point systems is not up for approval tonight correct?
Robert Byrnes- Correct that is a study item.

Justin Shannon- The language we use says to investigate. Over the life of the plan, we look at the pros and cons of combining these two point systems into one. It is nothing that will proposed tonight.
James Gaskill- That is what I thought, thanks.
John Blazzard- Things like the late muzzleloader hunt as well as the bonus point combinations, those are just things that are on the table, or is the muzzleloader hunt late something we are voting on tonight?
Justin Shannon- You are just voting on the mule deer plan. There is a list of strategies and some of them we will present in the bucks, bulls and OIAL and we will outline those things. Others are strategies we are asking the division to look at certain things and implement them over the life of the plan. I can go back through those again to know what is in the plan that we can do tonight and what would be down the road.
John Blazzard- Issuing a cougar tag to everyone who gets a deer tag would be a nightmare.
Justin Shannon- That will not be something we present tonight. It is something we will look at over the life of the plan and work out the details.

Motion

Motion- Jon Leonard- Recommend the Wildlife Board approve the Statewide Mule Deer Management Plan revisions as presented.
Second- James Gaskill

Discussion on the Motion

Bryce Thurgood- Is it appropriate to add something like looking into setting a season date for collecting horns. It has a lot to do with this plan. Setting a season date to ban shed hunting until May 1st.
Justin Shannon- This RAC can add any strategy that you see fit. If you would like the division to add a strategy to investigate seasonal closures for antler gathering, that is certainly a strategy that could be suggested and voted upon tonight. We did have some conversation with that in the committee. There was a survey question asking if the public would support something like that and 45% said they would support and I think 25% would not and the others neutral. We had discussions, it just never made it in as a strategy.
Robert Byrnes- We had sheets full of strategies we went through. If you want to include that, make a motion to amend the original motion to include the division looking at setting season dates for shed hunting.

Amendment to the Motion

Motion to Amend-Bryce Thurgood- Add a strategy that the Division would study antler shed hunting closures with the potential of May 1 season opening.
Second- R. Jefre Hicks

Discussion on the Motion

James Gaskill- You want that to be part of the mule deer plan?
Bryce Thurgood- I would like it to be part of the plan but then I wouldn't mind bringing it up at another time too.
Robert Byrnes- It would be a strategy within the mule deer plan.
James Gaskill- That was my question. Currently, it is not correct?
Robert Byrnes- Correct.
James Gaskill- Currently, it is dealt with in other sections of the division's paperwork somewhere.
Robert Byrnes- Yes.
James Gaskill- Would potentially come up in a later meeting or not?
Robert Byrnes- I believe it is part of the bucks and bulls proclamation correct?
Justin Shannon- It is not. It is not something that will be coming forward. We have done in the past is, antler gathering was a really big deal. There was a lot of damage and hunters going off road. There were some real challenges we had. I think it was 2008 but years ago we put together antler gathering ethics course. That is what you have to complete before picking up antlers or horns from February 1st to April 15th. If you are caught on

the winter ranges without that, there is issues with that. That is the route we have gone is the educational route and ethics with training on what you should and should not be doing. There still might be areas that we are still having problems and challenges. The issue today is not what it was 8 years ago when some of these challenges were hot and heavy.
Robert Byrnes- Where in rule does it require the ethics course?
Justin Shannon- It is in R657-5. It is in the big game proclamation every year.
Robert Byrnes- So, it is in the proclamation?
Justin Shannon- Yes, and there is a portion that says if you are going to shed hunt from February 1st to April 15th, you need to have completed this ethics course. That is the route our agency has gone and a lot of these issues have dampened.
Robert Byrnes- At one time, we did have a closure and it lasted one year.
Justin Shannon- Oh, we did have a closure?
Robert Byrnes- Yes we did. I think it was statewide but there was a lot of disagreement about the action. We are going to do the proclamation rule after we do this right?
Justin Shannon- Yes, R657-5 will be open for review during the next presentation.
Robert Byrnes- If we made a motion to include a strategy that you would study antler season closures and included that in the mule deer plan. That would be on your agenda to work on correct?
Justin Shannon- Yes, we would not necessarily have to change the rule until we decided to take action. We would look at this internally and get involved with law enforcement that do winter patrols and get feedback from them. We would have a discussion to see how big of an issue it is and if it requires seasonal changes. We do that anyways and are doing that now. It already is a high priority.
Robert Byrnes- Bryce would a strategy in the mule deer plan that might eventually yield a closure get to what you are after?
Bryce Thurgood- I wouldn't mind leaving in here but then possibly bringing it up in the next one also. I don't know if it is overkill. I would like to see some feedback but leave it here.
Robert Byrnes- We will vote on your motion to amend anyway.
R. Jefre Hicks- I think it is a good idea to have it as a strategy and for you to think about it as part of the overall strategy. Your return on the investment is much greater by tightening up on shed hunting in vulnerable times.
James Gaskill- Call for vote.

Motion to Amend Passes: Unanimous

Discussion on the original amended motion

Amended Motion: Recommend the Wildlife Board approve the Statewide Mule Deer Management Plan revisions as presented with a strategy that the Division would study antler shed hunting closures with the potential of May 1 season opening.

Motion Passes: Unanimous

Item 7. Bucks, Bulls & OIAL 2015 Season Dates and Application Timeline and Amendments to Rule R657-5
Justin Shannon, Big Game Coordinator

See Handout

RAC Questions

Robert Byrnes- On the Sanpete Valley change, is that going to eliminate that baiting of mature bulls that we had an issue with last year and came before the Wildlife Board.
Justin Shannon- It takes away the incentive to bait. I hope that is something that comes out of this.
Robert Byrnes- On the Pilot Mountain big horn sheep hunt, is it our year? We trade years on that tag don't we?

Justin Shannon- It is not our year and that is why we are discontinuing it. If there are still enough rams there for next year, we will recommend it back.
Robert Byrnes- Is Nevada in agreement?
Justin Shannon- Yes. We coordinate with them annually with these things.
James Gaskill- Could you explain more of that youth 3 season change?
Justin Shannon- When we went unit by unit, one of the things that came out of that is if you are a youth and you draw an any weapon tag, you can also hunt archery and muzzleloader seasons as well. If you draw muzzleloader, you are only set for those dates. If you draw an archery tag, you can hunt the extended archery as well. As we looked at it in the rule, that rule was never updated. The language is a little different than how we are operating.
James Gaskill- What you explain in the beginning is how you intend to change it. Your proposal is that any youth who draws a general season any weapon tag can hunt archery and muzzleloader?
Justin Shannon- Yes.
Paul Cowley- On the new limited entry North Slope hunt, I am wondering what coordination has occurred with Wyoming? Secondly, do you feel like you are going to find many animals left in Utah by October 3rd? Or will most of them already moved across the border at that point.
Justin Shannon- I will let Randy answer that.
Randy Wood- The deer start moving about the 1st of October and you will see a lot of deer the first part of October. By the 15-20th of October, most have moved out of the North Slope area. We use to hunt that early at the same time as the elk hunt. It is designed to give some opportunity when the bucks are there. During the general season, the any weapon hunt October 20th, there are a few bucks there and some people get some but for the whole they are gone. The biologist is working with Wyoming and the biologist there all the time. They have deer collared with Wyoming and tracking deer movement on the North Slope.
Paul Cowley- My experience is that a lot of them are gone by the first part of October or close to then.
Randy Wood- That area does not seem to matter on weather, it is that time of year. You can have a real light snow and warm October and the deer are gone by the 20th.
Paul Cowley- That is my experience.
Kristin Purdy- I am looking at the recommendation to add an extended archery hunt on the Cache Unit. Considering the Cache Unit is one of the lowest one on meeting the objective of 15-17 animals, I think the 3 year average is 13.8. We are looking to add an extended archery hunt to deal with the problem of urban deer on private lands. Didn't I hear that, in Bountiful, we are looking to address the urban deer of possibility of translocation? Up in the Cache Unit, we are not meeting the objective and have not for a long time. We are going to offer more hunt opportunity. It seems there is a conflict there in our desire to get the unit up to objective and yet we have got a problem on the west side of Cache valley with urban deer. Could you address that?
Justin Shannon- We want to grow deer in the right places. In some areas along the Wasatch Front, deer are in the wrong places and we don't want to grow deer in the areas there is a social intolerance for deer. When we look at making decisions about extended archery areas or translocation, we are trying to provide tools to address problems. I will let Darren talk about coordination for proposing for this hunt. We have to make sure we are managing for deer in the appropriate areas.
Darren Debloois- It is a fairly limited area as well. It includes the area east of Clarkston and includes Newton and runs over to Cornish. It is mostly private land. We have some issues with depredation in corn fields which can get fairly expensive. Newton is the city in question that has concerns about deer in town. This is to see how successful people will be. The big cities in Cache Valley along the east bench, we are having a different approach. We are working with the cities and have done some moving of deer out of Logan, for example. We are looking at North Logan as well to address urban deer that are in town year round and never leave.
Kristin Purdy- They are doing a different approach and are trying translocation. The cities have requested to move these deer out?
Darren Debloois- Right, we work with individual cities that express concern and try to work with them to address their problems taking into account hunter desires and what the population is doing.
Kristin Purdy- Based on the rural nature of the west side of Cache Valley, that an extended archery hunt is a more appropriate tool to use to deal with deer that have become a nuisance.

Darren Debloois- Right. In a town like Newton, it is fairly small with agricultural properties right at the edge of town. Deer are coming into the margins and infiltrate the whole town. They can allow for archery hunting but Newton is looking to see if the deer on the edge of town can be discouraged from coming into town.
Kristin Purdy- Have we forecast what this is going to do to our attempt to achieve the objective?
Darren Debloois- It should not have a huge effect, we are not talking about a lot of deer. In Cornish, deer are coming out of Idaho.
Paul Cowley- As we talk about the research going on, have we made any conditions or ways we can protect those animals we have collared so they don't get taken by hunters and we lose that information?
Justin Shannon- The animals that we are collaring are females. When we talk about survival rates, it is based on adult doe and female fawn.
Paul Cowley- I am more looking at big horn sheep where we did have collared animal taken last year that had a new collar put on it.
Justin Shannon- What unit was it on?
Paul Cowley- North Slope high Uintah's. We ought to put some kind of condition to protect collared animals given the amount of time, money and effort it takes to collar them.
Justin Shannon- From my experience, it is pretty rare. I'm not saying it does not happen but I don't hear about it often.
Craig VanTassell- When do you anticipate having the number of permits put on with these different hunts?
Justin Shannon- In April when we come back out through the RAC's.
Kristin Purdy- In R657-5-40 rocky mountain goat hunts, can we change the wording regarding counting the annual rings on the horn. Is there a way to address this in the language so it doesn't make it look like the hunters have to count the rings on the horn to determine the maturity of the animal? It is not possible for a hunter who is weighing to shoot, if the goat is mature or not. It puts a burden on the hunter.
Justin Shannon- You can tell the Billy's. It is a recommendation. That is what we would desire of the hunters to kill an older Billy. Counting rings is one way, looking at the base of the horns. Even behavioral things like how big and if it is by itself. There are a lot of different things to look at.
Kristin Purdy- If it is necessary to have some of those listed in the rule, in order to encourage it, let's list more that are realistic for the hunter.
Justin Shannon- Or take them out and say we encourage the hunters to kill a mature Billy.
Kristin Purdy- Or take them out. For the hunter to be encouraged based on the number of rings does not make sense to me.
Robert Byrnes- In your hunter training you do explain what those things about a mature Billy goat.
Justin Shannon- These mountain goat hunters have a training they take that is more inclusive than just counting the rings. There are a lot of tips.

Public Comment

Troy Justensen- Sportsman for Fish and Wildlife- We support the Division's recommendation but ask that you extend the days on the Range Creek and Rattlesnake 9 mile sheep hunt. We have gone to a couple of split seasons. On Zion, you give them a month. Big horn is 15 days?
Justin Shannon- On Newfoundland’s, it is 3 weeks.
Troy Justensen- I am talking about 9 mile Range Creek and Rattlesnake?
Justin Shannon- The first hunt has three weekends, so it is 16 days and the second is 14 days.
Troy Justensen- If possible, could we give it 5-6 more days? That is what we would like to recommend.

RAC Comment

John Blazzard- Concern about late muzzleloader hunt. I think we did damage to the genetic carriers going into breeding season. I would be opposed to starting another limited entry muzzleloader hunt in November.
James Gaskill- I share that concern. I would oppose that as well.
Robert Byrnes- It will be on units that are over buck to doe objective. It is supposed to be a limited number of tags as presented and as imagined. It is a tool to help reduce the buck to doe ratio on units where we are not able to do that through our normal methods.

James Gaskill- I am not sure why we can't do that with our normal methods. It seems to me like the reasons we can't are because their private landowner issues and so forth. How are you going to get on during the later season if you can't during the regular season?
Robert Byrnes- Potentially, there would be fewer people out at that time. Morgan South Rich, we have seen as high as upper 30's buck to doe ratio. We are still at the 3 year average of 27. There is an imbalance there even though our population is below what we want.
John Blazzard- My concern with that is it is almost an embarrassment that I know in the Cache Unit to kill a two point deer anymore. I think our buck to doe ratio is probably well above the objective but I don't think that we have got the quality bucks because they are being killed off and we are ended up with two point deer. We have got a genetically morphed deer herd.
R. Jefre Hicks- I think John has a good point and I hope you make an amendment. If a unit is above the target on bucks, open it up in later November does is take out the big bucks. I think it is more of an access issue. To open later takes out the big ones but not numbers.
Bryce Thurgood- What is the problem with having a few units with a little higher buck to doe ratio? Is it hurting anything to have it higher? It seems like you would have better quality in the end.
Justin Shannon- If we pass a plan that we want to manage for 18-20 bucks per 100 doe and have these be general season which are opportunity driven, let's do what we can to get to that. The comment was made that private landowners have a lot of deer on their property and control access to where deer may be. That may not be the best solution. What we may do is kill the same amount of bucks with lower success rate and more crowding. This is an idea that had a lot of discussion.
James Gaskill- This is exactly what I was referring to when I said that I worry about what is going to happen next time to complicate things and make it more difficult for the ordinary guy who wants to go out with his family and shoot any buck is a quality buck. I was concerned with the late season muzzleloader.

Motion

Motion- Kristin Purdy- Recommend the Wildlife Board clarify language defining a mature goat in the wording of R 657-5-40(3). E.g. delete the last sentence of section three.

Paul Cowley- I recommend you modify your proposal to merely drop how you determine it is a mature goat given that the training the division has for folks hunting goats.
Kristin Purdy- I would agree with that.

Second- R. Jefre Hicks

Discussion on the Motion

R. Jefre Hicks- It is silly to have counting rings in there, may as well strike it.

Motion Passes: For: 12, Against: 1, Bruce Sillitoe

Bruce Sillitoe- It is only explaining what a mature goat is. It does not say you have to count the rings.

Motion

Motion- Paul Cowley- Recommend the Wildlife Board approve the remainder of the presentation with the inclusion of no harvesting of collared Big Horn Sheep in Unit 8.
Second- Craig Van Tassell

Amendment to the motion

Motion to Amend- John Blazzard- Eliminate the LE late season muzzle loader deer hunt.
Second- James Gaskill

Discussion on the Motion to amend

Bryce Thurgood- I'm not really in favor of that late muzzleloader hunt but the more we talk about it, I see their point. I see it is going to be so few tags that we are talking. If you look at the survey, 60% were in favor of it so obviously the public are in favor. I think maybe we ought to give it a shot.
Bruce Sillitoe- One of the discussions made about not having that hunt was because enough is enough or it might be detrimental to the animal, could the DWR address that? Are the animals stressed at the time of the hunt that a hunt would decrease the herds or individual survivability if they are not hunted?
Justin Shannon- As we looked at this and talked about it, these same issues came up. That is why it was talked about moving it to the end of October or first of November. There was talk about the potential to interrupt the rut. The wildlife biologists are not classifying deer at this time because the rut is not on enough. You have to wait until you are in full rut for a lot of these things can give you the best classification. If you look at hunting bucks in the end of October, first of November, CWMU's are doing it now. There was discussions about CWMU's vs. public opportunity. I don't think it will disrupt the rut or add large amounts of stress. We don't have the exact number of permits but it will be limited and this RAC will have a say to how many permits.
Robert Byrnes- The hunt overlaps directly the muzzleloader elk hunt so there is a hunt going on in the field at the same time.
Greg Sheehan- When we first began talking about offering this hunt a few months back, it was really intended to accomplish a couple of things. One was to create opportunity for sportsman. Not a lot, but a few tags. In northern Utah there is nowhere else in the state where we have more units that are exceeding their buck to doe objectives post season. It is really because of private lands. A lot of these animals come off of these private lands late in October or first part of November. They come down on to a lot of our wildlife management areas. We really felt like these deer come in off areas where they are very lightly hunted and many, in some cases, not hunted at all. We spend a lot of time on habitat projects, law enforcement, money and effort taking care of these properties. You can have some very high ratios and we really felt like this was a chance for the average guy to get a deer in maybe a different setting. This is really a hunt for the average guy. This is intended more for the Northern Region than anywhere else in the state.
Bryce Thurgood- All these WMA's you are talking about, every one of those properties, around them they are hunting until the 10th of November with a rifle. We are not adding pressure, the deer are getting hunted well past this time with rifles and you are talking about hunting until the 5th of November with muzzleloader. I don't think it is going to be a crucial as what some of the other tools that the CWMU's use.
Robert Byrnes- Justin did state that he wants the permit recommendations to come from the local biologists back up. They are not trying to drive the numbers from the top down. We should trust our local biologist to make the right decisions for the herds they are managing.

Motion to Amend Fails: For: 5, Against: 8

Bill Bates- We may have a project we want to know what the effects of hunting would be on an animal. We would want hunters taking collared animals. Not in excess, but that might be part of the study so to make this more palatable. I would suggest you make it at the division's discretion or something like that.

Discussion on the Motion

Bryce Thurgood- The only one I have ever seen is collared sheep. Maybe Troy has experience in the sheep department. If you have a OIAL sheep tag and you are hunting and see a trophy ram that has a collar and the others are younger that don't have collars, I think that is kind of hard to tell someone you cannot shoot that ram. I don't like the idea of not being able to shoot a collared animal. Most of the time we are talking about cows and doe. Very seldom are they on bucks or bulls.
James Gaskill- Could you read that motion again for us.
Robert Byrnes- Motion is to recommend the Wildlife Board approve the remainder of the agenda as presented with no harvesting of collared animals.

Paul Cowley- If you would entertain me explaining what I saw this last year. About two years ago, we had a number of animals and we worked closely with the division to collar big horn sheep on the high Uintah's where we have a real concern as far as mixing with domestic sheep and disease transmission. We funded the revamping of the three collars that were picked up. These run around $4,000 each plus the monitoring to download the satellite information on a daily basis. Those collars were then funded by the Forest Service to revamp the collars and put back out on sheep. The Division was successful in getting those back out. Now, some of the key animals we look at are the rams that do go walkabout to see where they spread and the risk of them interacting with domestic sheep herds. During the hunt the next year, and the collars are on for 2 years, we lost one collar to disease. The second one just went off the map. The third collar was shot by a hunter and taken. The Division then submitted a proposal to net gun capture additional animals in the high Uintah's and put collars on them. The objective would be to capture some of those younger rams so you don't run into that very conflict. When we do that type of activity in wilderness areas, then we go through a MRDG. As part of the decision making process, we allow them to land in the wilderness areas we are responsible for upholding the wilderness act on. In that process, we scope that as part of the analysis with various special interest groups. In this case, we had 3 wilderness groups who have the same passion towards wilderness come in and the argument they made is if research is so important to those animals to request approval, then they were having a hard time understanding why we would allow a hunter to take that animal. We only had a limited number of animals in the herd that had been collared. That is why you see the proposal that I have put out in front of you. I appreciate Bill's position and he worked with us to get additional funding to capture those animals given the limited funding the Division had this last September. There is a way we could word that different to protect that research investment because you are probably talking close to $20,000-30,000 dollars. I recognize that collaring is a valuable tool.
Bryce Thurgood- I totally understand where you are coming from but in the same sense, that particular unit is different than say the Zion's. That is kind of a harder area to hunt for sheep. Class 3 or 4 rams and going to be harvested. Why not put it on the younger ones. If there are two rams and a smaller one has a collar on it, they are not going to want to shoot the smaller one with the collar. If they have hunted for 2 weeks and it is OIAL, they only get one shot at it and if that is the only sheep they see, what do you tell them? Are you going to tell them to go home empty handed.
Robert Byrnes- They specifically targeted that age class because that is the animal that is going to travel and become infected potentially. That is probably why. The design criteria of the study is what you are trying to avoid.
Justin Shannon- In that case, we were just trying to find any sheep up there to radio collar. My fear is that we are trying to solve a very localized problem and I would prefer the division work with the forest service and be surgical. We can send letters to hunters and let them know what we are doing. There are old collars on initial transplants that failed. I would prefer to be very surgical and work together to write letters to hunters in these situations.
R. Jefre Hicks- I think your initial motion was not to shoot collared animals and we got side tracked on sheep. I would feel better if you were to tighten the language on it to be extremely specific and leave the rest out.
Paul Cowley- I suggest, given the discussion, we go ahead and have the vote and rework the wording to deal with that adjustment.
Robert Byrnes- So, you want to just call the question and have a vote on your motion.
Paul Cowley- Or, we can turn around and withdraw the motion. Or rephrase the motion.
Robert Byrnes- I think the council would be agreeable if you removed basically the part you wanted to add in, no harvesting of collared animals. But, maybe we should just have a vote on it and see if it goes up or down. What do you want to do?
Paul Cowley- I would be willing to remove the collared animals but also include the emphasis that in areas where critical information could be gathered off of collared animals, that they may be handled on a unit by unit basis. Or a hunt by hunt basis. I think still allows flexibility for discussion to say how critical the information is we are trying to gather.
Robert Byrnes- Would you amend your motion to remove no harvesting of collared animals in lieu of requesting the division provide increased information to hunters in areas where collared animals are actively being researched. Something along those lines, it is basically to the point you want I think. They could send letters to hunters. In training, they could emphasize that there are collared animals out there for research but it would not be legal for them to be harvested.

James Gaskill- Isn't it within the Divisions discretion to make an emergency closure if there was a situation that warranted it? The way the proposal is now, I am not sure I could vote for it but I am not sure I don't want to give the Division the opportunity to work with the Forest Service in certain situations.
Robert Byrnes- I think emergency closures are up to the director.
Bill Bates- We already had that ability. I would make a suggestion that there is only one issue statewide where this is a concern right now and that is on the North Slope of the Uintah's with the project we are doing right now. I don't know exactly what the response is going to be with that. I suggest, as a potential motion, you might want to consider just closing the North Slope of the Uintah's to the harvest of collared big horn sheep and let us get together. If you make that motion, we can get together and come up with a response and coordinate with the Forest Service and have a response at the board.
Paul Cowley- Let's leave it at that.
Bryce Thurgood- How many sheep have been collared on this unit? Is it even worth having a hunt on this unit? You may as well shut down the whole unit if they are all collared rams.
Kent Hersey- On the North Slope itself where this animal was up in the high country, there is not many. It was harvested down as part of the Flaming Gorge hunt. We want to know what kind of movement we are having there. There are plenty of rams to harvest as part of the Flaming Gorge area. Discerning which ones go high and which ones go low makes it difficult.
Bryce Thurgood- There is no hunt on the high Uintah part right now, we are just talking the Flaming Gorge?
Kent Hersey- Correct.
Robert Byrnes- Potentially, your ram could be collard and still go to a huntable unit and be killed regardless.
Bryce Thurgood- Your proposal is to not allow hunting in a closed unit of a collared ram in a closed unit?
Kent Hersey- If we just called it unit 8, it includes Flaming Gorge. Technically, the high Uintah's is unit 8A. If we include all of the unit 8, it includes B and C which includes 3 corners.

Motion Passes: For: 10, Against: 3

Bryce Thurgood- When you wait 18 years to draw a sheep tag, and you tell them they cannot shoot a sheep. You are targeting the wrong sheep when you collar them and you can't tell someone they can't shoot something that they draw out for.

***RAC Member Joel Ferry needed to leave.**

Item 8. Big Game Preference Point Recommendations
Lindy Varney, Licensing Specialist

See Handout

Public Questions

Troy Justensen- Sportsman for Fish and Wildlife- If you go through and have excess permits and I go and obtain one of those and was not successful in the draw, if I buy one over the counter, do I lose my points?
Lindy Varney- You would not lose any points if you bought one.
Troy Justensen- Do you fear that you have a substantial amount of permits leftover that people will not put in for unless they get their first choice.
Lindy Varney- No, all of our rifle tags actually went through the draws as their first choice. They will go through all first choices and people will still apply. They want to hunt general season deer. I don't feel that our permit numbers will go too high over the counter. Maybe the first year or two but I don't think it will be to where we were in 2006.
Troy Justensen- Would you mind explaining the difference between the draw sequence with OIAL vs. general and how that is awarded.
Lindy Varney- It is really quite simple. When we look at a preference point system, how we work them is look at the clients and how they prefer. We do the draw different than the OIAL & limited entry draw. We look at

your first through fifth choice before moving to the next applicant. With the limited entry and OIAL we look at everyone's first choice before moving to the second choice.

RAC Questions

Bruce Sillitoe- I think I saw a discrepancy between the data you are showing us and some data that was presented before. The before data was they polled the public and the public said they were not willing to forgo a hunt in a year. The vast majority did not want to risk that. Yet, the data you presented here shows that a vast majority that only put in for one area. I think their odds are greater if they put in for 5 areas. Is that true?
Lindy Varney- It depends on how many points you have.
Bruce Sillitoe- Sure, that is probably too easy. But generally, if all things were equal, putting in more areas would mean better odds. Your data conflicts with what they are saying. They really are willing to give up a year hunting to get a quality hunt that they prefer. I just wanted to point that out and I think it is true from what she just presented.
Robert Byrnes- I won't draw a conclusion between what Bruce said and what you presented.
Bruce Sillitoe- It was more of a question whether that was true. I didn't mean to present it as a fact.
Lindy Varney- It is hard to say. 47% said they want a hunt or they don't hunt. 53% said they will go to a different area. Most of the general public want to go hunting. When we have 127,000 applications and there are only 86,000 permits, they are willing to take what they can hunt.
James Gaskill- There may be a lot of reasons why you only put in for one area, is that not correct? Is there any data to suggest why they only put in for one hunt?
Lindy Varney- We have never done any research. I talk to hunters on the phone and I have asked them. Some of the reason why is because they are families and want to hunt together as a family or that is the only unit they know and it is close to home and where they have land. It is all different why they only apply for one place.
James Gaskill- They still may very much want to go hunting but, for reasons that you have mentioned, they only want to hunt in one place.
Lindy Varney- That is true.
James Gaskill- There may not be a conflict here at all.
Bruce Sillitoe- I think my point was just made. They are willing to forgo a year to hunt in an area they want.
Lindy Varney- I believe so. It all depends on the hunter and the motivation. They may actually wait a year to draw out the unit they want to do. Some of them do because some units take 2-3 years to draw out.
James Gaskill- Do you have a table that says what percent drew on their first preference and what on their second.
Lindy Varney- What units?
James Gaskill- No, just generally. What percentage of the permits issued were second preference and third and fourth and so on?
Lindy Varney- There was 9,039 that drew out on their 2-5 choice. If you look at 2014, 64,624 drew out on their first choice. Second was 6,149. 5% drew second, 2% drew third, .6 drew fourth and .3 drew their fifth. It equals out to be 9,039 people. The rest were unsuccessful or drew their first choice.

Public Comment

Troy Justensen- Sportsman for Fish and Wildlife- This is really a point of contention among our board. They are not in favor of this and asked that the RAC not approve it. They would like to see all first choice be awarded before moving to someone's second choice. Also, that you don't lose your point if you draw your second, third, fourth or fifth choice.

RAC Comment

Russ Lawrence- My concern is with youth and if we went to losing the point and getting second choice, I would almost tell my kids that if they don't draw, we will not put them down for a second or third choice. That means that it will take you out of the game for next year as well.

James Gaskill- I like this proposal. I think you draw or you don't draw. If you don't draw, you don't lose your points and if you do draw, you lose your points. There is another proposal of going to groups of six and maybe that will solve your problem.
Russ Lawrence- Dad is a dedicated hunter, locked into three years.
Robert Byrnes- You have a certain number of preference points and they generate a random number that many times. Do you take the lowest one and that is my number for that sequence of drawing, is that correct?
Lindy Varney- Yes.
Robert Byrnes- The difference between how we do preference points and bonus points is, we tried to make it simpler when we did preference points. Is that correct?
Lindy Varney- We are looking at the client on the preference point system. We want to see what unit you prefer to hunt. We want to look at all of your choices and hopefully give you your preferred unit. With limited entry, we look at everyone's first choice and the hunt and give everyone a random number to how many points they have. We then look at everyone's first choice first before we evaluate the second choice.
Robert Byrnes- If, in the preference point system, you want to be selective and want to hunt in one unit and that is the only one you apply for, eventually you are going to get that guaranteed. It is not a random thing.
Lindy Varney- Correct. If you have 2 points and you are the highest point person for that unit, you are guaranteed that unit before someone who is applying for the first year.
Russ Lawrence- Last year, we had 15 archers in camp and we all had tags which is a lot. This year, there was 4 and the reason for that is all the rest did not draw. So, we are hoping this coming year they can get those tags and be together.
Robert Byrnes- Do you publish the chart I have seen in the mule deer committee that listed how many preference points you needed to draw a specific unit? Is that on the Divisions webpage?
Lindy Varney- It is not, I have not published this one. For 2014, this is how many points it took to be guaranteed a tag for that certain unit with that weapon type.
Robert Byrnes- Is that something you think you will put up so the people would know. It is all driven by demand.
Lindy Varney- It is public information so it is not something we will hide from the public so it would not be a bad idea to post it.
Robert Byrnes- Do you think you could put it with the drawing odds or something like that.
Lindy Varney- Where the statistics are?
Robert Byrnes- Yes.
Lindy Varney- That is a good idea. I have rifle and then muzzleloader.
Robert Byrnes- Basically, you could go there any look and you know that no matter what, every 4 years you could draw a tag on that unit. It will change based on demand. When we open a new unit, people tend to saturate it and then realize it is not such a great deal and the number goes down.
John Blazzard- It looks to me like we hunters are hunting ourselves out of house and home by encouraging youth to hunt when there are not enough hunts to go around now.
Robert Byrnes- It depends on how successful everyone is.

Motion

Motion- James Gaskill- Recommend the Wildlife Board approve the Big Game Preference Point Recommendations as presented.
Second- John Wall

Discussion on the Motion

John Blazzard- I want to make sure that if this passes, that the proclamation specifically lets people know they are going to lose their preference points if they draw.
Lindy Varney- We have already thought about that. If it does pass the Wildlife Board, in the big game application, if you click on general season, a page will appear explaining what happened and what was passed to make sure you are applying correctly.
Robert Byrnes- You will put that in the application guidebook under changes.

Lindy Varney- Yes.

Motion Passes: For: 10, Against: 2, Bryce Thurgood, Russ Lawrence

Russ Lawrence- For reasons stated.

John Blazzard- I have had several people comment to me with the reduction of the OIAL hunt opportunities for moose. A lot of people are looking for units where there is one moose available for 1,500-1,800 people applying. They requested I bring up the idea of transferring bonus points from species to species.
Robert Byrnes- That is some deep water.
John Blazzard- People have been putting in for the hopes of drawing a moose tag and now we have reduced the numbers way down. It is more than OIAL, it is like a once in 5 lifetimes.
Robert Byrnes- The sheep hunters are kind of in the same boat. I don't know that we want you to move over into our pocket.
John Blazzard- I understand that. I thought I would get my ears boxed for saying that but I promised I would because it is serious.

Item 9. CWMU Management Plans and Landowner Association Permit Numbers for 2015
Scott McFarlane, Public Wildlife/Private Lands Coordinator

See Handout

Robert Byrnes- If the council is agreeable, we will split the CWMU recommendations and landowner recommendations because we are going to have a bit of work on the landowner recommendations.

RAC Questions

James Gaskill- There was one that decreased its turkey application and was on 6900 acres, do they have a variance for that?
Scott McFarlane- Turkey only requires 5,000. So they don't need a variance.
James Gaskill- The species was listed as deer but it is really just turkey.
Scott McFarlane- Yes, it is a deer and turkey CWMU but the deer remain the same. They requested a change in their turkey permit numbers.
James Gaskill- If it is deer, why don't you have 10,000?
Scott McFarlane- Deer requires 5,000. Elk and moose are 10,000. It does not require a variance for that.
Paul Cowley- Can you help us understand why they are requesting the variance on the hunt season on those CWMU's?
Scott McFarlane- The rule requires that the Wildlife Board may authorize a bull elk season variance if the CWMU or landowner association member or landowner association operator clearly demonstrates November hunting is necessary on the CWMU. I have a copy of the variance request if you would like to know specifics on any one of those. It is hard to include them all in a RAC packet. That is allowed by rule to request a variance, they just have to demonstrate the need.
Paul Cowley- You feel like they have demonstrated that need and the division agrees with that. Even though they set up the CWMU with the shorter season?
Scott McFarlane- Yes, most of these have already been approved on previous applications. On the applications the regions that turned those applications in, they indicated they are in agreement with the variance request on those.
James Gaskill- Could you summarize a couple of common reasons?
Scott McFarlane- Sometimes they have a high percentage of elk that come later in the season. They provide large amounts of wintering elk. For them to be able to operate as a viable CWMU for elk, that is for the public and private benefit.
James Gaskill- Do they come off public land off CWMU's in the winter.
Scott McFarlane- Most come off of private lands onto the CWMU's.

Craig Van Tassell- Do you do classification counts and habitat studies and hunter success? I know there is a formula set up and they get so many hunts but that goes from year to year. How do you know the animals are there?
Scott McFarlane- Through our survey process, we survey the CWMU's and I believe the CWMU's have mandatory reporting requirements or else it does not work with non-residents and private permits. If they don't do it then they can't apply for a CWMU permit the following year. For the public hunters we have pretty good compliance with harvest reporting.
Craig Van Tassell- It seems like moose are going down in the public areas but the CWMU's still have their same quota.
Scott McFarlane- Not entirely true. Last fall, we decreased several moose CWMU's just because the region quota of permits went down. The CWMU's have to qualify for a certain percentage of those based on acreage. The Morgan South Rich unit allocated 40 permits in that unit and had 90% of the unit is in private property or CWMU's, then 90% of those would be allocated to the CWMU's and 10% to public. We do have a formula that adjusts for that.
Craig Van Tassell- That changes.
Scott McFarlane- If the unit permits go down, correspondingly the CWMU permits would go down also.

Motion

Motion- Paul Cowley- Recommend the Wildlife Board approve the CWMU Management Plans and Permit Numbers for 2015 with the noted corrections as presented.
Second- John Blazzard
Motion Passes: For: 11, Against: 1, R. Jefre Hicks

R. Jefre Hicks-don't feel like variances are needed.

Landowner Association Permit Numbers for 2015
Scott McFarlane, Public Wildlife/Private Lands Coordinator

See Handout

Robert Byrnes- On the Pilot Mountain, can you state what the percentage was for permits qualified.
Scott McFarlane- Without an adjustment for additional use or heavy use on the private lands, they qualify for .22 permits per year.
Robert Byrnes- It is what you have there.
Scott McFarlane- But we did some regional calculations with the additional use on private lands. What they qualify for is .25 permits per year. Basically, over a four year period they qualify for one permit. We are on a three year application. For the period of a three year application, they would qualify for .75 per year.

RAC Questions

Robert Byrnes- Since it is an elk landowner association, the permits are straight across. There is no sharing with the public correct? It is not like a CWMU?
Scott McFarlane- No, it is not. The way the landowner association works and on limited entry units for deer, pronghorn and elk, to qualify for a landowner association they have to have enrolled 51% of the private lands or we can look at it on private lands or habitat basis. In the case of Pilot Mountain, we look at it as habitat because quite a bit of the unit is not elk habitat. They enrolled 51% to qualify for the landowner association. The formula used is we take, for the basic calculation, the percentage of lands that are enrolled in the landowner association and apply that to the unit to the percentage of habitat they have in the unit and that would qualify them for the percentage of the permits offered for the Pilot Mountain landowner association. There are only 3 permits currently. There are 6 permits authorized for the Pilot Mountain unit limited entry, 3 of those go to Nevada and three go to Utah.

Public Comment

Dale Christiansen- Pilot Mountain Landowner Association and also the TL Bar Ranch. Presentation regarding Pilot Mountain association request for variance. Request to grant variance of one bull per year. Issue with large resident herd on the mountain summers on the ranch. Have tried various techniques but is ineffective and counterproductive to the goals of the DWR to have a viable herd. Trying to balance damage and depredation that occurs by working together with DWR. We reached an agreeable arrangement but it makes no sense to have the DWR come out and waste money and time and the elk are right back on the ranch the next day. Our solution is to get one bull elk permit per year for landowners.

RAC Comments

Robert Byrnes- Since you are so far apart from the division, if we made a recommendation for a variance in the middle ground.
Dale Christiansen- The one part that we are so far off, the numbers are skewed based on the fact that it is a joint management unit with Nevada. I can't tell Nevada elk from Utah elk when they come on the ranch. The number should be a half at least by calculation of the number of permits that are being allowed in that hunt unit is 6. That would actually change that number. On top of that, when you look at the usage number, from our calculations we believe it is much higher. They are on the ranch from April until October.
Robert Byrnes- If we made a recommendation for a variance that is maybe halfway between what you are asking for and what the division says you could have under their rules, would it still work for you or not?
Dale Christiansen- At this point, I am not sure if it would. Because of the damage the elk are doing to the ranch. I need to consult with our other landowners in the association to see what is acceptable to us. We would then not require DWR hazing and managing the herd growing. The ranch has received a fair amount of interest for mining.
John Blazzard- Are you planning on selling this tag to offset the depredation problems?
Dale Christiansen- Yes. That would be our plan.
John Blazzard- You said that the depredation problems would go away if you had this one tag.
Dale Christiansen- No, the depredation problems would not go away but we would be appropriately compensated for it.
John Blazzard- You said that the DWR was wasting their time coming out there because if you had this tag, they would not have to come out there anymore.
Dale Christiansen- From our standpoint, we have agreed that we would be appropriately compensated. The point I am trying to make is what they are doing is ineffective anyway. The DWR is spending a bunch of money not being effective and it is not solving our problem. A win/win situation would be where one permit would enable us to at least get some compensation for crops and fence damage, etc. that we are receiving and be able to jointly manage.
John Blazzard- It would not alleviate the DWR from having to come out there and haze.
Dale Christiansen- Our agreement would be if we are able to, yes, we would not have them coming out there. Otherwise, next summer Jim is going to be living out there again. We may have to start shooting more elk.
John Blazzard- Killing one elk out there is not going to make a difference between elk coming in or staying.
Dale Christiansen- Absolutely not, but it will compensate us for that damage they do.
Craig Van Tassell- How many elk are we talking about. How big of a herd? How many bulls?
Dale Christiansen- We have had a high of over 100 elk on the ranch. At various times, you have 2-3 groups of them. There is a resident herd that stays above the ranch or down on the ranch.
Robert Byrnes- We could have Jim come up and explain the DWR's analysis of the situation.
Craig Van Tassell- How many of them go to Nevada and how much time they spend there?
Jim Christensen- On the entire unit, we estimate 300 total elk. On the Pilot Mountain unit. I was looking up the bull to cow ratio. Off the top of my head I want to say we are around 35 bulls per 100 cow.
Craig Van Tassell- Are they being hunted at all?
Jim Christensen- Yes, there are six permits. 3 through Utah and 3 through Nevada.
Craig Van Tassell- How close is it to Nevada?

Jim Christensen- It is roughly 4 miles from the Nevada border. There is a cooperative hunt agreement to where hunters can hunt in both states.
Robert Byrnes- On the acreage that I am looking at here, the elk habitat of the unit is calculated at 54,357 acres in both states for the total.
Jim Christensen- That is Utah only.
Robert Byrnes- Ok, so to calculate the number of permits that they would be eligible, we are looking at all the elk but we are only looking at the habitat in Utah?
Jim Christensen- Correct.
Paul Cowley- I am going to ask the chairman's allowance to ask a question on our next agenda item if you don't mind. I am wondering, in this case, if this next agenda item which was a landowner appreciation tag were to pass, would this area qualify for that type of a tag?
Scott McFarlane- On the next agenda item, the landowner appreciation tag deals with deer only. It would not qualify under that.
Paul Cowley- Okay.
James Gaskill- Why is there only 6 tags if we have 100 bulls? We have 35 per 100 and 300 animals.
Jim Christensen- We manage that herd, the bulls, for a 5 1/2-6 year old age objective in the harvest. That is where we have been up to this point. If we start killing older bulls than that, we can issue more permits.
James Gaskill- Do we have any cow hunts out there?
Jim Christensen- Not currently. We are still below the population objective out there. The only antlerless harvest is limited to mitigation permits and vouchers.
James Gaskill- We are under objective except on his hay fields.
Craig Van Tassell- How many numbers are we talking about mitigation?
Jim Christensen- I think we were right around 20 cow tags issued this year.
Robert Byrnes- How many elk were shot?
Jim Christensen- There were 8 harvested.
Robert Byrnes- Were they all bulls?
Jim Christensen- No, there were 2 bulls, 2 spike bulls, 3 yearling cows and 3 adult cows.
Robert Byrnes- What is the age distribution? Do you see trophy class bull elk there that would yield a high sale price for the voucher?
Jim Christensen- During the rut, there gets to be bigger bulls that come down to the ranch.
Robert Byrnes- There is a potential for a trophy class bull to be harvested if a permit was available?
Jim Christensen- Yes.
Robert Byrnes- They could hunt the entire unit as a landowner association with a permit if they were given the permit is that correct?
Scott McFarlane-Correct.
Robert Byrnes- So, it wouldn't necessarily have to be on the ranch, it could be anywhere on the entire unit?
Scott McFarlane- Correct. The landowner association is requesting a permit every year or three permits during the three year application period. What they would qualify for is three quarters of a permit, .75 of a permit. It is within the rule and the way the division does things, that we can round that up to one permit every three years. That would be consistent with how we do things with conservation permits and non-resident permits. On the Utah side, over the three year application period, there are 9 permits. I believe it is everything over 5 permits can round up that way. By rule and by the way we do things, I think that they would qualify for one permit a year.
Robert Byrnes- One every three years.
Scott McFarlane- Yes, pardon me.
Robert Byrnes- Are there any payments being made for damages?
Scott McFarlane- Yes, there is but I would have to refer that to Jim.
Robert Byrnes- Could you tell me what that is?
Jim Christensen- The claim was through Mr. J. Tanner out of Grouse Creek. We combined his T Bar depredation with his depredation occurring in the Grouse Creek Valley. That amount, I can remember off the top of my head. For last year, it was right around $1,500 dollars.
John Blazzard- If the permit is given then does the depredation payment go away too?
Jim Christensen- The way we look at payments if the landowners are receiving payments from wildlife from any other means, then that amount is deducted from the amount of damage received to the property when we assess

the damage. If they sell their voucher, whatever that value is, they have to meet and exceed that before they would be eligible for additional monetary compensation.
Robert Byrnes- If they received a tag that was to be averaged over 3 years to achieve the tag, can the offset for depredation compensation be applied over 3 years also?
Scott McFarlane- Probably not because our depredation period goes from July 1-June 30 and that is a depredation period. By rule, that probably would not apply over the 3 year period unless an agreement was made with the landowner.
Bruce Sillitoe- You mentioned Jump Creek and how that was under acreage and how you were giving it a trial period. How does that relate? It appears very similar where you could do something similar here, given the obvious problems.
Scott McFarlane- We are kind of jumping between two programs. Jump Creek is an acreage variance to allow them to operate a CWMU under the 10,000 acre minimum. On this program, I think what we are doing is comparing apples and oranges. These are two separate programs.
Bruce Sillitoe- I understand, but you have a problem and are solving it in a creative way. I'm not sure I see a solution in a creative way.
Scott McFarlane- With the CWMU on Jump Creek, it is spelled out in rule how variance to acreage works. We don't have that in the landowner association rule.
Bryce Thurgood- On the mitigation when you shoot them, can we involve the public in that? If we give you one bull elk tag that you are not going to still want those cows shot. I don't see that problem going away.
Dale Christiansen- From our standpoint, what we had previously agreed with, the DWR was that if we were able to get a bull elk permit and keep the cow depredation vouchers we were getting. Those are being sold to the public. The DWR are going out and killing or shooting bulls which is nonsense to me.
Bryce Thurgood- You are selling cow tags, does that get deducted?
Dale Christiansen- Yes.
James Gaskill- Recognizing this is a problem, aren't there a number of other situations that would look at this and say it is good for them, why not good for us or is it opening a can of worms?
Scott McFarlane- I think the potential is there. If we grant it to one, others are going to come in behind and want the same thing. I don't know if it would happen or not but the possibility is there.
Bryce Thurgood- It is no different than the variance for CWMU's under acreage. You have already opened that can of worms there.
Dale Christiansen- From my understanding, there are variances all over in the CWMU and landowner program. I was given an example of a variance in one of the units of the landowner association where it was recommended they get more permits than what their acreage was.
Robert Byrnes- What other variances are being given in the landowner association program?
Scott McFarlane- It is not considered a variance. A variance would be contrary to our permit procedure or the rule. What we do with the landowner associations and CWMU's where they are a limited entry unit is have a basic calculation. In our procedures, how we authorize those permits, we have a clause in there that says we can adjust for unique circumstances like for additional use or heavier use on private lands or public lands to adjust those permits. That is what the unique circumstance was. I would have to have the region address this but I think they took the average number of elk over the average period of time and compare that with the entire unit. They did the comparison that way to bring it up to the .25 permits. He is referring to the Monroe Unit. We had all the elk classification data on that. We use the same formula they used to adjust those permits and Monroe Mountain by acreage qualified for 2 permits. With the adjustment for the extra use on the private lands that were enrolled and the property using this same formula, they qualified for 2 more permits a year.
Robert Byrnes- The same rationalization, how you get from .2 to .25, is that what you are saying?
Scott McFarlane- Correct.
Bill Bates- It was the Monroe and it did come in within rule because it followed the use of the habitat by the animals. In the landowner association rule, variances are not addressed. I think you need to be looking at value for value. We don't know what that trophy bull permit will sell for. We do know how much the depredation payment was. It is a tough thing to weigh out. There are considerations for what is going on private land, that is why we have you guys to weigh those tough issues. We only have 3 permits for Utah on this unit so you are taking 1/3 and giving it to the landowner association. They should have 33% of the habitat in order to do that. That is a pretty big variance when you look at it that way. There was a good question brought up about if we

have 100 bulls on this unit, why do we only have 6 permits and that is something the region is willing to address. Maybe in a year, this works out better. I don't know what to tell you to do. It is a tough situation.
Robert Byrnes- It would be good if somehow we can work out addressing the damages being done to the private property within the rule. You could make it conditional upon the division and the landowner or the association reaching an agreement that one tag over 3 years and some of the other finer details that we are not really going to get into. You could also not include that in your motion and recommend to the Wildlife Board to pass it as presented denying the request.

Motion

Motion-Craig Van Tassell- Recommend the Wildlife Board approve the Landowner Association Permit Numbers for 2015 as presented with the DWR recommendations and 1bull elk tag per three years for the Pilot Mountain Landowner Association.
Second- John Cavitt

Discussion on the Motion

Bill Bates- Let's say if the region recommended to increase the number of permits next year, would we have the ability to come back and change this recommendation rather than be stuck with the 3 years?
Scott McFarlane- I am not sure, this would be done on the April 1st board meeting. It could be an amendment because the permit numbers for the limited entry unit will be approved in the March meeting. It depends on how much the permits are increased whether it would meet his needs or not.
Dale Christiansen- Are you suggesting that if there is more permits issued, we would be able to benefit in that or detrimental?
Robert Byrnes- There would be more permits so the percentage would go up.
Dale Christiansen- Right. This is a joint problem with Nevada, so it is really 6 permits. The elk are not stopping at the state line. When we talk about it, it is not really .2, it is .5. There are 6 permits and there are that amount of elk.
Robert Byrnes- Be careful because I questioned exactly the acreage is only the Utah acreage and the permits are considering Utah permits. If you try and add that in, your acreage is going to be a smaller percentage.
Dale Christiansen- Not necessarily because maybe I go out and enroll more people in Nevada. There are more private landowners on that side.
Robert Byrnes- It doesn't qualify within our rule system.
Dale Christiansen- What are you suggesting? That permit for this coming year or 3 years from now?
Robert Byrnes- Those details need to be worked out in negotiation between the division and the landowner association.
Dale Christiansen- That would be your choice. We are on a 3 year application period, you could choose any one of those 3 years.
Randy Wood- We are at .22 permits at 3. If we double that to 6, you are going to be at.44. You are still not going to round up to 1 a year if we double permits out there.
Robert Byrnes- But .25 would go to .5.
Randy Wood- You are right.
Bryce Thurgood- He said he was only going to be satisfied if he gets one a year. My opinion is you would be better off to deny it.
Dale Christiansen- I am one of the landowners. I represent the association. That is what we are requesting. If there is something that is approved, I would have to take it back and we would discuss it. Our position has been that we wanted one per year. There has not been anything approved by you guys. If there were something approved, we would have to consider it.
Robert Byrnes- We can only make recommendations. The Wildlife Board has the authority.
Craig Van Tassell- I think we can only approve one according to code.
Robert Byrnes- Within the rule.

Motion Passes: For: 10, Against: 2, Bryce Thurgood, Paul Cowley

Paul Cowley- I find it frustrating when it appears like a win/win with minor variation given the Division is shooting a number of animals including bulls every year. To go ahead and allow this variance, my concern is what happens to the rest of the landowner associations. It seems like in this case that could easily be a win/win situation.

Robert Byrnes- I think your recommendation stays within the rule. Typically, the Wildlife Board tries to do that too because they do not want to see a landslide of people asking for variances.
Scott McFarlane- The problem with the landowner permit rule is that it does not make allowances for variances. The CWMU specifically states a process to go through variances.
Robert Byrnes- You do not have an advisory committee for the landowner like you do for CWMU's?
Scott McFarlane- No.

Motion

Motion- Paul Cowley- Recommend the Wildlife Board encourage the Division to set up a variance procedure for landowner association permits.
Second- James Gaskill

Discussion on the Motion

Bruce Sillitoe- Does it take legislature to make a change now on the rule?
Scott McFarlane- Not on rules. The rule is done through the Wildlife Board. Anything in code takes legislature.

Motion Passes- For: 10, Against: 2, R. Jefre Hicks, John Blazzard

John Blazzard-I think it would become a very obnoxious and cumbersome event where there is not a secondary committee or board to be able to review these issues. Every issue is going to be different. I can foresee everybody who has elk or deer coming in looking for a variance.

Item 10. Landowner Permit Rule Amendments R657-43 (New permit type)
Scott McFarlane, Public Wildlife/Private Lands Coordinator

See Handout

RAC Questions

Paul Cowley- Why did this not include elk given that they are over objective in a number of areas?
Scott McFarlane- Currently, the elk for limited entry are incorporated in the landowner association. This was something brought to us by the Farm Bureau as a request. They have a lot of landowners that provide habitat and can't get a permit through a draw because of how the draw system goes now. The request was not for elk but for deer because that was the majority of the problem at the time.
John Blazzard- You talked about migratory deer vs. resident deer.
Scott McFarlane- Yes.
John Blazzard- What does that mean if you have resident deer, you are not qualified.
Scott McFarlane- We are going to leave the determination up to the region. The reason we said migratory deer is because they might be on a landowner's property for a couple of months but in reality would be accessible to public during hunting times. We wanted to avoid pieces of property that had numbers of deer that didn't leave the property and are not available to the public for hunting.
John Blazzard- If a person applies for a hunt, you said these would be available May 1st. Does that mean a person can have 2 buck deer tags in a year?
Scott McFarlane- No that is not allowed by law.
John Blazzard- You also said it is first come, first serve basis.

Scott McFarlane- We have recommended a 2% cap on the current quotas for the individual units. Statewide, if every permit was redeemed, there would be about 1,700 permits available. There will be a limit on there. If a unit has very few permits and there is a high demand, that is where the first come, first serve comes into play.
John Blazzard- What was the reason for not allowing leasee's?
Scott McFarlane- Because this is a landowner appreciation permit and the way it was requested was that it was to benefit the landowner. If we were to allow leasee's to do it, we did not want people to come and lease property to obtain these permits. The leases on the 640 acre current landowner general season permits, they are allowed on that but not on this one.

Public Comment

Kyle Potter-No. Box Elder County Farm Bureau- Support this landowner appreciation tag.
Bret Selman-(Did not want to address the RAC) Some landowners need incentive to endure what they would consider as an inconvenience. Rewarding them for their allowance of animals helps us all win. In favor of rule.

RAC Comment

James Gaskill- If it is migratory deer we are interested in, why would we allow them to have an archery tag?
Robert Byrnes- In the mule deer committee we discussed that the Division needs to pursue programs that will reward and increase the tolerance of wildlife, mule deer specifically, on private lands. This is not 100% driven by that but it is part of it and we will see more.
R. Jefre Hicks- I like the idea that a landowner gets to get a chance at a permit for allowing some animals on his property. It is a good way to reward them in a small way. It is a good try to tighten up regulations on public access.

Motion

Motion-Bryce Thurgood- Recommend the Wildlife Board approve Landowner Permit Rule Amendments R657-43 as presented.
Second- John Blazzard

Motion Passes: Unanimous

Meeting Adjournment
Motion: Gaskill - Motion to adjourn.
Motion Passes: Acclamation by RAC Chair

Meeting Ends: 10:55 p.m.

Central Region Advisory Council
Springville City Civic Center
110 S. Main Street, Springville
November 6, 2014 ↬ 6:30 p.m.

Motion Summary

Approval of Agenda and Minutes

MOTION: To accept the agenda and minutes as written
Passed unanimously

Statewide Mule Deer Management Plan Revisions

MOTION: To accept the statewide mule deer management plan as presented
Passed unanimously

Bucks, Bulls & OIAL 2015 Season Dates and Application Timeline and Amendments to Rule R657-5

MOTION: For the reasons stated to accept plan as presented with the addition that the Wasatch moose boundary be extended to include the Manti and Nebo units
Passed 8 to 3

Big Game Preference Point Recommendations

FIRST MOTION: To keep status quo and ask that the Division explore other options for next year
Passed 10 to 1

SECOND MOTION: The preference point system be changed to start with the highest and fill all the first choices and then go to the next. When all of the first choices are filled go to the second choice but you do not lose your point(s) if you draw second through fifth choices
Passed 7 to 3, 1 abstention

CWMU Management Plans and Landowner Association Permit Numbers for 2015

MOTION: To approve the CWMU permit numbers as presented
Passed unanimously

MOTION: to accept the landowner association recommendations as presented
Passed unanimously

Landowner Permit Rule Amendments R657-43 (New permit type)

MOTION: To recommend that the rule be adopted
Passed 7 to 3 (one RAC member left)

Central Region Advisory Council
Springville City Civic Center
110 S. Main Street, Springville
November 6, 2014 ↬ 6:30 p.m.

Members Present	Members Absent
Matt Clark, Sportsmen	Michael Gates, BLM, excused
Timothy Fehr, At large	Christine Schmitz, Non-consumptive
Larry Fitzgerald, Agriculture	
Sarah Flinders, Forest Service	
Karl Hirst, Sportsmen	
Richard Hansen, At large, Vice Chair	
George Holmes, Agriculture	
Kristofer Marble, At large	
Gary Nielson, Sportsmen, Chair	
Danny Potts, Non-consumptive	
Jay Price, Elected	
Jacob Steele, Native American Goshute Tribe	

Others Present
John Bair, Wildlife Board Member
Calvin Crandall, Wildlife Board Member

---

1) Approval of the Agenda and Minutes (Action)
- **Gary Nielson, RAC Chair**

VOTING
Motion was made by Timothy Fehr to accept the agenda and minutes as written
Seconded by Richard Hansen
Motion passed unanimously

2) Wildlife Board Meeting Update (Information)
- **Gary Nielson, RAC Chair**

3) Regional Update (Information)
- **Michael Slater, Central Regional Aquatics Manager**

Aquatics
- Initial stocking of Bonneville cutthroat trout completed at Mill Creek as part of a three year project to restore the native trout to the entire drainage
- Gillnetted Deer Creek and Jordanelle reservoirs
- Gillnetted Yuba Reservoir
- Main Creek Restoration Project work continued
- June sucker biologist position closes Nov. 2, interviews in December
- Strawberry stocking Dec. 3, 4, 5 (need help, contact Alan Ward)

Wildlife
- Preliminary reports show similar number of deer taken by hunters but more mature bucks
- Pheasants release in several WMAs prior to the pheasant opener , will continue during the season

- Deer classification underway, will pick up as the rut gets closer
- Continue to assist cities work through the public process for developing urban deer control plans
- Plans will be needed when the current urban deer control administrative rule is revised next year

Habitat

- Upland game food plots established at Nephi WMA
- Winter range restoration at Steele Ranch
- Anaconda Fire (Tooele) rehab to be seeded by next week (sprayed already), harrow following
- Levan Fire seeded, chaining Nov. 3-7
- Eagle Scout project Nov. 15 planting bitterbrush at Levan
- USFS prescribed burn at Bartholomew Canyon successful (ask Sarah to add info)

Conservation Outreach

- 1000+ acres signed up for Walk-In-Access program in Ophir Canyon
- Meeting with BSA Utah National Parks Council to discuss wildlife recreation program partnering opportunities
- Trial voucher program for mentored hunting opportunity at local CHA

Law Enforcement

- Field training continues for new CO Lucas McTaggart.
- 0fficers responding to numerous UTIP hotline calls (1-800-662-3337)
- Unusual high number of illegal moose kills this fall

4) Deer Survey (Informational)

- **Kent Hersey, Big Game Project Leader**

Questions from the RAC

Richard Hansen – Why you didn't include any questions about predator issues in this survey?
Kent Hersey –Largely because that is a biological issue and the data we have from deer survival shows where there is a problem. We are doing everything we can right now on predator control and were going to keep doing it. We wanted to keep these to more social issues that dealt with what they would like to see from a hunting perspective and a management perspective rather than something that is more biological.

5) Statewide Mule Deer Management Plan Revisions (Action)

- **Justin Shannon, Big Game Coordinator**

Questions from the RAC

Gary Nielson – Right now the deer are looking really good because we have had two minimal winters and we have not had the fawn mortality that we have normally had. I am thinking that is a temporary thing, we can't keep having easy winters. How many permits are you talking about on those late hunts on those units that are over objective?
Justin Shannon – That hasn't been determined yet. What we are trying to do in the fall is build the framework and in the spring we would take those numbers through the public process to populate those hunts. As the power point said it would be limited. Even presenting this we are trying to gauge the social appetite for this. I think we would start slow but I hesitate to speculate on what numbers would actually be on those late hunts.

Gar Nielson – We talked to a lot of people in the central region and they felt like there was a reason we quit having the November hunt in the first place. If it was on a really limited basis they felt like it would be fine. They are worried about the numbers.
Justin Shannon – In all fairness, we are doing it now. CWMUs can hunt deer late October until November 10th in a lot of ways it is just giving public hunters that same opportunity on units that we have a surplus of bucks.
Gary Nielson – It goes both ways. There are a lot of deer that spend most of their life on private land and then come off in the winter and there are a bunch that spend their life on public land and go to private land to winter.

Richard Hansen – On the premium, multi season does the plan recommend that they do it only on premium deer units or all limited entry deer units?
Justin Shannon – It would be eligible for all limited and premium limited entry units. I don't want to get too far ahead but in the next presentation as we make the recommendation there are a couple exceptions that we wouldn't be proposing but certainly on the Book Cliffs, Vernon, Henries we would. There are a couple that don't have enough permits to even qualify for one or like Crawford Mountains where it just a muzzleloader hunting opportunity, it doesn't make sense there.
Richard Hansen – So it's not just the premium limited entry that it would apply to. It could include the limited entry units also.
Justin Shannon – Yes and that is why we quit using the work premium because I get confused.

Sarah Flinders – Your habitat objective number two, one of your last items says to work with local state and federal land management agencies to properly manage livestock to enhance crucial mule deer ranges. What do you mean by that?
Justin Shannon – I think what we were looking at with that is balance. We want healthy ranges so if we see situations where it's not that way we would certainly work with federal or state management land agencies and have those conversations.

Karl Hirst - How many cougar units would qualify for that cougar in the deer hunt?
Justin Shannon – There a lot of details that would have to be worked out in that regard. I can't remember how many we have in harvest objective. I would have to get some data for you. We are not presenting it tonight. There would have to be a lot of details worked out and brought back. I could speculate but let me get the real answers and I will talk to you.

Questions from the Public

Comments from the Public
Ben Lowder – Utah Bowman's Association – First I would like to thank Justin for the opportunity to have a seat on this committee to help formulate the mule deer plan. As he said we put a lot of time into it. If I remember correctly we had a number of evening meetings and then three full day meetings. It was a lot of time and everybody on the committee was pretty well committed to be there at every meeting so it was great. That said, we support the plan as presented. Again, we had a part in formulating the plan and feel that it came together very well and we think it will be a good plan for the next five years. One other thing Gary to address your question a little bit further on the November hunt, I am speaking for myself but kind of on behalf of the committee I guess, if I recall correctly, and I believe that I do, our intention with that was for those permits to be very, very limited. Numbers that were thrown out were like two to five. I don't know what the Division's plan is with that but that was our intention.

Dave Woodhouse – I would like to show my support for the mule deer plan. I know how much time and effort they put in going to those meetings. I was on the previous one and it's good to see

now that it's grown to where we can have opportunity to go to the multi type hunts for limited entry and I hope you can understand that is just an extra opportunity that will divide people up on the draw a little bit more and give people an opportunity for people with more points to put in for something different. Also it is my understanding that those tags would be coming out of the any legal weapon permits anyway so it won't affect the success rates on the hunt at all. I would just like to let you know I support these new mule deer recommendations. Thank you.

Troy Justensen – Sportsman for Fish and Wildlife – On behalf of SFW we would like to thank everybody that participated in putting this plan together. As a whole we support it and obviously there are some things in there we have a little bit of concerns with but as those come about we hope they will be addressed. The main thing we like to see is we can maintain and increase opportunity in our hunting tradition. But as a whole we support the plan, thank you.

RAC Discussion

VOTING
Motion was made by Matt Clark to accept the statewide mule deer management plan as presented
Seconded by Timothy Fehr
In Favor: All
Opposed:
Motion passed unanimously

6) Bucks, Bulls & OIAL 2015 Season Dates and Application Timeline and Amendments to Rule R657-5 (Action)
- **Justin Shannon, Big Game Coordinator**

Questions from the RAC
Matt Clark – How is the general season deer date set? Isn't it the third Saturday?
Justin Shannon – Historically it has been the closest date to the third Saturday.
Matt Clark – Do you ever do any coordination with school districts? It used to be called the deer hunt that you would get out of school for. Now they call it fall break. I know for me I have kids that hunt and it sure would be nice if you could coordinate that with fall break.
Justin Shannon – I too remember that tradition. We got let out of school for the deer hunt. We haven't had any of those coordination meetings with school districts. It might be a discussion worth having but to my knowledge we haven't had those.
Richard Hansen – The school districts are all different.
Matt Clark – They need to get their priorities straight.
Justin Shannon – We shouldn't let school get in the way of our education. I agree.

Sarah Flinders – It's not in our region but I wanted to hear from you from the northern RAC meeting what the response was to this new hunt on the north slope.
Justin Shannon – It was well received last night. They acknowledge that they have deer leaving the state. The question that came up at the RAC meeting last night was have we coordinated with Wyoming and the biologists have. We have some collars out there. There is a lot of excitement up there for this hunt. It used to be called the high country buck hunt and we had it for years. It just kind of went away and we have had a lot of people ask why it went away and it's hard to answer. They have asked if we could have it back and it has been well supported.
Sarah Flinders – Also on unit eight in northern region as well, the collard bighorn sheep, I know it was brought up and there was concern over hunters being allowed to harvest the bighorn sheep with collars on. It's extremely expensive to put those on and I know they lost two to disease and

one to a harvest. So it sounds like there was a lot of discussion on that, can you tell me if anything was decided?
Justin Shannon – I could share with you the different viewpoints. The Forest Service rep had some concerns that on the North Slope we go to great lengths to collard these bighorn sheep and they have some future decisions to make and the movement data is really important to them and last year one of these rams was harvested. We have worked with the Forest Service to collard more of these things. In September we did that. They had a lot of back and forth. Some of the sportsmen's rep was saying if you have waited 18 years to draw a sheep tag and that is the biggest one you see or that is the only one you see then you should be able to take it. I think the RAC really had to balance that. One of the things we talked about was working together. We have the ability to send letters to our hunters or if the RAC wanted to make a motion that for that North Slope bighorn sheep unit you couldn't harvest collared rams all that is open.
Sarah Flinders – Did they make that motion?
Kent Hersey – Paul Crowley's initial motion was to eliminate harvest of collard animals and that failed then the motion was changed to we are going to explore whether collard animals should be harvested or not and we will have a recommendation for the Wildlife Board.

Richard Hansen – Justin, are you going to try to implement more high country buck hunts?
Justin Shannon – Right now that is the only one we have in mind just because we are trying to take advantage of bucks that are leaving the state. I think if we had other situations arise we would certainly explore it but right now that is the only recommendation.

Questions from the Public
Lee Sorensen – We have a question on the Sanpete archery and the cancelation of it and the reasons why. We would like an explanation of that please.
Covy Jones – Mr. Chairman and the rest of the RAC I would love to address that but in order to do that I have to go through a little bit of the history and it will take a little bit of time, is that okay if I do that? Here are some photos I would like to pass out. The first thing I guess we need to go through is how did we get to where we are with the Sanpete extended archery hunt. The answer is in the late 90's early 2000's there were about 100 elk that showed up on highway 89 and the big problem we had these elk were all bulls and they were causing a serious public safety issue on the highway. At that time they went through several different things. They had a five day guided hunt for people who were unsuccessful. They tried several different options and in 2003 they decided to try an extended archery hunt. Again when they formed this extended archery hunt they did it with a committee and the committee consisted of one Division employee which would have been Steve Flinders, four landowners, Farm Bureau, UDOT, SFW and another sportsman representative. The committee came up with three very simple goals. One goal was to push elk off the highway and that they accomplished. Elk behavior being very different than deer you are able to change behavior permanently with pressure and that's what we did. The other goal was to push elk off of private lands. The committee had that as a goal and they had the opposite effect there. It actually evolved into a baiting situation where elk were baited onto private land. The third goal was to kill as few bulls as possible to accomplish the other two goals because these are both limited entry units that are managed for five and a half to six on the Manti and six and a half to seven year old bull on the Nebo. The answer to that is we really don't know how many bulls were harvested. We don't have a way to get that data. The next thing we need to take into consideration is that like I said before these units are both limited entry bull units and so we manage them according to the statewide plan. There was a plan brought before you four years ago that was approved, passed and passed by the Wildlife Board which says that the Nebo will be managed for 1,450 elk and a six and a half to seven year old average bull killed on that unit. The current status of the Nebo, we are at about 1,200 elk and the average bull is six years old which forced us to cut seven permits on that unit last year affecting archery, muzzleloader and riffle. The Manti has a population objective of 12,000 elk and we are at that population objective and

the Manti has an age objective of five and a half to six and we are right there at six. So the Manti is not in the same situation as the Nebo but the extended archery boundary crosses both units. The other issue is I guess in addition to the age objective on the Manti we take data separately from CWMUs that come off and Manti has a CWMU, Bear Mountain. Bear Mountain is harvesting on average a 5.3 year old bull which is below the age objective. It butts up against the extended archery and there could be possibly a localized effect from the extended archery hunt on management there. So what it comes down to is that we had a public safety issue, we chose a plan to address the public safety issue. The hunt has now evolved into something it was never intended to become and it's no longer needed to address that public safety issue. We are not saying that we never would bring it back again or something similar to that but we can't manage to the statewide elk plan and have this conflicting hunt without the public safety issue. I hope that answers any questions.

Clint Sorensen – Thank you for your time. The seven tags that were deducted from the archery, muzzleloader and rifle seasons were those part of the late season rifle hunt we implemented last year?
Covy Jones – When you cut tags they are cut on a percentage basis so it is cut across all weapon types and all hunts.
Clint Sorensen – You said we cut seven tags but we also added a hunt so where did those tags come from?
Covy Jones – Those tags have to come out of the total number of tags for that unit. So when we cut seven tags it cuts a percentage from everything.
Clint Sorensen – So when we add tags…
Covy Jones – It adds a percentage for everything.

Troy Justensen – SFW – We have an expanding moose population on the Manti and the Nebo. My question is would the Division consider expanding the Wasatch unit to allow the opportunity to hunt these bulls?
Covy Jones – I would defer to the biologist on that one.
Dennis Southerland – Covy, you could have answered this question. We don't oppose the idea. Management responsibilities for the Manti is shared between the central region and southeastern region so we would have to touch bases with them but we do have some bull moose in both the Nebo and Manti units but there are not enough moose there to qualify for a hunt of its own and I would advise hunters if we do include the Manti and Nebo in the boundary it's going to be like looking for a needle in a haystack. They are there but are not real easy to find.

Tom Mower – We have Bear Mountain Ranch which they were referring to in the study and I appreciate the data because everything he is saying is exactly confirmed with what we have been seeing over the last 15 years. We are all for opportunity but to meet the plan that is now in place and the age objective. It is nice to see scientific data to validate what we have seen over the last 15 years. We are extremely elk friendly. We double feed our cows and enjoy the elk that come in during the winter. I guess my question would be what value would we see in continuing the extended archery hunt in an area that has an objective with a program that is unlimited in harvest.
Covy Jones – I guess the value would be increased opportunity but we can't do that and mange consistently to the statewide plan and that is why we are recommending the closure.

Colton Jorgensen – Have you talked to the game wardens in that area about this subject?
Covy Jones – Yes we have talked to the game wardens Matt and Casey and Preston.
Colton Jorgensen – They have told me personally that they have had trouble no later than a week after this hunt ends with elk crossing the road and I know that there have already been elk hit in both the Nebo and the Manti area. Both Preston and Matt has spoken to me and my father about this and have shown concern for the people that are traveling that road. For example my wife

travels from Ephraim to Mt. Pleasant and I told her just the other day that she is going to have to start leaving work early because those elk and deer will be crossing the highway.

Lee Sorensen – I deal with the west side of the road west of Fairview and the question I have is why was that included in the first place? Is it an opportunity to hunt or was it to keep bulls off the road? It's on the west side; highway 89 goes on the east side of it. The bulls come off the east side to the west side in winter conditions so it makes no sense that it was put in there to keep the bulls off the road.
Covy Jones – I wasn't on that committee and no body that is in this room was on that committee so I have a hard time commenting on what they intended but the three goals of the committee were what I read earlier. It was to keep elk off the road, keep elk off private land and kill as few bulls as possible.

Kevin Jensen – Thanks for the opportunity. I guess my question would be why you made the decision that staying with the statewide plan outweighed the safety of drivers and then also the success that we have found down there. I live in that central area where that hunt has been and it has been a great success and a great idea I think.
Covy Jones – I don't think the Division has ever or would ever put public safety behind a statewide management plan. Elk are not deer and elk can be changed and habituated to other things. We can show through our data, we track all the road kill on that road. I can give you the date every bull was hit for the last two years because we track it through a road kill app. If it becomes a problem again I am not saying that we would never bring a solution again. It's just not a problem now. The other thing is this hunt ends January 31^{s} so is that the magic date of when all elk go away and there is no public safety concern.

Ryan Cowley – Why is baiting for big game not prohibited as a hunting method similar to upland game?
Justin Shannon – I think the biggest challenge with that is trying to show intent. We have a lot of private landowners who have livestock and different things and it's really hard to prove or show that you are putting a certain feed out for deer or elk versus cattle especially when the dietary overlap is so high on alfalfa and things like that.
Gary Nielson – So it is illegal and it's just a matter of proving it?
Justin Shannon – No, it is legal to bait. It is highly discouraged by the Division but that is why it is not illegal because showing that intent would be challenging.
Gary Nielson – I know some of the initial troubles started down there when a farmer put out a couple of big bales because he thought it would be neat to get the elk close to the house so the kids could watch them. That started them coming across the road and then it snowballed dramatically from there.

Comments from the Public
Clint Sorensen – Once again, thank you for your time. I am here for the Sanpete County archery hunt. To be totally honest I am a hunter, I love to hunt and it is a great opportunity to kill a nice elk. It is during a perfect time because there is not a lot going on. I have seen a lot of good things come from this hunt. By moving the elk it keeps them from staying on one guy's property and in a little town of Fairview… I travel to Heber City on the weekends to hunt and I spend money there. It helps the little community of Fairview out. I am thankful for the years we have had it and I would like you to reconsider your motion to stop it but thank you for the time that we have had on this hunt.

Lee Sorensen – Thanks for your time again. I was at the board meeting last year where this was reversed and brought a few things up. Since then we have had meetings with the DNR office here and one meeting with the landowners. It was real interesting. It is hard to get landowners

together especially when you are talking about the issues that were brought up at the meeting. One of the issues was a CWMU and before Covy came they had all heard it five times. I work with the guys on the west side of the road. They call them the big five over there. I work with them and book some hunts for them. The big five came in except for Scott Mower; he is in a bishopric down to Snow, but that is here nor there. They came in and the only issue that was addressed was a CWMU and they brought Tom Mower in from Big Bear Ranch and he graciously explained CWMUs to us. They listened and then they showed graphs of where deer were hit on the roads. That was the only thing that was brought up in the meeting. There was nothing about the fire, there was nothing about fencing, and there was nothing about bulls on property. A CWMU was presented. In that situation over there are so many hands that own little pieces of land and there are so many hands in the big pieces of land which are family members that there is no way a CWMU will work. Maybe for deer we could do it but not for elk. I am out there every three days and I bait. We use straight up alfalfa, the best we can buy. I see a lot of things when I'm out there in those three days. There are a lot of things that will happen if this hunt goes away especially on the west side because there is a lot of country out there that no one ever sees except for the people on the inside. One of those is poachers. I was out there last night and I am one hundred percent sure this guy was going to poach. I rode down there on my four wheeler and he jumped in his truck and took off. When we take this hunt out of that the poaching is going to go through the roof. In the first place you do not have officers enough to cover that country. If we see an officer out there, I have seen one in five months. He came through at one o'clock last Saturday. They do a good job down there but they have a lot of country to cover. When hunters are in the field the poaching is down. Our deer herd is finally growing. The elk out there they run in bunches. My sons and I have done a survey. The dates are on the survey and I would like to give each of you one of them. You can look at them. I have highlighted the bull numbers. The properties are on the back and the reasons why we were out there. We spent a lot of time building fence this summer and this fall. The bull numbers are there. We also had one big bull tag in Spencer Fork and there were so many bulls in there it was incredible. We saw 24 in two days. We hunted four days in September and saw 34 in there. These numbers on this survey nobody has seen because I put it together and kept it in a book. My sons and I are the only ones that have done it because we spend the time on the properties. I would like to hand those around. I think there is one extra Covy could have. That is coming from us working with the landowners. The problem we have is it's not all Nebo bulls. 89 runs on the east side of the property that we run. As soon as the snow comes in then the ground freezes and those bulls move to the west side. That is where they winter. It has nothing to do with baiting. We have had as high as 50 bulls in there and I have pictures that I will show anyone in this room that have 50 different bulls in there when that snow gets deep. They commute to the west side of the road because that is where they winter. The problem we have is these bulls buddy up for safety and you can see the bunches of bulls on this survey I gave you. Some of these bulls stay there year round. They come off the Manti onto us and it is a real problem. The opening day of the spike hunt we had 34 or 37 bulls and 22 cows on the back side of Cory Anderson's property. 1,200 acres, there were seven spikes in that bunch. We took one spike out and at the end of the hunt there were four left over which is a great thing for the unit. We put new fence in between Jack McAllister's and Cory's property so we could run sheep in there. We spent days repairing that fence from 60 some head of elk in there. They make a little bit of money off this that they put back into fencing and repairing fence. I would like to know where that money will come from. They like it the way it is. If you leave it alone it is going to cost you less money because they will take care of their own fence repairs. It is really tough to put 60 head of elk in 1,200 acres for two weeks and then bring your sheep in and try to feed that off after.

Josh Jensen – First and foremost I am grateful for this opportunity especially tonight to meet with a variety of stakeholders and hopefully come to a common agreement on this matter. You mentioned that you didn't know how many people have killed an elk. I can tell you how many I

have killed in ten years. I have killed one bull and my brother will tell you how many he has killed when he comes up here in just a minute. I think there is misconception on how many elk are being killed and what the positive things from this hunt are actually being presented. In 1999 there were five bulls killed on the highway. In 2000 there were two more bulls. That is a lot of elk being killed on the highway and that is a safety hazard for sure. You hired a technician to herd the elk and that was deemed unsuccessful. Then a depredation hunt was held. That was good for the hunters but not for the elk. Then all of the sudden this extended archery hunt comes into play and I think that has been one of the more positive things you have done as far as properly managing the herd while realizing the safety of the people on the highway. I really hope you consider this before you motion this out. It has been a positive thing I believe for the area. Thanks for your time.

Dave Woodhouse – I would like to give my support for the bucks, bulls and OIAL that has been presented here. I would like to bring to your attention the fact that we have a great opportunity to extend the Wasatch moose hunt into the Nebo and Manti. There are some great bulls over there. The best bulls on the Wasatch except maybe in Park City are in Dairy Fork right now. We are not asking for more tags, just extend the boundary. Like Dennis said it is a needle in a haystack to find them but that is a hunter's choice. It's not real easy to find them on most of the Wasatch either but they do. I would like you to consider that and debate that. Also I do support the closure of the Sanpete archery hunt at this time. I do remember when it was put into place. I was working down there and I saw all those where the road comes in from Mt Pleasant to Spring City and all those bulls would hang up right there. I even got a tag to try to hunt them a couple times but I gave up because I never could get access to any of the property. It was limited to who is paying the landowners. At the same time I was trying to draw a limited entry tag on the Manti and it doesn't work especially now that it is under control. If it gets bad again we can put it back in. There are probably a lot of units in this state that if we looked at the same criteria and elk are getting killed on the road you open a can of worms. You could have it down in San Juan County, everywhere because elk get killed on the road. They cross roads and are a hazard. Deer are even worse. We don't want to go there all over. I don't know if this is the right time or not but I bring this up every year I would like to see the Nebo unit changed from 15 to 17 bucks per hundred does to 18 to 20. We don't have a single unit in the central region in that regards and I would like to see one unit in central be 18 to 20. I think we are the only region in the state without that. We have talked about this before but that is a simple way to get one unit a little bit better. Thanks for your time.

Troy Justensen – SFW – We support the Division's recommendations with two exceptions. One of which we would like the board to act upon recommending extending the Wasatch unit to allow moose hunters to hunt the Manti and the Nebo. The other thing we would like to suggest is on the Range Creek and Rattlesnake bighorn hunts to bring them in line with the others. Right now there is a split season at 15 to 16 days and we would like that increased to 21 days to come in line with the rest of the bighorn hunts. It is a once in a lifetime to give these individuals ample opportunity to go out there and experience a hunt of a lifetime. Thank you.

Kevin Jensen – Thanks again for the opportunity. I would like to address also the misconception that the Sanpete extended hunt is an easy hunt and that there are a lot of bulls killed. It's absolutely not. I have hunted it every year since it started and I have killed zero bulls. I have not drawn my bow back. It is the hunting pressure as well as the baiting that is keeping them away from the highway and a lot of deer as well I think. I do bait and I do have a blind and I have never had a bull come in. Those who think it's a cakewalk ought to try it. Unless you cheat and hunt during the night you aren't going to have too much happen. I just want to strongly recommend that you rethink getting rid of this hunt because like I said it is a hot button issue with us down there because not only are we hunters and it gives us a chance to actually hunt these

bulls that we invest in and it is really our only legitimate chance we have but also it has kept our wives safe. A woman got killed there one year by hitting an elk down there. The fact that you have decided to get rid of it I don't know if the reasons outweigh the reasons to keep it and I strongly urge you to reconsider. Thank you.

Tom Mower – Bear Mountain CWMU – I can see there are a lot of reasons for the extended archery and I think we have met those goals with what it was initially brought out for. What I have seen over the years being down there for 15 or 16 years with a CWMU is at first there were a few people and it has become more and more popular and for us it has actually increased poaching because we have blinds all the way around us and everybody baiting. Sometimes we will get three or four calls about people who have hit elk and have come onto our property and once in a while you find a carcass in the spring where someone shot an elk. We are a separate unit, not even part of that but we have it all the way around us. It has increased trespassing and poaching on us. We are no longer really a safe harbor because everybody is trying to bait elk out of us. But the biggest thing is it's really a contradiction to what the management plan is. Do we want a certain size or age class of bull, a certain amount? As far as population we are right there. I have employees who have worked for us down there who have talked about hitting 16 or 17 bulls and finally got one. But the biggest thing about this is where it is over the counter unlimited there is no data. I love to see the scientific side of this that says we have met our objective in some areas but we have gone too far in others. We can't on our ranch even get to that average age anymore with people who are hunting and trying to enjoy it. So we either need to lower the standard and go over the counter with everything because you can't have both where it is limited here but not here and there is no data coming off this side because there are lots of animals that are getting hit. I love hunting opportunity if we want to hunt them late in the winter then we need to do it in a controlled fashion and issue so many permit. It kind of sounds like these gentlemen have a little different issue than we have down in Mt. Pleasant potentially too. They are running it more like a business opportunity and trying to protect fencing and things like that. Where we have it it's maybe a little bit different. We are really hurting our population. I don't know what their numbers are for their age class. For me I would definitely support at this time as something that can be brought back discontinuing this hunt. It used to be that there were five to ten hunters that went along the highway. Now it is much bigger, much broader and has become kind of a commercial situation. So with that I would recommend that at this time we close down this extended archery. Thank you.

Ben Lowder – UBA – I would like to address a couple things tonight. First I'll address the Sanpete extended archery hunt. We recognize that there was a specific issue that the hunt was designed originally to address we also recognize that that issue is no longer the issue that it was and rather this hunt is doing exactly the opposite of what it was designed to do and for that reason we support the Division in recommending a closure to this hunt. In addition we would like to support the comments by Troy and Dave earlier about extending the Wasatch moose unit to encapsulate part of that Manti unit where we have a little bit of moose population growing down there. And as well Troy's comments on the bighorn sheep extending those seasons where it is a once in a lifetime hunt. I am a big fan of when you are hunting for one hundred percent success rate of giving as much season opportunity as possible so we support that as well. Other than that we support the recommendations as presented.

Ryan Cowley – We have talked about this last year too and don't really want to rehash everything out but this hunt is really a fun hunt. It's not the typical one hundred percent success that a lot of elk hunters like to do. People that like to do this just like to get out and chase some mature bulls and hope one runs by them and you are a good enough shot to get it. There needs to be some hunts like this. It has really low success but it gets people out there taking their bow for a walk maybe shoot a coyote here and there too. The other thing is keeping an eye out for poachers that

time of year, the more eyes out on the mountain the better. I think this hunt needs to stay in place and actually expand into more areas of the state because it is a great opportunity. Thank you.

Colton Jorgensen – Just a couple of things I would like to touch on. I feel money talks sometimes. When it comes to Tom Mower here, he knows who I am, he knows my family personally. We have hunted like he says to the side of his land and I am here to tell you in the last ten years we have had one bull that has gone onto his property. Another thing is it's not just the elk you are keeping off the highway. We have had alfalfa set up in a blind and a few years back we were hunting and had to ride a snowmobile in to hunt. It was 20 below and we got to our blind were we sit and there were over 100 head of deer. Mature bucks that were feeding. How do you expect a deer to dig through two and a half feet of snow to get feed when all that vegetation is frozen? Again when it comes to people that aren't from there, yeah its fine, do you people want to be held responsible for lives that are lost? I don't personally and I have seen hundreds of elk that have been kept from crossing the highway. There are tons of landowners who are more than willing to allow people to go onto their land to hunt these elk if they ask permission. I think that is the name of the game. Anyone who asks permission, I could give you a list of people who would be more than willing to let people hunt on their land. Partly like the Sorensen's have said, there are landowners that need that money to fix their fences to keep their livestock in. We run cattle in that area and we fix fences every year because of the deer and the elk that have smashed it down and run through it. You have all seen it. When a herd of elk go running through they trample the fence. It is nice to have that extra money to fix these fences. Thanks.

Ken Jensen – How do you figure that this problem has been resolved? If you don't have this hunt you will have elk all over the highway and someone is going to get killed.

RAC Discussion

Richard Hansen – Does the Sanpete extended hunt go west of highway 89?
Covy Jones – It goes west of 89 over big hollow road.
Richard Hansen – When we do aerial counts we are counting Manti bulls on the Nebo, a lot of them, right Dennis.
Dennis Southerland – West of 89 is the Nebo unit.
Richard Hansen – I know it is but when we are doing those counts we are counting Manti bulls and elk that have crossed over.
Covy Jones – It could be they probably go both ways.

Gary Nielson – I heard you mention something earlier that if this reoccurred as a problem then we would address probably in a similar method like we have done.
Covy Jones – Absolutely, if we had 100 plus bulls show up hanging out on the highway we would have to address that.
Gary Nielson – I have had a chance to visit with a lot of the folks from over in Sanpete and a lot of them who live there and have their entire lives and they, as they put it, have an absolutely glorious time hunting late bulls with archery. But they feel like the purpose was served and that it is nice if you are from Sanpete because you can hunt but if you are not from Sanpete there is very limited opportunities at least where the bulls are. That is what they are telling me. They said as much as we would like that we see that the need for that hunt is pretty well passed.

Comment from audience – Why does someone potentially have to get killed to put the hunt back in place?
Covy Jones – I don't think that is a fair statement at all. This was to address a specific problem of over 100 bulls hanging out on the freeway and to bring human life and safety into that, of course we care about human life and safety. We formed a group right now to look at fencing a lot of that

highway because of this issue and it is both deer and elk. So I don't understand, the issue isn't there anymore. I am not saying that there is never going to be an elk on that road but it's not there right now. There are not 100 plus bulls hanging out on 89.

Kristofer Marble – It was mentioned a few times about extending the Wasatch moose. What are the Division's thoughts on that?
Covy Jones – I think as we mentioned before that we only manage part of the Manti and as Dennis said on the Nebo and our portion of the Manti we wouldn't mind but would like to consult with southeastern region biologist and see how they feel but indifferent I guess. Not strong feelings.

Sarah Flinders – Would this include the Nebo wilderness area?
Covy Jones – We don't exclude wilderness areas from hunt boundaries so yes.
Sarah Flinders – So the hunters would have limited access the hunters would know.
Covy Jones – Yes.

Richard Hansen – On extending the boundary for moose what is the purpose of taking moose to the Nebo? Were you trying to establish a viable population or what was the purpose?
Dennis Southerland – Yeah, we thought it was a good idea to try to establish a herd of moose on Nebo.
Richard Hansen – Maybe it's like finding a needle in a haystack but I drove on the loop road and saw several so it's not unusual. I am a little concerned that even if you take one off there it would be detrimental to what you are trying to accomplish.

Gary Nielson – Are you trying to establish a huntable population on those two units?
Dennis Southerland – We didn't make a concerted effort, we don't have a moose plan there for example but we had some moose that we wanted to move and I said I would take them and try them on the Nebo and they let me get away with it.

Karl Hirst – Are we better off establishing another unit and offering a few tags or just extending the one? If you had a choice between another moose unit and extending the boundary which would you pick?
Dennis Southerland – With the population what it is now I would extend the boundary and give some added opportunity for hunters. I wouldn't worry about an excessive harvest on the Nebo with it being included with the Wasatch. I would expect most hunters to go to the Wasatch.

Richard Hansen – We have had moose there before. I remember watching them a lot and in two years they were all dead. They had all died from disease, every one of them. I am not expecting that to ever get to a viable population.
Justin Shannon – I could give some perspective on the eastern side of the Manti for the southeast region. There are moose on the north Manti. We see them there. They aren't very abundant and so I don't think the Manti would be a standalone unit yet. If they continue to have population growth and things like that maybe down the road.

Sarah Flinders – So do you as biologists have concern over expanding that boundary where hunters have not been able to hunt moose are they all going to go down there this first couple years because it hasn't been in the boundary? Are we worried about over harvest in those areas that we are maybe trying to establish a viable population? As biologists is this something you have considered, do you want something like this or is this just from sportsmen pressure?
Justin Shannon – When we first started putting moose on the Manti the goal was to eventually hunt them but it never took like some of our other transplants. The one thing that I think is important to remember is we would just be harvesting males. I don't think a cow hunt is for that

unit so the hunts that we do have are for males and if you have males that are wondering onto the Manti that were to be harvested it wouldn't necessarily impact that population anyway because there would be other males to breed the cows. It is not a recommended that the Division came up with but if the RAC recommended it and put it together and recommended that the boundary be moved south it is something we could do.
Sarah Flinders – One more question about the bighorn sheep. There was one unit, you've been asked to maybe extend one of the season dates. One has a shorter season is there a biological reason for that and can you explain that and can you further explain if there would be any negative effect of extending the shorter season to match the longer season.
Justin Shannon – This is on the nine mile range creek and last year at this time we recommended to split it. Essentially the first couple weeks of November would be the early hunt and the last couple weeks would be the later hunt. I think one is 14 days and one is 16 days. Really we don't have a lot of the feedback yet because we are still in the early portion of that hunt. We haven't even started the second hunt yet. I know as we have split, one of the fears that sportsmen have come up with is this is a once in a lifetime hunt and they want as many days in the field as possible and we can appreciate that. The reason we didn't change it for this year is we didn't get any feedback for that hunt yet because it hasn't happened. But as we split the Newfoundland Mountains and we split the Zion on that desert country we could certainly go a lot earlier into the year with no issues because they rut earlier and different things. On the Newfoundland Mountains they don't have lots of other competing hunts out there because it is an isolated mountain range so we felt like we could give three weeks early and then late. The one downside with extending nine mile if we extended it late is we generally fly those populations the first day of December because that way we are flying as close to the rut as we can to get our highest population count and those are the best conditions generally. If we did extend it we would probably move them earlier into October but I would have to communicate with the biologist down there and see what kind of overlap that might have with the deer hunt and different things. It is certainly something we can look at.

VOTING
Motion was made by Jay Price for the reasons stated by the Division to accept the plan as presented with the addition that the Wasatch moose boundary be extended to include the Manti and Nebo units
Seconded by George Holmes

In Favor: Larry Fitzgerald, Richard Hansen, Jay Price, George Holmes, Karl Hirst, Sarah Flinders, Timothy Fehr, Kristofer Marble
Opposed: Matt Clark, Jacob Steele, Danny Potts
Motion passed 8 to 3

7) <u>Big Game Preference Point Recommendations</u> (Action)
- **Lindy Varney, Licensing Specialist**

<u>Questions from the RAC</u>
Timothy Fehr – I got lost, what was the real advantage of the change?
Lindy Varney – Back in 2009 we had so many permits left over the counter. When you are selling 16,000 permits over the counter you have a lot of pressure on our sales system and it did crash several times in different years. We had lines and people were waiting at two o'clock in the morning in long lines for a tag and they ended up not getting tags. We looked at other ways we could get these tags to the hunters and relieve the pressure on our system so they came up with this way and took it through the RAC and Board. This was the best option, still allowing people to hunt but keep their points so they could draw out the next year or two for the unit they preferred to have instead of trying to buy them over the counter on a first come first served basis.

Questions from the Public

Dave Woodhouse – My understanding of the draw is if a person is drawn then that person gets looked at first second third fourth fifth choice.
Lindy Varney – Correct.
Dave Woodhouse – So could the draw be changed more like the limited entry draw where they look at all the first choices first and then it goes back through to the second choices?
Lindy Varney – It could run that way but then you will have the potential of having people build up points. It would be a bonus point system. The preference point system is designed to actually look at the client because we want to make sure we take care of the client that has been waiting the longest to draw out for a certain unit. If we go to the way you are talking about like limited entry you are going to have people who are going to be building up their points because we are not looking at the client, we only care about hunts. When we do the preference point system draw we care about the client in trying to give them the hunt they want. We look at their first choice and if we don't have a permit we are going to go to your second choice and look at you.
Dave Woodhouse – I look at Colorado.
Lindy Varney – They have the one point system in Colorado and at this time we want to take care of the concern that the public is having right now and that is that people are drawing out for units that say I put in as my first choice but you draw that unit as your fifth choice and I don't draw. That is the concern and we want to address that concern right now versus going to the one point system.
Dave Woodhouse – I was just wondering if it would work the same if we drew all the first choices first and down the line.
Lindy Varney – By the time we get there second choices wouldn't even be looked at because when you look at everyone's first choice and you have 127,000 application and 86,000 permits people aren't going to be drawing out even on their first choice so your points are going to be racking up and you will have the same problem.
Dave Woodhouse – But they wouldn't rack up if everyone went out on their first choice
Lindy Varney – Not everyone would.
Dave Woodhouse – After the next year they would draw out.
Lindy Varney – I understand what you are saying but points would rack up when you have 40,000 people not drawing out each year because we are not looking at the certain person.
Dave Woodhouse – I don't see it that way. I think you could set it up.
Lindy Varney – We are going to investigate that way through the mule deer committee and the plan they put together and was approved through this RAC and Board. We are going to look at some alternate routes but for now we want to address the issue at hand.

Comments from the Public

Troy Justensen – SFW – We discussed this within our fulfillment committee and there is some real concern and our biggest concern is the effect it could have on youth. We have all talked about that hunting is a family tradition and the potential and opportunity to go out and hunt traditional places with your family. This by making you use your points for your second and third choice I think will limit that because case in point if you have a child and you want to put them in to hunt your traditional spot and then you choose some other places just in case they don't draw that so they can still go out hunting and if they draw the second choice and lose their point it puts them behind the curve. As Lindy pointed out I think a good idea would be to stay status quo until we have an opportunity to go back and through the mule deer committee and explore some different ideas to ensure the opportunity for the youth to have as much potential as possible to get them out hunting. We've got to keep them hunting because if we don't within a matter of two or three years those years are not replaceable, they are gone, and we are going to lose those kids. So on behalf of SFW we would not support this change. Thank you.

Dave Woodhouse – I like the idea of using the points and moving people along but I think it is kind of backwards. I know for a fact that I won't put in and I won't put in any of my kids for a hunt that they will not be guaranteed to draw their first choice. At this point in time I am not interested in a backup unit. I have one place I want to hunt because it is a traditional area. That is where I want to hunt. I might put a second choice in now because I can draw it and retain my points if it's available. I know the draw can be set up as I brought up because it is the exact way that Colorado is. You put in for your first choice and if you draw it you lose your points. You don't if you happen to get lucky and draw your second choice you keep your points, you get a tag and you go hunting. They draw across the board first choices first. Then they go to the second choices. So all the first choices get filled and that prioritizes it that way and all those people with points are gone. The next year those people that didn't draw will get a point and they are prioritized and they lose their point. It might keep an area at one or two points but the same thing that is happening not is going to happen. Once people catch on they won't put in for second, third or fourth choices. If they do and somebody draws out next year and gets hit with their fourth choice and loses their points they are going to be turning their tag back in and getting their points back. You are going to see that more times than not because their fourth choice might be an archery unit on the west Tintic or something. When it gets down to it they will think it's a pretty tough hunt and don't really want to do that and they will turn it back in. Then you will end up with the issue of what do they do with all these tags that are turned back in. I think a little more work needs to be done on it. I like the idea of eliminating points if you draw out and I don't like someone drawing third choice ahead of someone who puts in first choice with points. It does need to be fixed. Thanks.

Mike Christensen – I just wanted to tell Lindy and the Division thanks for looking at this. There is a definite problem here; status quo shouldn't be an option. Maybe what the Division has proposed isn't the option but there is an option out there to fix this before the next draw because what can currently happen is I can have three points and I put in for Nebo for first choice and don't draw it and then I put in for Wasatch for second choice and I draw it with three points. Since I didn't draw my first choice tag I earn a point so now I have four points going into next year and I am at the head of the line still. Gary, he wants to hunt the Wasatch, I know you don't but, and he wants to hunt the Wasatch as his first choice and he has two points but he doesn't draw it because I drew it with three and then Gary earns a point but I still have four and he has three. That is how the system works right now. So what Lindy proposed will deal with that and it will wipe out all your points. Dave has some obvious concerns that are valid. Colorado has a system that would probably work where you look at everyone's first choice first and if you don't draw your first choice you earn a point and then all the second choices are looked at and then all the third choices. I'm not going to tell you which way to go but status quo isn't an option. If you want to play the kid card I can draw because I have points and have been in the system longer and your kid and your grandkid and my kid are behind me because I have points and I can play the system. So if you want to play the kid card that's how you play it. Thanks.

RAC Discussion

Gary Hansen – We have all resigned ourselves to the lottery nature of the draw and we have pretty well swallowed that and done whatever it takes to just kind of be ok with that because that is where we are at. Building points toward drawing is the only thing that gives you hope in hunting where you would like to hunt. I don't know what you guys are like but I have this inner need go out and pursue deer I don't kill a lot of them but I really like to pursue them and so if I can't hunt exactly where I want to hunt I would still like to go somewhere not just blow it off and be done with it for the year, did that this year, that was not cool. I know we can come to some common ground and some happy medium. Those of us who have families, I have five boys, and we get out and rock and roll in the mountains and we are more concerned about being together. It is nice to go where we like to go. We tend to look for places people don't go to hunt but if you

eat your points every time you draw anything even if it is like you said archery on the West Tintic it will completely kill the family concept. I know a lot of people who don't have families think that is a bunch of horse ideas but coming from families that have hunted forever it's a big thing. That is the strong support that comes and the collegiality and the ethics are all part of that same big process. I hate to keep slamming those guys and it seems like we have done that a lot over the course of the draw process. We have made it harder and harder to do that. Thank you.

Karl Hirst – as I have talked to quite a few people about this everybody has a different drawing strategy. There is not a system that is going to solve it for everybody. The common format of the discussion was that they didn't understand the system and the way that it worked. They assumed it was like Colorado's preference point system and when you try to explain it to them they are going oh my gosh. I agree that I don't like status quo, there needs to be some change but at least from my perspective since they are already feeling that is like Colorado that that is a better step rather than taking and intermediate step and then another one. I think when you talk to people you are going to find they want to be over here anyway. Let's not step it through. Let's just make the change.

Richard Hansen – I had a lot of people talk to me about this after the draw this year and I know of one 13 year old boy who put in for his first choice and he didn't draw out. I talked to another guy who drew that same unit as their 5th choice. So you are going to have that situation where you are going to deny youth the opportunity to hunt no matter what you do but it seems fair to me that if a person puts first choice and they are assigned a draw number in the computer then the first choice applicants should be filled by them first. If there is anything left over and somebody has put it as a second choice then you fill second choices. I really don't think you will have any tags left over like we had before. There is too much interest in it and I think I am with my fellow board member. If I heard right like Colorado you fill the first choices first then second, third, fourth and fifth choices. If you don't draw out your first choice you get a preference point the next year your odds are better. That's just how it is. That's how I would like to see it.

Kristofer Marble – To build off Richard's comment, we did this change to alleviate pressure on the system due to leftover tags. Now we want to change it because it's not fair. If we do that is the anticipation that the problem is going to come back that we fixed back in 2008?
Lindy Varney – I don't believe it will. I believe we will still have left over permits but not back up to the numbers we had in the past just because we do have an increased number of applicants. The last three years we have gone up about seven percent each year in general season applicants. More and more people are starting to apply for general season deer permits. This year we had all of our rifle tags go to people who applied for it as their first choice. So all the applicants who got a rifle tag had it as their first choice. That is why we don't have any rifle tags left over because they went through first choice people. I don't believe we will have the same issues as we had back then just due to the fact hunting is becoming more popular.
Kristofer Marble – That might be true but do you anticipate the number of hunters who only apply for one choice to go up which would in turn create the same effect.
Lindy Varney – I don't believe so just because people still want to hunt. It is a family affair, people want to go out and hunt with their families or they just like to go out and have the opportunity to hunt so they may pick a different weapon type as their second choice because they still know the area and a lot of people hunt with multiple different weapons. Some people may change their ways of only applying for one unit because that is the one unit they know or love but I don't see a lot of people changing their strategy that much.
Kristofer Marble – It just seems like if now I am going to burn a point especially if I have more than one. If I have two or three I'm going to make it count.
Lindy Varney – That is true but people still want to go out and hunt and have the opportunities and enjoy that fun affair that they have in the fall with their family and friends.

Kristofer Marble – I see, thank you. I am kind of with Karl on this one. I think that there is a change that needs to be made kind of along the lines of what Dave was talking about and what Richard was talking about. I think that is the change that needs to be made and I don't know if this is the right change to make.

Gary Nielson – I don't know why you have to get rid of your points if you don't get your first choice. That leaves you never any possibility of drawing your first choice. Roll this a couple years and everyone will have four or five points and I don't think it is going to change anything. I hate to lose points for a second or third choice. Like I said we have already swallowed a bitter pill by just drawing to start with on the deer hunt. It is sure nice to be able to accumulate points to give you a better chance at hunting where you would really like to be. If we go with first choice and continue the preference points I would like to see the preference stay in there. If you get your first choice great, that's what you wanted then your points are gone but if you don't there is still hope that you might in five or six years.

Richard Hansen – What about using only the preference points for your first choice and if you don't draw it, you don't draw it? Your preference points only apply for your first choice?
Lindy Varney – And then your second through fifth are just random? It is something that we can think about. We haven't really talked about that internally.
Richard Hansen – You still have a chance but your first choice is what you are going to have the best opportunity to draw.
Lindy Varney – I want to show you this real quick. This is from 2014, 58 percent drew their first choice so 64,000 people. Only 9,039 people drew their second through fifth choice.

George Holmes – So in 2014 the second choice didn't lose their points.
Lindy Varney – No they did not so there were 9,039 people that did gain a point because they drew out their second through fifth choice.
George Holmes – So that is the status quo.
Lindy Varney – Yes that is the way we have it right now. There were only a little over 2,000 people that already had more points so they bumped up. Most of those 9,000 people were zero point people.

Sarah Flinders – So I think across the board there is a problem with the system we have so it needs to be fixed. I don't know how much time has been spent on alternatives. You brought forward one alternative. Do we have time, do you have time to come up with more because it sounds like the one alternative that you are considering is maybe not as viable as another option. Do you have time to come up with more data, more options and more possibilities?
Lindy Varney – Not for the 2015 drawing, no because we would have to go through the RAC and Board process.
Sarah Flinders – So is it more cost effective, because I'm sure it is costly to change.
Lindy Varney – It wouldn't cost that much because we already do it with our other draws.
Sarah Flinders – But then change back and go forth or is it easier to just stick with what we have now and spend a year developing two or three viable options and then bring it forward.
Lindy Varney – That is definitely and option that you can recommend. Cost wise like I said we do it the way we are proposing with all of our other general season draws. The public came to us and they wanted it to be run like the other draw because they didn't think it was fair for people to draw their second through fifth choice and still earn a permit. With the mule deer plan that has been approved by you and will go to the Wildlife Board in December in it is for us to look at new alternatives and we definitely will be going down that route no matter what to look at what we can do to help with limited entry and general season deer.
Sarah Flinders – I'm not just talking monetary costs. I'm talking about costing people points as well, because that is costly for some people.

Lindy Varney – It can be, yeah.

Gary Nielson – We are talking about the status quo like it is evil. I'm just not seeing that. I like the opportunity to build a better opportunity to draw your first choice. I realize that once in a while somebody gets left out that is true. Most of us have taken a turn doing that but as you accumulate your chances improve and I'm not sure what we are trying to fix.

Richard Hansen – I know a lot of guys who were gaming the system simply because of that. They would put a choice for every one of them knowing that their odds of drawing out there fifth, fourth, third or second choice wasn't that good. And so they knew they would get a preference point and so you begin to get that point creep and then when they get up to where they figure they have a lot better chance they will put it as their first choice with all those points. I don't know how you get away from any of it. It's just going to happen.
Lindy Varney – There are some units that can take that long to draw out.

Kristofer Marble – Can I make a motion to, I guess the proper way to say it is reject this proposal as presented?
Richard Hansen – Will Kris make a proposal for us to vote on how you would like it to be.
Kristofer Marble – Fair enough. I think in this case I would like to propose that we keep it status quo for this year and we ask the Division to come back with other options.

VOTING
Motion was made by Kristofer Marble to keep the point system status quo for this year and ask that the Division explore other options for next year
Seconded by Karl Hirst

George Holmes – I understand the motion, to stay the same. What are the benefits of that? Because that is what we are used to?
Karl Hirst – I would say the benefits are that losing their points is not a good thing. I would prefer that we look at a straight bonus point where you go through all the highest first. People can still game it just like they do the other. I think most people understand that is the system.
Kristofer Marble – The reason why I proposed it that way is that I don't think we should try to fix it here tonight. I don't think this works but trying to figure out another system is going to take more thought than what we can do tonight.
George Holmes – The new proposal is second choice you would lose your points. The status quo is second choice you would not lose your points.

In Favor: Danny Potts, Jacob Steele, Matt Clark, Larry Fitzgerald, Jay Price, George Holmes, Karl Hirst, Sarah Flinders, Timothy Fehr, Kristofer Marble
Opposed: Richard Hansen
Motion passed 10 to 1

Richard Hansen – I just think we ought to do something. We are the RAC board. We ought to make a proposal and say let's change it to this and then let them go and see what happens. Let the Wildlife Board do their job.
George Holmes – Our proposal was that we reject this proposal. I don't know that we have to come up with a new one.

Motion was made by Karl Hirst to go with a straight preference point in which you start with the highest ones and look at all their first choices and then go to the next one and look at all their second choices and the next one and look at third choices and let people set their own draw strategy

George Holmes – So would they lose their points with their second choice?
Karl Hirst – and they only lose their point if they draw their first choice.
Gary Nielson – I know we always compare ourselves to Colorado and Wyoming but we have 30 units and will it still work that way?
Sarah Flinders – Colorado has more units than we do if I am right.
Kristofer Marble – We could probably talk about that for a couple of hours. That is why I didn't make another proposal.

Motion restated
Motion was made by Karl Hirst that the preference point system start with the highest and fill all the first choices and then go to the next. When all of the first choices are filled go to the second choice but you do not lose your point(s) if you draw second through fifth choices
Seconded by Danny Potts

In Favor: Danny Potts, Jacob Steele, Matt Clark, Larry Fitzgerald, Richard Hansen, Karl Hirst, Kristofer Marble
Opposed: Jay Price, George Holmes, Timothy Fehr
Motion passed 7 to 3 one abstention (Sarah Flinders)

8) <u>CWMU Management Plans and Landowner Association Permit Numbers for 2015</u> (Action)

- **Scott McFarlane, Public Wildlife/Private Lands Coordinator**

<u>CWMU</u>

<u>Questions from the RAC</u>
Gary Nielson – Why would they request a variance, what was their season date before they went from September first to November 22nd?
Scott McFarlane – On the bull elk the season date is September first through October 31st. That is general for any of the CWMUs. It is allowed in rule for them to demonstrate a need and request a variance and the reasoning being is a lot of the CWMUs provide wintering areas for elk where elk come in later in the season and that is really the only time they have the best public and private opportunity to hunt these elk.
Gary Nielson – So it would create opportunity for the public as well as their sell tags?
Scott McFarlane – If they choose a November hunt for elk or deer the public has to be allowed the opportunity to hunt at that time. Most of them put in their variance request that this is to increase the public opportunity as well as private.

Jay Price – On the Coyote Little Pole that says it changed the operator. Do you know who the new operator or president of that is?
Covy Jones - I can get that but I don't know right off.
George Holmes – I think it changed Connie used to be the president and now I don't know who is.
Covy Jones – Sorensen development decided to take a more active role in the management of their property and so they appointed the president and the operator. They have the majority of the property and they took a more active role in that.
Jay Price – Is Cummings property included in that.
Covy Jones – I don't believe so.

George Holmes – I don't think so but it could be.
Covy Jones – Dale is saying it is not.
George Holmes – But I think Cummings is the operator under Sorensen's direction I would guess.
Covy Jones – Dave was and Sorensen now appointed a new operator for next year.
Scott McFarlane – I believe Dave Cummings is not involved in the CWMU.
Jay Price - So it's out.

Ken Strong – Is Crab Creek under new management or is that the previous management reapplying?
Dennis Southerland – It is the previous management reapplying.
Ken Strong – Can you keep them straight and honest this time?
Dennis Southerland – I can't, maybe the law dogs can.
Scott McFarlane – I know that Crab Creek has been denied and revoked according to our records but apparently they got everything straightened out because the region recommended approval of their application.

Questions from the Public
Comments from the Public
RAC Discussion

VOTING
Motion was made by Kristofer Marble to approve the CWMU permit numbers as presented
Seconded by Matt Clark
In Favor: all
Opposed:
Motion passed unanimously (10 voting, Timothy Fehr left)

Landowner Association

Questions from the RAC
Larry Fitzgerald – How do you calculate what they qualify for?
Scott McFarlane – In order to qualify for a landowner association to begin with you have to take all of the private lands in the unit and there are two ways to calculate it. We can do it by habitat or just total lands in the unit. Normally what they do is look at habitat. They draw a line and say this is the habitat for the species in the unit and then to qualify for it they have to enroll 51 percent of the private lands to qualify to be in a landowner association. And when they calculate permits they take that percentage of enrolled properties and apply that to the number of permits. So if there were four permits and they had one fourth of the habitat in the unit they would qualify for one of those permits every year. That is the basic calculation and what they do also is if there are some unique circumstances like there is higher use on the private lands then they can go through a formula to justify more permits.
Larry Fitzgerald – So you don't take into consideration the water year or the moisture and how much grass grows.
Scott McFarlane - That would be on the entire unit calculation. Say if there are 10 permits in the limited entry unit that were allocated to that unit and the landowner association qualified for 20 of those the adjustment would be made in the entire number of permits that were allocated for the unit but there is no adjustment that way. I'm not sure what you mean on that.
Covy Jones – So more specifically on the Vernon the landowners there have 14 percent of the habitat so they get 14 percent of the permits and we increased the permits last year and that is why they went up too. So as we have better habitat or better years and increase general season permits and have better buck to doe ratios then they start to see that increase as well. It is

possible that we could get to at some point 35, the amount they are requesting if the trend continues upward.
Scott McFarlane – I'm not sure what you were getting at but if there is a drought it would encompass the whole unit and not just the public or private lands in it.

Questions from the Public
Ryan Cowley – I am curious why units such as the Nebo and Wasatch and Manti don't have a landowner association
Scott McFarlane – If they qualify they would have to apply for them so I don't know. If they can get the correct percentage of the landowners together and put it into an association they would absolutely qualify. It's up to them to do it.
Covy Jones – Larger units with more private lands have a hard time getting the 51 percent. The units you just mentioned have more land and more private land and more private landowners and so they just have to get together and as the rule states now get that minimum percentage.
Ryan Cowley – So on units like the Vernon and some of the others that have less landowners or private land it seems like it is easier for them to qualify so is that fair and equitable for these other units landowners that have possibly thousands of landowners?
Scott McFarlane – The whole key to it is being able to get everybody together. Diamond Mountain for example put together 100 percent of the private landowners in the unit to create the Diamond Mountain landowner association. I don't know the public private land ratios in those units but that is the way the rule is set up so if they qualify, they qualify.

Comments from the Public
RAC Discussion

VOTING
Motion was made by Larry Fitzgerald to accept the landowner association recommendations as presented
Seconded by George Holmes
In Favor: All
Opposed:
Motion passed unanimously

9) Landowner Permit Rule Amendments R657-43 (New permit type) (Action)
- **Scott McFarlane, Public Wildlife/Private Lands Coordinator**

Questions from the RAC
Larry Fitzgerald – So if you get landowner permit for deer do you have to let the public on to your property.
Scott McFarlane – What it says is if you receive a permit for your property and you redeem that permit you have to let an equal number of people onto your property.
George Holmes – Do you get to choose the equal number of people?
Scott McFarlane – If you had two permits you have to let two members of the public on.
George Holmes – I understand that but can you choose the two that come?
Scott McFarlane – I is supposed to be on a first come first serve basis.
George Holmes – My first view of this as a landowner is it's a crock of shit. What did it start out being called, a landowner appreciation program?
Scott McFarlane – That is separate from the landowner appreciation permit. This is the landowner association.
George Holmes – What was the appreciation part?

Scott McFarlane – This is like the Vernon unit. If they have 30 landowners that have one permit the landowner has to allow one person onto his property, a public person who has a permit for that unit.
George Holmes – I don't mean to editorialize but I guess I'm going to. In our area there is no such thing as migratory deer, they are resident.
Scott McFarlane – Well, that is going to be left up to the region to make a determination on that.
Covy Jones – So on that one, on the landowner appreciation permits you would be eligible for a permit and it has nothing to do with allowing public access to your property.

Larry Fitzgerald – Can this be expanded to say antelope?
Scott McFarlane – Right now it is just for deer but that is absolutely a possibility. I apologize. I probably didn't break that out clear enough. The landowner appreciation permit is a separate program than the limited entry landowner association program. What the changes were to the rule to the landowner association program that requires public access to be able to access the limited entry landowner association property. The landowner appreciation permit is basically a permit that we are offering to the landowner if they provide habitat for migratory deer. We don't really want to target resident deer because we don't want to encourage deer to live year round on people's fields and it allows the landowner to get one permit a year and they don't have to go through the draw process.
George Holmes – Are these either sex?
Scott McFarlane – No, it is a general season buck permit. You would choose your season.

Questions from the Public

Comments from the Public
Ben Lowder – Where did the idea for the landowner appreciation permit come from? Scott McFarlane – It started mainly in the southern region where it is really hard to draw tags. There are landowners there who said it didn't seem fair that they feed all these deer and provide a lot of habitat for deer but don't have 640 acres to qualify for a permit. They asked if there was a way we could compensate the smaller landowners in some way to make them feel better about providing habitat and contribute to the deer population.
Ben Lowder – The reason I ask is on the mule deer committee we discussed some similar ideas and I am wondering if any of that discussion played into that or not.
Scott McFarlane – No, the discussion on this has been going on for at least three years that I know of. It falls in line with the mule deer plan to look for ways to compensate and encourage landowners to provide habitat for mule deer.
Ben Lowder – It does and the reason I bring it up is our discussions on the mule deer committee stemmed from our Wildlife Board representative from the southern region. Steve Dalton, his concern was to address landowners that are eligible for landowner tags but in the rule they can't sell them and they have no desire to hunt and so there is really no value to them. I just wanted to make sure that this wasn't coming from that discussion because if it was we have missed the point there but it doesn't sound like that is the case.
Scott McFarlane – The original intent of this when it was presented to us several years ago was that we have smaller landowners who would like to hunt but they have to wait two or three years to draw a permit and in appreciation for them providing that habitat we would like to compensate them or at least allow them or their family member to have that permit without having to go through the draw process.

Larry Fitzgerald – Could you clarify something for me, say in the Vernon if someone gets one landowner tag they have to let one public person go on their ground?
Scott McFarlane – That is correct if someone requests to go on their ground.
George Holmes – That is if it is a landowner association.

Scott McFarlane – If it is a landowner association, right. The landowner appreciation permit doesn't require you to allow a public hunter on.
Larry Fitzgerald – I just wanted to clarify. There is a lot of posted ground out there and they aren't going to open it up to everybody but I think they would be okay with one person.
Scott McFarlane - There were some misinterpretations of the rule. For example if they had 30 permits and all the deer were on one landowners property or the majority of them or the biggest deer or something like that the potential to have all those people come on a single landowners property would be there. The equal number would be 30 permits to go onto that single landowner's property. It was a way to attempt to distribute hunters a little bit more fairly and evenly.
Larry Fitzgerald – There have been issued with deer in hay fields. The landowner has it posted so how does he say which one hunter he lets on his property?
Scott McFarlane – Well it needs to be a fair process and if the one that he picks is the first one that request it. This all has to go through the landowner association president. That is the main contact for a landowner association. He would provide what lands are available. It would have to be a fair basis.
Tom Becker – I wouldn't come to me because I wouldn't know who got tags. The landowner association president would have that.
Larry Fitzgerald – Do you think Gowns is going to let someone off the street go into his hay field?
Tom Becker – Well if he gets the tag that is the obligation that he makes by being in the landowner association.
Scott McFarlane – That is and that is why we have put the book keeping requirement on that because currently there is no way to track.
Larry Fitzgerald - None of my ground is posted and I let people on.
Tom Becker – Most people do.
Larry Fitzgerald – So how about I take two or three and protect the guys that have hay fields?
Tom Becker – The hay fields are hunting by permission only any way so if he gives one person permission…
Larry Fitzgerald – I am sure Gowns will address this.
Tom Becker – That is something he will have to address but that has been in the rule as long as I can remember.
Scott McFarlane – And it has been applied that way hasn't it.
Tom Becker – Yes. That has been my interpretation of the rule but we have never had any real issues with it on the Vernon that I am aware of.
Larry Fitzgerald - There have been a lot of issues in the hay fields.
Scott McFarlane – To my knowledge at least in Salt Lake we haven't had the complaints to deal with and I don't know if they have come into the region but with the book keeping obligations at least we have an avenue to see if they were allocated out fairly.

Garrick Hall – Utah Farm Bureau – I just wanted to speak in favor of the landowner appreciation tags. It has been mentioned several times the value of private land to the wildlife herds and really this is just a simple thing we can do to show some appreciation and some compensation for the feed and the habitat that these private landowners are giving to the wildlife. We are very much in favor of this and would ask for your support. Thank you.
Mike Christensen – This goes along the same line as your concerns. From the public hunters standpoint the landowner association is a privilege for being a landowner. We own a ranch but we are not in a landowner association because the unit we are in doesn't qualify because of other issues. The problem occurs in the first line on that second to last page when we are changing the wording from access to the landowner association's private lands to the landowner who holds the vouchers private lands. The problem occurs when, I understand there are hay fields and there are issues like that but what happens when the public guy drew the tag and he is supposed to be

allowed to access private lands but you have the guy who owns 150 acres down in the river bottom and he only qualifies for a tag every five years by the landowner association's rule and then that public hunter gets to go hunt the 150 acres down where there is no deer. Like was stated before all the deer could be on one piece of private land so that is where the hunters are going to go. So what are you going to do, put all the public hunters onto the other lands where there are no deer? The system is rife to be abused. We can all see that. If my buddy drew then hey come over and hunt my land but that guy can't because he doesn't know you. This is a horrible system because it leaves it in the hands of men who aren't horrible people but they are people right. Larry doesn't know me and if I call him up, I think it is awesome that you open your lands, but if I called you up and you had your lands closed and I said I wanted to come hunting there but you know Richard really well and he has a tag too then you would just say you have already given it out to Richard. The whole system was set up so the public hunter could hunt the lands within the landowner association and the landowners have the privilege to say yes I want to be part of that system or no I don't. I would hope that you don't vote to change it to the landowners private land and make some public hunter hunt some tiny piece of winter range that doesn't even have deer on it and that landowner only gets his tag every two or three or five years. There are guys in here and I was going to use them as examples that only get a permit every two or three or four or five years and they don't have deer on their place during the deer hunt but this says that the public hunter gets to hunt that place with no deer on it. Not a fair system.

Ryan Cowley – Thanks for the opportunity. Going back to the landowner permit association rule and the Nebo unit, the Wasatch and the Manti it is nearly impossible for a landowner association to be formed there just because of how many landowners there are and how much private land there is. I wonder if you could recommend to the Board to ask the Division to amending that permit rule to make it reasonably possible for a landowner association to be formed on units such as Nebo, Wasatch and Manti especially if the Sanpete thing is going away there is going to be a lot of mad property owners. Thank you.

RAC Discussion

VOTING
Motion was made by George Holmes to recommend that the rule be adopted
Seconded by Richard Hansen
In Favor: 7
Opposed: 3
Motion passed 7 to 3

Mike Christensen – Aren't you going to address what he asked you to address, you usually do?
Gary Nielson – How would you suggest you modify it? Are you talking less acreage?
George Holmes – What was the minimum acreage for a landowner association?
Scott McFarlane – 640 acres is for a general landowner permit.
Covy Jones – It is 51 percent of the private land in the unit. There is no minimum acreage.
George Holmes – And are you asking for Springville to be a landowners association? I don't understand what you are asking for.
Larry Fitzgerald – He wants to form a landowners association but for example in Wasatch it would be impossible to get 51 percent of the landowners of the entire unit. I thought about it where they have divided it up in to 30 units if they could get 51 percent in one of the 30 units instead of the whole central.
George Holmes – Basically what that made it is it made it easier because there are more units.
Scott McFarlane – This is just for limited entry units.
Larry Fitzgerald – But it hasn't been addressed since you went to the 30 units where they are all limited entry now.

Tom Becker – That is where the landowner permits and the landowner appreciation permits come in. That is what we are trying to provide in those units.
Larry Fitzgerald – So this gentleman could apply for one of those?
Ryan Cowley – This has more to do with the elk because general deer for Wasatch and Manti is general. We are talking about limited entry.
Tom Becker – He is talking about limited entry
Larry Fitzgerald – Can I make another motion that we include elk, antelope and deer?
Tom Becker – There are landowner associations for elk and deer and antelope.
Larry Fitzgerald – But for the landowner appreciation permits.
Tom Becker – That is just for general season deer.
Larry Fitzgerald – But could I make a recommendation that we include elk and antelope?
Tom Becker – Those aren't general units. Those are limited entry and would fall under a landowner association not the landowner appreciated permit.
Ryan Cowley – I am not asking for a decision or to come up with the best thing tonight because it is going to take some thinking how this is going to work.
Tom Becker – The hardest part I found dealing with associations when you are talking about a limited unit is the number of landowners and the agreement that they have to make when it comes to the bylaws and how they distribute permits. We used to have for instance an elk landowner association on the Oquirrhs but when it came right down to it that had to be dissolved because nobody could get the landowners together for the signatures or they couldn't agree on how the permits were distributed and so it failed. When you are talking about the Wasatch or any of these other bigger units that is pretty much impossibility. The Vernon is even difficult to do even though it's got 50 landowners.
Larry Fitzgerald – Around 30 to qualify.
Tom Becker – It's a task to get all the signatures and get everyone agreeing on the bylaws. It's been working but for a few years no one wanted to deal with it. When you talk about big units like the Wasatch and you are talking about a valuable tag like a bull tag I would say it would be pretty hard to design something that would work.

Sarah Flinders – If it is big enough why can't you toss around the idea of breaking it up?
Ryan Cowley – You could do it now with those units but within those units there could be thousands of landowners.
Sarah Flinders – So in one unit you could divide it into subunits.

Covy Jones – The way the rule is written right now is it is only for limited entry and you have to have 51 percent of the private land in the unit sign up and on the big units it's tough.
Tom Becker –And its elk habitat so you wouldn't include city limits, we carve those out. It is still a monumental task. The advantage for a landowner association was to give the landowner an opportunity to hunt the unit in his backyard which would be hard to draw a tag for. Some of these permits have become very valuable. They don't necessarily want to hunt their backyard when they can get four or five thousand dollars for that tag. It is a trade off. They can hunt the whole unit and not just their private land or they can sell the tag for the going rate. It would be pretty difficult to do on the bigger units under the current plan I don't know how you would ever do it.

Gary Nielson – Mike brought this back in, have you got a solution?
Mike Christensen – I can't believe the RAC won't give somebody the time of day on their opinion. That is why I brought it back. It is his proposal. I understand where he is coming from. Is it fair that a guy who owns ground out on the Vernon gets to sell a deer tag for seven grand and a guy on the Wasatch doesn't? It affects George and Jay too.

Jay Price – There are enough landowners there it would take us 50 years to get one.

Mike Christensen – That is the question, how do you make that fair and equitable?
Jay Price – You don't, that's just part of life. You can't address it.

Scott McFarlane – It's hard to do something that will accommodate everybody so we try to do the best we can.
Tom Becker – I don't know if we anticipated that the cost for these tags would be what they are. We thought the landowners would want to hunt it but as the demand went up higher and higher the vouchers became valuable and the money kind of out competed the interest in going hunting. I don't know what would happen if you cut off the voucher system to the landowner association but gave them the opportunity to hunt the whole unit. I don't know how many people would be enrolled in it.

George Holmes – Are the vouchers on Vernon for buck deer?
Tom Becker – Yes.
Scott McFarlane – If there is a limited entry unit for buck deer, bull elk or buck pronghorn is what the system is for. Maybe one clarification might help. If a landowner association takes the permits and sells those and divides the money among the landowner association members than all of the landowner association properties are open on it.
Mike Christensen – Please don't address me on it. It's not my idea, it's his. The only reason I said that was the man got up and presented an idea to the RAC and the RAC didn't address his idea and when the RAC doesn't do that the public looses faith in it. It's not my idea.
Scott McFarlane – Okay, I was just addressing your comment so thanks.

Gary Nielson – I'm not sure how to make a proposal. I can see the need but I don't know quite how to remedy it.

Matt Clark – He understands that it is not something we are going to remedy, he said that himself. We have listened to him and we can go back and see if we can come up with a change. That is all he asked.

Gary Nielson – Okay. When this comes up in Board meeting I will mention your concern that there needs to be another potential avenue for something.

Meeting adjourned at 10:30 p.m.
45 in attendance
Next board meeting December 1st at the DNR boardroom, Salt Lake
Next RAC meeting December 2nd at Springville Civic Center

GARY R. HERBERT
Governor
SPENCER J COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Wildlife Resources
GREGORY J SHEEHAN
Division Director

M E M O R A N D U M

DATE: **November 13, 2014**

TO: **Utah Wildlife Board**

FROM: **Staci Coons, Chair**
Certification Review Committee

RE: **Variance Request from Stefanie Bates of iGroEco, LLC for the commercial use of Red tilapia.**

The Certification Review Committee met October 6, 2014, to discuss the above-mentioned variance request to Rule R657-3, for the commercial use of Red tilapia in aquaculture systems.

Members of the committee in attendance were: Scott McFarlane for Bill Bates, Wildlife Section Chief; Roger Wilson, Aquatic Section Chief; Kenny Johnson, Administrative Services Chief; Rick Olsen for Tony Wood, Law Enforcement Chief; Anna Forest for the State Veterinarian, Suzanne McMullin, COR Licensing Specialist; Krissy Wilson, Aquatics; Brad Baird, EDC Utah; Stefani Bates, iGroEco, LLC; Dee Bates, Green Earth Global; and Staci Coons, Administrative Rules Coordinator.

ANALYSIS

The committee evaluated the merits of the request based on the criteria established by the Wildlife Board in R657-3. Based upon the criteria established by the Wildlife Board, the analyses and recommendations of the committee are as follows:

1. **The health, welfare, and safety of the public** - The committee expressed no concerns over health, welfare, and safety of the public.

2. **The health, welfare, safety and genetic integrity of wildlife, domestic livestock, poultry and other animals -** The committee did have some concerns with possible impacts if escapement occurred. iGroEco has committed to following security measures to ensure tilapia would not be placed outside the facility. The committee is recommending the facility be inspected by both the Department of Agriculture and Division of Wildlife Resources on an annual basis.

3. **The ecological and environmental impacts -** The committee has no concerns with ecological or environmental impacts as long as the security measures are being followed.

4. **The suitability of the facilities** - The committee had no concerns with the suitability of the proposed facilities. However, since the facilities have not yet been constructed the committee is asking that inspections be done by the Department of Agriculture once the facilities are operational.

5. **Experience of the applicant for the proposed activity** - The committee expressed no concerns with the level of experience or education of the applicant for this proposed project.

6. **The ecological and environmental impacts on other states** - The committee had no significant concerns with impacts of this request on other states.

RECOMMENDATIONS

The committee, after careful evaluation, recommends that the request be approved with the following stipulations:

1. The committee recommends that the facility be inspected by the Dept. of Agriculture and the Division of Wildlife Resources upon completion.

2. The committee recommends that Stefani Bates provide the division with a detailed map including all springs, creeks and topography as well as the location and design of the aquaculture facility.

3. The committee recommends that all tilapia must be sold as dead.

4. The committee recommends that the Certificate of Registration issued to Ms. Stefani Bates is not transferable and cannot be sold with her business.

cc: Certification Review Committee Members
Stefani Bates, iGroEco, LLC

Stipulations for Tilapia Variance Requests in Utah

Tilapia is the common name for nearly one hundred species of cichlid fish native to Africa and the Middle East. Tilapia have been identified as one of the top 100 most invasive species groups in the world. Because of their high reproductive rate, propensity to exist in high densities, omnivorous diet, tolerance for marginal water quality, and the lower trophic level which they occupy, Tilapia pose a significant threat to sport and native fish populations in warm water habitats in Utah. Blue Tilapia (*Oreochromis aureus)* can survive in temperatures as low as 45^{o} , a winter temperature commonly found in desert regions of Utah or in warm springs.
Under Rule R657-3-23(30), Tilapia are classified as prohibited for collection, importation, and possession in Utah. Therefore, a variance issued by the Certification Review Committee is necessary for an individual to collect, import, possess, or propagate Tilapia in this state (Rule R657-3-36).
The UDWR Aquatic Section provides the following recommendations for the Certification Review Committee to consider in evaluating requests for variances involving Tilapia aquaculture or aquaponics operations in Utah.

1. Live Tilapia may not be transferred from approved facilities and operators may not sell live fish.
2. Persons requesting a variance for Tilapia aquaculture must submit a business/operational plan to the UDWR (See attached form).
3. Tilapia operations will not be approved within the 100 year flood plain in the following drainages:
    a. Green River
    b. Colorado River
    c. San Juan River
4. Tilapia operations will not be approved within the following drainages:
    a. Virgin River Drainage
    b. Portions of the Provo River Drainage (See map for restricted areas)
5. The species of Tilapia brought into an aquaculture facility must be pre-approved by the UDWR. The fish must have species and disease certification completed before delivery.
6. Tilapia must be delivered directly to the applicant's facility. Transporting vehicles may not stop at any waterway while in possession of Tilapia. Water from the transporting vehicle must not be drained, released, or exchanged into any waterway.
7. Only indoor recirculation aquaculture systems will be approved. Effluent must flow into a sewer or septic system (septic system may have a gravel leach field as part of septic system) where there is no connection to a waterway (streams, springs, ditches, lakes, etc). The facility will be a self contained recirculation operation.
8. Operators must acquire a performance bond to establish financial responsibility for state reclamation efforts if it becomes necessary for the UDWR to restore sport fish and/or native species to potentially affected drainages.
9. The UDWR reserves the right to deny any COR applications if sensitive native species may be negatively impacted, or if any of the stipulations above are not met.

Management/Operational Plan
For
Tilapia Aquaponics/Aquaculture Facility

Introduction

All questions must be answered completely and all accompanying information must be provided.

Please provide information on the company/facility/individuals that will oversee the management and responsibilities of the facility, including contact information. Please indicate fish culture experience and attach resume(s).

- iGroEco, LLC
- Steel, foam, and concrete facilities (GroHouse)
- Stefanie Bates: President/CEO (no first hand fish culture experience, however, resources with experience will be hired)

*Resume attached as PDF

  - Email: sbatesgeag@gmail.com
  - Phone: 801-718-9722
  - Address: 10178 National Place, South Jordan, UT 84095

Identify source of the Tilapia including contact information? Tilapia must be certified disease free. Tilapia must be delivered directly to the facility. Live Tilapia may not leave the facility.

- White Brook Tilapia Farm- Smithville Missouri
  - Website: tilapiasource.com
  - Phone: 816-866-1172
  - Fax: 206-424-4695
  - Email: info@tilapiasource.com

*Latest Fish Health Inspection Report attached as PDF

Please describe the strain/species of Tilapia to be managed. Blue Tilapia or mixed lots of this species are not permitted to be cultured in the State of Utah.

- Red Nile tilapia (*Oreochromis niloticus*) species will be managed.

Does the source verify the species provided

- Yes, the source does verify the species provided.

Provide a description of what water temperature requirements they need to survive and reproduce.

Thermo Tolerance

- Wilson et al. 2009 found that tilapia generally survived sustained temperatures over 12°C (53.6°F). Survival rate was mediated by the rate of decrease in temperature.
- Tilapia (*Oreochromis sp.*) can be found in Florida, Alabama, and Texas. However, Alabama winters do not allow the survival of most populations (GSMFC 2003).
- Tilapia more likely to establish populations in tropical and coastal areas in North and South America (Zambrano et al. 2011)
- Grammer et al. 2012 surveyed mean daily winter water temperatures (December – February) from 2004 – 2010 in coastal Mississippi and found minimal lethal

temperatures <10°C (<50°F) 11% of the time, attesting to the adaptability of Nile tilapia as an invasive species.

- Schofield et al. 2011 found that Nile tilapia can invade coastal areas beyond point of introduction. Successful invasion is subject to two caveats: (1) wintertime survival depends on finding thermal refugia (14°C), and (2) reproduction is hampered in regions where salinities are >30 ppm.
- Most tilapia species unable to survive at temperatures below 50°F (Lutz 2012).
- Incidence of disease was higher when water temperatures dropped below 22° C and death occurred to some fish at temperatures below 16° C (Watanabe et al. 1997)

Tilapia Optimum Water Quality Ranges

- pH 5-11
- D.O. <1 ppm
- Ammonia 2.4 – 3.4 ppm
- Optimum temperature 28°C (82.4°F)
    - Range 72-85°F
- Salinity 5-10 ppm (Chervinski, 1982; Watanabe et al. 1997; Watanabe et al. 2002)

Water Quality Parameter for a Cool and Warm Water Species

Parameter	Tilapia	Trout
Temperature °C	24 to 30	10 to 18
Oxygen, ppm	4 to 6	6 to 8
Oxygen partial pressure, mm Hg	90	90
CO_2, ppm	30 to 50	20 to 30
Total Suspended Solids ppm	<20	<10
Total Ammonia – N ppm	<3	<1
NH_3-N, ppm	<0.06	<0.02
Nitrite-N, ppm	<1	<0.1
Chloride, ppm	>200	>200

(Timmons and Ebeling 2007)

Provide diet information for the Tilapia

- Fish will be fed with formulas specific for tilapia supplied from Skretting USA, Tooele UT. These formulas include Pond LE, Starter Crumble, Classic Fry, and Oncor Fry.

Describe how they reproduce (nesters, broadcaster, live young, etc.).

- Red tilapia are nesters, once fertilization takes place the females employ mouth brooding.

Are they fertile or sterile? Yes___No_____

- Fish imported into the state will be fertile. Fingerlings will be exposed to feed induced with 17α-methyltestosterone for mono-sex production. A population of fingerlings will not be exposed to the hormone, and raised in separate tanks for an in-house breeding program. Thus, ensuring fry cohorts for future production.

How will sterility be verified?

- We will have a random sample size of the Tilapia tested by a reputable source, to ensure sterility has been achieved.

Describe the existing/current/future market for Tilapia from your facility.

Economic Importance

- In 2011, global aquaculture production alone (66 million tons) surpassed global beef production (63 million tons) for the first time in world history (EPI 2013).
- Tilapia ranked 4th on the top 10 consumed fish species list in 2012 with 1.476 lbs. consumed per capita within the United States (NMRS 2014). Tilapia trails behind shrimp, tuna, and salmon.
- As of 2005, 156 farms in the U.S. cultured tilapia, reporting total sales of $31.3 million. Idaho reported over $1.5 million in sales from seven farms (USDA Census of Aquaculture 2005; Lutz 2012)
- 2010 global production of tilapia 7.7 billion pounds.
- U.S. single largest importer of tilapia importing 183,295 tonnes of tilapia products in 2009, valued at $696.1 million (ERS 2010; Mjoun and Rosentrater 2010).
- Imports have steadily grown over the past decades, since consumers are becoming more familiar with the product and its adaptability in North American culinary preferences.
- Profitability is always a major concern when considering a recirculating aquaculture system. RAS are expensive to construct and operate, and profitability often depends on servicing markets for fish such as tilapia (whole fish on ice) (Timmons and Ebeling 2007).
- Tilapia suppliers in surrounding states have stated that there is a high demand for fresh wholesale tilapia on ice. Especially within Salt Lake City. Due to current laws and regulations these suppliers are not able to transport fish across state lines. *Aquarius Fish Co. – Salt Lake City, UT stated they are interested in iGroEco tilapia sales and would like to discuss production further (owner) once species selection and production estimates are finalized.

Please describe your bookkeeping process to account for Tilapia acquired, held, produced and marketed.

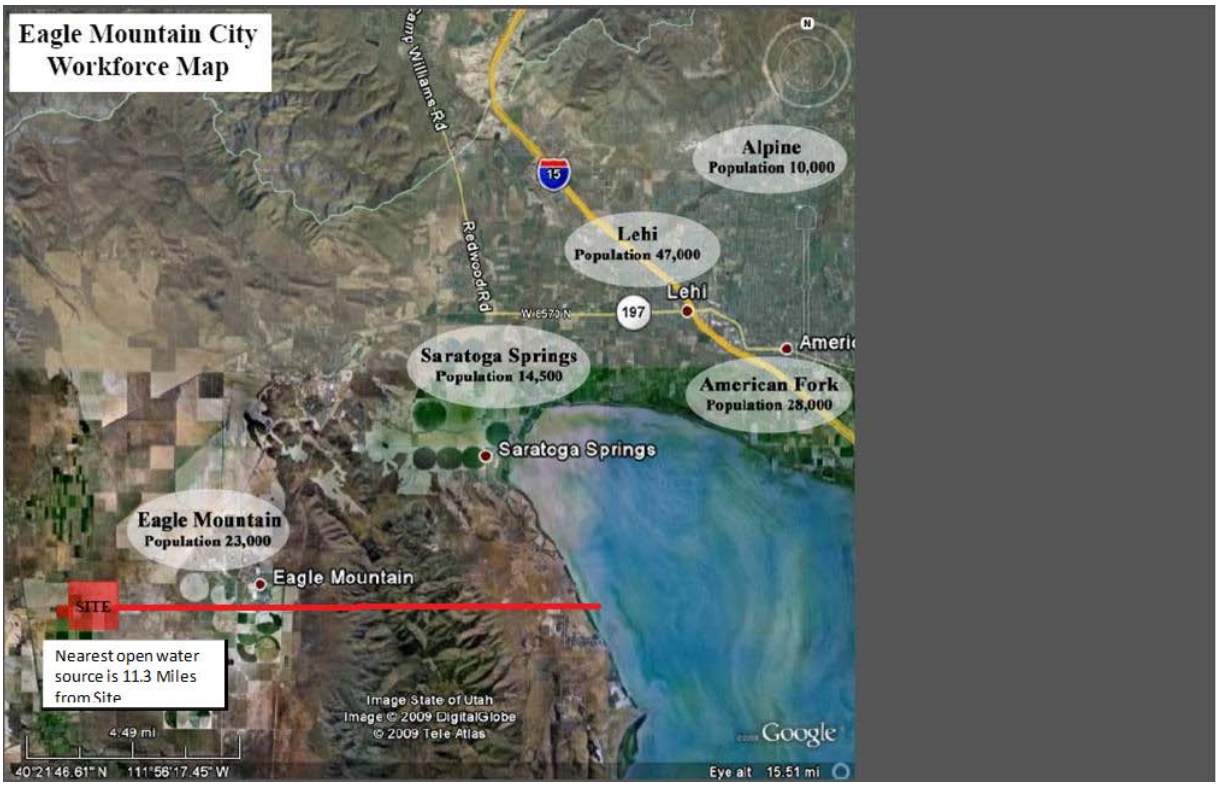
- Fish will be accounted for during daily operations, random sampling, grading, harvest, reproduction, and mortality. Data will be collected consistently and organized in hard copy form, and in excel files. Forms can be found in the Appendix (forms are subject to change).

Describe the proposed location for the facility (flood risk, earthquakes, proximity to waterways, UTM coordinates, nearest city or town, etc). Are there warm water springs, rivers, and lakes in the vicinity)?

Yes___No_X_ Please provide a Google map of the area.

- The proposed location is Eagle Mountain, UT for our farm (multiple GroHouses). The location is approximately 11.3 miles straight through to the nearest open source of water (Utah Lake). To our knowledge, there are no flood risks in the area. There

are no warm water springs or rivers located near the location (see Eagle Mountain City Workforce Map below).



- A Preliminary Geotechnical study performed by Earthtec Testing and Engineering, P.C. concluded that no faults are mapped in the vicinity of the site, and no evidence of faulting was observed during field explorations. The nearest mapped fault traces are part of the Mercer fault zone and are located approximately 9 miles west of the site. The site is located in an area mapped by the Utah Geological Survey a having very low liquefaction potential. The soils must be saturated for liquefaction to occur. Loose, saturated sands are more susceptible to liquefaction, but soft, sensitive silt soils also have the potential to experience failure and movement during a seismic event. Mostly clay soils and/or unsaturated conditions that were found in the test pits, in Earthtec's opinion, support the very low liquefaction potential designation.

Facility Design

Describe your water supply and water rights (please include water temperatures and water chemistry).

- Find water quality reports as an attachment in the Appendix.

Describe management procedures to ensure Tilapia cannot escape (chemical treatment, effluent must be to a sewer or septic system (gravel leach field as part of the septic system))?

- Effluent will be held in mineralization tanks for the repurpose/conservation of water. Once the solids have settled they will be composted. As the solids undergo

decomposition by microorganisms, nutrients that are essential to the plant growth will be released into the water, creating mineralization, which is the very essence of plant growth. We won't remove all the solids from the mineralization tanks, however, the excess solids that do need to be removed will be disposed of into municipal sewer lines and it will not be disposed of into any open waterways.

- Fish also will not have direct access to sewer lines, and as a precaution, screens (µ) will be placed on output water plumbing to ensure fish will not be able to escape.

Will the facility be indoors? Yes_X_ No__

- Self-contained indoor bio-secure facility, with a surrounding property fence and GroHouse Manager living on site (or security personnel).

If the facility is outdoors it must be covered.

Will it be a solid cover? Yes_X_ No__

Will it be a netted cover? Yes__ No_X_

Will the fish be held in raceways? Yes__ No_X__

Circle tanks? Yes_X_ No__

- Circular polyethylene and fiberglass tanks in a recirculating aquaculture system accompanied with hydroponic components.

Earthen ponds Yes__ No_X_

Will the fish be held in other types of holding containers? (please describe)

- Circular polyethylene and fiberglass tanks in a recirculating aquaculture system accompanied with hydroponic components.

How many brood fish will be held on station?

- Approximately 25 per GroHouse

What is your expected production in pounds? What are your expected sales in dollars?

- Approximately 600 lbs. of market size tilapia will be produced every 4 weeks (per GroHouse). Annually 7,817.5 lbs. of tilapia will be produced at a wholesale price of $2.30, which equals $17,980.25 per GroHouse/Year. Market prices are expected to increase as we will also focus on premium markets.

Company/Facility Exit Strategy

Please describe plans to dispose of Tilapia if the facility is closed?

1. **Transfer of ownership**
    . Transfer of ownership is not likely to happen with iGroEco. If ownership change does happen, the same precautions and Best Aquaculture Practices (BAP) will be utilized. No live tilapia will leave the facilities. Tilapia will not be abandoned under any circumstances.

2. **Transfer of responsibility**
    . Training will take place for the transfer of responsibilities. Secondly, meetings with state officials will be conducted for the update and review of the operation.

Ecological Damage Assurances

Tilapia has been identified as one of the top 100 most invasive species in the world. If Tilapia escape from this facility and cause damage to native or sportfish populations or their habitats, it will be your responsibility to restore the damage incurred as a result of the escapement. Please describe your restoration plan to ensure full recovery of adjacent areas and habitats to include financial bonding, participation in chemical treatments, and fisheries restoration, and any other actions you will take to prevent escapement and to address impacts.

1. **Financial bonding**
2. **Financial responsibility for chemical treatments and fisheries restoration**
3. **Any other actions to prevent escapement or address impact**
    . An Environmental Pollution Liability policy, to which funds will be accessible to state wildlife agencies, will be in place for restoration and wildlife management in the case of tilapia escapement into local ecosystems. A sample application can be found in the Appendix.

a. No live market size tilapia will be allowed out of our GroHouse facilities. Tilapia will be harvested and sold "whole pond side on ice". With the addition of new GroHouses, fingerlings will be transported in sealed and locked coolers to populate new facilities.
    i. State wildlife officials will be notified before the transportation takes place.
    ii. A count of fingerlings transported will be recorded.
    iii. At least 2 individuals (1 manager) will securely transport fingerlings directly to a new facility.
    iv. Said individuals will be equipped with flags/markers, 5 meter sewing tape, fish net, and plastic Ziploc bags.
    v. Transportation will take place solely on the property of iGroEco, LLC, and fingerlings will not be permitted to leave the property.
    vi. Once the transportation is successful state wildlife officials will be notified.
        1. In an unlikely event that the transportation cooler is compromised (broken and exposing fingerlings), individuals will place a flag/marker where the cooler or fingerlings have made contact with the ground (epicenter).
        2. The cooler will be set down and will not be allowed to move.
        3. All fish in the cooler will immediately be placed in bags and counted.
        4. Any visible fingerling/s on the ground will be immediately placed in plastic Ziploc bags.
        5. Visual assessments will be taken and recorded at 1 meter in all directions from the epicenter of escapement (up to 5 meters with each meter being marked North, South, East, and West). All visible fish will be removed and placed in the bags.

6. A count of fingerlings in Ziploc bags will be recorded.
7. State wildlife officials will be immediately notified.
8. If all fingerlings are not accounted for, then a suitable euthanasia agent will be heavily sprayed over the contaminated area, or suggested management actions approved by the state will be utilized.

If not done properly, Aquaponics ventures using Tilapia may be prohibited in the future.

UDWR must be notified IMMEDIATELY by the COR holder if escapement occurs.

All Certificates of Registration (COR) are non-transferable. In the event the facility is sold or transferred to a different entity, the new owner must apply for a new COR. The existing COR becomes invalid.

Please describe other pertinent facts relating to your proposed Tilapia operation.

- The facility is a fully enclosed, climate controlled, bio-secure structure. The only transfer of live fish will occur between buildings at the Eagle Mountain site. We are open to inspections of the DWR at any time.

Stefanie Bates
Facility Owner Signature

Appendix

WATER QUALITY CHART										
YEAR			MONTH							
			OXYGEN							
TEMPERATURE			Entering System	Entering Tank	Leaving Tank	Tank No.	Time of Day		Daily Rainfall	Barometric Pressure
DAY	Air	Water in Tank					A.M.	A.M.		
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
Average										

TANK CALIBRATIONS			**DATE**		
TANK #	1ST	2ND	3RD	AVERAGE	300/AVERAGE=GPM

TANK CALIBRATIONS			**DATE**		
TANK #	1ST	2ND	3RD	AVERAGE	300/AVERAGE=GPM

TANK CALIBRATIONS			**DATE**		
TANK #	1ST	2ND	3RD	AVERAGE	300/AVERAGE=GPM

MONTHLY FISH HANDLING - For use when sampling, grading, or moving fish in or out of the tank.

MONTH										
TANK NO.										
			SUBSAMPLE....				TOTAL TANK....			
Date	Activity	To...	Pounds	Number	No./lb.	Length	Pounds	Number	No./Lb.	Length

DAILY FISH PRODUCTION REPORT

	Monthly Totals	No. of lbs.	No. of fish	Size
MONTH	Beginning			
YEAR	End			
TANK NUMBER	Net			

DAY	FEED	FEED	SAMPLE			FISH IN		TANK	FISH OUT		TANK	FISH SELL		MORTALITY	
	FED	SIZE	POUNDS	NO.	SIZE	POUNDS	NO.	NO.	POUNDS	NO.	NO.	LBS	NO.	LBS.	NO.
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
26															
27															
28															
29															
30															
31															
TOTAL															

MONTHLY Totals/Averages
Month

TANK NO.	1	2	3	4	5	6	7	8	9	10	TOTAL/AVERAGE
Beginning of the Month											
Pounds											
Number											
No./lb.											
Size											
End of the Month											
Pounds											
Number											
No./lb.											
Size											
Net											
Pounds											
Number											
No./lb.											
Size											
Fish In											
Pounds											
Number											
Fish Out											
Pounds											
Number											
Fish Sold											
Pounds											
Number											
Mortality											
Pounds											
Number											
Feed											
Pounds											
Feed Conversion											

Mortality Reference Table

Inches	Pounds	Inches	Pounds	Inches	Pounds
1	0.000	6	0.106	10.875	0.632
1.125	0.001	6.125	0.113	11	0.654
1.25	0.001	6.25	0.120	11.125	0.677
1.375	0.001	6.375	0.127	11.375	0.723
1.5	0.002	6.5	0.135	11.5	0.747
1.625	0.002	6.625	0.143	11.625	0.772
1.75	0.003	6.75	0.151	11.75	0.797
1.875	0.003	6.875	0.160	11.875	0.823
2	0.004	7	0.169	12	0.849
2.125	0.005	7.125	0.178	12.125	0.876
2.25	0.006	7.25	0.187	12.25	0.903
2.375	0.007	7.375	0.197	12.375	0.931
2.5	0.008	7.5	0.207	12.5	0.960
2.625	0.009	7.625	0.218	12.625	0.989
2.75	0.010	7.75	0.229	12.75	1.018
2.875	0.012	7.875	0.240	12.875	1.049
3	0.013	8	0.252	13	1.080
3.125	0.015	8.125	0.264	13.125	1.111
3.25	0.017	8.25	0.276	13.25	1.143
3.375	0.019	8.375	0.289	13.375	1.176
3.5	0.021	8.5	0.302	13.5	1.209
3.625	0.023	8.625	0.315	13.625	1.243
3.75	0.026	8.75	0.329	13.75	1.277
3.875	0.029	8.875	0.343	13.875	1.312
4	0.031	9	0.358	14	1.348
4.125	0.034	9.125	0.373	14.125	1.385
4.25	0.038	9.25	0.389	14.25	1.422
4.375	0.041	9.375	0.405	14.375	1.460
4.5	0.045	9.5	0.421	14.5	1.498
4.625	0.049	9.625	0.438	14.625	1.537
4.75	0.053	9.75	0.455	14.75	1.577
4.875	0.057	9.875	0.473	14.875	1.617
5	0.061	10	0.491	15	1.658
5.125	0.066	10.125	0.510	15.125	1.700
5.25	0.071	10.25	0.529	15.25	1.743
5.375	0.076	10.375	0.549	15.375	1.786
5.5	0.082	10.5	0.569	15.5	1.830
5.625	0.087	10.625	0.589	15.625	1.874
5.75	0.093	10.75	0.610	15.75	1.920

American Safety Insurance Services, Inc.

ASIG Insurance Services (in California)

100 Galleria Parkway SE, Suite 700, Atlanta, GA 30339

Tel (800) 388-3647 Fax (770) 955-8339

www.americansafetyinsurance.com

Environmental Services Application

This application is NOT an insurance policy and the insurance company affording coverage reserves the right to reject any application for any reason. If additional space is needed, attach details on a separate sheet of paper. All Applicants must sign the application where indicated.

PRODUCER	APPLICANT
Name:	Name:
Address:	Address:
Telephone #:	Telephone #:
Fax #:	Fax #:
Email Address:	Email Address:
Web Address:	Web Address:
PRODUCER NAME:	PRIMARY CONTACT NAME:

Additional Named Insured(s)	
Name: Address: Description:	Name: Address: Description:

SECTION I. General Information	Space is supplied on page 3 for providing additional information
Specify the year that the Applicant initially commenced operations:	
What are the Applicant's total revenues for each of the last 3 years? 1st Preceding Year: $_____ 2nd Preceding Year: $_____ 3rd Preceding Year: $_____	

Applicant's Total Number of Employees:

What is the Applicant's current Workers Comp experience modification factor?

The Applicant is: ☐ **Corporation** ☐ **Sole Proprietor** ☐ **Partnership** ☐ **Joint Venture** ☐ **LLC** ☐ **Other (please identify)**

YES	NO		YES	NO	
☐	☐	Is the Applicant a successor of any other business? **If YES, list predecessor entities.**	☐	☐	Is work done through or by any affiliated or related company(s)? **If YES, provide details.**
☐	☐	Is Applicant, or any affiliated, related or predecessor entity currently involved in any litigation, administrative or arbitration proceeding(s) or subject to any court or agency order or injunction? **If YES, provide details.**	☐	☐	Has Applicant, or any affiliated, related or predecessor entity ever been (or is currently) the subject of bankruptcy, reorganization, solvency, dissolution, or other debtor related proceeding, or has it made an assignment for the benefit of creditors? **If YES, provide details.**
☐	☐	Is the Applicant applying for project specific coverage? **If YES, provide project name and Location.**	☐	☐	Does the Applicant directly or indirectly perform non-environmental work on residential properties?
☐	☐	Has Applicant, or any affiliated, related or predecessor entity or any officer or owner of any of them ever been convicted of a crime? **If YES, describe.**	☐	☐	Does the Applicant perform operations in any of the 5 boroughs of New York City?
☐	☐	Are more than 50% of the Applicant's services subcontracted?			**If YES, What % of total operations are performed in the 5 boroughs?** _____

SECTION II. Retention, Limit & Coverage

Effective Date: _____

Policy Term: ☐One Year ☐Two Year ☐Other _____

Retention Type: ☐Self-Insured Retention ☐Deductible

Limits of Liability:

Retention Amount: ☐ $2,500 ☐ $5,000 ☐ $10,000 ☐ $25,000 ☐ Other _____

☐ $1M/$1M ☐ $1M/$2M ☐ $2M/$2M ☐ Other _____

Coverages:	**YES**	**NO**		
Hired & Non-Owned Auto Liability:	☐	☐		
	Occurrence	Claims-Made	None	Retro Date
Commercial General Liability (CGL):	☐	☐	☐	_____
Contractors Pollution Liability (CPL):	☐	☐	☐	_____
Professional Liability (PL):		☐	☐	_____

SECTION III. Prior Insurance Information

	Commercial General Liability (CGL)	**Contractors Pollution Liability (CPL)**	**Professional Liability (PL)**
Policy Type (CM; Occ; No Covg)			
Effective Date:			

Expiration Date:			
Carrier:			
Retro Date:			
Limit of Liability:			
Retention:			
Total Premium:			

SECTION IV. Claims

Space is supplied on page 3 for providing additional information

Have any claims been made previously (last five years) against the Applicant or reported under any Commercial General Liability, Contractors Pollution

Liability, or Professional Liability policies?

	Total Incurred*	Number of Claims	Valuation Date	*Includes Loss and Expense Paid and reserved.
Current Year				
1st Prior Year				
2nd Prior Year				
3rd Prior Year				
4th Prior Year				

For Claims Greater than $5,000, **provide details**, including Date of Claim, Nature of Claim, Amount of Claim paid or reserved.

Is the Applicant aware of any incident, fact, circumstance, or situation including any act, error or omission that may result in a claim being made against it or any other person or entity for whom coverage is sought? **If YES, provide full details.**

SECTION V. Safety & Practices

Copies of all of the below must be made available to ASI upon request.

YES	NO	
☐	☐	Does the Applicant have a formal written Company/Site specific Health & Safety Program?
☐	☐	Does the Applicant have written Work Procedures for all services selected?
☐	☐	Does the Applicant have a formal written Hazardous Communication Program?
☐	☐	Does the Applicant have a formal written Respiratory Protection Program?
☐	☐	Does the Applicant have a formal written Medical Surveillance Program?

SECTION VI. Subcontracted Services

YES	NO	
☐	☐	Are all subcontractors licensed and accredited?
☐	☐	Are the subcontractors required to name the Applicant as an additional insured?
☐	☐	Is a standard written contract used with the Applicant's clients and/or subcontractors, including hold harmless and limitation of liability clauses?
		What are the minimum limits the Applicant requires of subcontractors? _____

SECTION VII. Mobile Equipment

Check here if this section does not apply. ☐

YES	NO	
☐	☐	Are there any self-propelled vehicles which primarily provide mobility to permanently mounted power cranes, shovels, loaders, diggers or drills or road construction or resurfacing equipment such as graders, scrapers or rollers? **If YES, specify number and description.** _____ _____ _____ _____
☐	☐	Are the above-described vehicles insured for liability coverage on your commercial automobile policy? **If YES, specify Carrier Info, Policy Period and Limits.** _____ **If NO, specify Radius Driven, Annual Mileage and provide MVRs for all drivers.** _____

SECTION VIII. Microbiological Contracting & Consulting

Check here if this section does not apply. ☐

All policies will include a mold, mildew and fungus exclusion. Limited microbiological coverage may be available for this applicant. Please provide the information requested below:

Describe the services performed.

_____

_____

_____

Specify the number of years involved in microbiological work. _____

Coverage Requested:

☐ **Contractors Pollution Liability** - Microbiological Decontamination

☐ **Professional Liability** -

☐ Microbiological Assessments

☐ Microbiological Laboratory Analysis

☐ Consulting on Microbiological Decontamination Projects

IF MOLD SUPPLEMENTAL COVERAGE IS REQUESTED, THE FOLLOWING MUST BE SUBMITTED AND ACCEPTED PRIOR TO BINDING

Requirements for Contractors

- Statement of qualifications and/or experience for performing Microbiological Decontamination
- Training certificates for all employees performing Microbiological Decontamination (training course: 16 hr for workers and 24 hr for supervisors)
- Copy of the written proposal / contract. Contract must provide a detailed scope of work and state that microbiological growth could reoccur if the source of the moisture is not remedied
- Written company specific standard operating procedures for Microbiological Decontamination

Requirements for Consultants (except Microbiological Lab Analysis)

- Statement of qualifications or resumes for all personnel providing Consulting on Microbiological Decontamination Projects and/or Microbiological Assessments
- Training certificates for all employees providing Consulting on Microbiological Decontamination Projects and Microbiological Assessments (training course: 24 hr)
- Sample of proposal / contract prepared for Consulting on Microbiological Decontamination Projects and/or Microbiological Assessments. Contract must provide a detailed scope of work and state that microbiological growth could reoccur if the source of the moisture is not remedied
- Copy of written reporting format (findings report) applies only to microbiological assessments, not consulting on microbiological decontamination

SECTION IX. Additional Information

Check here if this section does not apply. ☐

Please provide further descriptions below for General Information questions which request additional detail:

Successor of any other business?	
Project Name and Location?	
Litigation, administrative or arbitration,	

court or agency orders or injunctions?	
Crime Conviction?	
Affiliated/Related Company(s)?	
Bankruptcy, Solvency, Reorg., Dissolution or assignments for the benefit of creditors?	
Claim details?	
Claims greater than $5,000?	
Potential Claims descriptions?	
Additional Comments	

SECTION X. Contracting Services **Check here if this section does not apply.** ☐

Contracting Services	**Projected Revenues**	**% Subcontracted**
Asbestos Abatement Contractor:		
Commercial	$	%
Residential	$	%
Lead Abatement Contractor:		

Commercial	$	%
Residential	$	%
Environmental Contractor:		
Building Decontamination (excluding Mold, Mildew, Fungus)	$	%
Drilling – Environmental	$	%
Duct Cleaning	$	%
Emergency Response	$	%
Groundwater Remediation	$	%
Haz Mat Packing/Pickup	$	%
Medical Waste Pickup	$	%
Medical Waste Remediation	$	%
PCB – Light Ballast Removal	$	%
PCB – Removal/Remediation	$	%
Phyto Remediation	$	%
Septic System Installation	$	%
Soil Remediation – Bioremediation	$	%
Soil Remediation - Dig & Haul	$	%
Soil Remediation - Soil Incineration	$	%
Soil Remediation - Vapor Extraction	$	%
Spill Clean-Up	$	%
Superfund Landfill	$	%
Waste Incineration	$	%
Wastewater Treatment Systems Installation/Maintenance	$	%
Wetlands Contracting	$	%
Other (please specify) _____	$	%
Microbiological Decontamination Contractor:		

Commercial	$	%
Residential	$	%
Underground Storage Tank Contractor:		
Service Station Work (pump maintenance, fire suppression, power supply)	$	%
Storage Tank Cleaning	$	%
Storage Tank Installation	$	%
Storage Tank Removal	$	%
General Contractor (Non-Environmental):		
Carpentry	$	%
Concrete Construction	$	%
Construction Debris Removal	$	%
Demolition – Non-Structural (Interior Remodel)	$	%
Demolition – Over Two Stories	$	%
Demolition – Two or Less Stories	$	%
Drilling – Non-Environmental	$	%
Electrical	$	%
Excavation/Grading	$	%
General Construction	$	%
Insulation	$	%
Janitorial	$	%
Painting	$	%
Plumbing	$	%
Roofing – Commercial	$	%
Roofing – Residential	$	%
Service Station Construction and Maintenance	$	%
Underground Utility Installation	$	%

Other (please specify) _____	$	%
Total Revenue for Contracting Services:		

Hazardous Materials/Substances Disposal Procedures does not apply. ☐ **Check here if this section**

What Procedure does the Applicant employ in the disposal and transportation of hazardous materials/substances?

YES	NO		YES	NO		YES	NO		YES	NO	
☐	☐	Bagged	☐	☐	Manifested	☐	☐	Transported	☐	☐	Labeled
☐	☐	Drummed	☐	☐	Stored	☐	☐	Treated On-Site			

Storage Tank Installation & Removal Information does not apply. ☐ **Check here if this section**

YES **NO**

☐ ☐ Is a leak detection system a part of all Installations?

If YES, give the types and percentages.

_____

_____

__

Approximately how many tanks will be installed over the next twelve (12) months?

_____

☐ ☐ Are soil samples always taken and tested before excavation commences?

If NO, when are tests done and by whom?

_____

SECTION XI. Professional Services **Check here if this section does not apply. ☐**

Professional Services	Projected Revenues	% Subcontracted
Asbestos Assessments	$	%
Consulting On Asbestos Abatement Projects	$	%
Consulting On Drilling Projects	$	%
Consulting On Landfill Projects	$	%
Consulting On Lead Abatement Projects	$	%
Consulting On Microbiological Decontamination Projects	$	%
Consulting On Soil Remediation Projects	$	%
Consulting On Storage Tank Projects	$	%

	Consulting On Superfund Projects	$	%
	Environmental Geotechnical / Geophysical Consulting	$	%
	Environmental Feasibility Studies	$	%
	Environmental Impact Studies	$	%
	Environmental Project Management	$	%
	Exhaust/Stack Air Testing	$	%
	Expert Witness	$	%
	Ground or Surface Water Monitoring	$	%
	Health and Safety Consulting	$	%
	Indoor Air Quality Consulting (excluding Mold, Mildew or Fungus)	$	%
	Industrial Hygiene Services	$	%
	Lead Assessments	$	%
	Lab Packing	$	%
	Laboratory Analysis (excluding Mold, Mildew or Fungus)	$	%
	Litigation Support	$	%
	Manual Preparation	$	%
	Microbiological Assessments	$	%
	Microbiological Lab Analysis	$	%
	Phase I Environmental Site Assessments	$	%
	Phase II Sampling and Remedial Studies	$	%
	Phase III Remedial Project Design and Supervision	$	%
	Property Inspections	$	%
	Radon Detection	$	%
	Regulatory Consulting / Permitting	$	%
	Septic System Testing	$	%
	Soil Testing	$	%
	Storage Tank Replacement and Remedial Project Design Supervision	$	%

	Training Schools/Seminars (excluding Mold, Mildew or Fungus)	$	%
	Underground Storage Tank System Testing	$	%
	Waste Brokering Services	$	%
	Wastewater Testing	$	%
	Wetlands Consulting	$	%
	Wildlife Studies	$	%
	Other (please specify) _____	$	%
Total Revenue for Professional Services:			

Licensed/Accredited States **Check here if this section does not apply ☐**

State	Licenses / Accreditations	Services

Laboratories Owned By Applicant **Check here if this section does not apply ☐**

YES	NO		YES	NO	
☐	☐	Does Applicant's lab use trained and appropriately certified employees to obtain bulk samples or air samples?	☐	☐	Does Applicant's lab actively participate or is it approved certified or accredited in any of the following?
☐	☐	Is Applicant's lab premises a recognized EPA temporary waste storage site?	☐	☐	PAT
		If YES, list Applicant's EPA Number:	☐	☐	EPA
		_____	☐	☐	AIHA Accepted
		If YES, attach a description of the extent and method of storage and disposal of hazardous waste samples.	☐	☐	NVLAP/NIST
☐	☐	Are samples retained for future reference?	☐	☐	NIOSH
		If YES, how long? _____	☐	☐	OSHA
			☐	☐	AIHA EMPAT

☐ ☐ Other (describe)

Air Monitoring **Check here if this section does not apply** ☐

YES	NO	
☐	☐	Are air samples taken by a Certified Industrial Hygienist?

If NO, are air samples taken by other trained and properly educated staff?

_____

If YES, specify training:

_____

_____

_____

Describe air sampling equipment used:

_____

_____

_____

Describe air sampling equipment calibrating techniques:

_____

_____

_____

PLEASE READ THE FOLLOWING STATEMENT CAREFULLY AND SIGN BELOW WHERE INDICATED. IF A POLICY IS ISSUED THIS SIGNED STATEMENT WILL BE ATTACHED TO THE POLICY.

The Applicant represents that the above statements and facts are true and that no material facts have been suppressed or misstated.

Completion of this form does not bind coverage. Applicant's acceptance of Company's quotation and Company's written agreement to be bound is required to bind coverage and to issue policy.

All written statements and materials furnished to the Company in conjunction with this application are hereby incorporated by reference into this application and made a part hereof.

GENERAL FRAUD STATEMENT: "ANY PERSON WHO KNOWINGLY AND WITH INTENT TO DEFRAUD ANY INSURANCE COMPANY OR ANOTHER PERSON FILES AN APPLICATION FOR INSURANCE CONTAINING ANY MATERIALLY FALSE INFORMATION, OR CONCEALS FOR THE PURPOSE OF MISLEADING INFORMATION CONCERNING ANY FACT MATERIAL THERETO, COMMITS A FRAUDULENT INSURANCE ACT, WHICH IS A CRIME AND SUBJECTS THE PERSON TO CRIMINAL AND [NY: SUBSTANTIAL] CIVIL PENALTIES. IN THE DISTRICT OF COLUMBIA, LOUISIANA, MAINE, TENNESSEE AND VIRGINIA, INSURANCE BENEFITS MAY ALSO BE DENIED.

[NOT APPLICABLE IN COLORADO, HAWAII, NEBRASKA, OHIO, OKLAHOMA, UTAH AND VERMONT]"

NOTICE TO COLORADO APPLICANTS: "IT IS UNLAWFUL TO KNOWINGLY PROVIDE FALSE, INCOMPLETE, OR MISLEADING FACTS OR INFORMATION TO AN INSURANCE COMPANY FOR THE PURPOSE OF DEFRAUDING OR ATTEMPTING TO DEFRAUD THE COMPANY. PENALTIES MAY INCLUDE IMPRISONMENT, FINES, DENIAL OF INSURANCE, AND CIVIL DAMAGES. ANY INSURANCE COMPANY OR AGENT OF AN INSURANCE COMPANY WHO KNOWINGLY PROVIDES FALSE, INCOMPLETE, OR MISLEADING FACTS OR INFORMATION TO A POLICY HOLDER OR CLAIMANT FOR THE PURPOSE OF DEFRAUDING OR ATTEMPTING TO DEFRAUD THE POLICY HOLDER OR CLAIMANT WITH REGARD TO SETTLEMENT OR AWARD PAYABLE FROM INSURANCE PROCEEDS SHALL BE REPORTED TO THE COLORADO DIVISION OF INSURANCE WITHIN THE DEPARTMENT OF REGULATORY AGENCIES."

NOTICE TO HAWAII APPLICANTS: "FOR YOUR PROTECTION, HAWAII LAW REQUIRES YOU TO BE INFORMED THAT PRESENTING A FRAUDULENT CLAIM FOR PAYMENT OF A LOSS OR BENEFIT IS A CRIME PUNISHABLE BY FINES OR IMPRISONMENT, OR BOTH."

NOTICE TO OHIO APPLICANTS: "ANY PERSON WHO, WITH INTENT TO DEFRAUD OR KNOWING THAT HE/SHE IS FACILITATING A FRAUD AGAINST AN INSURER, SUBMITS AN APPLICATION OR FILES A CLAIM CONTAINING A FALSE OR DECEPTIVE STATEMENT IS GUILTY OF INSURANCE FRAUD."

NOTICE TO OKLAHOMA APPLICANTS: "WARNING: ANY PERSON WHO KNOWINGLY, AND WITH INTENT TO INJURE, DEFRAUD OR DECEIVE ANY INSURER, MAKES ANY CLAIM FOR THE PROCEEDS OF AN INSURANCE POLICY CONTAINING ANY FALSE, INCOMPLETE OR MISLEADING INFORMATION IS GUILTY OF A FELONY."

NOTICE TO UTAH APPLICANTS: "FOR YOUR PROTECTION, UTAH LAW REQUIRES THE FOLLOWING TO BE INCLUDED IN THIS APPLICATION: ANY PERSON WHO KNOWINGLY PRESENTS FALSE OR FRAUDULENT UNDERWRITING INFORMATION, FILES OR CAUSES TO BE FILED A FALSE OR FRAUDULENT CLAIM FOR DISABILITY COMPENSATION OR MEDICAL BENEFITS, OR SUBMITS A FALSE OR FRAUDULENT REPORT OR BILLING FOR HEALTH CARE FEES OR OTHER PROFESSIONAL SERVICES IS GUILTY OF A CRIME AND MAY BE SUBJECT TO FINES AND CONFINEMENT IN STATE PRISON."

The Signatory hereby acknowledges that he/she is aware that the aggregate limit is shared among all coverages offered and that the limit of liability contained in the Commercial General Liability, Contractors Pollution Liability or Professional Liability policy or any combination thereof shall be reduced, and may be completely exhausted, by the costs of legal defense and, in such event, the Company shall not be liable for the costs of legal defense or for the amount of any judgment or settlement or cleanup costs to the extent that such exceeds the limit of liability of this policy.

The Signatory hereby further acknowledges that legal defense costs that are incurred shall be applied against the self-insured retention/deductible amount.

Should the signatory become aware of any change or omission relative to the information provided herein subsequent to the completion of this application and precedent to the effecting of insurance, the undersigned promissorily warrants that he/she will submit to American Safety Insurance supplementary advice specifying such change or omission. Notwithstanding the immediate foregoing, however, the signatory further promissorily warrants that he/she will inform

American Safety Insurance of any change or omission with respect to any answers given in this application at any time subsequent to the completion thereof, provided insurance has been effected. It is agreed that the duty imposed upon the signatory by virtue of the foregoing promissory warranties, shall be nondelegable. It is further agreed that this application shall be the basis of any insurance as may be subsequently effected by American Safety Insurance and is incorporated and made part of the policy. American Safety Insurance will rely upon the veracity of all responses thereto in causing such insurance to be effected. It is further understood and agreed that all representations and warranties made to American Safety Insurance also are made to the issuing carrier.

APPLICANT _____ **DATE** _____

Signature of Principal or Officer

PRODUCER _____ **DATE** _____

Signature of Producer

Literature Cited

Census of Aquaculture (2005), National Ag Statistical Service (NASS), USDA, 2006.

Chervinski, J. 1982. Environmental physiology of tilapias. The Biology and Culture of Tilapias. ICLARM Conference Proceedings 7 (Pullin, R.S.V. and R.H Low-McConnell, Eds.). Manila, Philippines: International Center for Living Aquatic Resources Management. Pg. 119-128

Earth Policy Institute (EPI). 2013. Plan B updates, farmed fish production overtakes beef. Accessed July 2013. http://www.earth-policy.org/plan_b_updates/2013/update114.

Earth Policy Institute (EPI). 2013. Plan B updates, farmed fish production overtakes beef. Accessed July 2013. http://www.earth-policy.org/plan_b_updates/2013/update114.

Ecofilms Australia. 2012. Aquaponics and Filtration. Accessed November 2014. http://www.ecofilms.com.au/aquaponics-and-filtration/

Elliott, A.H, J.J. Castleton, and G.N. McDonald. 2011. Flood hazard map of the Magna quadrangle, Salt Lake County, Utah. Utah Geological Survey a division of Utah Department of Natural Resources.

El-Sayed, A. F. M. 2006. Tilapia Culture. CABI Publishing, Cambridge, MA. pg. 227

Grammer, G.L., W.T. Slack, M.S. Peterson, and M.A. Dugo. 2012. Nile tilapia *Oreochromis niloticus* (Linnaeus, 1758) establishment in temperate Mississippi, USA: multi-year survival confirmed by otolith ages.

GSMFC (Gulf States Marine Fisheries Commission). 2003. Fact sheet for *Oreochromis aureus*. Accessed April 2014 http://nis.gsmfc.org/nis_factsheet.php?toc_id=194

Lutz, C.G. 2012. Tilapia profile. Agricultural Marketing Resource Center (AgMRC). Accessed April 2014 http://www.agmrc.org/commodities__products/aquaculture/tilapia-profile/

Lovshin, L.L. n.d. Criteria for Selecting Nile Tilapia and Red Tilapia for Culture. Department of Fisheries and Allied Aquacultures. Auburn University, Alabama, USA.

Mjoun, K., and K.A. Rosentrater. 2010. Tilapia: Profile and economic importance. South Dakota Cooperative Extension Service FS963-01

National Marine Fisheries Service. Top 10 U.S. Consumption by Species Chart. Accessed April 2014 http://www.aboutseafood.com/about/about-seafood/top-10-consumed-seafoods

Popma, T., and M. Masser. 1999. Tilapia life history and biology. Southern Regional Aquaculture Center (SRAC). SRAC Publication No. 283

Schofield, P.J., M.S. Peterson, M.R. Lowe, N.J. Brown-Peterson, and W.T. Slack. 2011. Survival, growth and reproduction of non-indigenous Nile tilapia, *Oreochromis niloticus* (Linnaeus 1758). I. Physiological capabilities in various temperatures and salinities. Marine and Freshwater Research 62: 1-11

Timmons, M.B., and J.M. Ebeling. Recirculating Aquaculture. 2nd ed. Northeastern Regional Aquaculture Center. Ithaca, NY: Cayuga Aqua Ventures; 2007.

Watanabe, W.O., R.I. Wicklund, B.I. Olla, and W.D. Head. 1997. Saltwater culture of the Florica red and other saline tolerant tilapias: a review. IN: Tilapia Aquaculture in the Americas. Vol. 1 pp. 54-141 (Costa-Pierce, B.A. and J.E. Rakocy, Eds.). Baton Rouge, Louisiana: The World Aquaculture Society

Watanabe, W.O., T.M. Losordo, K. Fitzsimmons, and F. Hanley. 2002. Tilapia production systems in the Americas: Technological advances, trends, and challenges 10(3&4): 465-498

Wilson, J.C., N. P. Nibbelink, and D.L. Peterson. 2009. Thermal tolerance experiments help establish survival probabilities for tilapia, a group of potentially invasive aquatic species. Freshwater Biology 54: 1642-1650.

WVU Extension Service. 2014. Aquaculture production record forms for tanks or raceways. http://aquaculture.ext.wvu.edu/farming_fish/fact_sheets/production_record_forms

Zambrano, L., E. Martinez-Meyer, N. Menezes, and A.T. Peterson. 2011. Invasive potential of common carp (*Cyprinus carpio*) and Nile tilapia (*Oreochromis niloticus*) in American freshwater systems. Canadian Journal of Fisheries and Aquatic Sciences 63(9): 1903-1910

Stefanie E. Bates

10178 South National Place ♦ South Jordan, Utah 84095
801-718-9722 ♦ batesstef7@gmail.com

Business Management

business analyst / operations / human resources/six sigma / risk management/ account management/customer service management

Business management professional with excellent people skills and strengths in Human Resources, relationship building, analyzing data, coaching/developing, leading teams and managing projects. Experience hiring and terminating employees. Assertive, detail oriented, organized, flexible, hard worker who maintains an optimistic and upbeat attitude even during stressful or difficult times. Works well independently without direction from others and able to manage multiple priorities in a fast-paced environment.

Management Skills

Six Sigma Green Belt Certified and Black Belt trained. Proficient in SQL, Excel, Word, Lotus Notes, PowerPoint, Access, Microsoft Project, MicroStrategy (Business Intelligence) reporting, PeopleSoft table and code maintenance, PeopleSoft Security, PeopleSoft Query and Salesforce.

Professional Experience

VERISYS CORPORATION 2013 - 2014

Customer Service/Account Manager (September 2013 – Current)

Provide primary source verification and credentialing services for health care professionals and businesses that deliver health care goods and services throughout the United States.

- Manage business relationships and serve as the point-of-contact for key accounts including top national chain drug stores in the U.S. market and top tier background screening organizations, representing more than 50% of annual revenue.
- Foster repeat business by providing quality customer service and sustaining vital client relationships.
- Define client and business agreements and engage in contract and pricing negotiations.
- Interface with cross-functional teams to solve and support client specific needs.
- Develop procedures for Account Management and Customer Service Consultants and define communication expectations and accountability.
- Lead a team of Customer Service Consultants and an Assistant Account Manager and manage employee career growth and development.
- Lead miscellaneous projects within the team; one in particular resulted in over $400,000 in recovered revenue.

Assistant Account Manager (January 2013 – September 2013)

Serve as support to the Senior Account Manager by coordinating the involvement of company personnel to meet client objectives and expectations. Research and investigate issues and inquiries, ensure client needs are promptly addressed, document communications and assist in organizing and leading projects. Assist in the assessment of customer satisfaction and client retention as it pertains to credential aggregation and licensing for pharmacies, pharmacists, doctors, nurses, etc.

- Maintain strong client relationships by providing client support, issue resolution, billing and technical support and staying aware of client needs and demands.
- Analyze statistics and other data, and provide monthly customer quality reporting.
- Work closely with the project team in order to maintain a continuous knowledge of the project state to identify potential issues and/or opportunities within, or related to, the project.

SCHEELS 2012

Specialty Shop Manager – Youth Athletic Clothing **(**May 2012 – December 2012)

While providing superior customer service, manage shop needs through meeting display, inventory and sales goals. Manage my own budget and order merchandise for my shop.

- Attend weekly evening training meetings. Responsible for providing training to other sales individuals.
- Mentor part time sales individuals.

AMERICAN EXPRESS 1988 - 2011

Manager – Risk Management (2008 – 2011)

Responsible for New Accounts and the Fraud Verification Team policies, procedures, tools and letters.

- Worked on several high priority and complex projects and was responsible for writing procedures, creating new letters, writing test conditions, validating results in test environments and ensuring successful project implementations.
- Collaborated with Team Leader of the Federal Savings Bank (FSB) fraud team that processed balance transfer and convenience check fraud and worked together to make the teams' processes easier.
- Provided fraud support on the Lowe's co-brand partnership. Wrote procedures, created new letters, wrote test conditions and tested the results of new rules being implemented, etc., in test environments as well as in production. Participated on the project team and attended many calls and meetings.
- Led and implemented a project that created discrepancy indicators after a review of the credit bureau address and the application address.
- Completed and distributed quarterly and annual fraud prevention reports for key members of American Express Centurion Bank (AECB) and the Fraud Risk team.

Project Manager II (2006 – 2008)

Accountable for leading and managing projects focused on the Operational processes, metrics, revenues and Customer Satisfaction metrics in New Accounts. Provided leadership and direction to cross-functional teams empowered to execute the Six Sigma strategy for process improvement. Worked very closely with Operations Service Delivery Leader's and Team Leader's on Health of the Process (HOP) projects related to functional areas.

- Six Sigma Green Belt Certified and Black Belt trained.
- Drove results to achieve a reengineering save of $448,280 against a G2 goal of $493,582 in 2007, a year with no funding.
- Successfully led the 2008 Employee Engagement Team, which focused on Employee Development.

Manager-Assistant (2005 – 2006)

Key member of the Vice President staff responsible for planning and preparing for senior executive visits to Salt Lake City, planning meetings and events, handling ad-hoc requests and leading projects.

- Planned and prepared for visits from Senior Executives to the Salt Lake City Center. Ensured the visits ran flawlessly.
- Project Manager over the Data Privacy Project which did not allow third party vendors to have access to SSN and/or account number. Worked closely with members of the Service Delivery Network (SDN), Technologies, Data Privacy Office, Systems Assurance/Systems Infrastructure-West (SA/SI-W), etc., to ensure all processes met Data Privacy requirements.
- Project Manager over the Bank Affiliate Vendor Management project. Gathered and compiled appropriate report data and disseminated to Bank and SDN Process Leads. Accurately transcribed the data for these reports from numerous source documents into one final report.
- Participated in planning the 2005 and 2006 Leadership Briefing and the 2006 Leadership Conference.

HR Business Analyst **(**2001 – 2005)

HR Business Analyst in the Global HR Service Delivery Implementation Team responsible for running the appropriate queries associated with Security Access, and for working with Mellon (outsource vendor) employees and other Amex employees to complete Security requests.

- Created daily, weekly, monthly, quarterly and annual audits pertaining to Security Access in order to meet Sarbanes-Oxley audit requirements.
- Automated/enhanced three Security reports resulting in an annual cost save of $17K in a non-revenue generating department.

Team Leader (1994-2001)

Team Leader in various Operations teams including Small Business Services (SBS), Fraud, Optima and HR.

- Completed a Compensation Evaluation for all associate staff in HRICS-West by benchmarking against other departments within American Express to determine whether the salaries of our associates were competitive with other areas.
- Created and executed a proposal to have Small Business Acquisitions (SBA) inbound customer service calls received in New Accounts Customer Service (NACS) outsourced, resulting in a cost savings of 2 full time employees for the New Accounts production area.

Fraud Analyst (1993-1994)
Responsible for identifying and resolving fraud concerns on American Express applications for credit.

Credit Analyst II (1991 – 1993)
Responsible for processing applications for the American Express card.

Key to Disk Operator II (1988 – 1991)
Responsible for keying American Express credit card application information into the system.

EDUCATION

BS Business Management - Emphasis in Human Resources
University of Utah - Salt Lake City, UT

Fish Health Inspection Report

Company: Whitebrook Tilapia Farm
Facility : Whitebrook Tilapia Farm
Location: 18120 Chianti Court
Smithville, MO 64089

Site Manager: Kellen Weissenbach
Phone: (816) 866-1172

Water Source: Rural
Water Treatment: None

Current Inspection: 19-Jun-12
Prior Inspections:

Type of Fish Examined: Hatchery

Lab Accession: M12062004

Species	Lot ID	Age	Number in Lot	Eggs (E) or Fish (F) Origin	Sample Date(s)	*Pathogens - Methods and Results								
						Viruses					Bacteria		Parasites	
						IPNV	LMBV	SVCV	VHSV	VNNV	BF	BRM	HSP	AT
Oreochromis spp. tilapia	M12-390	2 mo	5,000	(E) Allied Aqua (MO)	19-Jun-12				I3B					
									150					
									neg					

Notes: * See other side of sheet for explanations of Pathogens - Methods and Results coding

All lots were tested according to American Fisheries Society-Fish Health Section's "Suggested Procedures for the Detection and Identification of Certain Finfish and Shellfish Pathogens" (2010) and World Organization for Animal Health (OIE) "Manual of Diagnostic Tests for Aquatic Animals" (2009) protocols. Lot M12-390 was NEGATIVE for the presence of Streptococcus spp. by culture on blood agar plates.

Samples Collected By: Royce A. Wilson, DVM
Affiliation: USDA, APHIS, VS
Telephone: (573) 680-0791
Client Reference #:
Inspecting Biologist: William Keleher

William R. Keleher, Jr., Fish Health Inspector

FOOTNOTES:

PATHOGEN ABBREVIATIONS

IPNV	Infectious Pancreatic Necrosis virus
LMBV	Large Mouth Bass virus
SVCV	Spring Viremia of Carp virus
VHSV	Viral Hemorrhagic Septicemia virus
VNNV	Nodavirus
BF	*Aeromonas salmonicida*
BRM	Yersinia ruckeri
BKD	*Renibacterium salmoninarum*
PS	*Piscirickettsia salmonis*
HSP	*Heterosporis* spp.
AT	*Bothriocephalus acheilognathi* (Asian Tapeworm)

In lots of fish less than one year of age, the age is listed in arabic numerals followed by mo. for months; for fish older than one year, the age is expressed in arabic numerals followed by a plus sign to indicate "older than".

Findings are reported in columns from top to bottom for each test as follows: number of fish examined; methods used; results. Positive results include the number of positive individuals (or pools).

RESULTS ARE REPORTED AS (-) IF NEGATIVE AND AS #+/# SAMPLED IF POSITIVE

FOR BKD, APPROXIMATE LEVELS OF INFECTION ARE ALSO REPORTED (e.g., 10/50 fields)

VIRAL PATHOGENS:

First letter = sampling method

A = whole fry homogenates (minus head, tail, yolk sac if present)
B = whole juvenile homogenates
C = kidney & spleen
D = ovarian fluids
E = kidney/spleen/heart
F = kidney/spleen/liver
G = kidney/spleen/heart/liver/pyloric caeca/gill
H = kidney/spleen/swim bladder
I = kidney/spleen/heart/liver
J = brain/eye
K = kidney/spleen/pyloric caeca/gill
L = kidney/spleen/heart/swim bladder
M = kidney/spleen/liver/swim bladder
N = kidney/spleen/heart/liver/swim bladder
O = kidney/spleen/heart/pyloric caeca/gill
P = kidney/spleen/heart/liver/gill

Numbers = continuous cell lines used

1 = GF-1 (grunt fin)
2 = CHSE-214 (chinook salmon embryo)
3 = FHM (fathead minnow)
4 = EPC (epithelioma papillosum cyprini)
5 = BF-2 (bluegill fry)
6 = CCO (Channel Catfish ovary)
7 = ASK (atlantic salmon kidney)
8 = SSN-1 (striped snake head)
9 = KF-1 (koi fin)

Last letter = Pooling of samples

A = individual fish
B = five fish pools
C = Other_____

PROTOZOAN PATHOGENS:

Encoded as follows:

A = Digestion method
B = Plankton centrifuge method
C = Examination of stained smear
D = Gross Examination
E = PCR
F = Microscopic Examination

BACTERIAL PATHOGENS:

Encoded as follows:

First letter = Health of fish sampled

A = Live, healthy fish
B = Moribund fish
C = Mortalities

Number = Material sampled

1 = kidney
2 = kidney/gut
3 = lesion
4 = gill
5 = ovarian fluid
6 = seminal fluid
7 = Other_____

Last letter = technique used for:

Primary Isolation

A = Standard culture medium TSA/BHI
B = Cytophaga agar
C = KDM2/SKDM2
D = Kidney smear/Impression

Presumptive Diagnosis

E = Gram stain, kidney smears (BKD)
F = Standard biochemical/physical testing
G = Giemsa stain

Confirmatory diagnosis

H = Slide agglutination
I = Direct fluorescent antibody test
J = Indirect fluorescent antibody test
K = ELISA
L = Immunodot
M = Fluorescent Immunoassay
N = PCR

Good Aquaculture Practices Series 4

Prevention and Treatment of Fish Diseases

Aquaculture Fisheries Division

Agriculture, Fisheries and Conservation Department

INTRODUCTION

Fish diseases affect the survival and growth rates of fish under culture. Given that drug treatments are expensive, fish diseases invariably lead to lower harvest and higher cost. Fish farmers often suffer hefty economic losses due to fish diseases.

To alleviate such losses, it is crucial to take precautions to prevent fish diseases and reduce pathogen levels in water bodies. It is also important to prevent water quality from deteriorating and to strengthen the natural resistance of the fish stock.

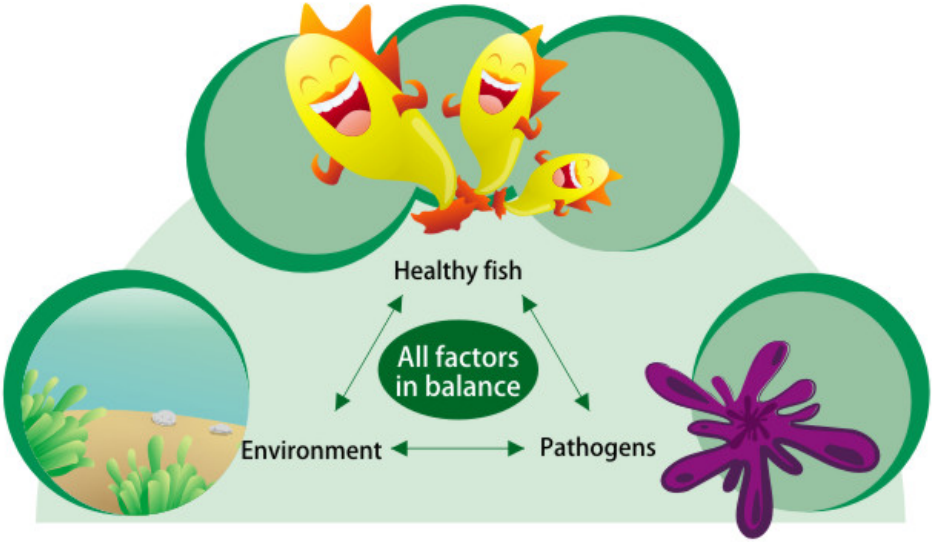
Regular monitoring of fish health is an effective way to identify disease causes and appropriate treatments. One major cause of serious fish kill is overlooking the contagiousness of fish diseases and thus delaying treatment. As such, adequate care and treatment should be given to infected fish promptly.

1 Prevention of fish diseases

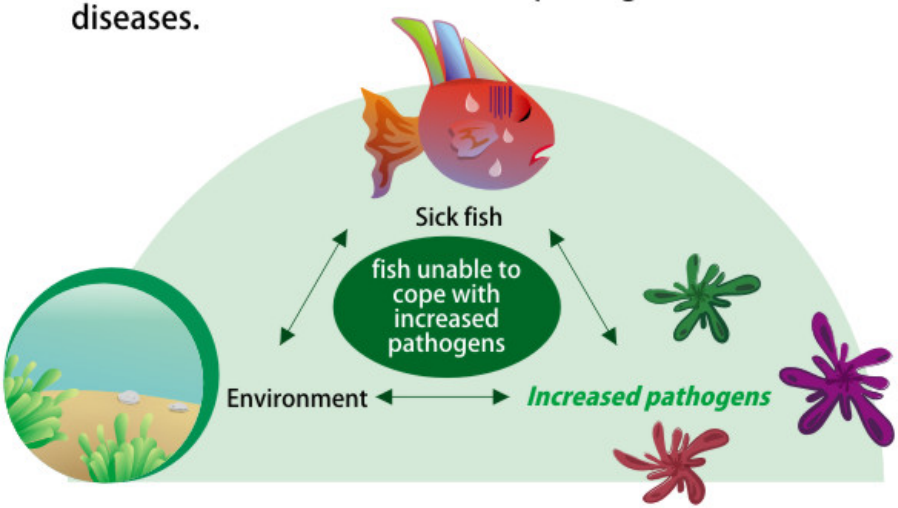
Causes of fish diseases
There are three major causes of fish diseases:

- Presence of environmental pathogens
- Low resistance of the fish stock
- Unsatisfactory water environment

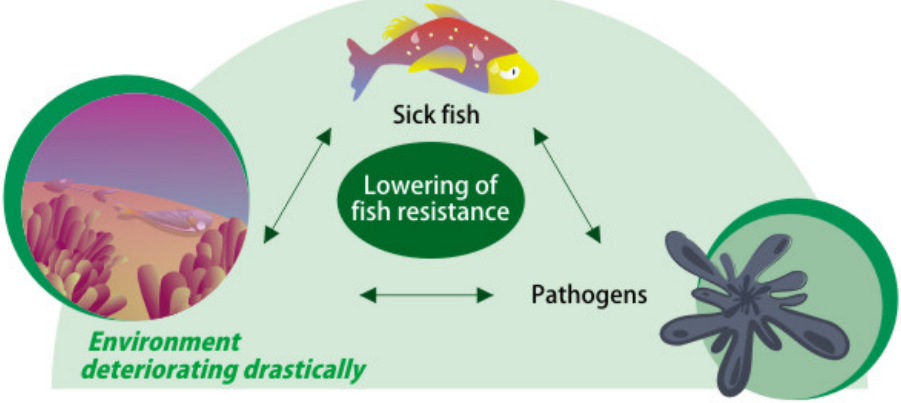
Pathogens (e.g. bacteria, viruses, fungi and parasites) exist in all natural water bodies, yet healthy fish have adequate resistance against them. They can also adapt to reasonable environmental changes and in turn avoid diseases due to pathogenic infection.



When the pathogen level of a water body rises sharply due to external factors, and the natural resistance of the fish stock cannot cope with the increased pathogens, the fish will become vulnerable to pathogenic infection and diseases.



In addition, external factors may also cause drastic changes in water quality, resulting in poor health and low resistance of fish stock. The risks of pathogenic infection and fish diseases or deaths are heightened.



2 Regular disease prevention and control practices

To prevent and control fish diseases, we should:

maintain a good culture environment and prevent the deterioration of water environment; and

use hygienic and nutritious fish feed to boost resistance of the fish stock and to minimise the chance of introducing pathogens to the water body.

2.1 How can we prevent the water environment from deteriorating?

Do not over-feed - Avoid contamination caused by excessive organic matters depositing on the pond bottom/seabed.

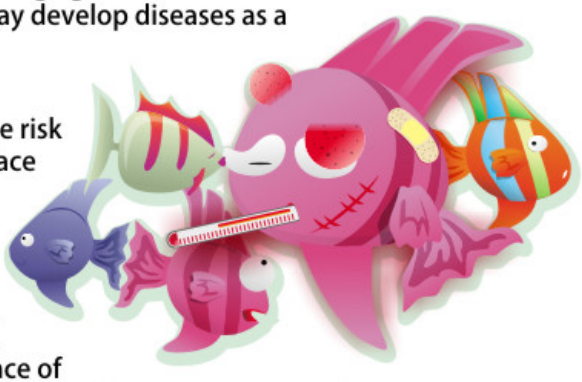
Promptly remove fish carcasses in fish ponds/raft net cages. Avoid contamination caused by excessive organic matters depositing on the pond bottom/seabed.

Remove fouling organisms on the raft net cages regularly, clear obstructions so that organic matters can be removed from the fish culture zone by sea currents.

Read the **"Good Aquaculture Practices Series 2 Environmental Management of Mariculture"** and **"Good Aquaculture Practices Series 3 Environmental Management of Pond Fish Culture"** booklets for good practices on culture environment management.

2.2 How to boost resistance of fish under culture?

Maintain a suitable stocking density. A crowded culture environment increases the risk of disease infection and makes the fish nervous. Fish knocking against each other often get surface wounds and may develop diseases as a result.



Use a winnowing basket without knots to reduce the risk of infection caused by surface wounds.

Avoid feeding the stock with trash fish that cannot provide balanced nutrition. This type of feed lessens the natural resistance of fish and makes them more vulnerable to pathogenic infection.

Use dry pellet feed which is hygienic, nutritious and low in bacteria. Dry pellet feed added with vitamins and minerals can further strengthen fish immunity. Read the **"Good Aquaculture Practices Series 1 Fish Feed Management"** booklet for good practices on fish feed management.

2.3 How to reduce pathogens in the water body?

Disinfect fish ponds and culture gear regularly. Refer to the methods listed in Table 1 to keep your fish farm clean.

Store the dry pellet feed properly, keep pellets in a cool, dry and covered place to prevent massive bacterial growth.

Store trash fish properly. Pathogens may proliferate in improperly preserved trash fish. Such feed may introduce large quantities of pathogens to the water. Some pathogens can be eliminated by deep freezing. Never use trash fish that are not clean or fresh.

Table 1: Disinfection of fish farms and culture gear

Item	Method
Fish pond bottom	**1** Drain and sun dry the pond for 3 months (or shorten the time by using a sterilising agent).
	2 After draining and sun drying the pond for 3 weeks, sprinkle with quick lime (calcium oxide), (500 g for every square metre). Sun dry for another week before filling with water.
Culture gear, tanks and pipes	**1** Disinfect with electric steam gun for about 5 minutes.
	2 Immerse in 1:4,000 formaldehyde (i.e. 100 ml of formaldehyde solution for every 0.4 ton of water) for about 1 hour, then rinse thoroughly with water.
	3 Immerse in 1:2,000 domestic bleach (i.e. 500 ml of bleach for 1 ton of water) for about 3 hours, then neutralise with sodium bicarbonate (soda) and rinse thoroughly with water.

Disinfect fertilised eggs and fry properly - Fertilised eggs and fry may be infected by pathogens that are present in their parents. Treat fertilised eggs with a sterilising agent and treat new fry with freshwater (for marine fish) or potassium permanganate prior to stocking.

Purchase quality fry - Fish farmers should purchase healthy fry with health certificates from reputable suppliers.

Join the fry health inspection programme. Fish farmers can submit fry samples to the Agriculture, Fisheries and Conservation Department (AFCD) for free tests on pathogens and harmful substances before placing purchase orders.

Read the "Good Aquaculture Practices Series 5 Fry Health Management" booklet for good practices on managing the health of fry.

3 Monitoring Fish Disease

While precautions should be taken to prevent diseases, close monitoring of disease is equally important. It is an effective way to detect sick fish and identify the cause of disease at an early stage, so that appropriate treatment can be given and transmittable fish disease can be controlled. For this reason, the AFCD encourages fish farmers to join the Fish Health Inspection Programme and conduct a simple health check on their fish stocks every day.

3.1 AFCD's Fish Health Inspection Programme

AFCD staff visit marine fish culture zones and fish ponds regularly to provide free fish health inspections and to introduce fish disease prevention practices. Services of this programme include:

- Full physical examination

- Tests for bacteria, parasites and viruses

- On-site demonstration of water quality test and fish disease prevention measures
- Introduction of simple fish health inspection routine
- Advice on good fish farm management

Fish farmers are welcome to call the **AFCD's Aquaculture Management Section (Tel. : 2150 7089)** to make inspection bookings or obtain programme details.

3.2 How to inspect the health of your fish stock

Fish farmers should carry out a simple health inspection routine every day. To begin with, observe fish behaviour (stage one). See if the fish are reducing feed intake or showing abnormal swimming patterns. If you are certain that the abnormal behaviour is not connected with environmental factors, carry out a detailed health inspection (stage two). For example, check the body surface, fins and gills, and see if there are any surface parasites. If disease symptoms are detected, seek assistance from the AFCD. Our staff will visit your farm to follow up the fish disease and recommend appropriate treatment.

Stage One : Observe fish behaviour (Table 2)

Feed intake Reduced feed intake is the first sign of many fish diseases. Fish farmers should therefore keep daily feeding records to ensure they have sufficient information to compare general intake trends.

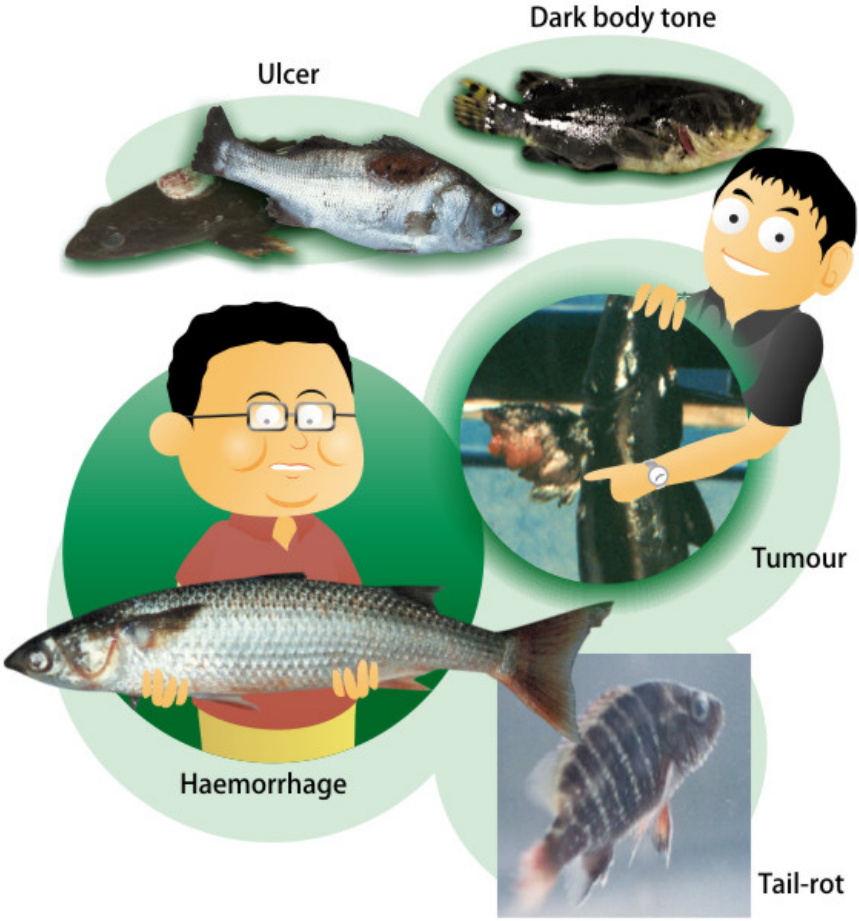
Abnormal swimming patterns Examples are fish lying flat, rubbing against the bottom or net cage edges, jumping out of the water, circling in water or losing buoyancy/balance. All these may be signs of disease.

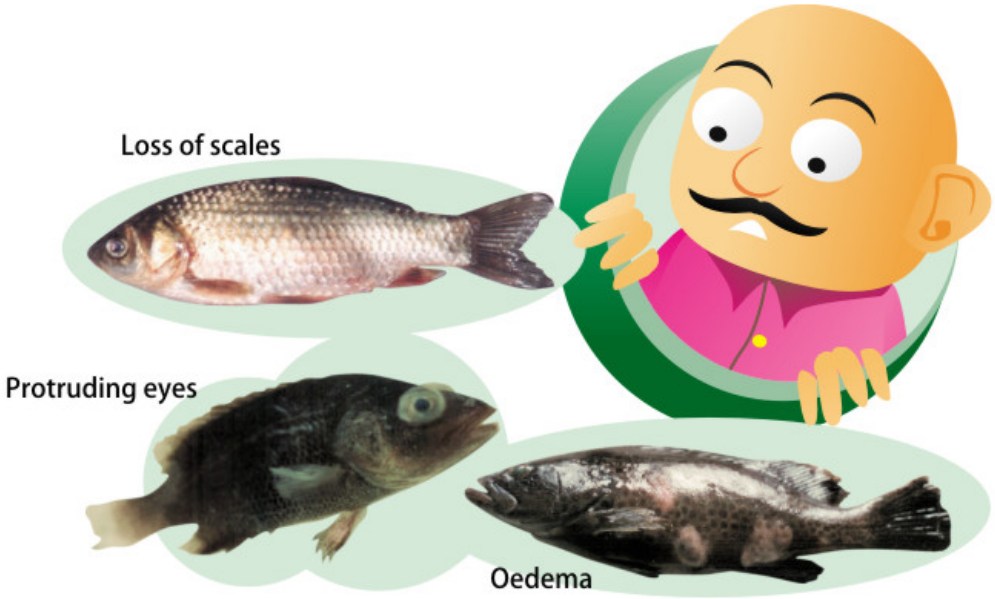
Table 2: Differentiating between sick and healthy fish

	Sick Fish	Healthy Fish
Activity	Swimming slowly; sluggish response	Swimming actively; sharp and responsive
Body Colour	Dull, dark or discoloured	Bright and glossy
Body Surface	White layered patches	Intact
Body Shape	Thin	Normal size
Feed Intake	Poor appetite	Good appetite
Organs	Different fish diseases cause damage to different organs	Internal organs are healthy and normal

Stage Two : Detailed health inspection

Check the body surface and fins - Body surface and fin wounds are obvious signs of infections. Common body symptoms of fish diseases are:





Check the gills - If the gills are whitened or show ulcers or with deep red spots, or there are gill flukes, excessive mucus or obstructive substances, the fish may be infected and gill functions may be impaired.

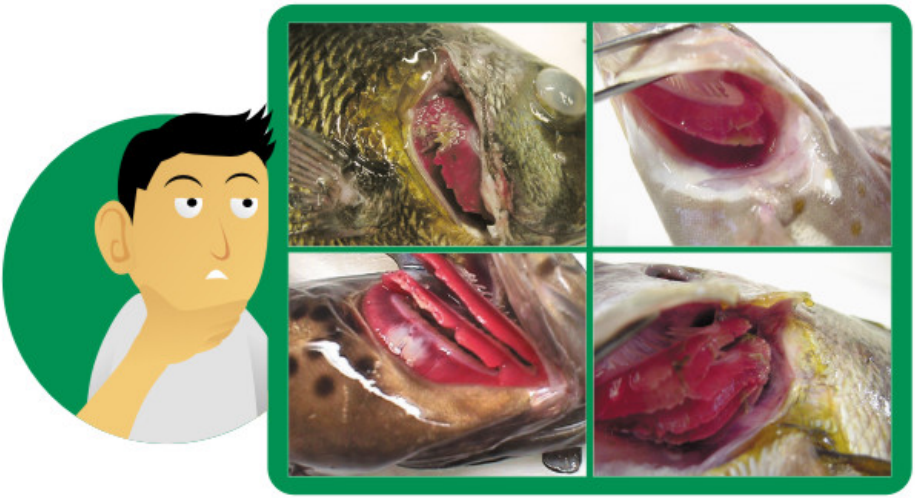
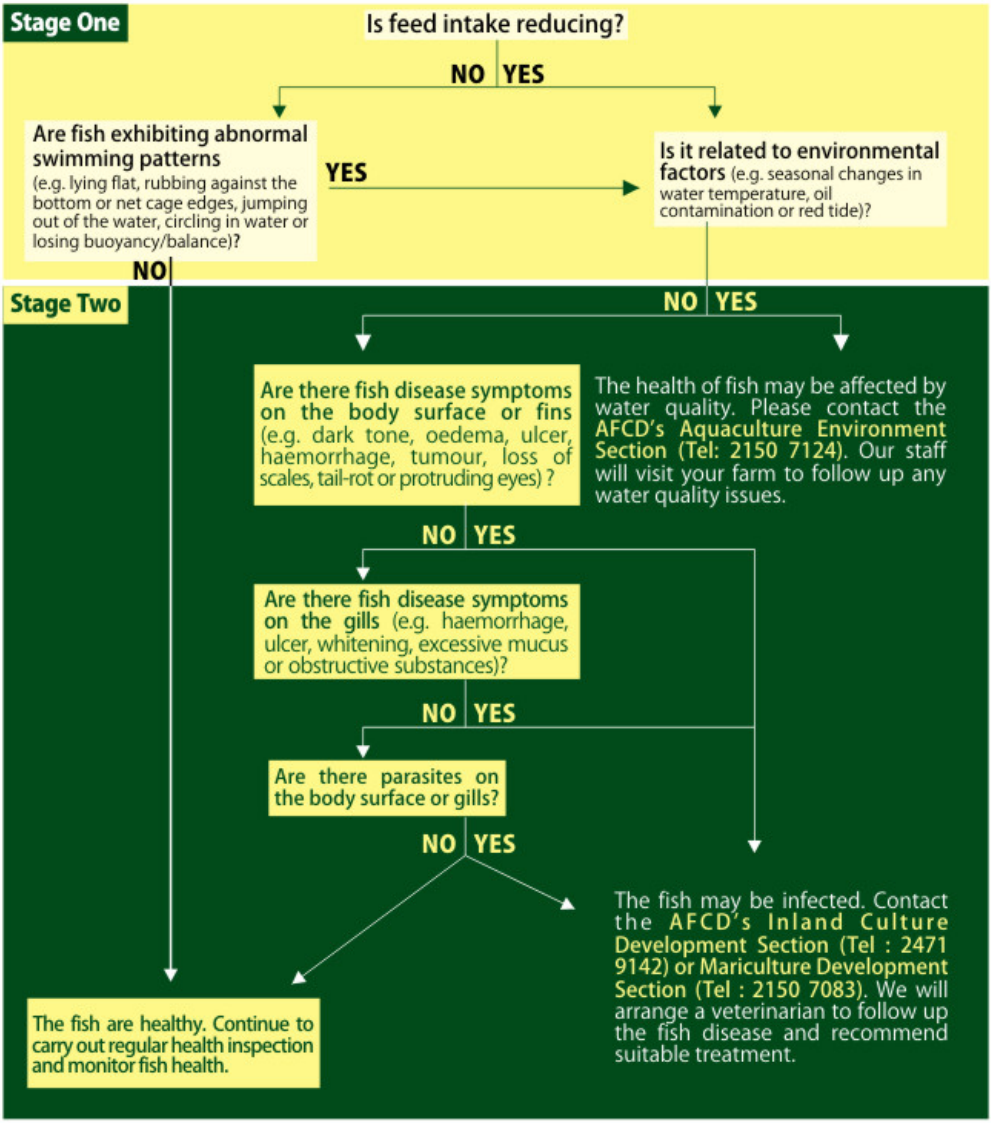


Diagram 1 : Fish disease monitoring flow chart



4 Know More About Fish Diseases

Common fish diseases may be caused by different pathogens, including parasites, fungi, bacteria and viruses. Sometimes diseases are not related to pathogens. Malnutrition, for example, is one reason. Fish diseases common in Hong Kong are listed in Table 3.

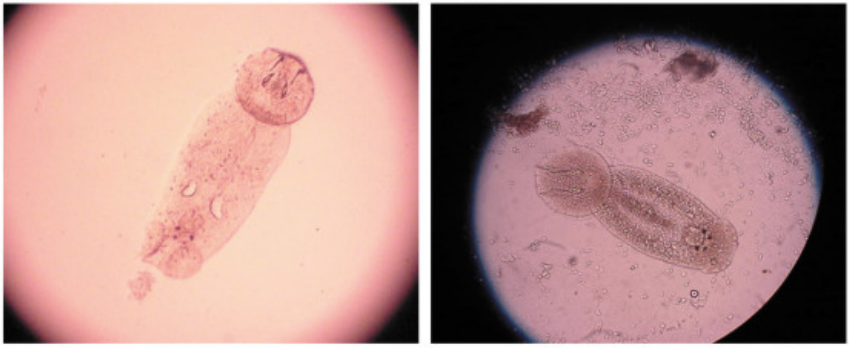
Table 3 : Fish diseases common in Hong Kong

Type of Infection	Disease	Affected Culture Environment
Ectoparasitism	Benedeniasis	Marine
	Cryptocaryoniasis / Ichthyophthiriasis	Marine / Freshwater
	Trichodiniasis	Marine / Freshwater
	Chilodonellasis	Marine
	Dactylogyrosis	Marine
	Gyrodactylosis	Marine / Freshwater
	Lernaeosis	Freshwater
	Copepods	Marine / Freshwater
Endoparasitism	Glugea disease	Marine
	Sanguinicolosis	Marine / Freshwater
Fungal infection	Saprolegniasis	Marine / Freshwater
Bacterial infection	Vibriosis	Marine / Freshwater
Viral infection	Viral Infection	Marine / Freshwater
Non pathogen-related diseases	Unbalanced nutrition	Marine / Freshwater

The eggs or spores of most pathogens infect new hosts and transmit fish diseases through the medium of water or by direct contact. When there are environmental abnormalities, water quality deterioration, unbalanced nutrition, bodily injuries or parasitic growth which weaken natural resistance, fish become vulnerable to pathogenic infection and diseases. The following are common fish diseases in Hong Kong and their symptoms and treatments.

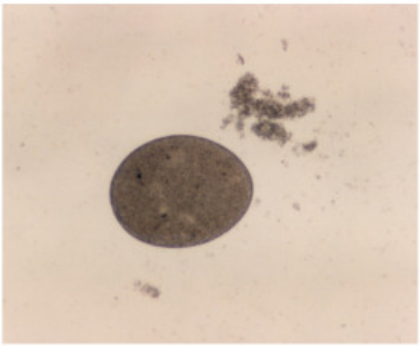
4.1 Ectoparasitism

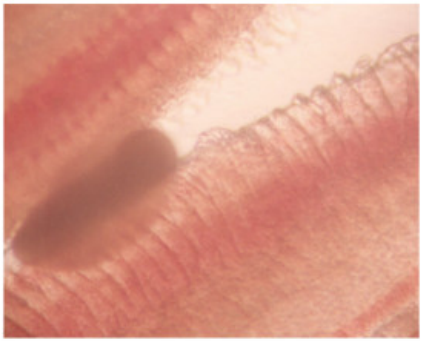
Benedeniasis



Pathogen	***Benedenia*** - white and transparent, 5-6mm long and 3-4mm wide.
Transmission	***Benedenia*** lay masses of eggs. After hatching, the larvae can survive in seawater for about a day to seek new hosts.
Symptoms	These parasites live in the mouth, eyes, skin and fins of fish and cause bodily wounds and excessive surface mucus. The sick fish get very restless and circle continuously or rub against net surface, resulting in loss of scales and hence infection. The fish gradually lose appetite and eventually die of weakness and exhaustion.
Treatment	Put the sick fish in freshwater and the parasitic ***Benedenia*** will come off in 1 to 2 minutes. Immerse in freshwater for 10 minutes three times every 1-2 weeks, and apply strong aeration.

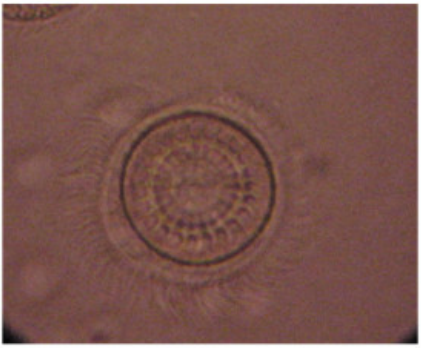
Cryptocaryoniasis (Seawater) / Ichthyophthiriasis (Freshwater)

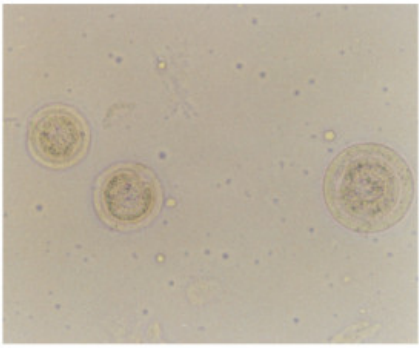




Pathogen	***Cryptocaryon irritans / Ichthyophthirius multifillis*** - white, ovate or spherical and ciliated, ranging from 40 to 400 microns in length.
Transmission	Juveniles can survive for more than 15 days in water after leaving a fish to seek new hosts. When they find a new host they will burrow into the fish skin and settle there.
Symptoms	White spots will appear on the caudal and pectoral fins and gradually extend to the body surface and gills. Eventually the growing white spots will form a film. The sick fish get irritable and restless. They circle continuously or rub against net surface which results in loss of scales, muscular inflammation and rot. The eyes become white and turbid and the fish gradually lose appetite, get thin and appear sluggish. Eventually gill tissues are badly damaged and the fish will die of suffocation.
Treatment	Immerse in freshwater for 5-15 minutes, or immerse in solution of 1:4,000 formaldehyde* or 1:250,000 potassium permanganate* for one hour. Apply strong aeration. *For correct application of fish drugs, see Table 4

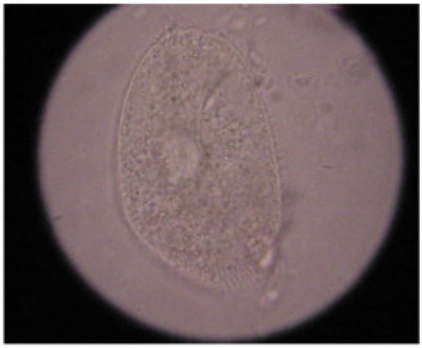
Trichodiniasis





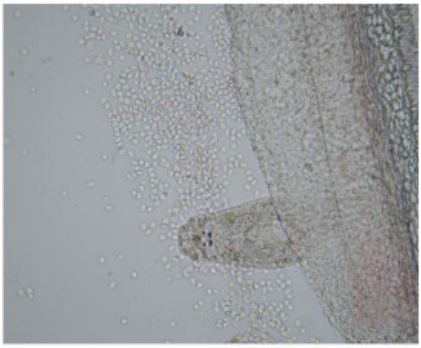
Pathogen	*Trichodina* - about 100 microns in length with peripheral cilia.
Transmission	*Trichodina* lay hundreds or even thousands of spores which can survive in the sediment of fish ponds to wait for suitable environment for hatching. The larvae can survive for 1 to 2 days in the water to seek new hosts.
Symptoms	Symptoms are similar to those of Cryptocaryoniasis. The infected fish show white spots on the body and gills.
Treatment	Similar to that for *Cryptocaryon irritans*.

Chilodonellasis



Pathogen	***Chilodonella*** - about 40 microns long and 30 microns wide.
Transmission	***Chilodonella*** carry out asexual reproduction by cell division inside fish bodies. After leaving a fish they can survive for 12 to 24 hours to seek new hosts.
Symptoms	Symptoms are similar to those of ichthyophthiriasis. The infected fish have pathological changes in the body and gills.
Treatment	Similar to that for ichthyophthiriasis.

Dactylogyrosis



Pathogen	***Dactylogyrus*** - generally 0.5 mm long with 4 anterior dorsal eye spots
Transmission	***Dactylogyrus*** have full reproduction capacity at birth. They transmit fish disease by direct contact.
Symptoms	***Dactylogyrus*** cause extensive wounds on the fish body surface and increase the chance of fungal and bacterial infection. The sick fish get irritable and restless. They swim frantically to the surface or swim sideways rapidly near the bottom. Body colour darkens and movement becomes sluggish. The fish would eat less, become weak and have difficulty in breathing. Death will eventually o c c u r when the gills and body rot.
Treatment	Use a 1:400,000 potassium permanganate solution* for extended immersion or immerse in solution of 1:4,000 formaldehyde* for one hour and apply strong aeration. When considering to use Trichlorofon for immersion, consult veterinarian advice before treatment. *For correct application of fish drugs see Table 4.

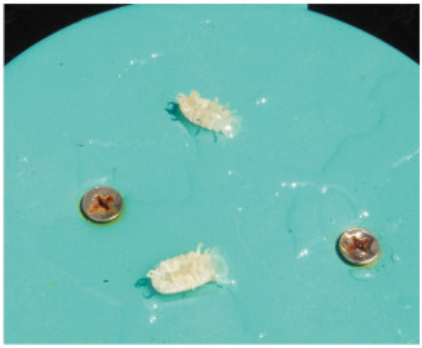
Gyrodactylosis

Pathogen	***Gyrodactylus*** - similar to ***Dactylogyrus*** in appearance but without eye-spots.
Transmission	Same as that of dactylogyrosis.
Symptoms	Same as those of dactylogyrosis but not always causing extensive wounds.
Treatment	Same as that for dactylogyrosis.

Lernaeosis

Pathogen	***Lernaea*** - also known as anchor worms, about 1-2 cm long.
Transmission	The larvae can survive for a long time in water to look for hosts.
Symptoms	Needle worms are parasites found on fish body surface. The sick fish will show decelerated growth due to anorexia, and develop surface wounds as they rub their bodies against objects. This increases the chance of getting other infections. Given their relatively large size needle worms can pierce through and injure internal organs of young fish.
Treatment	Immerse in solution of 1:250,000 potassium permanganate* for 2 to 3 hours and apply strong aeration. When considering to use Trichlorofon for immersion, consult veterinarian advice before treatment. *For correct application of fish drugs see Table 4.

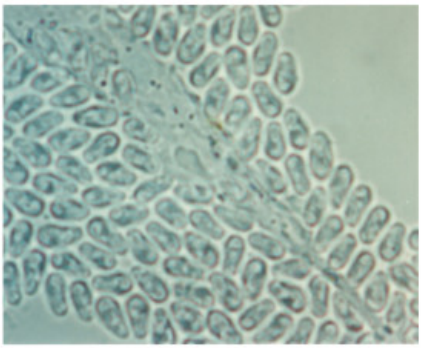
Copepods (commonly known as fish lice)



Pathogen	There are many species of fish lice. They range from several millimetres to several centimetres in length.
Transmission	Same as that of anchor worms.
Symptoms	Fish lice are parasites found on fish body surface. The sick fish will show decelerated growth due to anorexia, and develop surface wounds as they rub their bodies against objects. This increases the chance of getting other infections. Most lice would not cause serious harm to fish but a few species secrete toxins that make internal organs rot.
Treatment	Same as that for lernaeosis.

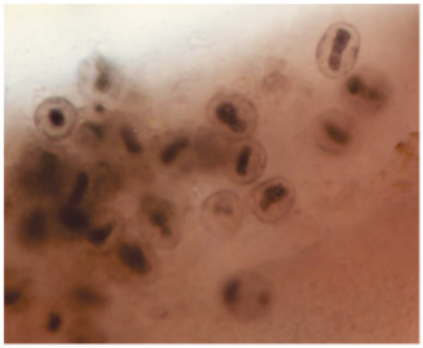
4.2 Endoparasitism

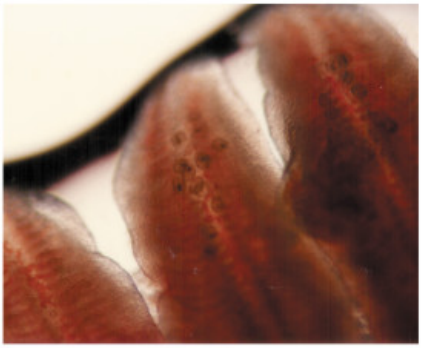
Glugea disease



Pathogen	***Glugea*** - spores are black, granular and 5-10 cm long.
Transmission	***Glugea*** spores reproduce in masses inside the fish. They are then discharged out of the body with urine and faeces or through the body surface to look for new hosts. Dead fish with glugea disease also release large quantities of ***Glugea*** spores when they rot.
Symptoms	Parasitic ***Glugea*** in the large intestinal wall mucosa cause inflammation. The sick fish will lose appetite and gradually waste away.
Treatment	None.

Sanguinicolosis





Pathogen	*Sanguinicola* spp. 10-20 microns long.
Transmission	*Sanguinicola* find their way to the water through fish gills and look for snails as intermediate hosts where they reproduce in masses. When the opportunity arises they invade fish and cause damage to their circulatory system.
Symptoms	Parasitic *Sanguinicola* in the fish circulatory system will cause anaemia. They will also cause damage to gills and kidneys. There are no distinctive initial symptoms but as the disease develops, gills will show dark spots, or there may be anaemic symptoms such as bloated belly and ascites, inflamed anus, upright fins and protruding eyes.
Treatment	Give Praziquantel by oral administration or injection (veterinarian prescription only).

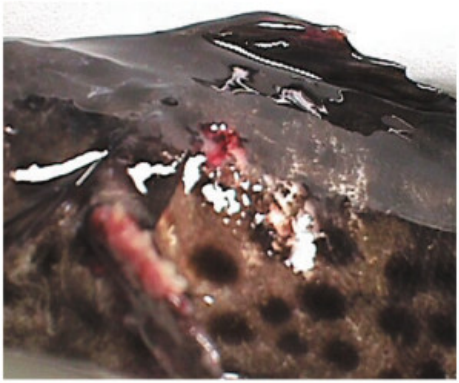
4.3 Fungal infection

Saprolegniasis

Pathogen	*Saprolegnia.*
Transmission	***Saprolegnia*** grow in trash fish, fish feed, culture gear and benthic organic matters. Masses of free spores are released from the body surface, faeces and rotten carcass of infected fish to look for new hosts in the water. Some ***Saprolegnia*** can survive for several years in benthic sediments in the water. As a result, fish may get infected continuously.
Symptoms	***Saprolegnia*** can burrow into the fish body from surface wounds. They can also invade the digestive tract when fish eat food containing them. They bore holes in the intestinal wall and reach internal organs through the circulatory system, reproducing and spreading across the body. Affected fish have greyish white woolly fungi on the body surface. Some ***Saprolegnia*** can cause granuloma - like lesion in internal organs.
Treatment	None. When saprolegniasis is diagnosed, all infected fish must be destroyed and no new fish are to be purchased or introduced until the fish farm is cleared and thoroughly disinfected.

4.4 Bacterial infection

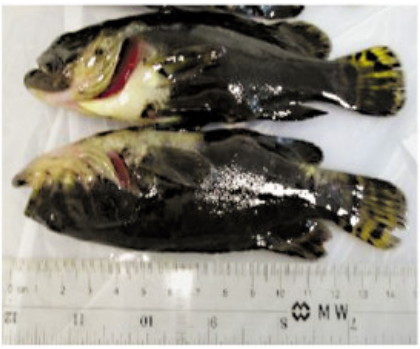
Vibriosis



Pathogen	*Vibrio*.
Transmission	*Vibrio* are present in water. When immunity of fish is poor or there is any surface wound, infection may occur. Fish can also get vibriosis by eating trash fish with *Vibrio*.
Symptoms	Different species of *Vibrio* attack different parts of the fish. Some make the body surface, gills and fins rot, or make the body turn black. Others attack internal organs like the heart, liver, spleen and intestines.
Treatment	Immerse in antibiotics or use them as oral drugs. Either way it must be prescribed by a veterinarian. Please note that some *Vibrio* have developed drug resistance to common antibiotics.

4.5 Viral infection

Viral infection



Pathogens	*Iridovirus* Lymphocystis disease virus *Nodavirus* Spring viraemia virus
Transmission	Viruses are transmitted from trash fish, broodstock or infected fish to other fish. Transmission is very rapid and all the fish in a fish farm can be infected within 12-24 hours. The death rate can be 100%. Fry under one year old are particularly vulnerable. Weather or water quality changes can also lead to infection.
Symptoms	Infection symptoms vary across different viruses. The sick fish may swim abnormally (e.g. circling) or show poor appetite, body wounds or darkened body colour.
Treatment	None. Neither antibiotics nor other fish drugs have any treatment effect. However, as a preventive measure, vitamin C can be added in the feed to boost resistance.

4.6 Non pathogen-related diseases

Unbalanced nutrition

Disease	Fatty liver
Symptoms	Fish fed regularly on high fat feed with no essential fatty acids (such as trash fish) will easily suffer from toxic reaction caused by peroxidation of unsaturated fat. Appetite is poor and growth is slow. It may also lead to bone defect or anaemia.
Treatment	Improve feed quality, store fish feed properly and use suitable additives. For details, read the "Good Aquaculture Practices Series 1 Fish Feed Management" booklet.

5 Treatment for Fish Diseases

One major cause of serious fish kill is overlooking the contagiousness of fish diseases and thus delaying treatment. To maximise the chance of successful treatment, infected fish must be isolated for treatment immediately. If any fish is found infected, isolate it immediately and give appropriate treatment or destroy it.

5.1 Rules for using fish drugs

The Harmful Substances In Food Regulations (Cap 132AF) provide statue against any food containing prohibited substances (e.g. chloramphenicol; see Schedule 2 to Cap 132AF) or containing certain substances in excessive concentration (e.g. Malachite green, Furazolidone and Tetracycline; see Schedule 1 to Cap 132AF).

Fish farmers must not use any fish drugs not prescribed by the AFCD or a registered veterinarian, or any fish drugs with unknown ingredients. When giving drugs, stick to the prescribed dosage and observe the withdrawal period afterwards. In case of doubt, seek assistance from the AFCD.

The following fish drugs are not prohibited but fish farmers must adhere to the following rules :

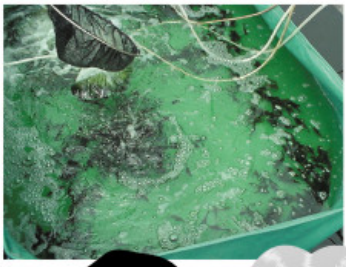
Drug	Rule
Hydrogen peroxide	Immerse fish in a solution of 1:2,000 30% hydrogen peroxide (i.e. 500 ml of hydrogen peroxide for 1 ton of water) for 1 hour.
Formaldehyde	Immerse fish in a 1:10,000 formaldehyde solution (i.e. 100 ml of formaldehyde for 1 ton of water) for 1 hour. If necessary, increase the concentration to 1:4,000 (i.e. 100 ml of formaldehyde for 0.4 ton of water). Do not use any formaldehyde solution with white sediments.
Potassium permanganate	Immerse fish in 1:250,000 potassium permanganate solution (i.e. 4 g of potassium permanganate for 1 ton of water) for 1-3 hours. For extended immersion, use a 1:400,000 potassium permanganate solution (i.e. 2.5 g potassium permanganate for 1 ton of water) for 24 hours.

5.2 Correct use of fish drugs

Drug bath is a major course of treatment for fish diseases. The correct way of preparing a drug bath is as follows :

- Prepare a correct dose of fish drug, aerating equipment and a water bag seine or large tank.

- Apply drug and stir well. Put a small number of fish into the drug bath first and observe their reaction to the drug. Introduce the major stock only when the reaction of the first batch of fish is normal.



- Observe how the fish react regularly and pump air continuously. If the fish behave strangely, stop immersion immediately and consider other treatments.

5.3 Safety rules for using fish drugs

- When applying fish drugs, avoid contact with eyes, mouth, skin or clothing or inhalation into lungs.
- Wear personal protection gear, such as safety goggles, gloves, protective clothing and mask.
- Some fish drugs are highly volatile. Maintain good ventilation at all times.
- Containers should be correctly labelled and covered. Empty containers may have residues of hazardous drugs.
- Stay well clear of ignition sources and dangerous chemicals like oxides, strong acids and strong alkalis when using fish drugs.
- Should any part of your body come into contact with fish drugs, rinse well with plenty of water immediately.
- In case of contact with eyes, rinse well with plenty of water immediately and lift the upper and lower eye lids to rinse slowly for more than 5 minutes. Seek medical attention right away.
- Store fish drugs in a cool, dry and well ventilated place and away from direct sunlight.

Technical Support

Fish farmers are welcome to telephone the AFCD for free information and technical advice:

General Aquaculture Information : 2471 9142 (pond fish) / 2150 7083 (marine fish)
Fish Health and Disease : 2471 9142 (pond fish) / 2150 7083 (marine fish)
Red Tide and Water Quality : 2150 7124

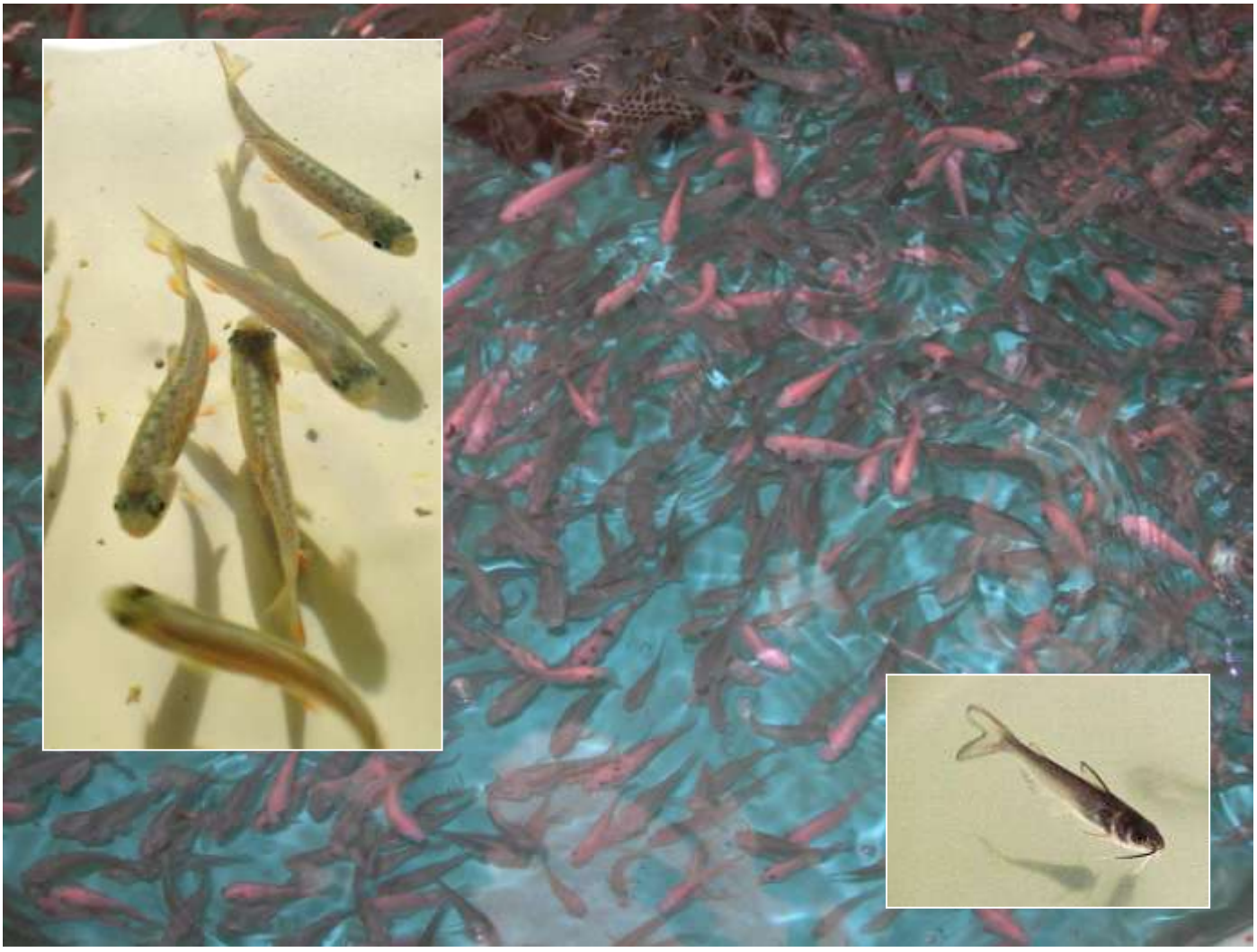
For further details of prevention and treatment of fish diseases, contact the Aquaculture Fisheries Division of AFCD on 2150 7083 or email us at mailbox@afcd.gov.hk

June 2009

Revision Date: February 2011

American Fisheries Society
Fish Culture Section

Guide to Using Drugs, Biologics, and Other Chemicals in Aquaculture



FCS Working Group on Aquaculture Drugs, Chemicals, and Biologics

CONTENTS

PREFACE

The Guide to Using Drugs, Biologics, and Other Chemicals in Aquaculture (Guide) describes regulated products that are approved for use in U.S. aquaculture. The Guide also describes drugs that are not yet approved for use in the U. S. but that can be used under an Investigational New Animal Drug (INAD) exemption and drugs that are considered to be of low regulatory priority (LRP) enforcement. The Guide was developed by the Working Group on Aquaculture Drugs, Chemicals, and Biologics established by the Fish Culture Section of the American Fisheries Society. The Working Group was created to facilitate communication and cooperation between public and private aquaculture interests, academic and agency researchers, and regulators to address needs and issues associated with the approval and use of aquatic animal drugs, biologics, and other regulated products in aquaculture. In this role, the Working Group created the Guide as an update and extension of the Guide to Drug, Vaccine, and Pesticide use in Aquaculture, originally developed by the Federal Joint Subcommittee on Aquaculture Working Group on Quality Assurance in Aquaculture Production in cooperation with various other agency and industry partners. The current Guide continues in the spirit of the previous document, serving as a comprehensive introduction to the use of regulated products in aquaculture and a resource for fish culturists.

THIS GUIDE IS INTENDED FOR INFORMATIONAL AND EDUCATIONAL PURPOSES ONLY. It is not meant as a prescriptive tool nor does it replace the advice of professional fish health biologists or licensed veterinarians. While every effort was made to ensure the accuracy of the information and calculations included in the Guide, the user is ultimately responsible for ensuring the accuracy of the calculations, administrations and legal use of applied products. Before using any drug or chemical that may be discharged into U.S. waters, contact your local National Pollutant Discharge Elimination System (NPDES) authority. Before using a drug authorized for use only under INAD exemption, make sure that you are a participant in the INAD program that is authorized to allow use of that drug. We provide no warranty nor guarantee for any calculations provided in the companion Treatment Calculator and all calculations should be verified by the user before use. Mention or display of a trademark, propriety product, or firm in this Guide does not constitute endorsement by the American Fisheries Society, the Fish Culture Section, or the Working Group.

All information contained in the Guide is accurate as of the revision date indicated on the upper left of the cover page. However, allowed uses of regulated products in aquaculture are dynamic and subject to change between revisions. IT IS THE RESPONSIBILITY OF INDIVIDUALS ADMINISTERING REGULATED PRODUCTS TO READ AND FOLLOW LABEL INSTRUCTIONS, AND BE AWARE OF ANY CHANGES IN RELEVANT REGULATION PRIOR TO USING THESE PRODUCTS.

ACKNOWLEDGMENTS

Contributors to the development of this Guide include:

Jim Bowker
U.S. Fish and Wildlife Service, Aquatic Animal Drug Approval Partnership Program
Co-Chair, Working Group on Aquaculture Drugs, Chemicals, and Biologics

Jesse Trushenski
Southern Illinois University Carbondale, Fisheries and Illinois Aquaculture Center
Co-Chair, Working Group on Aquaculture Drugs, Chemicals, and Biologics

Maren Tuttle-Lau
U.S. Geological Survey, Upper Midwest Environmental Sciences Center

Dave Straus
U.S. Department of Agriculture, Agricultural Research Service, Stuttgart National Aquaculture Research Center

Mark Gaikowski
U.S. Geological Survey, Upper Midwest Environmental Sciences Center
Co-Chair, Working Group on Aquaculture Drugs, Chemicals, and Biologics

Andrew Goodwin
University of Arkansas Pine Bluff, Aquaculture and Fisheries Center

Laura Sprague
U.S. Fish and Wildlife Service, Idaho Fish Health Center

Molly Bowman
U.S. Fish and Wildlife Service, Aquatic Animal Drug Approval Partnership Program

The Guide was critically reviewed by:

Tom Bell, U.S. Fish and Wildlife Service, Aquatic Animal Drug Approval Partnership Program
Joe Chapman, Idaho Fish and Game, Hagerman Hatchery
David Cline, Auburn University, Alabama Cooperative Extension System
Bob Durborow, Kentucky State University, Aquaculture Research Center
Mike Freeze, Keo Fish Farms, Inc.
Alan Johnson, Iowa Department of Natural Resources, Rathbun Fish Hatchery
Ronald Kinnunen, Michigan State University, Michigan Sea Grant
John (Randy) MacMillan, Clear Springs Foods, Inc., Working Group on Aquaculture Drugs, Chemicals, and Biologics Co-chair
Dave Miller, Wyoming Game and Fish Department, Clark's Fork Fish Hatchery
Melisse Schilling, U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Center for Veterinary Biologics
Michael Schwarz, Virginia Tech, Virginia Seafood Agricultural Research and Extension Center
Steve Sharon, Wyoming Game and Fish Department, Working Group on Aquaculture Drugs, Chemicals, and Biologics Co-chair

ACCESS

The Guide and companion Treatment Calculator are available on the following websites:

American Fisheries Society Fish Culture Section
http://www.fishculturesection.org/

U. S. Fish and Wildlife Service's Aquatic Animal Drug Approval Partnership Program
http://www.fws.gov/fisheries/aadap/home.htm

INTRODUCTION

Aquaculture is an established and growing industry in the U.S., and an increasingly important supplier of foods for U.S. consumers. The industry also produces baitfish for sport-fishing and ornamental fish for the pet trade. In addition, federal and state fish hatcheries raise millions of fish for stocking in U.S. waters to support commercial and recreational fisheries and species restoration efforts. Aquaculture is an important contributor to U.S. agriculture and a cornerstone of aquatic natural resources management.

All aquaculture operations will have a demand for drugs, biologics, and other chemicals, collectively referred to as "regulated products". This may include: 1) disinfectants as part of biosecurity protocols, 2) herbicides and pesticides used in pond maintenance, 3) spawning aids, 4) vaccines used in disease prevention, or 5) marking agents used in resource management. Despite the best efforts of fish culturists to avoid pathogen introductions, therapeutic drugs are also occasionally needed to control mortality, infestations, or infections. It is critical that culturists have access to regulated products that are safe and effective and apply them in a manner that is consistent with their intended use, best management practices, and relevant rules and regulations.

The Federal Food, Drug, and Cosmetic Act (FFDCA) defines the term "drug" broadly to include articles intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease, articles (other than food) intended to affect the structure or function of the body, and articles recognized in official drug compendia. In aquaculture, this includes compounds that one would typically think of as drugs—antibiotics and other therapeutic compounds, fish sedatives and anesthetics, gender manipulators and spawning aids, etc. However, it's important to remember that innocuous, common household compounds—hydrogen peroxide, salt, and ice—are also considered drugs. A general misconception is that products that are considered by the U.S. Food and Drug Administration (FDA) to be generally recognized as safe (GRAS) or effective (GRAE) can be legally used on fish; however, such products cannot be used on fish unless they have been approved by FDA for the intended purpose. There are various approval categories and ways in which approved drugs can be used legally, as well as ways in which drugs that are not yet approved can be used. Regardless of which category the drug falls under, drugs should be used judiciously in aquaculture. The drugs section covers the various types of approved drugs and uses, and also describes some common application methods.

Disinfectants are compounds which have antimicrobial properties that are generally applied to equipment and structures and are not intended to have a therapeutic effect on cultured animals. Greater emphasis on biosecurity in aquaculture has led to increased demand for disinfectants and greater need for aquaculturists to understand how to apply these compounds safely and effectively. Although a number of compounds classified as drugs in aquaculture may also be considered disinfectants in other industries, they are described in the section on drugs. The disinfectants section describes the most common uses for disinfectants in aquaculture, as well as appropriate compounds and application rates for aquaculture facilities.

Pesticides are not widely used in aquaculture; however, herbicides can be an important part of aquatic weed management in pond production. Certain algicides, and fish and invertebrate toxicants may also be used in some situations. The pesticides section of the Guide will focus on the most common pesticides applications in aquaculture.

Biologics include a range of products of biologic origin used in the diagnosis, prevention, and treatment of diseases. In aquaculture, the most commonly used biologics are vaccines used to immunize animals and prevent infections from occurring. The biologics section of the Guide will go over the vaccines that are currently available for use in aquaculture, as well as provide recommendations for their usage.

This Guide is intended to serve as a resource to assist aquaculturists to use regulated products legally and judiciously. The principles outlined in this Guide are intended to provide directions for the use of drugs, biologics, and other chemicals in ways that ensure the safety of treated animals, end-users, consumers of farm-raised seafood, and the environment. The Guide is not meant to be a comprehensive resource, but rather a primer and resource for finding further information. The Guide presents the following information related to the use of drugs, pesticides, vaccines and other biologics, and disinfectants in aquaculture:

- Regulatory authorities and their purviews
- Guidance to approved compounds and their uses
- Application methods and example calculations
- Where to find more information

IT IS THE RESPONSIBILITY OF THOSE USING, PRESCRIBING, AND/OR RECOMMENDING THE USE OF REGULATED PRODUCTS TO KNOW WHICH PRODUCTS CAN BE LEGALLY USED AND WITH WHAT RESTRICTIONS UNDER FEDERAL, STATE, AND ANY OTHER LOCAL REGULATIONS. REMEMBER, REGULATED PRODUCT USES MAY VARY BY LOCATION, SPECIES, LIFE STAGE, AND CULTURE CONDITIONS OR METHODS.

REGULATORY AUTHORITIES AND THEIR PURVIEWS

Several federal and state agencies are involved in regulating drugs, biologics, and other chemicals used in aquaculture. Each federal agency has specific, congressionally mandated responsibilities to regulate the products under their jurisdictions. In the case of aquaculture, there is some overlap between these federal agencies, as well as with state and local regulatory bodies.

The U.S. Food and Drug Administration (FDA) has many responsibilities under the FFDCA, including regulating the manufacture, distribution, and use of new animal drugs and animal feed and ensuring their safety and efficacy. The FDA Center for Veterinary Medicine (CVM) regulates the manufacture, distribution, and use of animal drugs. CVM is responsible for ensuring that drugs used in food-producing animals, including fish, are safe and effective and that foods derived from treated animals are free from potentially harmful drug residues. FDA has jurisdiction over new animal drugs, including products intended to treat aquatic animal parasites or diseases, manipulate gender or reproduction of aquatic species, or anesthetize or sedate aquatic animals.

The U.S. Environmental Protection Agency (EPA) is tasked with various responsibilities under a range of laws, including registration and licensing of pesticides. EPA is responsible for ensuring that registered pesticides meet scientific and regulatory standards for the protection of human health and the environment, as well as tolerances to ensure a reasonable certainty of no harm from pesticide residues in food. With respect to aquaculture, EPA has jurisdiction over disinfectants, sanitizers, and aquatic treatments used solely for the control of algae, bacterial slime, or pest control (excluding pathogens in or on fish). As authorized by the Clean Water Act, EPA also administers the National Pollutant Discharge Elimination System (NPDES) which prohibits the discharge of pollutants, including regulated products, into waters of the United States.

The Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of Agriculture (USDA) regulates all veterinary biologics, including vaccines, bacterins, antisera, diagnostic kits, and other products of biological origin. These duties are performed by the APHIS Center for Veterinary Biologics (CVB), which is charged with assuring that pure,

safe, potent and effective veterinary biologics, are available for the diagnosis, prevention, and treatment of animal diseases. CVB is responsible for testing, licensing, and quality control monitoring of vaccines and other biologics used in U.S. aquaculture.

State agencies may also regulate the use of drugs, biologics, and other chemicals in aquaculture. While many state agencies simply defer to the federal regulations and regulatory authorities, others impose additional requirements and restrictions beyond those in the federal regulations. For further information on the regulatory authorities that have jurisdiction over aquaculture in your area, you may consult "State/Territory Permits and Regulations Impacting the Aquaculture Industry", the "Guide to Federal Aquaculture Programs and Services", or the National Association of State Aquaculture Coordinators (directory of State Aquaculture Coordinators available here).

DRUGS

APPROVED AND CONDITIONALLY APPROVED DRUGS

All drugs used to control mortality associated with bacterial diseases or infestation density of parasites, sedate or anesthetize fish, induce spawning, change gender, or in any other way change the structure or function of aquatic species must be approved by the CVM. Approved drugs are compounds for which FDA CVM has evaluated data and concluded that the drug is effective in achieving the stated claim; is safe to the target fish, humans who might consume treated fish, and the environment when applied at labeled doses; and can be manufactured according to CVM criteria. If a drug has been proven safe and is manufactured according to CVM criteria, it may be marketed as a conditionally approved drug while additional data is collected to show that the drug is effective. It is illegal to use (1) unapproved drugs for any purpose or (2) approved drugs in a manner other than that specified on the product label unless the drugs are being used under the strict conditions of an investigational new animal drug (INAD) exemption or an extra-label prescription issued by a licensed veterinarian.

Table 1 lists drugs currently approved or conditionally approved by CVM for use in aquatic species. For more information about specific approved and conditionally approved drugs, click the individual drug links in Table 1. For further information about approved and conditionally approved drugs, users can refer to the FDA CVM list of approved aquaculture drugs, or the USFWS AADAP website.

REMEMBER, ANY USE OF AN APPROVED DRUG IN A MANNER NOT SPECIFICALLY NOTED ON THE DRUG'S LABEL IS ILLEGAL, UNLESS USED WHERE PERMITTED UNDER AN INAD OR UNDER AN EXTRA-LABEL PRESCRIPTION BY A LICENSED VETERINARIAN.

LOW REGULATORY PRIORITY DRUGS

Although technically unapproved for use in fishes, low regulatory priority (LRP) drugs are compounds that CVM considers to be of comparatively little risk to aquatic organisms, human consumers, or the environment. CVM has stated that it is unlikely to regulate the use of LRP drugs if the following five conditions are met: 1) the substances are used for the listed indications, 2) the substances are used at the prescribed levels, 3) the substances are used according to good management practices, 4) the product is of an appropriate grade for use in food animals, and 5) there is not likely to be an adverse effect on the environment.

The compounds described in Table 2 are considered to be of low regulatory priority when used for the indications listed. A fact sheet for Ovadine® (iodine) is the only one included in this Guide. For further information, please refer to the "Enforcement Priorities for Drug Use in Aquaculture".

DEFERRED REGULATORY STATUS DRUGS

Two compounds, copper sulfate and potassium permanganate, have been given "deferred regulatory status", pending further evaluation by CVM. Both copper sulfate and potassium permanganate are or have been EPA registered pesticides with approved uses in aquaculture settings (see Pesticides). At this time, either compound can be used to treat external protozoan or metazoan infestations as well as external bacterial or fungal infections on fish. For further information about these compounds, please click the fact sheet links above, or refer to the sections in the Guide on Pesticides or INAD drugs. For further information about deferred regulatory action, please refer to the FDA CVM "Enforcement Priorities for Drug Use in Aquaculture".

INVESTIGATIONAL NEW ANIMAL DRUGS (INADs)

Investigational New Animal Drug (INAD) exemptions are granted by CVM to permit the purchase, interstate shipment, and use of unapproved animal drugs for investigational purposes. There are two types of INADs: standard and compassionate. A standard INAD authorizes the use of an unapproved drug to develop data through use in animals that may not be released into the environment or slaughtered for human consumption. Compassionate INAD exemptions authorize the use of an unapproved drug in fish on a production scale and, because a slaughter authorization is granted as part of the compassionate INAD authorization, allows the release of treated fish for slaughter or release into the environment; a compassionate INAD authorization allows treated fish to enter the human food chain. Although compassionate INAD exemptions are used primarily in cases where the aquatic animals' health is of primary concern, investigators are still required to collect information and administer the drug according to the methods authorized in the compassionate INAD protocol. Under a compassionate INAD, CVM must be provided with information regarding use patterns, including the amount of the drug that was used, how many fish were treated, the outcome of the treatment, etc. In short, INAD exemptions allow aquaculturists access to unapproved drugs which have a reasonable expectation of effectiveness for the proposed indication to better manage the health of cultured fish while providing critical information regarding the safety and effectiveness of the drug under a diverse set of rearing conditions which would otherwise not be evaluated in the drug approval process.

Several individuals and organizations hold INAD exemptions for certain drugs, but the largest INAD exemption holder is the U.S. Fish and Wildlife Service (USFWS) which operates the National INAD Program (NIP) out of the Aquatic Animal Drug Approval Partnership Program (AADAP; Bozeman, MT). Prior to 1998, all INAD exemptions held by the USFWS were restricted to use by Service facilities only. With the establishment of the NIP in 1998, non-USFWS entities were allowed to participate in the USFWS compassionate INAD exemption program. Through the NIP, a wealth of data have been generated that may be useful in supporting broad new animal drug approvals for a variety of drugs. The NIP is operated on a cost-reimbursable basis, and participating agencies/organizations must sign a Cooperative Agreement with the USFWS. This agreement establishes the obligations and procedures to be followed by the USFWS and all cooperators to allow the use of specific drugs and chemicals under USFWS-held INAD exemptions as set forth by CVM.

This Guide focuses on the INAD exemptions available as part of the NIP, and additional information is provided for each of the NIP drugs below. For more detailed information about these compounds and what they can be used for, please click the fact sheet links below in Table 3. For information about the NIP or individual NIP drugs, please refer to the

USFWS AADAP program website. For further information about INAD exemptions and current exemption holders, refer to the FDA CVM website which includes information for contacting CVM with further questions.

BIOLOGICS

ABOUT BIOLOGICS

Veterinary biologics are products designed to diagnose, prevent, or treat diseases in animals. Although the term "biologic" can potentially refer to a wide range of products, those used in fish are generally classified as vaccines or bacterins: vaccines contain live organisms (bacteria or viruses) or killed viruses, whereas bacterins contain inactivated cultures of bacteria. Both are used to increase the natural ability of the animal to resist the disease caused by the organism from which the biologic product is derived. Biologics differ from drugs functionally (biologics affect the fish's immune system while drugs affect the disease-causing agent) and in terms of how they are applied (preventative, before infection application vs. therapeutic, post-infection application). Also, most biologics leave no chemical residues in animals.

There are a number of licensed, commercial veterinary biologics that are currently approved for use in fish; these products are described below. Autogenous vaccines are a specific subset of biologics that are derived from specific pathogens associated with a specific facility. Some fish culture facilities use autogenous vaccines and find them to be highly beneficial tools for fish health management; however, given the specificity of these biologics and their use patterns, they are not the focus of the Guide. As with drugs or any other compound used in aquaculture, it is recommended to seek professional advice about the specific biologic product you are interested in using before using it for the first time. However, there are some general recommendations that apply to the use of any biologic:

- Follow all recommendations provided on the product label or other product literature, including proper storage temperature.
- Shake biologic product well before using, and use all the opened product at once, i.e., don't store opened biologics for use at a later date.
- Biologics should only be applied to healthy fish.
- If human exposure (e.g. accidental injection) of the biologic product occurs, immediately seek medical advice.

REMEMBER THAT VACCINATION IS JUST ONE COMPONENT OF A COMPLETE FISH HEALTH PROGRAM, AND CANNOT PREVENT ALL FISH HEALTH PROBLEMS. SEEK PROFESSIONAL ADVICE REGARDING APPROPRIATE VACCINE USE BEFORE APPLICATION

For more information on using biologics in aquaculture production, users are encouraged to consult USDA APHIS Program Aid No. 1713 "Veterinary Biologics: Use and Regulation" and "Use of Vaccines in Finfish Aquaculture". For additional information about veterinary biologics, you can also consult the USDA APHIS CVB website, which includes contact information for further questions. Additionally, a reference poster with information about currently approved biologics can be ordered, viewed, and/or downloaded free of charge from the USFWS AADAP website. For information about preparing immersion baths or delivering injections, please refer to the Application Techniques section.

APPROVED BIOLOGICS

True Name: Aeromonas Salmonicida Bacterin (Trade Name: Furogen Dip)

Use: Aids in prevention of furunculosis in salmonids, ≥2 g, caused by *Aeromonas salmonicida*

Dose and Administration: Each liter of bacterin is sufficient to vaccinate 100 kg (220 lbs.) of fish. Add 1 L of bacterin to 9 L of clean hatchery water to make a 10-L vaccine bath. Aerate the bath. Net, drain, and immerse 5-kg (11 lb.) batches of fish in the bath for 60 seconds. The bath may be reused up to 20 times before discarding.

Permittee: Novartis Animal Health US, Inc., Larchwood Iowa 51241; U.S. Vet. Permit No. 303A

Precautions: Withhold food from fish for 24 hours prior to vaccination; do not vaccinate within 21 days of slaughter or release of catchable-sized fish

True Name: Aeromonas Salmonicida-Vibrio Anguillarum-Ordalii-Salmonicida Bacterin (Trade Name: Lipogen Forte)

Use: Aids in prevention of furunculosis, vibriosis, and cold water vibriosis in salmonids ≥10 g.

Dose and Administration: Anesthetize fish to immobilize and administer a 0.1 mL injection intraperitoneally, one fin length ahead of the pelvic fins, along the ventral midline of each fish. Warming vaccine to room temperature before use may facilitate injection.

Permittee: Novartis Animal Health US, Inc., Larchwood Iowa 51241; U.S. Vet. Permit No. 303A

Precautions: Withhold food from fish for 48 hours prior to vaccination; do not vaccinate within 60 days of slaughter or release of catchable-sized fish.

True Name: Arthrobacter Vaccine, Live Culture (Trade Name: Renogen)

Use: Aids in prevention of bacterial kidney disease (BKD) caused by *Renibacterium salmoninarum* in healthy salmonids, ≥10 g.

Dose and Administration: Anesthetize fish until immobilized and then administer 0.1 mL of the resuspended vaccine intraperitoneally, along the midline, one fin length ahead of the pelvic fins. The recommended minimum post-vaccination period is 400 degree-days (°C) before pathogen exposure.

Permittee: Novartis Animal Health US, Inc., Larchwood Iowa 51241; U.S. Vet. Permit No. 303A

Precautions: Do no vaccinate fish within 60 days of slaughter or release of catchable-sized fish; do not administer antimicrobial drugs 14 days before or after vaccination; oxytetracycline administration is contraindicated within the 6 weeks before or after vaccination; diagnostic kits which employ the use of polyclonal antiserum against *Renibacterium salmoninarum* should not be used to screen fish vaccinated with this product for at least 4 weeks after vaccination since kidney samples from vaccinated fish will yield positive test results, regardless of natural infection; for maximum efficacy, vaccination should precede exposure to *Renibacterium salmoninarum* by at least 400 degree days (°C) .

True Name: Infectious Salmon Anemia Virus Vaccine, Aeromonas Salmonicida-Vibrio Anguillarum-Ordalii-Salmonicida Bacterin, Killed Virus (Trade Name: Forte V1)

Use: Aids in prevention of infectious salmon anemia (ISA), furunculosis, vibriosis, and cold water vibriosis in salmonids ≥30 g.

Dose and Administration: Anesthetize fish to immobilize and administer a 0.15 mL injection intraperitoneally, one fin length ahead of the pelvic fins, along the ventral midline of each fish. Warming the vaccine to room temperature may facilitate injection.

Permittee: Novartis Animal Health US, Inc., Larchwood Iowa 51241; U.S. Vet. Permit No. 303A

Precautions: Withhold food from fish 48 hours prior to vaccination, do not vaccinate within 60 days of slaughter; do not vaccinate fish during the period of smoltification; oil adjuvanted vaccines administered by intraperitoneal injection in fish may cause visceral adhesions; this vaccine is intended to be used in young fish stock, the effects of vaccination of

broodstock has not been determined; during vaccination, the water temperature of the holding tanks should be 2-12 °C (36-54 °F); for maximum efficacy, it is recommended that vaccination precede exposure to specified pathogens by at least 800 degree days (°C).

True Name: Yersinia Ruckeri Bacterin (Trade Name: Ermogen)

Use: Aids in prevention of enteric redmouth disease, caused by *Yersinia ruckeri* serotype 1 in healthy salmonids, ≥2 g.
Dose and Administration: Each liter of bacterin is sufficient to vaccinate 100 kg (220 lbs.) of fish. Add 1 L of bacterin to 9 L of clean hatchery water to make a 10-L vaccine bath. Aerate the bath during vaccination. Net, drain, and immerse 5-kg (11 lb.) batches of fish in the bath for 30 seconds. The bath may be reused up to 20 times before discarding.
Permittee: Novartis Animal Health, US, Inc., Larchwood, Iowa 51241, U.S. Vet Permit No. 303A
Precautions: Vaccination should precede exposure to specified pathogens by at least 250 degree days (°C); withhold food from fish 24 hours prior to vaccination; do not vaccinate within 21 days of slaughter or release of catchable-sized fish.

True Name: Flavobacterium Columnare Bacterin (Trade Name: FryVacc1)

Use: Aids in prevention of columnaris disease caused by *Flavobacterium columnare* in healthy salmonids ≥3 g.
Dose and Administration: Each liter of bacterin is sufficient to vaccinate 100 kg (220 lbs.) of fish. Add 1 L of bacterin to 9 L of clean hatchery water to make a 10-L vaccine bath. Aerate the bath during vaccination. Net, drain, and immerse 5-kg (11 lb.) batches of fish in the bath for 30 seconds. The bath may be reused up to 20 times before discarding.
Permittee: Novartis Animal Health, US, Inc., Larchwood, Iowa 51241, U.S. Vet Permit No. 303A
Precautions: Do not vaccinate within 21 days of slaughter or release of catchable-sized fish.

True Name: Vibrio Anguillarum-Ordalii Bacterin (Trade Name: Vibrogen 2)

Use: Aids in prevention of vibriosis caused by *Vibrio anguillarum* serotypes I and II and *Vibrio ordalii* in healthy salmonids ≥2 g.
Dose and Administration: For immersion vaccination, each liter of bacterin is sufficient to vaccinate 100 kg of fish. Add 1 L of bacterin to 9 L of clean hatchery water to make a 10-L vaccine bath. Aerate the bath during vaccination. Net, drain, and immerse 5-kg (11 lb.) batches of fish in the bath for 30 seconds. The bath may be reused up to 20 times before discarding. For injection vaccination, anesthetize fish ≥10 g in size to immobilize and administer a 0.1 mL injection of undiluted bacterin intraperitoneally, one fin length ahead of the pelvic fins, along the ventral midline of each fish.
Permittee: Novartis Animal Health, US, Inc., Larchwood, Iowa 51241, U.S. Vet Permit No. 303A
Precautions: Do not vaccinate within 21 days of slaughter or release of catchable-sized fish; withhold food from fish 48 hours prior to vaccination

True Name: Flavobacterium Columnare Vaccine, Avirulent Live Culture (Trade Name: AQUAVAC-COL)

Use: Aids in prevention of columnaris disease due to *Flavobacterium columnare* infection in healthy catfish ≥7 days of age.
Dose and Administration: One vial is sufficient to vaccinate 7.5 lbs. of catfish in 5 gal. of water. When applied to fry at 7 days post hatch (average size of 13,000 catfish/lb. or 29 catfish/g or 812 catfish/oz.), each vial of vaccine is sufficient to vaccinate 100,000 fry in 5 gal. of water. When vaccinating catfish older than 7 days post hatch, each 10-pack of vaccine is sufficient to vaccinate 75 lbs. of catfish in 50 gal. of water. See Table 4 and package insert for additional information.
Licensee: Intervet, Inc., Omaha, Nebraska 68103, U.S. Est. No. 165A

Precautions: Do not vaccinate within 21 days of slaughter or release of catchable-sized fish; withhold food from fish 48 hours prior to vaccination; vaccination not recommended when water temperatures are below 21 °C (70 °F) or above 29 °C (85 °F)

True Name: Edwardsiella Ictaluri Vaccine, Avirulent Live Culture (Trade Name: AQUAVAC-ESC)

Use: Prevention of enteric septicemia of catfish (ESC) disease due to *Edwardsiella ictaluri* infection

Dose and Administration: Each vial is sufficient to vaccinate 7.5 pounds of catfish in 5 gal of water. When applied to fry at 7 days post hatch (average size of 13,000 catfish/lb. or 29 catfish/gram or 812 catfish/oz.), each vial of vaccine is sufficient to vaccinate 100,000 fry in 5 gal. of water. When vaccinating catfish older than 7 days post hatch, each ten-pack of vaccine is sufficient to vaccinate 75 pounds of catfish in 50 gal of water. See Table 4 and package insert for additional information.

Licensee: Intervet, Inc., Omaha, Nebraska 68103, U.S. Est. No. 165A

Precautions: Do not vaccinate within 21 days of slaughter or release of catchable-sized fish, withhold food from fish 48 hours prior to vaccination, vaccination not recommended when water temperatures are below 21 °C (70 °F) or above 29 °C (85°)F

DISINFECTANTS

ABOUT DISINFECTANTS

Disinfectants are physical or chemical agents that are used to destroy microorganisms, usually on inanimate objects including hard surfaces and equipment. In aquaculture, disinfectants can also include compounds used to destroy microorganisms living on the surface of fish eggs. These agents are used in aquatic animal rearing facilities as part of biosecurity protocols (see below) to control the spread of aquatic animal pathogens or nuisance/invasive species. In the case of compounds applied to eggs, disinfectants can be used as part of a comprehensive fish health management plan. Disinfectants are related to, but different from sanitizers, antiseptics, biocides, and sterilizers: biocides and sterilizers are agents that kill all forms of life, not just microbes; antiseptics refer to antimicrobial agents that are used to destroy microbes on living tissues; and sanitizers are compounds that clean and disinfect at the same time.

It is important to recognize that not all disinfectants are effective or appropriate in all circumstances. For example, iodine is appropriate for disinfecting eggs, but it is quickly neutralized by biological material and exposure to light and can stain clothing and equipment. As a result, iodine is not a good disinfectant for foot baths or net dips. Conversely, chlorine is particularly good for sanitizing nets, siphons, and other equipment, but is highly toxic to aquatic organisms unless neutralized. Disinfection can be optimized by selecting the appropriate agent for each scenario, and by following these general recommendations:

- Remove dirt, vegetation, or other debris before disinfecting.
- Use the recommended disinfectant concentrations/intensities.
- Allow sufficient contact time for disinfection to occur.

A large number of chemical and physical agents can be used to disinfect field gear and other hard surfaces. Recommended uses for these different disinfectants are summarized in Table 5. Relatively few agents are appropriate for use as egg disinfectants. For more information about disinfectants in aquaculture, users are encouraged to refer to World Organization for Animal Health (OIE) Manual of Diagnostic Tests for Aquatic Animals which includes a chapter on methods for disinfection of aquaculture establishments.

ABOUT BIOSECURITY

"Biosecurity" refers to practices used to prevent the introduction and spread of disease-causing organisms and nuisance/invasive species. Although many common fish pathogens and parasites are present in virtually all environments and are difficult or impossible to eradicate (e.g., *Flavobacterium columnare*, the causative agent of columnaris disease), others have a regional distribution (e.g., Viral Hemorrhagic Septicemia in the Western and Northeast U.S., the Great Lakes region, and Eastern Canada) or easier to avoid or contain (e.g., yellow grub). Biosecurity procedures can be particularly useful in minimizing risk of regionally distributed pathogens as well as those considered to have a ubiquitous distribution. Additionally, certain fish diseases are considered more serious than others (e.g., OIE-reportable fish pathogens including Viral Hemorrhagic Septicemia and Whirling Disease) and in regions where these diseases are known to exist, strict biosecurity protocols may be required or at least strongly encouraged.

Biosecurity is commonly associated with disinfection, but comprehensive biosecurity plans can go well beyond simple disinfection procedures to include everything from facility layout and design, to livestock sourcing and quarantine, to record-keeping. Biosecurity practices vary from one situation to the next, based on the potential risks associated with the type of facility, culture species, and pathogens or invasive/nuisance species that are involved. However, proper use of disinfectants as described in this Guide to minimize the risk of introducing fish pathogens from one location to another is a common feature of most aquaculture biosecurity plans.

For more information about biosecurity, users can refer to an aquaculture biosecurity manual and accompanying annotated presentation that were developed for Illinois aquaculture facilities, "Biosecurity Protection for Fish Operations" which focuses on Arkansas aquaculture operations, or the North Central Regional Aquaculture Center "Biosecurity for Aquaculture Facilities in the North Central Region" fact sheet. Although originally developed with regional facilities and biosecurity concerns in mind, the strategies described in these resources are largely applicable to aquaculture facilities throughout the U.S. Users may also wish to review "Sanitation Practices for Aquaculture Facilities" for further information.

PESTICIDES

ABOUT PESTICIDES

The list of pesticides registered for aquatic pest management in the U.S. continues to expand every year, however, only a handful of products are labeled for use in aquaculture production. There are three ways that pesticides can be legal for use in aquaculture production: 1) a full national EPA registration, 2) 24c Special Local Needs Registration (24c SLN), or 3) Section 18 Emergency Exemption. Full national EPA registration means that the product label will include specific instructions for use in aquaculture. Certain aquatic herbicides (described further below) and the insecticide Dimilin® 25W hold full national EPA registrations for certain applications in aquaculture. 24c SLN registrations are allowed under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) for pesticides that are needed for problems that are localized to certain regions and for which the pesticide manufacturer is unlikely to pursue separate national registrations. If there is a "Special Local Need" for a pesticide, a farmer or group or farmers can work together with the manufacturer that holds the national registration for a pesticide to get a special supplemental label approved to meet a local need. It is also possible to obtain a "3rd party 24c" where a trade association develops a supplemental label for a national product and has it approved through state regulators and the EPA. A 3rd party 24c does not require the support or consent of the manufacturer, but the trade association holding the supplemental label may be responsible for annual registration fees. This is a very common practice in terrestrial agriculture where a crop may only be grown in a small region or when a particular pest may only be present in a limited area. The main benefit to a 24c SLN registration is that

the supplemental label can often be approved without the need for additional scientific studies. For all 24c registrations, the need must be limited and local, there must not already be a compound labeled for the same purpose, the pesticide must already have a full national registration for some other use, and use must be limited to the region and purpose included on the supplemental label. A Section 18 Emergency Exemption is similar to a 24C SLN registration, but is intended to address emergency situations like the sudden emergence of a new pest. Requirements are similar to a 24c SLN registration, but are designed so that conditional approval can be obtained in just a few days. Section 18 Emergency Exemptions are temporary 'stop-gap' measures, and are intended to be replaced by 24c SLN registrations or full national registrations if the problem persists. Several pesticides are regionally available to aquaculturists through the 24c SLN and Section 18 Emergency Exemption mechanisms. The best source for information about pesticides which may be available via these alternative pathways is your Cooperative Extension Service office or your local aquaculture trade association.

For specific information about pesticides currently registered for use in the U.S., you can also consult the EPA's National Pesticide Information Retrieval System (NPIRS). NPIRS is a searchable online database of currently registered pesticides, which also links to EPA's Pesticide Product Label System (PPLS) where users can access electronic copies of pesticide product labels and directions for use. Please visit the NPIRS system and access the Pesticides Search system. From here, you can search by active ingredient ("copper sulfate") or product trade name ("Triangle Brand"[1]). From the search results, you can access product reports for compounds matching your search criteria. From the Product Report page, you can link directly to the PPLS system to access the current label images, which includes application methods, cautionary and safety information, details on compound storage and disposal, etc. Please note that the NPIRS and PPLS databases were not designed to be searchable by specific use patterns, i.e., aquatic weed management in aquaculture. However, they are a good resource for finding out more about what products are currently available based on active ingredients, and of those products available, which ones are labeled for aquatic applications.

CERTAIN ACTIVE INGREDIENTS MAY BE FOUND IN PRODUCTS LABELED FOR AQUATIC AND NON-AQUATIC USES. ALTHOUGH THE ACTIVE INGREDIENT MAY BE THE SAME, IT IS NOT LEGAL TO USE A PESTICIDE PRODUCT IN AQUACULTURE UNLESS IT IS LABELED FOR SUCH USE.

PESTICIDE APPLICATOR CERTIFICATION

Some pesticides are classified as "restricted use" and are not available to the general public because of the hazards associated with these compounds or their use patterns. Restricted-use pesticides can be purchased and applied only by a Certified Pesticide Applicator or under the supervision of a Certified Applicator. Pesticide Certification Programs are offered through state agencies responsible for pesticide regulation. For information on pesticide use, training programs, and certification requirements in any state, contact your local Cooperative Extension Service office.

IT IS THE RESPONSIBILITY OF THE USER TO UNDERSTAND THE RISKS ASSOCIATED WITH USING AQUATIC PESTICIDES AND HERBICIDES AND TO KNOW AND COMPLY WITH ALL RELEVANT REGULATIONS GOVERNING THEIR USE IN AQUACULTURE. USE ONLY PESTICIDE AND HERBICIDE PRODUCTS THAT ARE LABELED FOR USE IN AQUACULTURE AND FOLLOW ALL LABEL INSTRUCTIONS AND SAFETY PRECAUTIONS.

[1] Triangle Brand® is as an example trade name for copper sulfate; use as an example here does not represent endorsement of this product.

PESTICIDES COMMONLY USED IN AQUATIC WEED MANAGEMENT

Aquatic vegetation management is necessary to maintain optimal culture conditions in pond culture as well as the structural integrity of the ponds themselves. If left unchecked, submerged and emergent plants and algae can alter water quality and make feeding and harvesting difficult; over time submerged and emergent plants can even weaken levees. Herbicides are just one part of a comprehensive aquatic weed management plan that should include physical removal methods (seining and raking), biological control methods (stocking grass carp *Ctenopharyngodon idella*) and strategies to prevent vegetation from taking hold (e.g. fertilizing ponds to maintain plankton blooms to shade out aquatic vegetation). Although these methods may be cost-effective 'first lines of defense' against aquatic weeds, herbicides may be necessary to manage aquatic weeds in pond culture. For more information on using herbicides in aquaculture production including application methods and calculations, users should consult the Aquatic Weed Management publication series from the Southern Regional Aquaculture Center: "Control Methods", "Herbicides", and "Herbicide Safety, Technology and Application Techniques". Additional information about the efficacy of aquatic herbicides against various plants and algae is provided in Table 6. For more information about aquatic herbicides used in pond management, visit the AQUAPLANT website, which provides detailed information about numerous herbicides, application methods, and a photo index for identification of aquatic weeds.

Copper sulfate* ('blue stone') or *chelated coppers are commonly used contact algicides. However, copper can also be toxic to fishes, particularly in waters with low alkalinity. In waters with alkalinity ≤50 mg/L, copper application rates needed to control algae can cause fish kills. Using copper in waters with alkalinity ≤20 mg/L is extremely risky and should be avoided, along with copper applications in warm weather.

2,4-D is a translocated (moves within the plant) herbicide used to control emergent and submerged weeds. 2,4-D is available in both liquid and granulated forms, either as an ester or an amine compound. Although either form is relatively safe, the amine forms are slightly less toxic to fish and may be better for aquatic applications.

Diquat is a liquid contact herbicide used to control floating, emergent, or submerged weeds and filamentous algae. Diquat must be used with a non-ionic surfactant when applied to emergent foliage. Also, because Diquat binds clay particles, it is not effective in muddy, turbid waters.

Endothall is a contact herbicide available in liquid or granular forms as a dipotassium salt or mono-(N,N-dimethylalkylamine) salt. Because the amine salt is more toxic to invertebrates and fish, the dipotassium salt is more commonly used in aquaculture applications. However, the two compounds have different efficacies in controlling aquatic weeds: the amine salt of endothall is effective against many submerged plants and some algae (e.g., Hydrothol® formulations); the dipotassium salt of endothall is only effective in controlling submerged weeds (e.g., Aquathol® formulations).

Glyphosate is a translocated herbicide commonly used to control shoreline vegetation and some emergent aquatic weeds. It is most effective when applied during the weed's flowering or fruiting stage. A non-ionic surfactant may be necessary for some products or applications.

Fluridone is a translocated herbicide used to control most submerged and emergent weeds. It is available in liquid and pelleted forms. Unlike other commonly used herbicides, fluridone is not effective for spot treatment (i.e., the whole pond must be treated), and it kills weeds slowly which can allow for easier management of dissolved oxygen consumption as the plants die and decompose.

APPLICATION TECHNIQUES

In the midst of a disease outbreak or other fish health problem, it can be tempting to react immediately in the hopes of resolving the problem quickly. Although it is important to be aware of early warning signs and to respond promptly to fish health concerns should they arise, it is equally important to fully evaluate the situation and your options before deciding on any course of action. In short, fish culturists should *respond* to fish health issues, not *react*. Fish Hatchery Management (2nd Edition) outlines a series of questions culturists should ask themselves before applying a treatment to a group of fish:

1. Does the loss rate, severity, or nature of the disease warrant treatment?
2. Is the disease treatable, and what is the prognosis for successful treatment?
3. Is it feasible to treat the fish where they are, considering the cost, handling, and prognosis?
4. Is it worthwhile to treat the fish or will the cost of treatment exceed their value?
5. Are the fish in good enough condition to withstand the treatment?
6. Will the treated fish be released or harvested soon and is adequate withdrawal or recovery time available?

The answers to these questions will vary from one situation to the next and, in some cases, may require consultation with a veterinarian or a fish health professional (see section below). Although most aquaculture operations are concerned with managing the health of *populations*, not individual fish, animal welfare should also be considered when evaluating fish health issues. Taking the time to consider these questions can mean the difference between making rash, ineffective decisions and resolving problems using sound fish health management.

Assuming the decision to treat has been made, it is important to consider several additional factors that will determine treatment and application options as well as their likelihood of success:

1. The water supply
2. The fish
3. The treatment
4. The disease

Some of these factors are obvious, and are likely to have been given some independent consideration already (e.g., the fish and the disease involved). However, these factors should be considered together, in the 'big picture' context. Some species or life stages of fish are more or less sensitive to certain regulated products, some treatments require discharge of the treated water that may not be possible in certain culture systems, some diseases don't respond to certain treatments, etc. When applying a treatment, users must take all of the relevant factors into consideration to ensure the greatest likelihood of success. The following checklist (adapted from Fish Hatchery Management, 2nd Edition) may be helpful in planning, applying, and evaluating a treatment:

Before treating

1. Accurately determine the water volume, flow rate, and temperature.
2. Accurately determine the number and total weight of fish in the rearing unit.
3. Confirm the identity, expiration date, and active ingredient concentration of the regulated product to be applied.
4. Double-check treatment calculations. Beware of confusion from mixing metric and standard units.
5. Have aeration devices ready for use if needed.

6. If treated water is to be discharged, make sure all appropriate permits are in place and regulatory authorities have been notified.
7. If possible, conduct a bioassay on a small group of fish before treating the entire population in the rearing unit.

When treating

1. Dilute the regulated product with rearing water before applying it (or follow product directions)
2. Ensure the regulated product is well-mixed and evenly applied in the rearing units.
3. Observe fish closely and frequently during treatment for signs of distress.
4. Monitor temperature and dissolved oxygen levels in the rearing unit during treatment.
5. Except for oral treatments, discontinue feeding during treatment. Fish are unlikely to feed during treatment, and uneaten feed will foul the system and may reduce the efficacy of some treatments.
6. Discontinue treatment and restore normal culture conditions if fish become distressed.

After treating

1. Observe fish frequently for at least 24 hours following treatment.
2. Do not stress treated fish for at least 48 hours.
3. Recheck fish to determine efficacy of treatment

Depending on the regulated product, life stage of fish, and rearing system, appropriate application techniques will vary considerably. However, regulated products will typically be applied via culture water, food, or direct injection. The following sections are adapted from text describing treatment methods in Fish Disease—Diagnosis and Treatment and Fish Hatchery Management, 2nd Edition.

IMMERSION TREATMENT

In many cases, treatments will be applied by adding the regulated product to the culture water and applied as a dip, flush, prolonged bath, indefinite bath, or constant flow treatment.

For dip treatments, small numbers of fish are exposed to a strong concentration of the regulated product for a short period of time, usually no more than a minute. Given the handling involved and the potential for overdose because of the high product concentrations used, dip treatments are usually only used with relatively innocuous compounds (e.g., salt) and when the fish are going to be handled anyway (e.g., when fish are to be moved from one rearing unit to another).

Flush treatments consist of adding a solution of the treatment product at the inflow to a rearing unit and allowing it to flush through the system. Flush treatments are typically only feasible in raceways or other similarly configured systems. This type of treatment is not appropriate for regulated products with a narrow margin of safety, as it can be difficult to ensure uniform distribution and mixing of the product throughout the water column.

For prolonged bath treatments, water flow is temporarily stopped and the appropriate amount of the regulated product is added to the rearing unit. After a specified amount of time, the water flow is restored and the treatment is flushed from the rearing unit. As with other treatments, it is critical that the compound be adequately mixed and distributed to ensure uniform concentrations. Since water flow is off during the treatment, it is important to ensure that adequate aeration is provided, and depending on the length of the treatment and stocking density, that water quality is

monitored. Indefinite baths are similar to prolonged baths, except that the rearing system has a very large volume or little-to-no water exchange (e.g., ponds or water reuse systems). In the case of indefinite baths, lower product concentrations are used and are allowed to dissipate slowly through natural processes (absorption, chelation, photodegradation, etc.) or limited water exchange.

Constant flow treatments are applied to raceways and other flow-through systems when it is impossible or impractical or turn off water flow for a prolonged bath. For these treatments, inflow rates are calculated and an appropriate amount of regulated product is metered in at the inflow for the duration of the treatment. This type of treatment can be quite efficient, but given the amount of regulated product needed, these treatments can be costly and raise discharge issues.

Charged, constant flow treatments are a combination of prolonged bath and constant flow treatments, and can be used in laminar flow raceways. The treatment begins in the same manner as a prolonged bath treatment, where the water flow is temporarily stopped and the appropriate amount of regulated product is added to treat the entire volume of static water. Immediately after the treatment is applied, water flow is restored as part of a constant flow treatment, where the regulated product is metered into the rearing unit to maintain the treatment concentration for the rest of the treatment period. This type of treatment is often the most effective, but like traditional constant flow treatments, cost and discharge issues may prevent its use in all situations.

When applying water-borne treatments, it is important to consider that temperature and water chemistry can affect the toxicity of regulated products (e.g., copper sulfate in low alkalinity water), and the rate of product degradation or inactivation. Regulated products can have unintended effects on other biota, such as nitrifying bacteria, vegetation, and zoo- or phyto-plankton, and can create significant increases in biological oxygen demand. Finally, remember that water borne treatments may not be effective for some systemic infections.

ORAL TREATMENT

For the treatment of some diseases, particularly systemic infections, the regulated product must be introduced into the body of the fish. This is most commonly done through the use of medicated feed. Some regulated products may be applied as a 'top dressing' to normal feeds by end users (e.g., Romet® TC), usually by mixing pellets with medicated oil or gelatin solution and allowing the pellets to dry before feeding. Other regulated products, such as AQUAFLOR® (a veterinary feed directive [VFD] drug) must be incorporated into medicated feeds by licensed commercial feed mills (for more information about VFD drugs, see "Guidance for industry—Veterinary Feed Directive Regulation Questions and Answers"). In general, there is less flexibility with respect to medicated feeds: veterinarians cannot issue prescriptions for off-label use of drugs in oral treatments, including off-label use of VFD-medicated feeds. Given that most diseases cause fish to feed more slowly or stop feeding altogether, it is important to implement oral treatments early to ensure the maximum likelihood of success. As with all feeds, it is important to store medicated feeds in a cool, dry place, and to use them before the expiration date.

INJECTION TREATMENT

Direct injections of regulated products may be feasible for large or valuable fish (e.g., broodstock), particularly if there are small numbers of individuals to be treated. Injections are most commonly given intraperitoneally (IP, in the body cavity) or intramuscularly (IM, in the muscle). In either case, proper positioning of the needle is crucial to avoid damage to the internal organs. IP injections are typically given near the base of the pelvic fins at a ~45° angle to the ventral surface, aligning the needle along the axis of the body to avoid the internal organs. IM injections are typically given in

the dorsal musculature at a depth of approximately 0.5-1.0 cm with the needle at a ~45° angle to the side of the body. For more information about applying injection treatments, see "Hormone Preparation, Dosage Calculation, and injection Techniques for Induced Spawning of Fish". Although this publication is focused on the use of spawning agents, the injection techniques described are applicable to any injectable regulated product used in aquaculture.

CALCULATIONS

It is critical that regulated product dosage and application rates are correctly calculated. The Guide includes a companion Treatment Calculator for all approved drugs—please refer to the Treatment Calculator for more information on the use of approved drugs in static or flow-through tanks or in feeds. To calculate treatment application rates for ponds as well as tanks, users may consult the Southern Regional Aquaculture Center publications "Calculating Area and Volume of Ponds and Tanks" and "Calculating Treatments for Ponds and Tanks".

UNIT CONVERSION

Depending on the regulated product, how it is applied, and the units of measure routinely used at a facility, it may be necessary to convert temperature, volume, weight, or length units. Online calculators are particularly useful tools (e.g., online converter located here or the iGoogle Unit Converter gadget), but the following conversions may also be used for manual calculations:

Volume	Weight	Length	Temperature
1 gal. = 3.78 L	1 lb. = 453 g or 0.453 kg	1 inch = 2.54 cm	$^{\circ}C = (^{\circ}F - 32) \times (5/9)$
1 L = 0.26 gal	1 kg = 2.2 lbs.	1 cm = 0.39 in	$^{\circ}F = [^{\circ}C \times (9/5)] + 32$
1 tsp. = 5 mL		3.28 feet = 1 m	

WITHDRAWAL TIMES

Product withdrawal times must be observed to ensure that a product used in a target animal does not exceed legal tolerance levels in the animal tissue at the time the edible portion is made available for human consumption. Following proper withdrawal times helps to ensure that products reaching consumers are safe and wholesome. Withdrawal information is found on the product label, package insert, or feed tag of any approved product. Withdrawal requirements for drugs used in an extra-label manner must be determined by the prescribing licensed veterinarian. Prescribing veterinarians may wish to refer to the "Phish Pharm" database, which provides information on drug metabolism in fish and may be helpful in determining proper withdrawal times for extra-label drug use.

Withdrawal times are usually reported as a specific number of days. Each withdrawal day is a full 24 hours, starting from the last time an animal receives or is exposed to a regulated compound. Withdrawal time restrictions may also apply to the use of treated water for swimming, livestock watering, crop or turf irrigation, potable drinking supply, or other purposes.

BEST MANAGEMENT PRACTICES AND OTHER CONSIDERATIONS

BEST MANAGEMENT PRACTICES

The proper use of regulated products in aquaculture promotes human, aquatic animal, and environmental health and safety. Judicious use of regulated products ensures, to the greatest extent possible, the effectiveness of the products used and reduces overuse and unnecessary expense. By using regulated products properly, aquaculturists comply with the state and federal laws and maintain public trust and consumer confidence in cultured aquatic animals and seafood products.

Drugs, biologics, pesticides, and disinfectants can be costly, but when properly applied, they can be important tools in preventing significant economic losses and promoting animal welfare. However, these tools will not be optimally effective if the underlying problem is misdiagnosed or left uncorrected, or if the regulated products are not used as intended. Productivity is not the same as production efficiency, and greater yields based upon increased dependence on drugs or other regulated compounds do not necessarily translate to greater profits. Aquaculture facilities that can only raise fish through continuous reliance on regulated products to control disease or pests often find themselves out of business. Common sense and good culture practices can reduce the need for regulated products and increase the efficiency and/or cost-effectiveness of aquaculture operations.

There are numerous best management practices that users can employ to use regulated products safely and effectively in aquaculture, including:

- Diagnose the problem(s) before applying any regulated product.
- Seek professional advice on when and how to use regulated products.
- Use regulated products only for those species and indications listed on the label (exception - some drugs may allow extra-label use if specifically prescribed by a licensed veterinarian.
- Read and follow the product label directions for use.
- Use the proper dosage, amount, or concentration for the species, area, and/or specific condition; apply the full exposure regimen regardless of whether the signs which led to treatment are diminished. This is especially important when administering antibiotic and other compounds to which resistance could develop.
- Minimize handling and consider withholding feed on days when fish are to be treated.
- Use the correct method and route of application or administration (e.g. spraying aquatic vegetation, static [pond, tank or raceway] or continuous flow [tank or raceway] immersion water treatment, injection, or oral administration [medicated feeds]).
- Calculate withdrawal times accurately.
- Identify treated populations or stocks of production and holding units with clear markings.
- Do not use antibiotic drugs or medicated feed for disease prevention.
- Do not substitute unlabeled or industrial grade products for trade-name products that are labeled and approved for aquaculture or aquatic site uses.
- Keep accurate records.
- Consider the environmental impact of discharging treated water, including possible effects on non-target organisms.
- Adopt a producer quality assurance program (e.g., Hazard Analysis and Critical Control Points - HACCP) that provides guidelines for preventing tissue residue violations and for producing high-quality, wholesome products for consumer use.
- Be aware of requirements concerning personal safety measures and proper procedures for farm workers and pesticide applicators that handle or apply regulated products.
- Consider the economic consequences, both short- and long-term, of treatment before using a regulated product.

SAFETY CONSIDERATIONS

Literature provided with regulated products is an important source of information about how to use products safely and effectively, as well as in compliance with the law. Product labels and package inserts provided with drugs and biologics present information on proper storage, mixing, dosage, and administration; date of expiration; diluting or reconstituting the product; safe disposal of the unused product and product containers; and withdrawal times. Pesticide and disinfectant product labels describe how, when, and where the product may be applied, targets they are intended to control, and any precautionary statements on their environmental, physical, and chemical hazards. Any departure from the directions and conditions on the product label could mean a violation of law, and might pose a safety risk. Material Safety Data Sheets (MSDS's) provided by the product manufacturer (also available online through online databases such as this; links to MSDS's are also provided in each of the fact sheets below) are a source of additional information on safety precautions.

ALWAYS READ AND UNDERSTAND THE PRODUCT LITERATURE BEFORE USING ANY REGULATED PRODUCT, AND WHEN IN DOUBT, SEEK PROFESSIONAL ADVICE.

Users and others nearby can be affected by direct contact (including accidental injection) with regulated products or by inhalation exposure to vapors or airborne particulates. Treated waters or airborne drift can carry regulated products to an area or location where the products may have unintended effects on non-target species, including the general public. Users should always read the product label for information on required or recommended personal protective equipment. Common-sense precautions should be followed, such as wearing gloves, long-sleeved shirts, long pants, socks, shoes or boots, a hat and goggles, protective glasses, and/or a face shield. Some regulated products may require use of a respirator. In particular, individuals mixing and/or applying pesticides, or working in an area where pesticides are being applied or have recently been applied, should consider showering and washing their clothes afterwards. Work clothing potentially contaminated with pesticides should be washed separately from household laundry. Following product label directions and using common sense can minimize undesirable effects in humans, non-target plants and animals, and the environment.

HANDLING, STORAGE, AND DISPOSAL OF REGULATED PRODUCTS

Do not mix different regulated products unless it is specifically recommended on the product label. Combining products can have undesirable, effects (e.g., one or both products can be inactivated, or chemical reactions can produce harmful gases or create other safety hazards). Always follow label directions for storing, handling, mixing, diluting, reconstituting, and disposing of regulated products and their containers. This preserves the activity and quality of the product and helps prevent misuse, damaging effects on plants and animals, human injury, and environmental contamination. Proper mixing, diluting, and reconstituting are essential to ensure the effectiveness of products and the safety of their use. Improper dilution may cause the concentration or dosage administered to be too great or too small. Incomplete mixing can cause variations in the concentration or dosage applied or administered, and uneven effects (e.g. 'hot spots' which can cause fish mortality).

Regulated products should be stored in secure locations according to the product label; generally dry, well-ventilated areas located away from people, animals, human or animal foods and living areas are best. Some regulated products (e.g. drugs, biologics) are required to be refrigerated or frozen storage whereas others should be stored at ambient (room) temperatures; regardless of the specific temperature storage recommendations, it is prudent to avoid exposing regulated products to sun or other bright light and large changes in temperature or humidity. High-temperature storage (>80-90˚F) can cause excessive pressure to build in sealed containers, causing them to burst and leak. Exposure to high

temperatures can also result in product deterioration or inactivation and shortened shelf-life. Substantial changes in regulated product concentration may occur if stored incorrectly (e.g., drug concentration in one medicated feed was virtually unchanged when stored frozen but decreased 7–10% after 1 month and up to 30% after 3 months when stored at room temperature). All pesticides, drugs, and veterinary biologics should be stored in their original containers with the original label attached. If aliquots of regulated products are temporarily stored in smaller containers, all containers should be properly labeled. Don't store regulated products in other containers for long periods unless specifically authorized by the product label; the material in some containers may actually enhance degradation of the regulated product or directly react with the product creating a potentially hazardous situation. Dampness in storage areas can cause paper packages to deteriorate, metal containers to rust, and metal or glass containers to lose their labels. Disinfectants, pesticides, and drugs should not be stored where flooding is possible, or in sites where they might spill or leak into the environment. Secondary containment systems are recommended to contain spills.

Unused portions of a regulated product and empty containers should be disposed of properly. The best approach is to purchase only the amount of material that is immediately needed and use the entire product within a reasonable time period. Empty containers must be disposed of, however, and often a quantity of the product is left over. Product labels provide instructions for safe disposal. Improper disposal can result in product toxicity or environmental contamination, exposing the facility to liability from misuse. Many states run programs to collect and properly dispose of unwanted pesticides at no or low cost to participants. Nearly all states have plastic pesticide container collection and recycling programs coordinated by the Ag Container Recycling Council (ACRC). Further information on state pesticide disposal programs is available on the EPA website.

RECORD-KEEPING

Record-keeping is essential for any aquaculture business, and the use of some regulated products may require it. Good records provide a basis for sound, cost-effective management decisions. A good record-keeping system helps producers keep track of specific treatments and their results with identifiable, known populations or stocks of aquatic animals, as well as the specific water and land areas involved. By implementing good record-keeping practices, the status of all animals and culture systems can be determined at any time by all personnel.

Processors may require records demonstrating that all regulated products have been used properly and in accordance with necessary withdrawal times. Accurate record keeping is required for any producer using an INAD exemption in INAD field trials. Pesticide regulations require that users maintain records of restricted-use pesticides. While record-keeping may not be mandatory for general-use pesticides and other regulated product uses, there is certainly merit in documenting results for the purposes of adaptive management and decision-making in the future.

ESTABLISHING A VALID VETERINARIAN-CLIENT-PATIENT RELATIONSHIP AND WORKING WITH FISH HEALTH PROFESSIONALS

A valid veterinarian-client-patient relationship is required for extra-label use of drugs in aquaculture, as well as for use of veterinary feed directive drugs. Having a good working relationship with a veterinarian is also a good management practice for any aquaculture operation. The regulatory definition of a valid veterinarian-client-patient relationship is as follows:

1. A veterinarian has assumed the responsibility for making medical judgments regarding the health of (an) animal(s) and the need for medical treatment, and the client (the owner of the animal or animals or other caretaker) has agreed to follow the instructions of the veterinarian;

2. There is sufficient knowledge of the animal(s) by the veterinarian to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s); and
3. The practicing veterinarian is readily available for follow-up in case of adverse reactions or failure of the regimen of therapy. Such a relationship can exist only when the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of examination of the animal(s) and/or by medically appropriate and timely visits to the premises where the animal(s) are kept. (21 CFR Part 530).

A directory of aquatic veterinarians and disease diagnostic laboratories is available online. In addition to establishing a working relationship with a licensed veterinarian, users are also strongly encouraged to work with American Fisheries Society Fish Health Section-certified Fish Pathologists or Aquatic Animal Health Inspectors (directories available here). Fish Pathologists and Aquatic Animal Health Inspectors have been professionally certified to possess the competence, training, and ethics required to effectively serve the aquatic animal health needs of fisheries programs and aquaculture. Aquaculturists are encouraged to work with both fish health professionals and licensed veterinarians to create and maintain complete, effective fish health programs at their facilities.

Table 1. Approved and conditionally approved aquaculture drugs and indications. Click here to return to text.	
Compound	**Indication(s)**
AQUAFLOR® Active ingredient: 50% florfenicol	To control mortality due to enteric septicemia associated with *Edwardsiella ictaluri* in catfish To control mortality due to furunculosis in freshwater-reared salmonids To control mortality due to coldwater disease in freshwater-reared salmonids
AQUAFLOR®-CA1 Active ingredient: 50% florfenicol (conditionally approved)	To control mortality due to columnaris disease in catfish
35% PEROX-AID® Active ingredient: 35% hydrogen peroxide	To control mortality due to saprolegniasis in all freshwater-reared finfish eggs To control mortality due to bacterial gill disease in freshwater-reared salmonids To control mortality due to external columnaris disease in coolwater finfish and channel catfish
Chorulon® Active ingredient: chorionic gonadotropin	To improve spawning function in male and female brood finfish
Parasite-S Formalin-F Formacide-B Paracide-F Active ingredient: formalin Note: Approved labels for the formalin products listed above may differ from one another. Read the product label before use	To control external protozoa in all finfish To control monogenetic trematodes in all finfish To control fungi of the family Saprolegniaceae in all finfish eggs To control protozoan parasites in penaeid shrimp To control external protozoa in salmon, trout, catfish, largemouth bass, and bluegill To control monogenetic trematodes in salmon, trout, catfish, largemouth bass, and bluegill To control fungi of the family Saprolegniaceae in salmon, trout, and esocid eggs
Romet® 30 and Romet® TC Active ingredients: sulfadimethoxine and ormetoprim	To control furunculosis in salmonids To control enteric septicemia in catfish
Pennox® 343 Active ingredient: oxytetracycline hydrochloride	To mark skeletal tissues in finfish fry and fingerlings
Terramyc®in 200 for Fish Active ingredient: oxytetracycline dihydrate	To control ulcer disease , furunculosis, bacterial hemorrhagic septicemia, and pseudomonas disease in salmonids To control mortality due to coldwater disease in freshwater-reared salmonids To control mortality due to columnaris disease in all freshwater-reared *Oncorhynchus mykiss* To control bacterial hemorrhagic septicemia and pseudomonas disease in catfish To control gaffkemia in lobster
Finquel® Tricaine-S® Active ingredient: tricaine methanesulfonate	To temporarily immobilize fish of the families Ictaluridae, Salmonidae, Esocidae, and Percidae. In other fish and cold-blooded animals, the drug should be limited to hatchery or laboratory use

Table 2. Low regulatory priority aquaculture drugs, indications, and doses. Click here to return to text.		
Compound	**Indication(s)**	**Dose**
Acetic Acid	Parasiticide for fish	1000-2000 ppm dip for 1-10 minutes
Calcium chloride	Used to aid in egg hardening Used to aid in maintaining osmotic balance during fish holding and transport	10-20 ppm $CaCO_3$ (eggs) ≤150 ppm $CaCO_3$, indefinitely (fish)
Calcium oxide	External protozoacide for fish	2000 ppm dip for 5 sec
Carbon dioxide gas	Anesthetic for fish	
Fuller's Earth	Used to reduce the adhesiveness of fish eggs	
Garlic (whole form)	To control helminth and sea lice infestations of marine salmonids at all life stages	
Ice	Used to reduce the metabolic rate of fish during transport	
Magnesium sulfate	Used to treat external monogenic trematode infestations in fish Used to treat external crustacean infestations in fish	30,000 ppm $MgSO_4$ + 7000 ppm NaCl dip for 5-10 min
Onion (whole form)	Used to treat external crustacean parasites infestations of salmonids Used to deter sea lice from infesting external surface of salmonids	
Papain	Used to remove the gelatinous matrix from fish egg masses	0.2% solution
Potassium chloride	Used to aid in osmoregulation, relieve stress, and prevent shock in fish	10-2000 ppm Cl^{1-}
Povidone iodine	Egg surface disinfectant	100 ppm for 10 min during or after water hardening
Sodium bicarbonate	Used to introduce carbon dioxide into the water for anesthetizing fish	142-642 ppm for 5 min
Sodium chloride (salt)	Used as an osmoregulatory aid to relieve stress and prevent shock in fish Parasiticide for fish	0.5-1.0% indefinitely 3% dip for 10-30 min
Sodium sulfite	Used to improve hatchability (decrease adhesiveness) of fish eggs	15% solution for 5-8 min
Thiamine hydrochloride	Used to prevent or treat thiamine deficiency in salmonids	≤100 ppm for ≤4 h during water hardening (eggs) ≤1000 ppm for ≤1 h (sac-fry)
Urea and tannic acid	Used to reduce the adhesiveness of fish eggs	Immersion in 3 ppt urea + 4 ppt NaCl for ~6 min followed by separate immersion in 150 ppm tannic acid for ~6 min (treats approximately 400,000 eggs)

Table 3. Investigational new animal drug exemptions for aquaculture drugs held by the U.S. Fish and Wildlife Service as part of the National INAD Program. Click here to return to text.

Compound	Indication(s)
Common carp pituitary	To induce ovulation and spermiation in fish
Catfish pituitary	To induce ovulation and spermiation in fish
Halamid® Actamide Active ingredient: chloramine-T	To prevent mortality associated with bacterial gill disease or external flavobacteriosis in certain salmonids, sturgeon, perch, sunfish, bass and other coolwater and warmwater fish species To control mortality associated with bacterial gill disease or external flavobacteriosis in a variety of salmonid fish species To control mortality associated with bacterial gill disease or external flavobacteriosis in certain species of sturgeon, perch, sunfish, bass, and other coolwater and warmwater fish
Reward® Active ingredient: diquat	To control mortality caused by bacterial gill disease or external columnaris in a variety of freshwater fish species
Aquaflor® Active ingredient: 50% florfenicol	To control mortality associated with enteric septicemia, coldwater disease, furunculosis, and other various fish pathogens in all fish (except those uses/fish species listed on the label of the approved product)
35% PEROX-AID® Active ingredient: 35% hydrogen peroxide	To control mortality caused by ectoparasites of the genera *Ambiphrya, Chilodonella,Dactylogyrus, Epistylis, Gyrodactylus, Ichthyobodo, Ichthyophthirius, Trichodina,Trichophrya, Argulus*, *Salmincola*, *Lernaea,* and *Ergasilus* in freshwater fish species To control mortality caused by ectoparasites of the genera *Neobenedenia*, *Amyloodinium*, *Cryptocaryon*, and *Uronema* in marine fish species
Luteinizing hormone releasing hormone analog (LHRHa)	To induce ovulation and spermiation in fish
Pennox® 343 Active ingredient: oxytetracycline hydrochloride	To control of mortality associated with furunculosis, bacterial hemorrhagic septicemia, enteric redmouth, flexibacteriosis, and vibriosis in salmonids To control mortality associated with enteric septicemia in catfish To control mortality associated with bacterial hemorrhagic septicemia, pseudomonas disease, and flexibacteriosis in catfish, sturgeon, temperate basses, and other cool and warmwater fish
Terramycin® 200 for Fish Active ingredient: oxytetracycline dihydrate	To control mortality caused by coldwater disease, columnaris, flexibacteriosis, enteric redmouth, bacterial hemorrhagic septicemia caused by Aeromonads and Pseudomonads, and other gram negative systemic bacteria in salmonids To control mortality caused by deep-seated bacterial infections in freshwater and marine fish To control mortality caused by a variety of bacterial pathogens sensitive to oxytetracycline in non-salmonid freshwater and marine fish species To control mortality caused by withering syndrome in abalone to mark skeletal tissue in freshwater and marine fish
SE-MARK® Active ingredient: calcein	For skeletal marking of freshwater and marine finfish
Ovaplant® Active ingredient: salmon gonadotropin releasing hormone analogue (sGnRHa)	To induce ovulation and spermiation in fish
Benzoak® Active ingredient: benzocaine	To temporarily sedate/anesthetize fishes
AQUI-S®20E Active ingredient: eugenol	To temporarily sedate/anesthetize fishes
SLICE® Active ingredient: emamectin benzoate	To control mortality caused by external parasites in a variety of freshwater fish species
17α-methyl testosterone	To produce populations comprising over 90% phenotypically male fish

Table 4. Product and water volumes for preparing baths of AQUAVAC-ESC or AQUAVAC-COL for vaccinating catfish. Click here to return to text.

	Number of 7 day post hatch catfish fry to be vaccinated as a single group				
	200,000	400,000	600,000	800,000	1,000,000
Vials of vaccine	2	4	6	8	10
Gallons of water	10	20	30	40	50
	Pounds of catfish ≥7 days to be vaccinated as a single group				
	15	30	45	60	75
Vials of vaccine	2	4	6	8	10
Gallons of water	10	20	30	40	50

Table 5. Disinfectants and their use for field gear and hard surfaces. See bottom of table for definitions of abbreviations. Click here to return to text.

Disinfectant Concentration Contact Time	Surfaces	Deactivated by organic matter	Corrosive	NZMS	ZQM	MC Spores	MC Tams	IHNV	VHS	SVCV	KHV	ISA	IPN	LMBV	WSIV	RANA	BKD	FUR, ERM	CWD, COL	Chytrid	Disposal	Pros and Cons
Low Level Disinfectants: Kill most vegetative bacteria, some fungus, some enveloped viruses, do not kill mycobacteria or bacterial spores.																						
Benzalkonium chloride (QAC) 500ppm Contact 10 min (except as noted)	Plastics, floors, counter tops	Y	N	Y	Y	Y 10 min	Y 10 min	Y	Y 5 min	Y	Y		N	Y	Y		1000 ppm	Y		Y 5 min	unknown	**Pros**: easily accessible, non-corrosive **Cons**: highly toxic to fish, disposal issues, not labeled for aquatic use, bath type use
Didecyl dimethyl ammonium chloride (QAC) 400ppm Contact 5 min (except as noted)	Plastics, floors, counter tops	Y	N	Y	Y	Y 5 min	Y 1 min	Y 5 min	Y 5 min	Y 5 min	Y 5 min		N	Y 5 min	Y 5 min	Y 10 min	1000 ppm	Y 5 min		Y 1 min	unknown	**Pros**: non-corrosive, no rinse spray on **Cons**: disposal issues, hard to find, not labeled for aquatic use
Phenols (Lysol, Pinesol) Contact 15 min	Hard surfaces	N	N	Y	Y				Y												unknown	**Pros**: common household products **Cons**: not labeled for use of field gear, irritating to skin, must rinse
Intermediate Level Disinfectants: Kill vegetative bacteria, most viruses and most fungi, but not resistant bacterial spores																						
Chlorine 200-500ppm 10-60 min	All surfaces except plastics	Y	Y	N	Y 60 min	Y 15 min	Y 10 min	Y 5 min	Y 5 min	Y 10 min		Y 15 min	Y 30 min	Y 10 min		Y 15 min	Y 5 min	Y 10 min		Y 10 min	neutralize with sodium thiosulfate	**Pros**: works well, inexpensive, readily available **Cons**: highly corrosive, odors, human toxicity?
Virkon Aquatic 0.5%-1% 5-30 min (except as noted)	Waders, boots boats nets, all field gear	Y	N	Y 60 min	Y*		Y 5 min	Y 5 min	Y 10 min	Y 10 min		Y 10 min	Y 10 min	Y 20 min		Y 1 min	Y 10 min	Y 5 min		Y 1 min	dilute, pour on ground away from surface waters	**Pros**: non-corrosive, considered environmentally safe, biodegradable, can use as a no-rinse spray on **Cons**: cost, efficacy not determined for some pathogens
Ethyl Alcohol 70-80%	Hands, tools, counter tops	N	N	N	Y				Y				Y	N						Y	unknown	**Pros**: readily available **Cons**: evaporates quickly and may not get proper contact time, expensive, not good for field equipment, fixes organics to hard surfaces, inactivated by sunlight, flammable
Isopropyl Alcohol 60-80% 10-30 min (except as noted)					30				2				10							1	unknown	
Iodine 100-250ppm 20-30 min (except as noted)	Better as antiseptic on tissues	Y	Y	N	N	N	N	Y 10 min	Y 10 min	Y 20 min		Y 5 min		Y 10 min				500 30 min		Y 1 min	neutralize with sodium thiosulfate	**Pros**: antiseptic, inexpensive, **Cons**: corrosive to metals, stains, long contact time, cannot over concentrate, highly toxic to aquatic animals

Table 5. Disinfectants and their use for field gear and hard surfaces (continued). Click here to return to text.

Disinfectant Concentration Contact Time	Surfaces	Deactivated by organic matter	Corrosive	NZMS	ZQM	MC Spores	MC Tams	IHNV	VHS	SVCV	KHV	ISA	IPN	LMBV	WSIV	RANA	BKD	FUR, ERM	CWD, COL	Chytrid	Disposal	Pros and Cons
High Level Disinfectants: Destroy vegetative bacteria, mycobacteria(TB), fungi, enveloped (lipid or hydrophilic) and non enveloped virus (non lipid), but not necessarily bacterial spores. Must be capable of sterilization when contact time is extended.																						
Hydrogen Peroxide **3-5%** **5 min** **(except as noted)**		N	Y	15 min			N	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y			unknown	**Pros**: can add to QACs & iodine to make them more effective **Cons**: destroys soft tissues when over exposed
Peroxigard **1:16**			N					Y	Y	Y				Y							unknown	**Pros**: no-rinse spray on
Formaldehyde **1%-3%**	better when mixed w alcohol	N	N	N				?	16 h	5 h		16 h	5 min							5 min	titrations	**Pros**: easily accessible **Cons**: highly toxic, odors, personal protective gear required to protect applicator
Other Disinfection Options																						
Heat				5 m	15 m		5 m 75˚C (167˚F)	2 m 50˚C (122˚F)	5 m 55˚C(131 ˚F)	30 m 60˚C (140˚F)		2 m 50˚C (122˚F)	30 m 60˚C (140˚F)			15 m 60˚C (140˚F)	10 m 80˚C (176˚F)			5 m 60˚C (140˚F)	NA	
Ozone **8 ppm** **3 min**									Y				Y					Y	Y			
pH **>12 or <4** **> 4 hr**									Y	Y	Y pH <4											
Complete Drying **>20˚C**					7 d	60 d	1 h		14 d	5 d				5 d		4 d				6 h	NA	

Recommended active ingredient concentrations appear in red under the chemical along with the general minimum contact time. In columns where a Y appears, the contact time is listed below in minutes (min), hours(h), or days (d). If there is a blank, it is unknown at this time. If a contact time for a chemical was longer than feasible recommended time (generally longer than 1 hour) or the compound is known to not be effective, an N appears in the column. For example, a 10% formalin solution will only kill 20% of NZMS in a 1 hour exposure, therefore, it is listed as a N. Please remember that it is in violation of federal law to use a disinfectant other than how it is labeled.

Pathogen and/or invasive/nuisance species abbreviations are as follows: NZMS= New Zealand mud snail, ZQM = zebra/quagga mussels, MC Spores = Myxobolus cerebralis (whirling disease) myxospores, MC Tams = Myxobolus cerebralis (whirling disease) triactinomycon spores, IHNV =infectious hematopoietic necrosis virus , VHS = viral hemorrhagic septicemia virus, SVCV = spring viremia of carp virus , KHV = koi herpes virus, ISA = infectious salmon anemia virus, IPN = infectious pancreatic necrosis virus, LMBV = largemouth bass virus, WSIV = white sturgeon iridovirus, RANA = ranavirus, BKD = bacterial kidney disease, FUR = furunculosis, ERM =enteric redmouth, CWD = coldwater disease, COL = columnaris disease, Chytrid = chytrid fungus

Table 6. Treatment responses[1] of various types of aquatic vegetation to herbicides most commonly used for aquatic weed management in aquaculture. Table adapted from "Herbicides". Click here to return to text.

	Aquatic Herbicide Active Ingredient					
Vegetation Type	Copper & Copper Complexes	2,4-D	Diquat	Endothall	Glyphosate	Fluridone
Algae						
Planktonic	E	P	P	G[2]	P	P
Filamentous	E	P	G	G[2]-P[3]	P	P
Chara/Nitella	E	P	P	G[2]-P[3]	P	P
Floating Plants						
Duckweeds	P	F[4]	G	P	P	E
Salvinia	P	G	G	UNK	G	E
Water Hyacinth	P	E	E	UNK	G	P
Watermeal	P	F	F	UNK	UNK	G
Submerged Plants						
Coontail	P	G	E	E	P	E
Elodea	P		E	F	P	E
Fanwort	P	F	G	E	P	E
Naiads	P	F	E	E	P	E
Parrotfeather	P	E	E	E	F	E
Pondweeds	P	P	G	E	P	E
Emergent Plants						
Alders	P	E	F	P	E	P
Arrowhead	P	E	D	G	E	E
Buttonbush	P	F	F	P	G	P
Cattails	P	F	D	P	E	F
Common Reed	P	F	F	UNK	E	F
Water Lilies	P	E[5]	P	UNK	G	E
Frog's Bit	P	E	E	UNK	UNK	UNK
Pickerelweed	P	G	G	UNK	F	P
Sedges and Rushes	P	F	F	UNK	G	P
Spike Rush	P	UNK	G	UNK	P	G
Smartweed	P	E	F	UNK	E	F
Southern Watergrass	P	P	UNK	UNK	E	G
Water Pennywort	P	G	G	UNK	G	P
Water Primrose	P	E	F	P	E	F
Willows	P	E	F	P	E	P

[1] E = excellent control, G = good control, F = fair control, P = poor control, UNK = unknown or no response
[2] Hydrothol® formulations
[3] Aquathol® formulations
[4] Liquid 2,4-D formulations
[5] Granular 2,4-D formulations

FLORFENICOL

TRADE NAME: AQUAFLOR® and AQUAFLOR®-CA1, available from Intervet/Schering Plough Animal Health)

AQUAFLOR® and AQUAFLOR®-CA1 are Type A medicated articles (premix) which may be incorporated into feed to prepare a Type C medicated feed.

APPROVED INDICATIONS:

All below indications are 10 mg of florfenicol per kg of body weight per day for 10 consecutive days:

- For the control of mortality in catfish due to enteric septicemia of catfish associated with *Edwardsiella ictaluri*.
- For the control of mortality in freshwater-reared salmonids due to coldwater disease associated with *Flavobacter psychrophilum*.
- For the control of mortality in freshwater-reared salmonids due to furunculosis associated with *Aeromonas salmonicida.*
- For the control of mortality in catfish due to columnaris disease due to *Flavobacterium columnare.*

PRECAUTIONS:

Avoid inhalation, oral exposure, and direct contact with skin or eyes. Operators mixing and handling AQUAFLOR® and AQUAFLOR®-CA1 should use protective clothing, gloves, goggles and NIOSH-approved dust mask. Wash thoroughly with soap and water after handling. If accidental eye contact occurs, immediately rinse thoroughly with water. If irritation persists, seek medical attention. Not for human consumption. Keep out of reach of children.

Fish treated with florfenicol may become sensitive to sunlight.

WITHDRAWAL PERIOD:

12 days

REFERENCES:

AQUAFLOR®/Florfenicol literature related to fish
Material Safety Data Sheet for AQUAFLOR®

CLICK HERE TO RETURN TO TABLE

FORMALIN

TRADE NAME: Formalin-F, Formacide-B, Paracide-F, Parasite-S (available from Natchez Animal Supply Company, B.L. Mitchell Inc., Argent, and Western Chemical Inc.)

APPROVED INDICATIONS:
Formalin is approved for : (a) for the control of external protozoa (*Chilodonella* spp., Costia spp., *Epistylis* spp., *Ichthyophthirius* spp., *Scyphidia* spp. and *Trichodina* spp.), and the monogenetic trematode parasites (*Cleidodiscus* spp., *Dactylogyrus* spp., and *Gyrodactylus* spp.) on all finfish, (b) for the control of fungi of the family Saprolegniaceae on all finfish eggs and (c) for the control of external protozoan parasites (*Bodo* spp., *Epistylis* spp., and *Zoothamnium* spp.) on penaeid shrimp.

DOSAGE:
FOR THE CONTROL OF EXTERNAL PARASITES ON FINFISH

Aquatic Species	Administer in tanks or raceways for up to 1 hour (µL/L)	Administer in earthen ponds indefinitely (µL/L)
Salmon and trout -above 50˚F -below 50˚F	 - up to 170 - up to 250	 15-25**,*** 15-25**,***
All other finfish	up to 250	15-25**,***

**=Use lower concentration when ponds, tanks, or raceways are heavily loaded with phytoplankton, or finfish, to avoid oxygen depletion due to the biologic oxygen demand created by decay of dead phytoplankton. Alternatively, a higher concentration might be used if dissolved oxygen is strictly monitored.
***=Although the indicated concentrations are considered safe for cold and warm water finfish, a small number of each lot or pond to be treated should always be used to check for any unusual sensitivity to formalin before proceeding.

FOR THE CONTROL OF FUNGI OF THE FAMILY SAPROLEGNIACEAE ON FINFISH EGGS

Aquatic Species	Administer in Hatchery Systems (µL/L)
Eggs of all finfish except Acipenseriformes	1000 to 2000 for 15 minutes**
Eggs of Acipenseriformes	up to 1500 for 15 minutes**

**=Apply in constant flow water supply of incubating facilities. A preliminary bioassay should be conducted on a small sub-sample of finfish eggs to determine sensitivity before treating an entire group. This is necessary for all species because egg sensitivity can vary with species or strain and the unique conditions at each facility.

PRECAUTIONS:
Can cause central nervous system (CNS) depression. Slightly irritating to the respiratory system. May cause sensitization by inhalation. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Toxic if inhaled. Harmful if swallowed. Can cause central nervous system (CNS) depression. Corrosive to the digestive tract. Causes burns. May be fatal or cause blindness if swallowed. Harmful in contact with skin, may cause sensitization by skin contact. Corrosive to eyes.

WITHDRAWAL PERIOD: None.

REFERENCES:
Material Safety Data Sheet for Formalin-F®, Formacide-B®, Paracide-F®, and Parasite-S®
Formalin literature related to fish
Chemical Facility Anti-Terrorism Standards Fact Sheet

CLICK HERE TO RETURN TO TABLE

HUMAN CHORIONIC GONADOTROPIN

TRADE NAME: Chorulon® (available by prescription from Intervet/Schering-Plough Animal Health)

Chorulon® is a freeze-dried preparation of chorionic gonadotropin (human Chorionic Gonadotropin [hCG]) for intramuscular administration after reconstitution with the accompanying sterile diluents. Each 10 mL vial contains 10,000 I.U. chorionic gonadotropin (equivalent to 10,000 USP Units chorionic gonadotropin) and 10 mg mannitol with mono- and disodium phosphate to buffer the pH of the solution.

APPROVED INDICATIONS:

- Chorulon® is indicated for use as an aid in improving spawning function in male and female brood finfish.
    - Treatments should be administered via intramuscular injection just ventral to the dorsal fin for one to three injections. Any single injection should be administered, depending on the fish species, at a dose of 50 to 510 I.U./lb. body weight (BW) for males and 67 to 1816 I.U./lb. BW for females (see Table 1 below). Depending on body weight and dose administered, it may be necessary to divide the dose among two or more injection sites to avoid injecting a large volume (>1 mL) at a single site.

- No withdrawal period is required for brood finfish treated according to label directions. The total dose administered (all injections combined) should not exceed 25,000 I.U. (25 mL) per fish in fish intended for human consumption.

*The safety and effectiveness of Chorulon® has not been tested on all fish species under all possible fish culture conditions. If you are unsure whether your fish will react adversely to treatment with Chorulon®, conduct an initial bioassay on a small number of fish before treating an entire group.

USE LIMITATIONS/RESTRICTIONS/REQUIREMENTS:

Labeling restricts Chorulon® to use by or on order of a licensed veterinarian. Chorionic gonadotropin is a protein. In the unlikely event of an anaphylactic reaction, epinephrine should be administered. The administration of an antihistamine may also be indicated.

Keep out of reach of children. Once reconstituted, Chorulon® should be used immediately. Unused solution should be disposed of properly and not stored for future use.

PRECAUTIONS:

Exposure to Chorulon® powder or reconstituted product may cause irritation or allergic reaction at site of contact. Accidental injection may cause result in menorrhagia (abnormally long menstrual cycle). Personal protective equipment should always be used when handling this chemical. Before use, read the Material Safety Data Sheet.

DOSAGE AND ADMINISTRATION:

To reconstitute, transfer the contents of one vial of sterile diluent into one vial of freeze-dried powder. The resulting 10 mL of Chorulon® contains 10,000 I.U. chorionic gonadotropin. Summaries of doses tested in representative fish species are contained within the following tables. The dose of Chorulon® to be used in other species of finfish may differ from those species listed in the tables, but should fall within the suggested range of 50 to 510 I.U./lb. BW for males and 67 to 1816 I.U./lb. BW for females.

Tested fish species/dose combinations of hCG found to be effective.

Common Name, *Scientific Name,* Family	*Tested Dose(s) (I.U./lb. BW/injection)* Male	Female	Number of Injections	Injection Interval (h)
Yellow perch, *Perca flavescens,* Percidae	not tested	67-300	1	-
Striped bass, *Morone saxatilis*, Percichthyidae	50-500	75-252	1	-
White bass, *Morone chrysops*, Percichthyidae	65-510	91-750	1	-
Razorback sucker, *Xyrauchen texanus*, Catostomidae	not tested	100	3	24
Walleye, *Sander vitreum*, Percidae	75-400	145-830	1-3	72
Red snapper, *Lutjanus campechanus*, Lutjanidae	250	500	1	-
Sauger, *Stizostedion canadense*, Percidae	500	500-1000	1	-
Chinese catfish, *Clarius fuscus*, Clariidae	not tested	1816	1	-

Tested fish species/dose combinations of hCG found to be safe.

Common Name, *Scientific Name,* Family	*Tested Dose(s) (I.U./lb. BW/injection)* Male	Female	Number of Injections	Injection Interval (h)
White bass, *Morone chrysops*, Percichthyidae	750	1500	1	-
Walleye, *Stizostedion vitreum*, Percidae	750	1500	1	-
Grass carp, *Ctenopharyngodon idella*, Cyprinidae	2500	5000	1	-
Channel catfish, *Ictalurus punctatus*, Ictaluridae	2500	5000	1	-

WITHDRAWAL PERIOD: None for brood finfish treated according to label directions.

REFERENCES:

Material Safety Data Sheet for Chorulon®

Human Chorionic Gonadotropin literature related to fish

CLICK HERE TO RETURN TO TABLE

HYDROGEN PEROXIDE

TRADE NAME:

35% PEROX-AID® (available from Western Chemical Inc, or Eka Chemicals Inc.)

APPROVED INDICATIONS:

- For the control of mortality in freshwater-reared finfish eggs due to saprolegniasis.
  - 500 to 1,000 mg/L for 15 minutes in a continuous flow system once per day on consecutive or alternate days until hatch for all coldwater and coolwater species of freshwater-reared finfish eggs.
  - 750 to 1,000 mg/L for 15 minutes in a continuous flow system once per day on consecutive or alternate days until hatch for all warmwater species of freshwater-reared finfish eggs.

- For the control of mortality in freshwater-reared salmonids due to bacterial gill disease associated with *Flavobacterium branchiophilum.*
  - 100 mg/L for 30 minutes or 50 to 100 mg/L for 60 minutes once per day on alternate days for three treatments in a continuous flow water supply or as a static bath.

- For the control of mortality in freshwater-reared coolwater finfish and channel catfish due to external columnaris disease associated with *Flavobacterium.*
  - 50 to 75 mg/L for 60 minutes once per day on alternate days for three treatments in a continuous flow water supply or as a static bath (coolwater species of freshwater-reared finfish (except northern pike & paddlefish) and channel catfish).
  - 50 mg/L for 60 minutes once per day on alternate days for three treatments in continuous flow water supply or as a static bath (coolwater species of freshwater-reared finfish fry (except northern pike, pallid sturgeon, and paddlefish) and channel catfish fry).

*Initial bioassay on a small number is recommended before treating the entire group. Use with caution on walleye; other species may also be sensitive to hydrogen peroxide.

PRECAUTIONS:

Hydrogen peroxide is a strong oxidizer and personal protective equipment should always be used when handling this chemical (Note: Prolonged exposure may cause skin irritation or burns). Before use, read the Material Safety Data Sheet and Product Fact Sheet for 35% PEROX-AID®.

WITHDRAWAL PERIOD: None.

DISCHARGE LIMITS:

Consult with NPDES authority before first use of hydrogen peroxide. The FDA considers the use of hydrogen peroxide as a waterborne therapeutant in intensive and extensive freshwater aquaculture operations constitutes no significant threat to the environment, the populations of organisms residing there, or public health and safety if receiving water concentrations do not exceed 0.7 mg/L on a short-term basis. This acute water quality benchmark should be included on the product label to alert effluent regulatory authorities of the potential need to establish discharge limits at individual facilities using hydrogen peroxide based on site-specific conditions. Monitoring of effluent concentrations should only be required for those facilities that discharge to receiving water with either minimal flow relative to the hatchery discharge or that have minimal oxidizable material in the receiving water. Because hydrogen peroxide undergoes rapid degradation in eutrophic waters, most freshwater facilities with large holding

ponds will probably discharge hydrogen peroxide at concentrations far below the proposed 0.7 mg/L acute benchmark. FDA's Environmental Assessment

REFERENCES:

Hydrogen peroxide literature related to fish eggs.
Hydrogen peroxide literature related to fish.
Material Safety Data Sheet for 35% PEROX-AID®
Chemical Facility Anti-Terrorism Standards Fact Sheet

CLICK HERE TO RETURN TO TABLE

OXYTETRACYLINE DIHYDRATE

TRADE NAME: Terramycin® 200 For Fish (available from Phibro Animal Health)

APPROVED INDICATIONS:

- For the control of mortality in freshwater-reared salmonids due to coldwater disease associated with *Flavobacterium psychrophilum.*
- For the control of mortality in freshwater-reared *Oncorhynchus mykiss* due to columnaris disease associate with *Flavobacterium columnare.*
- To add to the label the previously approved indication for marking of skeletal tissue in Pacific salmon.

DOSAGE:

- Salmonids and catfish: 2.5 to 3.75 g oxytetracycline/100 lb. fish per day for 10 consecutive days.
- Pacific salmon: 250 mg/kg of fish per day administered as the sole ration for 4 consecutive days.
- Freshwater-reared salmonids: 3.75 g /100 lb. fish per day for 10 consecutive days.

PRECAUTIONS:
Certain components of animal feeds, including medicated premixes, possess properties that may be a potential health hazard or a source of personal discomfort to certain individuals who are exposed to them. Human exposure should, therefore, be minimized by observing the general industry standards for occupational health and safety.

Precautions such as the following should be considered: dust masks or respirators and protective clothing should be worn; dust-arresting equipment and adequate ventilation should be utilized; personal hygiene should be observed; wash before eating or leaving a work site; be alert for signs of allergic reactions—seek prompt medical treatment if such reactions are suspected.

Not for human use.

CALCULATIONS: See companion Treatment Calculator and information below.

To achieve a dosage of 2.5 or 3.75 g oxytetracycline dihydrate/100 pounds of fish:

Feeding Rate (%)	Oxytetracycline dihydrate in Type C Medicated Feed (g/ton)	Pounds of Type B Medicated Feed per ton of feed	Pounds of total biomass that one ton of Type C Medicated Feed will treat
1	5,000 or 7,500	250.0 or 375.0	200,000
2	2,500 or 3,750	125.0 or 187.5	100,000
3	1,667 or 2,500	83.3 or 125.0	66,667
4	1,250 or 1,875	62.5 or 93.8	50,000
5	1,000 or 1,500	50.0 or 75.0	40,000
6	833 or 1,250	41.7 or 62.5	33,333
7	714 or 1,071	35.7 or 53.6	28,571
8	625 or 938	31.3 or 46.9	25,000
9	556 or 833	27.8 or 41.7	22,222
10	500 or 750	25.0 or 37.5	20,000
15	333 or 500	16.7 or 25.0	13,333

WITHDRAWAL PERIOD:
Pacific salmon, skeletal marking: 7 days
Salmonids, therapeutic use: 21 days
Catfish, therapeutic use: 21 days

REFERENCES:
Appendix A: Oxytetracycline dihydrate literature related to fish
Material Safety Data Sheet for Terramycin®200 for Fish

CLICK HERE TO RETURN TO TABLE

OXYTETRACYLINE HYDROCHLORIDE

TRADE NAME: Pennox® 343 (source of drug: PennField Animal Health)

APPROVED INDICATIONS:

Pennox® 343 should be applied as a static immersion bath at the following dose/duration range for skeletal marking of finfish fry and fingerlings.

*The safety and effectiveness of Pennox® 343 has not been tested on all fish species under all possible fish culture conditions. If you are unsure whether your fish will react adversely to treatment with Pennox® 343, conduct an initial bioassay on a small number of fish before treating an entire group.

USE LIMITATIONS/RESTRICTIONS/REQUIREMENTS:
New manufacturer/product; information pending.

DOSAGE:

- Treat with 200 – 700 mg OTC/L for 2 – 6 hrs.
- Upon completion of treatment, fish should immediately be moved to fresh water.
- Marking of fish larvae less than 10 days old is more effective than marking older juveniles.

PRECAUTIONS:
Infants and mothers exposed during pregnancy may develop discoloration of the teeth. May cause eye and/or skin irritation. Personal protective equipment should always be used when handling this chemical. Before use, read the Material Safety Data Sheet for oxytetracycline hydrochloride.

High concentrations of oxytetracycline hydrochloride may acidify immersion baths, and buffers may be necessary to maintain pH within ranges appropriate for fish.

WITHDRAWAL PERIOD:
None.

REFERENCES:
Pennox® 343/oxytetracycline hydrochloride literature related to fish
Material Safety Data Sheet for Pennox® 343

CLICK HERE TO RETURN TO TABLE

ROMET® 30 and ROMET® TC

TRADE NAME:

Romet® 30 (available from FDA-licensed feed mills)
Romet® TC (available from Aquatic Health Resources)

Romet® 30 is an antimicrobial powder containing ormetoprim sulfadimethoxine for treatment of furunculosis in salmonids and enteric septicemia in catfish.

Romet® TC is a new formulation including hydrolyzed fish protein concentrate that significantly improves the palatability of Romet feeds. Growers can count on effective disease control because better palatability means improved medicated feed consumption and more antibiotic up-take.

APPROVED INDICATIONS:

- To control furunculosis in salmonids (trout and salmon) caused by *Aeromonas salmonicida.*
  - Administer medicated feed to achieve a dose rate of 50 mg/kg body weight (BW)/d for 5 consecutive days.
  - This use has a 42-day withdrawal time.

- To control of enteric septicemia of catfish caused by *Edwardsiella ictaluri.*
  - 50 mg per kilogram of body weight for five consecutive days.
  - This use has a 3-day withdrawal time.

*The safety and effectiveness of Romet® or Romet® TC has not been tested on all fish species under all possible fish culture conditions. If you are unsure whether your fish will react adversely to treatment with Romet® or Romet® TC, conduct an initial bioassay on a small number of fish before treating an entire group.

USE LIMITATIONS/RESTRICTIONS/REQUIREMENTS:

If fish show no improvement within 2 to 3 days, or if signs of disease reappear after termination of treatment, reevaluate management practices, diagnosis of outbreak, and establish susceptibility of the bacterial isolate(s) to the drug.

Labels for feeds containing Romet® must contain appropriate indications, limitations and warnings as well as required feed ingredient information.

Romet® 30 is a Type A medicated article (medicated premix) and is only available from an FDA-licensed feed mill.

Romet® TC is a Type B medicated article and is available from Aquatic Health Resources and approved for on-farm use (i.e., top coating).

PRECAUTIONS:

Romet® is considered irritating to the skin and eyes. Contact may cause allergic reaction in sensitive individuals. Personal protective equipment should always be used when handling this chemical. Before use, read the Material Safety Data Sheets.

PREPARATION OF MEDICATED FEEDS (Romet® 30 is only available from FDA-licensed feed mills):

Establish the weight of fish to be treated and calculate the amount of feed needed per day according to fish size and water temperature. Calculate the amount of Romet® 30 required for medicating the feed at the rate of 16.7 g of Romet® 30 per 100 kg (7.6 g of Romet® 30/100 lb.) of fish body weight per day.

Medication of Feed Before Pelletizing or Extruding

Thoroughly mix the calculated amount of Romet® 30 into the mash feed prior to pelletizing or extruding. Refer to the dosage table below for recommended levels of use.

Romet® 30 Recommended Levels

Feeding Rate (%)	Lbs of Romet® 30 per ton of feed
1	33.30
2	16.70
3	11.10
4	8.33
5	6.66

Romet® TC Recommended Levels

Feeding Rate (%)	Lbs. of Romet® TC to add to 1/2 gal of water for each 100 lbs. of feed
1	2.50
2	1.25
2.5	1.00
5	0.50

Medication of Feed After Pelletizing

Prepare a liquid slurry by suspending Romet® 30 in edible vegetable oil or 5% gelatin solution. Coat the pelleted fish feed with the slurry, which should be constantly agitated to ensure uniform suspension of the Romet® 30 during addition. As a general rule, one gallon of vegetable oil or gelatin solution is required to coat 200 lbs. of pellets. For example, to medicate 6666 lb. of fish for one day, with a 3% body weight feed intake, mix 1.1 lbs. of Romet® 30 with one gallon of vegetable oil to prepare a slurry to be used for coating 200 lbs. of pellets. Pellets may be placed in a cement mixer (if fifty lbs. or more are to be coated) or spread on plastic or a smooth concrete surface for the coating process. The pellets should be mixed constantly but gently while the slurry is being slowly added to insure even distribution without undue pellet breakage. The coated pellets are then spread out and allowed to air dry for several hours. Rebag and store under proper feed storage conditions.

WITHDRAWAL PERIOD:

Salmonids: 42 days

Catfish: 3 days

DISCHARGE LIMITS: The Unites States Environmental Protection Agency (USEPA) has not established a Reportable Quantity (RQ) for releases of this material. State and local regulations vary and may impose additional reporting requirements.

REFERENCES:

Material Safety Data Sheets for Romet® 30 and Romet® TC

Romet® 30/Romet® TC literature related to fish

CLICK HERE TO RETURN TO TABLE

TRICAINE METHANESULFONATE

TRADE NAME: Finquel, TRICAINE-S (available from Western Chemical, Inc.)

APPROVED INDICATIONS:
Tricaine methanesulfonate is approved for the temporary immobilization of fish, amphibians, and other aquatic, cold-blooded animals. It has been recognized as a valuable tool for the proper handling of these animals during manual spawning (fish stripping), weighing, measuring, marking, surgical operations, transport, photography, and research.

DOSAGE: 10-1,000 mg/L.

PRECAUTIONS:
May cause skin irritation. May be harmful if absorbed through the skin. May cause eye irritation.
Dust may be irritating to the mucous membranes and upper respiratory tract. May be harmful if inhaled.
May be harmful if swallowed.

CALCULATIONS:
See companion treatment calculator.

PRACTICAL ADMINISTRATION:
Do not use within 21 days of harvesting fish for food.

When used in food fish, use should be restricted to *Ictaluridae*, *Salmonidae*, *Esocidae*, and *Percidae* and water temperature should not exceed 10°C (50°F).

WITHDRAWAL PERIOD:
21 days

REFERENCES:
Material Safety Data Sheets for Finquel and TRICAINE-S
Tricaine methanesulfonate literature related to fish

CLICK HERE TO RETURN TO TABLE

17α-METHYLTESTOSTERONE

TRADE NAME:

17α-Methyltestosterone (administered in feed available from Rangen Inc.)

- Use as an in-feed medication to produce populations comprising over 90% phenotypically male fish

ALLOWABLE USES UNDER INAD #11-236 (USFWS/AADAP):

- Administer 17MT-medicated feed to achieve a dose rate of 9 mg/kg body weight (BW)/d for 28 consecutive days.
- Initiate treatment when fry are ≤10-d old.

  Note: 17MT will typically be top-coated into standard tilapia starter diet at a rate of 60 mg MT/kg.
- Withdrawal period: 120 days for 'Batch Culture' (from last day of treatment).

  ***Note*:** Batch culture is defined as when all fish in a group/lot enter and leave the lot at the same time.
- There is a withdrawal weight of 350 g/individual fish for 'Partial Harvest/Restock Culture'.

  ***Note*:** Partial harvest/restock culture is defined as the mixing of different lots of fish during the grow-out period and selective harvest from the production unit at various times.

REFERENCES:

USFWS INAD Fact Sheet

Material Safety Data Sheet for 17α-Methyltestosterone

FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD

17α-Methyltestosterone literature related to fish

CLICK HERE TO RETURN TO TABLE

BENZOCAINE

TRADE NAME: Benzoak® (available from Frontier Scientific, Inc.)

- Administer as a static bath to sedate fish

ALLOWABLE USE UNDER INAD 11-740 (USFWS INAD):

- BENZOAK® should be added directly to the full-volume of water in the treatment tank. Immediately after the addition of BENZOAK® to the treatment tank, mix thoroughly to ensure uniform distribution of anesthetic. Note: Do not make a concentrated stock of solution of BENZOAK® before actual use.
- Dose to be administered: Benzoak® should be applied at eugenol concentrations ranging from 10 - 100 mg/L (**note: Benzoak® is 20% benzocaine**). Dosage may vary with respect to species, water temperature, and level of anesthesia desired.
- Dosing interval and repetition: Benzoak® will be applied as a single treatment event, and will not require repeated treatments.
- Duration of treatment: Fish should be immersed in a solution of Benzoak® until the desired endpoint (sedation/anesthesia) is achieved. After completion of treatment and handling, fish should immediately be placed fresh water.
- Withdrawal period: none for fish that will not be catchable for 72 or more hours after release or are illegal for harvest during that 72 hour period. There is no withdrawal period associated with use of BENZOAK® on fish that die that will be buried or rendered into non-edible products.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for Benzoak®
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
Benzocaine literature related to fish

CLICK HERE TO RETURN TO TABLE

CALCEIN

TRADE NAME: SE-MARK® (available from Western Chemical, Inc.)

- Administer as a static immersion bath to mark skeletal tissue of fish

ALLOWABLE USES UNDER INAD 10-987 (USFWS INAD):

- Use one of the following two treatment regimens:
  - Treat with 125 - 250 mg/L (finfish or mussels) for 1-6 hr.
  - Treat with 2.5 – 5.0 g/L (finfish only) for 1 – 7 min note: it is anticipated that most fish treated at this concentration range will need to be pre-treated with a 1-5% solution of non-iodized salt for ~3.5 min to facilitate calcein uptake via osmotic induction.
  - Upon completion of treatment, fish or mussels should immediately be moved to fresh water.
  - SE-MARK® may be applied as a single treatment event, or as repeated treatments. Repeated treatments may be conducted to establish multiple marks. If a multiple treatment regimen is used, an interval of at least 2 days should be observed between treatment events.
  - When exposed to ultraviolet light, calcein exhibits a bright green fluorescence. Optimal fluorescence occurs when calcein is exposed to blue light of ~500 nm wavelength.
  - Withdrawal period: none .
  - Treatment is restricted to fish weighing <2 g and juvenile mussels.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for SE-MARK®
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
Calcein literature related to fish

CLICK HERE TO RETURN TO TABLE

CATFISH PITUITARY

TRADE NAME: Channel Catfish Pituitary (available from Hybrid Catfish Company)

- Administer by injection to enhance gamete maturation in a variety of catfish species

ALLOWABLE USES UNDER INAD 11-468 (USFWS INAD):

- CP is obtained as a fresh material by dissection from adult channel catfish (*Ictalurus punctatus*). Whole pituitaries are desiccated using an alcohol/acetone rinse, ground into a powder, and stored in sterile vials containing 1 g of a dessicated brownish/white powder.
- The standard dose rate is 10 mg CP/kg body weight. Although certain situations may require a higher dosage rate, the total dose will never exceed 25 mg CP/kg body weight.
- CP should be dissolved in sterile physiological saline or sterile water and administered as either an intraperitoneal (IP) or intramuscular (IM) injection.
- Dependent upon the species/strain involved, CP may be administered as a single treatment, or as a multiple treatment. It is anticipated that a multiple treatment regimen consisting of a single "priming" dose (2 mg/kg) followed by a single "resolving" dose (8 mg/kg; administered approximately 12-14 hrs later) will be most often used.
- CP treatment has been shown to be most effective when administered during the final stages of gamete maturation. In most cases, CP will be used within 4 weeks of the time fish are normally expected to spawn.
- Withdrawal period: 3-d. Treated fish that are not susceptible to legal harvest for 3 days post-treatment may be released immediately. There is no withdrawal period required for fish from brood stock treated with CP.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for Catfish Pituitary
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
Catfish pituitary literature related to fish

CLICK HERE TO RETURN TO TABLE

CHLORAMINE-T

TRADE NAME:
Halamid® (available from Western Chemical, Inc.)
Actamide (available from B.L. Mitchell, Inc.)

- Administer as a static bath to control mortality caused by bacterial gill disease (BGD) and external flavobacteriosis in a variety of freshwater fish species.

ALLOWABLE USES UNDER INAD 9321 (USFWS INAD):

- To prevent mortality associated with BGD or external flavobacteriosis.
  - Administer 15 mg/L for 60 min one day per week.
- To control mortality associated with BGD or external flavobacteriosis in a variety of salmonid fish species and in certain species of sturgeon, perch, sunfish, bass, and other coolwater and warmwater fish.
  - Administer 10, 15, or 20 mg/L for 60 min in a continuous flow or static bath system on three consecutive or alternate days.
- Withdrawal period: none.

Each facility using chloramine-T under the USFWS INAD must report investigational use to their National Pollution Discharge Elimination System (NPDES) authority and inform them of the effluent discharge limit of 0.1 ppm for this drug. Discharge of concentrations ≥ 0.1 ppm must be in compliance with discharge limits set by the local NPDES permitting agencies.

REFERENCES:
USFWS INAD Fact Sheet
Material Safety Data Sheet for Halamid®
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
Chloramine-T literature related to fish

CLICK HERE TO RETURN TO TABLE

COMMON CARP PITUITARY

TRADE NAME: Common Carp Pituitary (available from Stoller Fisheries or Argent Laboratories)

- Administer by injection to enhance gamete maturation in a variety of catfish species

ALLOWABLE USES UNDER INAD 8391 (USFWS INAD):

- CCP is obtained by dissection as a fresh material from adult common carp (*Cyprinus carpio*). Whole pituitaries are desiccated using an alcohol/acetone rinse, ground into a powder, and stored in vials containing 1- 25 g of a desiccated powder.
- Standard dosage rates are 4-10 mg CCP/kg body weight. Although certain situations may require a higher dosage rate, the total dose is not to exceed 25 mg CCP/kg body weight.
- CCP should be dissolved in sterile physiological saline or sterile water and administered as either an intraperitoneal (IP) or intramuscular (IM) injection.
- Depending on the species/strain involved, CCP may be administered as a single or multiple dose treatment. The multiple dose treatment administers a single "priming" dose followed by a single "resolving" dose.
- CCP treatment has been shown to be most effective when administered during the final stages of gamete maturation. In most cases, CCP will be used within 4 weeks of the time fish are normally expected to spawn.
- Withdrawal period: none

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for common carp pituitary
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
Common carp pituitary literature related to fish

CLICK HERE TO RETURN TO TABLE

DIQUAT

TRADE NAME: Reward® (available from Syngenta Crop Protection, Inc.)

- Administer as a static bath to control mortality caused by bacterial gill disease (BGD) and external flavobacteriosis in a variety of freshwater fish species.

ALLOWABLE USES UNDER INAD 10-969 (USFWS INAD):

- To control mortality caused by BGD or external columnaris in a variety of freshwater fish species.
  - Administer 2 – 18 mg/L daily on 1, 2, 3, or 4 consecutive or alternate days for 1-4 hr.
  - Administer 19 – 28 mg/L on 1, 2, or 3 consecutive days for 30-60 min.
  - Flush the treatment solution from the rearing unit after treatment.
- Prophylactic (or preventative) treatment **is not authorized**.
- The following withdrawal periods have been established for this product:
  - 5 days – channel catfish, muskellunge, tiger muskellunge, and northern pike.
  - 30 days – all other fish species.
  - Fish that will not be available for harvest (e.g. by recreational angling) until 30 d after treatment may be released immediately after treatment.
- Withdrawal period for channel catfish, muskellunge, tiger muskellunge, and northern pike: 5 days
- Withdrawal period for all other fish species: 30 days.
- Note that REWARD® is 37.3% diquat dibromide.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for Reward®
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
Diquat dibromide literature related to fish

CLICK HERE TO RETURN TO TABLE

EMAMECTIN BENZOATE

TRADE NAME: SLICE® (available from Intervet Schering-Plough Animal Health)

- Use as an in-feed medication to control mortality caused by external parasites (copepods) in a variety of freshwater fish species.

ALLOWABLE USES UNDER INAD 11-370 (USFWS INAD):

- Treatment concentration: 50 µg emamectin benzoate per kg of fish biomass per day in medicated feed.
- Treatment regimen: 7 days (consecutive).
- SLICE® should be administered as a single treatment event, with no repetition of treatment.
- Withdrawal period: 60 days.

REFERENCES:

USFWS INAD Fact Sheet

Material Safety Data Sheet for SLICE®

FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD

SLICE®/emamectin benzoate literature related to fish

CLICK HERE TO RETURN TO TABLE

EUGENOL

TRADE NAME: AQUI-S®20E (available from Western Chemical, Inc.)

- Administer as a static bath to sedate fish

ALLOWABLE USE UNDER INAD 11-741 (USFWS INAD):

- AQUI-S®20E should be added directly to the full-volume of water in the treatment tank. Immediately after the addition of AQUI-S®20E to the treatment tank, mix thoroughly to ensure uniform distribution of anesthetic. Note: Do not make a concentrated stock of solution of AQUI-S®20E before actual use.
- Dose to be administered: AQUI-S®20E should be applied at eugenol concentrations ranging from 10 - 100 mg/L (**note: AQUI-S®20E is 10% eugenol**). Dosage may vary with respect to species, water temperature, and level of anesthesia desired.
- Dosing interval and repetition: AQUI-S®20E will be applied as a single treatment event, and will not require repeated treatments.
- Duration of treatment: Fish should be immersed in a solution of AQUI-S®20E until the desired endpoint (sedation/anesthesia) is achieved. After completion of treatment and handling, fish should immediately be placed fresh water.
- Withdrawal period: none for fish that will not be catchable for 72 or more hours after release or are illegal for harvest during that 72 hour period. There is no withdrawal period associated with use of AQUI-S®20E on fish that die that will be buried or rendered into non-edible products.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for AQUI-S®20E
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
AQUI-S®20E/Eugenol literature related to fish

CLICK HERE TO RETURN TO TABLE

FLORFENICOL

TRADE NAME: Aquaflor® (source of drug: Intervet/Schering Plough Animal Health)

- Use as an in-feed medication to control mortality caused by caused by bacterial diseases in a variety of freshwater and marine fish.
- Aquaflor® may not be used under an INAD for use patterns for which it has already received FDA-approval (e.g., treatment of ESC in catfish and treatment of coldwater disease or furunculosis in freshwater-reared salmonids (NADA 141-246), and treatment of columnaris in catfish (NADA 141-259).

ALLOWABLE USES UNDER INAD 10-697 (USFWS INAD):

- All fish species – administer a dose rate of 10 or 15 mg florfenicol per kg fish body weight per day for 10 days.
- Use to control mortality associated with:
  - ESC, coldwater disease, and furunculosis (in fish species not listed on the label of the approved product).
  - Other bacterial pathogens (including enteric redmouth, bacterial hemorrhagic septicemia caused by Aeromonads and Pseudomonads, and other gram negative systemic bacteria).
  - When cultured under a variety of rearing or environmental conditions.
- Withdrawal period for salmonids: 21 days.
- Withdrawal period for non-salmonids: 28 days.
- There is no withdrawal period associated with use of Aquaflor® on fish not susceptible to legal harvest.

REFERENCES:

USFWS INAD Fact Sheet

Material Safety Data Sheet for Aquaflor®

FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD

Aquaflor®/florfenicol literature related to fish

CLICK HERE TO RETURN TO TABLE

HYDROGEN PEROXIDE

TRADE NAME: 35% PEROX-AID® (available from Western Chemical, Inc.)

- Administer as a static bath to control mortality caused by ectoparasites in a variety of freshwater and marine fish species.

ALLOWABLE USES UNDER INAD 11-669 (USFWS INAD):

- To control mortality caused by ectoparasites of the genera *Ambiphrya, Chilodonella, Dactylogyrus, Epistylis, Gyrodactylus, Ichthyobodo, Ichthyophthirius, Trichodina,Trichophrya, Argulus*, *Salmincola*, *Lernaea,* and *Ergasilus* in freshwater fish species when treated under a variety of rearing or environmental conditions.
- To control mortality caused by ectoparasites of the genera *Neobenedenia*, *Amyloodinium*, *Cryptocaryon*, and *Uronema* in marine fish species when treated under a variety of rearing or environmental conditions.
- The following treatment regimens may be used when treating freshwater or marine fish species:
    - Administer 100, 150, or 200 mg/L for 30 min once daily on 3 consecutive or alternate days; treatment with 200 mg/L is restricted to situations where the user has demonstrated to the Study Monitor that lower concentrations were ineffective, or where the user intends to test multiple treatment concentrations simultaneously.
    - Administer 50, 75, or 100 mg/L for 60 min once daily on 3 consecutive or alternate days.
- Withdrawal period: none.
- 35% PEROX-AID® contains 35% hydrogen peroxide, w/w.

Each facility using hydrogen peroxide under the USFWS INAD must report investigational use to their National Pollution Discharge Elimination System (NPDES) authority and should inform them of the acute water quality benchmark of 0.7 mg/L hat has been derived by FDA for hydrogen peroxide.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for 35% PEROX-AID®
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
Hydrogen peroxide literature related to fish
Chemical Facility Anti-Terrorism Standards Fact Sheet

CLICK HERE TO RETURN TO TABLE

LHRHa

TRADE NAME: Luteinizing Hormone–Releasing Hormone analogue (available from Western Chemical, Inc.)

- Administer by injection to enhance gamete maturation in a variety of variety of fish species.

ALLOWABLE USES UNDER INAD 8061 (USFWS INAD):

- LHRHa is available in vials containing 1, 5, or 25 mg LHRHa/vial. LHRHa should be diluted with sterile physiological saline immediately prior to intended use.
- Standard hormone dose rates are 5 to 20 µg LHRHa/kg BW. Although higher dose rates may be used, the total dose may not exceed 100 µg/kg BW.
- LHRHa should be dissolved in sterile physiological saline and administered as either an intraperitoneal (IP) or intramuscular (IM) injection. Intraperitoneal injections are typically administered in females whereas IM injections are typically administered in males.
- The LHRHa dose may be administered as a single injection or multiple injections depending on the species or strain treated. Multiple treatment regimens will generally consist of a single "priming" dose followed by a single "resolving" dose.
- LHRHa treatment has been shown to be most effective when administered during the final stages of gamete maturation. In most cases, LHRHa will be used within 4 weeks of the time fish are normally expected to spawn.
- Withdrawal period: 14 days.
- No withdrawal period for fish not susceptible to legal harvest.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for LHRHa
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
LHRHa literature related to fish

CLICK HERE TO RETURN TO TABLE

OXYTETRACYCLINE DIHYDRATE
Medicated feed therapy

TRADE NAME: Terramycin® 200 for Fish (source of drug: Phibro Animal Health)

- Use as an in-feed medication to control mortality caused by caused by bacterial diseases in a variety of freshwater and marine fish and abalone.
- Terramycin® 200 for Fish may not be used under an INAD for use patterns for which it has already received FDA-CVM approval. For more information, see NADA 038-439.

ALLOWABLE USES UNDER INAD 9332 (USFWS INAD):

- Salmonids – administer in medicated feed at a dose rate of 55 to 88 mg/kg BW/d for 10 consecutive days to control mortality associated with Gram negative pathogens.
  - There is a 21 d withdrawal period associated with use of this product at this dosage.
- Freshwater and marine fish species – administer in medicated feed at a dose rate of 220 mg/kg BW/d for 14 consecutive days to control susceptible Gram negative pathogens in fish reared in water temperatures exceeding 4°C.
  - Treatment may not be administered to fish in net pens.
  - Withdrawal period: 70 days.
- Non-salmonid freshwater and marine fish species – use at the standard dosage for the control of mortality caused by a variety of bacterial pathogens sensitive to oxytetracycline.
  - Treatment may not be administered to fish in net pens.
  - Withdrawal period: 40 days.
- Abalone – use at a dosage up to 6.0 g active drug per 100 lbs body weight per day for 14 days to control mortality caused by withering syndrome.
  - Withdrawal period: 35 days.
- Freshwater and marine fish species – use at a dosage of either 2.5 – 3.75 or 10.0 grams of active drug per 100 pounds of fish per day for 14 days to mark skeletal tissue in a variety of freshwater and marine fish species.
  - Withdrawal period: 21 days for salmonids.
  - Withdrawal period: 40 days for non-salmonids.
  - Withdrawal period (at the high dose): 70 days.
- No withdrawal period is required for fish or abalone that will not be catchable/harvested during the established withdrawal after release or are illegal for harvest.
- Note that Terramycin® 200 for Fish contains 200 g oxytetracycline (from oxytetracycline dihydrate) per pound of Type A Medicated Article.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for Terramycin® 200 for Fish
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
Terramycin® 200 for Fish/oxytetracycline literature related to fish

CLICK HERE TO RETURN TO TABLE

OXYTETRACYCLINE HYDROCHLORIDE
for immersion therapy

TRADE NAME: Pennox® 343 (source of drug: PennField Animal Health)

- Administer as a static bath to control mortality caused by bacterial diseases in a variety of freshwater and marine fish species.

ALLOWABLE USES UNDER INAD 9033 (USFWS INAD):

- Salmonids – administer at a dosage of 20 mg/L for 1 h as a single administration to control mortality associated with furunculosis, bacterial hemorrhagic septicemia, enteric redmouth, flexibacteriosis, and vibriosis.
    - Withdrawal period: 21 days.
- Salmonids – administer at a dosage of 20 mg/L for 1 h once daily for 1 to 4 consecutive days to control mortality associated with furunculosis, bacterial hemorrhagic septicemia, enteric redmouth, flexibacteriosis, and vibriosis.
    - Withdrawal period: 60 days.
- Catfish - administer at a dosage of 20 mg/L for 1 h as a single administration to control mortality associated with enteric septicemia.
    - Withdrawal period: 21 days.
- Catfish, sturgeon, temperate bass, and other cool and warmwater fish species listed in USFWS INAD 9033 – administer at a dosage of 20 mg/L for 1 h as a single administration to control mortality associated with bacterial hemorrhagic septicemia, pseudomonas disease, and flexibacteriosis.
    - Withdrawal period: 21 days.
- Catfish, sturgeon, temperate bass, and other cool and warmwater fish species listed in USFWS INAD 9033 – administer at a dosage of 20 mg/L for 1 h once daily for 1 to 4 consecutive days to control mortality associated with enteric septicemia in catfish, and bacterial hemorrhagic septicemia, pseudomonas disease, and flexibacteriosis.
    - Withdrawal period: 60 days.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for Pennox® 343
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
Pennox® 343/oxytetracycline hydrochloride literature related to fish

CLICK HERE TO RETURN TO TABLE

SALMON GONADOTROPIN RELEASING HORMONE ANALOGUE

TRADE NAME:

Ovaplant® Salmon Gonadotropin – Releasing Hormone analogue (available from Western Chemical, Inc.; Manufacturer - Syndel International Inc.)

- Administer as a pellet implant in a variety of fish species.

ALLOWABLE USES UNDER INAD 11-375 (USFWS INAD):

- sGnRHa (Ovaplant®) is available in pellets containing 75, 150, or 250 µg sGnRH per pellet. Forty to 60% of the sGnRH is putatively released within 24 hours with the remainder released over the next 7 to 21 days.
- Standard hormone dosage rates will be 10-75 µg /kg body weight. Although certain situations involving very small broodfish (e.g. fish less than 1 kg BW) may require a higher dosage rate, dosage will never exceed 150 µg /kg body weight. Investigators should use the following guidelines as proposed by Syndel International Inc.:
    - Ovaplant® 75 µg - For fish 1 kg to 8 kg.
    - Ovaplant® 150 µg - For fish 8 kg to 15 kg.
    - Ovaplant® 250 µg - For fish 15 kg to 20 kg.
- sGnRHa should be injected into the dorsal musculature using a Ralgun® or other similar injection device. Injections should be administered into the musculature immediately anterior and lateral (on either side) to the dorsal fin.
- sGnRHa will be administered as single treatment event only.
- sGnRHa treatment has been shown to be most effective when administered during the final stages of gamete maturation. In most cases, sGnRHa will be used within 4 weeks of the time fish are normally expected to spawn.
- Withdrawal period: Treated fish may not be released (all treated fish must be maintained indefinitely or destroyed).

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for Ovaplant®
FDA Authorization and/or Categorical Exclusion Letters for USFWS INAD
sGnRHa literature related to fish

CLICK HERE TO RETURN TO TABLE

COPPER SULFATE

TRADE NAME: Triangle Brand® Copper Sulfate (available from Freeport-McMoran Copper & Gold, Inc.)

- Administer as a static bath to control Ichthyophthiriasis (Ich) on catfish and mortality associated with Saprolegniasis in all finfish species.

ALLOWABLE USES UNDER INAD# 9101 (USFWS)**, 10046 (Freeport-McMoran) and 11401 (USDA-ARS):**

- For the treatment of ichthyophthiriasis (*Ichthyophthirius multifiliis*) on Ictalurid catfish cultured in earthen ponds.
    - Administer 0.4 to 1 mg/L per 100 mg/L total alkalinity (as $CaCO_3$) as an indefinite exposure once daily for 5 to 11 consecutive days.
- To control mortality associated with Saprolegniasis on channel catfish eggs.
    - Administer 10 mg/L for Administer 10 mg/L to the water of a flow-through hatching trough once daily until the embryos (eggs) develop eyes; flow rate should allow for 1 exchange every 30 minutes.
- Withdrawal period: 7 days.

If total alkalinity is less than 50 mg/L, Copper Sulfate treatments are not recommended. If total alkalinity is over 300 mg/L, no more than 3 mg/L Copper Sulfate should be used. Copper Sulfate may be very toxic to fish in soft or acid waters so preliminary testing is necessary. Copper Sulfate should be tested on a small batch of fish in a sample of the pond water before treating the entire population of fish. This product should only be used in earthen catfish ponds. Application of Copper Sulfate to catfish ponds may cause short-term reductions in the populations of aquatic invertebrates, plants and algae residing within these ponds. Dissolved oxygen may be depleted due to decaying material so careful monitoring of dissolved oxygen is recommended and supplemental aeration may be required to maintain satisfactory oxygen levels. If there is a heavy algal bloom or no aeration, Copper Sulfate treatments are not recommended since treatment could cause oxygen concentrations to drop and result in fish kills.

The concentration of free copper ions may be affected by water quality parameters such as alkalinity, dissolved solids, temperature, pH, and hardness. For instance, water with low dissolved solids may have a higher concentration of free copper than water with high dissolved solids; a higher concentration of free copper can increase toxicity. Do not discharge pond water for at least 72 hours after the final Copper Sulfate application in order to avoid causing toxicity to aquatic life in receiving waters. When completely draining a pond, the last 20-25% of pond volume should be released slowly to prevent possible resuspension of sediment with elevated copper concentrations. Drains on empty ponds that have previously been treated with Copper Sulfate should be closed to prevent erosion and sediment discharge. Sediments removed from ponds during cleaning should be used to repair earthwork and embankments, or should be disposed of in a manner that will prevent copper contamination of surface or ground water.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for Triangle Brand® copper sulfate pentahydrate
Copper Sulfate literature related to fish

CLICK HERE TO RETURN TO TEXT

POTASSIUM PERMANGANATE

TRADE NAME: CAIROX® Potassium Permanganate (available from Carus Corporation)

- Administer as a static bath to control external protozoan and metazoan parasites, and bacterial and fungal infections in a variety of warmwater fish species.

ALLOWABLE USES UNDER INAD 9246 (USFWS)**, 10223 (Carus Corporation) and 10298 (USDA-ARS):**

- Use at a dosage of 1 - 10 mg/L for 1 hour. Although a single treatment event is generally efficacious, repeated treatments may be used.
- Withdrawal period: none for fish that are not susceptible to legal harvest for a period of 7 days post treatment associated with use of Cairox® Potassium Permanganate.

CALCULATIONS:

1. Calculate the 15-min potassium permanganate ($KMnO_4$) demand (PPD) of the rearing unit (see "The Use of Potassium Permanganate in Fish Ponds").

2. Multiply the PPD by 2.5 to obtain the treatment rate (mg/L). Treatment rates determined in this way very closely estimate the concentration of active $KMnO_4$ needed for effective disease treatment; however, the chemical should be applied in increments of 2 - 4 mg/L to avoid too-high short-term concentrations. The maximum treatment rate is not to exceed 10 mg/L.

3. Administer treatment for 1-h in a static-bath or flow-through system.

REFERENCES:

USFWS INAD Fact Sheet
Material Safety Data Sheet for Cairox®
Potassium permanganate literature related to fish
Chemical Facility Anti-Terrorism Standards Fact Sheet

CLICK HERE TO RETURN TO TEXT

IODINE

TRADE NAME: Ovadine® (available from Western Chemical, Inc.)

INDICATIONS:
Iodine is not an FDA approved drug. Iodine is on the Low Regulatory Priority Aquaculture Drugs list. The guideline for iodine use is to surface disinfect salmonid eggs is a 100 ppm iodophor solution for 10 minutes as an egg surface disinfectant during and after water hardening.

PRECAUTIONS:
Eye irritant

CALCULATIONS:

	Desired Available Iodine Concentration *100 ppm (1:100 dilution)*
Per Liter of Water	10 mL Iodine
Per Gallon Water	37.8 mL Iodine 1.28 oz Iodine

PRACTICAL ADMINISTRATION:

Immerse eggs in a solution of 100 PPM available Iodine for 10 minutes.

Rinse eggs with clean water after treatment.

Iodine is non-toxic to green, fertilized and eyed eggs at the recommended application concentration.

REFERENCES:
Material Safety Data Sheet for Ovadine®
Iodine literature related to fish

CLICK HERE TO RETURN TO TABLE

GLOSSARY

ACRONYMS

AADAP:	Aquatic Animal Drug Approval Partnership
AFS:	American Fisheries Society
APHIS:	Animal and Plant Health Inspection Service
BMP:	Best Management Practice
BW:	Body Weight
CVB:	Center for Veterinary Biologics, FDA
CVM:	Center for Veterinary Medicine, FDA
EPA:	Environmental Protection Agency
FCS:	Fish Culture Section
FDA:	Food and Drug Administration
FFDCA:	Federal Food, Drug, and Cosmetic Act
FIFRA:	Federal Insecticide, Fungicide, and Rodenticide Act
GRAE:	General Recognized As Effective
GRAS:	Generally Recognized As Safe
INAD:	Investigational New Animal Drug
MSDS:	Material Safety Data Sheet
NADA:	New Animal Drug Application
NPIRS:	National Pesticide Information Retrieval System
PPLS:	Pesticide Product Label System
USDA:	U.S. Department of Agriculture
USFWS:	U.S. Fish and Wildlife Service
VFD:	Veterinary Feed Directive
WGADCB:	Working Group on Aquaculture Drugs, Chemicals, and Biologics

TERMS

Active ingredient:	In a drug product, the ingredient responsible for the intended effect of the product (e.g., florfenicol is the active ingredient in Aquaflor®). In a disinfectant or pesticide product, the component that kills or otherwise controls the target pest.
Algicide:	Pesticide that selectively kills or targets algae.
Autogenous vaccine/bacterin:	Biologics prepared from microorganisms which have been freshly isolated from a fish. Autogenous vaccines or bacterins are administered to a population of fish at the same facility to increase resistance to the specific pathogen strain found at that location. Note such biologics can only be sold and used only on the facility from where the source pathogen was isolated, for a limited, specified period of time, and under the supervision of a licensed veterinarian.
Bacterin:	Biologics used to increase the natural ability of fish to resist disease caused by a specific pathogen. Bacterins contain inactivated cultures of bacteria or other nonviral organisms.
Best Management Practices:	Fish culture and husbandry practices that strive to ensure optimal animal health, growth and production, and economic performance.

Certified pesticide applicator:	A person who has successfully completed a state Pesticide Certification Program and is therefore authorized to purchase, apply, and supervise others using restricted use pesticides.
Contact herbicide:	Herbicide that kills only those portions of a plant to which it is directly applied.
Deferred Regulatory Status drug:	Unapproved new animal drug for which FDA has a policy of regulatory discretion that allows certain uses of such a drug without an approval by FDA or INAD exemption.
Drug:	An article that is intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease in man or other animal; an article (other than food) intended to affect the structure or function of the body of man or other animal; or an article that is recognized in official drug compendia.
Drug sponsor:	An individual or company seeking FDA approval of a drug product. Sponsor must be a U.S. individual or company (or a U.S. subsidiary of a foreign company), and must submit the New Animal Drug Application to the FDA.
Extra-label use:	The use of an approved new animal drug in a manner that is not in accordance with the approved label directions. Such use is permitted only via a prescription by a licensed veterinarian in the context of a valid veterinarian-patient-client relationship.
Herbicide:	Pesticide that selectively kills or targets plants.
INAD exemption (compassionate):	An INAD exemption that allows producers to use an unapproved drug under certain conditions for purposes related to the health and well-being of an animal. Use of an INAD under a compassionate exemption must be done under a "Use Protocol" accepted by the FDA Center for Veterinary Medicine. Annual reporting to FDA is required to continue to use an INAD under a compassionate exemption.
INAD exemption (standard):	Exemption authorized under the Federal Food, Drug, and Cosmetic Act to permit the interstate shipment of new animal drugs that have not yet been approved by FDA and limits the distribution of such drugs for the purpose of conducting an INAD field trial to evaluate the safety and effectiveness of the drug. Standard INAD exemptions are typically sought by pharmaceutical or chemical companies and are granted by the FDA Center for Veterinary Medicine.
INAD field trial:	Trials conducted under a compassionate INAD exemption following procedures described in a "Use Protocol" developed for that drug. INAD investigators are required to collect data to demonstrate the safety and effectiveness of an INAD in support of a new animal drug approval.
Low Regulatory Priority drug:	Unapproved new animal drug for which FDA has a policy of regulatory discretion that allows the use of such a drug without an approval by FDA or INAD exemption.

New Animal Drug:	Any drug intended for the use in animals other than people, the composition of which is not generally recognized among experts qualified by scientific training and experience as safe and effective for use under the conditions described on the label.
New Animal Drug Application:	An application package submitted to FDA that requests the approval of a new animal drug. The application includes data to substantially demonstrate that the drug is safe to humans, the environment, the target animal (fish), is as effective as claimed, and can be manufactured and packaged according to FDA guidelines.
Non-target organisms:	Organisms exposed to and potentially affected by regulated products other than the organisms for which treatment was intended.
Over-the-counter drug:	Drugs that are permitted to be sold without a veterinary prescription.
Pest:	An organism (commonly insects, rodents, and weeds) that is considered to be an annoyance and may be injurious to health or to the environment.
Pesticide:	Any substance intending for preventing, destroying, repelling, or mitigating any pest, including plants.
Prescription drug:	An animal drug that must be prescribed by a licensed veterinarian. Labels of such drugs bear the statement "Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian."
Registration:	Under the Federal Insecticide, Fungicide, and Rodenticide Act, the formal listing with EPA of a new pesticide active ingredient prior to its marketing or distribution.
Regulated product:	Products such as drugs, biologics, pesticides, and disinfectants that may be used in aquaculture, but only according to allowed uses stipulated by federal, state, and other applicable rules and regulations.
Restricted use pesticide:	A registered pesticide that has been classified for restricted use under the Federal Insecticide, Fungicide, and Rodenticide Act for some or all of it applications due to its toxicity and special handling requirements. Restricted use pesticides may only be applied by trained, certified applicators or by individuals under their direct supervision and may be utilized only for those uses covered by the certified applicator's certification.
Target organism:	The organism for which regulated product treatment is intended.
Tissue Residue:	The amount of a compound or its metabolites remaining in edible tissue after exposure to a regulated product.
Translocated herbicide:	Also referred to as systemic herbicides, these herbicides are absorbed and transported through plant tissues and can therefore kill the target following application to any part of the plant.
Vaccine:	Biologics containing living organisms used to increase the natural ability of fish to resist disease caused by a specific pathogen.

Veterinary biologics:	All viruses, toxins, and analogous products of natural or synthetic origin, such as diagnostics, antitoxins, vaccines, and live microorganisms intended for use in the diagnosis, treatment, or prevention of diseases of animals.
Veterinary-client-patient relationship:	Exists when (a) the veterinarian has assumed responsibility for making medical judgments regarding the health of the animals and the need for medical treatment, and client has agreed to follow the instructions of the veterinarian, (b) there is sufficient knowledge of the animals by the veterinarian to initiate at least a general or preliminary diagnosis of the medical condition of the animals, and (c) the veterinarian is readily available for follow-up in case of adverse reactions or failure of treatment.
Veterinary feed directive:	A written statement that authorizes the owner or caretaker of animals to obtain and use animal feed containing VFD drugs to treat their animals in accordance with the FDA-approved directions for use. A VFD drug is a new animal drug approved under the Federal Food, Drug, and Cosmetic Act. VFD drugs are limited to use under the professional supervision of a licensed veterinarian. No extra-label uses of VFD drugs are permitted.
Withdrawal time:	The minimum required period of time between the last treatment of an animal and the slaughter or release of that animal.

Do you raise fish?

Do you use formalin, hydrogen peroxide, potassium permanganate, or other chemicals?

You may be subject to Department of Homeland Security Chemical Facility Anti-Terrorism Standards

What is CFATS? Responsibility for chemical security is shared among federal, state, and local governments, as well as the private sector. Chemical Facility Anti-Terrorism Standards (CFATS) were developed by the Department of Homeland Security (DHS) to allow for cooperative monitoring and control of various chemicals that present one or more security issues if released, stolen or diverted, or could be used for purposes of sabotage or intentional contamination.

Who is subject to CFATS? The Department of Homeland Security has issued CFATS for any facility that manufactures, uses, stores, or distributes certain chemicals at or above a specified quantity. **This includes aquaculture facilities that use or store these chemicals of interest.**

What are the chemicals of interest? DHS has identified more than 200 chemicals of interest (http://www.dhs.gov/xlibrary/assets/chemsec_appendixa-chemicalofinterestlist.pdf). Chemical use patterns will vary, and each facility is responsible for evaluating their own chemical use patterns and determining which are subject to CFATS. However, the chemicals of interest most likely to be found at aquaculture facilities are:

Formalin/Formaldehyde Solution--subject to CFATS if ≥1% solution and ≥15,000 lbs. stored
Hydrogen Peroxide—subject to CFATS if ≥35% solution and ≥400 lbs. stored
Potassium Permanganate—subject to CFATS if commercial grade and ≥400 lbs. stored

What should I do if I think my facility is subject to CFATS? If you use or store any of the chemicals of interest in volumes above the CFATS thresholds, you must register to access the Chemical Security Assessment Tool (http://www.dhs.gov/files/programs/gc_1169501486197.shtm). Once you are registered, complete a Top-Screen preliminary assessment to determine risks at your facility. Depending on the level of risk associated with your facility's chemical use patterns, you may be required to complete a Security Vulnerability Assessment and you may need to develop a Site Security Plan. These added steps are only necessary for those facilities determined to be high-risk by DHS.

You may already be doing everything necessary to prevent misuse of chemicals at your facility, but it is your responsibility to be sure and report what you are doing.

Don't let your chemicals be their next weapon!

For More Information:
Contact the CFATS help desk at CSAT@DHS.GOV
Call 1-866-323-2957
Visit www.dhs.gov/chemicalsecurity

2014 Mule Deer Hunter Survey

Purpose of the Survey

- To seek input from the deer hunting public about their preferences and opinions regarding deer management in Utah
- Use the survey results in conjunction with the Mule Deer Committee to help develop the 2014 Statewide Mule Deer Management Plan

Who was Surveyed?

- A random sample of anyone who applied for and/or received a permit for any 2013 buck deer hunt stratified into 6 categories:
  - Dedicated Hunters
  - General Season Archery
  - General Season Muzzleloader
  - General Season Any Weapon (Rifle)
  - Limited Entry
  - General Season/Limited Entry

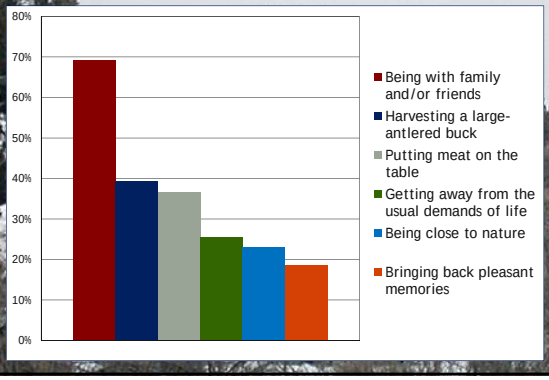
Survey Methods

- Survey developed by the Mule Deer Committee
- E-mail invitation sent to 9,156 hunters (out of a total pool of 140,934)
- Internet-based survey
  - About 15 minutes in length
  - Questions were primarily rating, yes/no, and multiple-choice
  - Open for 3 weeks

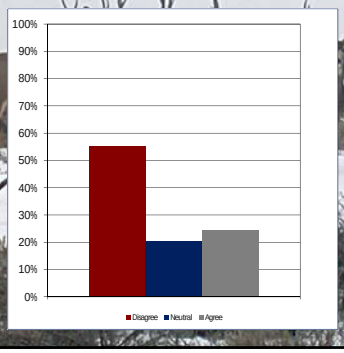
Sample Sizes and Return

- 2,654 surveys returned (30% response rate)
- Results weighted by category
  - 3% Dedicated Hunters
  - 9% General Season Archery
  - 8% General Season Muzzleloader
  - 42% General Season Any Weapon (Rifle)
  - 14% Limited Entry
  - 24% General Season/Limited Entry

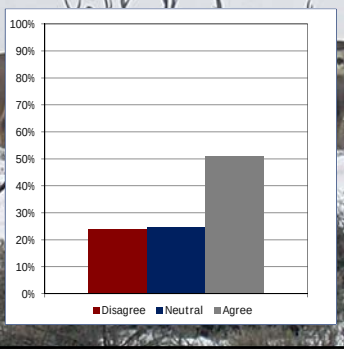
Why do you hunt Mule Deer?



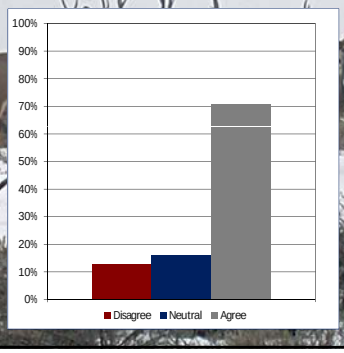
Hunt Satisfaction – Harvest any buck regardless of size



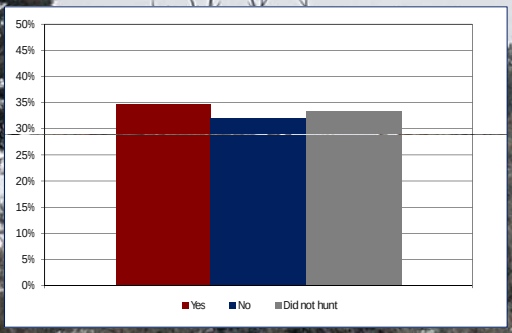
Hunt Satisfaction – Satisfied with their hunt even if they don't harvest



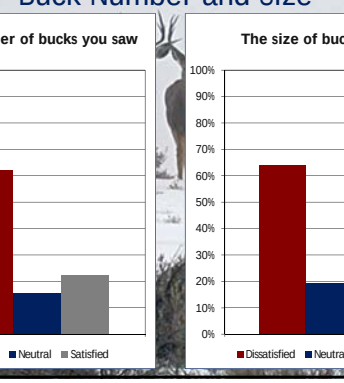
Hunt Satisfaction – Satisfied without harvest as long as they see bucks



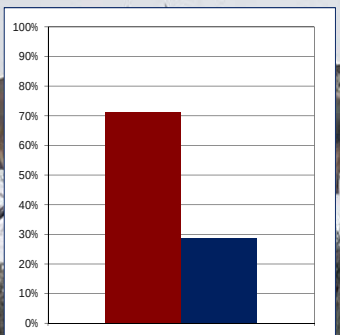
Hunt Satisfaction - Crowding



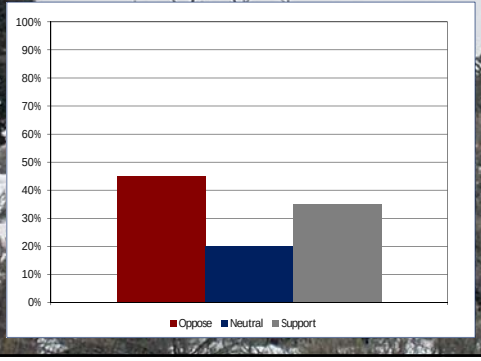
Hunt Satisfaction – Buck Number and Size



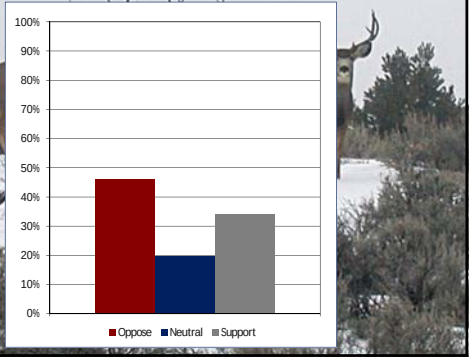
Management Options – Additional Restrictions



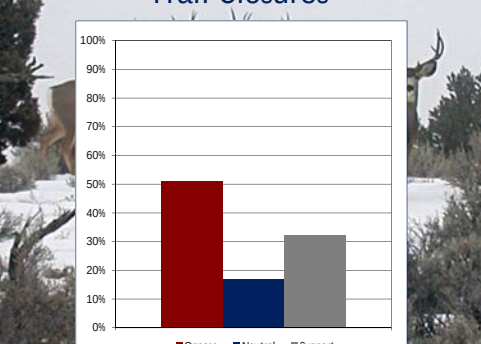
Additional Restrictions – Convert General Season to Limited Entry



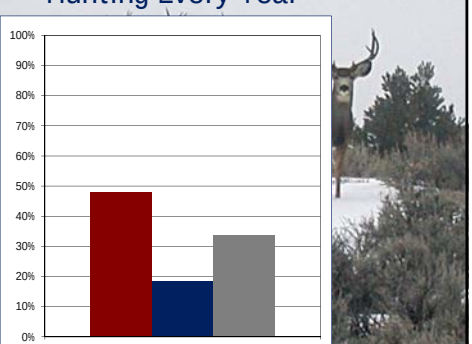
Additional Restrictions – More Archery/Muzzleloader



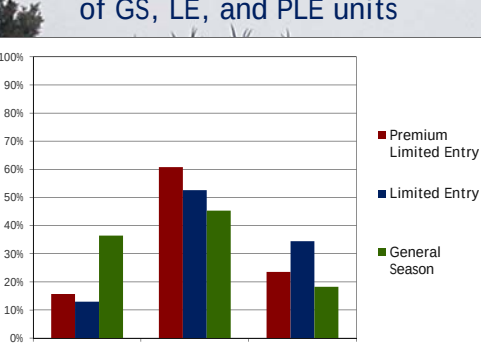
Additional Restrictions – Road and Trail Closures



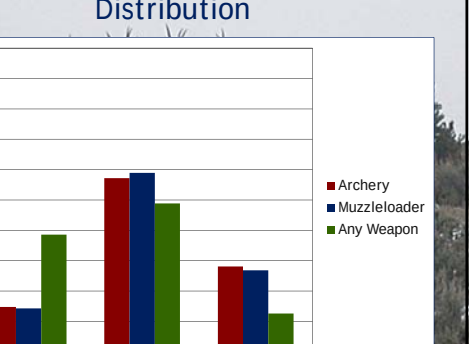
Additional Restrictions – Giving Up Hunting Every Year

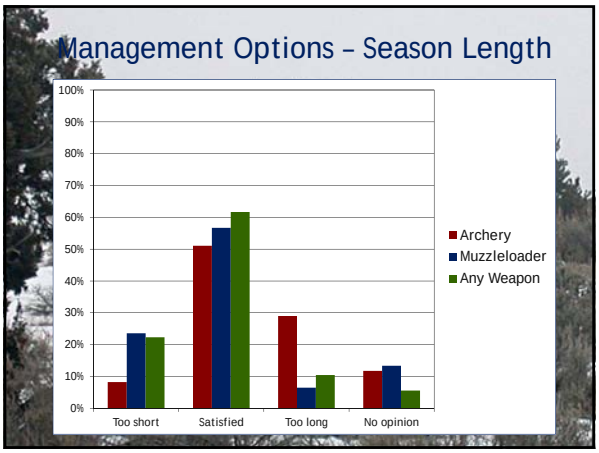


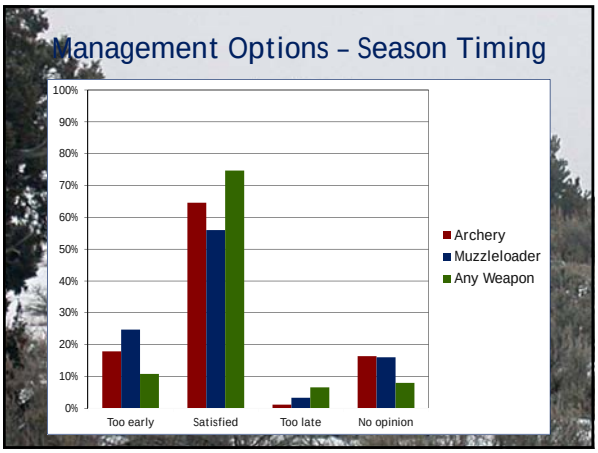
Management Options – Distribution of GS, LE, and PLE units

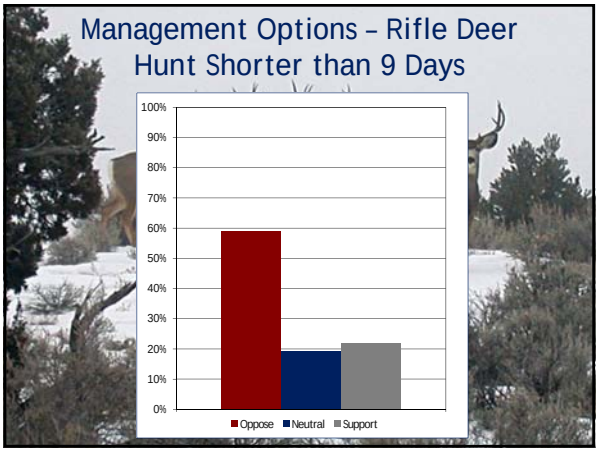


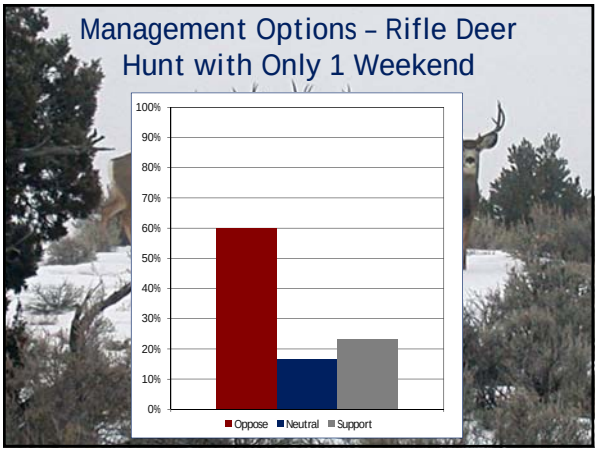
Management Options – Permit Distribution

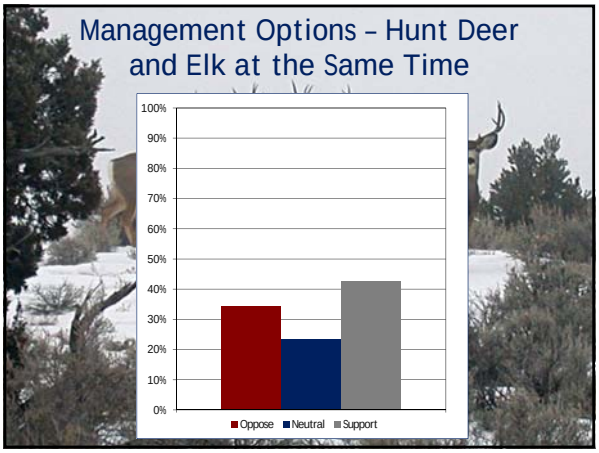


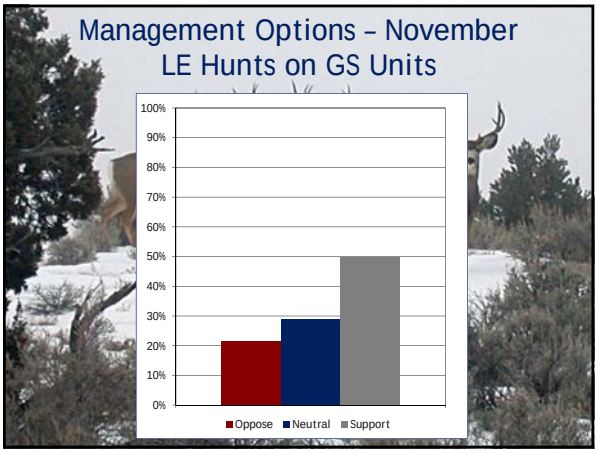

Management Options – Season Length
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Too short
Satisfied
Too long
No opinion
Archery
Muzzleloader
Any Weapon


Management Options – Season Timing
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Too early
Satisfied
Too late
No opinion
Archery
Muzzleloader
Any Weapon


Management Options – Rifle Deer Hunt Shorter than 9 Days
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Oppose
Neutral
Support


Management Options – Rifle Deer Hunt with Only 1 Weekend
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Oppose
Neutral
Support


Management Options – Hunt Deer and Elk at the Same Time
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Oppose
Neutral
Support


Management Options – November LE Hunts on GS Units
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Oppose
Neutral
Support

Summary of Main Points

- Social aspects of hunting play a large role in determining why people hunt in Utah
- Although not the majority, a portion of the hunting public wants more quality hunting opportunities
- Many hunters would like to see more and bigger bucks, but most are not willing to give up hunting every year
- Overall, hunters are satisfied with current management system

Thank You

2014 Statewide Mule Deer Plan

Mule Deer Committee Members

Members		DWR	
MDF	Mike Laughter	Ashley Green	Facilitator
Unaffiliated	Michael Christensen	Dax Mangus	Region
CWMU	Dave Freiss	Kent Hersey	Salt Lake
SFW	Byron Batemen	Justin Shannon	Chair
Farm Bureau	Spencer Gibbons		
FS	Kreig Rasmussen	RACS/WB	
BLM	Robin Naeve	Randy Dearth	NER
UBA	Ben Lowder	Rusty Aiken	SR
UWC	Lee Tracy	Kris Marble	CR
Public	DeLoss Christensen	Robert Byrnes	NR
BYU	Randy Larsen	Kevin Albrecht	SER
USU	Eric Thacker	Steve Dalton	WB

Committee Meetings

- Nine meetings held from April 22 – September 16.
- Nearly 40 hours spent on the survey and management plan.

Population Goals and Objectives

- Population Management Goal: Expand and improve mule deer populations throughout the state within the carrying capacity of available habitats and in consideration of other land uses.
  - Population Objective: By 2019, increase mule deer populations within the state as conditions allow and bring all populations to their unit objective (currently (2014) 425,400).

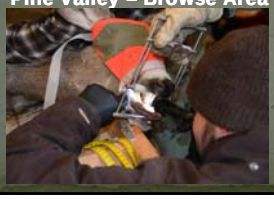
Population Goals and Objectives

Population Strategies

- Conduct annual browse assessments to ensure habitat can support current populations.
- On units chronically below objective, where habitat is not limiting, manage predators according to the current predator management policy.
- Implement research to identify and protect migratory corridors.
- In addition to antlerless harvest, continue using translocation as a management strategy.

Proposed Release Sites

- Box Elder – Raft Rivers
- Cache – Hardware Ranch
- Kamas – Cedar Hallow
- Wasatch Mtns, Avintaquin – Horse Ridge and Lake Canyon
- Pine Valley – Browse Area



Habitat Goals and Objectives

- Habitat Goal: Conserve, improve, and restore mule deer habitat throughout the state with emphasis on crucial ranges.
  - Habitat Objective 1: Maintain mule deer habitat throughout the state by protecting and enhancing existing crucial habitats and mitigating for losses due to natural and human impacts.
  - Habitat Objective 2: Improve the quality and quantity of vegetation for mule deer on a minimum of 500,000 acres of crucial range by 2019.

Habitat Strategies

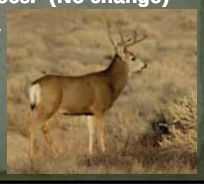
- Identify and rank threats and limiting factors within each unit.
- Continue to support and provide leadership for the Utah Watershed Restoration Initiative.
- Emphasize improving sagebrush-steppe, aspen, and riparian habitats across all landownerships.
- Continue to support the interagency Big Game Range Trend Studies.
- Use accepted guidelines for mitigating energy development.

Recreation Goals and Objectives

- Recreation Goal: Provide a diversity of high-quality hunting and viewing opportunities for mule deer throughout the state.
  - Recreation Objective 1: Maintain a hunting program for mule deer that encourages a variety of quality hunting opportunities while maintaining population objectives.
  - Recreation Objective 2: Increase opportunities for viewing mule deer while educating the public concerning the needs of deer and the importance of habitat and other limiting factors.

Recreation Strategies

- Continue to provide three hunt unit categories (general season, limited entry and premium limited entry) in approximately the current distribution to provide a variety of hunting opportunities.
- Manage general season units for a 3-year average of 15–17 or 18–20 bucks/100 does. (No change)
- Manage limited entry units for a 3-year average of 25–35 bucks/100 does. (No change)



Recreation Strategies

- Manage premium limited entry units for a 3-year average of 40–55 bucks/100 does with >40% of the harvested deer being 5 years of age or older.
  - Buck to doe ratio increased from 40-50 to 40-55.
  - Percentage of bucks 5 years or older increased from 40-55% to >40%.
- Baseline permits for the public draw will be recommended at current levels (2014).
- Continue to provide management buck hunts to provide additional hunting opportunity with a minimum of 10 permits on each unit.

Recreation Strategies

- Recommend permits for the 3 weapon types based on the following percentages: 20% for archery, 20% for muzzleloader, and 60% for any weapon.
  - On some units, these percentages may be altered to help achieve minimum buck:doe ratio objectives.

Recreation Strategies

- On appropriate limited entry and premium limited entry units, provide a multi-season hunting opportunity that will allow 3% of the hunters to hunt all seasons for an increased fee.

Recreation Strategies

- Establish season lengths that provide adequate hunting opportunity as follows: 28-day archery, 9-day muzzleloader, and 9-day any weapon seasons.
  - Exceptions include:
    - high country buck hunts (deer and elk seasons overlap)
    - hunting deer leaving or coming into Utah
    - extended archery areas
    - management buck hunts

Recreation Strategies

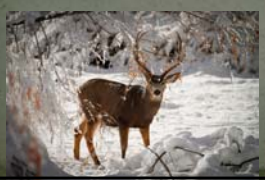
- Explore hunting bucks in late-October or early-November on general season units to provide additional limited entry hunting opportunity.
  - Hunting would only occur on general season units managed for 18–20 bucks/100 does that exceed their objective.
  - Permits would be very limited in number and would be part of the bonus point draw system.

Recreation Strategies

- Examine allowing hunters to harvest a cougar with their buck deer permit on units that qualify for predator management and where the harvest objective quota has not been met.
  - Hunters will not be allowed to use hounds during this hunt.

Recreation Strategies

- Investigate issuing a preference point to future first-time hunter education graduates.
- Explore additional opportunities to provide incentives to landowners that supply forage for mule deer.



Recreation Strategies

- Investigate consolidating the mule deer preference and bonus points into a single draw system.
- Provide hunting opportunities that will encourage youth participation and maintain family hunting traditions.
  - Explore increasing the maximum group application size from 4 to 6.

Summary

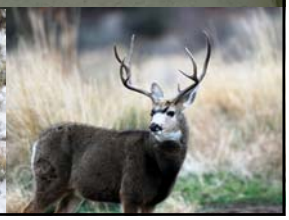
- This plan provides guidance and direction for managing Utah's mule deer populations.
- This is being proposed as a 5 year plan (December 2014-2019).
- Mule deer recommendations will be made in accordance with this plan.
- Thanks again to the Mule Deer Committee for their efforts in drafting this plan.

Thank You

2015
BBOIAL Rule Changes, Season Dates, and Boundary Recommendations

2015 General Season Deer Hunt Dates

• Archery	8/15 – 9/11	28 Days
• Muzzleloader	9/23 – 10/1	9 Days
• Any Weapon	10/17 – 10/25	9 Days



2015 General Season Elk Hunt Dates

• Archery Spike Bull	8/15– 9/4	21 Days
• Archery Any Bull	8/15 – 9/11	28 Days
• Any Weapon	10/3 – 10/15	13 Days
• Muzzleloader	10/28 – 11/5	9 Days

Statewide BBOIAL Recommended Changes

- **Provide limited entry deer hunting opportunities on general season units that are exceeding 18-20 bucks per 100 does.**
  - **Permits would be limited in number and overlap with muzzleloader elk hunts (Oct 28-Nov 5).**
  - **Units would include 1) Chalk Creek/East Canyon/Morgan-South Rich, 2) Kamas, 3) Nine Mile, 4) Pine Valley, 5) SW Desert, 6) Zion.**
  - **Update R657-5.**

Statewide BBOIAL Recommended Changes

- **Provide multi-season hunting opportunities on LE and PLE deer units.**
  - **Hunters would be able to hunt archery, muzzleloader, and any weapon seasons (similar to elk and bear).**
  - **Crawford Mtns and Dolores Triangle would be excluded because of weapon type and limited number of permits.**
  - **Update R657-5.**

Statewide BBOIAL Recommended Changes

- **We recommend adding 3 hunt days to the limited entry muzzleloader elk hunt.**
  - **Traditionally, this hunt has started on a Wednesday and ends the following Thursday.**
  - **We recommend starting on a Monday and ending the following Friday (Sept 21-Oct 2).**
  - **This will allow LE elk hunters more time in the field, closer to the rut, with less overlap with muzzleloader deer hunters.**

Statewide BBOIAL Recommended Changes

- **We recommend extending season dates on mountain goat hunts.**
  - **This recommendation will allow for longer, thicker coats on mountain goats.**
  - **Season dates extensions are in conjunction with access and road closures (late Oct – late Nov).**

Statewide BBOIAL Recommended Changes

- **We recommend updating R657-5:**
  - **Prohibit using drones to take big game.**
  - **Allow unsuccessful LE deer and elk archery hunters to hunt extended archery areas.**
  - **Correct a clerical error clarifying which permits allow a youth to hunt archery, muzzleloader, and any weapon seasons.**
  - **Add moose to CWD and importation sections.**
  - **Other minor corrections and clarifications.**

Southern Region Recommendations

- **Splitting the Zion bighorn sheep hunt into an early (Sept 12 – Oct 11) and late (Oct 12 – Nov 10) season to reduce crowding.**
- **Adding a muzzleloader pronghorn season to the Southwest Desert unit (Sept 23 – Oct 1).**

Southeast Region Recommendations

- **Adding an archery hunt for pronghorn on the La Sal, Potash/South Cisco unit.**

Northern Region Recommendations

- **Splitting the Newfoundland Mtn bighorn unit into an early (Oct 24-Nov 13) and late (Nov 14-Dec 6) season.**
- **Adding an extended archery deer area on the Cache unit to address urban deer.**
- **Adding a LE deer hunt on the North Slope, Summit (unit 8A) that runs concurrently with the general season elk hunt (Oct 3-15, re-establishing high country buck hunts).**
- **Adding a muzzleloader pronghorn hunt on the Cache/Morgan-South Rich/Ogden unit.**
- **Discontinuing the Pilot Mtn bighorn sheep hunt.**

Central Region Recommendations

- **Discontinuing the Sanpete Valley extended archery elk hunt because of the conflict of harvesting LE bulls with over the counter permits.**
- **Changing the boundary of the Wasatch elk unit to exclude areas that fall within the Wasatch Front extended archery unit.**
  - **Season dates for the Wasatch Front extended archery area will run from Aug 15 – Dec 15.**
  - **This extended archery area will remain a LE unit to allow for AW and Muzz spike hunting in Summit County.**
- **Slightly altering boundaries of the Oquirrh-Stansbury and West Desert deer and elk units.**

Northeast Region Recommendations

- **No changes**

Key Dates for 2015 Season

- Big game drawing for BBOIAL, new dedicated hunter applicants, and lifetime license holders:
  - Application period: January 29 – March 5, 2015
- Application period for bonus and preference points and application withdrawal period:
  - January 29 – March 19, 2015
- Results posted by May 29, 2015

Key Dates for 2015 Season

- Hunters with disabilities General Season hunt extension dates:

– Archery Deer	8/10 – 8/14	preseason
– Muzzleloader Deer	9/18 – 9/22	preseason
– Any Weapon Deer	10/12 – 10/16	preseason
– Archery Elk	8/10 – 8/14	preseason
– Muzzleloader Any Bull Elk	11/6 – 11/11	postseason
– Any Weapon Any Bull Elk	9/12 – 9/20	preseason
and during NER late youth hunt	11/28 – 1/14/16	postseason
– Muzzleloader Spike Elk	11/6 – 11/11	postseason
– Any Weapon Spike Elk	10/16 – 10/20	postseason

Thank You

General Season Deer Preference Point Draw

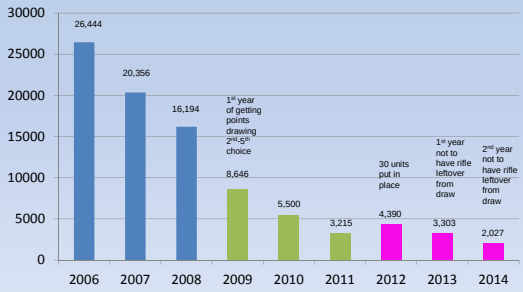
Definition of a Preference Point

- Preference points are designed to allow all applicants to draw a general season permit every few years.
- Work best when there are more permits and larger areas.
- No waiting period.

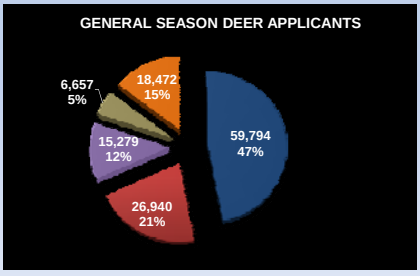
Background of Preference Points

- Preference points began in 2000. A point was earned if you were unsuccessful for any choice and you lost your points if successful on any hunt choice.
- The process was changed in 2009. A point was earned if you were unsuccessful for your 1st choice only and you didn't lose your points if you drew out on your 2nd-5th choice.
- The reason for this change:
  - Help reduce remaining permits
  - Remove potential for system crashing
  - Fairly distribute permits through the draw

Left over general deer permit trend



Number of hunt choices for 2014 (127,142 applicants)



Recommendation

- Based on concerns expressed by the public over the current preference point system, the Division recommends a change so all preference points are lost if a hunter is successful for any hunt choice.

Pros and Cons

- Consistent with all general season draws.
- Resolves concerns of hunters.
- More permits may remain after draw.
- More pressure on the sales system.
- Longer lines.
- Re-educating the public.
- You will lose your points if you draw out no matter what choice.
- Reprogramming
- Hunters have lost his/her "preference" of the hunt/weapon they want.

Recommendation

- Housekeeping changes to R-657-62

Odds of drawing out by weapon type

Weapon type	Apps by 1st Choice	Succ 1st Choice	App % 1st Choice	Apps by 2nd Choice	Succ 2nd Choice	App % 2nd Choice	Apps by 3rd Choice	Succ 3rd Choice	App % 3rd Choice	Apps by 4th Choice	Succ 4th Choice	App % 4th Choice	Apps by 5th Choice	Succ 5th Choice	App % 5th Choice
Any legal weapon	81,945	41,792	51%	41,771	2,398	6%	24,799	717	3%	14,783	144	1%	11,051	94	1%
Muzzleloader	16,770	10,747	64%	13,677	2,194	16%	7,556	526	7%	5,453	337	6%	3,454	166	5%
Archery	18,095	12,085	67%	11,889	1,557	13%	8,053	573	7%	4,893	225	5%	3,967	108	3%

General Season buck deer statistics for 2012 - 2014

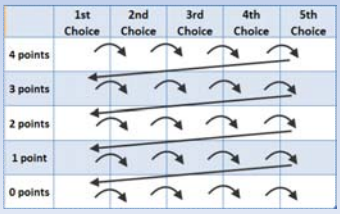
2012 data	2013 data	2014 data
100,854 total applications (excludes DH and Lifetime permits) 86,500 permits approved	106,308 total applications (excludes DH and Lifetime permits) 84,600 permits approved	112,223 total applications (excludes DH and Lifetime permits) 84,800 permits approved
1st choice 65,653 drew 65%	1st choice 64,850 drew 61%	1st choice 64,624 drew 58%
2nd choice 4,516 drew 4%	2nd choice 5,393 drew 5%	2nd choice 6,149 drew 5%
3rd choice 1,718 drew 2%	3rd choice 1,737 drew 2%	3rd choice 1,816 drew 2%
4th choice 789 drew 0.8%	4th choice 774 drew 0.7%	4th choice 706 drew 0.6%
5th choice 484 drew 0.5%	5th choice 321 drew 0.3%	5th choice 368 drew 0.3%
25,970 unsuccessful 26%	31,172 unsuccessful 29%	36,779 unsuccessful 32%
1,724 ineligible 2% (drew another deer hunt)	2,061 ineligible 2% (drew another deer hunt)	1,781 ineligible 2% (drew another deer hunt)

Additional information

2012 information	2013 information	2014 information
A total of 7,507 (7.4%) applicants earned a preference point and drew a permit with their 2nd - 5th choice.	A total of 8,225 (7.7%) applicants earned a preference point and drew a permit with their 2nd - 5th choice.	A total of 9,039 (8%) applicants earned a preference point and drew a permit with their 2nd - 5th choice.
1,334 (1.3%) applicants had 1 or more point(s).	2,117 (1.9%) applicants had 1 or more point(s).	2,911 (2.5%) applicants had 1 or more point(s).
A total of 8,275 purchased a preference point.	A total of 8,882 purchased a preference point.	A total of 10,304 purchased a preference point.

General Season draw order

1. Lifetime permits
2. Dedicated Hunter applications
3. 20% for Youth (17 years old or younger on July 31) applications
4. Then the rest of the applications



Limited Entry draw order

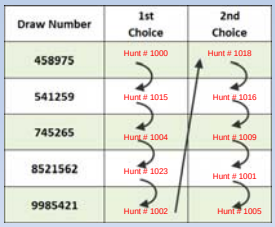
•50% of the permits for each limited entry unit are reserved for applicants who have the greatest number of bonus points.

• You receive a random drawing number for your current application and a random drawing number for every bonus point you have. Your lowest random number is then used in the drawing. (The lower your number, the better your chance at drawing a permit.)

• Beginning with the lowest draw number and continuing in sequence, the first choice for a hunt is considered and permit awarded if quota is there for that hunt number.

• If a permit is not available for the hunt of first choice, the application is skipped, and the first choice of the next application is considered.

• After all first choices are evaluated, the second choice of applicants not receiving a permit in the first choice round are evaluated in the same manner as the first choices.



Points to draw out on archery

Hunt #	Hunt Unit	Resident Points Required For 2014 Guaranteed Success on First Choice	Nonresident Points Required For 2014 Guaranteed Success on First Choice
1500	Beaver	1	2
1501	Box Elder	0	0
1502	Cache	0	0
1503	Central Mtns, Manti/San Rafael	1	0
1504	Central Mtns, Nebo	0	0
1505	Chalk Creek/East Canyon/Morgan-S Rich	0	0
1506	Fillmore, Oak Creek	0	No Applicants
1507	Fillmore, Pahvant	1	0
1508	Kamas	0	0
1509	La Sal, La Sal Mtns	0	0
1510	Monroe	1	1
1511	Mt Dutton	0	1
1512	Nine Mile	0	0
1513	North Slope	0	0
1514	Ogden	0	0
1515	Oquirrh-Stansbury	1	0
1516	Panguitch Lake	1	2
1517	Pine Valley	0	1
1518	Plateau, Boulder/Kaiparowits	1	1
1519	Plateau, Fishlake	1	1
1520	Plateau, Thousand Lakes	2	5
1521	San Juan, Abajo Mtns	0	1
1522	South Slope, Bonanza/Vernal	2	0
1523	South Slope, Yellowstone	1	0
1524	Southwest Desert	1	2
1525	Wasatch Mtns, Avintaquin/Currant Creek	2	0
1526	Wasatch Mtns, West	1	0
1527	West Desert, Tintic	0	No Applicants
1528	West Desert, West	0	0
1529	Zion	0	1

Points to draw out on rifle

Hunt #	Hunt Unit	Resident Points Required For 2014 Guaranteed Success on First Choice	Nonresident Points Required For 2014 Guaranteed Success on First Choice
1530	Beaver	2	2
1531	Box Elder	0	0
1532	Cache	1	0
1533	Central Mtns, Manti/San Rafael	1	0
1534	Central Mtns, Nebo	1	0
1535	Chalk Creek/East Canyon/Morgan-S Rich	1	0
1536	Fillmore, Oak Creek	1	0
1537	Fillmore, Pahvant	2	1
1538	Kamas	0	0
1539	La Sal, La Sal Mtns	1	1
1540	Monroe	2	2
1541	Mt Dutton	1	3
1542	Nine Mile	1	0
1543	North Slope	0	0
1544	Ogden	1	0
1545	Oquirrh-Stansbury	2	0
1546	Panguitch Lake	1	2
1547	Pine Valley	2	2
1548	Plateau, Boulder/Kaiparowits	2	3
1549	Plateau, Fishlake	2	2
1550	Plateau, Thousand Lakes	4	4
1551	San Juan, Abajo Mtns	0	1
1552	South Slope, Bonanza/Vernal	2	0
1553	South Slope, Yellowstone	2	0
1554	Southwest Desert	2	3
1555	Wasatch Mtns, Avintaquin/Currant Creek	2	0
1556	Wasatch Mtns, West	1	0
1557	West Desert, Tintic	1	0
1558	West Desert, West	1	0
1559	Zion	2	2

Points to draw out on muzzleloader

Hunt #	Hunt Unit	Resident Points Required For 2014 Guaranteed Success on First Choice	Nonresident Points Required For 2014 Guaranteed Success on First Choice
1560	Beaver	1	2
1561	Box Elder	0	0
1562	Cache	0	0
1563	Central Mtns, Manti/San Rafael	1	0
1564	Central Mtns, Nebo	0	0
1565	Chalk Creek/East Canyon/Morgan-S Rich	0	0
1566	Fillmore, Oak Creek	0	No Applicants
1567	Fillmore, Pahvant	1	0
1568	Kamas	0	0
1569	La Sal, La Sal Mtns	0	0
1570	Monroe	2	1
1571	Mt Dutton	1	1
1572	Nine Mile	0	No Applicants
1573	North Slope	0	0
1574	Ogden	0	0
1575	Oquirrh-Stansbury	1	0
1576	Panguitch Lake	1	2
1577	Pine Valley	1	2
1578	Plateau, Boulder/Kaiparowits	1	2
1579	Plateau, Fishlake	2	0
1580	Plateau, Thousand Lakes	4	4
1581	San Juan, Abajo Mtns	0	1
1582	South Slope, Bonanza/Vernal	2	0
1583	South Slope, Yellowstone	1	0
1584	Southwest Desert	1	1
1585	Wasatch Mtns, Avintaquin/Currant Creek	2	0
1586	Wasatch Mtns, West	0	0
1587	West Desert, Tintic	1	No Applicants
1588	West Desert, West	0	0
1589	Zion	0	1

Breakdown of preference points for 2012 - 2014

Status	2012 Preference Points	Applicants	2013 Preference Points	Applicants	2014 Preference Points	Applicants
Not Successful For First Choice	0	6,173	0	6,108	0	6,127
Not Successful For First Choice	1	1,163	1	1,779	1	2,402
Not Successful For First Choice	2	149	2	267	2	413
Not Successful For First Choice	3	19	3	64	3	79
Not Successful For First Choice	4	3	4	7	4	15
Not Successful For First Choice					5	2
Not Successful For First Choice					7	1
TOTAL		**7,507**		**8,225**		**9,039**
Successful For First Choice	0	44,738	0	39,503	0	36,235
Successful For First Choice	1	17,655	1	21,287	1	22,373
Successful For First Choice	2	2,889	2	3,488	2	5,080
Successful For First Choice	3	286	3	441	3	683
Successful For First Choice	4	52	4	83	4	164
Successful For First Choice	5	15	5	21	5	44
Successful For First Choice	6	5	6	8	6	24
Successful For First Choice	7	4	7	4	7	10
Successful For First Choice	8	3	8	5	8	4
Successful For First Choice	9	5	9	3	9	2
Successful For First Choice	11	1	10	4	10	3
TOTAL		**65,653**	11	2	12	1
			13	1	13	1
				64,850		**64,624**

Applications and success rate for 2012 - 2014 general season deer 1st and 2nd choice

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	46	1500	Beaver-ARCH	700	580	498	86%	464	86	19%
2013	44	1500	Beaver-ARCH	630	608	478	79%	478	42	9%
2014	44	1500	Beaver-ARCH	600	632	471	75%	414	29	7%
2012	78	1501	Box Elder-ARCH	880	200	196	98%	214	24	11%
2013	77	1501	Box Elder-ARCH	800	160	156	98%	171	17	10%
2014	77	1501	Box Elder-ARCH	760	175	157	90%	205	26	13%
2012	43	1502	Cache-ARCH	1420	609	602	99%	406	60	15%
2013	40	1502	Cache-ARCH	1420	690	677	98%	422	59	14%
2014	41	1502	Cache-ARCH	1,320	747	699	94%	500	97	19%
2012	13	1503	Central Mtns, Manti/San Rafael-ARCH	1760	2237	1539	69%	1053	29	3%
2013	15	1503	Central Mtns, Manti/San Rafael-ARCH	1760	2234	1542	69%	978	28	3%
2014	16	1503	Central Mtns, Manti/San Rafael-ARCH	1,760	2,201	1,489	68%	989	49	5%
2012	62	1504	Central Mtns, Nebo-ARCH	880	399	379	95%	489	140	29%
2013	54	1504	Central Mtns, Nebo-ARCH	800	505	485	96%	455	146	32%
2014	55	1504	Central Mtns, Nebo-ARCH	800	515	483	94%	519	179	34%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	34	1505	Chalk Creek/East Canyon/Morgan-S. Rich-ARCH	1360	854	831	97%	578	79	14%
2013	32	1505	Chalk Creek/East Canyon/Morgan-S. Rich-ARCH	1360	957	932	97%	699	168	24%
2014	30	1505	Chalk Creek/East Canyon/Morgan-S. Rich-ARCH	1,360	1,144	1,073	94%	810	165	20%
2012	90	1506	Fillmore, Oak Creek-ARCH	100	24	22	92%	33	7	21%
2013	90	1506	Fillmore, Oak Creek-ARCH	90	27	25	93%	30	7	23%
2014	90	1506	Fillmore, Oak Creek-ARCH	90	18	18	100%	46	20	43%
2012	58	1507	Fillmore, Pahvant-ARCH	340	442	249	56%	317	18	6%
2013	64	1507	Fillmore, Pahvant-ARCH	310	414	231	56%	282	19	7%
2014	67	1507	Fillmore, Pahvant-ARCH	310	408	208	51%	279	33	12%
2012	67	1508	Kamas-ARCH	640	338	332	98%	332	102	31%
2013	71	1508	Kamas-ARCH	640	317	306	97%	381	133	35%
2014	69	1508	Kamas-ARCH	640	394	376	95%	384	115	30%
2012	72	1509	La Sal, La Sal Mtns-ARCH	400	284	267	94%	226	39	17%
2013	70	1509	La Sal, La Sal Mtns-ARCH	360	331	310	94%	220	29	13%
2014	71	1509	La Sal, La Sal Mtns-ARCH	360	346	306	88%	175	30	17%
2012	70	1510	Monroe-ARCH	200	315	158	50%	257	3	1%
2013	62	1510	Monroe-ARCH	240	427	171	40%	217	20	9%
2014	63	1510	Monroe-ARCH	280	470	187	40%	249	26	10%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	82	1511	Mt Dutton-ARCH	140	143	117	82%	107	1	1%
2013	85	1511	Mt Dutton-ARCH	130	102	94	92%	144	24	17%
2014	84	1511	Mt Dutton-ARCH	130	143	110	77%	99	0	0%
2012	85	1512	Nine Mile-ARCH	260	124	120	97%	139	53	38%
2013	82	1512	Nine Mile-ARCH	260	135	129	96%	143	49	34%
2014	83	1512	Nine Mile-ARCH	260	151	137	91%	171	59	35%
2012	52	1513	North Slope-ARCH	720	504	499	99%	302	93	31%
2013	68	1513	North Slope-ARCH	690	543	535	99%	378	125	33%
2014	54	1513	North Slope-ARCH	650	542	516	95%	378	108	29%
2012	71	1514	Ogden-ARCH	500	301	291	97%	252	21	8%
2013	68	1514	Ogden-ARCH	500	354	343	97%	278	34	12%
2014	66	1514	Ogden-ARCH	500	434	402	93%	339	37	11%
2012	47	1515	Oquirrh-Stansbury-ARCH	500	530	424	80%	359	12	3%
2013	47	1515	Oquirrh-Stansbury-ARCH	420	563	334	59%	377	20	5%
2014	45	1515	Oquirrh-Stansbury-ARCH	500	631	374	59%	412	36	9%
2012	37	1516	Panguitch Lake-ARCH	560	735	472	64%	431	9	2%
2013	34	1516	Panguitch Lake-ARCH	600	841	521	62%	490	13	3%
2014	35	1516	Panguitch Lake-ARCH	640	936	545	58%	509	17	3%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	51	1517	Pine Valley-ARCH	720	518	444	86%	450	145	32%
2013	51	1517	Pine Valley-ARCH	760	520	411	79%	464	159	34%
2014	50	1517	Pine Valley-ARCH	780	588	463	79%	437	164	38%
2012	50	1518	Plateau, Boulder/Kaiparowits-ARCH	360	519	279	54%	253	7	3%
2013	55	1518	Plateau, Boulder/Kaiparowits-ARCH	400	502	290	58%	223	31	14%
2014	49	1518	Plateau, Boulder/Kaiparowits-ARCH	400	615	290	47%	216	26	12%
2012	65	1519	Plateau, Fishlake-ARCH	300	381	242	64%	271	13	5%
2013	59	1519	Plateau, Fishlake-ARCH	260	442	193	44%	301	12	4%
2014	56	1519	Plateau, Fishlake-ARCH	260	515	202	39%	295	10	3%
2012	77	1520	Plateau, Thousand Lakes-ARCH	80	233	14	6%	171	4	2%
2013	86	1520	Plateau, Thousand Lakes-ARCH	40	72	22	31%	104	4	4%
2014	86	1520	Plateau, Thousand Lakes-ARCH	40	62	31	50%	71	2	3%
2012	54	1521	San Juan, Abajo Mtns-ARCH	500	492	439	89%	164	11	7%
2013	52	1521	San Juan, Abajo Mtns-ARCH	500	518	427	82%	181	22	12%
2014	53	1521	San Juan, Abajo Mtns-ARCH	500	545	405	74%	194	35	18%
2012	38	1522	South Slope, Bonanza/Vernal-ARCH	360	697	332	48%	294	10	3%
2013	42	1522	South Slope, Bonanza/Vernal-ARCH	290	661	260	39%	289	14	5%
2014	40	1522	South Slope, Bonanza/Vernal-ARCH	270	774	229	30%	333	22	7%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	45	1523	South Slope, Yellowstone-ARCH	300	587	268	46%	336	9	3%
2013	46	1523	South Slope, Yellowstone-ARCH	300	576	267	46%	365	9	2%
2014	43	1523	South Slope, Yellowstone-ARCH	300	642	257	40%	456	11	2%
2012	81	1524	Southwest Desert-ARCH	140	173	92	53%	153	11	7%
2013	78	1524	Southwest Desert-ARCH	140	157	98	62%	117	9	8%
2014	81	1524	Southwest Desert-ARCH	150	164	111	68%	145	9	6%
2012	20	1525	Wasatch Mtns, Avintaquin/Currant Creek-ARCH	800	1620	684	42%	1077	16	1%
2013	21	1525	Wasatch Mtns, Avintaquin/Currant Creek-ARCH	800	1712	676	39%	1,057	13	1%
2014	22	1525	Wasatch Mtns, Avintaquin/Currant Creek-ARCH	800	1,835	640	35%	1,232	24	2%
2012	24	1526	Wasatch Mtns, West-ARCH	1500	1362	1296	95%	1118	89	8%
2013	22	1526	Wasatch Mtns, West-ARCH	1500	1703	1380	81%	1,195	4	0%
2014	21	1526	Wasatch Mtns, West-ARCH	1,580	1,847	1,409	76%	1,316	26	2%
2012	84	1527	West Desert, Tintic-ARCH	180	124	114	92%	153	40	26%
2013	81	1527	West Desert, Tintic-ARCH	180	138	131	95%	155	35	23%
2014	85	1527	West Desert, Tintic-ARCH	180	138	127	92%	162	39	24%
2012	89	1528	West Desert, West-ARCH	140	40	39	98%	69	15	22%
2013	88	1528	West Desert, West-ARCH	140	47	46	98%	73	24	33%
2014	88	1528	West Desert, West-ARCH	120	38	38	100%	77	25	32%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	68	1529	Zion-ARCH	560	327	314	96%	322	88	27%
2013	65	1529	Zion-ARCH	600	359	342	95%	406	136	33%
2014	65	1529	Zion-ARCH	620	445	332	75%	487	138	28%
2012	6	1530	Beaver-ALW	2100	3791	1657	44%	2014	44	2%
2013	7	1530	Beaver-ALW	1890	3705	1520	41%	1,866	8	0%
2014	7	1530	Beaver-ALW	1,800	3,986	1,458	37%	1,824	13	1%
2012	14	1531	Box Elder-ALW	2100	2221	2190	99%	1443	235	16%
2013	17	1531	Box Elder-ALW	2400	2027	2000	99%	1,421	273	19%
2014	18	1531	Box Elder-ALW	2,280	2,073	1,960	95%	1,478	190	13%
2012	4	1532	Cache-ALW	4260	4380	3991	91%	1822	14	1%
2013	4	1532	Cache-ALW	4260	4897	3938	80%	1,944	44	2%
2014	3	1532	Cache-ALW	3,960	5,807	3,574	62%	1,948	44	2%
2012	1	1533	Central Mtns, Manti/San Rafael-ALW	5280	7200	4610	64%	2848	88	3%
2013	1	1533	Central Mtns, Manti/San Rafael-ALW	5280	7608	4499	59%	2,944	170	6%
2014	1	1533	Central Mtns, Manti/San Rafael-ALW	5,280	7,927	4,286	54%	3,115	248	8%
2012	8	1534	Central Mtns, Nebo-ALW	2640	3131	2379	76%	2370	50	2%
2013	10	1534	Central Mtns, Nebo-ALW	2400	3058	2149	70%	2,586	98	4%
2014	10	1534	Central Mtns, Nebo-ALW	2,400	3,517	2,072	59%	2,602	125	5%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	7	1535	Chalk Creek/East Canyon/Morgan-S. Rich-ALW	4080	3612	3553	98%	1588	212	13%
2013	6	1535	Chalk Creek/East Canyon/Morgan-S. Rich-ALW	4080	4226	3748	89%	1,657	53	3%
2014	6	1535	Chalk Creek/East Canyon/Morgan-S. Rich-ALW	4,080	4,811	3,719	77%	1,826	45	2%
2012	61	1536	Fillmore, Oak Creek-ALW	100	430	210	49%	664	58	9%
2013	69	1536	Fillmore, Oak Creek-ALW	270	343	174	51%	541	77	14%
2014	72	1536	Fillmore, Oak Creek-ALW	270	335	185	55%	530	64	12%
2012	11	1537	Fillmore, Pahvant-ALW	1020	2357	802	34%	1211	11	1%
2013	13	1537	Fillmore, Pahvant-ALW	930	2367	712	30%	1,203	11	1%
2014	13	1537	Fillmore, Pahvant-ALW	930	2,472	725	29%	1,189	9	1%
2012	33	1538	Kamas-ALW	1920	883	873	99%	906	283	31%
2013	31	1538	Kamas-ALW	1920	964	943	98%	1,073	440	41%
2014	33	1538	Kamas-ALW	1,920	1,056	1,014	96%	1,068	490	46%
2012	26	1539	La Sal, La Sal Mtns-ALW	1200	1337	1097	82%	477	7	1%
2013	27	1539	La Sal, La Sal Mtns-ALW	1080	1232	987	80%	493	14	3%
2014	27	1539	La Sal, La Sal Mtns-ALW	1,080	1,230	970	79%	514	27	5%
2012	22	1540	Monroe-ALW	600	1492	494	33%	981	6	1%
2013	18	1540	Monroe-ALW	720	1890	612	32%	961	8	1%
2014	14	1540	Monroe-ALW	840	2,299	688	30%	1,090	9	1%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	44	1541	Mt Dutton-ALW	420	604	300	50%	876	29	3%
2013	39	1541	Mt Dutton-ALW	390	696	283	41%	802	41	5%
2014	42	1541	Mt Dutton-ALW	390	725	285	39%	772	22	3%
2012	31	1542	Nine Mile-ALW	780	973	690	71%	650	6	1%
2013	30	1542	Nine Mile-ALW	780	972	689	71%	734	6	1%
2014	32	1542	Nine Mile-ALW	780	1,067	658	62%	763	24	3%
2012	18	1543	North Slope-ALW	2160	1705	1682	99%	1041	300	29%
2013	23	1543	North Slope-ALW	2070	1652	1614	98%	941	342	36%
2014	25	1543	North Slope-ALW	1,950	1,571	1,480	94%	1,034	341	33%
2012	28	1544	Ogden-ALW	1500	1208	1199	99%	1013	111	11%
2013	24	1544	Ogden-ALW	1500	1501	1385	92%	1,148	17	1%
2014	23	1544	Ogden-ALW	1,500	1,780	1,371	77%	1,230	20	2%
2012	9	1545	Oquirrh-Stansbury-ALW	1500	3012	1270	42%	1236	14	1%
2013	8	1545	Oquirrh-Stansbury-ALW	1260	3553	1021	29%	1,248	5	0%
2014	8	1545	Oquirrh-Stansbury-ALW	1,500	3,941	1,221	31%	1,204	10	1%
2012	16	1546	Panguitch Lake-ALW	1360	2168	1360	63%	1486	45	3%
2013	12	1546	Panguitch Lake-ALW	1800	2520	1418	56%	1,576	57	4%
2014	12	1546	Panguitch Lake-ALW	1,920	2,737	1,439	53%	1,545	106	7%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	3	1547	Pine Valley-ALW	2160	4788	1628	34%	1563	3	0%
2013	3	1547	Pine Valley-ALW	2280	4937	1761	36%	1,535	5	0%
2014	4	1547	Pine Valley-ALW	2,340	5,424	1,775	33%	1,641	12	1%
2012	12	1548	Plateau, Boulder/Kaiparowits-ALW	1080	2262	812	36%	914	22	2%
2013	11	1548	Plateau, Boulder/Kaiparowits-ALW	1200	2673	896	34%	891	32	4%
2014	11	1548	Plateau, Boulder/Kaiparowits-ALW	1,200	2,739	898	33%	880	40	5%
2012	21	1549	Plateau, Fishlake-ALW	900	1511	703	47%	1321	35	3%
2013	20	1549	Plateau, Fishlake-ALW	780	1723	545	32%	1,356	63	5%
2014	19	1549	Plateau, Fishlake-ALW	780	2,022	551	27%	1,433	52	4%
2012	25	1550	Plateau, Thousand Lakes-ALW	240	1343	9	1%	715	0	0%
2013	41	1550	Plateau, Thousand Lakes-ALW	120	684	18	3%	619	0	0%
2014	39	1550	Plateau, Thousand Lakes-ALW	120	805	36	4%	591	0	0%
2012	23	1551	San Juan,Abajo Mtns-ALW	1500	1394	1276	92%	516	74	14%
2013	26	1551	San Juan,Abajo Mtns-ALW	1500	1344	1236	92%	450	97	22%
2014	26	1551	San Juan,Abajo Mtns-ALW	1,500	1,500	1,298	87%	410	65	16%
2012	19	1552	South Slope, Bonanza/Vernal-ALW	1080	1695	1020	60%	813	1	0%
2013	16	1552	South Slope, Bonanza/Vernal-ALW	870	2030	799	39%	783	18	2%
2014	15	1552	South Slope, Bonanza/Vernal-ALW	810	2,290	735	32%	852	11	1%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	17	1553	South Slope, Yellowstone-ALW	900	1729	824	48%	1039	3	0%
2013	19	1553	South Slope, Yellowstone-ALW	900	1823	803	44%	1,137	19	2%
2014	20	1553	South Slope, Yellowstone-ALW	900	1,993	794	40%	1,186	21	2%
2012	30	1554	Southwest Desert-ALW	420	1056	290	27%	1078	0	0%
2013	29	1554	Southwest Desert-ALW	420	1014	312	31%	873	5	1%
2014	28	1554	Southwest Desert-ALW	450	1,213	330	27%	886	2	0%
2012	2	1555	Wasatch Mtns, Avintaquin/Currant Creek-ALW	2400	4956	2062	42%	3329	16	0%
2013	2	1555	Wasatch Mtns, Avintaquin/Currant Creek-ALW	2400	5675	2055	36%	3,457	19	1%
2014	2	1555	Wasatch Mtns, Avintaquin/Currant Creek-ALW	2,400	6,259	1,980	32%	3,611	11	0%
2012	5	1556	Wasatch Mtns, West-ALW	4500	4300	4045	94%	2788	123	4%
2013	5	1556	Wasatch Mtns, West-ALW	4500	4823	4030	84%	2,938	111	4%
2014	5	1556	Wasatch Mtns, West-ALW	4,740	4,952	4,045	82%	3,146	286	9%
2012	29	1557	West Desert,Tintic-ALW	540	1132	480	42%	1162	7	1%
2013	28	1557	West Desert,Tintic-ALW	540	1123	475	42%	1,139	19	2%
2014	29	1557	West Desert,Tintic-ALW	540	1,151	448	39%	1,198	36	3%
2012	40	1558	West Desert, West-ALW	420	652	332	51%	833	34	4%
2013	49	1558	West Desert, West-ALW	420	547	308	56%	679	59	9%
2014	51	1558	West Desert, West-ALW	360	585	250	43%	693	71	10%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	10	1559	Zion-ALW	1680	2881	1335	46%	1301	51	4%
2013	9	1559	Zion-ALW	1800	3299	1508	46%	1,351	8	1%
2014	9	1559	Zion-ALW	1,860	3,678	1,547	42%	1,512	4	0%
2012	36	1560	Beaver-MUZZ	700	741	504	68%	690	43	6%
2013	36	1560	Beaver-MUZZ	630	773	436	56%	610	59	10%
2014	38	1560	Beaver-MUZZ	600	816	359	44%	679	81	12%
2012	64	1561	Box Elder-MUZZ	880	383	373	97%	306	28	9%
2013	72	1561	Box Elder-MUZZ	800	302	294	97%	297	31	10%
2014	70	1561	Box Elder-MUZZ	760	349	322	92%	260	29	11%
2012	32	1562	Cache-MUZZ	1420	884	865	98%	642	86	13%
2013	33	1562	Cache-MUZZ	1420	927	904	98%	672	116	17%
2014	31	1562	Cache-MUZZ	1,320	1,100	1,021	93%	792	192	24%
2012	15	1563	Central Mtns, Manti/San Rafael-MUZZ	1760	2187	1503	69%	1264	42	3%
2013	14	1563	Central Mtns, Manti/San Rafael-MUZZ	1760	2235	1510	68%	1,369	62	5%
2014	17	1563	Central Mtns, Manti/San Rafael-MUZZ	1,760	2,106	1,456	69%	1,282	73	6%
2012	49	1564	Central Mtns, Nebo-MUZZ	880	521	508	98%	553	179	32%
2013	57	1564	Central Mtns, Nebo-MUZZ	800	483	465	96%	573	154	27%
2014	61	1564	Central Mtns, Nebo-MUZZ	800	492	460	93%	688	259	38%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	48	1565	Chalk Creek/East Canyon/Morgan-S. Rich-MUZZ	1360	522	511	98%	491	44	9%
2013	53	1565	Chalk Creek/East Canyon/Morgan-S. Rich-MUZZ	1360	517	501	97%	500	76	15%
2014	52	1565	Chalk Creek/East Canyon/Morgan-S. Rich-MUZZ	1,360	572	526	92%	570	123	22%
2012	88	1566	Fillmore, Oak Creek-MUZZ	100	44	41	93%	60	27	45%
2013	89	1566	Fillmore, Oak Creek-MUZZ	90	30	30	100%	83	47	57%
2014	89	1566	Fillmore, Oak Creek-MUZZ	90	25	24	96%	50	22	44%
2012	63	1567	Fillmore, Pahvant-MUZZ	340	396	202	51%	326	36	11%
2013	61	1567	Fillmore, Pahvant-MUZZ	310	430	186	43%	358	40	11%
2014	68	1567	Fillmore, Pahvant-MUZZ	310	395	179	45%	340	57	17%
2012	73	1568	Kamas-MUZZ	640	277	270	97%	250	45	18%
2013	74	1568	Kamas-MUZZ	640	266	256	96%	243	71	29%
2014	75	1568	Kamas-MUZZ	640	285	265	93%	267	54	20%
2012	69	1569	La Sal, La Sal Mtns-MUZZ	400	317	305	96%	227	32	14%
2013	66	1569	La Sal, La Sal Mtns-MUZZ	360	359	307	86%	249	27	11%
2014	73	1569	La Sal, La Sal Mtns-MUZZ	360	319	295	92%	220	26	12%
2012	74	1570	Monroe-MUZZ	200	265	133	50%	213	19	9%
2013	67	1570	Monroe-MUZZ	240	359	172	48%	289	24	8%
2014	58	1570	Monroe-MUZZ	280	504	205	41%	321	22	7%
2012	86	1571	Mt Dutton-MUZZ	180	106	99	93%	130	17	13%
2013	83	1571	Mt Dutton-MUZZ	130	133	109	82%	154	4	3%
2014	82	1571	Mt Dutton-MUZZ	130	160	80	50%	170	10	6%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	83	1572	Nine Mile-MUZZ	260	134	133	99%	181	55	30%
2013	84	1572	Nine Mile-MUZZ	260	130	125	96%	174	56	32%
2014	79	1572	Nine Mile-MUZZ	260	167	146	87%	206	88	43%
2012	41	1573	North Slope-MUZZ	720	649	633	98%	393	33	8%
2013	48	1573	North Slope-MUZZ	690	561	543	97%	320	61	19%
2014	47	1573	North Slope-MUZZ	650	621	564	91%	357	39	11%
2012	76	1574	Ogden-MUZZ	500	237	236	100%	235	19	8%
2013	75	1574	Ogden-MUZZ	500	246	239	97%	240	30	13%
2014	74	1574	Ogden-MUZZ	500	286	265	93%	279	48	17%
2012	55	1575	Oquirrh-Stansbury-MUZZ	500	486	405	83%	487	27	6%
2013	43	1575	Oquirrh-Stansbury-MUZZ	420	644	277	43%	596	66	11%
2014	48	1575	Oquirrh-Stansbury-MUZZ	500	619	285	46%	671	104	15%
2012	42	1576	Panguitch Lake-MUZZ	560	637	428	67%	485	14	3%
2013	35	1576	Panguitch Lake-MUZZ	600	784	457	58%	549	30	5%
2014	34	1576	Panguitch Lake-MUZZ	640	960	475	49%	662	24	4%
2012	35	1577	Pine Valley-MUZZ	720	793	449	57%	771	89	12%
2013	38	1577	Pine Valley-MUZZ	760	737	476	65%	783	106	14%
2014	36	1577	Pine Valley-MUZZ	780	822	460	56%	866	128	15%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	53	1578	Plateau, Boulder/Kaiparowits-MUZZ	360	498	230	46%	341	33	10%
2013	45	1578	Plateau, Boulder/Kaiparowits-MUZZ	400	584	246	42%	357	47	13%
2014	46	1578	Plateau, Boulder/Kaiparowits-MUZZ	400	628	266	42%	398	36	9%
2012	66	1579	Plateau, Fishlake-MUZZ	300	366	189	52%	283	29	10%
2013	63	1579	Plateau, Fishlake-MUZZ	260	423	179	42%	313	18	6%
2014	62	1579	Plateau, Fishlake-MUZZ	260	472	167	35%	291	16	5%
2012	60	1580	Plateau, Thousand Lakes-MUZZ	80	431	0	0%	243	0	0%
2013	79	1580	Plateau, Thousand Lakes-MUZZ	40	143	0	0%	163	0	0%
2014	80	1580	Plateau, Thousand Lakes-MUZZ	40	166	17	10%	158	0	0%
2012	57	1581	San Juan,Abajo Mtns-MUZZ	500	446	425	95%	303	19	6%
2013	60	1581	San Juan,Abajo Mtns-MUZZ	500	432	417	97%	284	37	13%
2014	60	1581	San Juan,Abajo Mtns-MUZZ	500	497	408	82%	277	33	12%
2012	59	1582	South Slope, Bonanza/Vernal-MUZZ	360	438	322	74%	313	15	5%
2013	56	1582	South Slope, Bonanza/Vernal-MUZZ	290	493	241	49%	320	26	8%
2014	57	1582	South Slope, Bonanza/Vernal-MUZZ	270	514	213	41%	373	32	9%
2012	56	1583	South Slope, Yelloestone-MUZZ	300	457	253	55%	368	12	3%
2013	58	1583	South Slope, Yelloestone-MUZZ	300	478	255	53%	343	15	4%
2014	59	1583	South Slope, Yelloestone-MUZZ	300	499	245	49%	356	14	4%

Year	Rank	Hunt #	Hunt Name	Quota	Apps by 1st choice	Successful by 1st app choice	App by 1st choice%	Apps by 2nd choice	Successful by 2nd app choice	App by 2nd choice %
2012	79	1584	Southwest Desert-MUZZ	140	198	86	43%	253	21	8%
2013	80	1584	Southwest Desert-MUZZ	140	139	85	61%	209	21	10%
2014	78	1584	Southwest Desert-MUZZ	150	172	83	48%	211	35	17%
2012	27	1585	Wasatch Mtns, Avintaquin/Currant Creek-MUZZ	800	1311	663	51%	1006	36	4%
2013	25	1585	Wasatch Mtns, Avintaquin/Currant Creek-MUZZ	800	1445	662	46%	1,169	32	3%
2014	24	1585	Wasatch Mtns, Avintaquin/Currant Creek-MUZZ	800	1,701	617	36%	1,093	46	4%
2012	39	1586	Wasatch Mtns, West-MUZZ	1500	691	670	97%	829	212	26%
2013	37	1586	Wasatch Mtns, West-MUZZ	1500	763	736	96%	991	330	33%
2014	37	1586	Wasatch Mtns, West-MUZZ	1,580	817	765	94%	959	409	43%
2012	80	1587	West Desert, Tintic-MUZZ	180	198	155	78%	229	10	4%
2013	76	1587	West Desert, Tintic-MUZZ	180	165	158	96%	205	13	6%
2014	76	1587	West Desert, Tintic-MUZZ	180	189	161	85%	206	3	1%
2012	87	1588	West Desert, West-MUZZ	140	89	84	94%	141	37	26%
2013	87	1588	West Desert, West-MUZZ	140	61	55	90%	106	46	43%
2014	87	1588	West Desert, West-MUZZ	120	60	46	77%	117	51	44%
2012	75	1589	Zion-MUZZ	560	257	252	98%	367	141	38%
2013	73	1589	Zion-MUZZ	600	292	279	96%	510	224	44%
2014	64	1589	Zion-MUZZ	620	457	372	81%	558	140	25%

2015 BUCK/BULL CWMU & LANDOWNER ASSOCIATION

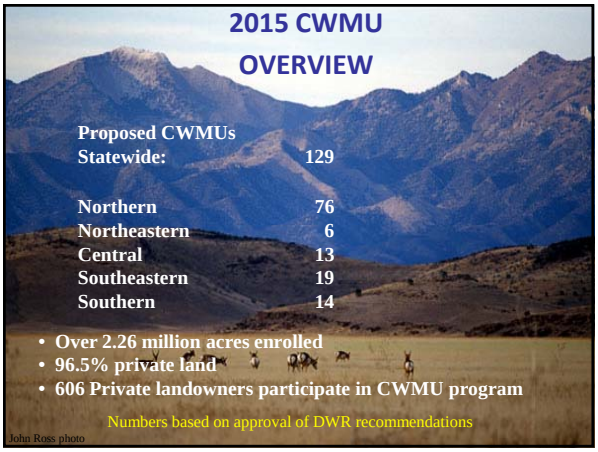
2015 CWMUs

- New Applications
- Renewal Applications
- Change Applications (Amendments that require RAC/Board action)
  - Change in permit numbers
  - Change in permit allocation (private/public ratio)
  - Change in season dates

APPLICATIONS FOR CWMUs

- 17 New applications
  - 4 due to land-ownership changes or >34% increase/decrease in acreage
  - 13 brand new applications
  - One application w/DWR recommendation to deny (East Zion)
- 82 CWMUs submitted renewal applications for 2015-2017
- 3 CWMUs submitted change applications requiring RAC/Board approval
- 2 CWMUs did not re-apply and dropped from the program
- A total of 129 applications submitted for the 2015 hunting season

2015 CWMU OVERVIEW



Proposed CWMUs

Statewide:	**129**
Northern	**76**
Northeastern	**6**
Central	**13**
Southeastern	**19**
Southern	**14**

- **Over 2.26 million acres enrolled**
- **96.5% private land**
- **606 Private landowners participate in CWMU program**

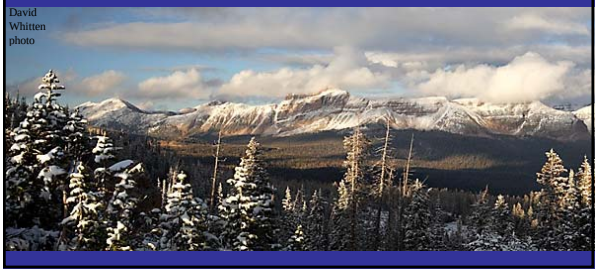
Numbers based on approval of DWR recommendations

John Ross photo

2015 CWMU BUCK/BULL PERMIT RECOMMENDATIONS

	PRIVATE PERMITS	PUBLIC PERMITS
Buck Deer	**1992**	**264**
Management Buck Deer	**2**	**1**
Bull Elk	**931**	**140**
Buck Pronghorn	**89**	**65**
Bull Moose	**43**	**41**
Total	**3,057**	**511 (16.7%)**

CWMU APPLICATION RECOMMENDATIONS BY REGION



David Whitten photo

NORTHERN REGION
NEW APPLICATIONS

CWMU NAME	STATUS	ACRES	SPECIES	DWR REC.
Chimney Rock	New	11,240	Deer, Elk, Moose	Approve
Dilly Ranch	New	7,088	Deer	Approve
Plymouth Peak	New	5,179	Pronghorn	Approve
Powder Mountain	New	11,800	Deer, Elk, Moose	Approve
RLF Deep Creek	New	11,129	Pronghorn	Approve
Spring Creek Acres	New	5,503	Deer	Approve
The Rose of Snowville	New – Decreased acres 47%	9,404	Pronghorn	Approve
Wood Canyon	New – Decreased acres 35%	7,050	Deer	Approve

NORTHERN REGION
RENEWAL APPLICATIONS

CWMU NAME	STATUS	CHANGES	DWR REC.
Bally Watts	Renewal	No changes	Approve
Bear Springs	Renewal	Added 1,666 acres, increased buck deer permits from 10 to 20, no elk season var.	Approve
Beaver Hollow	Renewal	No changes	Approve
Blind Spring	Renewal	No changes	Approve
Blue Spring Hills	Renewal	No changes	Approve
Bluebell	Renewal	No changes	Approve
Bootjack	Renewal	No changes	Approve
Cedar Canyon	Renewal	Decreased moose to 1 Private/Public every other year	Approve
Clear Valley Ranch	Renewal	President and operator change	Approve
Coldwater Ranch	Renewal	Added 2,443 acres	Approve

NORTHERN REGION
RENEWAL APPLICATIONS (Cont.)

CWMU NAME	STATUS	CHANGES	DWR REC.
Deseret	Renewal	Added 3,606 private acres; increased 9 buck deer permits, 11 bull elk permits, 7 pronghorn permits, requests bull elk season variance 9/1-11/22	Approve
Double Cone	Renewal	No changes	Approve
Dove Creek	Renewal	No changes	Approve
Durst Mountain	Renewal	Changed president	Approve
East Fork Chalk Creek	Renewal	Requests bull elk season variance 9/1 – 11/10	Approve
Engineer Springs	Renewal	Requests to change buck deer season to 9/11-11/10	Approve
Ensign Ranches	Renewal	Requests bull elk season variance 9/1-11/20	Approve
Folley Ridge	Renewal	No changes	Approve
Fort Ranch	Renewal	Operator/president change, removed public acres	Approve
Golden Spike	Renewal	No changes	Approve
Green Canyon	Renewal	No changes	Approve
Guildersleeve	Renewal	Operator change, decreased acreage 563 acres	Approve

NORTHERN REGION
RENEWAL APPLICATIONS (Cont.)

CWMU NAME	STATUS	CHANGES	DWR REC.
Hell Canyon	Renewal	Decreased acreage 231 acres, President/operator chg.	Approve
Indian Creek	Renewal	Removed 30 acres of public land	Approve
Ingham Peak	Renewal	No changes	Approve
Lone Tree Taylor Hollow	Renewal	Increased buck deer permits from 40 total (36/4) to 50 total (45/5)	Approve
Middle Ridge	Renewal	Added pronghorn to application	Approve
Mountain Meadow	Renewal	No changes	Approve
North Promontory	Renewal	No changes	Approve
Nucor West	Renewal	No changes	Approve
Park Valley	Renewal	Decreased private acreage 5,534 acres	Approve
Park Valley Hereford	Renewal	Decreased public land 180 acres, increased 1 public and 1 private buck deer permit	Approve
Pocatello Valley	Renewal	Change buck deer season date to 9/1 – 10/31	Approve
Promontory Point	Renewal	Removed public land, 100% private	Approve

NORTHERN REGION
RENEWAL APPLICATIONS (Cont.)

CWMU NAME	STATUS	CHANGES	DWR Rec.
Rattlesnake Pass	Renewal	Decreased private acres 2,642 acres	Approve
Sardine Canyon	Renewal	Added 574 private acres	Approve
Sharp Mountain	Renewal	No Changes	Approve
SJ Ranch	Renewal	Decreased 1 private bull elk permit	Approve
Skull Crack	Renewal	No Changes	Approve
South Canyon	Renewal	Decreased acreage 7,336 acres, reduced buck deer permits from 20 total (18/2) to 11 total (9/2) , 1 additional public elk permit	Approve
State Corner	Renewal	Requests bull elk season variance 9/1-11/20	Approve
Thatcher Mountain	Renewal	No Changes	Approve
Twin Peaks	Renewal	No Changes	Approve
Twin Peaks Goose Creek	Renewal	Added 4,728 private acres	Approve
Two Bear	Renewal	No Changes	Approve
Washakie	Renewal	Reduced buck deer permits from 20 total (18/2) to 10 total	Approve

NORTHERN REGION
RENEWAL APPLICATIONS (Cont.)

CWMU NAME	STATUS	CHANGES	DWR REC.
Weber Florence Creek	Renewal	Requests bull elk season variance 9/1 – 11/20	Approve
West Hills	Renewal	Increased 320 private acres, increased 2 private buck permits	Approve

NORTHERN REGION
CHANGE APPLICATIONS

CWMU NAME	STATUS	CHANGES	DWR REC.
Grouse Creek	Change	Change CWMU name to Riverview Ranch LLC	Approve
Junction Valley	Change	Added 6,641 acres, 29% increase	Approve
Pine Canyon	Change	Increase buck deer permits from 20 total (18/2) to 30 total (27/3)	Approve
Woodruff Creek South	Change	Decreased acreage 4,208 acres, requests contiguous acreage variance.	Deny unless recommended by CWMU Advisory Comm.

SOUTHEASTERN REGION
NEW APPLICATIONS

CWMU NAME	STATUS	ACRES	SPECIES	DWR REC.
Emma Park	New – eastern half of current Emma Park CWMU	12,328	Deer, Elk	Approve
Indian Head	New – western half of current Emma Park CWMU	10,465	Deer, Elk	Approve
Jump Creek	New – needs acreage variance approval, CWMU Advisory Committee recommended approval, was part of Scofield East CWMU	7,500	Elk	Approve with conditions
Patmos Ridge	New	14,700	Deer, Elk	Approve

SOUTHEASTERN REGION
RENEWAL APPLICATIONS

CWMU NAME	STATUS	CHANGES	DWR REC.
Castle Valley Outdoors	Renewal	Added 1,877 acres, reduced buck deer permits by 1 permit	Approve
Conover-Jensen	Renewal	Added 3 private buck deer permits	Approve
Deer Haven	Renewal	Added 407 acres	Approve
Hiawatha	Renewal	Requests bull elk season variance 9/1 - 11/30	Approve
Preston Nutter Ranch	Renewal	Removed public land, 100% private	Approve
Roan Cliffs	Renewal	No changes	Approve
Scofield Canyons	Renewal	Increased buck deer permits from 10 (9/1) to 20 (18/2)	Approve
Scofield East	Renewal	Decreased acreage 1,211 acres	Approve
Scofield West	Renewal	Changed bull elk permit ratio 80:20 to 85:15, added 1 private bull elk permit	Approve

SOUTHEASTERN REGION
RENEWAL APPLICATIONS (Cont.)

CWMU NAME	STATUS	CHANGE	DWR REC.
Soldier Summit	Renewal	Decreased acreage 601 acres, decreased buck deer permits from 20 (18/2) to 10 (9/1)	Approve
Spring Creek Dodge	Renewal	Decreased acreage 4,519 acres, decreased 1 private elk permit	Approve
Summit Point	Renewal	Increased 662 acres, decreased bull elk permits from 10 (8/2) to 6 (5/1)	Approve

SOUTHERN REGION
NEW APPLICATIONS

CWMU NAME	STATUS	ACRES	SPECIES	DWR REC.
East Zion	New	4,945	Deer	Deny
Milford East Bench	New	17,078	Pronghorn	Approve

SOUTHERN REGION
RENEWAL APPLICATIONS

CWMU NAME	STATUS	CHANGE	DWR REC.
Alton	Renewal	Decreased acreage 1,190 acres, decreased 2 private management buck permits	Approve
Bar J Ranch	Renewal	Added 330 public acres, traded 330 acres to straighten boundary, deer season change to 9/11-11/10, deer ratio change to 90:10	Approve
Boobe Hole	Renewal	Requests bull elk season variance 9/1-11/20	Approve
Missouri Flat	Renewal	Changed president	Approve
Mt. Carmel	Renewal	No changes	Approve
New Harmony	Renewal	No changes	Approve
Oak Ranch	Renewal	No changes	Approve
Old Woman Plateau	Renewal	Bull elk season variance requested 9/1-11/20	Approve
Round Valley	Renewal	President change, buck deer season change to 9/1-10/31	Approve
Zane	Renewal	Added 335 acres, increased buck pronghorn permits from 3(2/1) to 5 (3/2)	Approve

CENTRAL REGION
NEW APPLICATIONS

CWMU NAME	STATUS	ACRES	SPECIES	DWR REC.
Crab Creek	New – previous CWMU in 2010	10,200	Deer, Elk	Approve

CENTRAL REGION
RENEWAL APPLICATIONS

CWMU NAME	STATUS	CHANGES	DWR REC.
Bear Mountain	Renewal	Added 1,200 acres	Approve
Coyote Little Pole	Renewal	Changed president and operator, increased bull elk permits from 7 (6/1) to 10 (8/2)	Approve
Double R Ranch	Renewal	No changes	Approve
Heaston East	Renewal	Corrected acreage	Approve
Skull Valley South	Renewal	No changes	Approve
Three C	Renewal	Changed president	Approve
Wallsburg	Renewal	No changes	Approve
Westlake	Renewal	Changed president	Approve

CENTRAL REGION
CHANGE APPLICATIONS

CWMU NAME	STATUS	ACRES	CHANGE	SPECIES	DWR REC.
Deer Creek	Change	6,516	Decrease turkey permit numbers from 8 to 4	Deer	Approve

NORTHEASTERN REGION
NEW APPLICATIONS

CWMU NAME	STATUS	ACRES	SPECIES	DWR REC.
Moon Ranch	New – decreased acreage 41%	11,976	Deer, Elk	Approve
Sand Creek	New	10,200	Deer, Elk	Approve

NORTHEASTERN REGION
RENEWAL APPLICATIONS

CWMU NAME	STATUS	CHANGES	DWR REC.
Antelope Creek	Renewal	Decreased 1,638 acres, increased buck pronghorn permits 1 private/1public	Approve
Avintaquin Canyon	Renewal	Changed operator	Approve
Buckhorn Ranch	Renewal	Added 200 acres	Approve
Little Red Creek	Renewal	Decreased buck deer permits from 30 (27/3) to 20 (18/2), changed bull elk ratio from 90:10 to 85:15, president and operator change	Approve

LANDOWNER ASSOCIATION
VOUCHER RECOMMENDATIONS

2015
STATEWIDE
OVERVIEW

STATEWIDE 2015 LANDOWNER ASSOCIATION APPLICATIONS

- 15 applications received
- DWR recommends approval of 12 as received
- 2 split recommendations
- 1 recommendation to deny

2015 LANDOWNER ASSOCIATION BUCK/BULL VOUCHERS TOTALS

15 Landowner Associations

116 deer vouchers

1 management buck voucher

7 elk vouchers

8 pronghorn vouchers

SPLIT RECOMMENDATIONS

2015 LANDOWNER ASSOCIATION BUCK/BULL SPLIT RECOMMENDATIONS

LOA NAME	SPECIES	PERMITS REQUESTED	PERMITS QUALIFIED	DWR REC.	REASON
Panguitch Lake LOA	Bull Elk	10	7	7	LOA requested 10, only qualifies for 7
Vernon LOA	Buck Deer	35	30	30	LOA requested 35, only qualifies for 30
Pilot Mountain LOA	Bull Elk	1	.22/year	Deny	Requests a variance to allow 1 permit every year

Landowner Permit Rule R657-43

Establishing the Landowner Appreciation Permit

Scott McFarlane
Private Lands Coordinator

Overview of Recommendations

- Clerical Changes throughout Rule
  i.e. use of "unit" instead of "region"
  use of "eligible property" instead of "private lands"
- Creation of "Landowner Appreciation Permit"
- Clarification regarding:
  - public access on private property for limited entry landowner permits
  - Permit calculation process for limited entry landowner permits
- New book keeping requirements for landowner associations documenting public access

Landowner Appreciation Permit

- Areas in state where private property provides substantial contribution to deer populations meeting management objectives
- Some of these private lands don't meet requirements for general landowner permit but are critical for migratory deer
- Provides opportunity for these landowners to purchase general season deer permit to hunt the applicable general season unit

Qualifications for Landowner Appreciation Permit

- Private lands only
- Landowners and immediate family only
  - No lessees
- 100 acres of cultivated and mechanically harvested crop lands
- Property provides habitat for migratory deer
- DWR will establish map showing crucial corridors for herd meeting management objective
  - Locational requirement, land characteristics, land ownership requirements, other qualifying factors

Specifics – Landowner Appreciation Permits

- Applications available May 1
- Applicant chooses general season deer hunt (archery, muzzleloader, rifle)
- First-come, first-served, based on application date
- Successful applicants are ineligible for general landowner permit program, and vice-versa
- Only one permit per eligible property
- No vouchers
- Developing recommendation for permit numbers that will be presented in Spring Wildlife Board Meeting
  - Permits be in addition to annual cap, not to exceed 2% of permits for each unit

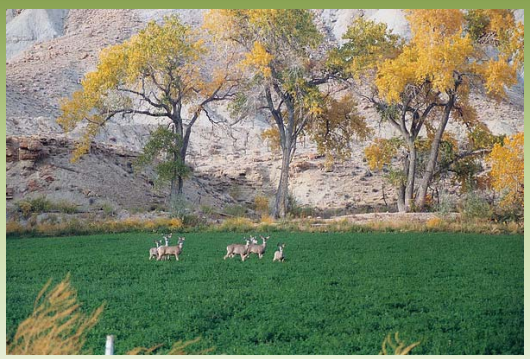
Item #2: Modifications to Limited Entry Landowner Permit Program

- Clarifications:
  - Permit calculation based on lands enrolled in landowner association, not just private lands in unit
  - Landowner receiving voucher(s) must allow an equivalent number of public hunters onto his/her private land for limited entry hunt
  - Landowner associations who handle distribution of proceeds from vouchers must provide public access to members receiving benefit
    - Access is on a "when requested " basis…

Item #2: Modifications to Limited Entry Landowner Permit Program

- Book keeping obligations for landowner association:
  - Document members who receive vouchers, members of the public who request access to private lands, and which members provided requested access
  - Provides avenue for DWR to document public benefit of landowner permit program

Thank-you!



GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Wildlife Resources
GREGORY J. SHEEHAN
Division Director

November 17, 2014

Jake Albrecht, Chairman
Utah Wildlife Board
1594 West North Temple
Salt Lake City, Utah 84114

Dear Jake:

On November 12, 2014, the CWMU Advisory Committee met to consider a variance request to include non-contiguous acreage in the Woodruff Creek South CWMU. This CWMU is in the first year of their 3 year management plan that runs through 2016.

In 2014, the plan was implemented as approved. However, several landowners have withdrawn their leases for next year, reducing the CWMU from 15,682 acres to 11,464. The loss of 4,218 acres does not exceed the 34% ownership change that necessitates the submission of a new application. The 640 acres of uncontiguous acreage, if included, will increase the acreage to 12,104

The CWMU still meets the 10,000 acre minimum acreage, regardless of whether it is included. The 640 acre section is owned by Ryan Foutz, the CWMU operator. It was purchased for inclusion in the CWMU. This parcel offers excellent late season hunting for deer. Elk and moose hunters will not be affected as much by the change. The CWMU asked for a variance to have the non-contiguous parcel continued to be included.

The CWMU Advisory Committee was concerned with the precedence that this may set. However, since this was not a new application, they determined a new precedence would not be set and made the following motion:

Motion to approve including non-contiguous 640 acreage in Woodruff Creek South CWMU for the duration of the permit period, provided that: 1) this parcel must be contiguous with other acreage by 2016 when the plan must be resubmitted; and 2) for the duration of the plan, the operator or his agent must accompany hunters to show them the boundary of the non-contiguous parcel.

The CWMU Advisory Committee recommends that the Wildlife Board approve this request with the listed provisions. Thank you for your consideration.

Sincerely,

Bill

Bill Bates, Chairman
CWMU Advisory Committee

1594 West North Temple, Suite 2110, PO Box 146301, Salt Lake City, UT 84114-6301
telephone (801) 538-4700 • facsimile (801) 538-4709 • TTY (801) 538-7458 • *www.wildlife.utah.gov*

UTAH DNR WILDLIFE RESOURCES