RAC AGENDA – September 2014

1. Welcome, RAC Introductions and RAC Procedure
   - RAC Chair

2. Approval of Agenda and Minutes **ACTION**
   - RAC Chair

3. Wildlife Board Meeting Update **INFORMATIONAL**
   - RAC Chair

4. Regional Update **INFORMATIONAL**
   - DWR Regional Supervisor

5. Fishing Guidebook and Rule R657-13 **ACTION**
   - Drew Cushing, Warmwater Sport Fisheries Program Coordinator
   - Paul Birdsey, Coldwater Sport Fisheries Program Coordinator

Region Specific Items – to be presented in the specified region only.

SRO -1	Fish Lake Management Plan	**INFORMATION**
SRO -2	Boulder Mountain Fish Management Plan	**INFORMATION**
SRO -3	Native Cutthroat Trout New Introductions	**ACTION**

Meeting Locations

SR RAC – Sept. 9th 7:00 PM
Snow College Richfield Campus
800 W. 200 S., Richfield

SER RAC – Sept. 10th 6:30 PM
John Wesley Powell Museum
1765 E. Main St., Green River

NER RAC – Sept. 11th 6:30 PM
Wildlife Resources NER Office
318 North Vernal Ave, Vernal

CR RAC – Sept. 16th 6:30 PM
Dept. of Natural Resources
1594 W. North Temple, Salt Lake

NR RAC – Sept. 17th 6:00 PM
Brigham City Community Center
24 N. 300 W., Brigham City

Board Meeting – Oct. 2nd 9:00 AM
DNR - Boardroom
1594 W. North Temple
Salt Lake City, UT

Statewide

- The warm and coolwater fish species (all fish that are not "trout") at your permanent residence do not count as part of your possession limit
- Definition: Permanent Residence- for the purposes of this rule only, the domicile an individual relies upon in establishing residency for the purposes of Utah Code §23-13-2(37).
- Add yellow perch at Fish Lake, Pacu at Blue Lake and smallmouth bass from Gunlock, Sand Hollow and Quail Creek Reservoirs to the disposal list
- Add striped bass to the allowed bait and chum that can be used at Lake Powell

SRO

Boulder Mountain lakes and reservoirs, Garfield and Wayne counties (Boundary description removed from the water specific section)

- See specific water restrictions for individual waters. Statewide regulations apply to those waters not specifically identified

Aspen Mirror Lake, Kane County

- ~~CLOSED Jan. 1 through 6am on the third Saturday of April~~
- Fishing from a boat is unlawful

(Boulder Mt. Lakes), **Beaver Dam Reservoir, Bulberry Lakes, Fish Creek Reservoir, Honeymoon Lake, Long Willow Bottom, Mcgath Lake, Pacer Lake, Pine Creek Reservoir, Round Willow Bottom, Scout Lake, Solitaire Lake** Garfield and Wayne Counties

- CLOSED Jan. 1 through 6 a.m. on the third Saturday of April and Nov. 1 through Dec. 31

~~**Duck Creek**, Kane County~~

- ~~CLOSED Jan 1 through 6am on the third Saturday of April~~

Duck Creek Springs Lake, Kane County

- ~~CLOSED Jan 1 through 6am on the third Saturday of April~~
- Fishing from a boat or float tube is unlawful

Oak Creek Reservoir (Upper Bowns Reservoir) (Boulder Mt. Lake), Garfield County

- Limit 16 Brook Trout

Fish Lake, Sevier County

- No limit on yellow perch
- Trout limit 4 fish, you can only harvest one trout over 24 inches

Gunlock Reservoir, Washington County

- No limit on smallmouth bass. Anglers must not release any smallmouth bass they catch. All smallmouth bass must be immediately killed.

~~**Johnson Reservoir**, Sevier County~~

- ~~Unlawful to use whole fish for bait. Cut baitfish must not be larger than one inch in any dimension and no more than one piece per hook~~

Quail Creek Reservoir, Washington County

- No limit on smallmouth bass. Anglers must not release any smallmouth bass they catch. All smallmouth bass must be immediately killed.

Sand Hollow Reservoir, Washington County

- No limit on smallmouth bass. Anglers must not release any smallmouth bass they catch. All smallmouth bass must be immediately killed.

CRO

Blue Lake, Tooele County

No limit on pacu. Anglers must not release any pacu they catch. All pacu must be immediately killed.

NERO

~~**Bullock Reservoir** (Uinta County)~~

- ~~Unlawful to use whole fish for bait. Cut baitfish must not be larger than one inch in any dimension and no more than one piece per hook~~

~~**Cottonwood reservoir** (Uinta County)~~

- ~~Unlawful to use whole fish for bait. Cut baitfish must not be larger than one inch in any dimension and no more than one piece per hook~~

NRO

Logan River, Cache County
From Card Canyon Bridge upstream to the highway bridge at Red Banks Campground, including all tributary streams in between, not including Tony Grove Lake:

- Limit 2 trout and whitefish in the aggregate.
- Artificial flies and lures only

From the highway bridge at Red Banks Campground upstream to the Idaho state line, including all tributaries, not including White Pine Lake:

- Limit 2 trout and whitefish in the aggregate
- CLOSED Jan. 1 through 6 am on the second Saturday of July

Bear Lake, Rich County

Any angler possessing a valid Utah or Idaho fishing or combination license may fish within both Utah and Idaho boundaries of Bear Lake.

An individual may fish with up to two poles on all portions of the Utah portion of Bear Lake that are open to fishing.

An individual must comply with Idaho regulations regarding fishing with more than one pole when fishing on the Idaho portion of Bear Lake.

SERO

Knight-Ideal Community Fishing Pond, Carbon County

Community Fishery, limit 2 fish regardless of species

R657. Natural Resources, Wildlife Resources.
R657-13. Taking Fish and Crayfish.
R657-13-1. Purpose and Authority.

(1) Under authority of Sections 23-14-18 and 23-14-19 of the Utah Code, the Wildlife Board has established this rule for taking fish and crayfish.

(2) Specific dates, areas, methods of take, requirements and other administrative details which may change annually and are pertinent are published in the proclamation of the Wildlife Board for taking fish and crayfish.

R657-13-2. Definitions.

(1) Terms used in this rule are defined in Section 23-13-2.

(2) In addition:

(a) "Aggregate" means the combined total of two or more species of fish or two or more size classes of fish which are covered by a limit distinction.

(b) "Angling" means fishing with a rod, pole, tipup, handline, or trollboard that has a single line with legal hooks, baits, or lures attached to it, and is held in the hands of, or within sight (not to exceed 100 feet) of, the person fishing.

(c)(i) "Artificial fly" means a fly made by the method known as fly tying.

(ii) "Artificial fly" does not mean a weighted jig, lure, spinner, attractor blade, or bait.

(d) "Artificial lure" means a device made of rubber, wood, metal, glass, fiber, feathers, hair, or plastic with a hook or hooks attached. Artificial lures, including artificial flies, do not include fish eggs or other chemically treated or processed natural baits or any natural or human-made food, or any lures that have been treated with a natural or artificial fish attractant or feeding stimulant.

(e) "Daily limit" means the maximum limit, in number or amount, of protected aquatic wildlife that one person may legally take during one day.

"Bait" means a digestible substance, including worms, cheese, salmon eggs, marshmallows, or manufactured baits including human-made items that are chemically treated with food stuffs, chemical fish attractants or feeding stimulants.

“Camp” means, for the purposes of this rule, any place providing temporary overnight accommodation for anglers including a camper, campground, tent, trailer, cabin, houseboat, boat, or hotel.

"Chumming" means dislodging or depositing in the water any substance not attached to a hook, line, or trap, which may attract fish.

(i) “Commercially prepared and chemically treated baitfish” means any fish species or fish parts which have been processed using a chemical or physical preservation technique other than freezing including irradiation, salting, cooking, or oiling and are marketed, sold or traded for financial gain as bait.

(j) “Dipnet” means a small bag net with a handle that is used to scoop fish or crayfish from the water.

(k) “Filleting” means the processing of fish for human consumption typically done by cutting away flesh from bones, skin, and body.

(l) "Fishing contest" means any organized event or gathering where anglers are awarded prizes, points or money for their catch.

(m) "Float tube" means an inflatable floating device less than 48 inches in any dimension, capable of supporting one person.

(n) “Free Shafting” means to release a pointed shaft that is not tethered or attached by physical means to the diver in an attempt to take fish while engaged in underwater spearfishing.

(o) "Gaff" means a spear or hook, with or without a handle, used for holding or lifting fish.

(p) "Game fish" means Bonneville cisco; bluegill; bullhead; channel catfish; crappie; green sunfish; largemouth bass; northern pike; Sacramento perch; smallmouth bass; striped bass, trout (rainbow, albino, cutthroat, brown, golden, brook, lake/mackinaw, kokanee salmon, and grayling or any hybrid of the foregoing); tiger muskellunge; walleye; white bass; whitefish; wiper; and yellow perch.

(q) "Handline" means a piece of line held in the hand and not attached to a pole used for taking fish or crayfish.

(r) "Immediately Released" means that the fish should be quickly unhooked and released back into the water where caught. Fish that must be immediately released cannot be held on a stringer, or in a live well or any other container or restraining device.

(s) "Lake" means the standing water level existing at any time within a lake basin. Unless posted otherwise, a stream flowing inside or within the high water mark is not considered part of the lake.

(t) "Length measurement" means the greatest length between the tip of the head or snout and the tip of the caudal (tail) fin when the fin rays are squeezed together. Measurement is taken in a straight line and not over the curve of the body.

(u) “Liftnet” means a small net that is drawn vertically through the water column to take fish or crayfish.

(v) "Motor" means an electric or internal combustion engine.

(w) "Nongame fish" means species of fish not listed as game fish.

(x) “Permanent residence” means, for the purposes of this rule only, the domicile an individual relies upon in establishing residency for the purposes of Utah Code 23-13-2(37).

(y) "Possession limit" means, for purposes of this rule only, two daily limits, including fish at [~~home~~]their permanent residence, in a cooler, camper, tent, freezer, livewell or any other place of storage.

([~~y~~]z) "Protected aquatic wildlife" means, for purposes of this rule only, all species of fish, crustaceans, or amphibians.

([~~z~~]aa) "Reservoir" means the standing water level existing at any time within a reservoir basin. Unless posted otherwise, a stream flowing inside or within the high water mark is not considered part of the reservoir.

([~~aa~~]bb) “Seine” means a small mesh net with a weighted line on the bottom and float line on the top that is drawn through the water. This type of net is used to enclose fish when its ends are brought together.

([~~bb~~]cc) "Setline" means a line anchored to a non-moving object and not attached to a fishing pole.

([~~cc~~]dd) "Single hook" means a hook or multiple hooks having a common shank.

([~~dd~~]ee) "Snagging" or "gaffing" means to take a fish in a manner that the fish does not take the hook voluntarily into its mouth.

([~~ee~~]ff) “Spear” means a long-shafted, sharply pointed, hand held instrument with

or without barbs used to spear fish from above the surface of the water.

([~~ff~~]gg) "Tributary" means a stream flowing into a larger stream, lake, or reservoir.

([~~gg~~]hh)(i) "Trout" means species of the family Salmonidae, including rainbow, albino, cutthroat, brown, golden, brook, tiger, lake (mackinaw), splake, kokanee salmon, and grayling or any hybrid of the foregoing.

(ii) "Trout" does not include whitefish or Bonneville cisco.

(ii) “Underwater spearfishing” means fishing by a person swimming, snorkeling, or diving and using a mechanical device held in the hand, which uses a rubber band, spring, pneumatic power, or other device to propel a pointed shaft to take fish from under the surface of the water.

R657-13-9. Underwater Spearfishing.

(1) A person possessing a valid Utah fishing or combination license may engage in underwater spearfishing, only as provided in this Section.

(2) The following waters are open to underwater spearfishing from January 1 through December 31 for all species of game fish, unless specified otherwise by individual water:

(a) Big Sand Wash Reservoir (Duchesne County);

(b) Brown’s Draw Reservoir (Duchesne County);

(c) Causey Reservoir (Weber County);

(d) Deer Creek Reservoir (Wasatch County), except underwater spearfishing for largemouth and smallmouth bass is closed from April 1 through the fourth Saturday in June;

(e) East Canyon Reservoir (Morgan County), except underwater spearfishing for largemouth and smallmouth bass is closed from April 1 through the fourth Saturday in June;

(f) Echo Reservoir (Summit County), except underwater spearfishing for largemouth and smallmouth bass is closed from April 1 through the fourth Saturday in June;

(g) Electric Lake (Emery County);

(h) Fish Lake (Sevier County), except underwater spearfishing for any game fish is closed from September 16 to the first Saturday in June the following year;

(i) Flaming Gorge Reservoir (Daggett County), except underwater spearfishing for largemouth and smallmouth bass is closed from April 1 through the fourth Saturday in June;

(j) Grantsville Reservoir (Tooele County);

(k) Ken’s Lake (San Juan County);

(l) Lake Powell (Garfield, Kane and San Juan Counties), except underwater spearfishing for largemouth and smallmouth bass is closed from April 1 through the fourth Saturday in June;

(m) Newcastle Reservoir (Iron County), except underwater spearfishing is closed for all species of game fish other than wipers and rainbow trout;

(n) Pineview Reservoir (Weber County), except underwater spearfishing is closed for:

(i) largemouth and small mouth bass from April 1 through the fourth Saturday in June; and

(ii) tiger musky year round.

(o) Porcupine Reservoir (Cache County);

(p) Recapture Reservoir (San Juan County);

(q) Red Fleet Reservoir (Uintah County);

(r) Rockport Reservoir (Summit County), except underwater spearfishing for largemouth and smallmouth bass is closed from April 1 through the fourth Saturday in June;

(s) Sand Lake (Uintah County);

(t) Smith-Moorehouse Reservoir (Summit County);

(u) Starvation Reservoir (Duchesne County), except underwater spearfishing for largemouth and smallmouth bass is closed from April 1 through the fourth Saturday in June;

(v) Steinaker Reservoir (Uintah County), except underwater spearfishing for largemouth and smallmouth bass is closed from April 1 through the fourth Saturday in June;

(w) Willard Bay Reservoir (Box Elder County); and

(x) Yuba Reservoir (Juab and Sanpete Counties).

(3) Nongame fish, excluding prohibited species listed in Section R657-13-13, may be taken by underwater spearfishing:

(a) in the waters listed in Subsection (2) and at Blue Lake (Tooele County) for tilapia and pacu only; and

(b) during the open angling season set for a given body of water.

(4) The waters listed in Subsections (2) and (3)(a) are the only waters open to underwater spearfishing for game or nongame fish, except carp may be taken by means of underwater spearfishing from any water open to angling during the open angling season set for a given body of water.

(5)(a) Underwater spearfishing is permitted from official sunrise to official sunset only, except burbot may be taken by underwater spearfishing at Flaming Gorge Reservoir (Daggett County) between official sunset and official sunrise.

(b) No other species of fish may be taken with underwater spearfishing techniques at Flaming Gorge Reservoir or any other water in the state between official sunset and official sunrise.

(6)(a) Use of artificial light is unlawful while engaged in underwater spearfishing, except artificial light may be used when underwater spearfishing for burbot at Flaming Gorge Reservoir (Daggett County).

(b) Artificial light may not be used when underwater spearfishing for fish species other than burbot at Flaming Gorge Reservoir.

(7) Free shafting is prohibited while engaged in underwater spearfishing.

(8) The daily limit and possession limit for underwater spearfishing is the same as the daily limit and possession limit applied to anglers using other techniques in the waters listed in Subsections (2) and (3)(a), and as identified in the annual Utah Fishing Guidebook issued by the Utah Wildlife Board.

R657-13-11. Restrictions on Taking Fish and Crayfish.

(1) Artificial light is permitted while angling, except when underwater spearfishing. However artificial light is permitted while underwater spearfishing for burbot in Flaming Gorge or while [~~bow~~]fishing for carp with a bow, crossbow, or spear statewide.

(2) A person may not obstruct a waterway, use a chemical, explosive, electricity, poison, crossbow, firearm, pellet gun, or archery equipment to take fish or crayfish, except as provided in Subsection R657-13-14(2) and Section R657-13-20.

(3)(a) A person may not possess a gaff while angling, or take protected aquatic wildlife by snagging or gaffing, except:

(i) a gaff may be used at Lake Powell to land striped bass; and

(ii) snagging may be used at Bear Lake to take Bonneville cisco.

(b) Except as provided in Subsection (3)(a)(ii) and Section R657-13-21, a fish hooked anywhere other than the mouth must be immediately released.

(4) Chumming is prohibited on all waters, except as provided in Section R657-13-20.

(5) The use of a float tube or a boat, with or without a motor, to take protected aquatic wildlife is permitted on many public waters. However, boaters should be aware that other agencies may have additional restrictions on the use of float tubes, boats, or boats with motors on some waters.

(6) Nongame fish and crayfish may be taken only as provided in Sections R657-13-14 and R657-13-15.

R657-13-12. Bait.

(1) Use or possession of corn, hominy, or live baitfish while fishing is unlawful.

(2) Use or possession of tiger salamanders (live or dead) while fishing is unlawful.

(3) Use or possession of any bait while fishing on waters designated artificial fly and lure only is unlawful.

(4) Use or possession of artificial baits which are commercially imbedded or covered with fish or fish parts while fishing is unlawful.

(5) Use or possession of bait in the form of fresh or frozen fish or fish parts while fishing is unlawful, except as provided below and in Subsections (7) and (8).

(a) Dead Bonneville cisco may be used as bait only in Bear Lake.

(b) Dead yellow perch may be used as bait only in: Deer Creek, Echo, Fish Lake, Gunnison, Hyrum, Johnson, Jordanelle, Mantua, Mill Meadow, Newton, Pineview, Rockport, Starvation, Utah Lake, Willard Bay and Yuba reservoirs.

(c) Dead white bass may be used as bait only in Utah Lake and the Jordan River.

Dead shad, from Lake Powell, may be used as bait only in Lake Powell. Dead shad must not be removed from the Glen Canyon National Recreation Area.

(e) Dead striped bass, from Lake Powell, may be used as bait only in Lake Powell.

[~~(e)~~](f) Dead fresh or frozen salt water species including sardines and anchovies may be used as bait in any water where bait is permitted.

([~~f~~]g) Dead mountain sucker, white sucker, Utah sucker, redside shiner, speckled dace, mottled sculpin, fat head minnow, Utah chub, and common carp may be used as bait in any water where bait is permitted.

(6) Commercially prepared and chemically treated baitfish or their parts may be used as bait in any water where bait is permitted.

(7) The eggs of any species of fish caught in Utah, except prohibited fish, may be used in any water where bait is permitted. However, eggs may not be taken or used from fish that are being released.

(8) Use of live crayfish for bait is legal only on the water where the crayfish is captured. It is unlawful to transport live crayfish away from the water where captured.

(9) Manufactured, human-made items that may not be digestible, that are chemically treated with food stuffs, chemical fish attractants, or feeding stimulants may not be used on waters where bait is prohibited.

(10) On any water declared infested by the Wildlife Board with an aquatic invasive species, or that is subject to a closure order or control plan under R657-60, it shall be unlawful to transport any species of baitfish (live or dead) from the infested water for use as bait in any other water of the State. Baitfish are defined as those species listed in sections (5)(b),(5)(c),(5)(f) and (8).

R657-13-14. Taking Nongame Fish.

(1)(a) As provided in this Section, a person possessing a valid Utah fishing or combination license may take nongame fish for personal, noncommercial purposes during the open fishing season set for the given body of water.

(b) A person may not take any species of fish designated as prohibited in Section R657-13-13.

(2)(a) Except as provided in Subsection (2)(b), nongame fish may be taken by angling, traps, bow and arrow, liftnets, dipnets, cast nets, seine, or spear in any water of the state with an open fishing season.

(b) Nongame fish may not be taken in the following waters, except carp may be taken by angling, archery, crossbow, spear, or underwater spearfishing statewide:

(i) San Juan River;

(ii) Colorado River;

(iii) Green River (from confluence with Colorado River upstream to Colorado state line in Dinosaur National Monument);

(iv) Green River (from Colorado state line in Brown's Park upstream to Flaming Gorge Dam, including Gorge Creek, a tributary entering the Green River at Little Hole);

(v) White River (Uintah County);

(vi) Duchesne River (from Myton to confluence with Green River);

(vii) Virgin River (Main stem, North, and East Forks).

(viii) Ash Creek;

(ix) Beaver Dam Wash;

(x) Fort Pierce Wash;

(xi) La Verkin Creek;

(xii) Santa Clara River (Pine Valley Reservoir downstream to the confluence with the Virgin River);

(xiii) Diamond Fork;

(xiv) Thistle Creek;

(xv) Main Canyon Creek (tributary to Wallsburg Creek);

(xvi) Provo River (below Deer Creek Dam);

(xvii) Spanish Fork River;
(xviii) Hobble Creek (Utah County);
(xix) Snake Valley waters (west and north of US-6 and that part of US-6 and US-50 in Millard and Juab counties);
(xx) Raft River (from the Idaho state line, including all tributaries);
(xxi) Weber River; and
(xxii) Yellow Creek.
(c) Nongame fish, may be taken by underwater spearfishing in the waters and under the conditions specified in Section R657-13-9.
(3) Seines shall not exceed 10 feet in length or width.
(4) Cast nets must not exceed 10 feet in diameter.
(5) Except as provided in Section R657-13-21, lawfully taken nongame fish shall be either released or killed immediately upon removing them from the water, however, they may not be left or abandoned on the shoreline.

R657-13-16. Possession and Transportation of Dead Fish and Crayfish.

(1)(a) At all waters except Strawberry Reservoir, Scofield Reservoir, Panguitch Lake, Jordanelle Reservoir and Lake Powell, game fish may be dressed, filleted, have heads and/or tails removed, or otherwise be physically altered after completing the act of fishing or reaching a fish cleaning station, camp, or principal means of land transportation. It is unlawful to possess fish while engaged in the act of fishing that have been dressed or filleted. This shall not apply to fish that are processed for immediate consumption or to fish held from a previous day's catch.
(b) Trout and/or salmon taken at Strawberry Reservoir, Scofield Reservoir and Panguitch Lake, and smallmouth bass taken at Jordanelle may not be filleted and the heads or tails may not be removed in the field or in transit.
(c) Fish may be filleted at any time and anglers may possess filleted fish at any time at Lake Powell.
(2) A legal limit of game fish or crayfish may accompany the holder of a valid fishing or combination license within Utah or when leaving Utah.
(3) A person may possess or transport a legal limit of game fish or crayfish for another person when accompanied by a donation letter.
(4)(a) A person may not[~~:~~][~~(i)~~] take more than one daily limit of game fish in any one day[~~; or~~].
([~~ii~~]b) A person may not possess more than one daily limit of [~~each species or species aggregate~~]trout, unless the additional fish are:
([~~A~~]i) from a previous days catch;
([~~B~~]ii) eviscerated; and
([~~C~~]iii) within the possession limit for each species or species aggregate.
([~~b~~]c) Excluding trout, other game fish kept at the angler's permanent residence do not count towards an angler's possession limit for that species or species aggregate.
(d) A person may possess a full possession limit of Bonneville cisco without eviscerating the fish from a previous days catch.
(5) A person may possess or transport dead fish on a receipt from a registered commercial fee fishing installation, a private pond owner, or a short-term fishing event. This receipt shall specify:
(a) the number and species of fish;

(b) date caught;

(c) the certificate of registration number of the installation, pond, or short-term fishing event; and

(d) the name, address, telephone number of the seller.

R657-13-21. Catch-and-Kill Regulations.

(1) The Wildlife Board may designate in proclamation and guidebook waters where anglers are required to kill specified aquatic animal species that are caught.

(2) A person shall immediately kill any aquatic animal caught in a water identified by the Wildlife Board in proclamation or guidebook as catch-and-kill for that species.

(a) An aquatic animal killed subject to a catch-and-kill regulation may be:

(i) retained and consumed by the angler; or

(ii) disposed of:

(A) in the water where the aquatic animal was caught;

(B) at a fish cleaning station;

(C) at the angler's [~~place of~~]permanent residence; or

(D) at another location where disposal is authorized by law.

(3) A person may not release a live aquatic animal subject to a catch-and-kill regulation in the water it was caught or in any other water in the state.

KEY: fish, fishing, wildlife, wildlife law
Date of Enactment or Last Substantive Amendment: July 8, 2014
Notice of Continuation: October 1, 2012
Authorizing and Implemented or Interpreted Law: 23-14-18; 23-14-19; 23-19-1; 23-22-3

Fish Lake Fishery Management Plan

August 20, 2014

Fish Lake Advisory Committee

and

Utah Division of Wildlife Resources

Fish Lake Fishery Management Plan

In January, 2014, the Utah Division of Wildlife Resources (UDWR) organized the Fish Lake Advisory Committee to help develop the Fish Lake Fishery Management Plan. The development of a long-term plan for the management of the fishery at Fish Lake should consider the following: public desires and values, economic and political factors, needs and responsibilities of state and federal agencies, as well as opinions and recommendations of interested groups. During the spring of 2013, the UDWR conducted an internet on-line survey to gather information about public desires and perceptions regarding the fishery in Fish Lake. Among many other questions, the on-line survey asked respondents if they would be willing to serve on a committee to develop a Fish Lake Fishery Management Plan. Committee members were selected from respondents who indicated a willingness to serve and were asked to represent public anglers on the committee. Other committee members were selected from local businesses, Sevier County Commission, Blue Ribbon Fishery Advisory Council and Fishlake National Forest. The Fish Lake Advisory Committee was comprised of the following individuals:

Garth (Tooter) Ogden	Sevier County Commissioner
Gary Mason	Sevier County Commissioner
Ray Schelble	Blue Ribbon Fisheries Council
Jim Whelan	Fishlake National Forest
Gary Moulton	Lodge owner
Brad Nielson	Lodge owner
DeLoss Christensen	Angler
Sterling Lee	Angler
Brennon Nielson	Angler
J. Brett Jensen	Angler
Travis Kyhl	Angler
Timothy Kidder	Angler
Brayden Gardner	Angler

The purpose of the committee as outlined by UDWR was to:

- Provide public, local government, business interests and agency input to the Fish Lake Fishery Management Plan.
- Determine a Mission Statement.
- Develop a plan for the future management of the fishery at Fish Lake.
- Set goals and objectives for the fishery.
- Make recommendations to achieve goals.
- Consider all interests – find common ground.

The Fish Lake Advisory Committee met four times during January, February and March 2014 and developed the mission statement, goals, objectives and tools/actions for Fish Lake.

History

Fish Lake is located in south-central Utah, approximately 40 miles southeast of the town of Richfield, at an elevation of 8,843 feet (Figure 1). The lake covers approximately 2,500 acres, has a mean depth of 55 feet, and a maximum depth of 117 feet. It provides one of the more popular fisheries in the state, supporting three resort marinas and yielding about 100,000 angler hours annually (Hepworth et al. 2010).

The fish community in Fish Lake has changed substantially since the late 1800s when Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*), mottled sculpin (*Cottus bairdi*) and redside shiner (*Richardsonius balteatus)* were the only fish present. Lake trout were introduced into Fish Lake in 1906 and were regularly stocked until 1991. Utah chubs were illegally introduced in the early 1900s. By the 1940s cutthroat trout and mottled sculpin were found in relatively small numbers and by the 1970s cutthroat trout were all but extirpated from Fish Lake, while mottled sculpin were found only on rare occasions. At present, the fish community is dominated by rainbow trout (*Oncorhynchus mykiss*), yellow perch (*Perca flavescens*), and splake (*Salvelinus namaycush X Salvelinus fontinalis*), while lake trout (*Salvelinus namaycush*), Utah chub (*Gila atraria*), and Utah sucker (*Catostomus ardens*) are also relatively common. Rainbow trout and splake are stocked annually, while all other species are maintained by natural reproduction.

From the early 1970s through the mid 1990s, there was a great deal of concern among anglers and managers about the declining rainbow trout fishery at Fish Lake (Hepworth and Duffield 1986; Hepworth 1989; Berg and Hepworth 1990). Specifically, managers observed a trend of reduced angler effort and sport-fish harvest. Most alarming was the decline of rainbow trout harvested from over 177,000 in 1969 to only 11,612 in 1992. This decline coincided with the illegal introduction of yellow perch in the early 1970s. It is believed that expanding numbers of yellow perch set up a chain of events that led to the decline of Utah chubs and a corresponding switch of lake trout predation from Utah chub to rainbow trout (Chamberlain and Hepworth 2003). As a result, management efforts began focusing more on encouraging harvest of yellow perch and stocking larger rainbow trout to avoid lake trout predation. Since 1996, Fish Lake was stocked annually with approximately 200,000 7 inch rainbow trout in the spring. In 2007 rainbow trout stocking length was increased to 8 inches. By 2004, angler use at Fish Lake had increased to over 140,000 hours/year and a total of 27,400 rainbow trout were harvested (Chamberlain and Hepworth 2005). In 2009 the rainbow trout stocking program was adjusted, with half the quota being stocked in spring and the other half in fall.

Splake have increased in popularity since they were initially stocked in 1984. Splake are especially important for the winter ice fishing angler. Ice fishing angler hours surpassed that of boat anglers for the first time in 2010 (Hepworth et al. 2010). In response to decreasing mean size and condition observed in 2005 and 2006 gill net surveys, the annual splake quota was reduced in 2006 from 80,000 to 40,000.

Background

One concern the UDWR has with the fishery at Fish Lake is the cost of stocking 200,000 8 inch rainbow trout annually and the poor return to the creel of these fish. In our 2010 creel survey, only 5% of the total number and 26% of the total weight of stocked rainbow trout were harvested (Hepworth et al. 2010). In 2013, it cost approximately $173,912.00 to raise and stock 43,478 pounds of 8 inch rainbow trout in Fish Lake. This issue prompted the UDWR to evaluate the entire fishery at Fish Lake and determine what type of fishery the public desired. The UDWR needed to know what fish species are most important to anglers, why people want to fish at Fish Lake, and what could be done to improve the fishery to better meet desires of the public. Two public open houses were held by the UDWR in 2013 to gather information on what type of fishery the public wanted at Fish Lake. These were only attended by a total of 18 people from the general public. The UDWR then put out an internet on-line survey with a series of questions to collect more information. Two hundred and forty-five people responded to the survey (Appendix 1). Survey results indicated the most important fish species at Fish Lake was lake trout (45%), followed by splake (33%) and rainbow trout (26%). 76% of respondents preferred a trophy lake trout fishery to a fishery with higher numbers of rainbow trout. Winter anglers most often target splake (45% of respondents), while summer anglers target rainbow trout most often (39% of respondents). There was very little interest in yellow perch from respondents, with 56% ranking perch as least important, only 8% saying perch were most important and 6% saying they target perch most often when fishing at Fish Lake. Although perch were not listed in the survey as important, they are recognized as being important to anglers, especially during the winter and for youth and other anglers interested in catching high numbers of fish.

FISH LAKE FISHERY MANAGEMENT PLAN

Fish Lake Advisory Committee Mission Statement

“Develop a Fish Lake Fishery Management Plan that will improve the overall quality and health of the fishery and aquatic environment, while maintaining diversity and increasing overall value to and use by anglers.”

Goals:

1. Maintain a healthy lake trout population.

Objectives:

A) Increase the number of trophy lake trout (>28 inches) to 4 fish/net hour during fall gill netting.

B) Increase forage fish numbers:

a) Utah chub: >55 fish/net night (summer gill netting using AFS nets).

b) Stock up to 250,000 kokanee salmon and continue with a stocking rate that will maintain a kokanee salmon fishery (see Goal #6).

c) Combined lake trout forage (Utah chub/kokanee salmon/rainbow trout) spring gill net catch rate of > 30 fish/ net-night (using old style UDWR gill nets).

C) Investigate potential for increasing or using the following fish for lake trout prey: brook trout, rainbow trout, Bonneville cisco, redside shiner, crayfish, golden shiner.

2. Manage perch population to improve quality/size and reduce impacts of perch on other fish species.

Objectives:

A) Reduce perch numbers to <5 fish/net-night (summer gill netting using AFS nets).

B) Increase average perch length from current 7 inches to 10 inches or greater.

C) Reduce Eurasian watermilfoil by at least a long-term average of 50% and maintain an average milfoil weevil population of 0.5 weevils per stem.

D) Remove >200,000 perch by anglers (harvest) per year and 50,000 per year for stocking in other lakes.

E) Increase current angler harvest rates for perch up to > 2.0 fish per hour. If the yellow perch population significantly decreases to Objective A, the targeted harvest rate will have to be lowered.

F) Investigate use of additional predatory fish: Sterile walleye, saugeye, brown trout, tiger trout, tiger muskie, sterile muskie, sterile pike.

a) Conduct a diet study on saugeye in Mill Meadow Reservoir once they are established and on tiger muskie from Fish Lake.

3. Create additional shoreline fishing areas for anglers.

Objectives:

A) Increase shore fishing from 10% of anglers to 25% of all anglers.

B) Reduce Eurasian watermilfoil distribution by at least a long-term average of 50%.

4. Protect Fish Lake from introduction of any new Aquatic Invasive Species (AIS).

Objectives:

A) No new AIS introductions.
B) Prevent Eurasian watermilfoil from being transported from Fish Lake.
C) Increase law enforcement presence and effort.
    a) DWR law enforcement will conduct routine patrols of the lake and conduct 2 saturation patrols during winter and if needed, 2 during summer.

5. Introduce new species to increase diversity of angling opportunities and help improve other fish species numbers.

Objectives:

A) Kokanee salmon – Stock up to 250,000 kokanee salmon in 2015. Continue yearly stocking as necessary to maintain a kokanee salmon fishery. Kokanee salmon are intended to compliment rainbow trout to meet the combined catch rate objectives listed under Goal #6 and to reduce rainbow trout stocking rates.
B) Tiger trout - Gain Approval for stocking. Tiger trout stocking is a supplement to splake stocking; not additional fish. (Note: *20,000 Tiger trout have been stocked in Fish Lake in 2014 because the splake quota could not be met.)*
C) Sterile walleye/saugeye – Monitor new introduction of saugeye at Mill Meadow (and other locations) and determine if they could be used as a tool in Fish Lake to reduce perch population and provide another sport fish opportunity. Assess opportunity, benefits and impacts of stocking sterile walleye when they become available.

6. Maintain consistent angling opportunities for fish species during summer and winter months.

Objectives:

A) Achieve and maintain an angler catch rate of > 0.75 fish/ hour for all trout and kokanee salmon combined.
B) Achieve and maintain a summer angler catch rate of > 0.5 fish/hour for rainbow trout and kokanee salmon combined.
C) Maintain a winter angler catch rate for splake of > 0.5 fish/hour and summer angler catch rate of > 0.1 fish/ hour.
D) Splake and tiger trout combined: Maintain gill net catch rates of 10-15 fish/net-night with an average length of 15".
E) Rainbow trout and kokanee salmon combined: Maintain gill net catch rates of 15 - 20 fish/net-night.
F) Rainbow trout/kokanee salmon gill net catch should be a minimum of 25% kokanee salmon. If kokanee salmon objectives are not being met after 5 years, evaluate and consider lake trout foraging on kokanee salmon and angler satisfaction with kokanee salmon before continuing with the kokanee salmon program.

G) Reduce annual stocking of rainbow trout as kokanee salmon population establishes and expands to meet objectives E and F.

7. Increase numbers of fish that occur in low numbers.

Objectives:

A) Brown trout – Stock additional fish as available.
B) Brook trout – Stock additional fish as available.
C) Tiger muskie – No change in current stocking program. Consider stocking if they will help reduce perch numbers and benefit other fish species.

The Fish Lake Advisory Committee recommends that the following tools and actions be implemented to attain and maintain goals and objectives:

Tools/Actions:

Goal #1. Maintain a healthy lake trout population.

- Change current regulation from: "Limit 4 trout, only 1 may exceed 28 inches, regardless of species", to "Limit 4 trout, only 1 may exceed 24 inches, regardless of species".
- Implement catch and release regulation on lake trout >24 inches, if fall gill net catch rate for lake trout >28 inches drops below an average of 1.0 fish/net-hour for two consecutive sampling periods.
- If perch population is reduced, then consider transferring Utah chubs from another water to Fish Lake in order to boost the population (potential source lakes are Otter Creek Reservoir, Piute Reservoir, Koosharem Reservoir, Navajo Lake).
- Stock kokanee salmon as another prey species for lake trout (see goal #6).
- Evaluate the possibility of introducing crayfish.

Goal #2. Manage perch population to improve quality/size and reduce impacts of perch to other fish species.

- Introduce milfoil weevil to reduce Eurasian watermilfoil. (Note: *This management action was initiated on July 3 and July 10, 2014 when 66,000 milfoil weevils were stocked. Another 60,000 weevils are scheduled to be stocked in summer 2015.)*
- Remove perch harvest limit.
- Make it legal to dispose of (i.e. "waste") perch from Fish Lake.
- Evaluate using localized chemical treatments during perch spawning to reduce numbers. Conduct test treatments in spring 2015.

Goal #3. Create additional shoreline fishing areas for anglers.

- Introduce milfoil weevil to reduce Eurasian watermilfoil to open up shoreline weed beds. (Note: *This management action was initiated on July 3 and July 10, 2014 when*

66,000 milfoil weevils were stocked. Another 60,000 weevils are scheduled to be stocked in summer 2015.)

- Investigate opportunity for and cost of construction of shoreline jetties and piers. Pursue funding by 2016.
- Work with Fishlake National Forest to improve and maintain Forest Road 1483 around the south end of Fish Lake. (Work with public/anglers to contact Fishlake National Forest to express desire to improve road.)

Goal #4. Protect Fish Lake from introduction of any new Aquatic Invasive Species (AIS).

- Increase presence of AIS technicians by 50% (target busy times). AIS technician presence will be based on need and available funding. (Note: *Management action has been implemented during summer 2014. AIS technician presence has been increased from 40 hours per week to 60 hours per week.)*
- UDWR will assess the possibility of using chemical treatment of Eurasian watermilfoil within marinas if milfoil weevils do not reduce watermilfoil within the marinas.
- UDWR law enforcement will conduct routine patrols of the lake and two saturation patrols during winter and if needed, two during summer.

Goal #5. Introduce new species to increase diversity of angling opportunities and help improve other fish species numbers.

- Stock up to 250,000 kokanee salmon in 2015. Continue to stock kokanee salmon at levels that will attain and maintain objectives in Goal #6.
- Stock up to 20,000 tiger trout annually as a supplement to splake stocking.

Goal #6. Maintain consistent angling opportunities for fish species during summer and winter months.

- Splake and tiger trout - Recommend a combined stocking rate of 60,000/year. Adjust stocking to maintain angler and gill net catch rate objectives.
- Stock up to 250,000 kokanee salmon in 2015. Continue yearly stocking and adjust as necessary to attain and maintain gill netting objectives.
- Adjust rainbow trout stocking numbers to meet rainbow trout and kokanee salmon combined objectives. Adjust stocking to maintain gill netting objectives.

Goal #7. Increase numbers of fish that occur in low numbers.

- Stock brown trout and brook trout when excess fish are available.
- Some tiger muskie will continue to move up to Fish Lake from Johnson Reservoir.

Outreach :

- Promote angler harvest of perch at Fish Lake and educate anglers on purpose of removing as many perch as possible.
- Have a public tournament for perch similar to “burbot bash” held at Flaming Gorge Reservoir. Tournament should initially be held in the winter, in conjunction with

winter ice fishing clinic. Work with anglers, lodge owners and sportsmen groups and organizations to promote the tournament.

- Continue winter ice fishing clinic. Promote and increase attendance.
- Conduct public education about negative impacts of illegal fish introductions.
- Inform public and promote shoreline angler access improvements.
- Conduct AIS public education and interdiction.
- Have yearly public meeting to review management plan and progress.

Discussion

Goal #1. Maintain a healthy lake trout population.

The Fish Lake Advisory Committee would like to see an increase in the number of trophy sized lake trout in Fish Lake and this is reaffirmed by the results of the internet on-line survey showing lake trout as the most valued fish in Fish Lake. The limiting factor for lake trout appears to be an inadequate and diverse food supply (Chamberlain and Hepworth, 2003). To meet the desired objectives, there needs to be more forage fish available for trophy sized lake trout, as well as smaller sized prey fish, so that small lake trout can convert from a macroinvertebrate/zooplankton diet to a piscivorous diet. To increase lake trout prey species numbers and diversity two primary actions were indentified to focus on: 1) Increase Utah chub numbers; and 2) Introduce an additional prey species in kokanee salmon, which will also serve as another sport fish opportunity. Increasing Utah chub numbers is connected to Goal #2; reducing perch numbers.

Historically, Utah chubs were the primary prey for lake trout. The Utah chub population dramatically declined in correlation with the large increase in the yellow perch population. Yellow perch prey on juvenile Utah chubs and their eggs and it is believed the high perch population caused the decline in the Utah chub population. To increase Utah chub numbers, perch numbers need to be significantly reduced. Thick weed beds, comprised mainly of Eurasian watermilfoil, occur in all shallow water areas surrounding Fish Lake, creating ideal habitat for perch to reproduce and survive, thus supporting a dense population. Reduction of weed bed habitat is believed to be the best action for reducing yellow perch numbers. As weed bed habitat is reduced and yellow perch numbers decrease, it is believed that Utah chub numbers will increase. Options for reducing Eurasian watermilfoil and several additional ideas for reducing yellow perch numbers are discussed under actions/tools for Goal #2.

Once perch numbers are reduced, the option of transferring Utah chubs from another waterbody to Fish Lake should be assessed. This could boost the Utah chub population to speed up the recovery process. Transferring Utah chubs from another waterbody should only be considered if perch numbers are low enough to limit predation on juvenile chubs and the Utah chub population needs a boost to increase reproduction.

Stocking kokanee salmon should provide another prey item for lake trout and reduce predation on rainbow trout by lake trout. Kokanee salmon were stocked once in Fish Lake in the early 1960s and persisted for about 8-10 years before finally dying out. Consistent stocking of kokanee salmon should allow them to establish and maintain a population. There are limited

stream spawning opportunities for kokanee salmon around Fish Lake and lake spawning strains will be sought for stocking. It is hoped that there will be some kokanee salmon reproduction in the lake and only limited stocking will be required in the future to maintain a viable population for both lake trout forage and angling opportunities. Kokanee salmon should be more available as a prey resource for lake trout than rainbow trout because they are a more pelagic species and will occupy deeper depths than rainbow trout. Kokanee are also a popular sport fish that can be caught by anglers and will provide an additional fishing opportunity in Fish Lake. Currently, there are no lakes in the UDWR Southern Region with kokanee salmon. If kokanee salmon become established and can be sustained, then it is expected that rainbow trout stocking will be decreased. If prey fish numbers increase as expected, there should be an increase in numbers of lake trout >28 inches in future sampling efforts.

In Fish Lake, few small lake trout (<24 inches) are converting to a piscivorous diet. Lake trout that are 24 inches – 28 inches have recently converted to feeding on fish and need to be protected so they can attain a trophy size of >28 inches. Lake trout that exceed 24 inches are feeding on other fish and growing rapidly. A regulation change is proposed to protect lake trout between 24 inches and 28 inches from harvest by anglers. Current regulation allows the harvest of 4 trout, but only one over 28 inches. So anglers could harvest 4 lake trout between 24 inches and 28 inches. The new proposed regulation will allow harvest of only one trout over 24 inches.

Other prey items for lake trout may be considered if Utah chub and kokanee salmon do not provide the necessary forage base to increase the number of trophy class lake trout.

Fall gill netting to monitor the lake trout population will occur every other year beginning in 2014. Since 1992 the average number of lake trout > 24 inches caught in fall gill netting is 1.28 fish per net-hour, with a range of 0.43 fish per net-hour in 1992 to a high of 2.63 per net-hour in 2004 (Graph 1). If fall gill net catch rate for lake trout >28 inches drops below an average of 1.0 fish/net-hour for two consecutive sampling periods and the decline can be attributed to angler harvest and not other factors, then the UDWR will consider and evaluate recommending a regulation change to catch and release for lake trout >24 inches.

Table 1. Historical summer forage fish gill netting data. Goal #1, objective for Utah chub is 55 chubs/net-night using AFS nets. 2013 and 2014 were the first two years using AFS nets, which tend to capture fewer fish than the old style UDWR nets. Using AFS nets we are currently at a two year average of 13.1 chubs/net-night. Long-term average is 53 chubs/net-night using old style UDWR nets. Also see graph 2 and 3. (YLP = yellow perch; UTC = Utah chub; RBT = rainbow trout; UTS = Utah sucker)

Summer Forage Fish Netting						
Year	YLP	UTC	RBT	UTS	Total for year	
1991	32	289	9.5	10	1362	
1992	28	92	13.8	14.3	592.4	
1993	30	61	22.3	8	485.2	
1994	40	54	10.7	8.3	452	
1995	53	43	21.2	6.8	496	
1996	51	50	25.8	3.7	522	
1998	90	55	11.7	11.5	672.8	
1999	87	63	16.3	12.8	716.4	
2000	43	85	18.8	38.8	742.4	
2001	16	61	12.5	21.7	444.8	
2002	63	92	11.2	27	772.8	
2003	46	52	10.5	13.8	489.2	
2004	28.5	55.8	12	20.2	466	
2005	31.5	42.5	8	10.3	369.2	
2006	59.5	37.3	11.5	3.8	448.4	
2007	18.3	49	7.8	6	324.4	
2009	57.8	27.8	5.3	2.5	373.6	
2013	22.8	12.5	5.3	5	182.4	AFS nets
2014	9	13.8	4.25	9	144.2	AFS nets
Average	43	53	13	12		

Goal #2. Manage perch population to improve quality/size and reduce impacts of yellow perch on other fish species.

Yellow perch were illegally introduced to Fish Lake in the early 1970s. Their numbers remained low and chub numbers high through 1984. After 1984, yellow perch numbers increased quickly and were very abundant by 1992. This rapid increase in the perch population coincided with the introduction and expansion of Eurasian watermilfoil. Yellow perch have had a significant impact on the fishery in Fish Lake since their introduction. As discussed earlier, the decrease in Utah chub numbers was negatively correlated with the increase in yellow perch. As Utah chubs became unavailable to lake trout for forage, they switched from feeding mostly on Utah chubs to feeding primarily on rainbow trout. Chamberlain and Hepworth, 2003 found lake trout were consuming up to 50% of rainbow trout stocked annually. The cost of feeding hatchery raised rainbow trout to lake trout and the low return to the creel of stocked rainbow trout is an issue that needs to be addressed.

Reducing yellow perch numbers, which should increase Utah chub numbers, has multiple benefits. When Utah chub and rainbow trout were both available to lake trout for forage, Utah chubs were utilized more than rainbows (mean 51% chub compared to 28%

rainbow) (Wright 1942). As Utah chub numbers rebound, and with the addition of kokanee salmon, lake trout should prey less on rainbow trout, which should improve rainbow trout survival and numbers, improve angler success for rainbows, and reduce the number and cost of stocking rainbow trout.

Reducing the perch population should also increase the size of perch in Fish Lake. Currently, perch are so abundant that competition for forage and space are limiting growth, a classic over-population situation resulting in stunted fish. Reduced perch numbers should increase the average size of perch and hopefully attain the objective of 10 inch average size. Larger perch should increase angler interest in perch and result in increased angler satisfaction and use.

Eurasian watermilfoil (*Myriophyllum spicatum*) is the dominant aquatic plant in Fish Lake and surrounds the entire lake shore in shallow water areas <20 feet deep. This is an invasive species native to Europe, Asia, and North Africa. Infestations have undesirable consequences on fish assemblages, cause declines in abundance and diversity of macroinvertebrates and displace native aquatic plants. Dense growth of Eurasian watermilfoil also impedes and limits boaters, boat anglers, shoreline fishermen and near-shore recreational swimmers. The UDWR recently received funds to implement year one of a project titled, "Biological Control of Eurasian Watermilfoil in Fish Lake, Utah – Phase 1", (Appendix 2). On July 3 and 10, 2014, a total of 66,000 milfoil weevils were introduced into Fish Lake. The milfoil weevil (*Euhrychiopsis lecontei)* is an herbivore that has suppressed and reduced Eurasian watermilfoil in a slew of experiments and whole-lake applications in other infested waterbodies in the U.S. (Creed and Sheldon 1995; Newman et al. 1996; Sheldon 1997; Newman and Biesboer 2000). The UDWR, U. S. Forest Service (USFS), and EnviroScience (an ecological consulting and services firm with experience and expertise in milfoil weevil culture and introduction) believe the introduction and establishment of the milfoil weevil will reduce and suppress Eurasian watermilfoil abundance in Fish Lake. It is estimated that Eurasian watermilfoil abundance will be reduced by a long-term average of 50% compared to existing levels. This should help reduce the perch population and minimize impacts by perch on other fish species, especially Utah chub.

The Fish Lake Advisory Committee recommends two regulation changes to increase angler harvest of perch: 1) Removing the limit of 50 perch will encourage anglers to harvest more perch, 2) Allowing anglers to dispose of perch caught at Fish Lake will allow anglers to remove as many perch as they want. For these two proposed regulation changes to accomplish their purpose of having anglers remove more perch from Fish Lake, a concentrated effort on public outreach and education will have to be made and promoted by the UDWR, USFS, angler/sportsmen groups, local resorts and other partners. Many anglers at Fish Lake only harvest a few perch because of their small size and they don't want to spend a lot of time to prepare high numbers of small perch for eating. As anglers understand the benefit to the fishery of removing perch and having the ability to dispose of perch, it is anticipated that many more anglers will harvest perch and meet the objective of anglers harvesting >2 perch per hour.

Based on angler creel surveys from 1998, 2004 and 2010, approximately 50% of perch caught are harvested. The highest perch harvest occurred in 2010 and was 24,900 fish. A concentrated outreach effort will be required to get anglers to harvest up to 200,000 perch annually.

In spring of 2013, 37,000 yellow perch were captured in hoop nets at Fish Lake and transferred to Yuba Reservoir. At the present time it is uncertain if this will be done again in 2014. This is not a long-term program, as it is expensive and labor intensive to operate. The objective of removing 50,000 perch per year for transfer to other waters may not be feasible. If other actions for reducing yellow perch numbers are successful, it will be even less reasonable to capture and move up to 50,000 perch per year

Another tool that may be used to help reduce perch numbers is to conduct partial chemical treatments targeting perch. Generally, partial rotenone treatments to control unwanted fish species in lakes and reservoirs is not recommended. Partial treatments usually have only short term effects. However, in combination with other control methods outlined in this plan, partial treatments may be a useful tool in reducing perch numbers in Fish Lake.

Shoreline or partial treatment of perch populations in Fish Lake should be conducted in early spring (following ice-off). Rotenone should be applied after dark when adult perch move into the shallows to spawn, preferably when a light wind is blowing towards shore. Wind action should assist with trapping target fish and controlling the spread of Rotenone to non-target areas. Either 5% powdered rotenone or 5% liquid rotenone (emulsifiable rotenone) may be used. Target concentrations to kill perch should be 1.0 ppm. Prior to large scale applications in Fish Lake, tests should be conducted to evaluate effectiveness and total kill of non-target species. Based on spring perch netting to be conducted in Fish Lake during 2014, target locations could be identified for testing during spring 2015. Target or test areas should be no larger than 100 meters (shoreline length). Rotenone should be applied in a circular pattern starting on shore and extending out into the lake to just outside the weed-bed and continuing back to shore. Regional UDWR staff will collect all fish to determine the effectiveness of partial treatments. Rotenone could have a negative effect on watermilfoil weevils and temporarily reduce their numbers. During spring 2015, before milfoil weevils have dispersed throughout Fish Lake, may be the only opportunity to conduct trial tests with rotenone without impacting weevils. If the abundance and distribution of Eurasian watermilfoil is not reduced by weevils, rotenone treatments would probably only provide short-term reductions of the perch population. Rotenone impacts on milfoil weevils should be carefully assessed before being utilized.

The Fish Lake Advisory Committee discussed using predatory fish species, such as walleye, tiger muskie and saugeye, to help reduce perch numbers. At the current time it is recommended to not stock any of these predatory fish into Fish Lake. Walleye are very effective and efficient predators and tend to become the dominant fish in lakes. If fertile

walleye were introduced and established in Fish Lake, along with other predators, they could have drastic negative impacts to the trout fishery in Fish Lake. Trout species would likely disappear or be significantly reduced in numbers. Previously discussed options for reducing perch numbers need to be implemented, and the results analyzed, to determine if perch numbers are being reduced and Utah chub numbers are increasing. Stocking sterile predatory fish will remain an option to be discussed in the future if other methods are not successful at reducing perch numbers.

The UDWR is working with Brigham Young University (BYU) to complete a stable isotope diet study of fish in Fish Lake. The diet study can be repeated in the future to compare any changes to the diet and predation by fish in the lake. During spring gill netting conducted in May 2014, BYU was present and collected tissue samples for diet analyses from the fish species caught at that time. Local lodge owners will be collecting tissue samples from tiger muskie any chance they get throughout the summer. During 2014 fall gill netting for lake trout, BYU will collect tissue samples for that species. When saugeye are introduced into Mill Meadow Reservoir in the future, a diet study to determine what they consume will be conducted.

Goal #3. Create additional shoreline fishing areas for anglers.

With dense weed beds surrounding the shoreline of Fish Lake, it is very difficult for shore anglers to catch fish and have an enjoyable experience. During the summer there are few shoreline anglers. A boat is needed to effectively fish the lake during the summer. If milfoil weevils successfully reduce the Eurasian watermilfoil coverage area by a long-term average of 50%, new areas would become available for shore fishing at Fish Lake. It is expected that just as many boat anglers, or more, will continue to use Fish Lake, but the number of shoreline anglers will increase, resulting in an overall increase in the number of angler hours at Fish Lake.

The UDWR will research the possibility and cost of constructing several rock/dirt jetties that would extend out to the edge of weed beds. The cost and feasibility of installing a pier will also be researched. A pier with pilings would be required to avoid damage by ice. It is estimated that the cost of either option will exceed $100,000.00. Once the best option is decided, the UDWR and Fishlake National Forest will pursue funding.

The UDWR will contact the Fishlake National Forest and work with them to try and improve Forest Road 1483 around the south end of Fish Lake and open up some additional shoreline fishing opportunities.

Goal #4. Protect Fish Lake from introduction of any new Aquatic Invasive Species (AIS).

The UDWR has hired an additional AIS technician for the summer 2014 season. AIS technician presence at Fish Lake has been increased from 40 hours per week to 60 hours per week. AIS technicians contact as many boaters as possible to be sure boaters are meeting legal requirements regarding movement of AIS species, with particular emphasis on preventing quagga mussels from being transferred to Fish Lake. If quagga mussels become established in

Fish Lake, they will have major impacts on the fishery and recreation opportunities and cause economic hardships to local businesses. Quagga mussels will filter the plankton from the lake, reducing the food supply for splake, rainbow trout, kokanee salmon, Utah chub, perch and other fish, which will have bottom-up impacts of reducing fish numbers and condition for these species and reducing forage available for lake trout, splake and brown trout. Quagga mussels will impact shorelines and aquatic vegetation, as well as impact waters downstream such as Mill Meadow Reservoir and irrigation systems. Education of boaters about the risk and problems of quagga mussels is the best method to prevent their introduction into Fish Lake.

AIS technician presence at Fish Lake will be assessed on an annual basis. AIS technician presence will be determined by the need and benefit at Fish Lake and the availability of funding by UDWR. Currently the trend for the UDWR is to invest funds and personnel time into interdiction and education of boaters at Lake Powell and at checkpoints at the Port-of-Entry on I-15 at St. George and other major roads entering Utah.

Chemical treatments could be used within the marinas to reduce or eliminate milfoil to minimize the risk of boaters and recreationist spreading it to other waters bodies. This action would only be necessary if milfoil weevils do not reduce Eurasian watermilfoil within the marinas.

Goal #5. Introduce new species to increase diversity of angling opportunities and help improve other fish species numbers.

The UDWR has requested kokanee salmon to be stocked into Fish Lake during summer of 2015. Availability of kokanee salmon will depend on the success of kokanee salmon egg collection in the fall 2014, as well as hatching and rearing of young fish until summer of 2015. Utah hatcheries also need to meet kokanee salmon requests for other lakes where kokanee are already stocked. When the number of kokanee salmon available for stocking in 2015 is known, then the decision will be made on where and how many to stock.

Kokanee salmon were stocked into Fish Lake one time in early 1960s, persisting with no further stocking for about 10 years. Lack of spawning habitat was the most likely reason they did not persist. Once kokanee salmon are established in Fish Lake they will probably require supplemental stocking to maintain desired population levels. If available, lake spawning strains of kokanee salmon from Flaming Gorge Reservoir will be used in Fish Lake to provide the best opportunity for in-lake reproduction. Kokanee salmon are efficient plankton feeders, especially on the smaller plankton species that are common in clear, high elevation lakes like Fish Lake. Kokanee salmon can provide a new species for anglers to catch and are a popular sport fish where they occur in Utah. It is anticipated that kokanee salmon will provide another prey source for lake trout and help increase trophy lake trout numbers. As the kokanee salmon population is established, it should be possible to reduce the number of rainbow trout stocked.

Tiger trout have been approved for stocking into Fish Lake. Tiger trout and splake are similar fish in their needs and behaviors. Tiger trout would be stocked to supplement splake stocking when there are not enough splake available. In 2012, UDWR hatcheries were unable to produce any splake to be stocked into Fish Lake. Consequently, splake numbers decreased

and were difficult for anglers to catch. Tiger trout can be substituted for splake for more diverse and consistent angling opportunities. In 2014, the UDWR was again short of the requested number of splake to be stocked and tiger trout have been stocked to supplement splake.

The methodologies to effectively produce sterile (triploid) walleye are in the process of being developed in other western states. Once the process of producing sterile walleye is perfected, they will be evaluated to determine if they are a suitable species to stock into Fish Lake. Fertile walleye could have drastic negative impacts to the fishery in Fish Lake and could become the dominant species in the lake. If that happened, all trout species would likely disappear or be significantly reduced in numbers. Fertile walleye should not be stocked in Fish Lake. Saugeye (sterile) may be another option to introduce into Fish Lake to diversify angling opportunities and will be evaluated after assessing how they do in Mill Meadow Reservoir in the coming years. Both sterile walleye and saugeye may help reduce perch numbers, but could also reduce Utah chub numbers and available forage for lake trout.

Goal #6. Maintain consistent angling opportunities for other fish species during summer and winter months.

In response to decreasing mean size and condition of splake observed in 2005 and 2006 gill net surveys, the annual splake stocking quota was reduced from approximately 80,000 to 40,000. From 2006 to 2010 the average total length of splake increased from 11.2 inches to 13.9 inches, but is short of the Fish Lake Fishery Management Plan objective of 15 inches. A combination of reduced stocking numbers from 2006 to 2011 and no stocking of splake in 2012, have resulted in low catch rates for anglers. It is recommended to increase the annual quota to 60,000 splake and assess if higher numbers reduce total length. It is also recommended to use tiger trout as a substitute for splake stocking when the splake quota cannot be reached. In 2014, adjustments are again required as only 20,000 splake are available to be stocked, so 20,000 tiger trout have also been requested to be stocked in Fish Lake. If more and smaller-sized forage fish become available in the future as prey items for splake, then the total length of splake should increase as well.

Stocking and maintaining a kokanee salmon fishery was discussed under Goal #5. Once established, kokanee salmon should help the consistency of the overall fishery at Fish Lake. The key will be to adjust stocking in the future to maintain a good kokanee salmon population. It is anticipated that once a kokanee salmon population is established, it will help meet Plan objectives for combined rainbow/kokanee catch rates of .50 fish per hour. Kokanee salmon are stocked at about a 3 inches length, compared to the current stocking of 8 inch rainbow trout. Kokanee salmon avoid predation at smaller lengths much better than rainbow trout and survival to catchable size should be better. The production cost to produce a 3 inch fish compared to an 8 inch fish is significantly lower. If kokanee salmon can be established and maintained in Fish Lake, then the number of 8 inch rainbow trout that need to be stocked will

be reduced and result in a significant savings to UDWR budget. Currently, it costs the UDWR approximately $173,912.00 to stock 200,000 8 inch rainbow trout in Fish Lake annually.

Predation on kokanee salmon by lake trout could be high and keep kokanee salmon numbers low. Low kokanee salmon numbers may not indicate that the stocking program is unsuccessful. If rainbow trout are surviving better because of reduced predation by lake trout and fewer numbers of rainbow trout need to be stocked to maintain angler catch rates and gill net survey objectives, then kokanee salmon stocking should continue. Angler satisfaction and desire to maintain a kokanee salmon fishery should also be considered when assessing the kokanee salmon stocking program in the future.

Table 2. Angler catch rates measured by creel surveys at Fish Lake in 1998, 2004 and 2010, compared with proposed management plan objectives.

	Angler catch-rate (fish/hour)			
	1998	2004	2010	FL Management Plan objective
All trout/Kokanee*	.84	.64	.53	.75
Rainbow Trout/Kokanee*	.65	.40	.25	.50
Splake (winter)	.42	.69	.42	.50
Splake (summer)				.10

*Kokanee salmon only applies to future management plan objectives; not previous creel surveys.

Table 3. Historic spring gill net catch-rate and mean total length of trout, compared with proposed management plan objectives. Also see graph 4.

	Gill net catch-rate (# fish/net-night)				Total Length (inches)			
	1981-2012 (Mean)	2012	2014	FL Management Plan objective	Mean total length 1986-2012	2012 mean total length	2014 mean total length	FL Management Plan objective
All trout/Kokanee*	25.8	30.8	19.5	-	-	-	-	-
Rainbow Trout/Kokanee*	13.6	20.3	11.5	15-20	12.5	12.6	12.9	-
Splake	13.3	10.2	7.5	10-15	12.9	13.6	13.7	15

* Kokanee salmon only applies to future management plan objectives; not previous surveys.

Goal #7. Increase numbers of fish that occur in low numbers.

The plan does not recommend an annual stocking quota for brown or brook trout species, but Fish Lake should be considered as a place to stock excess brown and brook trout when they are available. Both fish are currently present in small numbers and have been stocked into Fish Lake in the past. If high numbers of these species were present in Fish Lake, they could increase competition for available food resources with other trout species and impact other trout numbers. In 2012, 99,000 3 inch brown trout and 36,000 3 inch brook trout were stocked, with another 7,000 3 inch brook trout in 2013.

Tiger muskie will continue to be stocked in Johnson Reservoir, which is downstream of Fish Lake. Some of these fish move up to Fish Lake and exist in low numbers. Brown trout, brook trout and tiger muskies should continue in low numbers in Fish Lake and provide a diversity of angling opportunities.

Monitoring Plan:

Monitoring must be conducted to determine if and how management actions are affecting the fishery in Fish Lake and to determine if objectives are being met. Monitoring should include gill net surveys, angler creel surveys, fish diet studies, effect of milfoil weevils on Eurasian watermilfoil, and AIS sampling.

The UDWR has been completing annual spring gill net surveys, along with summer forage fish and fall lake trout gill netting every three years. The UDWR will continue annual spring gill netting and increase summer forage fish and fall lake trout netting to every other year, beginning in 2014 until Management Plan objectives are met or the need to gill net can be reduced. Spring gill netting is generally used to evaluate rainbow trout and splake abundance and will include kokanee salmon. Summer sampling was initiated in 1991 to monitor forage fish (yellow perch, Utah sucker, and Utah chub) abundance. Fall sampling originated from lake trout egg collection for hatchery production. When egg collection from wild lake trout was no longer necessary, netting was continued as a means to evaluate the lake trout population.

Creel surveys provide data and information on angling pressure, catch and harvest rates, where anglers come from and their behaviors, desires and results of management actions. The last creel survey at Fish Lake was completed in 2010. The next creel survey is planned for 2017. Some results from implementation of this Management Plan should be evident by 2017.

The UDWR is working with BYU to conduct a diet study of the fish assemblage at Fish Lake. Collecting tissue samples and using stable isotope analysis can describe the food web at Fish Lake. Completing the study now and then repeating the study in the future can show how changes in the fish assemblage (e.g. adding koaknee salmon and increasing Utah chub numbers) impacts the food web and can provide insight into how management actions are working and what changes may need to be made. BYU investigators collected initial tissue samples from several species of fish during spring 2014 gill netting. Additional samples for lake trout will be collected in fall 2014 and for all species, if needed, in 2015. Local lodge owners are assisting in collecting tissue samples from tiger muskie and lake trout when the opportunity arises. When saugeye are established in Mill Meadow Reservoir they will be included in the diet study.

Milfoil weevils were introduced to Fish Lake on July 3 and 10, 2014. Additional weevils are planned to be stocked in 2015 and 2016. The company from which the weevils were purchased completed pre-stocking surveys and data collection of the Eurasian watermilfoil distribution and density in areas where the weevils were stocked. The company will continue to monitor the impact and effectiveness of the weevils for the next 3 – 4 years. Annual gill netting may be adjusted to monitor the response of forage fish to changes in milfoil growth and distribution as the weevils reduce the amount of watermilfoil present around the shoreline of Fish Lake. In the future, the Fishlake National Forest plans to conduct repeat mapping of watermilfoil and aquatic vegetation distribution as a follow-up to their mapping project in 2010.

The UDWR collects water samples annually from Fish Lake to check for the presence of quagga mussels. The UDWR will continue to monitor for the presence of quagga mussels. The UDWR has a Conservation Officer from Richfield assigned to patrol Fish Lake and regular patrols are conducted.

The UDWR will complete an annual review and report on the Plan and include tools/actions implemented, gill netting data, weevil effects, diet study, creel survey and other relevant data and information. The Fish Lake Advisory Committee will be reassembled after five years to assess if goals and objectives are being met and to determine if changes need to be made.

Triggers:

- If after five years, the number of lake trout >28 inches in length caught in fall gill netting is not increasing, then new tools and actions and/or investigations may need to be implemented to determine what can be done to increase numbers. We may need to further evaluate lake trout diet, other possible limiting factors and forage fish populations.

- If the fall gill net catch rate for lake trout >28 inches drops below an average of 1.0 fish/net-hour for two consecutive sampling periods, then consider recommending catch and release regulation on lake trout >24 inches. Must consider and evaluate if harvest is contributing to the decline in the trophy lake trout population. If another factor is causing the decline then implementing catch and release would not increase lake trout numbers.

- If after 5 years, perch numbers are not decreasing and Utah chub numbers are not increasing, then evaluate and consider stocking sterile walleye, tiger muskie, saugeye, sterile muskie or sterile pike. Consider and evaluate any other alternate methods for reducing the perch population.

- If after five years, shoreline anglers have not increased to at least 17% of anglers, then more effort should be made to create and improve shoreline angling locations and

promote these efforts and shoreline angling opportunities to the public. Long-term goal is 25% shoreline anglers.

- After five years, determine if kokanee salmon stocking has met, or is approaching, management plan goals and objectives and if the stocking of kokanee salmon should continue. If kokanee salmon do not establish a population, then consider discontinuing stocking of kokanee salmon. Evaluate options and consider return to stocking more rainbow trout.

Timeline for Plan Implementation:

Date	
May 2014	Spring gill netting. Diet study initiated. AIS technician presence - yearly.
July 2014	Forage fish gill netting. Milfoil weevils introduced.
August 2014	Tiger trout stocked. Quagga mussel sampling – yearly.
September 2014	Eurasian milfoil and milfoil weevil surveys.
October 2014	Lake trout gill netting.
Fall 2014	Regulation changes. Kokanee salmon egg collection.
January 2015	Ice fishing clinic. Perch tournament.
April 2015	Trial chemical treatments for perch.
May 2015	Spring gill netting.
July 2015	2nd stocking of milfoil weevils.
Summer 2015	Stock kokanee salmon - continue yearly.
September 2015	Eurasian milfoil and milfoil weevil surveys.
Fall 2015	Yearly public meeting to review plan.
December 2015	Funding proposal for jetties/pier.
January 2016	Ice fishing clinic. Perch tournament.
May 2016	Spring gill netting
July 2016	Last stocking of milfoil weevils. Forage fish gill netting.
September 2016	Eurasian milfoil and milfoil weevil surveys.
October 2016	Lake trout gill netting.
Fall 2016	Yearly public meeting to review plan.
January 2017	Creel survey begins. Ice fishing clinic. Perch tournament.
May 2017	Spring gill netting
July 2017	Chemical treatment of marinas for milfoil if necessary.
September 2017	Eurasian milfoil and milfoil weevil surveys.
Fall 2017	Construct jetties/pier if approved. Yearly public meeting to review plan.
January 2018	Ice fishing clinic. Perch tournament.
May 2018	Spring gill netting.
July 2018	Forage fish gill netting.
September 2018	Eurasian milfoil and milfoil weevil surveys.
Fall 2018	Yearly public meeting to review plan.
October 2018	Lake trout gill netting.
January 2019	Ice fishing clinic. Perch tournament.
May 2019	Spring gill netting.
July 2019	Forage fish gill netting.
Fall 2019	5 year review of Plan with Advisory Committee.

Fish Lake Advisory Committee Signatories

Garth Ogden – Sevier County Commissioner	Date
Gary Mason – Sevier County Commissioner	Date
Gary Moulton – Fish Lake Resort Owner	Date
Brad Nielson – Bowery Haven Resort Owner	Date
Kurtis Robins – District Ranger Fremont River District, Fishlake National Forest	Date
Ray Schelble – Blue Ribbon Fishery Advisory Council	Date
DeLoss Christensen – Fish Lake Angler	Date
Sterling Lee – Fish Lake Angler	Date
Brennon Nielsen – Fish Lake Angler	Date
J. Brett Jensen – Fish Lake Angler	Date
Travis Kyhl – Fish Lake Angler	Date
Timothy Kidder – Fish Lake Angler	Date
Brayden Gardner – Fish Lake Angler	Date

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Figure 1. Location of Fish Lake, Sevier County, Utah.

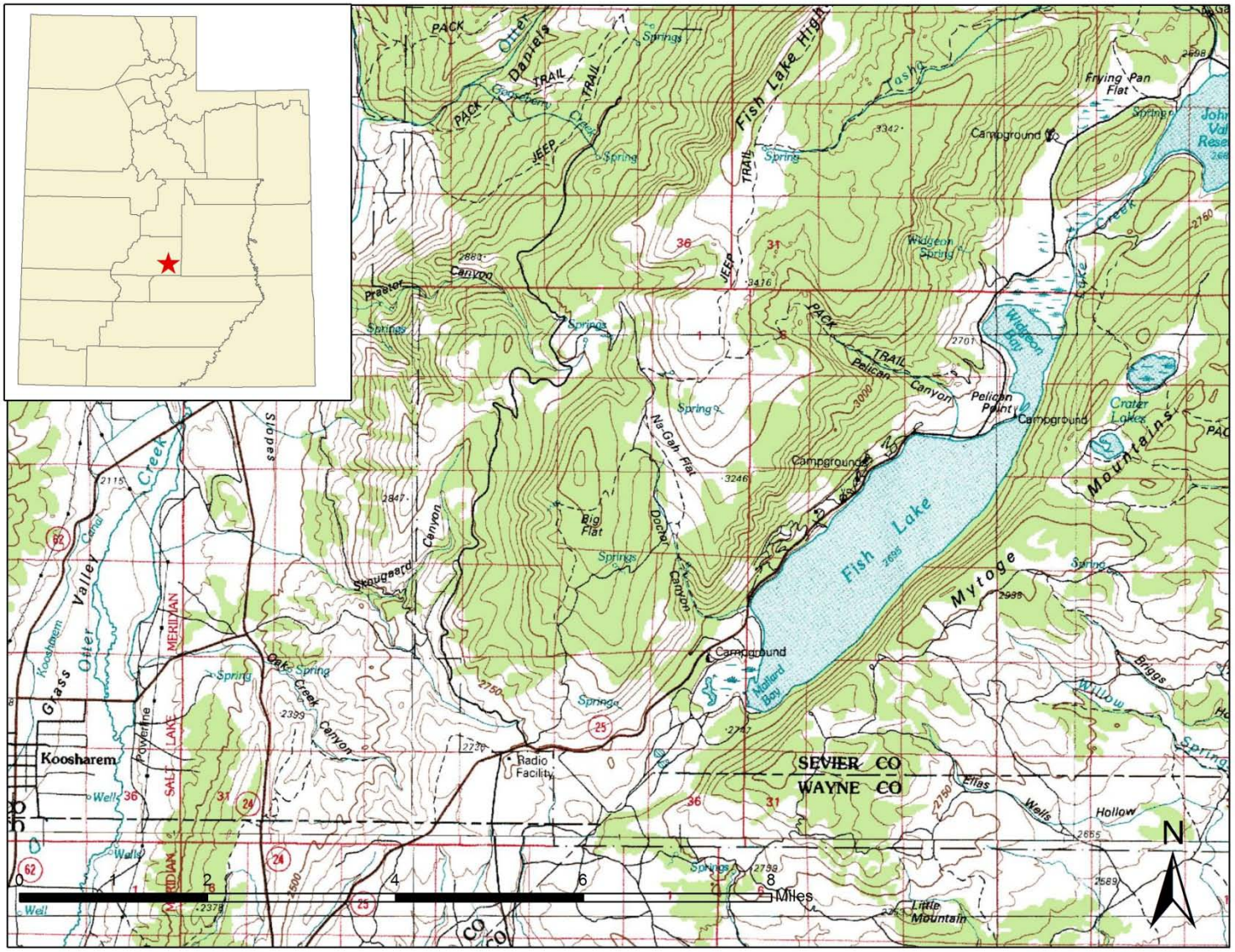


Table 3. Stocking history at Fish Lake, 1983 – 2013 (BRD – hatchery brood).

Year	Rainbow Trout		Splake		Lake Trout		Brown Trout		Brook Trout		Tiger trout	
	QTY	Size	QTY	Size	QTY	Size	QTY	Size	QTY	Size	QTY	Size
1983	201,350 198,320	5” 7”	-	-	39,670	5”						
1984	386,976 10,310	5” 7”	38,488	5”	-	-						
1985	157,024 35,841	5” 7”	62,460	5”	10.012	5”						
1986	163,871 37,118	5” 7”	56,252	5”	19,985	5”						
1987	302,925	5”	65,773	5”	24,635	5”						
1988	195,504	5”	12,985	5”	-	-						
1989	283,509 5,390 1,604	5” 10” BRD	-	-	37,228	5”						
1990	202,001 53,091	5” 10”	72,177	5”	-	-						
1991	168,459 59,977	7” 10”	-	-	20,070	7”						
1992	277,010 1,937	7” BRD	38,698	5”	-	-						
1993	36,149 88,258	7” 10”	35,486	5”								
1994	27,654 27,947 8,179	5” 7” 10”	55,875	5”								
1995	252,278 5,734	7” BRD	39,943 64,875	3” 5”								
1996	202,231 10,326	7” 10”	15,892 67,202	3” 5”								
1997	180,985 548	7” BRD	82,567	3”								
1998	190,572 34,526	7” 10”	83,833	5”								
1999	183,921	7”	40,235	5”								
2000	200,320 6,788	7” 10”	80,551	5”	525	BRD						
2001	220,806	7”	81,355	5”								

Year	Rainbow Trout		Splake		Lake Trout		Brown Trout		Brook Trout		Tiger trout	
	QTY	Size	QTY	Size	QTY	Size	QTY	Size	QTY	Size	QTY	Size
2004	216,378	7”	110,870	5”								
2005	208,644	7”	81,716	5”	724	BRD						
2006	198,600	7”	40,007	5”								
2007	205,730	8”	39,940	5”								
2008	199,191 23,194 28,639	8” 6” 10”	40,228	5”								
2009	163,747 8,800	8” 10”	43,734	4”								
2010	96,194 120,836	8” 8”	46,543	4”								
2011	98,517 78,082	8” 8”	41,274	4”								
2012	62,298 65,939 50,010 16,425	4” 8” 9” 10”	0				98,345 2,083	3” BRD	13,346	3”		
2013	230,214	8”	72,300	3”	1,640 1,291	3” BRD			6,899	3”		
2014			20,000	5”							20,000	5”

Appendix 1. Results from public on-line survey (.pdf file; open in Adobe Acrobat).

Fish Lake Fishery Management Survey

SurveyMonkey

1. 1. How often do you fish at Fish Lake?

	Response Percent	Response Count
Never	4.5%	11
Less than 5 days per year	**41.4%**	**101**
5 to 10 days per year	24.6%	60
More than 10 days per year	29.5%	72
	answered question	**244**
	skipped question	**1**

2. 2. How would you rank the quality of the fishery at Fish Lake?

	Response Percent	Response Count
Excellent	11.6%	27
Good	**58.6%**	**136**
Fair	27.6%	64
Poor	2.2%	5
	answered question	**232**
	skipped question	**13**

Appendix 2. Proposal for stocking milfoil weevils into Fish Lake (.pdf file; open in Adobe Acrobat).

Biological control on Eurasian watermilfoil in Fish Lake - Phase I

Utah's Watershed RESTORATION INITIATIVE

Project ID: 3041 **Status**: Project **Approved for Fiscal Year**: 2015

Description: Fish Lake's littoral zone is dominated by Eurasian watermilfoil, which causes multiple significant negative impacts. DWR would contract with a private company to introduce milfoil weevil as a biological control on the invasive Eurasian watermilfoil.

Location: Project would occur in Fish Lake, approximated 40 miles southeast of Richfield.

Project Manager: Nic Braithwaite
PM Agency: Utah Division of Wildlife Resources
PM Office: Southern Region
Lead Agency/Organization: Utah Division of Wildlife Resources
UWRI Region: Southern

Submitted to: [ ] UWRI [x] Habitat Council [ ] External Conservation Permit

[x] BRFAC

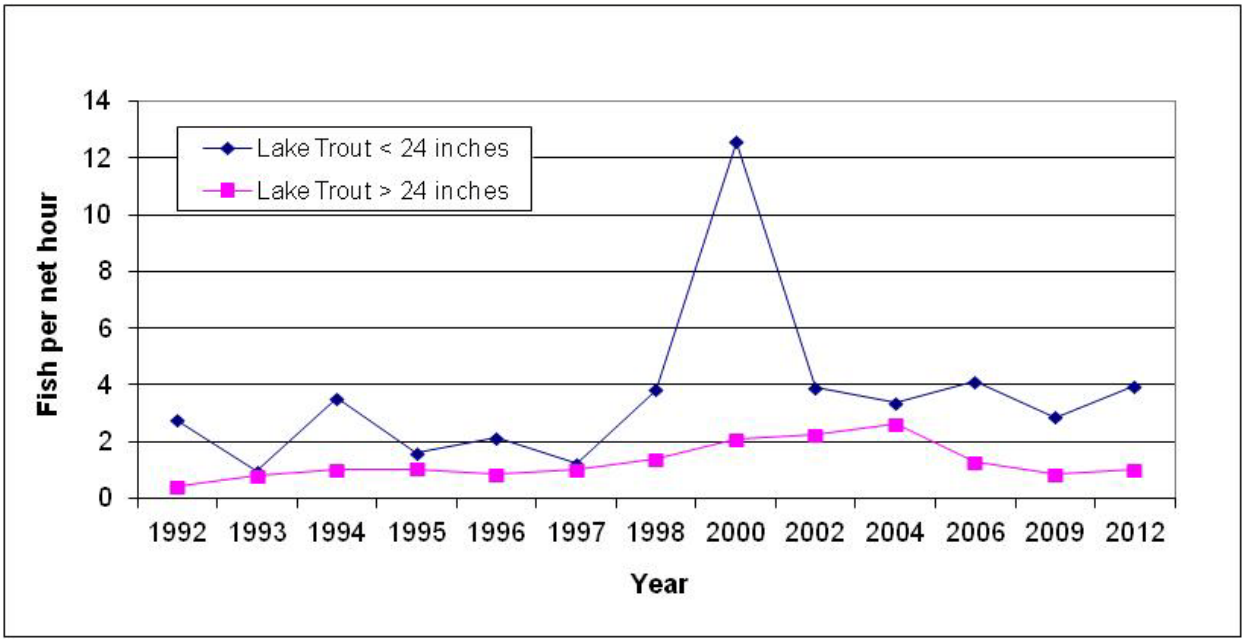
Description of Need for Project: The ubiquitous presence of Eurasain watermilfoil in Fish Lake has negatively impacted the trophy trout fishery by shifting the dominant forage fish from Utah chub to illegally introduced and less available yellow perch, limited shore fishing opportunities by growing in dense mats along the shoreline, and increased the risk of infesting other water bodies throughout Utah with Eurasian watermilfoil via overland travel of watercraft from Fish Lake.

Objectives: Reduce Eurasian watermilfoil density in Fish Lake by 50% over the long-term. A reduction of this magnitude would likely favor a more desirable forage fish population, increase opportunities for shore fishing, and reduce the risk of watercraft transporting Eurasian watermilfoil to other water bodies.

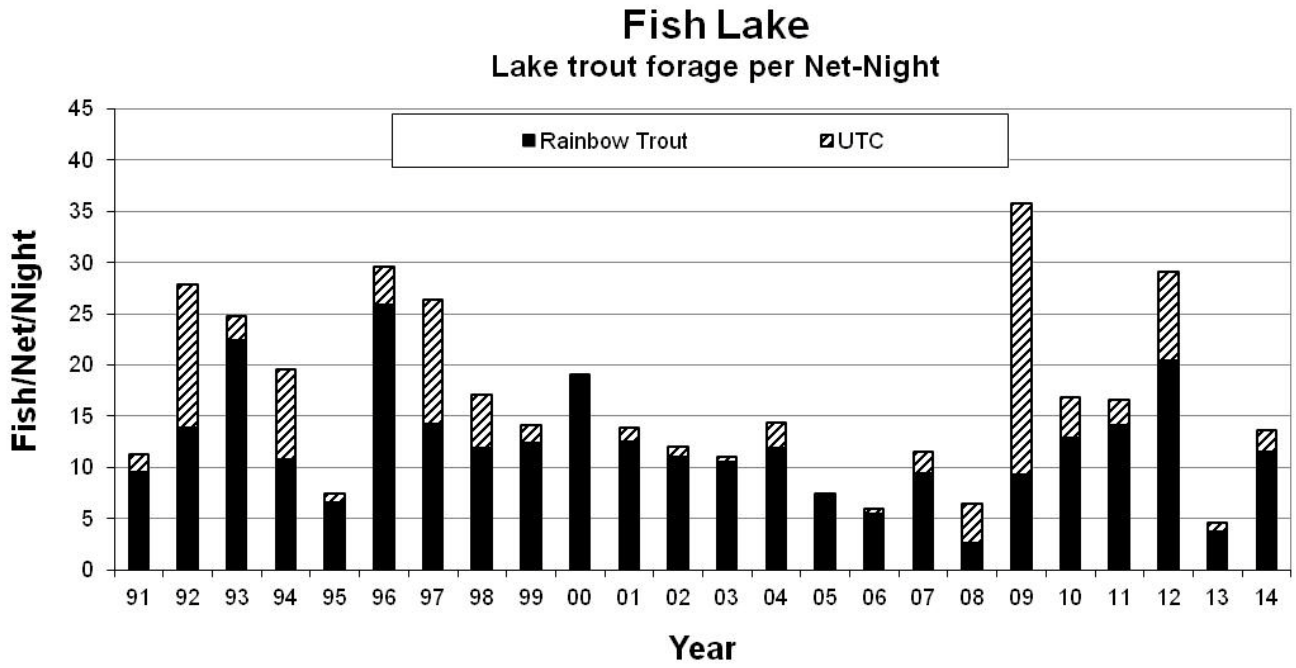
Threats/Risks: Without a significant control effort on Eurasian watermilfoil in Fish Lake, the valuable trophy trout fishery will suffer because yellow perch will continue to be the most prevalent forage fish in the lake, shore fishing opportunities and use will remain very low, and the risk of boaters transporting Eurasaian watermilfoil to other water bodies will continue to be high. Other control methods on Eurasian watermilfoil, such as mechanical and chemical controls, tend to be expensive and only effective over short time periods, especially relative to biological control with the milfoil weevil. Obtaining sufficient numbers of the milfoil weevil to establish a self-sustaining population in Fish Lake may not be possible after 2015. EnviroScience is the only current source for purchasing the milfoil weevil and they are downsizing their program to only service existing clients or waters in Michigan after 2015.

Relation to Management Plans: Meets DWR goals to provide public angling opportunities by increasing the available shoreline for angling use. Meets DWR goals to improve aquatic habitat and fish populations by shifting habitat in Fish Lake to be more favorable for Utah chub than yellow perch, which in turn benefits the valuable trophy trout fishery. Meets the Utah Aquatic Invasive Species Plan (2009) by reducing the risk of spreading Eurasian watermilfoil to other water bodies.

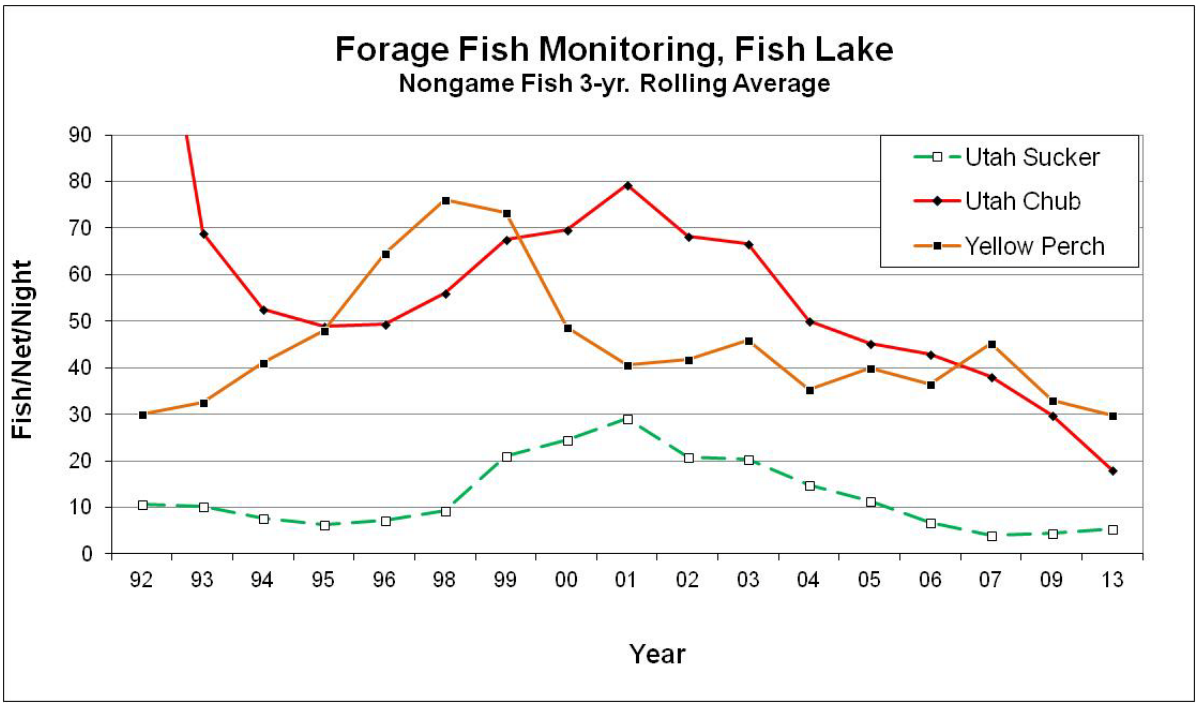
Graph 1. Historical fall lake trout gill netting showing number of lake trout per net-hour, 1992 – 2012. Plan objective is 4 lake trout >28" per net-hour.



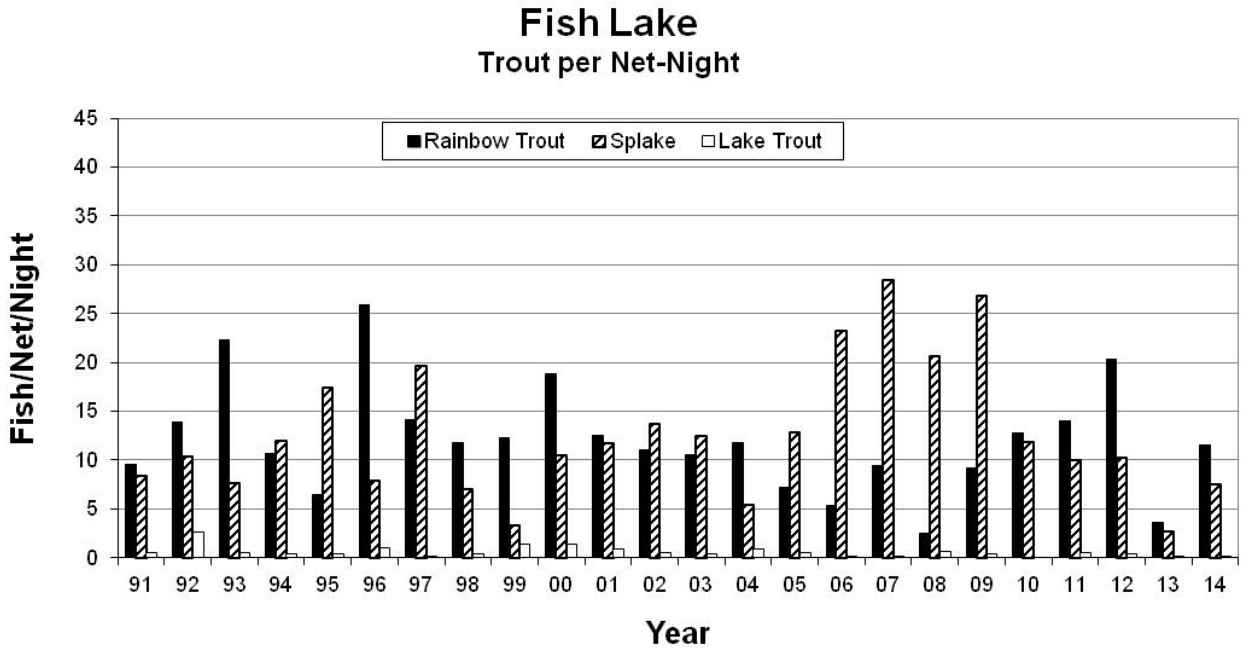
Graph 2. Spring gill netting for lake trout forage fish. Plan objective is >30 fish/net-night for combined Utah chub, kokanee salmon and rainbow trout.



Graph 3. Summer gill netting for forage fish showing downward trend of Utah chub and relatively consistent numbers of yellow perch. Plan objective is to reduce yellow perch numbers to <5 fish per net-night and increase Utah chub numbers to >55 fish per net-night.



Graph 4. Data from spring gill netting. Plan objectives are: splake/tiger trout 10-15 fish per net-night and rainbow/kokanee 15-20 fish per net-night.



Boulder Mountain Sport Fish

Management Plan

Boulder Mountain Sport Fish Advisory Committee

Committee Representation:

A Public Involvement Committee (PIC) was formed on January 8, 2014 to provide public input to the Utah Division of Wildlife Resources (UDWR) regarding sport fisheries management for Boulder Mountain lakes. Members were selected through input and recommendations from various groups/organizations interested in Boulder Mountain and a survey (Appendix 1) conducted in the spring of 2013. The committee was comprised of:

- Dixie National Forest
- Blue Ribbon Fisheries Advisory Council
- UDWR Regional Advisory Council
- Mike James Angler (Guide)
- Dustin Rooks Angler
- Scott Albrecht Angler
- Jason Porter Angler
- Lance Larsen Angler
- Dewain Peterson Angler
- Graig Ogden Angler

Public Involvement Committee Mission:

The purpose of the PIC as outlined by UDWR was to:

1. Develop a sport fish management plan for lakes and reservoirs on Boulder Mountain.
2. Set recommended goals and objectives for future fish management on Boulder Mountain.
3. Provide recommendations on management and future work related to the sport fisheries on Boulder Mountain.

Issues concerning water rights, grazing, and access fall outside UDWR's legal authority and were not addressed in this plan.

The committee defined their mission as:

"Develop a sport fish management plan that will maintain and/or improve the quality, diversity, and uniqueness of the fisheries in Boulder Mountain lakes."

Introduction:

The area referred to as Boulder Mountain consists of a series of forested plateaus located between the Fremont and Escalante rivers in south central Utah (Figure 1). The mountain contains approximately 80 lakes, ponds, and reservoirs that sustain populations of trout. Most of these waters are found between 8,400 feet (2,561 m) and 11,000 feet (3,354 m) in elevation. Brook trout have been stocked in these lakes since the early 1900s and, prior to 2000, 80% of the lakes were managed with brook trout. Boulder Mountain has long held a reputation for quality- and trophy-sized brook trout (Figure 2). The area's relatively southern latitude provides a longer growing season than many other western alpine areas. In addition, the mountain's basaltic geology is highly productive and supports robust invertebrate communities. Brook trout often experience impressive growth rates often growing up to 10 inches in the first year after stocking.

The Boulder Mountain Sportfish Enhancement Project (Hadley and Hepworth 2013) was initiated in 1998 and concluded in 2012. This project focused on improving fisheries in lakes with "stunted" brook trout populations. The process of overcrowding and subsequent slowed growth is often referred to as "stunting." These overcrowded populations are often less desirable to anglers and can be greatly underutilized. Fourteen Boulder Mountain lakes, ponds, and reservoirs containing self-sustaining populations of brook trout were selected for inclusion in the project. In all but one lake, two rotenone treatment applications were conducted on successive years to ensure that fertile brook trout were completely eradicated. After rotenone treatments were completed, cutthroat, tiger, splake, and/or triploid brook trout were stocked in the fourteen treated waters. Despite efforts to improve fishing, misunderstanding over the goals and objectives of the project are still common among some anglers. Common rumors included the misconceptions that UDWR was attempting to remove most or all brook trout populations in Boulder Mountain lakes, and that native cutthroat trout restoration was the driving force behind removal of stunted brook trout.

Currently, 65% of Boulder Mountain lakes are managed with brook trout (Table 1; Appendix 2). However, the quality- and trophy-sized brook trout that anglers have come to expect from Boulder Mountain are declining, while opportunities for quality- and trophy-sized sterile hybrids are increasing. The PIC was tasked with assisting the UDWR in the development of a management plan to deal with these issues. The PIC identified and discussed three major issues with the fisheries on Boulder Mountain: 1) Fish size – caused by overstocking and decreased angler harvest, 2) Habitat or lack of over winter survival of fish, and 3) Fishing pressure – top waters are receiving excessive angler pressure, reducing the overall quality of the fishing experience. A total of 82 lakes, ponds, and reservoirs were discussed by the PIC and management recommendations were made for each water body during a series of meetings held during the winter/spring of 2014. The following plan is an aggressive attempt to improve and maintain not only brook trout fishing, but the quality, diversity, and uniqueness of the fisheries on Boulder Mountain. The PIC strived to incorporate comments and input from the 245 anglers who took the online survey (Appendix 1), anglers outside the committee, and other interested parties who attended the meetings, and additional anglers contacted by members of the PIC.

Goals and Objectives:

The PIC determined that fisheries, on Boulder Mountain should be managed towards one of four goals (lakes with multiple species can be managed under separate goals):

- Trophy: characterized by very large fish present at relatively low numbers
- Quality: characterized by a high number of moderately large fish
- Opportunity: characterized by a very high number of small fish
- Conservation: characterized by the presence of native cutthroat trout and specifically managed to meet conservation goals and objectives outlined in conservation agreements. This goal is not necessarily exclusive of other goals (i.e. a conservation fishery can also be managed as trophy).

The following objectives should be used to evaluate each goal (measured through gillnet surveys):

- Trophy: 10% of trout > 3 lbs, 10% of grayling > 16”
- Quality: 80% of trout between 1 and 3 lbs, 80% of grayling between 12” and 14”
- Opportunity: 100% of trout < 2lbs, 100% of grayling < 12”

Additional Recommendations and Comments:

1. The PIC recommends that UDWR considers the fisheries on Boulder Mountain as high priority and ensures sufficient time and resources be given to address issues outlined in this plan. Lakes need to be adequately monitored and evaluated to ensure goals and objectives are being met.

2. The PIC supports the use of piscicides (rotenone) when appropriate to remove overcrowded or undesirable populations of fish when necessary to improve the quality, diversity, and uniqueness of Boulder Mountain fisheries.

3. The PIC recognizes and supports the conservation of native trout (Bonneville and Colorado River cutthroat trout) and has recommended opportunities for future cutthroat trout restoration that coincide with improved sportfishing opportunities. These restoration activities will focus on establishing self-sustaining populations of cutthroat trout in streams. The PIC recommends that Colorado River cutthroat trout should be stocked in the Colorado River Basin and Bonneville cutthroat trout should be stocked in the Sevier River Basin. The PIC does not recommend the use of cutthroat trout if sport fishing would decline or be sacrificed.

4. The PIC recognizes the importance of sterile trout (tiger, splake, and triploid brook trout) and encourages UDWR to continue to maintain and improve the hatchery programs that produce these fish. The PIC recommended stocking tiger trout in numerous waters some of which have been known for trophy brook trout, stocking of a small number of tiger trout (less than 25% of the overall population) may help control brook trout populations when overstocking occurs.

5. The PIC recommends that size restrictions be removed from the possession limit to allow harvest of four trout daily, consistent with state wide fishing regulations on all lakes except Dougherty Basin Lake and Oak Creek Reservoir.

6. The PIC recognizes that many of the management actions and recommendations will result in improved size and quality of fish in Boulder Mountain lakes and is concerned that future public pressure will be put on protecting these fisheries with restrictive regulations. Harvest of fish is an important component in maintaining the quality and trophy fish in Boulder Mountain fisheries. Allowing harvest and stocking trout at annual rates of 50 fingerlings per acre or less, results in growth rates producing 3-5 pound trout after two winters (growth occurring during a portion of three summers). Attempts to protect large trout usually backfire, resulting in increased abundance, reduced growth, and conditions that do not support large trout.

7. The PIC recommends lakes within specific geographic areas on the Boulder Mountain should be managed to provide a multitude of opportunities or combination of management goals and fish species. Management actions at a few top waters need to be duplicated in other areas. Providing these species combinations and sizes in other areas will help spread out popularity and address the issue of top waters receiving excessive angling pressure.

8. The PIC recognizes that many of the lakes on Boulder Mountain can experience occasional winter kill and variable survival rates on fish. It is understood that on any given year conditions may change. However, long term management should focus on those goals and objectives outlined in this Plan.

The fisheries on Boulder Mountain can be broken down into eight geographic areas: 1) Boulder Top, 2) East Slope, 3) Escalante Mountain, 4) Griffin Top, 5) North Creek, 6) North Slope, 7) South Slope, and 8) West Slope. The following tables list recommended fish species, management goals, and management actions for each lake. Fish species abbreviations include: BRK (brook trout), BRK-Triploid (sterile brook trout), BVCT (Bonneville cutthroat trout), CRCT (Colorado River cutthroat trout), GRY (arctic grayling), RBT (rainbow trout), SPL (splake trout), and TG (tiger trout).

Boulder Top

Lake Name	Fish Species	Management Goal	Management Action
Chuck Lake	BRK	Quality	Stocking Adjustment
Crescent Lake	CRCT	Quality	Stocking Adjustment
	TG	Trophy	Stocking Adjustment
Bess Lake	BRK	Quality	Monitor
	GRY	Quality	Monitor
Big Lake	BRK	Opportunity	Monitor
	GRY	Opportunity	Monitor
Crater Lake	BRK	Quality	Stocking Adjustment
	GRY	Trophy	Stocking Adjustment
Dead Lake	BRK	*Evaluate	Evaluate
	GRY	*Evaluate	Stocking Adjustment
Pleasant Lake	BRK	Trophy	Stocking Adjustment
	GRY	Trophy	Monitor
Raft Lake	BRK	Quality	Stocking Adjustment
	GRY	Trophy	Monitor
Circle Lake	GRY	*Evaluate	Monitor
Dead Horse Lake	BRK	Trophy	Monitor
	GRY	Trophy	Monitor
Cub Lake	BRK	Quality	Monitor
East Lake	BRK - Triploid	Quality	Monitor
Halfmoon Lake	BRK - Triploid	Quality	Stocking Adjustment
Horseshoe Lake	TG	Trophy	Stocking Adjustment
	BRK - Triploid	Trophy	Monitor
Ledge Lake	BRK - Triploid	*Evaluate	Habitat – Aerator
Ridge Lake	BRK	Opportunity	Stocking Adjustment
Rim Lake	BRK - Triploid	Quality	Stocking Adjustment
	GRY	Quality	Stocking Adjustment
Spectacle Lake	TG	Trophy	Stocking Adjustment
	BRK - Triploid	Trophy	Stocking Adjustment
Surveyor Lake	TG	Trophy	Stocking Adjustment
	BRK	Trophy	Stocking Adjustment

*Evaluate – Not enough information was available for the PIC to make a management goal recommendation at this time.

Specific recommendations for the Boulder Top lakes:

1. Provide additional opportunities for tiger trout on the Boulder Top. Maintain tiger trout numbers at no more than 25% of the overall population in each specific water body.
2. Make stocking adjustments to meet management goals.
3. Evaluate those lakes with stocking quotas and little information to determine what the limiting factors and potential are.
4. Investigate the feasibility of installing a solar aerator at Ledge Lake to determine its effectiveness and potential use at other waters.
5. Open all lakes on Boulder Top to winter fishing.

East Slope

Lake Name	Fish Species	Management Goal	Management Action
Lower Bowns Reservoir	TG	Trophy/Quality	Monitor
	RBT	Opportunity	Monitor
Scout Lake	BRK	Trophy	Monitor
Oak Creek Reservoir	TG	Trophy	Regulations - Treatment - Stocking Adjustments
	BRK-Triploid	Trophy	Regulations - Treatment - Stocking Adjustments

Specific recommendations for the East Slope lakes:

1. Determine if an increased limit on brook trout (16 fish/day) at Oak Creek Reservoir will reduce competition and increase growth rates.
2. If changes in limit are unsuccessful in improving growth then conduct a rotenone treatment at Oak Creek Reservoir to remove fertile brook trout. Restock with sterile brook trout and tiger trout (less than 25% of population).
3. Make stocking adjustments to meet management goal.
4. Open all lakes except Scout Lake to winter fishing.

Escalante Mountain

Lake Name	Fish Species	Management Goal	Management Action
Antimony Lake	BRK - Triploid	Trophy	Stocking Adjustment
	RBT	Quality	Stocking Adjustment
Little Antimony Lake	TG	Trophy	Stocking Adjustment
Otter Lake	BRK	Quality	Monitor
	GRY	* Evaluate	Evaluate
Pacer Lake	TG	Trophy	Stocking Adjustment - Habitat – Pipe
	BRK	Trophy	Stocking Adjustment - Habitat – Pipe
Rob's Reservoir	BVCT	Conservation	Monitor

*Evaluate – Not enough information was available for the PIC to make a management goal recommendation at this time.

Specific Recommendations for the Escalante Mountain lakes:

1. Make stocking adjustments to meet management goals.
2. Improve overwinter survival at Pacer Lake by piping water from the spring out into the lake and investigate possible vegetation control options.
3. Maintain tiger trout numbers at no more than 25% of the overall population in Pacer Lake.
4. Open all lakes except Pacer Lake to winter fishing.

Griffin Top

Lake Name	Fish Species	Management Goal	Management Action
Row Lake #7 (Banana)	BRK	Quality	Habitat – Aerator
	GRY	Quality	Habitat – Aerator
	RBT	Opportunity	Habitat – Aerator
Row Lake #3	TG	Opportunity	Stocking Adjustment
	RBT	Opportunity	Stocking Adjustment
Blue Lake GT	GRY	Trophy	Stocking Adjustment
Purple Lake	BRK	Trophy	Stocking Adjustment
Row Lake #8	BRK	Quality	Habitat – Aerator
	GRY	Quality	Habitat – Aerator

Specific recommendations for the Griffin Top lakes:

1. Make stocking adjustments to meet management goals.
2. Investigate the feasibility of installing a solar aerator at Row Lake #7 and Row Lake #8 to determine its effectiveness and potential use at other waters.
3. Open all lakes to winter fishing.
4. Stock catchable size (10 inches) tiger trout in Row Lake #3 to provide additional opportunity in the area.

West Slope

Lake Name	Fish Species	Management Goal	Management Action
Cook Lake	TG	Opportunity	Stocking Adjustment
	BRK- Triploid	Opportunity	Monitor
	RBT	Opportunity	Stocking Adjustment
Miller Lake	TG	Opportunity	Stocking Adjustment
	RBT	Opportunity	Stocking Adjustment
Pine Creek Reservoir	CRCT	Conservation/Trophy	Stocking Adjustment
Pine Creek Lower Pond	CRCT	Conservation	Monitor

Specific Recommendations for the West Slope lakes:

1. Make stocking adjustments to meet management goals.
2. Stock catchable size (10 inches) tiger trout in Cook and Miller lakes to provide additional opportunity in the area.
3. Allow winter fishing at all lakes except Pine Creek Reservoir.
4. Investigate the feasibility of installing a solar aerator at Cook and Miller lakes to determine its effectiveness and potential use at other waters.

North Creek Lakes

Lake Name	Fish Species	Management Goal	Management Action
Barker Res.	BRK - Triploid	Quality	Monitor
	RBT	Opportunity	Monitor
Lower Barker Res.	TG	Trophy/Quality	Stocking Adjustment
	SPL	Trophy/Quality	Stocking Adjustment
Long Willow Bottom Res.	TG	Trophy	Monitor
	CRCT	Conservation - Trophy	Monitor
Round Willow Bottom Res.	TG	Trophy	Monitor
	CRCT	Conservation - Trophy	Monitor
Dougherty Basin Lake	CRCT	Conservation	Monitor
Johnny Lake	CRCT	Quality	Monitor
Tall Four Reservoir	CRCT	Conservation	Monitor
Flat Lake	BRK - Triploid	Trophy	Stocking Adjustment
Joe Lay Reservoir	BRK - Triploid	Trophy	Stocking Adjustment
Yellow Lake	TG	Trophy	Stocking Adjustment
	BRK - Triploid	Trophy	Stocking Adjustment
Blue Lake NCL	TG	Trophy	Stocking Adjustment
	CRCT	Conservation-Quality	Treatment - Stocking Adjustment
North Creek Reservoir	CRCT	Opportunity	Monitor
Unnamed Pond below Tall Four	BRK	Opportunity	Monitor

Specific Recommendations for the North Creek lakes:

1. Provide a unique fishing experience at Lower Barker Reservoir and increase ice fishing opportunities in the area. Stock tiger trout and splake.
2. Make stocking adjustments to meet management goals.
3. Conduct a rotenone treatment at Blue Lake to remove fertile brook trout and restock with tiger and Colorado River cutthroat trout. This will also give UDWR the opportunity to renovate the upper reaches of North Creek for native cutthroat trout.
4. Restock Dougherty Basin Lake with sterile brook trout if/when other opportunities for a Colorado River cutthroat trout brood source can be secured.
5. Allow winter fishing at all lakes except Long and Round Willow Bottom reservoirs, and Dougherty Basin Lake. Maintain the seasonal closure (until July) at Dougherty Basin Lake to protect the CRCT brood.
6. Maintain tiger trout numbers at no more than 25% of the overall population in Yellow and Blue lakes.

North Slope Lakes

Lake Name	Fish Species	Management Goal	Management Action
Blind Lake	SPL	Trophy	Monitor
	GRY	Opportunity	Monitor
	BRK	Opportunity	Monitor
	RBT	Opportunity	Monitor
	CRCT	Opportunity	Stocking Adjustments
Fish Creek Lake	SPL	Trophy	Stocking Adjustments
	TG	Trophy	Stocking Adjustments
	CRCT	Quality	Monitor
Honeymoon Lake	TG	Trophy	Monitor
	BRK – Triploid	Trophy	Stocking Adjustments
Beaver Dam Reservoir	BRK – Triploid	Trophy	Stocking Adjustments
Green Lake NBS	BRK	Trophy	Habitat - Aerator
	GRY	Trophy	Habitat - Aerator
Pear Lake	BRK	Trophy	Habitat - Aerator
	GRY	Trophy	Habitat - Aerator
Coleman Reservoir	BRK	Trophy	Monitor
	RBT	Opportunity	Monitor
Solitaire Lake	TG	Trophy	Monitor
	CRCT	Trophy/Quality	Monitor
Bulberry Lake #1 (South)	TG	Opportunity	Stocking Adjustment
	BRK – Triploid	Opportunity	Stocking Adjustment
Bulberry Lake #2 (Moss)	TG	Quality	Stocking Adjustment
Bulberry Lake #3 (Clear)	TG	Quality	Stocking Adjustment
Bulberry Lake #4 (North)	TG	Quality	Stocking Adjustment
Heart Lake North	TG	Quality	Monitor
	BRK	Quality	Monitor
Heart Lake South	TG	Quality	Monitor
Bob's Hole	TG	Trophy	Stocking Adjustment
	BRK - Triploid	Trophy/Quality	Stocking Adjustment
Donkey Pond	BRK	Trophy	Stocking Adjustment
Left Hand Reservoir	BRK - Triploid	Opportunity/Quality	Stocking Adjustment
Lost Lake	BRK – Triploid	Quality/Trophy	Stocking Adjustment
Donkey Lake	BRK	Quality/Trophy	Treatment - Stocking Adjustment
Lava Lake	BRK	*Evaluate	Evaluate
Round Lake	BRK	Quality	Monitor

Specific Recommendations for the North Slope lakes:

1. Make stocking adjustments to meet management goals.
2. Stock sterile brook trout in Honeymoon Lake and Bulberry Lake #1.
3. Discontinue stocking cutthroat trout in Honeymoon Lake and Beaver Dam Reservoir.
4. Investigate the feasibility of installing a solar aerator at Pear and Green lakes to determine its effectiveness and potential use at other waters.
5. Monitor the fertile brook trout population in Heart Lake North and remove brook trout if necessary.
6. Conduct a rotenone treatment at Donkey Lake to remove fertile brook trout and restock with sterile brook trout to consistently maintain the quality/trophy management objective.

7. Allow winter fishing at all lakes except Solitaire Lake, the Bulberry lakes, Fish Creek Reservoir, Beaver Dam Reservoir, and Honeymoon Lake.
8. Maintain tiger trout numbers at no more than 25% of the overall population in Bob's Hole.

South Slope

Lake Name	Fish Species	Management Goal	Management Action
Posey Lake	TG	Trophy	Stocking Adjustment
	BRK	Trophy	Stocking Adjustment
	RBT	Opportunity	Evaluate - Stocking Adjustment
	SPL	Trophy	Stocking Adjustment
Tule Lake	BRK	Trophy	Stocking Adjustment
McGath Lake	BRK-Triploid	Trophy	Stocking Adjustment
Garkane Main Impoundment	RBT	Opportunity	Monitor
Garkane East Impoundment (King's Pasture)	TG	Opportunity	Stocking Adjustment
	CRCT	Conservation	Treatment
Short Lake	CRCT	Conservation/Trophy	Monitor
Garkane West Impoundment	CRCT	Conservation	Monitor
Grass Lake	BRK-Triploid	Quality/Trophy	Stocking Adjustment - Habitat
	CRCT	Quality/Trophy	Stocking Adjustment - Habitat
Green Lake SB	TG	Trophy	Stocking Adjustment
	CRCT	Quality	Stocking Adjustment
Deer Creek Lake	TG	Trophy	Stocking Adjustment
	BRK	Trophy	Stocking Adjustment
	CRCT	Quality/Trophy	Stocking Adjustment
Chriss Lake	BRK	Opportunity	Habitat - Dam Repair
Moosman Lake	TG	Trophy	Treatment - Stocking Adjustment
	BRK-Triploid	Trophy	Treatment - Stocking Adjustment
	CRCT	Trophy	Treatment - Stocking Adjustment

Specific Recommendations for the South Slope lakes:

1. Make stocking adjustments to meet management goals.
2. Incorporate a trophy fishing component in Posey Lake to include brook and tiger trout.
3. Maintain tiger trout numbers at no more than 25% of the overall population in Posey, Green, Deer Creek, and Moosman lakes.
4. Investigate the feasibility of improving habitat in Grass Lake.
5. Investigate the feasibility of repairing and improving the dams at McGath and Chriss lakes
6. Conduct a rotenone treatment at Moosman Lake to remove fertile brook trout and restock with sterile brook trout, tiger trout and Colorado River cutthroat trout to provide a more desirable fishing opportunity.
7. Allow winter fishing at all lakes except McGath.
8. Investigate options for weed control at Posey Lake.

Management Actions

Stocking Adjustments – Stocking adjustments should begin in 2014 and continue until all additions can be worked into the hatchery system.

Rotenone Treatments – Rotenone treatments have been recommended for four lakes (Garkane East Impoundment, Moosman Lake, Donkey Lake, and Blue Lake) and suggested as a possibility for Oak Creek Reservoir if brook trout size continues to decline. Oak Creek Reservoir treatment is dependent on effectiveness of regulation changes. Currently, the PIC recommends the following priority list: 1) Donkey Lake, 2) Moosman Lake, 3) Blue Lake, 4) Oak Creek Reservoir. Action should be taken to treat Donkey Lake as soon as possible.

Regulation Changes – The following regulation changes are recommended and should be taken to the Wildlife Board in 2014 to be included in the 2015 regulations.

1. General state wide limit of 4 trout at all lakes except: Dougherty Basin and Oak Creek Reservoirs.
2. Oak Creek Reservoir – Trout limit 16 fish per day
3. Winter fishing restriction (November 1 through the third Saturday of April) at the following waters:

Scout Lake	Pacer Lake	Pine Creek Reservoir
Round Willow Bottom	Long Willow Bottom	Solitaire Lake
Beaver Dam Reservoir	Fish Creek Reservoir	Bulberry Lakes
Honeymoon Lake	McGath Lake	

4. Maintain current seasonal closure and species restrictions at Dougherty Basin

The PIC recognizes that some lakes could be vulnerable to excessive winter fishing and recommends that the following list of waters be monitored closely and added to the restrictive list in the event the UDWR and Wildlife Board determine that winter fishing is negatively impacting the resource:

Blue Lake GT	Purple Lake	Flat Lake
Yellow Lake	Joe Lay Reservoir	Green Lake NBS
Lost Lake	Round Lake	Tule Lake
Green Lake SB	Deer Creek Lake	

Habitat – Habitat recommendations included: 1) dam repairs, 2) spring development, 3) aeration devices, and 4) Vegetation Control. The PIC recommends the UDWR secure funding through the Blue Ribbon Advisory Council or other funding sources for spring development and aeration devices and begin work as soon as possible. Additionally, contact should be made with water users concerning dam repairs on Chriss and McGath lakes.

Monitoring and Evaluation

The PIC recommends the following actions be included in monitoring and evaluating this plan:

1. An annual public meeting should be held to inform the public of progress and any recent developments.
2. The UDWR should develop a strategy for informing the public of recent events and activities taking place on Boulder Mountain.
3. Conduct a full evaluation of the Boulder Mountain Management Plan in 2022. This should include a follow-up online survey and a new PIC to evaluate the success and failures of this plan and make any modifications.

Summary

The PIC recognized the uniqueness of fisheries on Boulder Mountain and focused their attention on improving the quality and diversity of opportunities available to anglers (Table 2). The PIC recognized the long standing tradition/history of trophy brook trout fisheries on the mountain and made recommendations to improve numerous fisheries. Based on this plan, 35% of the lakes on Boulder Mountain will be managed for trophy brook trout and 83% will have a trophy fish component in the fishery (Table 3). The PIC recognizes the challenges and issues that may arise in implementing this plan and are eager to assist UDWR however possible. This plan should assist UDWR with specific actions and measurable objectives that will address the three major concerns identified by the Boulder Mountain PIC:

1. *Fish size – caused by overstocking and decreased angler harvest.* This concern should be addressed by adjusting stocking rates, changing regulations to allow additional harvest and encouraging anglers to harvest more fish.
2. *Habitat or lack of over winter survival of fish.* This concern should be addressed by investigating the use of solar aeration devices, spring development, and weed control measures.
3. *Fishing pressure – quality waters are receiving excessive angler pressure and reducing the overall quality of the fishing experience due to tougher fishing conditions and anglers looking for a secluded experience.* By improving and developing additional quality fishing opportunities, anglers should disperse to more lakes and have additional locations with quality fishing.

UDWR Comments and Implementation Plan

The UDWR would like to thank the PIC for the hard work and diligence they put into the development of the Boulder Mountain Sport Fish Management Plan. The recommendations and ideas are well thought out and should provide improved fishing opportunities for Utah's anglers. The following is a tentative outline for the implementation of the recommendations provided by the PIC. The UDWR will make every effort to implement all recommendations as soon as possible; however the timing may need to be adjusted based on unforeseen circumstances.

Recommendation	Implementation Schedule
Stocking Adjustments	
Reductions/Canceled Stocking	Spring 2014
Additions	
Fingerling	Spring 2014 - Spring 2015
Catchable	Spring 2015 – Spring 2016
Habitat	
Aerators	Seek Funding for 2015 Installation
Pipe	Seek Funding for 2016 Installation
Vegetation	Begin discussion with USFS 2014
Dam Repair	Begin discussion with water users 2014
Regulations	Present to Wildlife Board 2014 for 2015 Implementation
Rotenone Treatments	Begin public process in 2014
Evaluations	Evaluate those lakes listed 2014-2015
Monitoring	Begin Monitoring in 2015

Utah Division of Wildlife Resources

Aquatics Staff

Richard Hepworth – Southern Region Aquatics Manager — 7-31-14 Date

Roger Wilson – Aquatics Chief — 7-31-14 Date

Figure 1: Boulder Mountain, located between the Fremont and Escalante rivers in south central Utah.

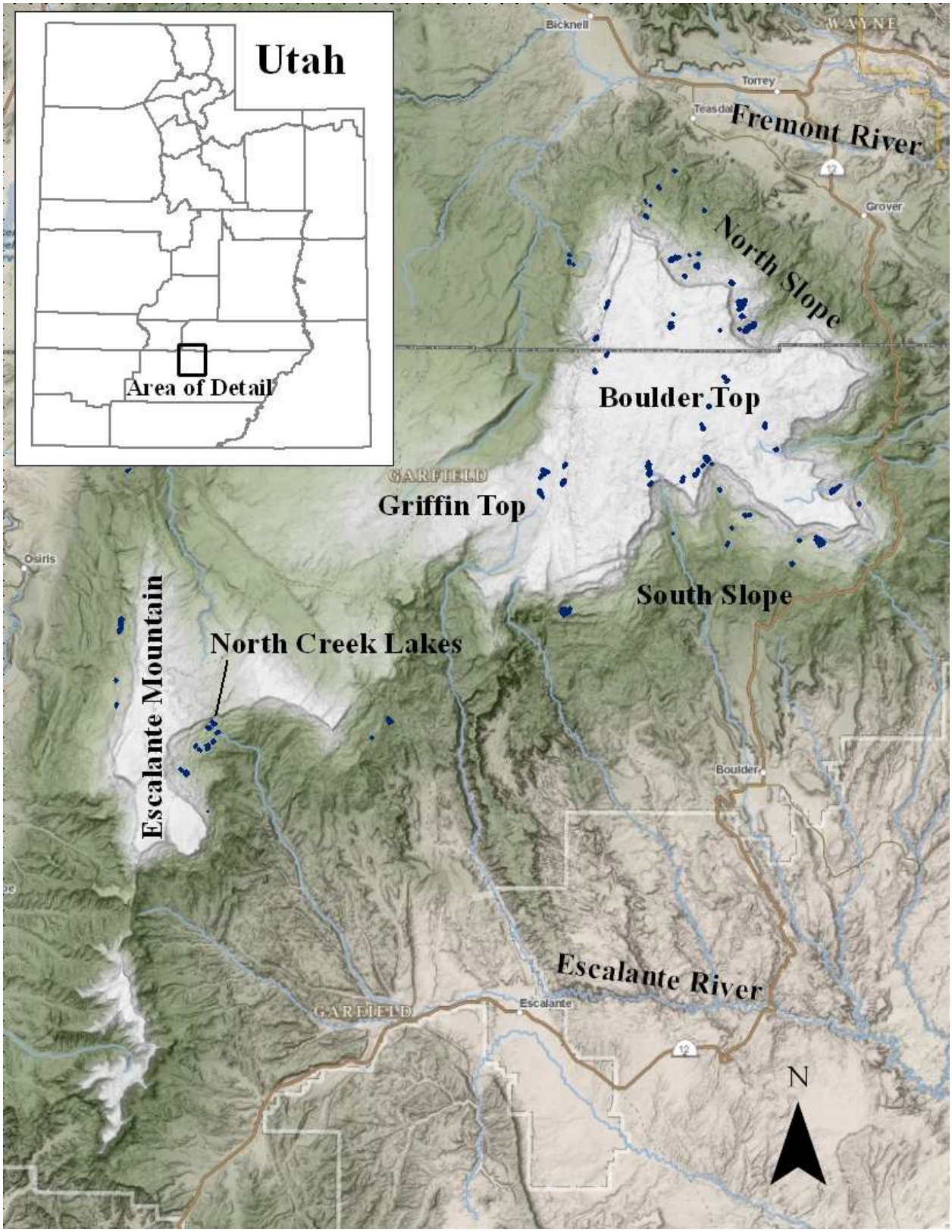


Figure 2. Trophy-sized brook trout, typical of the quality sized fish anglers have come to expect from lakes on the Boulder Mountain.

Table 1: Boulder Mountain current (2013) management summary by species. Most lakes are managed for multiple species. Total lakes – 82.

Species	Number of Lakes	Percent of Lakes
Brook Trout	53	65%
Cutthroat Trout	25	30%
Cutthroat Only	10	12%
Tiger Trout	14	17%
Splake	3	4%
Total Hybrid	17	21%
Rainbow Trout	12	15%
Grayling	15	18%

Table 2. Boulder Mountain recommended management strategy by species. Most lakes are managed for multiple species. Total lakes – 82.

Species	Number of Lakes	Percent of Lakes
Brook Trout	51	62%
Cutthroat Trout	21	26%
Cutthroat Only	8	10%
Tiger Trout	32	39%
Splake	5	5%
Total Hybrid	36	44%
Rainbow Trout	11	13%
Grayling	14	17%

Table 3. Percent of Boulder Mountain lakes placed under each management recommendation. Many lakes are managed for multiple species and multiple management goals. Total lakes – 82.

Species	Management Concept			
	Trophy	Quality	Opportunity	Conservation
Brook Trout	35%	21%	10%	
Bonneville Cutthroat Trout	0%	0%	0%	1%
Colorado R. Cutthroat Trout	10%	7%	2%	13%
Tiger Trout	26%	6%	6%	
Splake	5%	1%	0%	
Rainbow Trout	0%	1%	12%	
Grayling	9%	5%	2%	
Total	83%	46%	33%	13%

Boulder Mountain Sportfish Management Plan
Public Involvement Committee Signatories

Dixie National Forest — Date: 7/7/2014

Dixie National Forest — Date:

Blue Ribbon Fisheries Advisory Council — Date: 7/31/14

Rusty Aiken – Southern Regional Advisory Council Member — Date: 7-11-14

Mike James – Angler, Guide — Date: 6-17-2014

Dustin Rooks – Angler — Date: 6/17/2014

Scott Albrecht – Angler — Date: 6/17/2014

Jason Porter – Angler — Date: 7-7-14

Lance Larsen – Angler — Date: 8-6-14

Dewain Peterson – Angler — Date: 6-17-14

Graig Ogden - Angler — Date:

APPENDIX I

Boulder Mountain Sportfish
Public Opinion Survey Results

June 2013

1. Which of the following species do you target most often when fishing at Boulder Mountain lakes? (Check one.)

	Response Percent	Response Count
Brook trout	**68.0%**	**164**
Brown trout	0.4%	1
Native cutthroat trout	9.5%	23
Grayling	1.2%	3
Rainbow trout	1.2%	3
Tiger trout	5.8%	14
Splake trout	2.1%	5
No specific species	11.6%	28
	answered question	**241**
	skipped question	**1**

2. Which fish species are important to you when fishing at Boulder Mountain lakes? Please rank them from 1 to 7 in order of importance, with 1 as most important.

	1	2	3	4	5	6	7	Rating Count
Brook trout	**73.0% (168)**	8.7% (20)	6.5% (15)	3.0% (7)	1.7% (4)	3.5% (8)	3.5% (8)	230
Brown trout	4.1% (9)	12.4% (27)	7.3% (16)	12.8% (28)	**22.0% (48)**	21.1% (46)	20.2% (44)	218
Native cutthroat trout	18.5% (42)	**21.1% (48)**	15.9% (36)	14.5% (33)	9.3% (21)	6.6% (15)	14.1% (32)	227
Grayling	4.6% (10)	13.0% (28)	13.0% (28)	14.8% (32)	12.0% (26)	17.6% (38)	**25.0% (54)**	216
Rainbow trout	3.2% (7)	6.4% (14)	13.2% (29)	12.8% (28)	17.4% (38)	16.4% (36)	**30.6% (67)**	219
Tiger trout	10.9% (24)	**29.4% (65)**	14.9% (33)	13.6% (30)	13.1% (29)	7.7% (17)	10.4% (23)	221
Splake trout	7.8% (17)	9.6% (21)	**21.6% (47)**	15.1% (33)	10.6% (23)	17.4% (38)	17.9% (39)	218
						answered question		**232**
						skipped question		**10**

3. Which of the following species (not currently available in the Boulder Mountain lakes) would you be interested in fishing for? (Check all that apply.)

	Response Percent	Response Count
Northern pike	11.7%	27
Tiger muskie	20.9%	48
Saugeye (a hybrid of walleye and sauger)	10.4%	24
Lake trout (Mackinaw)	22.6%	52
None of the above	**57.8%**	**133**
	answered question	**230**
	skipped question	**12**

4. Would you be in favor of chemically removing stunted brook trout from Boulder Mountain lakes in order to improve fishing?

	Response Percent	Response Count
Yes	**59.5%**	**138**
No	28.0%	65
No opinion	12.5%	29
	answered question	**232**
	skipped question	**10**

5. Of the following lakes on Boulder Mountain, which one would you be most likely to fish? (Check one.)

	Response Percent	Response Count
Blind Lake	17.0%	39
Fish Creek Reservoir	**23.9%**	**55**
Donkey Reservoir	12.6%	29
Posey Lake	7.0%	16
McGath Lake	23.5%	54
Lower Bowns Reservoir	7.0%	16
Scout Lake	3.0%	7
Blue Lake (Griffin Top)	3.9%	9
Raft Lake	2.2%	5
	answered question	**230**
	skipped question	**12**

6. When fishing on Boulder Mountain, what type of experience are you interested in? (Check all that apply.)

	Response Percent	Response Count
Trophy fishing	**72.2%**	**169**
Seclusion	62.0%	145
Family outing (camping, hiking, fishing)	38.0%	89
Catching numerous species	25.6%	60
Catching a lot of fish, regardless of size	19.2%	45
	answered question	**234**
	skipped question	**8**

7. When choosing a destination or lake to fish on Boulder Mountain, what is the most important factor influencing your decision? (Check one.)

	Response Percent	Response Count
Fish size	**47.0%**	**110**
Access (hike/drive)	13.2%	31
Fish species	20.9%	49
Scenery	9.8%	23
Catch rate	7.3%	17
Other	1.7%	4
	answered question	**234**
	skipped question	**8**

8. What is your favorite lake on Boulder Mountain?

	Response Count
	197
answered question	197
skipped question	45

Lake/Reservoir	Respondents	Percent
McGath Lake	28	14%
Fish Creek/Beaver Dam	25	13%
Blind Lake	13	7%
Donkey Reservoir	13	7%
Lost (Government) Lake	12	6%
Oak Creek Res.	10	5%

9. Which lake(s) would you most like to see improved and what change(s) would you recommend?

	Response Count
	150
answered question	150
skipped question	92

Lake/Reservoir	Respondents	Suggested Change(s)
Donkey Reservoir	32	Bigger Fish/Treatment/More like Fish Creek
Oak Creek Reservoir	18	Bigger Fish/Treatment/Keep Brook Trout
Fish Creek Reservoir	10	Special Regulations

10. How would you rate the current, overall management of the fisheries on Boulder Mountain? (Check one.)

	Response Percent	Response Count
Excellent	11.5%	26
Good	**63.0%**	**143**
Fair	22.0%	50
Poor	3.5%	8
	answered question	**227**
	skipped question	**15**

APPENDIX 2

Boulder Mountain Lakes
Current (2013) Fish Species Composition

Lake Name	Area	Stocked							Wild		Movement			
		BRK	RBT	CRCT	BVCT	TG	SPL	GRY	BRK	CRCT	BRK	GRY	TG	SPL
Chuck Lake	Boulder Top	x		x	x									
Crescent Lake	Boulder Top			x										
Bess Lake	Boulder Top	x						x						
Big Lake	Boulder Top	x						x						
Crater Lake	Boulder Top	x						x						
Dead Lake	Boulder Top	x						x						
Pleasant Lake	Boulder Top	x						x						
Raft Lake	Boulder Top	x						x						
Circle Lake	Boulder Top							x						
Dead Horse Lake	Boulder Top										x	x		
Cub Lake	Boulder Top	x												
East Lake	Boulder Top	x												
Halfmoon Lake	Boulder Top	x												
Horseshoe Lake	Boulder Top	x												
Ledge Lake	Boulder Top	x												
Ridge Lake	Boulder Top	x												
Rim Lake	Boulder Top	x												
Spectacle Lake	Boulder Top	x												
Surveyor Lake	Boulder Top	x												
Lower Bowns Reservoir	East Slope		x			x								
Scout Lake	East Slope	x												
Oak Creek Reservoir	East Slope								x					
Antimony Lake	Escalante Mtn		x											
Little Antimony Lake	Escalante Mtn		x											
Otter Lake	Escalante Mtn	x												
Pacer Lake	Escalante Mtn	x												
Rob's Reservoir	Escalante Mtn				x									
Row Lake #7 (Banana)	Griffin Top	x	x					x						
Row Lake #3	Griffin Top		x											
Blue Lake GT	Griffin Top	x						x						
Purple Lake	Griffin Top	x						x						
Row Lake #8	Griffin Top	x						x						
Barker Reservoir	North Cr Lakes	x	x											
Lower Barker Reservoir	North Cr Lakes	x	x											
Long Willow Bottom Reservoir	North Cr Lakes			x		x								
Round Willow Bottom Resevoir	North Cr Lakes			x		x								

Lake Name	Area	Stocked							Wild		Movement			
		BRK	RBT	CRCT	BVCT	TG	SPL	GRY	BRK	CRCT	BRK	GRY	TG	SPL
Dougherty Basin Lake	North Cr Lakes			x										
Johnny Lake	North Cr Lakes			x										
Tall Four Reservoir	North Cr Lakes			x										
Flat Lake	North Cr Lakes	x												
Joe Lay Reservoir	North Cr Lakes	x												
Yellow Lake	North Cr Lakes	x												
Blue Lake NCL	North Cr Lakes								x					
North Creek Reservoir	North Cr Lakes								x					
Unnamed Pond below Tall Four	North Cr Lakes								x					
Blind Lake	North Slope		x		x		x	x	x					
Coleman Reservoir	North Slope	x	x											
Fish Creek Lake	North Slope			x	x	x	x							
Honeymoon Lake	North Slope			x		x								
Solitaire Lake	North Slope			x		x								
Beaver Dam Reservoir	North Slope	x		x	x								x	x
Bulberry Lake #1 (South)	North Slope					x				x				
Green Lake NBS	North Slope	x						x						
Pear Lake	North Slope	x						x						
Heart Lake North	North Slope					x			x					
Bulberry Lake #2 (Moss)	North Slope					x								
Bulberry Lake #3 (Clear)	North Slope					x								
Bulberry Lake #4 (North)	North Slope					x								
Heart Lake South	North Slope					x								
Bob's Hole	North Slope	x												
Donkey Pond	North Slope	x												
Left Hand Reservoir	North Slope	x												
Lost Lake	North Slope	x												
Round Lake	North Slope	x												
Donkey Lake	North Slope								x					
Lava Lake	North Slope								x					
Posey Lake	South Slope	x	x											
Garkane Main Impoundment	South Slope		x											
Garkane East Impoundment	South Slope			x		x								
Green Lake SB	South Slope			x										
Short Lake	South Slope			x										
Garkane West Impoundment	South Slope									x				

Lake Name	Area	Stocked							Wild		Movement			
		BRK	RBT	CRCT	BVCT	TG	SPL	GRY	BRK	CRCT	BRK	GRY	TG	SPL
Deer Creek Lake	South Slope	x			x									
McGath Lake	South Slope	x												
Tule Lake	South Slope	x												
Chriss Lake	South Slope								x					
Moosman Lake	South Slope				x				x					
Grass Lake	South Slope													
Cook Lake	West Slope	x	x											
Miller Lake	West Slope		x											
Pine Creek Reservoir	West Slope			x										
Pine Creek Lower Pond	West Slope									x				

STATE ACTIONS
Resource Development Coordinating Committee
Public Lands Policy Coordination Office
5110 State Office Building
SLC, UT 84114
Phone No. 537-9230

1. State Agency Utah Division of Wildlife Resources 1470 N. Airport Rd Cedar City, UT 84721	**2. Approximate date project will start:** As early as fall 2014, but most likely between 2015 and 2020

3. Title of proposed action: Restoration of native Bonneville cutthroat, Colorado River cutthroat trout, southern leathersides, and bluehead suckers in southern Utah streams

4. Description of Project: Bonneville cutthroat trout (BCT) and southern leathersides (SLS) are fish species native to the Bonneville basin, while Colorado River cutthroat trout (CRCT) and bluehead suckers (BHS) are native to the Colorado River basin. Efforts to conserve these species and prevent their listing under the Endangered Species Act include expanding remnant populations within the drainages where they are found and establishing self-sustaining populations in streams with adequate habitat. Utah Division of Wildlife Resources (UDWR) proposes to restore BCT in Pinto Creek, Bear Creek, Mammoth Creek and its tributaries upstream of Mammoth Spring, and Horse and Birch creeks NE of Widstoe; BCT and SLS in East Fork Sevier River and its tributaries upstream of Tropic Reservoir; and CRCT and BHS in Calf Creek. The restoration project in Mammoth Creek is intended to expand a remnant population of BCT discovered in that stream in 2012. Activities will include: 1) constructing fish passage barriers where necessary to prevent the upstream migration of non native fish from downstream reaches; 2) removing remaining non native fish from project streams with the piscicide rotenone; 3) transferring native fish from nearby streams to establish populations in the project area.

5. Location and detailed map of land affected (site location map required, electronic GIS map preferred) (include UTM coordinates where possible) **(indicate county).**
See Attachment for Map

UTM (NAD83): Pinto Creek – 120279588E 4153741N (Washington); Bear Creek – 120363517E 4203531N (Iron and Garfield); Mammoth Creek – 120349063E 4168549N (Iron and Garfield); Upper EF Sevier River – 120385921E 4153256N (Garfield and Kane); Horse Creek – 120418173E 4191220N (Garfield); Birch Creek – 120418271E 4193439N (Garfield); Calf Creek – 120463797E 4184754N (Garfield).

6. Possible significant impacts likely to occur: Non native fish will be removed from project streams and native fish will be established in their place. This project will help decrease the threats to BCT, CRCT, SLS, and BHS and ensure long-term conservation as outlined in formal conservation agreements and strategies. This action will help to preclude the listing of these species under the Endangered Species Act.

7. Identify local government affected: Garfield, Iron, Kane, and Washington counties

a. Has the government been contacted? Yes

b. When? DWR met with county commissions in spring 2014

c. What was the response? Support by Iron, Kane, and Washington counties; no official response from Garfield county

d. If no response, how is the local government(s) likely to be impacted? See #6

8. For acquisitions of land or interests in land by DWR or State Parks please identify state representative and state senator for the project area. Name and phone number of state representative, state senator near project site, if applicable:

a. Has the representative and senator been contacted?

9. Areawide clearinghouse(s) receiving state action: (to be sent out by agency in block 1) Five County Association of Governments	
10. For further information, contact: Mike Hadley 1470 N. Airport Road Cedar City, Utah 84721 Phone: (435)865-6106	**11. Signature and title of authorized officer** **Date:**

INSTRUCTIONS

I. Whenever a State agency proposes or is administratively responsible for an action not exempted, it shall complete a State Action form and forward one copy to the Governor's Office of Planning and Budget and the affected areawide clearinghouse(s).

Questions encountered with the areawide clearinghouse review should be directed to the areawide clearinghouse. The Governor's Office of Planning and Budget will wait for the affected areawide clearinghouse(s) to complete their review before issuing a final clearance to the originator on this STATE ACTION.

II. If the proposed action affects lands within the Jordan River Natural Conservation Corridor (see http://www.mitigationcommission.gov/wetlands/pdf/wetlands_jornac.pdf), a copy of this completed form must also be submitted to:

Jordan River Natural Areas Forum
C/O State and Local Planning
Governor's Office of Planning and Budget
116 State Capitol
Salt Lake City, UT 84114

Questions regarding JRNACC or JRNAF should be directed to 538-1027.

UTAH STATE AND AREAWIDE CLEARINGHOUSES

AREAWIDE CLEARINGHOUSES	COUNTIES	MONTHLY MEETINGS
Bear River Association of Governments Roger C. Jones, Executive Director 170 North Main, Room 2 Logan, UT 84321 Phone (435) 752-7242 rogerj@brag,dst.ut.us	Box Elder Cache Rich	3rd Tuesday 1:00 p.m
Five County Association of Governments Kenneth Sizemore, Executive Director 1070 West 1600 South, Building B St George, UT 84770 Phone (435) 673-3548 ksizemore@fivecounty.utah.gov	Beaver Garfield Iron Kane Washington	2nd Wednesday 1:30 p.m
Mountainland Association of Governments Darrell Cook, Executive Director 586 East 800 North Orem, UT 84097-4146 Phone (801) 229-3800 dcook@mountainland.org	Summit Utah Wasatch	4th Wednesday 7:00 p.m
Six County Association of Governments Russell Cowley, Executive Director 250 North Main Richfield, UT 84701 Phone (435) 893-0712 rcowley@sixcounty.com	Juab Millard Piute Sanpete Sevier Wayne	2nd Wednesday 1:00 p.m
Southeastern Utah Association of Governments William D. Howell, Executive Director 375 South Carbon Ave Price, UT 84501-0881 Phone (435) 637-5444 bhowell@seualg.utah.gov	Carbon Emery Grand San Juan	3rd Thursday 1:00 p.m
Uintah Basin Association of Governments Laurie Brummond, Executive Director 330 East 100 South Roosevelt, UT 84066 Phone (435) 722-4518 laurieb@ubaog.org	Daggett Duchesne Uintah	3rd Thursday 1:00 p.m
Wasatch Front Regional Council Chuck Chappell, Executive Director 295 North Jimmy Doolittle Road Salt Lake City, UT 84116 Phone (801) 363-4250 cchappell@wfrc.org	Davis Morgan Salt Lake Tooele Weber	4th Thursday 3:00 p.m

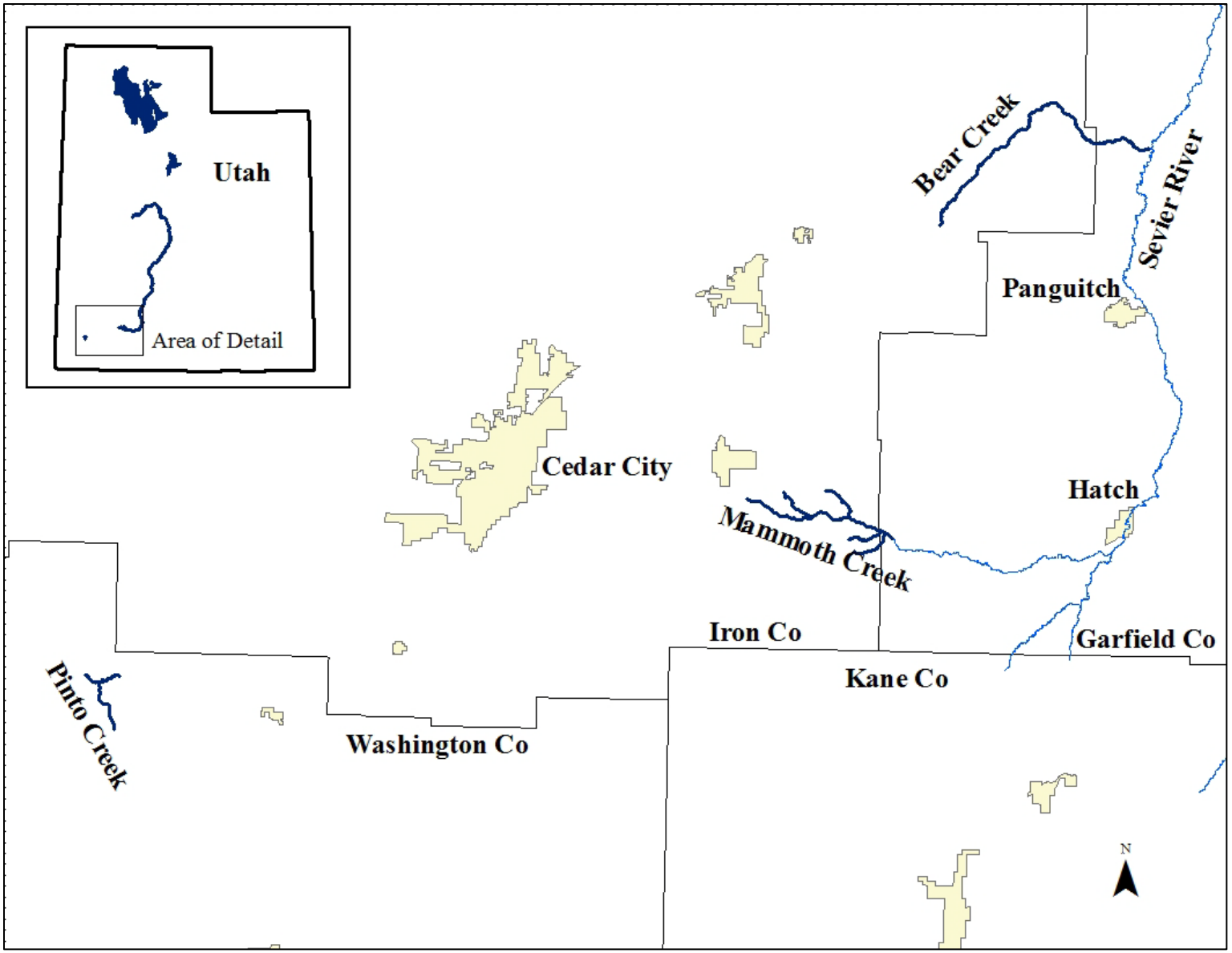


Figure 1. Location of Pinto Creek, Bear Creek, and Mammoth Creek. Stream reaches targeted for native fish restoration are in bold.

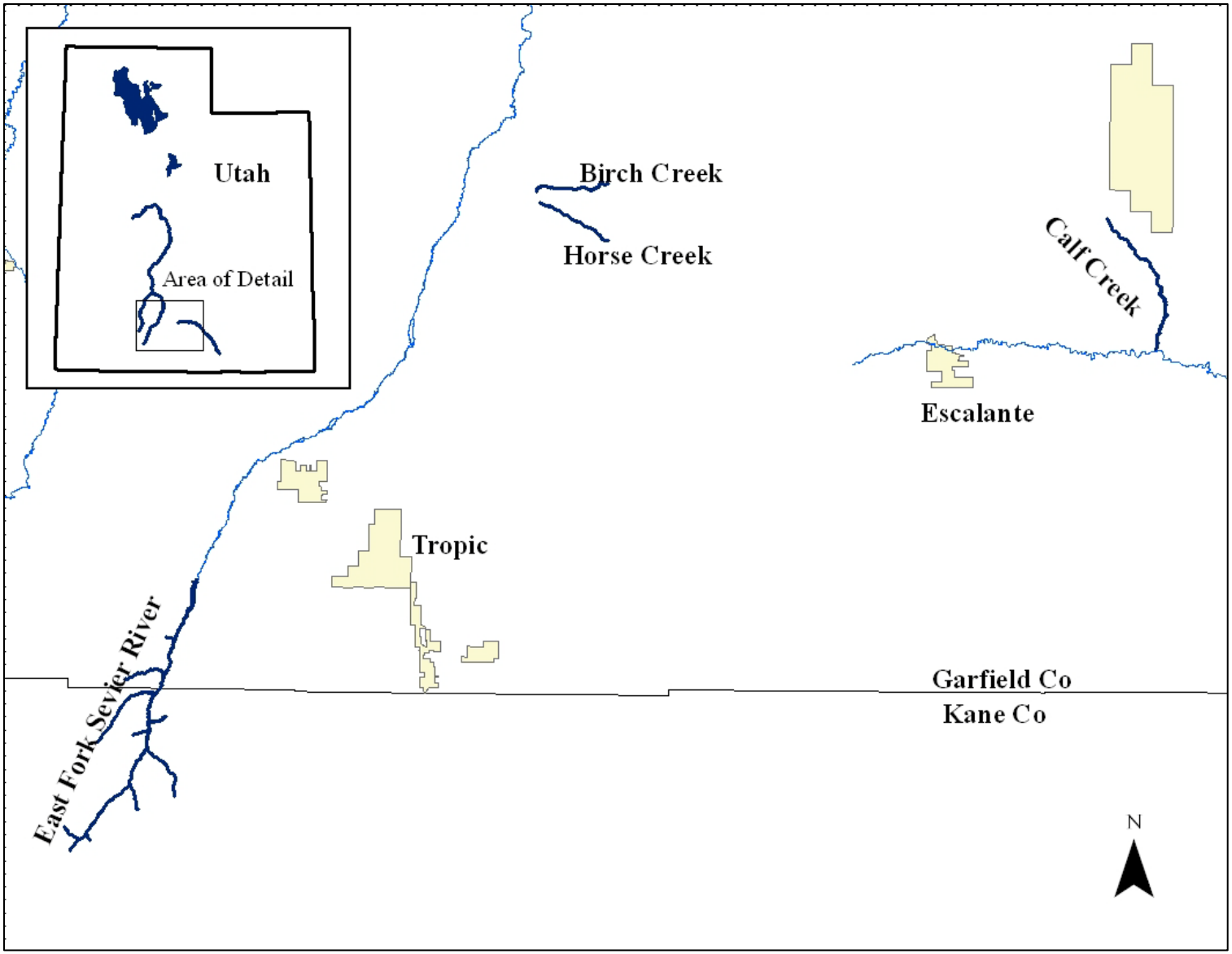


Figure 2. Location of Upper East Fork Sevier River, Horse Creek, Birch Creek, and Calf Creek. Stream reaches targeted for native fish restoration are in bold.