

SADDLE HORSE - TREND STUDY NO. 10R-15-10

Vegetation Type: Mountain Brush

Range Type: Substantial Deer Summer, Crucial Elk Summer (Calving habitat)

NRCS Ecological Site Description: Upland Shallow Loam (Pinyon-Utah Juniper), R034XY322UT

Land Ownership: BLM

Elevation: 7540 ft. (2299 m)

Aspect: Southeast

Slope: 12%

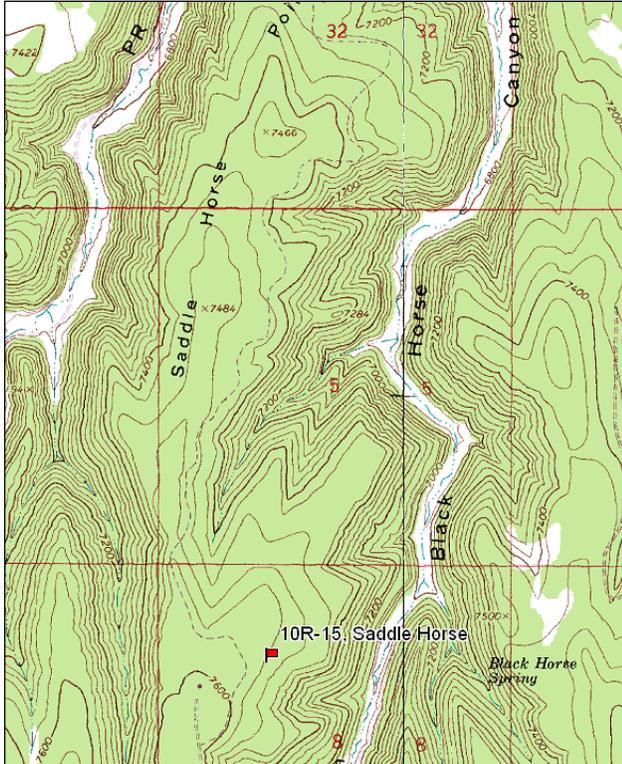
Transect bearing: 40° magnetic

Belt placement: line 1(11ft), line 2(34 ft), line 3(59 ft), line 4(71 ft) line 5 (95 ft).

Directions:

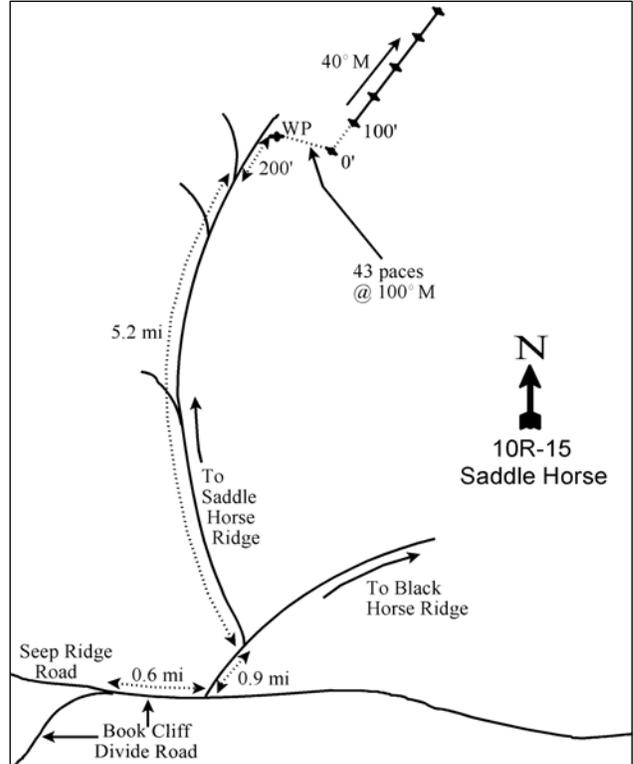
From the intersection of Seep Ridge road and Book Cliffs Divide road, continue 0.6 miles to an intersection with the road to Black Horse Ridge. Turn left and go 0.9 miles to the intersection with the road to Saddle Horse Ridge. Go left here and continue 5.2 miles to the third fork (staying right through two forks). From the third fork the witness post is approximately 200 feet on the right side of the road. From the witness post the 0' stake is 43 paces at 100°M.

Map Name: Seep Canyon



Township: 15S Range: 24E Section: 8

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 649728 E 4377121 N

SADDLE HORSE - TREND STUDY NO. 10R-15

Site Information

Site Description: The study samples a chaining that was done in the 1960's on Saddle Horse Ridge, which is between PR Canyon and Black Horse Canyon. The site supports a mixed community of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), true mountain mahogany (*Cercocarpus montanus*), antelope bitterbrush (*Purshia tridentata*), pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*). A small fire burned the last 100 feet of the baseline sometime between 2000 and 2005. The area has moderate to heavy use by elk, but there is little cattle use here since there is no available water on the ridge. Grazing in the area is managed by the Bureau of Land Management as part of the Sweetwater allotment. Pellet group transect data has estimated fluctuating use by elk with heavy use in 1998 and 2005, more moderate use in 2000 and light use in 2010. Estimated deer use was light in 1998 and 2000, but increased to more moderate use in 2005 and 2010. Cattle use was sampled at light rates in 1998 and 2010 (Table - Pellet Group Data).

Browse: The site supports a variety of browse with the key species being mountain big sagebrush, true mountain mahogany and bitterbrush. Mountain big sagebrush is not the preferred shrub in this area and has displayed mostly light to moderate use. The key shrub with respect to abundance and preference is bitterbrush. The bitterbrush population is mostly mature with low to moderate decadence, good vigor and very heavy utilization. Recruitment of young bitterbrush plants has been mostly good over the course of the study. The other key browse species, true mountain mahogany, consists of a small population of mature and healthy, but heavily used plants. Recruitment of young mahogany plants has been minimal since 1998. Other shrubs encountered include rubber rabbitbrush (*Chrysothamnus nauseosus* ssp. *hololeucus*), snowberry (*Symphoricarpos oreophilus*) and pinyon and juniper trees that have reestablished on the site since the chaining (Table - Browse Characteristics). Point-center quarter data has shown a fairly stable population of mature trees (Table - Point-Quarter Tree Data) with little change in cover since 1998 (Table - Browse Trends).

Herbaceous Understory: Grasses are fairly diverse on the site, though intermediate wheatgrass (*Agropyron intermedium*) provides nearly all of the grass cover. The other grass species that are not very abundant include species such as sedge (*Carex* sp.), Indian ricegrass (*Oryzopsis hymenoides*), mutton bluegrass (*Poa fendleriana*) and bottlebrush squirreltail (*Sitanion hystrix*). Cheatgrass (*Bromus tectorum*) is present on the site, but is not abundant. Forbs are not abundant and do not provide much additional forage. The most common species are Watson penstemon (*Penstemon watsonii*) and scarlet globemallow (*Sphaeralcea coccinea*) (Table - Herbaceous Trends).

Soil: The soil has a sandy clay loam to sandy loam texture with a neutral soil reaction (pH 7.0) (Table - Soil Analysis Data). Calcium carbonate deposits are common on rocks within the soil, some up to 1/4 inch thick. Bare ground cover is low with good protective cover provided by vegetation, litter, rock and pavement cover (Table - Basic Cover). The soil erosion condition was classified as slight in 2005 due to some rill erosion and minor soil pedestaling. The soil erosion condition was classified as stable in 2010.

Trend Assessments

Browse:

- **1998 to 2000 - stable (0):** There was a decrease in the densities of all three key browse species, mountain big sagebrush, true mountain mahogany and bitterbrush, though cover remained similar for all three species. Decadence of bitterbrush increased slightly from 0% to 13%. Recruitment of young plants decreased in mountain big sagebrush and bitterbrush, though it remained good for both species.
- **2000 to 2005 - slightly down (-1):** The density of the three key browse species returned to 1998 levels, though the cover of bitterbrush decreased from 6% to 4%. Decadence of bitterbrush increased to 31% and decadence of true mountain mahogany increased to 33%.
- **2005 to 2010 - slightly up (+1):** There was little change in the density or cover of the three browse species, but decadence of bitterbrush and mahogany decreased to low levels.

Grass:

- **1998 to 2000 - slightly down (-1):** The sum of nested frequency of perennial grasses decreased by 16% and cover decreased from 19% to 14%.
- **2000 to 2005 - down (-2):** There was a 31% decrease in the sum of nested frequency of perennial grasses and cover decreased to 11%. Intermediate wheatgrass had a significant decrease in nested frequency.
- **2005 to 2010 - slightly up (+1):** The perennial grass sum of nested frequency increased by 16% and cover increased to 13%.

Forb:

- **1998 to 2000 - slightly down (-1):** The sum of nested frequency of perennial forbs decreased and cover decreased from 2% to around 1%. Forbs were not abundant on the site.
- **2000 to 2005 - stable (0):** There was little change in the sum of nested frequency or cover of perennial forbs.
- **2005 to 2010 - slightly up (+1):** The perennial forb sum of nested frequency increased to 1998 levels, though cover remained low.

DEER DESIRABLE COMPONENTS INDEX - HIGH POTENTIAL SCALE --

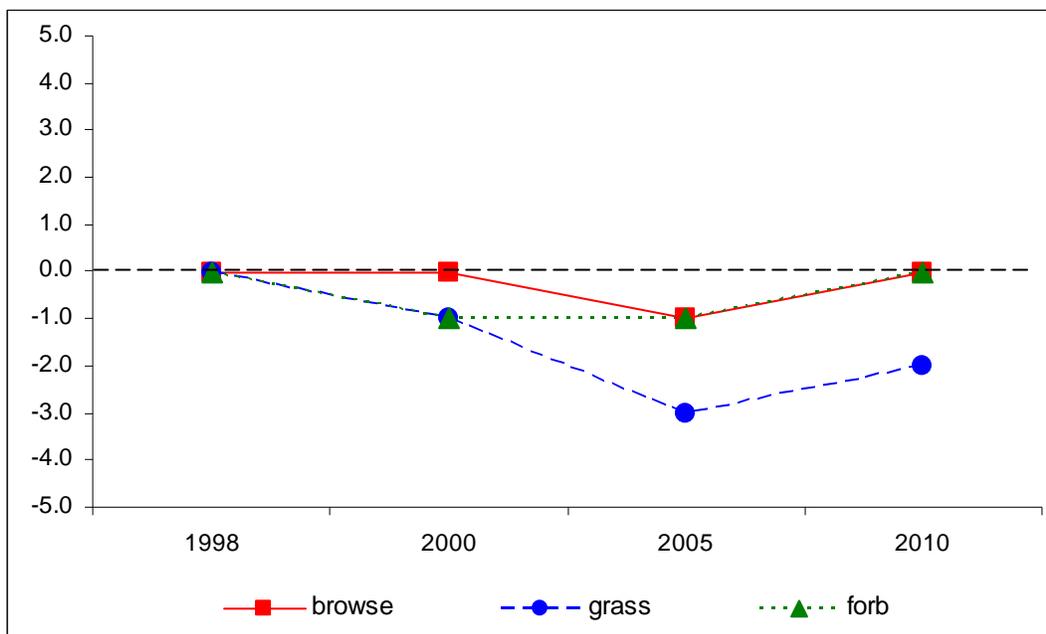
Management unit 10R, study no: 15

Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
98	17.9	15.0	14.3	30.0	-0.2	3.5	0.0	80.5	Good
00	15.5	12.6	9.5	27.6	0.0	1.6	0.0	66.8	Fair
05	13.3	8.0	11.1	22.1	-0.7	2.2	0.0	56.0	Poor-Fair
10	15.0	13.3	3.9	25.7	-0.7	2.7	0.0	60.1	Fair

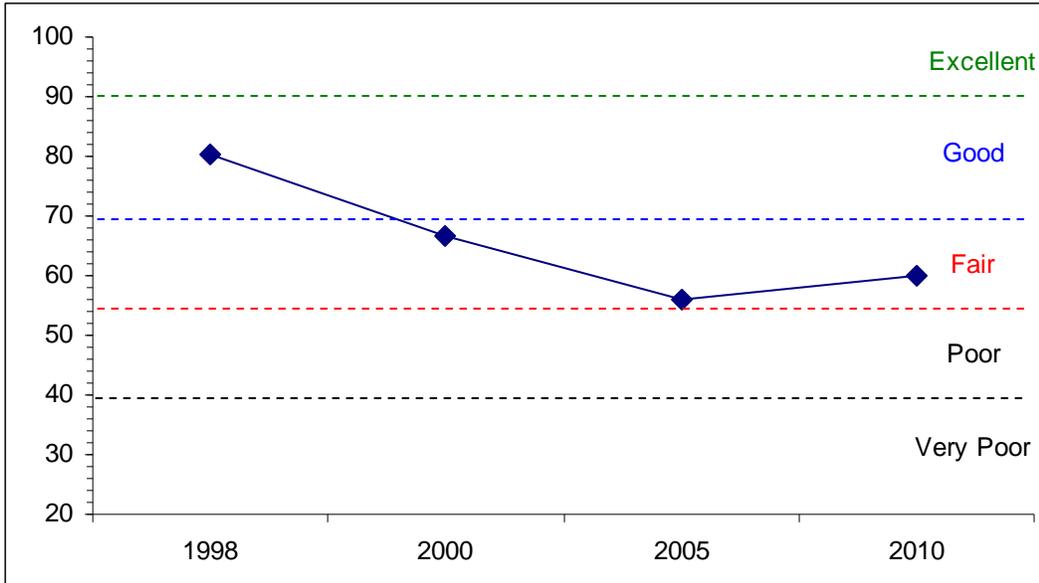
Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--

Management unit 10R, Study no: 15



DEER DESIRABLE COMPONENTS INDEX TREND, HIGH POTENTIAL--
 Management unit 10R, Study no: 15



HERBACEOUS TRENDS--
 Management unit 10R, Study no: 15

Type	Species	Nested Frequency				Average Cover %			
		'98	'00	'05	'10	'98	'00	'05	'10
G	Agropyron cristatum	b16	a-	ab4	a-	.19	-	.15	-
G	Agropyron intermedium	b332	b321	a213	a246	16.06	12.37	9.80	12.44
G	Bromus inermis	-	-	-	5	-	-	-	.00
G	Bromus tectorum (a)	b29	a-	bc43	c72	.23	-	.87	.88
G	Carex sp.	c63	bc53	a23	ab28	1.82	1.10	.31	.14
G	Oryzopsis hymenoides	14	3	5	9	.48	.00	.12	.10
G	Poa fendleriana	29	18	10	23	.40	.30	.10	.14
G	Sitanion hystrix	b18	a-	ab16	a3	.38	-	.55	.03
Total for Annual Grasses		29	0	43	72	0.23	0	0.87	0.87
Total for Perennial Grasses		472	395	271	314	19.36	13.78	11.04	12.86
Total for Grasses		501	395	314	386	19.59	13.78	11.92	13.74
F	Antennaria rosea	6	3	3	8	.19	.06	.09	.21
F	Arabis sp.	11	6	14	4	.02	.01	.04	.03
F	Astragalus convallarius	4	-	-	-	.04	-	-	.01
F	Astragalus sp.	3	-	-	-	.07	-	-	-
F	Chenopodium fremontii (a)	a-	a-	b11	a2	-	-	.05	.03
F	Descurainia pinnata (a)	a-	a-	b62	a10	-	-	.98	.02
F	Erigeron sp.	-	-	2	2	.00	-	.00	.00
F	Lappula occidentalis (a)	a15	a3	c93	b68	.10	.00	2.24	.20
F	Lepidium sp. (a)	-	-	-	8	-	-	-	.02
F	Machaeranthera grindelioides	2	2	3	3	.03	.03	.04	.03
F	Penstemon caespitosus	3	-	-	-	.03	-	-	-
F	Penstemon pachyphyllus	a-	b11	ab3	b17	-	.08	.04	.11
F	Penstemon watsonii	b39	a8	a7	a10	.56	.45	.33	.04

Type	Species	Nested Frequency				Average Cover %			
		'98	'00	'05	'10	'98	'00	'05	'10
F	<i>Polygonum douglasii</i> (a)	-	-	4	-	-	-	.00	-
F	<i>Senecio multilobatus</i>	3	4	7	6	.04	.01	.01	.19
F	<i>Sphaeralcea coccinea</i>	_{ab} 35	_a 28	_a 32	_b 55	.71	.14	.51	.72
F	<i>Tragopogon dubius</i>	2	-	-	-	.00	-	-	-
F	<i>Viguiera multiflora</i>	3	1	3	-	.03	.03	.00	-
Total for Annual Forbs		15	3	170	88	0.10	0.00	3.29	0.27
Total for Perennial Forbs		111	63	74	105	1.73	0.81	1.08	1.37
Total for Forbs		126	66	244	193	1.84	0.81	4.37	1.64

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS--

Management unit 10R, Study no: 15

Type	Species	Strip Frequency				Average Cover %			
		'98	'00	'05	'10	'98	'00	'05	'10
B	<i>Amelanchier utahensis</i>	1	0	1	0	.00	-	.00	-
B	<i>Artemisia tridentata vaseyana</i>	36	24	29	36	4.28	3.15	3.34	4.94
B	<i>Cercocarpus montanus</i>	10	3	9	9	2.29	2.12	1.72	1.92
B	<i>Chrysothamnus nauseosus hololeucus</i>	2	2	3	2	.30	.06	.18	.03
B	<i>Chrysothamnus viscidiflorus viscidiflorus</i>	1	1	2	1	-	-	-	-
B	<i>Ephedra viridis</i>	0	0	0	1	-	-	-	-
B	<i>Juniperus osteosperma</i>	6	5	3	6	4.44	3.50	4.03	4.63
B	<i>Opuntia fragilis</i>	2	3	5	1	.38	-	.15	.03
B	<i>Pinus edulis</i>	7	7	5	9	1.37	2.27	2.54	3.70
B	<i>Purshia tridentata</i>	26	28	23	25	6.08	5.57	4.36	3.98
B	<i>Symphoricarpos oreophilus</i>	2	1	1	1	.15	.66	-	-
Total for Browse		93	74	81	91	19.33	17.34	16.36	19.24

CANOPY COVER, LINE INTERCEPT--

Management unit 10R, Study no: 15

Species	Percent Cover			
	'98	'00	'05	'10
<i>Artemisia tridentata vaseyana</i>	-	-	5.08	7.94
<i>Cercocarpus montanus</i>	-	.80	1.89	3.36
<i>Chrysothamnus nauseosus hololeucus</i>	-	-	.05	-
<i>Juniperus osteosperma</i>	2.59	1.60	4.08	7.11
<i>Juniperus scopulorum</i>	-	1.60	-	-
<i>Opuntia fragilis</i>	-	-	.06	-
<i>Pinus edulis</i>	-	1.39	4.15	7.21
<i>Purshia tridentata</i>	-	-	2.70	7.38
<i>Symphoricarpos oreophilus</i>	-	-	.08	.08

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 10R, Study no: 15

Species	Average leader growth (in)	
	'05	'10
Artemisia tridentata vaseyana	2.3	1.9
Cercocarpus montanus	1.3	1.8
Purshia tridentata	1.5	1.1

POINT-QUARTER TREE DATA--

Management unit 10R, Study no: 15

Species	Trees per Acre				Average diameter (in)			
	'98	'00	'05	'10	'98	'00	'05	'10
Juniperus osteosperma	79	134	53	79	2.7	3.5	5.0	3.8
Pinus edulis	53	99	51	68	1.8	1.9	2.4	2.3

BASIC COVER--

Management unit 10R, Study no: 15

Cover Type	Average Cover %			
	'98	'00	'05	'10
Vegetation	41.13	34.22	30.35	36.93
Rock	3.09	4.38	3.45	3.03
Pavement	2.00	1.38	1.82	3.12
Litter	57.48	56.59	41.66	56.71
Cryptogams	.20	.83	1.43	.03
Bare Ground	16.27	21.62	33.52	21.67

SOIL ANALYSIS DATA --

Management unit 10R, Study no: 15, Study Name: Saddle Horse

Effective rooting depth (in)	pH	sandy clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
16.5	7.0	52.7	26.7	20.6	4.5	8.4	70.4	0.9

PELLET GROUP DATA--

Management unit 10R, Study no: 15

Type	Quadrat Frequency				Days use per acre (ha)			
	'98	'00	'05	'10	'98	'00	'05	'10
Rabbit	6	52	45	4	-	-	-	-
Elk	30	29	31	19	78 (193)	36 (90)	62 (154)	16 (40)
Deer	14	15	16	12	11 (28)	15 (38)	37 (91)	39 (96)
Cattle	1	-	-	-	6 (14)	-	-	2 (4)

BROWSE CHARACTERISTICS--
Management unit 10R, Study no: 15

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
Amelanchier utahensis									
98	40	100	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
05	20	100	0	-	-	0	0	0	8/13
10	0	0	0	-	-	0	0	0	-/-
Artemisia frigida									
98	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
05	0	0	0	-	-	0	0	0	4/11
10	0	0	0	-	-	0	0	0	7/10
Artemisia tridentata vaseyana									
98	1480	46	54	0	180	7	0	0	30/43
00	1080	39	57	4	60	9	0	0	23/33
05	1280	28	64	8	420	27	0	3	20/29
10	1340	10	82	7	180	34	0	4	22/34
Cercocarpus montanus									
98	260	0	100	0	-	38	62	0	52/50
00	60	0	100	0	-	100	0	0	54/54
05	180	11	56	33	-	22	56	0	41/40
10	200	0	90	10	-	40	50	10	39/37
Chrysothamnus nauseosus hololeucus									
98	40	50	50	0	-	0	0	0	17/19
00	40	0	50	50	-	0	0	50	17/19
05	60	0	67	33	-	0	0	0	17/26
10	40	0	100	0	-	0	0	0	26/36
Chrysothamnus viscidiflorus viscidiflorus									
98	40	0	100	0	-	0	0	0	19/20
00	40	0	50	50	-	100	0	0	11/14
05	60	0	100	0	-	0	0	0	11/10
10	20	0	100	0	-	0	0	0	22/24
Ephedra viridis									
98	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
05	0	0	0	-	-	0	0	0	-/-
10	20	0	100	-	-	0	100	0	-/-
Juniperus osteosperma									
98	160	75	13	13	-	0	13	13	-/-
00	180	67	22	11	-	0	0	0	-/-
05	160	0	63	38	-	0	0	25	-/-
10	280	36	64	0	-	0	0	0	-/-

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
<i>Opuntia fragilis</i>										
98	40	0	100	0	-	0	0	0	5/29	
00	60	0	100	0	-	0	0	0	3/13	
05	420	14	38	48	-	0	0	48	3/9	
10	40	50	50	0	20	0	0	0	-/-	
<i>Pinus edulis</i>										
98	140	57	43	-	-	0	0	14	-/-	
00	160	75	25	-	-	0	0	0	-/-	
05	100	20	80	-	-	0	0	0	-/-	
10	180	22	78	-	-	0	0	0	-/-	
<i>Purshia tridentata</i>										
98	980	27	73	0	40	37	18	0	23/58	
00	800	15	73	13	-	15	65	3	18/51	
05	980	22	47	31	-	31	45	14	15/33	
10	900	9	89	2	40	47	20	0	16/34	
<i>Symphoricarpos oreophilus</i>										
98	40	0	100	0	-	0	0	0	44/68	
00	20	0	0	100	-	0	0	100	27/59	
05	20	0	100	0	-	0	0	0	19/31	
10	20	100	0	0	-	100	0	0	14/30	