

DAKE PASS - TREND STUDY NO. 1-22-11

Vegetation Type: Black Sagebrush

Range Type: Crucial Deer Winter, Crucial Elk Year-long

NRCS Ecological Site Description: [Semidesert Stony Loam \(Black Sagebrush\), R028AY252UT](#)

Land Ownership: BLM

Elevation: 5,300 ft. (1,615 m)

Aspect: South

Slope: 4%

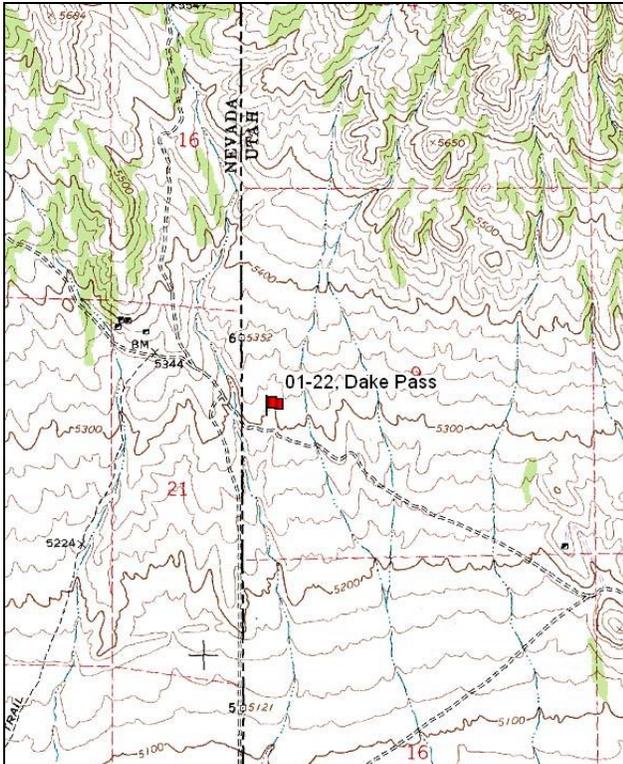
Transect bearing: 0° magnetic

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

Directions:

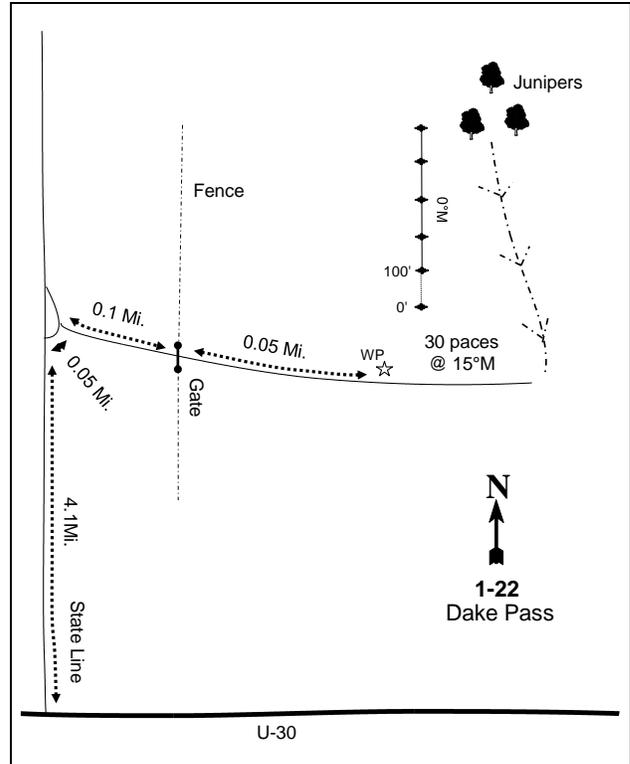
From U-30 at the Utah/Nevada state line, near mile marker 0, turn right and travel 4.1 miles to an intersection. Take a right at the intersection and travel 0.15 to a gate. From the gate drive 0.05 miles to a witness post on the left hand side of the road. From the witness post walk 30 paces at 15 degrees magnetic to the 0-foot baseline stake. The baseline runs 0 degrees magnetic.

Map Name: Jackson Spring



Township: 8N Range: 19W Section: 9

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 246040 E 4590512 N

DAKE PASS - TREND STUDY NO. 1-22

Site Information

Site Description: The study samples a salt desert shrub community just west of the Utah-Nevada state line. The site is characterized by gentle low ridges dominated by black sagebrush (*Artemisia nova*) and shallow drainage depressions with deeper soils. The area is managed by the Bureau of Land Management (BLM) as part of the U & I allotment. This area is utilized by deer and elk as winter range. It is also an important sage-grouse strutting area. A large number of sage-grouse droppings were noted on the next ridge to the east in 2001. Pellet groups have been sampled in low to lightly moderate abundance for elk and low abundance for deer since 2001. Most of the wildlife presence appears to be concentrated in the drainage areas on the site. Sampled cattle sign has been low in abundance since 2001 (Table - Pellet Group Data).

Browse: Black sagebrush is the most abundant species, but there are several other palatable browse species including bud sagebrush (*Artemisia spinescens*), shadscale (*Atriplex confertifolia*), winterfat (*Ceratoides lanata*), Nevada ephedra (*Ephedra nevadensis*), and spiny hopsage (*Grayia spinosa*). All of these species provide additional forage for wintering big game. Black sagebrush has provided over 50% of the browse cover on the site since 1996 (Table - Browse Trends). The black sagebrush population is comprised of a dense stand of low growing plants. Utilization of black sagebrush was moderate to heavy in 1996 and 2011, but was light in 2001 and 2006. Decadence and poor vigor of black sagebrush have been moderate over the course of the study. Recruitment of young black sagebrush plants has been mostly good, with an abundance of seedlings sampled in 2006. The other preferred browse species occur at much lower densities. Winterfat and ephedra have displayed heavy use throughout the sample years. The other browse species have had mostly light use with some moderate use. Other less desirable shrubs include narrowleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *stenophyllus*) and Nuttall horsebrush (*Tetradymia nuttallii*) (Table - Browse Characteristics).

Herbaceous Understory: The herbaceous understory is not particularly abundant. There are only three perennial grass species that have been sampled, which are Indian ricegrass (*Oryzopsis hymenoides*), Sandberg bluegrass (*Poa secunda*), and bottlebrush squirreltail (*Sitanion hystrix*). The annual grass cheatgrass (*Bromus tectorum*) is found on the site, and dominated the herbaceous understory in 2006. However, cheatgrass has been rare in the other sample years. Forbs are not abundant on the site, but are somewhat diverse. Most forb species have low forage value (Table - Herbaceous Trends).

Soil: The soil is in the Tosser-Plegomir complex, likely as part of the Tosser component. These soils occur on fan remnants, with parent material consisting of alluvium derived from limestone and rhyolite (Soil Survey Staff 2011). The soil texture is a clay loam with a moderately alkaline soil reaction (pH 8.2) (Table - Soil Analysis Data). The soil is light colored, with considerable surface rock and pavement cover. There are large open areas between individual shrubs, but little bare soil is exposed due to the abundance of pavement-rock cover (Table - Basic Cover). Aside from the gradual movement of soil from the low ridges, there is no accelerated erosion occurring and the soil erosion condition was classified as stable in 2001 and 2011, but was slight in 2006.

Trend Assessments

Browse:

- **1996 to 2001 - stable (0):** The density of black sagebrush increased 10% from 7,580 plants/acre to 8,360 plants/acre, though cover remained similar at 14%. Decadence decreased from 33% to 27%, but poor vigor increased from 7% to 12%. Recruitment of young black sagebrush plants increased from 11% of the population to 15%.
- **2001 to 2006 - slightly down (-1):** The black sagebrush density decreased by 17% to 6,920 plants/acre, and cover decreased to 12%. Decadence remained the same at 27%, but poor vigor

increased slightly to 16%. Recruitment of young black sagebrush plants decreased to 8%, but there was an abundance of seedlings.

- **2006 to 2011 - slightly down (-1):** There was a 12% decrease in the density of black sagebrush to 6,100 plants/acre, and cover decreased to 10%. Decadence decreased slightly to 22%, and poor vigor decreased to 14%. Recruitment of young black sagebrush plants increased to 12%.

Grass:

- **1996 to 2001 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, but cover increased from 6% to 9%.
- **2001 to 2006 - down (-2):** The sum of nested frequency of perennial grasses decreased by 15%, and cover decreased to 6%. Cheatgrass increased significantly in nested frequency, and cover increased from less than 1% to 13%. Bottlebrush squirreltail decreased significantly in nested frequency.
- **2006 to 2011 - slightly up (+1):** The sum of nested frequency of perennial grasses decreased 15%, but cover increased slightly to 7%. There was a significant decrease in the nested frequency of cheatgrass, and cover decreased to less than 1%.

Forb:

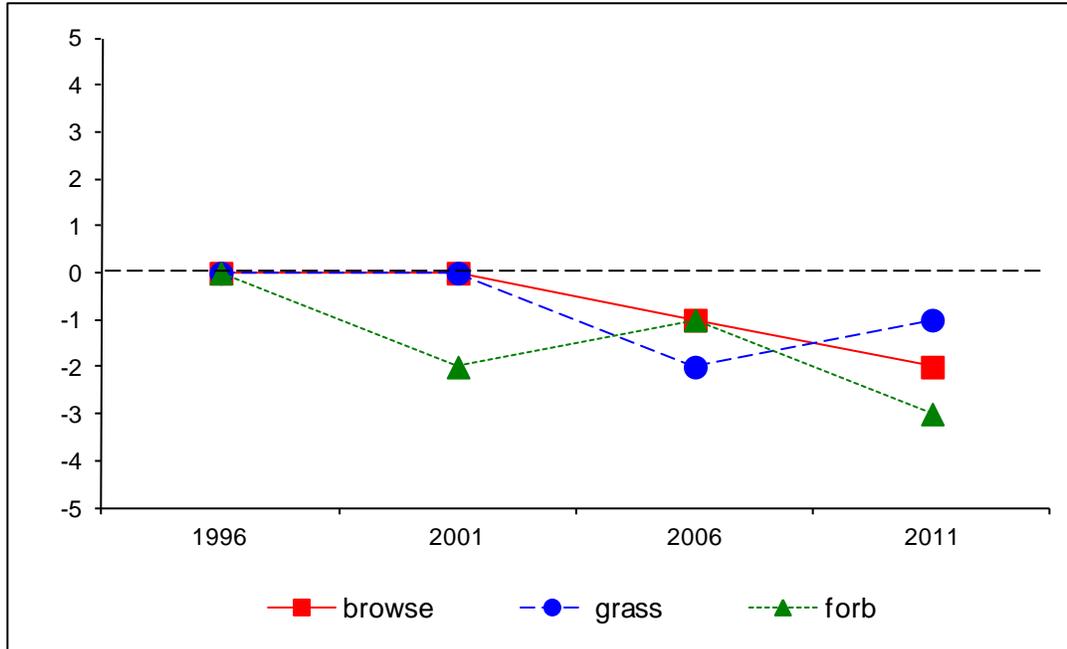
- **1996 to 2001 - down (-2):** The sum of nested frequency of perennial forbs decreased by 49%, and cover decreased from 4% to less than 1%.
- **2001 to 2006 - slightly up (+1):** Perennial forb sum of nested frequency increased markedly, but cover remained similar at around 1%. Perennial forbs remained rare on the site.
- **2006 to 2011 - down (-2):** There was a substantial decrease in the sum of nested frequency of perennial forbs, and cover remained around 1%. The sum of nested frequency of annual forbs and cover increased substantially, and several annual species dominated the site.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --
Management unit 1, study no: 22

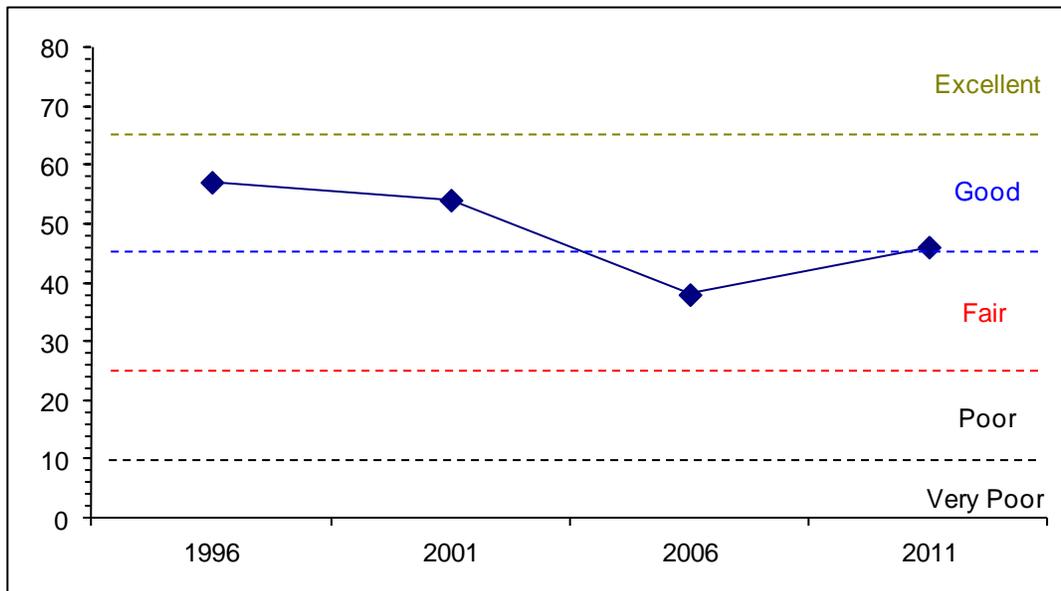
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
96	23.6	7.0	7.5	12.0	0.0	7.1	0.0	57.2	Good
01	20.4	7.5	7.8	17.0	-0.2	1.6	0.0	54.1	Good
06	19.8	8.1	4.7	12.8	-9.6	2.3	0.0	38.0	Fair
11	16.8	9.1	6.2	13.4	-0.7	1.3	0.0	46.1	Fair-Good

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 1 Study no: 22



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--
Management unit 1, Study no: 22



HERBACEOUS TRENDS--

Management unit 01, Study no: 22

Type	Species	Nested Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
G	Bromus tectorum (a)	a27	ab51	c406	b62	.04	.20	12.83	.87
G	Oryzopsis hymenoides	49	63	57	72	.64	2.33	1.38	2.41
G	Poa secunda	136	118	133	104	2.87	2.54	3.89	2.87
G	Sitanion hystrix	b129	b126	a71	a45	2.46	3.64	1.14	1.41
Total for Annual Grasses		27	51	406	62	0.04	0.20	12.83	0.87
Total for Perennial Grasses		314	307	261	221	5.98	8.52	6.42	6.70
Total for Grasses		341	358	667	283	6.02	8.72	19.26	7.57
F	Agoseris glauca	3	-	-	-	.00	-	-	-
F	Arabis sp.	b10	a-	a-	a-	.02	-	-	-
F	Astragalus sp.	-	-	1	-	-	-	.00	-
F	Astragalus utahensis	12	-	4	2	.03	-	.06	.06
F	Caulanthus crassicaulis	4	-	1	-	.38	-	.00	-
F	Collinsia parviflora (a)	14	-	5	-	.02	-	.01	-
F	Cryptantha sp.	b33	a-	b27	a2	.42	-	.09	.01
F	Cymopterus sp.	-	1	-	2	-	.00	-	.06
F	Delphinium sp.	-	-	-	2	-	-	-	.00
F	Descurainia pinnata (a)	a2	ab15	b33	c104	.00	.04	.08	1.88
F	Erigeron pumilus	2	-	-	-	.00	-	-	-
F	Erigeron sp.	-	-	1	5	-	-	.00	.15
F	Eriogonum ovalifolium	1	-	-	-	.00	-	-	-
F	Gilia sp. (a)	a5	a3	a21	b268	.01	.00	.05	4.84
F	Halogeton glomeratus (a)	1	-	-	-	.00	-	-	-
F	Lappula occidentalis (a)	ab15	a4	a13	b28	.05	.01	.02	.28
F	Mentzelia albicaulis (a)	6	-	1	-	.03	-	.00	-
F	Navarretia intertexta (a)	7	-	3	2	.01	-	.00	.00
F	Phlox hoodii	b107	a50	a49	a38	2.47	.55	.62	.23
F	Phlox longifolia	a27	ab51	b57	a23	.15	.22	.34	.10
F	Sphaeralcea grossulariifolia	1	1	-	-	.03	.00	-	-
F	Townsendia sp.	3	-	-	-	.01	-	-	-
Total for Annual Forbs		50	22	76	402	0.14	0.05	0.17	7.02
Total for Perennial Forbs		203	103	140	74	3.55	0.78	1.13	0.63
Total for Forbs		253	125	216	476	3.70	0.84	1.31	7.65

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

BROWSE TRENDS--

Management unit 01, Study no: 22

Type	Species	Strip Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
B	Artemisia nova	87	92	88	81	14.13	13.55	12.41	10.03
B	Artemisia spinescens	19	15	8	5	.55	.19	.45	-
B	Atriplex confertifolia	56	53	51	45	4.50	2.28	2.72	2.80
B	Ceratoides lanata	3	13	16	12	.03	.27	.65	.33
B	Chrysothamnus viscidiflorus stenophyllus	35	39	36	35	1.76	1.27	2.41	2.79
B	Ephedra nevadensis	9	8	10	8	.21	.64	.63	.85
B	Grayia spinosa	10	9	9	9	2.70	2.33	2.45	2.40
B	Kochia americana	17	0	0	0	.75	-	-	-
B	Opuntia sp.	0	0	0	2	-	-	-	.00
B	Pediocactus simpsonii	3	2	3	3	.00	.00	-	-
B	Tetradymia nuttallii	5	2	1	6	.30	.06	-	-
Total for Browse		244	233	222	206	24.95	20.63	21.74	19.23

CANOPY COVER, LINE INTERCEPT--

Management unit 01, Study no: 22

Species	Percent Cover	
	'06	'11
Artemisia nova	12.31	14.58
Artemisia spinescens	.06	.43
Atriplex confertifolia	4.03	3.09
Ceratoides lanata	.40	.15
Chrysothamnus viscidiflorus stenophyllus	2.18	1.71
Ephedra nevadensis	.56	.46
Grayia spinosa	2.18	1.86
Opuntia sp.	-	.05
Tetradymia nuttallii	.30	.21

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 01, Study no: 22

Species	Average leader growth (in)		
	'01	'06	'11
Artemisia nova	0.6	1.1	0.7
Ceratoides lanata	-	3.2	2.3

BASIC COVER--

Management unit 01, Study no: 22

Cover Type	Average Cover %			
	'96	'01	'06	'11
Vegetation	33.97	32.38	38.72	30.60
Rock	5.53	2.96	3.77	5.94
Pavement	27.12	30.03	27.08	34.12
Litter	33.09	17.84	28.57	22.25
Cryptogams	2.29	3.89	1.95	1.53
Bare Ground	4.20	17.40	13.35	10.21

SOIL ANALYSIS DATA --

Management unit 01, Study no: 22, Study Name: Dake Pass

Effective rooting depth (in)	pH	Clay-Loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
10.2	8.2	42.7	28.0	29.3	1.8	9.3	380.8	0.8

PELLET GROUP DATA--

Management unit 01, Study no: 22

Type	Quadrat Frequency				Days use per acre (ha)		
	'96	'01	'06	'11	'01	'06	'11
Rabbit	-	-	13	-	-	-	-
Elk	1	9	12	12	19 (46)	12 (30)	27 (66)
Deer	1	-	1	-	-	-	1 (2)
Cattle	-	-	1	1	-	9 (23)	5 (13)

BROWSE CHARACTERISTICS--

Management unit 01, Study no: 22

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
Artemisia nova									
96	7580	11	57	33	5660	55	21	7	11/23
01	8360	15	57	27	360	2	.95	12	9/18
06	6920	8	65	27	113560	5	0	16	10/19
11	6100	12	66	22	780	33	25	14	9/20
Artemisia spinescens									
96	1080	24	50	26	20	11	24	22	5/13
01	780	8	62	31	-	13	18	18	6/8
06	400	0	95	5	20	35	5	0	5/8
11	220	9	91	0	20	0	0	0	7/12
Artemisia tridentata wyomingensis									
96	0	0	0	-	-	0	0	0	-/-
01	0	0	0	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	30/43
11	0	0	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>Atriplex confertifolia</i>										
96	4800	29	59	12	1660	7	8	3	9/15	
01	3480	23	60	17	20	0	0	5	7/12	
06	3200	14	78	8	100	1	0	3	9/16	
11	2320	14	78	8	40	13	4	8	9/18	
<i>Ceratoides lanata</i>										
96	60	33	67	0	-	0	67	0	7/12	
01	680	26	74	0	20	3	0	0	5/8	
06	1000	16	80	4	40	30	60	0	7/10	
11	560	43	57	0	-	54	36	0	6/12	
<i>Chrysothamnus viscidiflorus stenophyllus</i>										
96	1120	4	89	7	400	7	0	2	10/16	
01	1240	13	73	15	40	0	0	8	9/16	
06	1440	3	89	8	780	3	3	1	10/15	
11	1580	10	82	8	40	11	0	5	9/15	
<i>Ephedra nevadensis</i>										
96	280	21	79	0	-	29	36	0	18/29	
01	160	0	75	25	-	50	50	0	15/25	
06	260	8	62	31	-	0	69	31	15/23	
11	200	10	50	40	-	40	60	50	16/27	
<i>Grayia spinosa</i>										
96	260	0	77	23	-	15	8	31	23/34	
01	380	0	74	26	-	0	0	0	16/25	
06	320	0	81	19	-	13	0	13	20/29	
11	300	0	100	0	-	27	0	7	19/37	
<i>Kochia americana</i>										
96	1360	4	94	1	40	13	0	1	6/11	
01	0	0	0	0	-	0	0	0	-/-	
06	0	0	0	0	-	0	0	0	-/-	
11	0	0	0	0	-	0	0	0	-/-	
<i>Leptodactylon pungens</i>										
96	0	0	0	-	-	0	0	0	-/-	
01	0	0	0	-	-	0	0	0	-/-	
06	0	0	0	-	-	0	0	0	7/14	
11	0	0	0	-	-	0	0	0	-/-	
<i>Opuntia sp.</i>										
96	0	0	0	-	-	0	0	0	4/13	
01	0	0	0	-	-	0	0	0	5/10	
06	0	0	0	-	-	0	0	0	5/16	
11	40	0	100	-	-	0	0	0	4/7	

		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>Pediocactus simpsonii</i>										
96	60	0	100	-	-	0	0	0	0/2	
01	40	0	100	-	-	0	0	0	1/2	
06	60	67	33	-	-	0	0	0	1/2	
11	60	33	67	-	-	0	0	0	1/4	
<i>Tetradymia nuttallii</i>										
96	140	29	43	29	-	0	0	14	13/18	
01	40	0	0	100	-	0	0	100	11/12	
06	20	0	100	0	-	0	0	0	14/20	
11	180	0	89	11	-	0	0	11	12/21	