

Redwood

National and State Parks

National Park Service
US Department of the Interior

Department of Parks and Recreation
State of California

2012 HERD UNIT CLASSIFICATION and MANAGEMENT OF ROOSEVELT ELK



Photo: Redwood National and State Parks

March 29, 2013

INTRODUCTION

The Roosevelt elk (*Cervus elaphus roosevelti*), the largest of the six recognized subspecies of elk, once occurred from southern British Columbia south to Sonoma County, California. The tribes living in and around what is now Redwood National and State Parks (RNSP or “parks”), the Tolowa, Yurok, Hupa, and Chilula, burned the prairies of the Bald Hills and other forest openings regularly in part to promote the growth of new grass attractive to wildlife (i.e., elk and deer); their use of elk for subsistence presumably had minimal impact on elk populations. With the arrival of European and other foreign settlers intense hunting began in the mid-1800s and the Roosevelt elk’s range was highly reduced. In 1848 through 1855 market hunting for elk hide and meat supplied gold miners during the northern California gold rush. When the gold rush was over a large amount of elk habitat was converted to cattle and sheep ranching and croplands, and elk were killed to protect against crop depredation. Elk populations and distribution in the Marble and Siskiyou Mountains and the Salmon-Trinity Alps were significantly reduced (USDI 1983). The only Roosevelt elk populations that persisted through this period were those occupying coastal lowlands in the northern part of California, where dense forests and brush fields provided protective cover. Today Roosevelt elk in California persist only in Humboldt and Del Norte Counties, and extreme western Siskiyou County.

Dasmann (1964) speculated that the total elk population of northern California ranged from 1,000 to 2,000 animals at that time. Mandel and Kitchen (1979) estimated the elk population then to be 1,000 to 1,300, with roughly half being located in and around RNSP. Elk currently occur in the redwood forest, oak woodlands, grasslands, and coastal dunes in RNSP and the surrounding areas.

Work in RNSP

Annual classification of elk herds within RNSP began in 1996 to document relative abundance and simple population characteristics, such as cow numbers, recruitment, and calf survival within known herds (Wallen 1997). These herd count/classifications have been conducted annually each fall since that time by parks staff and others. Also in 1996, a monitoring program of the elk population in a portion of the Prairie Creek drainage was established independent of the RNSP program (Weckerly 1996, Weckerly et al. 2004). The 2 independent monitoring programs in the same area provided a unique opportunity to compare data gathered unsystematically with data gathered using a science-based approach using a standard protocol.

Beginning in 2004 elk in the Bald Hills were counted using the “Weckerly method” (Weckerly and Francis 2004) by Dr. Weckerly. Unlike the Prairie Creek herd counts which were quite similar between the parks’ and Weckerly’s survey methods, the Bald Hills herd counts were very dissimilar between the 2 methods, with park staff counts grossly undercounting the numbers of animals. Due to the inaccuracy of the park staff counts, staff discontinued fall counts in the Bald Hills in 2008.

METHODS

Seven separate herds were counted/classified within RNSP. Six of the herds were counted by RNSP staff between early September and late November in 2012. The Bald Hills herd was counted 10 times in January 2013 by Dr. Weckerly. Surveys by Dr. Weckerly, associated with the Prairie Creek herd monitoring program, also were conducted in January. Results from these latter two surveys are considered part of the 2012 elk count “season” and are included in this report with the fall 2012 data. This is compatible with how information was reported in previous reports.

Fall classification counts were conducted by driving or hiking to the identified herd units. Using binoculars and spotting scopes, RNSP staff recorded the total number of elk observed, and the total number of elk within each classification group. The groups are mature bulls, spikes (first year males identified by a lack of brow tine off the main beam), cows, and calves. The observers also assigned ranking criteria to the classification counts that specified the observer’s confidence in the accuracy of the count. A scale of 1 to 4 was used to determine the certainty of the observation. A rating of 1 indicated good visibility and the animals were close enough to accurately count and classify the herd. A rating of 4 indicated that the observation was unacceptable for determining herd composition because of poor visibility due to low light level, fog, vegetation, or topography. In calculating the ratio of calves to adult cows, ratings of 3 and 4 were dismissed due to poor quality of observations. As in previous years, the highest cow counts with an acceptable ranking were used as the herd size estimates for 2012. The counts from the fall period were used, even though more animals may have been observed during earlier months.

Elk in the Bald Hills during winter surveys were counted from vantage points or approached on foot and counted. A set route was driven/walked once a day 10 times. When groups were approached on foot it was to obtain an unobstructed view or to conduct a coordinated stalk. A coordinated stalk consisted of an attempt to alert elk groups to the presence of one surveyor in such a manner that the group moved to an area with an unobstructed view where they could be counted by another surveyor. All elk seen were counted and classified as mature bulls or “cows” using binoculars and field telescopes. Generally, juveniles and spikes were combined with female counts due to the large size of the herd and because these age-sex classes were not detected by themselves in separate groups (however, this year classification was possible due to sub-grouping of the herd). All animals within 50 m of one another displaying coordinated activity or movement were considered a group (Weckerly et al. 2004). As with the other herd counts, the highest reliable cow count was used as the year’s herd size estimate for this season.

Fall Count Herd Units

- (1) **Old South Operations Center (OSOC)** herd
- (2) **Lower Redwood Creek (LRCR)** herd; (sometimes referred to as the “Levee” herd in previous reports)
- (3) **Davison Ranch/Berry Glen (DARA)** herd
- (4) **Elk Prairie/Hwy 101 Bypass** herd (EPBY)
- (5) **Gold Bluffs Beach (GOBB)** herd; (several co-mingling groups)

(6) **Crescent Beach Education Center (CBEC) herd**

Fall Count Herd Classification Groups

- **Cows** = all females >1 year old.
- **Calves** = young of the year (<1 year old; recognized by spotted coat and small size; later the spots disappear, but they retain a short, rounded snout).
- **Spikes** = year old males exhibiting only a main beam, brow tine absent.
- **Mature bulls** = ≥ 2 years, with brow tine evident off the main beam.

Fall Count Herd Observation Ranking Criteria

- 1 = Good**, visibility good and animals close enough to observe with high confidence of an accurate count and classification.
- 2 = Fair**, animals are either distant or not fully cooperative for good confidence in classification (e.g. some vegetation blocking full view or movement into cover while counting).
- 3 = Poor**, animals too far away (e.g. difficult to track individuals or animals are in adjacent hiding cover).
- 4 = Unacceptable**, bad visibility due to low light levels, fog, uncooperative animals.

All of the ranked observations are briefly summarized in the notes section of the data form.

RESULTS AND DISCUSSION

Fall classification counts (and winter 2013 for Bald Hills) for the different age classes are presented in Table 1. It should be noted that the parks' DARA and EPBY herds are combined in Weckerly's "Prairie Creek" herd. Table 1 numbers for DARA/EPBY reflect fall staff counts.

Table 1. Highest number of elk reported within each herd unit and for each classification grouping in 2012. MB = mature bull, SP = spike, CW = cow, CV = calf, n = total fall counts when animals were observed.

Location	MB	SP	CW	CV	Total	n
OSOC	2	0	12	1	15	5
LRCR	1	6	18	11	36	4
Bald Hills	3	11	188	40	242	10
DARA	1	0	28	5	34	11
EPBY	5	0	2	1	8	8
GOBB	4	4	19	10	37	7
CBEC	3	5	36	10	54	3

Weckerly's January 2012 estimate for the Davison herd (including Boyes Prairie or "EPBY") was 46 elk (F. Weckerly pers. comm.). The staff count for this herd was 42, once again illustrating that total herd count numbers between the 2 methods are highly comparable.

Cow counts by year, the best indicator of herd persistence (McCullough et al. 1994, Weckerly and Francis 2004), are displayed in Fig. 1. Numbers for all herds for all years are provided in Appendix A. Four herds showed increases in cow numbers over last year's numbers, and 2 herds maintained the same number of cows as last year. Unlike the previous 2 years when there were no cows counted in the EPBY herd, 2 cows with calves were observed in Boyes Prairie, one still had her calf during the fall count period. No cows were recorded in the January counts (F. Weckerly pers. comm.). The GOBB herd ranges widely over a large area and is difficult to count so this number should be taken with caution although the substantial decline, and persistent lower numbers since 2002, likely indicates a real trend. The Bald Hills herd count was up this year from its low number in 2010, and more in line with what's been recorded in other previous years.

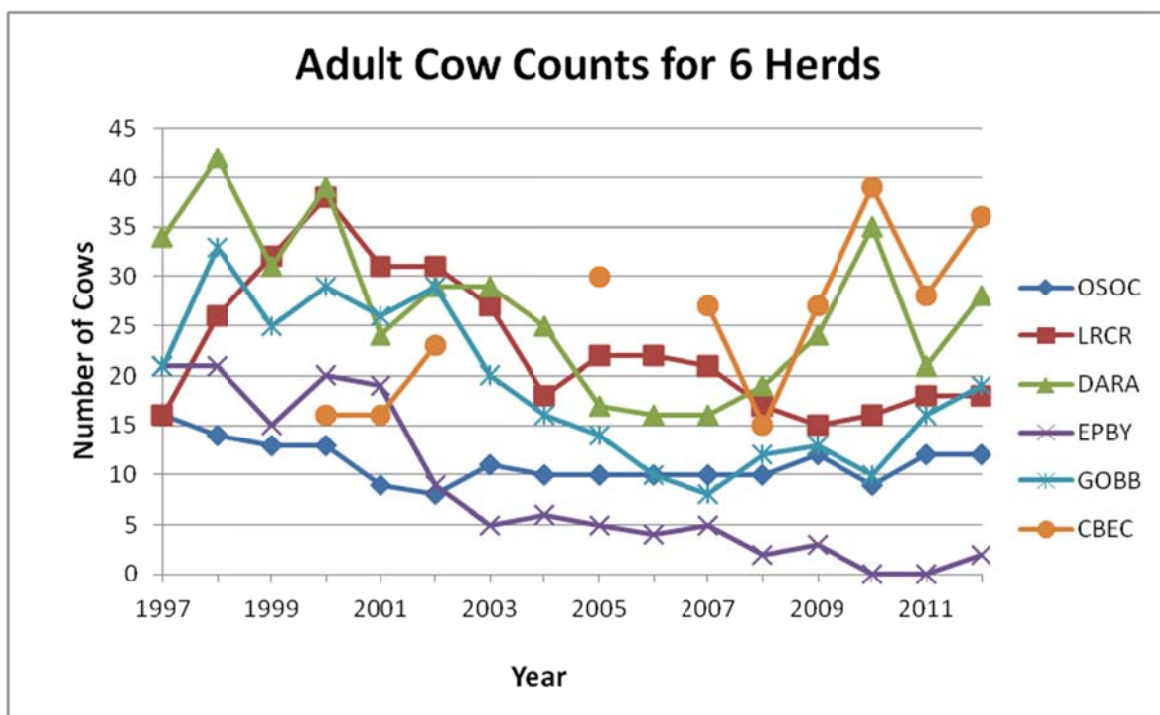


Figure 1. RNSP fall elk herd cow numbers from 1997 to 2012 indicating herd persistence through time. The CBEC herd counts did not begin with regularity until 2007.

The highest fall cow count in each herd was used to determine calf:cow and bull:cow ratios. The ratio of calves to cows is an indication of herd productivity; ratios were up from last year's counts in 4 herds, and down in 2 (Table 2). The high calf:cow ratios in 2004, 2007, 2008, to a lesser extent in 2009, and in 2012 for the EPBY herd were artifacts of an extremely small population size. In 2012 one cow with a calf was observed in that herd during our fall count.

Weckerly (unpub. data) calculated a calf:cow ratio of 0.22 for his “Prairie Creek” herd. The staff fall count data indicated a calf:cow ratio of 0.18 (not including the 1 cow with a calf in the EPBY herd). Weckerly and Francis (2004) found that herd counts in the Prairie Creek drainage were similar from 1997 to 2003 between staff counts and their’s, but herd composition ratios were not. They suggested this may be due to observer bias in classifying calves. In 2012 ratios were more similar to each other than in previous years.

Table 2. Calves per 100 cows for fall elk herd counts, 1997 to 2012 (N/A = data not available).

Herd	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
OSOC	35	29	31	15	22	36	27	10	40	30	40	40	25	55	16	8
LRCR	11	15	38	22	26	22	11	22	18	45	33	23	20	56	44	61
DARA	27	18	23	41	29	21	21	24	12	18	56	37	33	22	38	18
EPBY	33	24	53	29	37	33	20	50	0	25	60	100	33	0	0	50
GOBB	38	12	7	9	19	21	15	6	17	30	50	50	54	60	44	53
CBEC	N/A	N/A	N/A	13	12	22	N/A	N/A	N/A	N/A	30	40	30	5	14	28

One reason for monitoring bull:cow ratios is that these ratios may indicate the quantity of available forage. That is, when food is less abundant males may use habitats where they are more difficult to observe, in part due to social demands unique to males of polygynous species (Weckerly et al. 2004, Weckerly 2007). Figure 2 displays the bull:cow ratios for the 6 herds monitored in the fall by park staff. The EPBY herd was included with the DARA herd ratio in the same manner as Weckerly reported. Weckerly reported a bull:cow ratio of 0.48 for the “Prairie Creek” herd. This was comparable to the staff count ratio of 0.44. However, this number was due in part to 2 cows counted along with 5 bulls in the EPBY herd. Considering the DARA herd alone, there was an extremely low ratio of 0.04. These ratios have varied widely among years between the two counts, with staff counts sometimes twice as high or in this case many times lower. This variation could be due to the manner in which bulls move around during, versus after, the rut. However, the cause of the discrepancies between the 2 counts is not understood, but also may be due to differences in methodology between the 2 counts. Ratios from staff counts are based on actual numbers of animals observed, while Weckerly accounts for imperfect detection, and bulls typically have lower sighting probabilities than cows. Thus, Weckerly’s bull:cow ratios account for the differences in sighting probabilities between the sexes, which may explain why staff ratios tended to be much lower (F. Weckerly pers. comm.).

Besides the huge drop in the DARA bull:cow ratio, the LRCR herd’s bull:cow ratio also dropped precipitously from last year, to 0.06. The OSOC and CBEC bull:cow ratios were equivalent to last year’s, and the GOBB ratio increased substantially to 0.21 after a low of 0.06 last year. Overall, the numbers of bulls counted were low compared to previous years, with 10 being the maximum counted at one time, in the latter part of September in the Davison area.

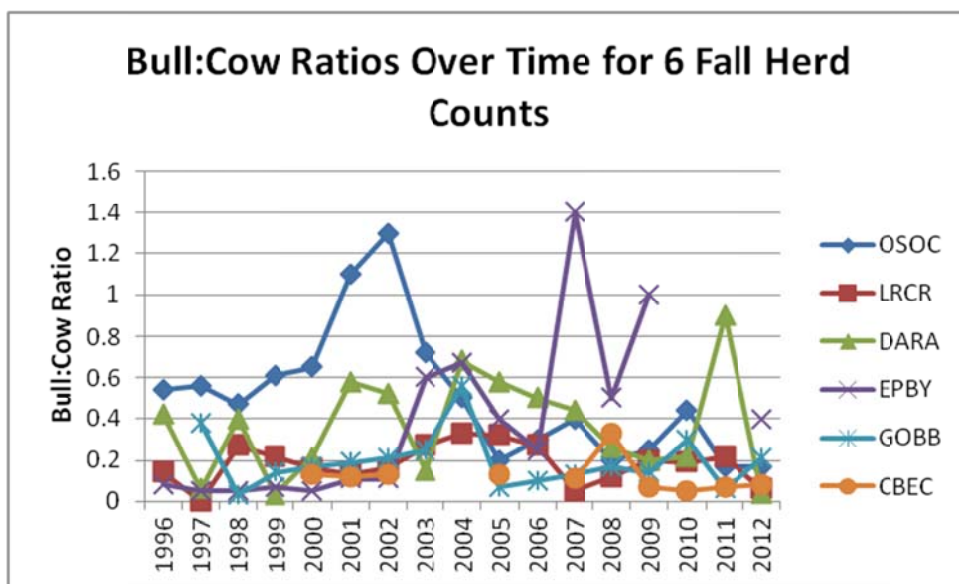


Figure 2. Bull:cow ratios from 1996 to 2012 indicating herd reproductive capability through time. The CBEC herd was not counted consistently every year.

Old South Operations Center (OSOC) Herd

For the second year in a row the cow count for the OSOC herd was up to a “typical” number for this herd. Despite the relatively high numbers of cows in this herd, calf production was poor with only 1 calf counted in the fall. The bull number remained low, at 2. The Northwestern Elk Hunt may remove animals from this herd on private ranchlands in and around the Orick Valley (see *Annual Elk Hunts* below). No elk depredation permits were issued to landowners in the Orick Valley in 2012 by California Department of Fish and Wildlife (D. Lancaster, pers. comm.).

Lower Redwood Creek (LRCR) Herd

This elk herd uses a long corridor of habitat along lower Redwood Creek extending from the beaches and private land pastures near the Redwood Creek estuary, upstream to the Tall Trees Grove. During the fall of 2012, this herd was located primarily north and south of Redwood Creek near the estuary and around the Orick rodeo grounds. During the course of the year elk in this herd also were observed with some frequency on Freshwater Spit/Beach, either feeding or bedded down. The cow count was similar to what it’s been in the previous 4 years but has yet to regain the high numbers observed in the late 1990s and early 2000s (Fig. 1 and Appendix A). The calf:cow ratio was the highest on record since counts began in 1997, with 11 calves counted with 18 cows. The bull:cow ratio was extremely low due to only one bull being observed in the fall. The Northwestern Elk Hunt may remove animals from this herd on private ranchlands in and around the Orick Valley (see *Annual Elk Hunts* below).

Davison Ranch (Elk Meadow) / Berry Glen (DARA) Herd

This herd consists of a group of mature bulls that often occupies the northern portion of Elk Meadow north to the Lost Man Creek Fish Hatchery, and a group of cows, spikes, and calves that occupy the southern portion of Elk Meadow south to Skunk Cabbage Creek. These animals also frequent the Redwood Adventures cabins and the lawn of the former Valley Green Office (Green Diamond Resource Co.) on the east side of the highway, due to the fresh mowed grass at these locations. The number of cows counted (28) was the highest since 2003, however, this number is still lower than the numbers recorded from 1997-2000. The calf:cow ratio dropped by more than half of what it was in 2011 and was the lowest it's been since 2006 when it equaled 0.18. The bull:cow ratio was inflated to 0.44 due to the inclusion of the Elk Prairie (Boyes Prairie) bulls and cows. Without including these animals the ratio was a mere 0.04, due to only one bull counted during the high cow count. Ten bulls were counted in September, along with 14 cows and 5 calves.

Elk Prairie / Hwy 101 Bypass (EPBY) Herd

On January 5, 12 bulls were observed in Elk Prairie. In May, June, and July 10 bulls were observed. It was not uncommon to see between 2 and 9 bulls over the course of the year, however, during the fall and winter counts just 5 bulls were observed by park staff and Weckerly (F. Weckerly pers. comm.). Two cows were observed, each with a calf during the course of the year, however, only one calf was present by fall, resulting in a calf:cow ratio of 0.50. The last time cows and calves were present in this "herd" was in 2009. The herd has been dwindling steadily since 2001. Explanations for this may be due to the Highway 101 bypass where the California Dept of Transportation (Caltrans) planted grass along the shoulders, thus, increasing the likelihood of vehicle collisions with elk grazing immediately off the road. The median barriers also may increase the likelihood of collisions and the 4-lane freeway may have altered herd movements. Added to this is the remoteness of the area which makes it more attractive to poachers (RNSP unpub. data).

Gold Bluff Beach (GOBB) Herd

The GOBB herd is comprised of several sub-herds that come together on occasion. They use a large area that extends from Mussel Point at the south end of Gold Bluffs Beach to Carruther's Cove near the northern limit of this beach. This year 9 fall counts were attempted, and animals were observed during 7 of them, with 2 subgroups noted on 2 occasions. This herd is difficult to count because of the large area they use and the brushy nature of the coastal bluffs which can obscure some animals. Due to these factors it's possible the counts under-represent the total herd number to some degree. However, they don't appear to account for the fact that cow numbers have not reached the higher numbers observed in 1998-2002. None the less, in 2012 there were 19 cows recorded, the highest number since 2003 when 20 cows were recorded (see Fig. 1 and Appendix A). The calf:cow ratio was 0.53, up from last year's 0.44 and comparable to ratios observed in 2007 through 2010. The bull:cow ratio also was up from last year's low of 0.06, at

0.21; 6 bulls were observed versus 1 bull observed last year. It is possible that some animals in this herd are impacted by the Klamath Elk Hunt (see *Annual Elk Hunts* below).

Crescent Beach Education Center (CBEC) Herd

Interpretation staff stationed at CBEC recorded elk in the meadows near CBEC throughout much of the year. The high count in 2012, on November 21, was 54 animals, including 36 cows and 12 calves. The cow count was the second highest on record for this herd, which appears to be increasing in size. The high number of calves recorded resulted in a calf:cow ratio of 0.28 which is substantially higher than the previous 2 years but falls short of higher ratios observed in 2007-2009. The calf:cow ratio was 0.21, an improvement over last year's. The highest number of bulls recorded in the fall was four.

Bald Hills Herd

There were 10 counts in the Bald Hills in 2013, from January 3 to January 17. This year the high count for the Bald Hills herd was 242. Unlike the previous few years, the Bald Hills herd was separated into 3 or 4 "sub-herds" that included groups in Dolason Prairie, Counts/Maneze/Childs Hill Prairies, and Schoolhouse Peak/Coyote Creek Prairies. Only half as many bulls were observed this year as compared to last. This year, perhaps due to the smaller sub-groups, herd classification was possible. The high cow count included 188 cows, 40 calves, 11 spikes, and 3 bulls. The calf:cow ratio was 0.21 for all groups combined.

Winter survey routes in the Bald Hills were displayed in previous Annual Elk Reports (through 2008).

Other Observations

There were 16 opportunistic staff or visitor observations of elk entered in the Wildlife Observation database. Two of these were of dead animals, one sub-adult observed along Rellim Ridge Trail on February 7, with no sign of trauma or injury. The other was a cow observed in Counts Hill Prairie on April 11. As with the Rellim Ridge animal, there was no sign of trauma, e.g., predation, although a black bear was observed in the area that same day. The other observations were scattered throughout the parks, and included a bull "fending off" and "treeing" a black bear, and also reportedly "attempting to impale bear with antlers". This took place on July 5 at North Operations Center in Crescent City where a group of bulls has taken up residence within the last few years.

Incidents

Two visitors encountered a large bull with 3 or 4 cows on the Coastal Trail on August 23. They were hiking south on the Coastal Trail after coming down West Ridge Trail. Not too far past the junction with West Ridge they came upon the bull in the middle of the trail. When they slowly walked toward him, he put his head down and charged towards them. There was an alder tree down across the trail and when his head came in contact with the tree he backed off. The visitors

were on the other side of the tree and backed around a corner in the trail out of view of the elk. There was nowhere for them to go due to a steep bluff on one side of the trail and marshy wetland on the other side. After waiting awhile they walked around the corner to see if the bull was still there. He was and when he saw them he charged again. They backed out of sight again and waited close to an hour to see if he would move. It was getting late in the day and their car was at Fern Canyon. One of the visitors clacked her hiking poles together which caused the elk to back off. The 2 people then cautiously moved forward until they reached dry ground on the beach side of the trail and walked around the animals.

Entanglements

On August 10, or before, a bull elk got into some type of weed block, or landscaping, fabric which was wrapped well around both antlers and dragging on the ground. At times it fell down over its eyes so it could not see. On August 29 the bull moved into Davison meadow, in a place where it could be tranquilized. Park staff successfully put the animal under, removed the fabric, and ear-tagged it. This animal was observed with the herd on numerous occasions afterwards and appears to have successfully recovered.



Elk with landscaping fabric entangled in antlers.

On August 22, wildlife staff received a report from a park employee that a bull elk had rope wrapped around its antlers in Elk Prairie at the south end. The bull was located in the prairie where it was sparring with another bull. Staff contacted a California Department of Fish and Wildlife biologist who came to the park with a technician, located the elk, tranquilized it, ear tagged it, removed the rope and the antlers, and observed it until it was fully recovered from the drugs. This animal was seen on numerous occasions afterwards and appears to have completely recovered.

On September 8 wildlife staff received a report of a bull elk with fishing line/gill net wrapped around its antlers. The bull was with the herd on Freshwater Spit, south of Kuchel Visitor Center. Upon investigation it turned out the “bull” was a young spike with a large amount of fishing gill net wrapped around both antlers with the majority on the right side. Due to his location near Highway 101 nothing could be safely done to try to remove the net. The herd later crossed the highway and went down the boat launch and into the lagoon. Eventually, they went north into the timber. This spike was not seen again, it’s possible that he was able to rid himself of the material.



Spike with gill net entangled in antlers on Freshwater Beach.

On October 4, at approximately 10:30 a.m., wildlife staff received a report from law enforcement rangers of a bull elk entangled in a rope fence at the Gold Bluffs Beach Campground. The supervisory biological technician responded with 2 rangers and in consultation with a California Department of Fish and Wildlife biologist, decided it should be darted as soon as possible. The

elk was immobilized at approximately 12:20 p.m. The large bull was entangled in 1/2-inch thick nylon rope that was strung through eyelets on top of metal posts that were pounded into ground. The bull was able to pull two posts out of the ground and gain enough length of rope to get tangled in another section of rope between the posts. Most of the metal posts were extremely bent, and it was apparent that the animal had been struggling for some time prior to staff arriving. The elk was tranquilized and ear-tagged, and the rope was removed from its antlers and the surrounding area. It eventually came to at approximately 7:20 p.m. The bull was last seen that same night at 8:00 p.m. feeding about 0.25 mile from where it was immobilized. As of the writing of this report this animal has not been observed again.

Mortality

There were 5 known elk deaths (from other than hunting) in RNSP in 2012.

On February 7 a national park trails employee came upon a dead young elk along the Rellim Ridge Trail south of Howland Hill Road and Jedediah Smith Redwoods State Park. There was no evidence of trauma or predation, the animal appeared healthy, it was in the “middle of nowhere”; its death is a mystery.

On July 27 an NPS law enforcement ranger received a report of an elk that had been hit by a vehicle in “down town” Orick, and was on the sidewalk just north of South Operations Center. When the ranger arrived at the kill site, she observed bloody drag marks. She was able to determine the animal had been dragged behind the Orick Post Office and butchered.

While searching for the elk with garden cloth in its antlers on August 12, a park technician observed birds “working on something” in Elk Meadow. Upon approach a dead cow elk was discovered south of Davison Road between the 2nd and 3rd telephone poles and approximately 50 yards west of Highway 101. The elk was found with its head tucked under its neck, there was a small round hole in its neck, and its rear legs looked dismembered. Birds had already been picking at it so the hole remained of unknown origin. There was a pool of bright red blood about 3 feet away from the carcass covered with grass. No drag marks were noticed, but a large circular area of grass was stomped down nearby.

On September 4, again looking for the elk with the garden cloth previously removed, wildlife staff observed vultures circling in Elk Meadow north of Davison Road. Upon approach the carcass of a spike was observed, cause of death unknown.

A bull elk was dispatched in Elk Meadow by an NPS law enforcement ranger under advice from wildlife staff also present. This animal had been reported to the wildlife biologist on December 10 by a visitor who observed it while driving near the south end of the Highway 101 bypass. He reported that it was bleeding from the mouth and thought it may have been clipped by a vehicle. By December 13 the bull had made its way to Elk Meadow. The lower jaw was dangling loose, it obviously had a severe jaw/mouth injury, could not eat, etc. After dispatch it was examined and a bullet entrance/exit wound was observed in the lower jaw. The head was removed by a

California Department of Fish and Wildlife warden, who stated the animal was shot with a .22- or similar- small caliber rifle. This undoubtedly was a botched poaching attempt.

Annual Elk Hunts

Two local elk hunts may impact RNSP elk herds. The Klamath Hunt takes place on Green Diamond Resource Company lands adjacent to the parks, and may take animals from the Bald Hills herd and possibly the GOBB herd; this hunt allows 5 antlerless and 5 bull elk to be taken. The Northwestern Hunt is on all lands in Del Norte and Humboldt Counties that are not Green Diamond Resource Company or park lands. The Northwestern Hunt may cause hunting pressure in the Orick Valley (OSOC, LRCR herds) and in the north (e.g., CBEC herd). This hunt allows for 20 animals of either sex to be taken.

In 2012, 2 antlerless and 4 bulls were taken by the Klamath Hunt. One antlerless was taken from Williams Ridge, just outside the national park in the Bald Hills. The other antlerless was listed as taken from “Klamath”. The 4 bulls all were taken in the vicinity of the national park, 2 from William’s Ridge, one from Skookum Prairie, and one from Schoolhouse Peak. The bulls were large (one 8x7, one 7x6, and two 6x6) (CDFW unpub. data).

The Northwestern Hunt removed 2 bulls from the Orick Valley in 2012, including a 5x5 from the LRCR herd, a 5x2 from either the LRCR or OSOC herd (CDFG unpub. data).

Other large private landowners also may sell a certain number of elk tags each year. There is such a landowner adjacent to the national park in the Bald Hills. An 8x7 bull was taken on Williams Ridge under one of these tags.

Report Prepared by Kristin Schmidt, RNSP Wildlife Biologist

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PERSONAL COMMUNICATION

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Appendix A

Highest reliable (ranking <3) cow counts for identified elk herds, 1997 to 2012 (data displayed, in part, in Figure 1 in the report). ND = no data available for that year.

Location	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
OSOC	16	14	13	13	9	8	11	10	10	10	10	10	12	9	12	12
LRCR	16	26	32	38	31	31	27	18	22	22	21	17	15	16	18	18
BAHI	45	98	62	104	54	35	26	241*	251*	278*	270*	244*	261*	225*	241*	242*
DARA	34	42	31	39	24	29	29	25	17	16	16	19	15	23	21	28
EPBY	21	21	15	20	19	9	5	6	5	4	5	2	3	0	0	2
GOBB	21	33	25	29	26	29	20	16	14	10	8	12	13	10	16	19
CBEC	ND	ND	ND	16	ND	23	ND	ND	30	ND	27	15	27	39	28	36

* Counts conducted using the “Weckerly method” account for differences in herd counts beginning in 2004.