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Pacific Fisher Annual Report 2013



June 1, 2013

Humboldt Redwood Company (HRC) Project Summary

Forest Sciences Project Plan

Subject Area: Habitat Conservation Plan (HCP) monitoring

Date initiated: March 1999

End Date: Ongoing

Project managers: Sal Chinnici, Forest Sciences Manager and Brad Mauney, Lead Wildlife Biologist, HRC

Project Title: Pacific Fisher HCP Monitoring

Project Summary:

The Pacific fisher (*Martes pennanti pacifica*) is a medium-sized carnivore in the weasel family. It is one of 17 covered species of the HRC Habitat Conservation Plan (HCP). The fisher is currently both a Federal and State candidate for listing under the respective Endangered Species Acts, and is a California Species of Special Concern.

The HCP conservation strategy for the Pacific fisher is a combination of a habitat-based approach with an additional structural component element. The management objective is to maintain enough suitable habitat to contribute to a sustainable population of the species in the northern California coastal province. Conservation measures include retention of late seral habitat, aquatic resource protection, measures to retain and recruit habitat structural components, and old growth habitat reserves (i.e., the Marbled Murrelet Conservation Areas or MMCAs).

Monitoring for this species is through forest carnivore surveys to establish continued occupancy of HRC lands, and tracking of seral stage distribution in Watershed Assessment Areas (WAAs). No changes in the monitoring strategy are recommended at this time.

Reviewed:

Original signed by Mike Miles

Mike Miles, Director Forest Science

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Cover photo: Pacific Fisher at bait pack at Boulder Creek (unit 25).

Project Distribution List

Table 1. Project document distribution list.

Susan Sniado CA Dept. of Fish & Wildlife Northern California - North Coast Region 610 2nd Street Eureka, CA 95501	James Bond U.S. Fish and Wildlife Service Arcata Fish and Wildlife Office 1655 Heindon Rd. Arcata, CA 95521
Matt Goldsworthy NOAA Fisheries 1655 Heindon Rd. Arcata, CA 95521	James Robbins Cal Fire 118 Fortuna Blvd. Fortuna, CA 95540
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Introduction

The HCP conservation strategy for the Pacific fisher (*Martes pennanti pacifica*) is a combination of a habitat-based approach with an additional structural component element. The management objective (HCP 6.8.1) is to maintain enough suitable habitat to contribute to a sustainable population of the species in the northern California coastal province. Conservation measures (HCP 6.8.2) include retention of late seral habitat, aquatic resource protection, measures to retain and recruit habitat structural components, and old growth habitat reserves (i.e., the Marbled Murrelet Conservation Areas or MMCAs). Seral stage distribution is to be tracked and reported.

In order to generate more robust information about fisher distribution in the HCP area, a forest carnivore survey methodology was developed in 1999-2000, and implementation of the strategy began in 2000. Remote baited camera sets were used according to the methods of Zielinski and Kucera (1995). The 2000-2005 baseline survey established the occupancy of fisher in survey units in most WAAs across HRC lands. Beginning in 2010 a second survey cycle of HRC lands was initiated according to the same methods. This report summarizes the 2000-2005 survey, current results of the second cycle, compares occupancy of the survey units, and reports seral stage distribution.

Baseline Survey (2000-2005)

Methods

In accordance with the methods developed for the Pacific fisher research/monitoring project, a property-wide assessment to determine possible fisher presence and distribution on HRC lands was completed in 2005. The assessment occurred over a five-year period (2000-2005), including a total of 119 sample units, according to Zielinski and Kucera (1995) methods. All lands covered under the HCP (approximately 210,000 acres) comprised the pool from which the sample units were selected for the duration of the project (Figure 1).

The sample units are four square mile areas, following the alignment of section lines. This unit size was designed to take in the known variations in Pacific fisher home range, and to be consistent with other studies being conducted within the Pacific Northwest (Zielinski and Kucera 1995). Each of these sample units received either two TrailMaster 1500 single sensor photographic stations, two TrailMaster 550 dual sensor photographic stations, or a combination of the two, for a minimum of 35 sample nights.

Results

The sample units scheduled for the final season of the initial assessment were completed by April 2005 (Table 2). This completed the requirements of the HCP for the property-wide assessment for Pacific fisher monitoring.

Results of the baseline survey included the establishment of Pacific fisher presence in all of the large Watershed Assessment Areas (WAAs) on HRC lands, with the exception of the Van Duzen WAA. Subsequently we found that Green Diamond Resource Company had reported presence of fisher in this WAA. Incidental detections were documented fisher sightings within the sample unit, but not at the camera trap.

There were relatively few detections overall, with presence established in 15 sample units. There were 118 sample units completed during the initial five year survey, at a rate of 70 camera nights per unit (2 cameras per unit), for a total of 6,370 sample nights. Survey unit 118 could not be done as the PALCO property in that unit was sold prior to the survey. The 15 detections from 118 sample units resulted in a detection rate of 0.13. Thus, fisher may be well distributed spatially on HRC lands, but may occur in relatively low numbers based on the sample results.

Table 2. Order of units sampled over the initial five-year period for the Pacific fisher (*Martes pennanti pacifica*).

Unit Sampling Order				
(2000-2001)	(2001-2002)	(2002-2003)	(2003-2004)	(2004-2005)
10	19	18	114	57
111	53	67	54	60
116	88	59	24	74
23	71	94	72	9
22	110	4	16	103
96	40	64	15	65
80	90	45	76	2
107	115	55	75	69
87	68	83	41	79
105	92	34	11	102
33	97	32	66	77
7	6	117	31	30
112	20	118*	106	13
49	27	46	43	14
29	8	89	108	26
28	85	37	5	36
73	109	17	101	82
50	44	52	70	38
42	3	100	48	12
58	56	84	95	
61	119	104	62	
1	47	21	93	
81	35	25	39	
91	98	99	113	
63	51	86	78	

Units not surveyed due to active harvesting, access problems, or end of survey season. These units were sampled at the end of successive years in numerical order, time and weather permitting, or they were sampled in the 5th year of the study (except 118).

Surveyed in year 2

Surveyed in year 3

* Unit 118 (Redway) was sold by PALCO, and was not surveyed.

Table 3. Fisher detections, all methods, 2000 - 2005.

Sample Unit	Detection Year	Zone	Sample Order	Contact Type
32	2000	II	11	Incidental
43	2000	II	14	Incidental
97	2001	IV	11	Incidental
24	2002	I	3	Incidental
27	2002	II	14	Camera
85	2002	IV	16	Camera
115	2002	V	8	Incidental
17	2003	I	17	Camera
25	2003	I	23	Camera
37	2003	II	16	Camera
37	2003	II	16	Incidental
41	2003	II	9	Incidental
5	2004	I	16	Camera
11	2004	I	10	Camera
95	2004	IV	20	Camera

Second Survey Cycle 2010-2013

Methods

The methods for this resurvey begun in 2010 are similar to the initial property-wide survey of 2000-2005. The schedule of the resurvey mirrors the original survey (Table 4).

During the 2010-2011 season each of the sample units received either two Bushnell Trophy Trailcam monitoring systems, two TrailMaster 550 dual sensor photographic stations, or a combination of the two, for a minimum of 35 sample nights. Bait packs (~10kg) were wired to a tree in a suitable location within the four square mile units. Gusto (added to lanolin for ease of field application) was also used as an extra attractant or lure. Camera stations were checked weekly and bait packs replaced as necessary and any adjustments, repair, camera film, SD card or battery replacement would occur at that time.

During this period, five sample units were surveyed using the older style Trailmaster 550 cameras. No fishers were detected using these trail monitoring systems. Black bear activity was very high in November through December 2010, but tapered off significantly by mid-January 2011. Damage to the Trailmaster camera sets from black bears is common (e.g. severed cords) and can reduce camera effectiveness, leading to false negatives.

Table 4. Proposed order of units to be sampled over a five-year period (2010 – 2015) for the Pacific fisher (*Martes pennanti pacifica*) on HRC property.

Unit Sampling Order				
(2010-2011)	(2011-2012)	(2012-2013)	(2013-2014)	(2014-2015)
10	19	18	114	57
111	53	67	54	60
116	88	59	24	74
23	71	94	72	9
22	110	4	16	103
96	40	64	15	65
80	90	45	76	2
107	115	55	75	69
87	68	83	41	79
105	92	34	11	102
33	97	32	66	77
7	6	117	31	30
112	20	118*	106	13
49	27	46*	43	14
29	8	89	108	26
28	85	37	5	36
73	109	17	101	82
50	44	52	70	38
42	3	100	48	12
58	56	84	95	
61	119	104	62	
1	47	21	93	
81	35	25	39	
91	98	99	113	
63	51	86	78	

* Units 46 and 118 are no longer part of HRC property and will not be surveyed.

To try and reduce such problems, in January 2011 we purchased Bushnell Trophy Trailcam camera monitoring systems to phase in and eventually replace the Trailmaster 550 cameras. The Bushnell Trailcams are a digital camera without the peripheral equipment (e.g. connecting cords) that can lead to problems with the Trailmaster systems.

The new camera traps appeared to yield positive results almost immediately. We used the first two Bushnell cameras in the upper watershed of Bear River in unit 96. There was a fisher detection on 22 February 2011 that occurred in plot 96 B (just north of the Chisum Pond) and appeared to be a female or juvenile based on the relatively small size. Another fisher was detected on 20 May 2011 in the Larabee Creek drainage at unit

80 B (Figure 2). The new camera systems seemed to work efficiently, required less maintenance, and appeared to provide excellent feedback.

By the 2011-2012 season we had converted our camera traps entirely to the Bushnell Trophy Trailcam systems. Other than the change in camera systems, surveys have continued during the current reporting period using the same methods as for the previous surveys.

Results

During the 2010-2013 survey period 40 units (80 camera traps) have been surveyed to date for a total of 2,800 camera nights. Camera trap results from 2010-2013 surveys include detections of 21 different species (Table 5). There were no observable detections at 10 traps (six units). Unidentifiable rodent and unidentifiable other species were detected at one trap each.

Pacific fisher were detected at 20 of the camera traps, covering 15 of the 40 surveyed sample units, for a trap detection rate of 0.25, an increase compared to the 2012 rate of 0.22, and to the 0.13 for the total baseline survey results. The fisher unit detection rate is now 0.38, compared to the 0.35 reported in 2012. There have been a total of seven Pacific fisher detections during the 2012 – 2013 season to date. The Pacific fisher trap detection rate is now second only to the black bear.

Black bears (*Ursus americanus*) were the most commonly detected species (0.53 trap, 0.60 unit), followed by fisher (0.25, 0.38), blacktail deer (*Odocoileus hemionus*, 0.24, 0.38), and gray fox (*Urocyon cinereoargenteus*, 0.23, 0.35). Bobcat (*Lynx rufus*) detections also increased with this report, from a trap detection rate of 0.11 to 0.15, and from 0.13 to 0.25 at the unit level. Bobcat are a known predator of fishers (e.g. Lofroth et al. 2010).

New species detected this year included Roosevelt elk (*Cervus canadensis roosevelti*), gray jay (*Perisoreus canadensis*), and wild turkey (*Meleagris gallopavo*).

Table 5. Species Detected by Camera Trap and Unit 2010-2013.

Species	Scientific Name	# of Traps Where Detected	Trap Detection Rate	# of Units Where Detected	Unit Detection Rate
Black Bear	<i>Ursus americanus</i>	42	0.53	24	0.60
Pacific Fisher	<i>Martes pennanti pacifica</i>	20	0.25	15	0.38
Blacktail Deer	<i>Odocoileus hemionus</i>	19	0.24	15	0.38
Gray Fox	<i>Urocyon cinereoargenteus</i>	18	0.23	14	0.35
Bobcat	<i>Lynx rufus</i>	12	0.15	10	0.25
Western Spotted Skunk	<i>Spilogale gracilis</i>	10	0.13	9	0.23
None	NA	10	0.13	6	0.26
Virginia Opossum	<i>Didelphis virginiana</i>	9	0.11	5	0.13
Coyote	<i>Canis latrans</i>	7	0.09	5	0.13
Western Gray Squirrel	<i>Sciurus griseus</i>	6	0.08	4	0.10
Turkey Vulture	<i>Cathartes aura</i>	5	0.06	4	0.10
Mountain Lion	<i>Puma concolor</i>	4	0.05	4	0.10
Steller's Jay	<i>Cyanocitta stelleri</i>	3	0.04	3	0.08
Raccoon	<i>Procyon lotor</i>	3	0.04	3	0.08
Wild Pig	<i>Sus scrofa</i>	3	0.04	2	0.05
Roosevelt Elk	<i>Cervus canadensis roosevelti</i>	3	0.04	2	0.05
Ringtail	<i>Bassariscus astutus</i>	2	0.03	2	0.05
Gray jay	<i>Perisoreus canadensis</i>	2	0.03	1	0.03
Unknown Rodent	NA	1	0.01	1	0.03
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	1	0.01	1	0.03
Douglas' Squirrel	<i>Tamiasciurus douglasii</i>	1	0.01	1	0.03
Varied Thrush	<i>Ixoreus naevius</i>	1	0.01	1	0.03
Unknown	NA	1	0.01	1	0.03
Wild Turkey	<i>Meleagris gallopavo</i>	1	0.01	1	0.03

A complete summary of the 2010-2012 surveys to date is provided in Table 6. Unit locations are shown on Figure 1.

Table 6. 2010-2013 Pacific fisher survey summary (fisher detections in **bold font**).

Unit	Order	Setup Date	Pull Date	Fisher Detections?	Species Detected
10A	1	12/3/10	1/7/2011	No	black bear, gray fox
10B	1	12/3/10	1/7/2011	No	black bear, gray fox
111A	2	12/7/10	1/11/2011	No	blacktail deer, gray fox, black bear
111B	2	12/7/10	1/11/2011	No	black bear
116A	3	12/9/10	1/13/2011	No	black bear, gray fox, blacktail deer
116B	3	12/9/10	1/13/2011	No	black bear

Unit	Order	Setup Date	Pull Date	Fisher Detections?	Species Detected
22A	4	12/10/10	1/14/2011	No	black bear, gray fox
22B	4	12/10/10	1/14/2011	No	black bear, gray fox
23A	5	12/13/10	1/17/2011	No	none
23B	5	12/13/10	1/17/2011	No	black bear, gray fox
96A	6	2/3/11	4/7/2011	No	mountain lion, gray fox, ringtail
96B	6	2/3/11	4/7/2011	Yes	mouse spp., gray squirrel, Pacific fisher
80A	7	5/17/11	6/21/11	Yes	black bear, Pacific fisher
80B	7	5/17/11	6/21/11	Yes	opossum, black bear, Pacific fisher
107A	8	6/3/11	7/8/11	No	opossum, black bear
107B	8	6/3/11	7/8/11	No	opossum, black bear
87A	9	7/18/11	8/22/11	No	black bear, Stellers jay, bobcat, flying squirrel
87B	9	7/18/11	8/22/11	No	black bear
105A	10	1/26/11	3/2/11	No	mountain lion, spotted skunk, gray fox
105B	10	1/26/11	3/2/11	No	gray fox
33A	11	9/7/11	10/12/11	No	none
33B	11	9/7/11	10/12/11	No	none
110A	5	12/7/12	1/11/13	No	black bear
110B	5	12/7/12	1/11/13	No	blacktail deer, black bear, Stellers jay
112A	13	9/8/11	10/13/11	No	raccoon, gray squirrel, opossum, black bear, spotted skunk
112B	13	9/8/11	10/13/11	No	black bear, gray squirrel, blacktail deer, wild pig, opossum

Unit	Order	Setup Date	Pull Date	Fisher Detections?	Species Detected
49A	14	11/1/11	12/6/11	Yes	black bear, blacktail deer, Pacific fisher
49B	14	11/2/11	12/7/11	No	black bear, bobcat
29A	15	11/7/11	12/12/11	No	black bear
29B	15	11/8/11	12/13/11	No	blacktail deer, gray fox, black bear
28A	16	11/15/11	12/20/11	Yes	black bear, bobcat, Pacific fisher, blacktail deer, Stellers jay, Douglas squirrel
28B	16	11/15/11	12/20/11	No	blacktail deer, unk spp., black bear, bobcat
73A	17	12/16/11	1/20/12	No	bobcat, black bear, varied thrush, gray squirrel, spotted skunk, blacktail deer, opossum
73B	17	12/17/11	1/21/12	No	opossum
42A	19	12/27/11	1/31/12	No	opossum, blacktail deer
42B	19	1/3/12	2/7/12	No	blacktail deer, spotted skunk
115A	9	2/4/13	3/11/13	No	wild pig, wild turkey, bobcat, coyote
115B	9	2/4/13	3/11/13	No	wild pig, bobcat
19A	1	8/8/12	9/12/12	No	black bear
19B	1	8/8/12	9/12/12	No	black bear, bobcat
1A	22	3/21/12	4/25/12	No	none
1B	22	3/21/12	4/25/12	Yes	Pacific fisher
20A	13	3/20/13	4/24/13	Yes	Pacific fisher
20B	13	3/20/13	4/24/13	Yes	Pacific fisher
27A	14	3/20/13	4/24/13	No	bobcat, black bear
27B	14	3/20/13	4/24/13	No	black bear

Unit	Order	Setup Date	Pull Date	Fisher Detections?	Species Detected
40A	6	12/12/12	1/16/13	Yes	black bear, coyote, bobcat, Pacific fisher
40B	6	12/12/12	1/16/13	Yes	black bear, spotted skunk, gray fox, coyote, Pacific fisher
50A	18	7/13/12	8/17/12	No	Roosevelt elk, blacktail deer, black bear, gray fox
50B	18	7/13/12	8/17/12	No	Roosevelt elk, blacktail deer, bobcat, coyote
53A	2	10/11/12	11/15/12	No	black bear
53B	2	10/11/12	11/15/12	No	none
58A	20	1/12/12	3/5/12	No	spotted skunk
58B	20	1/12/12	3/5/12	No	spotted skunk, gray squirrel, bear or deer, mountain lion
60A	8	1/22/13	2/26/13	No	none
60B	8	1/22/13	2/26/13	No	none
61A	21	3/16/12	4/20/12	No	turkey vulture
61B	21	3/16/12	4/20/12	No	blacktail deer, turkey vulture
63A	25	4/13/12	5/18/12	No	coyote, opossum
63B	25	4/13/12	5/18/12	Yes	Pacific fisher, coyote, raccoon, blacktail deer, turkey vulture
6A	12	3/5/13	4/9/13	No	gray jay
6B	12	3/5/13	4/9/13	No	gray jay, turkey vulture, common raven
71A	4	10/26/12	11/30/12	Yes	black bear, gray fox, gray squirrel, blacktail deer, Roosevelt elk, coyote, Pacific fisher
71B	4	10/26/12	11/30/12	No	black bear, opossum, blacktail deer, spotted skunk
7A	12	2/28/12	4/3/12	Yes	spotted skunk, Pacific fisher
7B	12	2/28/12	4/3/12	Yes	Pacific fisher

Unit	Order	Setup Date	Pull Date	Fisher Detections?	Species Detected
81A	23	3/26/12	4/30/12	No	black bear
81B	23	3/26/12	4/30/12	Yes	Pacific fisher, ringtail, black bear, blacktail deer
85A	15	5/14/13	6/18/13	No	none
85B	15	5/14/13	6/18/13	No	none
88A	3	10/23/12	11/27/12	No	gray fox, blacktail deer, opossum, bobcat
88B	3	10/23/12	11/27/12	Yes	black bear, gray fox, Pacific fisher
90A	7	12/18/12	1/22/13	Yes	Pacific fisher, ringtail, black bear, gray fox
90B	7	12/18/12	1/22/13	Yes	Pacific fisher
91A	24	5/25/12	6/29/12	No	black bear
91B	24	5/25/12	6/29/12	No	black bear, raccoon, turkey vulture
92A	11	2/5/13	3/12/13	No	gray fox, spotted skunk
92B	11	2/5/13	3/12/13	Yes	Pacific fisher
97A	10	2/6/13	3/13/13	Yes	Pacific fisher, mountain lion
97B	10	2/6/13	3/13/13	No	none

Table 7 provides a comparison of results of the baseline (2000-2004) surveys and current (2010-2013) surveys. As discussed above, 40 of the 118 sample units have been resurveyed to date, with a total of 15 fisher detections. Two sample units (1 and 97) were occupied by fisher on the baseline and also shown current occupancy (100% occupancy rate). 23 sample units had negative results on both the baseline and current survey. Interestingly, 12 sample units had negative results on the baseline survey, but had fisher detections on the current survey. Conversely, three units were occupied on the baseline survey, but did not have fisher detections on the current survey. This seeming increase in detections may be related, at least in part, to the improvement in camera equipment, but bears further review and investigation as the current survey continues.

Table 7. Comparison of Baseline (2000-2005) and Current (2010-2013) Surveys.

Pacific fisher Sample Unit #	Pacific fisher detections 2000-2005 surveys	Pacific fisher detections 2010- 2013 surveys
1	Yes	Yes
2	Yes	Not Surveyed
3	No	Not Surveyed
4	No	Not Surveyed
5	Yes	Not Surveyed
6	No	No
7	No	Yes
8	No	Not Surveyed
9	Yes	Not Surveyed
10	No	No
11	Yes	Not Surveyed
12	No	Not Surveyed
13	No	Not Surveyed
14	No	Not Surveyed
15	No	Not Surveyed
16	No	Not Surveyed
17	Yes	Not Surveyed
18	No	Not Surveyed
19	No	No
20	No	Yes
21	No	Not Surveyed
22	No	No
23	No	No
24	Yes	Not Surveyed
25	Yes	Not Surveyed
26	No	Not Surveyed
27	Yes	No
28	No	Yes
29	No	No
30	No	Not Surveyed
31	No	Not Surveyed
32	Yes	Not Surveyed
33	No	No

Pacific fisher Sample Unit #	Pacific fisher detections 2000-2004 surveys	Pacific fisher detections 2010- 2013 surveys
34	No	Not Surveyed
35	No	Not Surveyed
36	No	Not Surveyed
37	Yes	Not Surveyed
38	No	Not Surveyed
39	No	Not Surveyed
40	No	Yes
41	Yes	Not Surveyed
42	No	No
43	Yes	Not Surveyed
44	No	Not Surveyed
45	No	Not Surveyed
46	No	Not Surveyed
47	No	Not Surveyed
48	No	Not Surveyed
49	No	Yes
50	No	No
51	No	Not Surveyed
52	No	Not Surveyed
53	No	No
54	No	Not Surveyed
55	No	Not Surveyed
56	No	Not Surveyed
57	No	Not Surveyed
58	No	No
59	No	Not Surveyed
60	No	No
61	No	No
62	No	Not Surveyed
63	No	Yes
64	No	Not Surveyed
65	No	Not Surveyed
66	No	Not Surveyed
67	No	Not Surveyed
68	No	Not Surveyed

Pacific fisher Sample Unit #	Pacific fisher detections 2000-2004 surveys	Pacific fisher detections 2010- 2013 surveys
69	No	Not Surveyed
70	No	Not Surveyed
71	No	Yes
72	No	Not Surveyed
73	No	No
74	No	Not Surveyed
75	No	Not Surveyed
76	No	Not Surveyed
77	No	Not Surveyed
78	No	Not Surveyed
79	No	Not Surveyed
80	No	Yes
81	No	Yes
82	No	Not Surveyed
83	No	Not Surveyed
84	No	Not Surveyed
85	Yes	No
86	No	Not Surveyed
87	No	No
88	No	No
89	No	Not Surveyed
90	No	Yes
91	No	No
92	No	Yes
93	No	Not Surveyed
94	No	Not Surveyed
95	Yes	Not Surveyed
96	No	Yes
97	Yes	Yes
98	No	Not Surveyed
99	No	Not Surveyed
100	No	Not Surveyed
101	No	Not Surveyed
102	No	Not Surveyed

Pacific fisher Sample Unit #	Pacific fisher detections 2000-2004 surveys	Pacific fisher detections 2010-2013 surveys
103	No	Not Surveyed
104	No	Not Surveyed
105	No	No
106	No	Not Surveyed
107	No	No
108	No	Not Surveyed
109	No	Not Surveyed
110	No	No
111	No	No
112	No	No
113	No	Not Surveyed
114	No	Not Surveyed
115	Yes	No
116	No	No
117	No	Not Surveyed
118	Not Surveyed	Not Surveyed
119	No	Not Surveyed

Habitat Summary

Regarding maintenance of habitat for the Pacific fisher, the HCP states:

“Retention of late seral habitat on the ownership through the life of the permit is expected to provide sufficient habitat in terms of quantity, quality, and distribution to contribute to a viable population. Channel Migration Zones (CMZs) and Riparian Management Zones (RMZs) are expected to provide connectivity across the landscape. In many locations, CMZs and RMZs will intersect with other RMZs or be augmented by habitat subject to silvicultural restrictions (e.g. NSO activity sites, mass-wasting sites, or steep slopes adjacent to RMZs). These areas, MMCAs, and adjoining public lands will form an interconnecting network of habitat which is expected to provide opportunities for denning and resting sites in the Humboldt, Yager, and Van Duzen WAAs. HRC land within the Bear, Mattole, and Eel WAAs is not expected to provide blocks of late seral habitat through the life of the permit. Late seral and old growth habitat on public lands adjacent to HRC ownership in these two WAAs is expected to provide suitable habitat for the species.

The conservation measures to retain and recruit habitat structural components within and outside of RMZs across the ownership is expected to provide older forest legacies in younger stands when these stands reach a mid-successional seral stage. These

legacy components are expected to provide suitable substrate for Pacific fisher denning and resting sites.”

The quantity and distribution of late seral habitat as of January 2013, according to the most recent stand inventory information as cross-walked to California Wildlife Habitat Relationships System (CWHR) types, and thus seral stage for the Watershed Assessment Areas (WAAs), is shown in Table 8. Table 8 does not include information for the Mad River WAA in which HRC has only 3,325 acres. HRC’s HCP commitment is to maintain at least 10% late seral by WAA (HCP 6.11). CMZs, RMZs, NSO activity sites, mass-wasting sites, and steep slope areas are tracked separately through other HCP programs and applied on each Timber Harvesting Plan (THP). In addition, the retention and recruitment of habitat structural components are tracked via individual THPs.

Pacific fisher habitat should also benefit over time as a result of the HRC conservation measure of retention of all old growth trees meeting the company’s policy, and use of uneven-aged silviculture, two additional measures not contemplated during the writing of the HCP and Biological Opinion.

Table 8. Seral Types by Watershed Assessment Area (WAA), Acres by Seral Type (not including Mad River).

WAA	Grass	Hardwood	Open	Young	Mid	Late	Totals	% Late Seral
Humboldt Bay		296	209	8,209	17,492	12,124	38,329	31.6%
Yager Creek	23	169	2,133	16,285	10,838	4,578	34,027	13.5%
Van Duzen River	79	401	870	3,696	16,858	3,528	25,432	13.9%
Eel River	565	7,481	3,020	20,806	28,805	14,048	74,723	18.8%
Bear/Mattole River	2,427	12,073	2,372	5,938	4,444	7,430	34,683	21.4%
Total	3,094	20,420	8,603	54,933	78,437	41,708	207,195	

Summary and Recommendations

HRC will continue to use remote camera survey efforts over time in the study area (HCP lands) to develop an index of occupancy, and will continue to track habitat per WAA.

The 2012 - 2013 survey season is year three of the current cycle of property-wide surveys. The current cycle should be completed by the 2014 - 2015 season (Table 4) when a complete resurvey of the property will be finished and a full comparison to the baseline can be done. No changes in monitoring strategy are proposed at this time.



Figure 2. Photo of bobcat at camera trap in Upper Tom Gulch.



Figure 3. Roosevelt elk near Corbett Ranch (Van Duzen).

Literature Cited

Lofroth, E.C., C.M. Raley, J.M. Higley, R.L. Truex, J.S. Yaeger, J.C. Lewis, P.J. Happe, L.L. Finley, R.H. Naney, L.J. Hale, A.L. Krause, S.A. Livingston, A.M. Myers, and R.N. Brown. 2010. Conservation of Fishers (*Martes pennanti*) in South-Central British Columbia, Western Washington, Western Oregon, and California-Volume 1: Conservation Assessment. USDI Bureau of Land Management, Denver, Colorado, USA.

Zielinski, W.J. and T.E. Kucera, editors. 1995. American marten, fisher, lynx and wolverine: survey methods for their detection. U.S. Forest Service General Technical Report PSW-GTR-157. 163 pp.