



DESCHUTES NATIONAL FOREST

MONITORING

FISCAL YEAR 2007

compiled by:

Mose Harris IV

Range Monitoring

Range Program



Allotments are monitored to meet compliance with the 2000 Grazing Implementation Monitoring Module. Monitoring is directed by several “triggers” as defined in the module. “Triggers” define when livestock should be moved. Allotments are placed by category and monitored at differing levels. More about the Implementation Module can be seen via the website at

<http://www.blm.gov/nhp/efoia/or/fy2000/im/m2000-045at1.htm>. The majority of the allotments on the Deschutes National Forest are Category 3 (All pasture/use areas that do not have riparian areas) and do not have hard monitoring targets like those with Threatened and Endangered species. Indian

Ford is the only active Category 2 allotment being monitored now. The Indian Ford Allotment is classified as a Category 2 allotment because the upper reaches of Indian Ford Creek are known to be habitat for Redband trout. The allotment was classified as a Category I allotment until the spring of 2007 when it was determined that it did not contain any habitat for listed fish or amphibian species. Because of the past Category I classification a designated monitoring area (DMA) was established along the creek in 2006. The PACFISH/INFISH Effectiveness Monitoring Program (PIBO) established a “managed” DMA monitoring site along the creek and within the allotment in 2006.

Results are mixed and site specific but for CAT 3 upland allotments the general trend is stable to improving with an increase in Idaho fescue (forage species). Some areas have shown a decrease in Antelope bitterbrush most likely due to long lived plants and little disturbance.

In May of 2007, a Proper Functioning Condition (PFC) assessment was completed for the Indian Ford allotment and the riparian area was found to be in proper functioning condition. The assessment was completed in conjunction with a PFC training session attended by 16 trainees and included a cadre of five specialists. PFC is a qualitative method for assessing the condition of riparian-wetland areas. The term PFC is used to describe both the assessment process, and a defined, on-the-ground condition of a riparian-wetland area. The PFC assessment refers to a consistent approach for considering hydrology, vegetation, and erosion/deposition (soils) attributes and process to assess the condition of riparian-wetland areas. A checklist is used for the PFC assessment which synthesizes information that is foundational to determining the overall health of a riparian-wetland system. The PFC assessment found that there is 1) diverse age-class distribution of riparian-wetland vegetation; 2) diverse composition of riparian-wetland vegetation; 3) that the species present indicate maintenance of riparian-wetland soil moisture characteristics; 4) that streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high-stremflow events; 5) riparian-wetland plants exhibit high vigor; and 6) adequate riparian-wetland vegetation cover is present to protect banks and dissipate energy during high flows.

Annual monitoring of key areas has been, or is being, established for all the active allotments on the Forest (direction in the 2000 Implementation Module). The intent is to monitor these key locations during and at the end of the growing season to determine whether the standard was achieved. Stubble height on Idaho fescue is the key element, but photos are also taken at the time

of measurement. Each pasture is monitored as time allows or as often as the need arises. Shrub utilization is monitored by adaptive management methods on the Pine Mountain Allotment and the Cinder Cone Allotments using line intercept methods to monitor shrub utilization, growth form, and height depending on actual use by livestock.

Long-term condition and trend clusters were not established on the allotment and there are no photo records to help determine the trend of vegetation conditions over long periods of time or pre-European settlement. Monitoring riparian areas was emphasized during the 1990's and two riparian cross section photo points and one wet meadow/upland utilization transect was established to provide a photo record and to monitor stubble height.

Annual Utilization Monitoring Data for Plot ESA-Indian Ford-1

Year	Medium Stubble Height Inches	Key Forage Species	Remarks
2007	4	Kentucky bluegrass only in 2007	Came on 2 weeks later and stayed 13 days longer to facilitate monitoring of Peck's Penstemon.
2006	8	Mixed species	
2005	4	Mixed species	
2004	4	Mixed species	
2003	8	Mixed species	
2002	Not Measured	Mixed species	Non-use
2001	5	Mixed species	Predominant species is Kentucky bluegrass
2000	9	Mixed species	Did not include Baltic Rush
1999	10	Sedge	

Table C. 1 Stubble Height Measurements from 1999-2007

Stubble height is measured annually as a monitoring tool. When the allotment is grazed during a season, stubble height is used as an annual indicator and as such it is not part of the terms and conditions of the permit or is it considered a long term objective for riparian management.

**Indian Ford Allotment Photo(s) Monitoring
2006 – 1998**

Upper Riparian Plot Series ▼



Photo(s) 7/26/2006



Photo(s) 8/5/2005



Photo(s) 9/11/2004

Utilization Plot – Dry Meadow Series ▼



Upper Riparian Plot Series ▼



Photo(s) 8/1/2003

Utilization Plot – Dry Meadow Series ▼



Photo(s) 10/23/2002



Photo(s) 10/21/2001



Upper Riparian Plot Series ▼



Photo(s) Spring of 1999



Photo(s) spring 1998

Utilization Plot – Dry Meadow Series ▼



Photo(s) 9/5/2000



Photo(s) 8/2/1999



Photo(s) spring 1999

Lower Riparian Plot Series ▼ (Left to Right)



Photo(s) 8/5/2005

Spring 1999



Spring 1998



Stocking rates are usually expressed in terms of a standard animal unit for a specific length of time for a unit of land. The most common measurement of stocking rate is the animal unit month (AUM). One AUM is the amount of forage required by an animal unit for 1 month. An animal unit is generally one mature cow of approximately 1,000 pounds and a calf as old as 6 months, or their equivalent. One AUM is equal to 1,000 pounds of forage, by dry weight. End of year use (see table below) is reported for the **Deschutes National Forest** in terms of 1,000s of AUMs or MAUMs.

Annual Grazing Use on the Deschutes National Forest

Year	MAUM's
2008	6.4
2007	9.0
2006	7.2
2005	9.8
2004	6.9
2003	4.8
2002	8.3
2001	10
2000	11
1999	13.2
1998	14.2
1997	14.2
1996	13
1995	17
1994	22
1993	22.1

Allotments are also monitored in relation to project actions such as mowing for fuels reduction and timber sale activity and impacts to the range program. This is done as needed annually. Damage to water systems, fences, and study plots has occurred. Projects that occurred in FY 2006 included some prescribed burns in the Flat Top area and timber sales in the Buick Project area. Prescribed burns and/or mechanical mowing also took place in the Aspen Project Area, Fuzzy, and Buick.

**Range Long Term Study Program
Field Study Sites and Program Needs / Opportunities**

Over time, three basic study site types have been used to track plant community trend and/or response to vegetative management such as livestock grazing, brush crushing, plant seeding, burning, and mowing. These are Current Trend Plots, Enclosures, and treatment transects (site specific current trend plots in treatment units).

Current Trend Transects:

Records indicate that there are 76 Current Trend Plots (CTs) on the **Forest**, most of which are located on the east **Bend/Fort Rock Ranger District**. Forty two of these plots and their associated transects were read in the summer of 1993. All plots within active allotments were read and many in-active or vacant allotments were also read. In the summer of 2003, 22 CTs (46 transects) were read in preparation for the Cluster II Range Environmental Assessment. In the summer of 2004, 3 CT's (7 transects) were read. In the spring and summer of 2006, 10 CT's (21 transects) were read. In the spring and summer of 2007, 6 CT's (12 transects) were read. In the spring and summer of 2008, 7 CT's (13 transects) were read. The data recorded when reading

CTs includes the plant association group present on the allotment, the soil type, any historical evidence of logging or large fires, type of forbs present, the predominant forage species and in what quantities, any fuels reduction taking place, shrub species presence and the increase or decrease in amount of bare soil. Recording information to determine long term trend and maintenance of the monitoring sites. Yes, but it does require later summary and changes over time.

Study Enclosures:

There are nine 3-way type enclosures established on the **Bend/Fort Rock Ranger District**. All are east of HWY 97. In the summer of 2003, four study enclosures were read for a total of 14 transects read in preparation for the Cluster II Range Environmental Assessment. In the summer of 2004, one study enclosure was read for a total of 6 transects read. In the spring/summer of 2006, two 3-way study areas were read (6 transects). In the spring/summer of 2008, one 3-way study area was read (6 transects).

Generally the enclosures consist of a 7-foot high woven wire fence area around an acre in size (keeps both deer and livestock out), a 3-strand barbed wire fenced area also about an acre in size (keeps cattle out), and a control area with no fence. Each structure has an associated transect located inside the study plot. There are three different enclosures to facilitate comparison of impacts, long term trends, and, in this case, response of vegetation to mechanical mowing.

Treatment Transects:

There are an estimated 6 to 10 transects in older treatment units. These transects need to be located and re-read. In the spring/summer of 2006, six of these CTs were relocated and read. Data evaluation is incomplete at this time and has not been completely analyzed. This should be concluded by December of 2009.

General Discussion:

There is a database being developed in cooperation with the Pacific Northwest Regional Office which includes allotment name, the number of plots and transects, date established, vegetation type, range condition, and date last visited. This should prove to be very helpful in evaluating and monitoring our range conditions in the future.

Contact: Don Sargent, Range Technician; Bend/Fort Rock Ranger District; (541)383-4739.

Blue-green Algae Monitoring



The objective of this type of monitoring is to determine risk to human health from the toxins found in blue/green algae. The duration of study is annually every week from June through September when the algae is most likely to appear in harmful levels. Monitoring elements include water temperature, pH, and clarity measurements attained through the use of secchi disks. The water samples collected are sent to a laboratory to be analyzed for abundance of phytoplankton. These are indicators of the biological productivity of the lake as well as for levels of potentially toxic blue-green algae present. Occasionally, samples are tested for toxins.

Blue-green algae densities were monitored on Odell Lake (**Crescent Ranger District**), Suttle Lake (**Sisters Ranger District**) and Lava Lake, Paulina Lake, Crane Prairie Reservoir, and Wickiup Reservoir (**Bend/Fort Rock Ranger District**) in 2007. Health advisory notices were posted for Odell Lake when densities of potentially toxic blooms exceeded the standard of 100,000 cells/mL of lake water on a sample collected on July 16, 2007. Densities of *Anabaena flos-aquae*, one of the potentially toxic blue-green algae found on the **Deschutes National Forest**, peaked in Odell Lake on July 23rd at over 1,000,000 cells/mL. Cell densities had dropped to just over 12,000 cells/mL on July 30th.

None of the other lakes sampled on the forest experienced cell densities above 100,000 cells/mL.

Contact: Marc Wilcox, Forest Hydrologist, Deschutes National Forest; 541-383-5537

Fuels Monitoring

An Assessment of Fuel Treatments on Three Large 2007 Pacific Northwest Fires

This report was written to Fire Directors Ken Snell and Carl Gossard with the intent to assess the effectiveness of past fuel and vegetation treatments on reducing hazardous fuels.



The signing of the National Fire Plan in 2000 increased the fuel treatment budgets at the national level. Since this signing, there have been fuel treatments on an estimated 713,000 acres on Oregon forests. A strong effort has been placed on implementing the most effective treatments possible. The two fuel treatment goals are: 1) Reducing wildfire risks to communities and the environment, and 2) Improving ecosystem resiliency to wildfire effects. This study was conducted by local teams consisting of a fuels specialist, an operations specialist, a vegetation manager, and a GIS specialist. Their task was to assess the effectiveness of past fuel and vegetation treatments on reducing hazardous fuels.

Out of the 21 fires that burned on Forest Service and Bureau of Land Management land in Oregon and Washington in 2007, five burned into or adjacent to fuel treatments. To get a better understanding of just how much of an impact fuel treatments have on suppressing wildfires, three large fires from 2007 were broken down and analyzed. The fires observed in this study were The Monument Fire on the Umatilla National Forest and Prineville District BLM, The GW Fire on the Deschutes National Forest, and The Egley Complex on the Malheur National Forest and Burns District BLM. The study was conducted using treatment data supplied by the units, interviews, field observations, and Burned Area Reflectance Classification (BARC) mapping.

The following is a summary of the Deschutes NF fire impacts of the GW Fire on the Sisters Ranger Districts:

The GW Fire originated at 5,500 feet elevation and burned generally downhill in rolling topography down to 3,400 feet elevation. In the past four years, the Sisters Ranger District has experienced five large fires Lake George, 2006; B & B Complex, 2003; Link, 2003; Cache Mountain, 2002; and Cache Creek, 1999. These previous fires provided safe anchor points for fireline construction and allowed resources to focus at the head of the fire which was threatening Black Butte Ranch. Approximately 4,393 acres within the GW Fire perimeter had little or no management activity in recent history. In these untreated areas, suppression resources could not safely or effectively engage the GW Fire due to the extreme fire behavior. Of the total acres burned during the GW fire, 429 acres were past wildfire areas. These types of areas provided the only places from which the fire could be safely engaged. The fire burned through 1,269 acres of other vegetation treatments consisting of commercial and non-commercial harvests of various ages.



Figure 1- Fire behavior on the GW fire's third day, September 2, 2007. (Photo courtesy Gary Miller)

In each one of these fires, the progress of the fire was slowed down upon reaching the treated area. The study showed that more recent treatments and higher-intensity treatments reduced fire behavior and fire effects more effectively than older and less intense treatments.

On all three fires, fuel treatments seemed to increase suppression effectiveness. When the Incident Management Team (IMT) had knowledge of treatments, they used these treated areas to plan and implement suppression strategies and tactics.

Decisions of where to treat are influenced by competing resource objectives and values-at-risk. Managers are challenged by deciding between implementing less intense, low-cost landscape-scale treatments and more intense, high-cost, small-scale treatments.

Key Recommendations from the Report

National Forests and Bureau of Land Management Districts should:

1. Develop and articulate a clear strategy to guide hazardous fuel treatments.
2. Continue to implement the Regional/State Office fuel treatment effects monitoring process.
3. Use treatment data in developing wildfire strategies. Provide fuel treatment maps to Incident Management Teams.

The State/Regional Office should:

1. Develop a strategy for monitoring treatment effectiveness and validate fuel treatment performance when tested by wildfires. The objective is to rely less on anecdotal evidence and retrospective analysis and more on definitive conclusions drawn from data.

Continued landscape scale underburning and maintenance treatments should be part of future long term vegetation and fuel treatment strategies and the need for maintenance treatments will continue to escalate as more lands are restored.

Authors: Steve Harbert, Andrew Hudak, Laura Mayer, Tim Rich, Sarah Robertson

Invasive Plants

Prevention and Implementation of the 2005 Record of Decision

Spotted knapweed



With the signing and implementation of the October 2005 Record of Decision for the Pacific Northwest Region Invasive Plant Program for Preventing and Managing Invasive Plants, specific standards have been established for the prevention of spread of invasive plants on the **Deschutes National Forest**.

The following is a listing of standards that must be addressed and actions taken regarding invasive plant prevention listed by each standard 1 – 10.

1. Prevention of invasive plant introduction, establishment and spread is being addressed in our Forest Service proposed projects. Our District botanists/weed coordinators are providing the weed input which consists of a weed risk assessment for each project.
2. We are requiring the cleaning of heavy equipment before operating on National Forest Lands. The clause being used is under Section 171 – Weed and Disease Prevention. 171.01 states “This work consists of washing and treating construction equipment to remove seeds, plants, and plant fragments from the equipment before the equipment is used on National Forest System lands.”
3. We have clauses that require the use of weed-free straw and mulch on projects on National Forest Lands. Clause 713.05 Mulch, (a) Straw. Furnish certified weed-free straw from oats, wheat, rye, or other grain crops that is free from mold or other objectionable material.
4. We have begun to notify the public of the upcoming requirements for the use of weed free feed on all National Forest lands. Public notification for weed-free feed in wilderness areas and trailheads has been occurring since 2007 when it became required. We have begun to notify the public that in January of 2009 weed-free feed will be required on all forest service lands.
5. We have been incorporating weed prevention considerations into rangeland management activities through Allotment Management Plans and Annual Operating Instructions. Allotment Management Plans address invasive plant prevention as they are updated. Annual Operating Instructions cover any specific invasive plant prevention practices that would apply to that allotment.
6. We have been inspecting gravel pits and rock quarry sites for invasive plants and some have not been used because of the presence of invasive plants.
7. Our road maintenance employees have been provided a video, which explains some techniques to reduce the spread of invasive plants during road maintenance activities. Examples are, to refrain from blading the road if invasive species are present, or to blade from each end toward the middle to confine the weed population rather than spread it.

11 – 23. These standards (11-23) address invasive plant treatments that must be applied to site specific invasive plant projects and these have been incorporated into the Deschutes and Ochoco National Forests Invasive Plant Treatment Environmental Impact Statement that is currently in development.

Contact: Deb Mafera, Invasive Plants Program Manager, Ochoco/Deschutes National Forests; 541-416-6588

Invasive Plant Project Monitoring

The presence of invasive plants has been monitored annually on the Davis Fire area on the **Crescent Ranger District** as well as completing district-wide surveys. With the annual treatments done along the major travel ways on the district, infestations are not expanding at alarming rates – and in most cases are decreasing or staying stable. They are sometimes found in different locations from year to year.

The start date for walking major travel ways on an annual basis was 1997. All invasive plants are pulled except established populations of St. Johnswort (infestations are well-established and manual treatment is not effective) and Common Mullein (lower priority for treatment due to its ubiquity and less environmental concern). Also, bull thistle has a lower priority for treatment, but along roadsides we try to pull all of these weeds if they are easily accessible.

Some examples of new invaders that have been discovered since these surveys began are yellow star thistle (all plants found were pulled, and this infestation is considered eradicated with no new plants occurring since 2004), Kochia was first noted in 2004 (all plants found were pulled – in 2005 and 2006 other infestations were found and pulled, mainly along Highways 97 and 58), and individual plants of meadow knapweed have been found and pulled the past two years along Highway 58 just east of Willamette Pass.

Major travel corridors, fire suppression, and salvage activity areas have been monitored annually since the Davis fire in 2003 which burned a total of 21,000 acres. Mullein and bull thistle infestations in some past harvest units in the Davis Fire area have greatly expanded and increased in density due to conditions created by the fire.

Contact: Deb Mafera, Invasive Plants Program Manager, Ochoco/Deschutes National Forests; 541-416-6588

Wildlife Monitoring

The Deschutes National Forest is involved in a variety of monitoring efforts designed to evaluate the effects of management activities on various environmental factors. Following are a few of the ongoing or planned monitoring efforts designed to evaluate wildlife populations or habitats.



Live Eagle Camera

A live streaming video of a wild eagle nest located at Odell Lake on the **Crescent Ranger District** is part of a cooperative project with the Oregon Zoo, ATT Foundation, The National Fish and Wildlife Foundation, and the Forest Service's NatureWatch Program. The purpose of the project is to bring live video of wild eagles and wild salmon to the Oregon Zoo's Great Northwest Exhibit where the same species are kept in captivity, and to the Internet. The mission of the NatureWatch Program is to provide children and adults the opportunity to safely view, and participate in, activities and programs that raise their level of awareness and understanding of wildlife, fish, and plants, and their connection to ecosystems, landscapes, and people.

http://wwwnotes.fs.fed.us:81/wo/wfrp/find_a_photo.nsf/eaglecam

Bald Eagle Nest Surveys

The **Deschutes National Forest** falls within Recovery Zone 11 (High Cascades) and to a lesser extent Recovery Zone 22 (Klamath Basin) of the Pacific States Recovery Area for the Bald Eagle. The Forest has a goal of producing habitat for 35-45 pairs of bald eagles (LRMP 4-9).

The number of sites occupied by Bald Eagles on the Forest has increased from 28 in 1992 to 46 in 2007 (Table 1). Over the last sixteen years, 534 eaglets have fledged on the Forest, averaging about 33 young per year. Over the last sixteen years, an average of 1.2 young were produced per nesting attempt on the Forest. In 2007, production was slightly lower than the sixteen year average, down to 1.1 young produced per nesting attempt. The recovery goal for productivity per occupied site is 1.00. The Forest's sixteen year average for productivity per occupied site is .90; however in 2007 the average productivity per occupied site was at .77. In 2007, the average nesting success per occupied site was 90% (only nests which produced chicks were considered successful). The recovery goal is a minimum of 65% across all zones.

Table 1. Summary of Bald Eagle Nesting on the Deschutes National Forest (1992-2007)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
#of sites occupied	28	31	31	32	33	35	35	31	34	38	39	42	43	41	46	43
#of nesting attempts	21	23	20	24	23	24	25	26	25	31	30	32	37	31	35	30
success rate per nesting attempt	81%	82%	70%	87%	69%	87%	84%	85%	80%	77%	83%	81%	89%	79%	76%	70%
% occupied territories with nesting attempts	75%	74%	64%	75%	69%	68%	71%	84%	74%	82%	77%	76%	86%	76%	76%	70%
# of young produced	26	26	22	30	22	28	31	33	29	41	38	41	39	39	50	33
Avg #young per nesting attempt	1.24	1.13	1.1	1.25	.96	1.17	1.24	1.27	1.16	1.32	1.27	1.28	1.05	1.25	1.43	1.1
Avg#young per occupied site	0.93	0.84	0.71	0.94	0.67	0.80	0.89	1.06	.85	1.08	.97	.98	.91	.95	1.09	.77

Effective in August 2007, the bald eagle was de-listed as a threatened species across its range because it has recovered from being at risk of extinction. It will continue to be protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. On National Forest system lands, it also will continue to be protected by the National Forest Management Act (NFMA).

The bald eagle has been designated a Regional Forester’s Sensitive Species and will be included on this list for at least the 5-year post-delisting ESA monitoring period. In addition, the Fish and Wildlife Service (FWS) issued the National Bald Eagle Management Guidelines that are intended to help people minimize activities that could interfere with eagle’s ability to forage, nest, roost, breed, or raise young. Such impacts to bald eagles, where they may constitute “disturbance”, are prohibited by the Eagle Act. Because of it’s de-listing; the Forest Service is no longer required to consult with FWS on activities that could affect the bald eagle.

Northern Spotted Owl Nest Surveys



Managing for spotted owls and their habitat became a focus in the late 1980s and early 1990s. The **Deschutes National Forest** identified spotted owl habitat in 1992, then again in 1998 using improved data sets, photos, and GIS layers not available to biologists in 1992. Although the 1998 version of spotted owl habitat identification was an improvement over the 1992 effort, newer information is now available which allows us to improve upon the 1998 effort. Most notably, a forest-wide photo interpretation (PI) layer which was completed in 2000. The new PI layer shows the impact of the recent budworm epidemic, which caused high mortality on an estimated 50,000 to 60,000 acres of forested habitat on the Deschutes National Forest (Eglitis pers. comm. 2001). The latest PI layer gives us the most accurate depiction of tree size class and canopy cover that has ever been available. Finally, earlier habitat identification efforts focused on specific plant associations, while recent observations have shown that habitat can be, and is being used by owls

regardless of plant association, if the proper forest structure exists. In late 2003 and 2004, additional corrections were made as well as updates taking into account losses due to the 2003 and 2004 wildfires. A brief chronology of mapping efforts and results (including the 2001 effort) is described in the 2006-2009 Programmatic BA. Likewise, the U.S. Fish and Wildlife Service (USFWS) published the *Environmental Baseline Update for the Northern Spotted Owl on the Deschutes National Forest, Oregon* in December of 2001.

In 2002, the Deschutes National Forest began an ongoing investigation of all known active and historic spotted owl nest sites and nest stands on the Forest. Objectives of the investigation include: 1) locate, determine status, and record the location (GPS) of all identified nest sites for the 42 spotted owl pairs on the Deschutes National Forest, 2) at each nest site, collect vegetative and topographic features to describe and analyze nest site characteristics, 3) within each forest stand containing a nest site, compile and/or collect stand examination data to describe and analyze nest stand characteristics, and 4) at each nest stand, collect and examine all regurgitated pellets to describe prey use. A database of all data collected was developed and is being refined. Table 2 is a summary of spotted owl nest surveys conducted through 2007.

Several sites are no longer considered potentially viable due to stand replacement fire occurring within the home ranges. These sites were surveyed after the fires (Davis, Eyerly, Cache Mountain, Link, B&B, Black Crater, Lake George, and GW fires) for 1-2 years to determine if sites were still active. No spotted owls were detected. Sites being removed from further consideration include Davis Mt., Abbot/Cabot, Brush Creek, Key West, Cache Mt. West, Cache Mt. East, Santiam Pass, Bear Valley, Spring Creek, First Creek, Dry Creek, Canyon Creek, and Upper Canyon. Therefore, the total number of spotted owl sites for the Deschutes National Forest has been reduced from 44 to 31 at this time.

Table 2. Spotted Owl Nest Survey Summary

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
# of sites surveyed	16	15	23	9	33	25	21	27	25	16	29	32	15	30	32	20	10
% of known sites surveyed	40%	37%	57%	22%	82%	62%	52%	70%	61%	38%	69%	73%	36%	71%	74%	61%	32%
# of occupied sites	16	14	17	9	28	19	11	15	5	5	10	8	9	8	8	6*	7
% of surveyed sites occupied	100%	93%	73%	100%	84%	76%	52%	56%	20%	35%	34%	25%	60%	27%	25%	30%	70%
# pairs attempting to nest	2	9	5	5	9	10	0	7	1	3	0	3	4	1	2	0	0
% of occupied sites, nesting	13%	64%	29%	56%	32%	53%	0%	47%	20%	75%	0	38%	44%	13%	25%	0	0
# of young	4	12	2	6	13	12	0	7	2	5	0	5	4+	2	1	0	0
# of young/nest	2	1.3	0.4	1.2	1.4	1.2	0	1	2	3	0	1.67	1.0+	2	1	0	0

*Barred owl detected at one site – not counted as occupied.

Contact is Lauri Turner, Wildlife Biologist, Deschutes National Forest