

METHODS

Barber Pool Communal Roost Surveys

Surveys of the Barber Pool Communal Roost were conducted three times per week from 1 December 1997 through 13 March 1998, and from 2 December 1998 through 10 March 1999. Roost surveys were conducted every Monday, Wednesday, and Friday, starting approximately two hours before sunset and continuing until darkness. Roost surveys lasted approximately three hours in duration, and were conducted under all weather conditions. We recorded general weather conditions during each roost survey including precipitation, temperature, wind speed and direction, and amount of snow both on the ground and on roost trees. All roost surveys were conducted from the south side of the river from the Surprise Valley development. During roost watches, the entire length of the Surprise Valley property was driven while observers scanned throughout Barber Pool for eagles. All eagles, their ages (adult or immature), exact perching locations, and movements within Barber Pool were recorded in field notes and on topographic maps. The main observation point for roost watches was located on the rim above Barber Pool on a road leading to the New York Canal ([click here to view Figure 1](#)). All main subroost areas could be easily viewed from this observation point. Observers ended roost watches by driving to the north side of the river near the Crow Inn Restaurant to make a final count of eagles using the Barber Pool and Gregerson subroosts. After sunset, a more accurate count of eagles in these subroosts could be made from the north side of the river. The roost trees near Eckert Road were checked for roosting eagles when observers drove from Surprise Valley to the Crow Inn.

Dead Dog Creek Roost Surveys

Monitoring of the Dead Dog Creek Communal Roost was conducted once per week on Wednesday evenings from 3 December 1997 through 11 March 1998, and from 9 December 1998 through 24 March 1999. Dead Dog Creek roost surveys were conducted simultaneously with surveys at Barber Pool. Roost surveys started approximately 2-3 hours before sunset and continued until total darkness, lasted approximately 3-4 hours in duration, and were conducted under all weather conditions. We recorded general weather conditions during roost surveys including temperature, precipitation, wind speed and direction, and amount of snow both on the ground and on roost trees. We recorded species (bald or golden eagles), age (adult or immature), perch locations, direction from which eagles entered the roost, and movements of eagles within the roost. We recorded eagle behavior, eagle movements within the roost stand, and exact roost locations in field notes and on topographic maps. Observers reached the roost by driving (4-WD vehicle, ATV, or snowmobile) to the bottom of Dead Dog Creek along an unmarked 2-track road located west of More's Creek, then hiked to observation points on the hillside north of the roost ([click here to view Figure 2](#)).

Dead Dog Creek Roost Stand Exam

We conducted a thorough exam of the conifer stand containing the Dead Dog Creek Communal Roost during July and August 1998. We used methods modified from Keister et al. (1983) and Dellasala et al. (1998). We first delineated the roost stand by establishing a fixed boundary around the timbered area containing all roost trees ([click here to view Figure 3](#)). We estimated area within this boundary from a USGS topographic map. We determined general forest type and identified dominant plant species present, then sampled roost stand vegetation within thirty-four

0.1 ha (0.25 ac., 18 m, 59 ft. radius) nested circular plots that were systematically positioned at 100 m (328 ft.) intervals along parallel transects. Transects were positioned perpendicular to topographic contours and were spaced at 200 m (656 ft.) intervals (click here to view Figure 3). Transect lengths varied from 300 to 1600 m (984-5250 ft.). We randomly determined the starting point used to position the vegetation plots along each transect.

We measured all dominant and co-dominant trees within the 0.1 ha plots. We defined dominant and co-dominant trees as those trees ≥ 35 cm (13.8 in.) diameter at breast height (dbh) and taller than or the same height as the adjacent trees forming the upper canopy, respectively. We then measured all trees 10-35 cm (4.0-13.8 in.) dbh within a 0.05 ha (0.125 ac.) plot (13.5 m, 41.4 ft radius) nested within the 0.1 ha plot. Lastly, we measured all seedlings and saplings within a 0.01 ha (0.025 ac.) plot (3.8 m, 11.6 ft radius) nested within the 0.05 ha plot. We recorded species and coverage of brush and herbaceous vegetation within each 0.01 ha plot, and noted the amount of downed woody debris and duff for fire potential. At each plot center, we measured slope and aspect using a clinometer and USGS topographic map.

For all trees, we determined species, height was measured with a clinometer, dbh was determined with a tape, and age was determined by increment coring at breast height. Ten-year radial growth (amount of growth within the last 10-year period) was determined from increment cores. We also determined crown class (five classes: open grown, dominant, co-dominant, intermediate, and suppressed), crown ratio (percent of tree with live limbs), and crown shape for all trees within vegetation plots. Crown shape (structure class) was modified from Keister et al. (1983) and Keen (1943). We placed trees into five crown shape categories:

1. Growing stock: Healthy, fast growing, young to middle-aged trees with live crowns and good form.
2. Growing stock, but with $<50\%$ live crown or poor form.
3. Over mature trees: Older, dominant live trees with crowned or flat tops, with $>75\%$ live crowns.
4. Dead top: Growing stock or Over mature trees with completely dead tops.
5. Snag: Dead trees with $>75\%$ of their original form.

In addition to vegetation plots, all trees within the Dead Dog Creek Communal Roost used by bald eagles for perching or roosting were identified throughout the 1997-1998 winter and were plotted on USGS topographic maps. Eagle use trees were returned to during July 1998, and we recorded species, height, dbh, age, 10-year radial growth, crown class, crown ratio, and crown shape as described above for trees measured within vegetation plots.

Surveys of Foraging Areas

Morning surveys of foraging areas were conducted once each week on Wednesdays from 3 December 1997 through 11 March 1998, and from 9 December 1998 through 10 March 1999. We recorded eagles using five different known foraging areas including Arrowrock Reservoir, Lucky Peak Reservoir, the foothills, the desert south of Boise, and the Boise River from Lucky Peak Dam to Eagle Island. Surveys of foraging areas began at sunrise, and continued until approximately 1300 hours. We recorded general weather conditions during foraging area surveys including precipitation, wind speed and direction, ice conditions, and amount of snow. All eagles (both bald and golden eagles), their ages (adult or immature), locations, and activities were recorded in field notes or on topographic maps. Due to the expanse of the area covered, surveys could not be conducted by one observer. Two observers were used on each survey day, and separate routes were covered simultaneously by each. Arrowrock Reservoir and the Boise River were surveyed by one observer, while the other surveyed Lucky Peak Reservoir, foothill feeding areas, and locations in the desert south of Boise.

Reservoir Foraging Areas

Arrowrock Reservoir was surveyed from Road 268. We first drove from Arrowrock Dam upstream to Willow Creek campground at the backwaters of the reservoir, then surveyed downstream toward the dam to avoid direct glare from the morning sun. Surveys of Arrowrock Reservoir began shortly after sunrise and were completed between 0900-1000 hours. We scanned all stands of trees, rock outcrops, and other likely perch locations for eagles. We also scanned for eagles in flight during the entire survey. We recorded proximity of eagles to prey sources such as deer (*Odocoileus hemionus*) or elk (*Cervus elaphus*) carcasses.

We surveyed Lucky Peak Reservoir from Road 268 and from Highway 21 beginning at Arrowrock Dam, working downstream to Highway 21. We then drove north along Highway 21 to Robie Creek. We returned along Highway 21 to Lucky Peak Dam, stopping to scan near More's Creek Bridge and from the dam itself. Surveys of Lucky Peak Reservoir began at approximately 0900 hours, and were usually completed by 1000 hours. We scanned all stands of trees, rock outcrops, and other likely perch locations for eagles. We also scanned for eagles in flight throughout the entire survey. We recorded proximity of eagles to prey such as deer or elk carcasses.

Foothills Foraging Areas

Surveys of known foraging areas in the Boise foothills were conducted from a 4-WD vehicle on an unmarked road on the Boise River WMA near the maintenance shop/office. The area manager had routinely placed road-killed deer and elk carcasses in this area for several winters (Jerry Scholten, IDFG, pers. comm.). Surveys of foothills foraging areas took place between 1000 and 1100 hours. During surveys, we drove to areas where carcasses had been placed and scanned for eagles feeding, perching nearby, and soaring in the vicinity.

Desert Foraging Areas

Surveys of known foraging areas in the desert south of Boise were conducted from a 4-WD vehicle on Black's Creek/Kuna Mora Road, South Cole Road, Pleasant Valley Road, and Gowen Road. Observers began at Black's Creek Reservoir, continued west on Kuna Mora Road to South Cole Road, turned south on South Cole Road and continued to the Iowa Beef Processing Plant (IBP), then surveyed north toward Boise along Pleasant Valley Road, and continued east to Interstate I-84 along Gowen Road. Observers scanned for eagles at Black's Creek Reservoir, near IBP, and south of IBP near the sewage facilities. Observers also scanned for eagles while traveling along Kuna Mora Road, Pleasant Valley Road, and Gowen Road, recording all eagles observed in flight, perched on the ground near prey, or perched on power or fence poles.

Boise River Surveys

Surveys of eagles along the Boise River began between 0900 and 1000 hours at Lucky Peak Dam. We drove downstream along Highway 21 in an auto, counting all eagles observed perched or soaring near Lucky Peak Dam, between Lucky Peak and Diversion Dams, and between Diversion Dam and the Highway 21 bridge. We then scanned Barber Pool from the State Historical Marker and the Crow Inn on the north side of the river, and from the main roost observation point and the lower end of the Surprise Valley development on the south side of the river. We continued along Amity Road to Barber Park, scanning the cottonwood perches near Eckert Road as we passed. We parked in Barber Park and began riding bicycles downstream along the greenbelt pathway. We continued until we reached the downstream end of the Riverside Village residential development near the upstream end of Eagle Island. Boise River surveys lasted 2-3 hours, and were completed by 1300 hours. All locations of eagles observed during surveys were recorded in field notes and on topographic maps.

RESULTS

Barber Pool Roost Surveys

A total of 45 and 43 roost surveys were conducted at Barber Pool between 1 December 1997 and 13 March 1998, and between 2 December 1998 and 10 March 1999, respectively. An average of 4.4 and 5.1 bald eagles were observed at the Barber Pool Communal Roost nightly during the 1997-1998 and 1998-1999 winters, respectively (click here to view Figure 4). This compares to an average of 8.4 eagles during the 1996-1997 winter, 12.0 during the 1995-1996 winter, 3.0 during the 1994-1995 winter, and 10.0 during the 1993-1994 winter (click here to view Figures 5, 6). Bald eagle use of Barber Pool for night roosting increased slightly during the 1998-1999 winter compared to the previous season. As during past winters, a higher proportion of adult eagles were observed roosting in Barber Pool than immatures. During the 1997-1998 winter, 71 percent of all eagles observed roosting in Barber Pool were adults, and only 29 percent were immatures (click here to view Figure 7). During the 1998-1999 winter, 66 percent of all eagles roosting in Barber Pool were adults, and only 34 percent were immatures (click here to view Figure 8). Roost counts peaked at 13 eagles during early January 1998, and in mid-January 1999 and again in mid-February 1999, corresponding to some of the season's coldest temperatures. Similar to past winters, eagle numbers at Barber Pool were found to be inversely correlated to

average daily temperatures recorded at Idaho City, Idaho during the 1997-1998 and 1998-1999 winters ([click here to view Figures 9, 10](#)).

During the 1997-1998 winter, bald eagles were observed roosting within Barber Pool in four separate locations (or subroosts): the 'Barber Pool' subroost, the 'Canal' subroost, near Eckert Road (the 'Raptor Ridge' subroost), and on the east side of the river on property owned by Oliver Gregerson (the 'Gregerson' subroost) ([click here to view Figures 1, 11](#)). Eagles were observed using the Canal subroost during late afternoon only a few times throughout the 1997-1998 winter, but were never observed roosting there. Eagles were never observed using the Canal subroost during the 1998-1999 winter. Use of this traditional subroost has continued to decline over the past few winters. The winter of 1997-1998 was the first season since initiation of this study that no eagles were observed roosting in the Canal subroost. The Canal subroost once was considered the primary subroost in Barber Pool, but was replaced by the Barber Pool subroost during the winters of 1994-1995 and 1995-1996. It is unknown why eagles no longer use the Canal subroost.

Eagles continued to use the Barber Pool subroost throughout the 1997-1998 winter, but use of this subroost declined and changed. During past seasons, use of this subroost was limited to one large live cottonwood tree, referred to as the 'Barber Pool Roost Tree'. During the 1997-1998 winter, eagles used the Barber Pool Roost Tree and several smaller cottonwood trees in its vicinity for night roosting. During past winters, the Barber Pool subroost was used throughout the season by roosting eagles, however, during the 1997-1998 winter, eagles used the Barber Pool subroost only during early December and again during early-mid March. During the 1998-1999 winter, use of the Barber Pool subroost continued to decline, and use of the Gregerson subroost increased ([click here to view Figure 12](#)). During the 1998-1999 winter, the Barber Pool subroost was only used once by one roosting bald eagle. It is unknown why eagles no longer use the Barber Pool subroost.

The newly-described 'Gregerson' subroost, was used most consistently by eagles during the majority of the 1997-1998 and 1998-1999 winters. Eagles began using this new subroost east of the Boise River during late December 1997, and continued roosting there throughout the 1997-1998 and 1998-1999 winters ([click here to view Figures 11, 12](#)). The Gregerson subroost consisted of 6-10 live cottonwood trees located immediately next to the river channel, upstream of the Gregerson house and compound ([click here to view Figure 1](#)). The Gregerson subroost was located across the river and downstream from the Barber Pool subroost.

Eagles also were observed roosting in three different cottonwood trees located near Eckert Road at the proposed Raptor Ridge housing development throughout both the 1997-1998 and 1998-1999 winters ([click here to view Figures 1, 11, 12](#)). During the 1997-1998 winter, two adult bald eagles were consistently observed roosting at the Raptor Ridge subroost. It was suspected that they were a mated pair. During the 1998-1999 winter, only one adult bald eagle was consistently observed roosting at the Raptor Ridge subroost.

During previous winters, eagles often staged in Barber Pool during the early evening, only to leave the area before dark. This pattern continued during the 1997-1998 and 1998-1999 winters, but was not as regular as in past seasons. Generally, eagles observed in Barber Pool during surveys roosted at one of the subroosts described above. Eagles observed leaving Barber Pool generally flew upstream, then east into the foothills, likely heading for the Dead Dog Creek Communal Roost site.

On numerous occasions, bald eagles were observed approaching Barber Pool from the south, flying low over the Surprise Valley development. Eagles also were observed flying along the lower rim, especially on days when winds were from the southeast. Both patterns of flight were described during earlier winters before construction of development projects began. Concern was raised over whether or not these flight patterns would continue after developments were completed. These patterns were still common during the 1997-1998 and 1998-1999 winters.

During past winters, we recorded potential disturbances to bald eagles in Barber Pool such as fishermen, canoeists, pedestrians, campers, ATV's, and feral dogs. We continued to observe these activities during the 1997-1998 and 1998-1999 winters, but they were confined to the east side of the river. Considerable human use of lands east of the river near the Crow Inn continued, but these activities had no apparent affect on eagles using either the Barber Pool or Gregerson subroosts. No human activity was recorded in Barber Pool west of the river during the 1997-1998 winter.

Shakespeare Festival amphitheater construction was ongoing throughout the 1997-1998 winter, but construction activities had no apparent effect on eagle perching, foraging, or roosting behavior within Barber Pool.

Dead Dog Creek Roost Surveys

A total of 15 roost surveys were conducted at Dead Dog Creek between 3 December 1997 and 11 March 1998. A total of 15 roost surveys were conducted at Dead Dog Creek between 9 December 1998 and 24 March 1999. An average of 15.7 and 16.2 bald eagles were observed at the Dead Dog Creek Communal Roost nightly during the 1997-1998 and 1998-1999 winters, respectively ([click here to view Figure 13](#)). Roost counts peaked at 35 eagles during late January and early February 1998, and the following winter at 28 eagles during mid-January 1999 ([click here to view Figure 13](#)). Unlike Barber Pool, counts of bald eagles at the Dead Dog Creek Communal Roost were not related to average daily temperatures at Idaho City ([click here to view Figures 14, 15](#)). Peak roost counts at Dead Dog Creek did not coincide with the season's coldest temperatures ([click here to view Figure 12](#)), nor were they related to snow depth or amount of snow on roost trees.

Consistently more eagles used the Dead Dog Creek Communal Roost than the Barber Pool Communal Roost. Unlike the Barber Pool Communal Roost, the proportion of adults using the Dead Dog Creek Communal Roost was close to 50 percent. During the 1997-1998 winter, 47 percent of eagles roosting at the Dead Dog Creek Communal Roost were adults, and 41 percent

were immatures (click here to view Figure 7). During the 1998-1999 winter, 54 percent of eagles roosting at the Dead Dog Creek Communal Roost were adults, and 42 percent were immatures. Twelve and 4 percent of eagles roosting within the Dead Dog Creek Communal Roost could not be identified to age due to poor viewing conditions which occurred during periods of inclement weather, respectively, during the 1997-1998 and 1998-1999 winters (click here to view Figures 7, 8).

Two main subroosts were identified within the Dead Dog Creek roost stand. Eagles generally roosted within the lower or upper subroosts (click here to view Figure 2). The lower subroost was located at the eastern edge of the stand near the creek bottom, and consisted of one dead Douglas-fir tree, and a few live Douglas-fir trees surrounding it. The majority of eagles roosting in the lower subroost used the dead tree. The upper subroost was located at the west end of the stand, also very near the creek bottom, and consisted of several large live and dead Douglas-fir and ponderosa pine trees. More eagles consistently roosted in the upper subroost than the lower subroost throughout both winters of this study (click here to view Figures 16, 17). Many other perches were used by eagles throughout the stand during roost surveys (click here to view Figure 2), but the majority of eagles moved to one of the two subroosts described above shortly before dark.

Eagles approached the stand from two general directions during surveys. The majority of eagles approached the roost stand by flying west up the creek bottom. Less commonly, eagles entered the roost from the south, flying over the main ridge south of Dead Dog Creek. Compared to the Barber Pool Communal Roost, eagles often entered the Dead Dog Creek Communal Roost later into the evening. At Dead Dog Creek, it was common for eagles to enter the roost well after sunset, even after total darkness.

Dead Dog Creek Roost Stand Exam

The Dead Dog Creek bald eagle roost stand is located within the Dead Dog Creek Drainage, approximately 1.6 km (1 mi.) west of the More's Creek arm of Lucky Peak Reservoir. Dead Dog Creek is a tributary of More's Creek and is located on the northeastern slope of the Lucky Peak/Shaw Mountain complex. The area is unroaded, and thus inaccessible to motor vehicles. Dead Dog Creek is the southernmost forested drainage on Lucky Peak, and is located on the Lucky Peak USGS topographic quadrangle map. Eagle roost areas were identified within T3N, R4E, sections 7, 17, and 18. Coordinates of the roost stand were located using the Global Positioning System (GPS), and the center point of the stand is 43°36.54'N by 116°01.32'W. The stand varies in elevation from 1340-1460 m (4,400-4,800 ft.) along the main ridge south of Dead Dog Creek, to 1100-1220 m (3,600-4,000 ft.) along Dead Dog Creek, has an average aspect of 25° (NE), and an average slope of 58.8%. Several shallow drainages separated by steep finger ridges are oriented NE/SW throughout the stand. The stand is located in Ada County, and ownership of lands in this area is shared by the U.S. Forest Service, the U.S. Bureau of Land Management, and Idaho Department of Fish and Game. The majority of the roost stand is located on BLM lands, however, the main subroost within the stand was located on lands administered by the U.S. Forest Service.

The roost stand was approximately 76 ha (188 ac.) in size, and contained mixed-conifer habitat dominated by Douglas-fir and ponderosa pine. The main vegetation type was Douglas-fir/mountain ninebark (*Physocarpus malvaceus*, PSME/PHMA), though other mountain shrub species were common including cherry (*Prunus* spp.), elderberry (*Sambucus* sp.), serviceberry (*Amelanchier* sp.), maple (*Acer* sp.), and willow (*Salix* spp.). The stand received moderate to heavy cattle grazing until approximately ten years ago, and during the summer of 1998, old livestock trails had mostly grown over, making ground travel within the stand difficult. Post-grazing recovery of underbrush and forbes had been rapid, and thick stands of young mountain brush (avg. 54% coverage, range 10-100%) were present throughout the stand. Litter and humus layers averaged >10 cm (4 in.) under the forest canopy and in brush field areas. Fuels from brush were moderate, while fuels from downed and dead timber and suppressed conifers were low.

Soils present in the Dead Dog Creek Drainage are coarse-loamy, mixed, frigid Pachic Haploxerolls and loamy-skeletal, mixed, mesic Aridic Argixerolls in the Ola-Searles complex (Collett 1980). These soils are present on side slopes and mountains from 915-1524 m (3,000-5,000 ft.) elevations, generally on north aspects between 30-60% slope. The Ola-Searles soils are formed mainly from weathered granite, and unweathered granite bedrock is usually only 51-102 cm (20-40 in.) below the surface. Runoff in these soils is very rapid, and the hazard of erosion is high.

Trees within the stand were mostly even-aged Douglas-fir (186.0 stems/ha, 75.0 stems/ac., all size categories) and ponderosa pine (16.5 stems/ha, 6.7 stems/ac., all size categories) that were approximately 60-85 years old. Fire burned through the stand approximately 90 years ago, sparing some Douglas-fir and ponderosa pine which are now approximately 140-200 years old (7.6 stems/ha, 3.0 stems/ac., both species combined). All remnant old-growth trees contained fire scars at their bases. The main forest canopy was approximately 18-27 m (60-90 ft.), but remnant old-growth trees reached from 33-40m (100 to 130 ft.). Forest canopy densities varied from 10 percent at dry sites, to 80 percent in bottoms and wind-protected areas. Average dbh for both Douglas-fir and ponderosa pines within 0.1 ha. plots was approximately 51 cm (20 in.), and ranged from 18.7 cm (7.8 in.) for ponderosa pines to 23.0 cm (9.0 in.) for Douglas-firs in 0.05 ha plots (Table 1). Average 10-year radial growth values for trees within 0.1 and 0.05 ha plots were 1.6 and 1.57 cm (0.64 and 0.62 in.), respectively, indicating that the co-dominant and younger trees within the stand were very fast-growing. Old-growth remnant trees had much lower average 10-year radial growth values (0.86 cm, 0.34in.), indicating that they were likely approaching maximum height and radial growth potentials for the Dead Dog Creek site. Flat tops and horizontal branching of remnant trees also indicated maturity in terms of size.

Douglas-fir trees were approximately ten times more dense than ponderosa pines within the Dead Dog Creek roost stand (Table 1). Douglas-firs were older and taller than ponderosa pines measured (Table 1). We found little or no regeneration of Douglas-firs within closed-canopy areas, but seedlings and saplings were widely scattered in open areas and at forest edges. We found no regeneration of ponderosa pines within vegetation sampling plots (Table 1). Crown shape of trees measured in 0.1 and 0.05 ha plots was low (range 1.5-2.8), indicating that the

majority of trees within the stand were growing stock (Table 1). Pockets of dead-topped trees were scattered throughout the stand. These injuries were caused by an unknown foliar pathogen or defoliator.

Table 1. General characteristics of conifer trees within the Dead Dog Creek communal bald eagle roost stand.

Tree Type	# Measured	Density trees/ha (ac.)	Avg. dbh cm (in.)	Avg. age (yrs.)	Avg. height m (ft.)	Avg. crown shape
Plot Size 1, dbh > 35 cm (13.8 in.)						
Douglas-fir	209	61.5 (24.9)	50.0 (19.7)	94.6	23.2 (76.1)	1.7
Ponderosa pine	22	6.5 (2.6)	51.8 (20.4)	80.3	19.5 (63.8)	1.5
Plot Size 2, dbh 10-35 cm (4.0-13.8 in.)						
Douglas-fir	191	112.4 (45.5)	22.9 (9.0)	49.8	13.4 (43.8)	2.0
Ponderosa Pine	17	10.0 (4.0)	19.8 (7.8)	38.6	9.5 (31.2)	2.8
Plot Size 3, saplings and seedlings						
Douglas-fir	4	11.8 (4.8)	4.6 (1.8)	31.9	3.6 (11.8)	1.25
Ponderosa Pine	0	--	--	--	--	--

All trees used by bald eagles for perching and roosting within the Dead Dog Creek roost stand were old-growth remnant trees. These trees were taller, had greater girths, and were older than the majority of trees within the stand (Tables 1, 2). Although only 9 percent of trees in the Dead Dog Creek stand were ponderosa pines, 35 percent of eagle use trees were pines (Tables 1, 2). Eagle use trees had higher crown shape values (range 3.4-4.2) than trees measured within vegetation plots, indicating that more use trees had dead tops or were snags.

The Dead Dog roost stand was inspected during September 1999 by a BLM fire specialist and biologist, and was assessed for fuel loading and wildfire potential. Options for management actions to reduce fire potential within the stand were explored and discussed at this time, and it was agreed that no immediate actions were warranted or feasible to reduce the risk of catastrophic wildfire within the stand. It was determined that fuel loads were not excessive compared to similar stands in the nearby area.

Table 2. Characteristics of trees used by roosting bald eagles within the Dead Dog Creek stand.

Tree Species	# Identified	Avg. dbh cm (in.)	Avg. age (yrs.)	Avg. height m (ft.)	# Alive	# Dead tops	# Dead	Avg. crown shape
Douglas-fir	26	95.0 (37.4)	172	31.4 (103.0)	18	3	5	3.4
Ponderosa pine	9	92.5 (36.4)	177	26.0 (85.2)	2	3	4	4.2

Surveys of Foraging Areas

A total of 15 surveys of known foraging areas were conducted during the winter of 1997-1998, and a total of 15 surveys of known foraging areas were conducted during the winter of 1998-1999. During both winters, eagles were most numerous on Lucky Peak and Arrowrock Reservoirs during surveys of foraging areas, and least numerous in the desert south of Boise (click here to view Figures 18, 19). We recorded an average of 17.6 and 17.2 bald eagles on all surveys of foraging areas combined during the 1997-1998 and 1998-1999 winters, respectively (click here to view Figures 20, 21).

Reservoir Foraging Areas

We recorded an average of 11.0 and 8.2 bald eagles per weekly survey on Lucky Peak and Arrowrock Reservoirs combined during the 1997-1998 and 1998-1999 winters, respectively (click here to view Figures 20, 21). During the first winter of the study, eagle numbers on the reservoirs peaked during mid-December 1997, and then again during mid-January through early February 1998 (click here to view Figure 18). Similarly, during the second year of the study, eagle numbers peaked during late December 1998, and again during mid-February 1999 (click here to view Figure 19). During the 1997-1998 winter, 48 percent of all eagles observed on reservoir foraging areas were adults, and 50 percent were immatures (click here to view Figure 22). During the 1998-1999 winter, 59 percent of all eagles observed on reservoir foraging areas were adults, and 39 percent were immatures (click here to view Figure 23). The majority of eagles encountered during reservoir surveys were associated with carcasses of winter-killed big game. Large concentrations of eagles were observed regularly in the More's Creek arm of Lucky Peak Reservoir, and at the upper end of Arrowrock Reservoir near Cottonwood Creek. Small concentrations of eagles also were common throughout the winter near Trail Creek on Arrowrock Reservoir. In these areas, deer carcasses were available to feeding eagles throughout much of the winter. Throughout both winters of the study, golden eagles were also commonly observed during reservoir surveys.

Foothills Foraging Areas

We recorded an average of 0.8 and 2.7 bald eagles per weekly survey at foothills carcass feeding areas during the 1997-1998 and 1998-1999 winters, respectively (click here to view Figures 20, 21). Eagles were more numerous at foothills feeding areas during the second year of the study than during the first. During the 1997-1998 winter, 33 percent of all bald eagles observed at foothills foraging areas were adults, and 50 percent were immatures (click here to view Figure