ARIZONA BALD EAGLE WINTER COUNT: 1994

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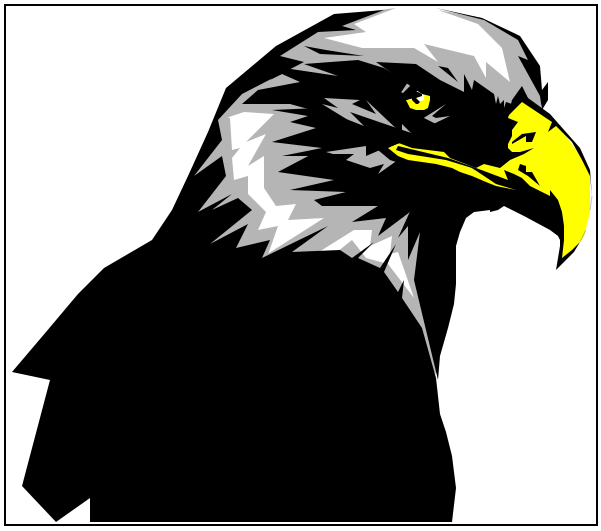

Technical Report 68
Nongame and Endangered Wildlife Program
Program Chief: Terry B. Johnson
Arizona Game and Fish Department
2221 West Greenway Road
Phoenix, Arizona 85023-4312

May 1995

RECOMMENDED CITATION

Beatty, G.L., J.T. Driscoll, and M.C. Siemens. 1995. Arizona bald eagle winter count: 1994. Nongame and Endangered Wildlife Program Technical Report 68. Arizona Game and Fish Department, Phoenix, Arizona.

ACKNOWLEDGMENTS

We thank the following agencies and private groups for their contributions to Arizona's 1994 bald eagle winter count: Bureau of Reclamation, Salt River Project, U.S. Forest Service, National Park Service, U.S. Fish and Wildlife Service, Audubon Society, and the Arizona Game and Fish Department. Of course, a special thanks goes out to all the volunteers for this record breaking count!

FUNDING SOURCES

Funding for this project was provided by: the Arizona Game and Fish Department's Heritage Fund; Project W-95-M, Jobs 1 and 4 under the Federal Aid in Wildlife Restoration Act (Pittman-Robertson Act); and voluntary contributions of helicopter time by the Bureau of Reclamation and The Salt River Project.

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ARIZONA BALD EAGLE WINTER COUNT: 1994

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INTRODUCTION

Arizona's wintering bald eagle (*Haliaeetus leucocephalus*) population was examined in the 1970s and early 1980s through comprehensive winter counts (Todd 1977, 1981, 1984a, 1984b; Hall 1985). In 1986, the National Wildlife Federation (NWF), coordinator of the nationwide survey, asked that only areas of eagle concentration (sites with more than 15 eagles observed in 2 or more years) be surveyed. Subsequently, due to Arizona's lack of eagle "concentrations," the state only contributed minimal information in 1986 and 1987 (Hastings 1988). From 1989-1991 winter counts in Arizona were localized to specific management areas such as Roosevelt Lake (USFWS 1990) and Nankoweap Creek (Brown et. al 1989, Brown and Stevens 1991). Annual statewide counts were resumed again in 1992 (Beatty 1993, Beatty and Driscoll 1994) using a combination of volunteers and helicopters. Todd's high count of 225 eagles (1984b) was tied in 1992, and was surpassed in 1994 when we counted 351 eagles.

The national bald eagle winter survey, which was initiated and organized by the NWF from 1979-1991, is now coordinated by the Raptor Research Technical Assistance Center (RRTAC--Bureau of Land Management, 3948 Development Ave., Boise, Idaho 83705). Because the bald eagle can be gregarious in the winter, national surveys can determine the species' success throughout its range and distribution (Stalmaster 1987). In addition, determining bald eagle winter use in Arizona contributes to management efforts on the bird's wintering grounds.

Our objective for the 1994 count was to duplicate 1992 and 1993 survey routes and search for eagles more comprehensively along the Gila, Black, and White river drainages by helicopter.

METHODS

The 1994 winter count was performed 5-12 January 1994 to allow weekday use of agency helicopters as well as provide a weekend for volunteers. Due to the diverse habitat in Arizona and the desire to maximize (but not duplicate) the count of bald eagles in a narrow time frame with minimal effort, a variety of methods are needed to survey the state adequately. The Salt, Verde, East Verde, Bill Williams, Gila, Black, and White rivers and their associated lakes and tributaries are the main water bodies in central Arizona where fish and carrion eating bald eagles might occur. Due to these drainages' rugged terrain, deep canyons, and relative inaccessibility, they are best surveyed by helicopter. The Bureau of Reclamation and Salt River Project contributed

four days of helicopter time to survey the Verde, Salt, Gila, Black, and White river drainages and their main tributaries. Other areas in Arizona which are more accessible by boat, vehicle, and foot, were left to volunteer surveyors.

Helicopter surveys were conducted with three biologists and a pilot in low-level flight, directly above the drainage. The observer in front had the best overall view. Observers in back watched for birds out the side windows. Often the observer in front was able to spot the most eagles. Biologists in back were most useful observing eagle concentrations along a short stretch of river or lake when birds were flushed by the helicopter. Location and distance traveled are described by river kilometers, based on BioSystems Analysis, Incorporated's river map atlas (Hunt et al. 1992). When river kilometers were not known, landmarks and estimated distances were used. Level of flight and speed varied on terrain, height and density of tension wires, and wind speed. A flying height of 100-200 feet above ground level was best for all observers when conditions were favorable.

Volunteer surveyors from agencies and private groups were solicited through the mail, given NWF forms, and instructed on procedures. Most volunteers surveyed from their vehicle. Foot travel, boat, mountain bike and helicopter followed as the most used methods.

The state was broken down into regions (i.e. northeast AZ - White Mountains, northern AZ - Flagstaff/Coconino Co., Glen Canyon Recreation Area, central AZ - Salt/Verde rivers, southwestern AZ - lower Colorado River, southeastern AZ - San Carlos Apache Indian Reservation). A coordinator was appointed for each region to maximize the areas covered and to minimize double counting of birds. Regions were chosen based upon past sightings of wintering bald eagles, available bald eagle habitat, location of agencies involved, and geographic landforms. Areas surveyed by volunteers were determined by the coordinators and surveyors in their particular region and based on areas visited in 1992 and 1993. Some counts were made in areas not assigned to a region. Golden eagles observed were also recorded during the survey, but not reported in this document. NWF forms were then submitted to the Department for compilation and sent to the western regional coordinator of the RRTAC.

Adult plumaged bald eagles are birds at least five years old, with a distinct all white head and tail, brown wings and body. Subadult (or immature) plumaged birds are less than five years old with brown in the tail and head and white mottling on the body (Clark and Wheeler 1987). Volunteers were asked to be aware of mistaking four-year old near-adult bald eagles for full-adult plumaged birds.

Bald eagles were classified as resident breeding birds by being sighted on commonly used perches, and proximity to known nests. More obvious determinations were made when eagles were actually incubating eggs or perched in a nest.

Data are broken down in two sections, the helicopter survey and the volunteer survey by county. The data presented in the Appendix (Tables 1-15) describe the results of the helicopter survey and the volunteer survey by county. The separation between

helicopter and volunteer surveys was created due to the difference in method and because of the desire to retain duplication of effort and consistency for comparisons in future seasons.

Many of Arizona's county borders are defined, in part, by a river. In the following cases where a drainage was a county border, the county which the bird was counted in, was chosen arbitrarily: Bill Williams River/Alamo Lake-Mohave County, upper Verde River-Yavapai County, San Carlos Reservoir-Gila County. These border decisions will remain consistent for future counts.

RESULTS

The 1994 Arizona winter count totalled 351 bald eagles statewide (Tables 1-15), more than ever before (250 adults [71.2%], 96 subadults [27.4%], 5 unknowns [1.4%]). A total of 7949 minutes (132 hours) were spent searching for eagles. The greatest effort was in Coconino County, where volunteers spent 2735 minutes (45 hours) searching for bald eagles (Table 16). Additionally, Coconino County also counted the most eagles (n=109).

The most efficient method of counting eagles was by helicopter. The 120 eagles counted by helicopter in 699 minutes represents one eagle per six minutes of searching. The most efficient volunteer ground effort occurred in Apache and Coconino counties, where one eagle was counted for every 25 and 24 minutes respectively (Table 16).

DISCUSSION

Methods of searching for bald eagles during the 1992-1994 winter counts changed from those of earlier statewide surveys. Todd (1981) flew extensively throughout the state in a fixed-wing aircraft emphasizing the northern section of the state near Flagstaff, and the eastern White Mountains. In contrast, the helicopter was the only aircraft used in the 1992-1994 counts, with an emphasis on central Arizona's rivers and lakes surrounding the breeding bald eagle population. Todd flew the lower reaches of the Verde and Salt rivers, but access to the upper reaches of these drainage was hampered by the fixed-wing aircraft's inability to fly in narrow canyons. In the 1992-1994 surveys, the northern and northeastern regions of the state were left to terrestrial volunteer surveyors.

The total number of bald eagles counted in Arizona during the 1994 winter count was 351. In 1992, we counted 225 bald eagles equalling the previous high of birds counted statewide in 1984 (Beatty 1993). In 1993, we counted only 186 eagles, but surveys were hampered by restricted access to the White Mountain Apache Tribal Land. Also in 1993, statewide flooding caused fewer eagles to be found along river drainages (Beatty and Driscoll 1994). The totals from previous statewide counts (Todd 1984, Hall 1985, Beatty

1993, Beatty and Driscoll 1994) range from 118 to 351 (Table 17).

Good access statewide to survey routes due to mild winter weather, helicopter access to the White Mountain Apache Tribal Land and improved helicopter route selection contributed to a record breaking 1994 Arizona winter count. All routes were accessible throughout the state due to mild winter weather with little rain or snow. The entire state of Arizona encountered temperatures ranging from 1.6 to 4.7E F higher than normal with precipitation from 0.48 to 1.66 inches less than normal. This was in sharp contrast to January of 1993 when Arizona received more rain for any January since 1931 (NOAA 1994). We examined the Gila River drainage for the first time by helicopter in 1994, after counting only six eagles on the Bill Williams River drainage in 1992. A total of 34 eagles were counted on the Gila Drainage in 1994. After receiving the necessary permits from the White Mountain Apache Tribe, we explored further up the White and Black rivers, including Big Bonito Creek. These waters had 33 eagles present in 1994.

Roosevelt Reservoir has been consistently surveyed from 1989-1994 for wintering bald eagles (Table 18) by the Bureau of Reclamation, in response to a USFWS recommendation in the Biological Opinion issued 30 March 1990 on the Central Arizona Water Control Project, Roosevelt Dam Element of Plan 6. Three eagles were observed on the northern shore of Roosevelt in 1994. The totals for the surveys conducted from 1989-1994 were 29 (21 adults, 8 subadults) bald eagles. Nineteen (62%) of these eagles were observed on the north shore, and 10 (38%) on the south shore.

The age distribution of the 351 bald eagles observed during Arizona's 1993 winter count was 71 percent (n=250) adults, 27 percent (n=96) subadults, and 2 percent (n=5) unknown. Stalmaster (1987) discussed the factors which can influence winter age ratios, such as status of the population, stage of migration, and geographic location. Later, Stalmaster summarizes: "roughly a third of all eagles in any concentration are juveniles and sub-adults." The NWF national winter surveys (Hastings 1988) for 1986-1988 averaged 33 percent subadult bald eagles. Arizona's statewide counts from 1981-1985 and 1992-1994 averaged 33 percent subadult bald eagles.

From the most recent counts completed in the 1990s, the number of subadult birds represented 29 percent (n=212) of all birds counted (n=762). Arizona's 1993 count of 25 percent subadult birds was the lowest from all of our statewide counts. The number of subadult birds climbed to 27 percent in 1994. Because the dark brown of young birds is more difficult to see than the obvious white head and tails of adult birds, subadult birds may be missed throughout the survey. However, 29 percent is near the one-third that Stalmaster described as a healthy age distribution in a winter bald eagle population.

To examine the accuracy of our surveys, we coordinated a ground survey of a 20 mile section of the upper Verde River the same morning as our helicopter survey. This test

was created after questions arose over the thoroughness of our helicopter surveys, based upon the seemingly low numbers of breeding adults observed (Beatty 1993, Beatty and Driscoll 1994). One biologist rode the Verde River Train in a rail car counting eagles, as other biologists flew over the river in a helicopter. The ground survey counted eight eagles and the helicopter survey tallied nine birds.

We concluded that both methods were similar in accuracy for this stretch of river and that each had unique benefits. The helicopter survey was quicker and could access more remote areas. However, the helicopter often caused eagles to flush and did not allow us to easily count eagles flying high or perched on tall cliffs. The ground survey was slower, but allowed surveyors more time to search thoroughly. Although ground surveys were accurate, the remote nature of Arizona's rivers favors the helicopter survey as the preferred method to search for wintering bald eagles.

RECOMMENDATIONS

1.Continue to coordinate with the White Mountain Apache Tribe to perform surveys on the Black, White, and Salt rivers.

2.Continue to include the Gila River drainage as part of the helicopter survey.

3.After examining Arizona for three years to determine the best locations to search for eagles, state routes should be standardized. Confusing terrestrial oriented routes, routes not producing eagles, routes not consistently completed or routes not accessible in all years because of weather should be deleted. However, routes in the southern part of the state should be retained to maintain complete state representation.

4.Develop a database for all routes completed in the 1990s, including core information from the standardized forms such as survey site number, survey site,county, date, time, method, river drainage, number of eagles, percent ice-cover, weather, comments, surveyor, and affiliation.

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Table 1. Arizona bald eagle winter count, Verde River drainage, helicopter survey, 5 January 1994.

Time	Location	Sub	Ads	Unk	Total
0800-0804	Verde/Salt confluence-Hwy 87 bridge, 0.0-4.2	0	1	0	1
0805-0822	Hwy 87 bridge to Needle Rock, 4.2-29.5	0	1	0	1
0822-0838	Needle Rock to north end of Bartlett Reservoir 29.5-60.0	1	1	0	2
0838-0852	North end Bartlett Reservoir to Horseshoe Dam, 60.0-73.5	0	1	0	1
0853-0903	Horseshoe Reservoir, 73.5-84.0	0	1	0	1
0908-0919	Horseshoe Reservoir to Table Mt. BA, 84.0-110.0	0	0	0	0
0940-0953	Table Mt. BA to East Verde BA, 110.0-136.5	0	2	0	2
1002-1018	Lower East Verde River, 0.0-~10.0	0	2	0	2
1023-1035	East Verde BA to West Clear Creek, 136.5-175.4	0	2	0	2
1418-1438	Lower West Clear Creek, 0.0-~10.0	2	2	0	4
1106-1113	W. Clear Crk to Verde Rvr bridge - Camp Verde, 175.4-185.1	0	1	0	1
1353-1415	Verde River bridge to Peck's Lake, 185.1-234.0	1	0	0	1
1349-1352	Peck's Lake	0	0	0	0
1341-1348 1227-1232	Upper Verde River to Sycamore Creek, 234.0-252.0	0	0	0	0

Table 1. Continued. Note: includes Lake Pleasant, Agua Fria Drainage.

Time	Location	Sub	Ads	Unk	Total
1232-1244	Sycamore Creek/Verde River confluence to Perkinsville, 252.0-271.0	0	3	0	3
1245-1253	Perkinsville to Hell's Canyon, 271.0-283.0	6	4	2	12
1304-1319	Hell's Canyon to Sullivan Lake, 283.0-316.0	2	1	0	3
1652-1701	Lake Pleasant	0	1	0	1

Table 2. Arizona bald eagle winter count, Salt River drainage, helicopter survey, 6 January 1994.

Time	Location	Sub	Ads	Unk	Total
0752-0804	Salt/Verde River to Stewart Mountain Dam, 0.0-21.9	0	1	0	1
0805-0839	Stewart Mt. Dam to Roosevelt Reservoir, 21.9-79.1	0	1	0	1
0844-0919	Roosevelt Dam along southern perimeter of reservoir to Tonto Creek	0	0	0	0
0948-1000	Tonto Creek inlet up the creek to Narrows 14.5-59.0	0	2	0	2
1034-1046	Northern perimeter of Roosevelt Reservoir to Salt River arm	0	3	0	3
0841-0905	Salt River from Pinal Creek to Cherry Creek, 112.0-138.0	0	3	0	3
0906-0918	Lower Cherry Creek to Ellis Ranch	0	0	0	0
0927-0942	Salt River/Cherry Creek to Canyon Creek, 138.0-168.6	0	0	0	0

Table 2. Continued.

Time	Location	Sub	Ads	Unk	Total
0943-0953	Canyon Creek, 0.0-14.0	0	0	0	0
0957-1012	Cibecue Creek, 0.0-~6.0	0	0	0	0
1012-1038	Canyon Crk./Salt River to Cedar Basin BA, 168.6-224.0	0	1	0	1
1514-1524	Lower Carrizo Creek	0	0	0	0
1039-1054	Cedar Basin to Black/White river confluence, 224-247.0	1	4	0	5
1055-1106	Lower White river (to Whiteriver)	0	6	0	6
1220-1255	North Fork Whiteriver	0	9	0	9
1402-1426	Lower Black River, pumping station to Black/White confluence (including George's Basin and Nash Creek Reservoir)	2	8	0	10
1347-1359	Lower Big Bonito Creek	2	6	0	8

Table 3. Arizona bald eagle winter count, Gila River drainage, helicopter survey, 6 and 10 January 1994.

Time	Location	Sub	Ads	Unk	Total
1146-1204	San Carlos Reservoir	5	2	0	7
1204-1214	San Carlos River (incl. Talkalai Lake)	0	2	0	2
1037-1045 1235-1307	Upper Gila River (Safford to San Carlos Reservoir)	0	2	0	2
1122-1142	Lower Gila River (Coolidge Dam to Winkelman)	0	2	0	2
1117-1201	Eagle Creek	4	10	0	14
1046-1101	Bonita Creek	0	3	0	3
1308-1326	Blue River	1	3	0	4

Table 4. Arizona bald eagle winter count, Apache County, volunteer survey, 5 January 1994.

Date	Time	Location	Sub	Ads	Unk	Total
1/5/94	0730-0745	Becker Lake	2	5	0	7
1/5/94	1640-1655	Nelson Reservoir	0	1	0	1
1/5/94	0800-0830	Little Colorado River	0	2	0	2
1/5/94	0745-0750	Casa Malapais, L.C.R.	0	0	0	0
1/5/94	0830-0850	Little Colorado River, S. Fork campground	0	0	0	0
1/5/94	0845-0915	Greer Lakes	0	0	0	0
1/5/94	0800-0815	The Ranch Lake	0	2	0	2
1/5/94	0830-0855	Ortega Lake	0	2	0	2
1/5/94	0900-0935	Sponseller Lake	4	2	0	6
1/5/94	0730-0805	Luna Lake	0	2	0	2
1/5/94	0705-1400	San Francisco River, USFS to NM	0	1	0	1
1/5/94	0915-1200	Campbell Blue Creek	0	2	0	2
1/5/94	1620-1630	Nutriosa Reservoir	0	0	0	0
1/5/94	0835-0855	Williams Valley	0	0	0	0
1/5/94	0855-0915	Sierra Blanca Lake	0	0	0	0
1/5/94	1030-1145	Black River, east fork	2	14	0	16
1/5/94	1155-1240	Black River, west fork	0	1	0	1
1/5/94	1345-1405	Upper Black river	0	2	0	2
1/5/94	1000-1030	Coyote Creek area	0	0	0	0
1/5/94	0725-0740	Sunrise Lake	0	0	0	0
1/5/94	0850-0905	Big Lake	0	0	0	0
1/5/94	0835-0850	Crescent Lake	0	0	0	0
1/5/94	0750-0805	Lee Valley Reservoir	0	0	0	0

Table 4. Continued.

Date	Time	Location	Sub	Ads	Unk	Total
1/5/94	0745-0800	White Mt. Reservoir	0	0	0	0
1/5/94	0815-0830	Basin Lake	0	0	0	0
1/5/94	1045-1120	White Mt. Hereford Ranch	0	2	0	2
1/5/94	0815-0825	Tenney Pond	0	0	0	0
1/5/94	0920-0935	Mexican Hay Lake	2	1		

Table 5. Arizona bald eagle winter count, Cochise County, volunteer survey, 4 and 8 January 1994.

Date	Time	Location	Sub	Ads	Unk	Total
1/8/94	0830-1130	Parker Canyon Lake	1	2	0	3
1/4/94	0645-0745	Willcox Playa	0	1	0	1

Table 6. Arizona bald eagle winter count, Coconino County, volunteer survey, 5-8 and 10-12 January 1994.

Date	Time	Location	Sub	Ads	Unk	Total
1/7/94	1530-1700	West Chevelon Canyon	1	2	0	3
1/8/94	0700-0830	Willow Creek	1	1	0	2
1/5/94	1045-1100	White Horse Lake	4	4	0	8
1/5/94	0745-0750	Barney Flat Wetland	2	2	0	4
1/5/94	1000-1020	Kaibab Lake	0	2	0	2
1/5/94	0930-0950	Pittman Valley	0	0	0	0
1/5/94	1000-1015	J.D. Dam Lake	3	3	0	6
1/8/94	0845-1100	Country Club Lakes	0	2	0	2
1/5/94	0920-0940	Bellemont	2	4	0	6
1/5/94	0945-0955	Davenport Lake	0	0	0	0

Table 6. Continued.

Date	Time	Location	Sub	Ads	Unk	Total
1/5/94	1030-1040	Cataract Lake	0	1	0	1
1/5/94	1035-1105	Steel/Stone Reservoir	1	2	0	3
1/10/94	0820-1200	Townsend-Winona Rds.	3	5	0	8
1/8/94	0930-1255	89 North	1	0	0	1

1/7/94	0930-1530	Route 180	0	1	0	1
1/8/94	0830-1130	Stoneman Lake area	3	1	0	4
1/7/94	0730-0745	FH3	0	5	0	5
1/11/94	1350-1700	I-17 (Flagstaff to Sedona)	1	4	0	5
1/10/94	0810-1100	FH3 Lakes (Mary, Mormon, Prime, Ashurst)	2	7	0	9
1/7/94	1015-1300	Hwy 87 (FS-Clint's Well)	0	4	0	4
1/8/94	1200-1300	Hwy 87-260 (Clint's Well to Camp Verde)	0	1	0	1
1/6/94	0940-1110	Marble Canyon	2	10	0	12
1/12/94	0745-0830	Glen Canyon NRA	1	2	0	3
1/7/94	1330-1555	Long Lake complex	0	2	0	2
1/5/94	1100-1110	McClellan Reservoir	0	0	0	0
1/5/94	1030-1200	Pine Flat	0	1	0	1
1/6/94	1340-1405	Coleman Lake	2	4	0	6
1/5/94	0900-0920	Dogtown Lake	0	0	0	0
1/5/94	0815-0845	Scholz Lake	2	4	0	6
1/5/94	0710-0855	Blue Stem Wash/Babbitt's	0	1	0	1
1/5/94	20 min	Boggy Tank	0	2	0	2
1/6/94	1110-1135	Sunflower Flat	0	0	0	0
1/5/94	1045-1130	Willow Springs Lake	0	1	0	1

Table 7. Arizona bald eagle winter count, Graham County, volunteer survey, 6 January 1994.

Dates	Time	Location	Sub	Ads	Unk	Total
1/6/94	215 min	Point of Pines Lake Area	2	3	1	6
1/6/94	115 min	Ash Flat Area	0	0	0	0

Table 8. Arizona bald eagle winter count, Greenlee County, volunteer survey, 5 and 9 January 1994.

Dates	Time	Location	Sub	Ads	Unk	Total
1/9/94	0830-0850	Grey's Peak	1	0	0	1
1/5/94	1420-1500	Bush Creek	0	0	0	0
1/5/94	1500-1600	Beaver Creek	0	0	0	0
1/5/94	85 min	Campbell Blue	0	1	0	1

Table 9. Arizona bald eagle winter count, Mohave County, volunteer survey, 5, 8 and 10 January 1994.

Dates	Time	Location	Sub	Ads	Unk	Total
1/5/94	N/A	Alamo Lake	0	4	0	4
1/8/94	1000-1800	Lake Mead, Temple Bar	0	3	0	3
1/10/94	N/A	Havasu National Wildlife Refuge, Topock Marsh	0	0	0	0

Table 10. Arizona bald eagle winter count, Navajo County, volunteer survey, 5 January 1994.

Date	Time	Location	Sub	Ads	Unk	Total
1/5/94	0830-1030	Black Canyon	0	0	0	0
1/5/94	1210-1300	Dry Lake	0	1	0	1
1/5/94	1200-1205	Cottonwood Wash, Clay Springs	0	2	1	3
1/5/94	0900-1110	Highway 260	0	0	0	0
1/5/94	0825-0840	Scott's Reservoir	0	1	0	1
1/5/94	0940-1000	Rainbow Lake	0	2	0	2
1/5/94	0925-0935	Lake of the Woods	1	0	0	1
1/5/94	0900-0950	Jacque's Marsh	0	0	0	0
1/5/94	0900-0945	Little Mormon Lake	1	0	0	1
1/5/94	0840-0955	Showlow Lake	2	0	0	2
1/5/94	1000-1030	Whipple Lake	0	0	0	0
1/5/94	1015-1050	White Mountain Lake	0	2	0	2
1/5/94	0925-1025	Pintail Lake	1	2	0	3
1/5/94	0815-0915	Telephone Lake	1	0	0	1
1/5/94	0830-0900	Redhead Marsh	0	0	0	0
1/5/94	805-0855	Schoen's Reservoir	1	1	0	2
1/5/94	1030-1235	Fools Hollow Lake	5	4	1	10
1/5/94	20 min	Woodland Lake	0	0	0	0
1/5/94	0930-0940	Fred's Lake	0	1	0	1
1/5/94	0850-0900	Edeler's Lake	0	0	0	0
1/5/94	0920-1005	Lone Pine Lake	1	3	0	4
1/5/94	1100-1250	Long Lake	0	0	0	0
1/5/94	0820-0835	White Lake	1	2	0	3

Table 11. Arizona bald eagle winter count, Pima County, volunteer survey, 7 January 1994.

Date	Time	Location	Sub	Ads	Unk	Total
1/7/94	1300-1400	Arivaca Lake	0	0	0	0

Table 12. Arizona bald eagle winter count, Pinal County, volunteer survey, 8 January 1994.

Date	Time	Location	Sub	Ads	Unk	Total
1/8/94	0730-0900	Picacho Lake	0	0	0	0

Table 13. Arizona bald eagle winter count, Santa Cruz County, volunteer survey, 7-8 and 10 January 1994.

Date	Time	Location	Sub	Ads	Unk	Total
1/8/94	1400-1530	Bog Hole	0	0	0	0
1/7/94	N/A	Patagonia Lake	0	0	0	0
1/7/94	1010-1050	Peña Blanca Lake	0	0	0	0
1/10/94	0915-1130	San Raphael Valley	0	0	0	0

Table 14. Arizona bald eagle winter count, Yavapai County, volunteer survey, 8 January 1994.

Dates	Time	Location	Sub	Ads	Unk	Total
1/8/94	0735-0850	Lynx Lake	0	1	0	1
1/8/94	0730-0900	Watson Lake	0	0	0	0
1/8/94	0730-0900	Willow Lake	1	1	0	2
1/8/94	1600-1705	Goldwater Lake	0	0	0	0

Table 15. Arizona bald eagle winter count, Yuma County, volunteer survey, 4 January 1994.

Dates	Time	Location	Sub	Ads	Unk	Total
1/4/94	0830-1700	Colorado River, Imperial National Wildlife Refuge	9	5	0	14

Table 16. Summary of 1994 Arizona bald eagle winter count.

County	Sites	Survey time (minutes)	Eagles/Minutes	Sub	Ads	Unk	Total
Verde River	4	220	0.17	12	23	2	37
Salt River	10	312	0.16	5	44	0	49
Gila River	6	167	0.20	10	24	0	34
Apache	28	1165	0.04	10	39	0	49
Cochise	2	240	0.02	1	3	0	4
Coconino	33	2735	0.04	31	78	0	109
Graham	2	330	0.02	2	3	1	6
Greenlee	4	205	0.01	1	1	0	2
Mohave	3	480	0.01	0	7	0	7
Navajo	23	1070	0.03	14	21	2	37
Pima/Pinal	2	150	0	0	0	0	0
Santa Cruz	4	265	0	0	0	0	0
Yavapai	4	320	0.01	1	2	0	3
Yuma	1	510	0.03	9	5	0	14
Total	124	7949	0.04	96	250	5	351
Percent Total	100	100		27.4	71.2	1.4	100

Table 17. Summary of Arizona bald eagle winter counts, 1981-1985, 1992-1994.

Year	Subadult bald eagles	Adult bald eagles	Unknown bald eagles	Total bald eagles
1981	60 (36%)	103 (63%)	2 (1%)	165
1982	72 (34%)	135 (64%)	3 (2%)	210
1983	53 (33%)	104 (66%)	1 (1%)	158
1984	63 (28%)	159 (71%)	3 (1%)	225
1985	40 (34%)	78 (66%)	0	118
1992	70 (31%)	145 (65%)	10 (4%)	225
1993	46 (25%)	133 (71%)	7 (4%)	186
1994	96 (27%)	250 (71%)	5 (2%)	351
Totals	500 (33%)	1007 (65%)	31 (2%)	1538 (100%)

Table 18. Summary of Roosevelt Reservoir bald eagle winter counts, 1989-1994.

Year	Subadult bald eagles	Adult bald eagles	Eagles observed north shore	Eagles observed south shore
Nov. 21, 1989	1	5	1	5
Jan. 3, 1990	1	5	5	1
Feb. 6, 1990	1	1	1	1
Mar. 21, 1990	0	1	0	1
Jan. 15, 1991	3	1	3	1
Jan. 10, 1992	2	5	6	1
Jan. 21, 1993	0	0	0	0
Jan. 6, 1994	0	3	3	0
Totals	8	21	19	10