

# ARIZONA BALD EAGLE WINTER COUNT: 1999-2000

James T. Driscoll, Bald Eagle Management Coordinator  
John G. Koloszar, Nongame Biologist  
Nongame Branch, Wildlife Management Division



Technical Report 172  
Nongame and Endangered Wildlife Program  
Program Chief: Terry B. Johnson  
Arizona Game and Fish Department  
2221 West Greenway Road  
Phoenix, Arizona 85023-4399

November 2000

## CIVIL RIGHTS AND DIVERSITY COMPLIANCE

The Arizona Game and Fish Commission receives federal financial assistance in Sport Fish and Wildlife Restoration. Under Title VI of the 1964 Civil Rights Act, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, religion, national origin, age, sex, or disability. If you believe you have been discriminated against in any program, activity, or facility as described above, or if you desire further information please write to:

Arizona Game and Fish Department  
Office of the Deputy Director, DOHQ  
2221 West Greenway Road  
Phoenix, Arizona 85023-4399

and

The Office for Diversity and Civil Rights  
U.S. Fish and Wildlife Service  
4040 North Fairfax Drive, Room 300  
Arlington, Virginia 22203

## AMERICANS WITH DISABILITIES ACT COMPLIANCE

The Arizona Game and Fish Department complies with all provisions of the Americans with Disabilities Act. This document is available in alternative format by contacting the Arizona Game and Fish Department, Office of the Deputy Director at the address listed above or by calling (602) 789-3290 or TTY 1-800-367-8939.

#### RECOMMENDED CITATION

Driscoll, J.T. and J.G. Koloszar. 2000. Arizona bald eagle winter count: 1999-2000. Nongame and Endangered Wildlife Program Technical Report 172. Arizona Game and Fish Department, Phoenix, Arizona.

#### ACKNOWLEDGMENTS

We thank the following agencies and private groups for their contributions to Arizona's 1999-2000 bald eagle winter count: Bureau of Reclamation, National Audubon Society (Arizona chapters), Salt River Project, San Carlos Apache Tribe, U.S. Fish and Wildlife Service, U.S. Forest Service, and White Mountain Apache Tribe. A special thanks goes out to Greg Beatty, U.S. Fish and Wildlife Service, and all the volunteers for their hard work and dedication to the winter counts.

#### PROJECT FUNDING

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

## TABLE OF CONTENTS

Introduction.....	1
Methods.....	1
Results.....	2
Discussion.....	3
Recommendations.....	4
Literature Cited.....	4
Appendix A: 1999 Winter Count.....	6
Appendix B: 2000 Winter Count.....	13

LIST OF TABLES

Table 1. Results of the 1999 Arizona bald eagle winter count, Apache County ..... 6  
Table 2. Results of the 1999 Arizona bald eagle winter count, Cochise County ..... 7  
Table 3. Results of the 1999 Arizona bald eagle winter count, Coconino County..... 7  
Table 4. Results of the 1999 Arizona bald eagle winter count, Graham, Greenlee, and Maricopa  
Counties ..... 8  
Table 5. Results of the 1999 Arizona bald eagle winter count, Mohave County ..... 8  
Table 6. Results of the 1999 Arizona bald eagle winter count, Navajo County..... 9  
Table 7. Results of the 1999 Arizona bald eagle winter count, Pima, Pinal, and Santa Cruz  
Counties ..... 10  
Table 8. Results of the 1999 Arizona bald eagle winter count, Yavapai County ..... 10  
Table 9. Results of the 1999 Arizona bald eagle winter count, Yuma and LaPaz Counties ..... 10  
Table 10. Results of the 1999 Arizona bald eagle winter count, helicopter surveys ..... 11  
Table 11. Results of the 1999 Arizona bald eagle winter count, non-standardized routes ..... 12  
Table 12. Summary of 1999 Arizona bald eagle winter count..... 12  
Table 13. Results of the 2000 Arizona bald eagle winter count, Apache County ..... 13  
Table 14. Results of the 2000 Arizona bald eagle winter count, Cochise County ..... 13  
Table 15. Results of the 2000 Arizona bald eagle winter count, Coconino County..... 14  
Table 16. Results of the 2000 Arizona bald eagle winter count, Graham, Greenlee, and Maricopa  
Counties ..... 15  
Table 17. Results of the 2000 Arizona bald eagle winter count, Mohave County ..... 15  
Table 18. Results of the 2000 Arizona bald eagle winter count, Navajo County..... 16  
Table 19. Results of the 2000 Arizona bald eagle winter count, Pima, Pinal, and Santa Cruz  
Counties ..... 17  
Table 20. Results of the 2000 Arizona bald eagle winter count, Yavapai County ..... 17  
Table 21. Results of the 2000 Arizona bald eagle winter count, Yuma and LaPaz Counties ..... 17  
Table 22. Results of the 2000 Arizona bald eagle winter count, helicopter surveys ..... 18  
Table 23. Results of the 2000 Arizona bald eagle winter count, non-standardized routes ..... 19  
Table 24. Summary of 2000 Arizona bald eagle winter count..... 20  
Table 25. Summary of statewide Arizona bald eagle winter counts, 1981-1985, 1992-2000 ..... 21

# ARIZONA BALD EAGLE WINTER COUNT: 1999-2000

James T. Driscoll and J.G. Koloszar

## INTRODUCTION

The national bald eagle (*Haliaeetus leucocephalus*) winter survey was initiated and organized by the National Wildlife Federation (NWF) from 1979-1991. Arizona contributed statewide information to these surveys in the 1970s to the early 1980s (Todd 1977, 1981, 1984a, 1984b; Hall 1985). However in 1986, a NWF survey protocol change asked the states to survey only areas of high bald eagle concentrations (routes with more than 15 eagles observed in two or more years). Due to Arizona's lack of qualifying "concentrations," the state contributed minimal information in 1986 and 1987 (Hastings 1988), and surveyed only specific management areas such as Roosevelt Lake (U.S. Fish and Wildlife Service 1990) and Nankoweap Creek (Brown et. al 1989; Brown and Stevens 1992) from 1989 to 1991. The national survey is now coordinated by the U.S. Geological Survey Biological Resources Division, Snake River Field Station (USGS-BRD-SRFS).

Arizona's annual statewide winter counts resumed in 1992 (Beatty 1993; Beatty and Driscoll 1994, 1996, 1998; Beatty et al. 1995a, 1995b), using a combination of ground visits (foot, automobile, boat, snowmobile) and helicopters. By 1995, the Arizona Game and Fish Department, in cooperation with the NWF, established 115 standardized survey routes for the Arizona bald eagle winter count.

Because the bald eagle is gregarious in winter, national surveys are a valuable tool for determining the species' success throughout its range (Stalmaster 1987). In addition, determining wintering bald eagle habitat use in Arizona increases our knowledge of the species' management needs. Identifying winter distribution in Arizona was a goal in the 1982 Southwest Bald Eagle Recovery Plan (U.S. Fish and Wildlife Service 1982). Now that the U.S. Fish and Wildlife Service (USFWS) has reclassified the bald eagle to threatened status (USFWS 1995), and has proposed delisting the species (USFWS 1999), the national winter count retains its importance. Through the consistent efforts of each state, the winter count will provide valuable information on nationwide population fluctuations post-delisting.

## METHODS

In 1999 and 2000, we continued to use the established 115 standardized survey routes for Arizona's bald eagle winter count. Our objective was to complete all of the 115 standardized routes. Any additional routes completed are included only for management purposes in Arizona; they are not included in the results reported to NWF.

We scheduled Arizona bald eagle winter counts for January 6 to 10, 1999, and January 3 to 9, 2000. This allowed for weekday use of agency helicopters and weekends for volunteers. Due to the diverse habitat in Arizona, and our desire to maximize (but not duplicate) statewide coverage in a narrow period with minimal effort; we needed a variety of methods to perform an adequate survey.

The best way to survey the rugged terrain and deep canyons of the Salt, Verde, and Gila river watersheds, is by helicopter. U.S. Bureau of Reclamation (USBR) and Salt River Project (SRP) contributed four days of helicopter time, while volunteers surveyed the other areas more accessible by boat, foot, and vehicle.

The low-level helicopter flights housed two to three biologists and a pilot flying directly above the watershed. While the level of flight and speed were dependent upon terrain, wind speed as well as height and density of power lines, a height of 100 to 200 feet above ground level and 55 to 65 knots was optimum for observing bald eagles.

We solicited volunteers from agencies and private groups through the mail. We supplied survey forms (from the USGS-BRD-SRFS) and instructed them on the protocol. Most volunteers surveyed from their vehicle, although they also used boats, foot travel, planes, and snowmobiles.

We classified the bald eagle sightings into adult, subadult, and unknown age classes. We advised the volunteers to be aware of the various near-adult plumages as they may be easily mistaken for full-adult birds. We also recorded the occurrence of golden eagles during the survey, but did not report them in this document.

We broke the data into two sections: 1) volunteer surveys by county (Tables 1-9, 13-21); and 2) helicopter surveys (Tables 10, 22). The separation between volunteer and helicopter surveys represents the difference in methods so future comparisons could be made.

## RESULTS

The Arizona winter count totaled 403 bald eagles in 1999 (Tables 1-10, 12), including 248 adults (62 percent), 144 subadults (36 percent), and 11 unknown age bald eagles (3 percent). In 2000, we counted 325 bald eagles (Tables 13-22, 24), including 202 adults (62 percent), 115 subadults (35 percent), and 8 unknown age bald eagles (2 percent). The highest number of bald eagles occurred on the North Fork White River (n=43) in 1999, and Verde River (n=27) in 2000. In addition, 6 and 13 bald eagles were counted on non-established routes, respectively (Table 11, 23).

Of the 115 standardized routes, Arizona completed 105 (91 percent) in 1999 and 110 (96 percent) in 2000. Surveyors spent a total of 8378 minutes (139.6 hours) searching for eagles in 1999 and 9402 minutes (156.7 hours) in 2000. For seven routes in 1999 and one route in 2000, minutes were not recorded, and survey times were estimated from those reported in previous years. In 1999 and 2000, the greatest survey effort was in Coconino County, where volunteers searched for 3416 minutes (56.9 hours) and 3525 minutes (58.8 hours), respectively (Tables 3, 15).

The most efficient method of counting eagles was by helicopter (Tables 12, 24). In 1999, we counted 238 eagles in 763 minutes (12.7 hours) and 165 eagles in 851 minutes (14.1 hours) in 2000. This represented 0.31 and 0.19 bald eagles observed per minute, respectively. The most efficient

volunteer ground effort for both years (in counties with more than one survey route) occurred in Navajo County where they observed 0.0309 and 0.0749 bald eagles per minute.

#### DISCUSSION

The total numbers of bald eagles counted in the 1999 and 2000 Arizona winter counts were 403 and 325, respectively. In 1999, we broke an Arizona record by counting 40 more bald eagles than the previous record in 1994. The 2000 winter count was above the eight year statewide mean of 302 (range=186 to 403, Table 25). In addition, the number of sites surveyed also was above average in 1999 and 2000. From 1995 through 1998, the highest number of routes completed was 103 (1995), and average 98.5 (86 percent) completed routes. In 1999 and 2000, we had 105 (91 percent) and 110 (96 percent) of the 115 routes completed, respectively.

The percentage of adults and subadults bald eagles counted in Arizona is consistent with the NWF national winter surveys for 1986-1988 (Hastings 1988). Statewide winter counts from 1981 to 1985 and 1992 to 2000 averaged 65 percent adults (n=2342), 33 percent subadults (n=1199), and 2 percent unknown (n=79) (Table 25). In 1999 and 2000, the percentage of adult counted (62 percent for both years) was just below, while the percentage of subadults (36 and 35 percent) was just above national levels.

We can partially attribute the record 1999 count to a high number of bald eagles observed on the North Fork White River. Excluding 1999, we observed an averaged of 8.6 (n=43) bald eagles per year on the North Fork White River. In 1999, we found 43 bald eagles. Seasonably warm temperatures (15 to 20 degrees), in conjunction with a decrease in ice coverage in Apache County may have contributed to bald eagles "concentrating" on the North Fork White River. In addition, the canyon may provide additional shelter from the wind, behavior we have observed on the lower Gila River near the San Carlos Reservoir. In 1999, we also observed higher than average counts on the Gila River drainage and in Coconino County.

As in 1997 and 1998, we observed a high concentration of subadults near the San Carlos Reservoir (SCR) in 1999. We observed 19 subadults on the SCR, and 13 subadults in a cottonwood grove below Coolidge Dam. Lower lake levels and higher concentrations of waterfowl may have been factors influencing the presence of bald eagles from 1997 to 1999. However, extremely low lakes levels observed in 2000 may have contributed to a lower subadult count (n=9 on the SCR, n=5 below the dam).



#### RECOMMENDATIONS

Continue to conduct the annual winter count with the 115 standardized routes.

Continue updating the Nongame Branch bald eagle winter count database with core information from the standardized survey forms.

Develop statewide maps documenting the location and abundance of wintering eagles for distribution to managing agencies.

Begin to document the location of wintering bald eagle mortalities in Arizona and follow up with appropriate management.

#### LITERATURE CITED

- Beatty, G.L. 1993. 1992 Arizona bald eagle winter count. Nongame and Endangered Wildlife Program Technical Report. Arizona Game and Fish Department, Phoenix, Arizona.
- Beatty, G.L. and J.T. Driscoll. 1994. 1993 Arizona bald eagle winter count. Nongame and Endangered Wildlife Program Technical Report. Arizona Game and Fish Department, Phoenix, Arizona.
- Beatty, G.L. and J.T. Driscoll. 1996. Arizona bald eagle winter count: 1996. Nongame and Endangered Wildlife Program Technical Report 103. Arizona Game and Fish Department, Phoenix, Arizona.
- Beatty, G.L. and J.T. Driscoll. 1998. Arizona bald eagle winter count: 1997-1998. Nongame and Endangered Wildlife Program Technical Report 137. Arizona Game and Fish Department, Phoenix, Arizona.
- Beatty, G.L., J.T. Driscoll, and M.C. Siemens. 1995a. Arizona bald eagle winter count: 1994. Nongame and Endangered Wildlife Program Technical Report 68. Arizona Game and Fish Department, Phoenix, Arizona.
- Beatty, G.L., J.T. Driscoll, and J.G. Koloszar. 1995b. Arizona bald eagle winter count: 1995. Nongame and Endangered Wildlife Program Technical Report 82. Arizona Game and Fish Department, Phoenix, Arizona.
- Brown, B.T., R Mesta, L.E. Stevens, and J. Weiseit. 1989. Changes in winter distribution of bald eagles along the Colorado River in the Grand Canyon, Arizona. *J. Raptor Res.* 23(3): 110-113.

- Brown, B.T. and L.E. Stevens. 1992. Winter abundance, age structure, and distribution of bald eagles along the Colorado River, Arizona. *Southwestern Naturalist* 37:404-435.
- Hall, R.S. 1985. Memo re: Arizona's 1985 winter and spring bald eagle surveys. Bureau of Land Management, Kingman, Arizona.
- Hastings, B.C. 1988. Midwinter bald eagle survey report, 1986-1987. Institute for Wildlife Research, National Wildlife Federation, Washington, D.C.
- Stalmaster, M.V. 1987. *The bald eagle*. Universe Books, New York, New York.
- Todd, R.L. 1977. Winter bald eagle in Arizona. Arizona Game and Fish Department, Phoenix, Arizona.
- Todd, R.L. 1981. Multi-agency findings on the distribution of bald eagles for Arizona in the January months of 1979, 1980, 1981. Arizona Game and Fish Department, Phoenix, Arizona.
- Todd, R.L. 1984a. A report on the Nongame Branch bald eagle survey flights in January, 1984. Special Report. Arizona Game and Fish Department, Phoenix, Arizona.
- Todd, R.L. 1984b. Memo re: winter bald eagle counts in Arizona. Arizona Game and Fish Department, Phoenix, Arizona.
- U.S. Fish and Wildlife Service. 1982. Bald eagle recovery plan (southwestern population). U.S. Fish and Wildlife Service, Albuquerque, New Mexico.
- U.S. Fish and Wildlife Service. 1990. Biological opinion on Central Arizona Water Control Project, Roosevelt Dam Element of Plan 6 (2-21-83-f-10), U.S. Fish and Wildlife Service, Phoenix, Arizona.
- U.S. Fish and Wildlife Service. 1995. Endangered and Threatened Species: Bald Eagle Reclassification; Final Rule. Volume 60, No. 133. Department of the Interior, Washington D.C.
- U.S. Fish and Wildlife Service. 1999. Endangered and threatened wildlife and plants; proposed rule to remove the bald eagle in the lower 48 states from the list of endangered and threatened wildlife; proposed rule. *Federal Register*. 64(128):36454-64. Department of the Interior, Washington, D.C.

APPENDIX A: 1999 WINTER COUNT

Table 1. Results of the 1999 Arizona bald eagle winter count, Apache County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
1	Becker Lake	25	2	0	0	0
2	Little Colorado River (LCR)	15	0	0	0	0
3	S. Fork LCR – Campground	30	0	0	0	0
4	Casa Malapais – LCR	10	0	0	0	0
5	Greer Lakes (River, Bunch, and Tunnel Reservoirs)	80	3	0	0	0
6	Sponseller Lake	40	0	0	0	0
7	Mexican Hay Lake	90	0	0	0	0
8	White Mountain Hereford Ranch (Trinity, Glen Livet, McKay reservoirs)	80	1	0	0	1
9	The Ranch Lake	16 <sup>1</sup>	2	1	0	0
10	Ortega Lake	10	0	0	0	0
11	Concho Lake	15	0	0	0	0
12	Luna Lake	45	2	1	0	0
13	Nelson Reservoir	30	2	0	0	0
14	Nutriosio Reservoir	15	0	0	0	0
15	Tenney Pond	45	0	0	0	1
16	San Francisco River (Alpine RD to New Mexico)	165	0	2	0	0
17	Campbell Blue Creek	60	0	0	0	0
Total		771	12	4	0	2

<sup>1</sup> Minutes not recorded. Times averaged from those reported through 1994 - 1998.

Table 2. Results of the 1999 Arizona bald eagle winter count, Cochise County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
18	Parker Canyon Lake	123 <sup>1</sup>	2	0	0	0
19	Willcox Playa	Not Surveyed				
20	Sulphur Springs Valley – Whitewater Draw	165 <sup>1</sup>	0	0	0	0
Total		288	2	0	0	0

<sup>1</sup> Minutes not recorded. Times averaged from those reported through 1994 -1998.

Table 3. Results of the 1999 Arizona bald eagle winter count, Coconino County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
21	Long Lake Complex	300	9	1	0	1
22	Stoneman Lake	335	3	2	0	0
23	FH3	80	0	0	0	0
24	I-17, Sedona to Flagstaff	225	3	0	0	0
25	Bellemont	362	2	4	0	0
26	Townsend/Winona A/B	420	5	2	0	0
27	HWY 89 North/Sunset Crater - Wupatki	330	2	0	0	0
28	FH3 Lakes (Mary, Mormon, Marshall, Prime)	467	12	2	0	0
29	Continental Country Club Lakes	130	2	0	0	0
30	Chevelon Canyon Lake	Not Surveyed				
31	Holden Lake	10	0	0	0	0
32	Spring Valley Wash	110	0	0	0	0
33	Red Lake Valley	15	0	0	0	0
34	Kaibab Lake	20	0	0	0	0
35	Pittman Valley	25	3	0	0	0
36	Davenport Lake	5	0	0	0	0
37	Scholz Lake	50	3	2	0	0
38	Cataract Lake	10	1	0	0	0
39	Willow Springs Lake	80	0	2	0	0

Table 3. (continued)						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
40	West Chevelon Canyon	85	3	0	0	0
41	Willow Creek	60	0	0	0	0
42	White Horse Lake – Pomeroy Tanks	25	2	6	0	0
43	JD Dam Lake	30	0	0	0	0
44	Barney Flat Wetland	10	0	0	0	0
45	Steel/Stone Road	45	0	0	0	0
46	Pine Flat	20	0	0	0	0
47	Boggy Tank	60	0	0	0	0
48	Blue Stem Wash-Babbitt property	80	2	1	0	0
49	Glen Canyon Nat'l Rec Area (Lee's Ferry)	27	1	4	0	0
50	Colorado River, Lee's Ferry to Little Colorado River	Not Surveyed				
Total		3416	53	26	0	1

Table 4. Results of the 1999 Arizona bald eagle winter count, Graham, Greenlee, and Maricopa Counties.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
51	Point of Pines Lake Area	340	8	6	7	0
52	Greys Peak	Not Surveyed				
53	Painted Rock Reservoir	45	0	0	0	0
Total		385	8	6	7	0

Table 5. Results of the 1999 Arizona bald eagle winter count, Mohave County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
54	Lake Mohave	480	3	5	0	1
55	Havasu National Wildlife Refuge, Topock Marsh	495	0	0	0	0
56	Lake Mead, Temple Bar	300	5	4	0	0
57	Alamo Lake	20	4	0	0	0
Total		1295	12	9	0	1

Table 6. Results of the 1999 Arizona bald eagle winter count, Navajo County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
58	Lake of the Woods	15	1	0	0	0
59	Rainbow Lake	34	0	2	0	0
60	Little Mormon Lake	10	0	0	0	0
61	Whipple Lake	10	1	0	0	0
62	Long Lake	60	0	0	0	0
63	Lone Pine Lake	30	0	0	0	0
64	Schoens Reservoir	30	0	0	0	0
65	White Mountain Lake	30	0	0	0	0
66	Dry Lake	120	0	0	0	0
67	Jacques Marsh	40	1	0	0	0
68	Scott's Reservoir	20	0	3	0	0
69	Showlow Lake	60	4	1	0	0
70	Pintail Lake	38 <sup>1</sup>	0	0	0	0
71	Telephone Lake	13	1	0	0	0
72	Fool Hollow Lake	90	4	1	0	0
73	Fred's Lake	20	1	0	0	0
74	Edeler's Lake	5	0	0	0	0
75	Cottonwood Wash/Clay Springs	35	1	0	0	0
76	White Lake	18	0	0	0	0
Total		678	14	7	0	0

<sup>1</sup> Minutes not recorded. Times averaged from those reported through 1994 -1998.

Table 7. Results of the 1999 Arizona bald eagle winter count, Pima, Pinal, and Santa Cruz Counties .						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
77	Arivaca Lake	90	0	0	0	0
78	Picacho Reservoir	240	0	0	0	0
79	Bog Hole	44 <sup>1</sup>	0	0	0	0
80	Patagonia Lake	Not Surveyed				
81	San Raphael Valley	78 <sup>1</sup>	0	0	0	0
82	Pena Blanca Lake	60	0	0	0	0
Total		512	0	0	0	0

<sup>1</sup> Minutes not recorded. Times were estimated from those reported through 1994-1998.

Table 8. Results of the 1999 Arizona bald eagle winter count, Yavapai County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
83	Wet Beaver Creek	Not Surveyed				
84	Oak Creek	Not Surveyed				
85	Willow Lake	Not Surveyed				
86	Lynx Lake	Not Surveyed				
87	Watson Lake	Not Surveyed				
88	Goldwater Lake	Not Surveyed				
Total		---	---	---	---	---

Table 9. Results of the 1999 Arizona bald eagle winter count, Yuma and LaPaz Counties.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
89	Imperial National Wildlife Refuge Cibola/Martinez Lake – Colorado River	270 <sup>1</sup>	1	0	0	0
Total		270	1	0	0	0

<sup>1</sup> Minutes not recorded. Times were estimated from those reported through 1994-1998.

Table 10. Results of the 1999 Arizona bald eagle winter count, helicopter surveys.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
90	Verde River	151	25	5	0	0
91	Lower East Verde River	9	1	0	0	0
92	Lower West Clear Creek	21	2	1	0	0
93	Lower Salt River	90	15	12	0	0
94	Upper Salt River	82	7	2	0	0
95	Lower Tonto Creek	33	3	0	0	0
96	Lower Cherry Creek	7	0	0	0	0
97	Lower Canyon Creek	10	0	0	0	0
98	Lower Cibecue Creek	12	2	0	0	0
99	Lower Carrizo Creek	7	1	0	0	0
100	White River	18	5	2	0	0
101	North Fork White River	37	24	19	0	0
102	Lower Black River	47	26	5	0	0
103	Big and Little Bonito Creeks	21	7	9	0	0
104	San Carlos River (Talkalai Lake)	25	1	1	0	0
105	San Carlos Reservoir	15	3	19	0	0
106	Upper and Lower Gila River	60	7	13	0	0
107	Eagle Creek	24	9	3	0	0
108	Bonita Creek	14	1	0	0	0
109	Lower San Francisco River	39	3	0	0	0
110	Blue River	12	2	1	0	0
111	Sunrise Lake	3	0	0	0	0
112	Big Lake	2	0	0	0	0
113	Lee Valley Reservoir	2	0	0	0	0
114	Crescent Lake	2	0	0	0	0
115	Lake Pleasant	20	2	0	0	0
Totals		763	146	92	0	0



Route Name	County	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
HWY 87 South	Coconino	131	1	2	0	1
HWY 87 North	Coconino	75	0	0	0	0
Camp Verde	Yavapai	43	0	0	0	0
Blue Ridge Reservoir	Coconino	65	0	0	0	1
HWY 180	Coconino	0	0	0	0	1

County	Routes	Minutes	Adult	Subadult	Unknown	Total	Total/minute
Verde River drainage	3	181	28	6	0	34	0.1878
Salt River drainage	11	364	90	49	0	139	0.3818
Gila River drainage	7	189	26	37	0	63	0.3333
Various helicopter	5	29	2	0	0	2	0.0689
Apache	17	771 <sup>1</sup>	12	4	2	18	0.0233
Cochise	2	288 <sup>1</sup>	2	0	0	2	0.0069
Coconino	28	3416	53	26	1	80	0.0200
Graham	1	340	8	6	7	21	0.0618
Maricopa	1	45	0	0	0	0	0
Mohave	4	1295	12	9	1	22	0.0170
Navajo	19	678 <sup>1</sup>	14	7	0	21	0.0309
Pima	1	90	0	0	0	0	0
Pinal	1	240	0	0	0	0	0
Santa Cruz	3	182 <sup>1</sup>	0	0	0	0	0
Yuma and LaPaz	1	270 <sup>1</sup>	1	0	0	1	0.0037
Totals	105	8378	248	144	11	403	0.0500

<sup>1</sup> Seven times not recorded. Times averaged from those reported through 1994-1998.

APPENDIX B: 2000 WINTER COUNT

Table 13. Results of the 2000 Arizona bald eagle winter count, Apache County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
1	Becker Lake	15	3	0	0	0
2	Little Colorado River (LCR)	10	0	0	0	0
3	S. Fork LCR – Campground	15	0	0	0	0
4	Casa Malapais - LCR	5	0	0	0	0
5	Greer Lakes (River, Bunch, and Tunnel Reservoirs)	105	0	0	0	0
6	Sponseller Lake	30	1	1	0	1
7	Mexican Hay Lake	90	0	0	0	0
8	White Mountain Hereford Ranch (Trinity, Glen Livet, McKay reservoirs)	60	0	0	0	0
9	The Ranch Lake	40	0	0	0	0
10	Ortega Lake	27	0	0	0	0
11	Concho Lake	26	0	0	0	0
12	Luna Lake	25	4	5	0	0
13	Nelson Reservoir	25	2	0	0	0
14	Nutriosio Reservoir	20	0	0	0	0
15	Tenney Pond	20	0	1	0	0
16	San Francisco River (Alpine RD to New Mexico)	120	0	0	0	0
17	Campbell Blue Creek	60	0	0	0	0
Total		693	10	7	0	1

Table 14. Results of the 2000 Arizona bald eagle winter count, Cochise County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
18	Parker Canyon Lake	120	2	0	0	0
19	Willcox Playa	Not Surveyed				
20	Sulphur Springs Valley – Whitewater Draw	250	0	0	0	0
Total		370	2	0	0	0

Table 15. Results of the 2000 Arizona bald eagle winter count, Coconino County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
21	Long Lake Complex	210	1	1	0	0
22	Stoneman Lake	318	5	3	0	0
23	FH3	57	0	0	0	0
24	I-17, Sedona to Flagstaff	275	13	7	0	1
25	Bellemont	335	1	1	0	1
26	Townsend/Winona A/B	420	2	0	0	0
27	HWY 89 North/Sunset Crater - Wupatki	345	1	0	0	0
28	FH3 Lakes (Mary, Mormon, Marshall, Prime)	380	2	2	0	1
29	Continental Country Club Lakes	150	2	0	0	0
30	Chevelon Canyon Lake	78 <sup>1</sup>	0	0	0	0
31	Holden Lake	25	0	0	0	0
32	Spring Valley Wash	120	0	0	0	0
33	Red Lake Valley	10	0	0	0	0
34	Kaibab Lake	30	2	0	0	0
35	Pittman Valley	20	0	0	0	0
36	Davenport Lake	10	1	0	0	0
37	Scholz Lake	37	0	0	0	0
38	Cataract Lake	20	0	0	0	0
39	Willow Springs Lake	30	0	0	0	0
40	West Chevelon Canyon	60	0	1	0	0
41	Willow Creek	50	0	0	0	0
42	White Horse Lake - Pomeroy Tanks	50	1	1	0	0
43	JD Dam Lake	35	0	1	0	0
44	Barney Flat Wetland	25	0	0	0	0
45	Steel/Stone Road	55	0	0	0	0
46	Pine Flat	30	0	0	0	0
47	Boggy Tank	120	1	0	0	0
48	Blue Stem Wash-Babbitt property	180	5	2	0	0

Table 15. (continued)						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
49	Glen Canyon Nat'l Rec Area (Lee's Ferry)	50	2	0	0	0
50	Colorado River, Lee's Ferry to Little Colorado River	Not Surveyed				
Total		3525 <sup>1</sup>	39	19	0	3

<sup>1</sup> Minutes not recorded. Times averaged from those reported through 1994 - 1999.

Table 16. Results of the 2000 Arizona bald eagle winter count, Graham, Greenlee, and Maricopa Counties .						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
51	Point of Pines Lake Area	Not Surveyed				
52	Greys Peak	Not Surveyed				
53	Painted Rock Reservoir	60	0	0	0	0
Total		60	0	0	0	0

Table 17. Results of the 2000 Arizona bald eagle winter count, Mohave County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
54	Lake Mohave	420	1	0	0	0
55	Havasu National Wildlife Refuge, Topock Marsh	285	1	0	0	0
56	Lake Mead, Temple Bar	994	13	3	0	0
57	Alamo Lake	20	0	1	0	0
Total		1719	15	4	0	0

Table 18. Results of the 2000 Arizona bald eagle winter count, Navajo County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
58	Lake of the Woods	15	3	0	0	0
59	Rainbow Lake	20	0	4	0	0
60	Little Mormon Lake	15	0	0	0	0
61	Whipple Lake	15	0	0	0	0
62	Long Lake	80	1	0	0	0
63	Lone Pine Lake	15	0	0	0	0
64	Schoens Reservoir	24	0	0	0	0
65	White Mountain Lake	25	0	0	0	0
66	Dry Lake	20	0	0	0	0
67	Jacques Marsh	95	4	0	0	3
68	Scott's Reservoir	25	0	0	0	0
69	Showlow Lake	20	1	0	0	0
70	Pintail Lake	40	1	1	0	0
71	Telephone Lake	20	6	11	0	0
72	Fool Hollow Lake	80	4	3	0	0
73	Fred's Lake	15	0	0	0	1
74	Edeler's Lake	10	0	0	0	0
75	Cottonwood Wash/Clay Springs	30	0	0	0	0
76	White Lake	10	0	0	0	0
Total		574	20	19	0	4

Table 19. Results of the 2000 Arizona bald eagle winter count, Pima, Pinal, and Santa Cruz Counties .						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
77	Arivaca Lake	120	0	0	0	0
78	Picacho Reservoir	165	0	0	0	0
79	Bog Hole	30	0	0	0	0
80	Patagonia Lake	Not Surveyed				
81	San Raphael Valley	60	0	0	0	0
82	Pena Blanca Lake	120	0	0	0	0
Total		495	0	0	0	0

Table 20. Results of the 2000 Arizona bald eagle winter count, Yavapai County.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
83	Wet Beaver Creek	480	0	0	0	0
84	Oak Creek	360	2	0	0	0
85	Willow Lake	65	1	0	0	0
86	Lynx Lake	40	0	0	0	0
87	Watson Lake	60	0	0	0	0
88	Goldwater Lake	50	0	2	0	0
Total		1055	3	2	0	0

Table 21. Results of the 2000 Arizona bald eagle winter count, Yuma and LaPaz Counties .						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
89	Imperial National Wildlife Refuge Cibola/Martinez Lake – Colorado River	60	4	8	0	0
Total		60	4	8	0	0

Table 22. Results of the 2000 Arizona bald eagle winter count, helicopter surveys.						
Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
90	Verde River	177	26	1	0	0
91	Lower East Verde River	9	1	2	0	0
92	Lower West Clear Creek	18	0	0	0	0
93	Lower Salt River	96	8	11	0	0
94	Upper Salt River	51	8	3	0	0
95	Lower Tonto Creek	26	3	0	0	0
96	Lower Cherry Creek	8	0	0	0	0
97	Lower Canyon Creek	12	2	0	0	0
98	Lower Cibecue Creek	13	1	0	0	0
99	Lower Carrizo Creek	6	0	0	0	0
100	White River	15	4	3	0	0
101	North Fork White River	27	11	5	0	0
102	Lower Black River	48	19	7	0	0
103	Big and Little Bonito Creeks	44	5	8	0	0
104	San Carlos River (Talkalai Lake)	35	1	1	0	0
105	San Carlos Reservoir	22	4	9	0	0
106	Upper and Lower Gila River	77	5	3	0	0
107	Eagle Creek	31	7	3	0	0
108	Bonita Creek	15	0	0	0	0
109	Lower San Francisco River	38	1	0	0	0
110	Blue River	13	0	0	0	0
111	Sunrise Lake	3	0	0	0	0
112	Big Lake	4	1	0	0	0
113	Lee Valley Reservoir	Not Surveyed				
114	Crescent Lake	2	0	0	0	0
115	Lake Pleasant	61	2	0	0	0
Totals		851	109	56	0	0

Table 23. Results of the 2000 Arizona bald eagle winter count, non-standardized route.						
Route Name	County	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
HWY 87 South	Coconino	75	1	0	0	0
HWY 87 North	Coconino	150	4	1	0	0
Camp Verde	Yavapai	35	0	0	0	0
Blue Ridge Reservoir	Coconino	60	0	0	0	0
McCellan Reservoir	Coconino	20	0	0	0	0
Loop Road	Coconino	120	3	2	0	0
Bar Cross	Coconino	30	0	0	0	0
Garland Prairie	Coconino	30	1	0	0	0
Woodland Lake/Big Springs	Navajo	40	0	0	0	0



Table 24. Summary of 2000 Arizona bald eagle winter count.							
County	Routes	Minutes	Adult	Subadult	Unknown	Total	Total/minute
Verde River drainage	3	204	27	3	0	30	0.1471
Salt River drainage	11	346	61	37	0	98	0.2832
Gila River drainage	7	231	18	16	0	34	0.1472
Various helicopter	5	70	3	0	0	3	0.0429
Apache	17	693	10	7	1	18	0.0260
Cochise	2	370	2	0	0	2	0.0054
Coconino	29	3525 <sup>1</sup>	39	19	3	61	0.0173
Maricopa	1	60	0	0	0	0	0
Mohave	4	1719	15	4	0	19	0.0111
Navajo	19	574	20	19	4	43	0.0749
Pima	1	120	0	0	0	0	0
Pinal	1	165	0	0	0	0	0
Santa Cruz	3	210	0	0	0	0	0
Yavapai	6	1055	3	2	0	5	0.0047
Yuma and LaPaz	1	60	4	8	0	12	0.2000
Totals	110	9402 <sup>1</sup>	202	115	8	325	0.0346

<sup>1</sup> One time not recorded. Times averaged from those reported through 1994 - 1999.

Table 25. Summary of statewide Arizona bald eagle winter counts, 1981-1985, 1992-2000.						
Year	Survey Time	Birds/minute	Adults	Subadults	Unknown	Total
1981	- <sup>1</sup>	-	103 (63%)	60 (36%)	2 (1%)	165
1982	-	-	135 (64%)	72 (34%)	3 (2%)	210
1983	-	-	104 (66%)	53 (33%)	1 (1%)	158
1984	-	-	159 (71%)	63 (28%)	3 (1%)	225
1985	-	-	78 (66%)	40 (34%)	0	118
1992	9801	0.0230	145 (65%)	70 (31%)	10 (4%)	225
1993	9938	0.0187	133 (71%)	46 (25%)	7 (4%)	186
1994	7949	0.0457	263 (72%)	96 (26%)	4 (1%)	363
1995 <sup>2</sup>	9563	0.0259	164 (66%)	76 (31%)	8 (3%)	248
1996	7255	0.0498	232 (64%)	127 (35%)	2 (1%)	361
1997	7718	0.0444	193 (56%)	134 (39%)	16(5%)	343
1998	7190 <sup>3</sup>	0.0416	183 (63%)	103 (36%)	4(1%)	290
1999	8378 <sup>3</sup>	0.0500	248 (62%)	144 (36%)	11 (3%)	403
2000	9402 <sup>3</sup>	0.0346	202 (62%)	115 (35%)	8 (2%)	325
Totals	77194 <sup>3</sup>	0.0468	2342 (65%)	1199 (33%)	79 (2%)	3620

<sup>1</sup> The effort for the 1981-1984 counts was described in miles flown.

<sup>2</sup> Beginning of use of 115 standardized routes from the 1992-1994 surveys.

<sup>3</sup> Some survey times not recorded. Times averaged from reported times of previous counts.