ARIZONA BALD EAGLE WINTER COUNT: 2003

James T. Driscoll, Bald Eagle Management Coordinator
Kenneth V. Jacobson, Nongame Biologist
Jorge S. Canaca, Nongame Biologist

Nongame Branch, Wildlife Management Division
Arizona Game and Fish Department

Technical Report 227
Nongame and Endangered Wildlife Program
Program Chief: Terry B. Johnson
Arizona Game and Fish Department
2221 West Greenway Road
Phoenix, Arizona 85023-4399

January 2004

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., K.V. Jacobson, and J.S. Canaca. 2004. Arizona bald eagle winter count: 2003. Nongame and Endangered Wildlife Program Technical Report 227. Arizona Game and Fish Department, Phoenix, Arizona.

Acknowledgments

We thank the following agencies and private groups for their contributions to Arizona's 2003 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 all the coordinators and volunteers for their hard work and dedication to the winter count.

Project Funding

Funding for this protect was provided by: Arizona's Nongame Wildlife Checkoff; the Arizona Game and Fish Department's Heritage Fund; State Trust Fund Grants; U.S. Fish and Wildlife Service State Wildlife Grant; and voluntary contributions of helicopter time by the U.S. Bureau of Reclamation and Salt River Project.

TABLE OF CONTENTS

LIST OF TABLES

ARIZONA BALD EAGLE WINTER COUNT: 2003

James T. Driscoll, K.V. Jacobson, and J.S. Canaca

INTRODUCTION

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

The National Wildlife Federation (NWF) initiated and organized the national bald eagle (*Haliaeetus leucocephalus*) winter count from 1979-1991. Arizona contributed statewide information in the 1970s to the early 1980s (Todd 1977, 1981, 1984a, 1984b; Hall 1985). However, in 1986 a NWF protocol change asked the states to survey only areas of high bald eagle concentrations (routes with more than 15 bald eagles observed in 2 or more years). Due to Arizona's lack of "concentrations," we contributed minimal information in 1986 and 1987, and surveyed only specific management areas such as Roosevelt Lake, and Nankoweap Creek from 1989 to 1991 (Brown and others 1989; Brown and Stevens 1992; Hastings 1988; USFWS 1990).

Arizona's statewide annual winter counts resumed in 1992, using a combination of ground visits (foot, automobile, boat, snowmobile) and helicopters (Beatty 1993; Beatty and Driscoll 1994, 1996, 1998; Beatty and others 1995a, 1995b; Driscoll and Koloszar 2000, 2001; Driscoll and others 2002). By 1995, the Arizona Game and Fish Department, in coordination with the NWF, established 115 standardized routes for Arizona's bald eagle winter count. The U.S. Geological Survey Biological Resources Division, Snake River Field Station (USGS-BRD-SRFS), now coordinates the national winter count.

METHODS

In 2003, we continued to use the established 115 standardized survey routes in Arizona. Our objective was to complete all of the standardized routes. Additional routes completed were included for management purposes only, and were not included in the results.

We scheduled the Arizona bald eagle winter count for January 6 to 12, 2003. This scheduling allowed for the 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. The U.S. Bureau of Reclamation (USBR) and Salt River Project (SRP) contributed 4

days of helicopter time, while volunteers surveyed the other areas more accessible by boat, vehicle, and foot.

The low-level helicopter flights contained 2 to 3 biologists and a pilot flying directly above the watershed. While the level of flight and speed were dependent upon terrain, height and density of power lines, and wind speed; a height of 30.5 to 61 m (100 to 200 ft) above ground level and 55 to 65 knots (48 to 57 mph) was optimum for observing bald eagles.

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

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 bald eagles. We also recorded the occurrence of golden eagles during the survey, but did not report them in this document.

We broke the data into 2 sections: 1) the volunteer survey by county (Tables 1-9), and 2) the helicopter survey (Table 10). The separation between volunteer and helicopter surveys represents the difference in methods for future comparisons.

RESULTS

The 2003 Arizona bald eagle winter count totaled 362 bald eagles (Tables 1-11). We documented 232 adults (64.1%), 118 subadults (32.6%), and 12 unknown eagles (3.3%). The highest number of bald eagles occurred on the lower Black River (n=47). An additional 7 eagles were counted on non-established routes (Table 12).

Of the 115 standardized routes, Arizona completed 110 (95.7%). Surveyors spent a total of 10,036 minutes (167.3 hours) searching. The greatest survey effort was in Coconino County, where volunteers searched for 3369 minutes (56.2 hours) (Table 3).

The most efficient method of counting was by helicopter. We counted 158 bald eagles in 988 minutes (16.4 hours). This represented 0.1599 bald eagles observed per minute. The most efficient volunteer ground effort (in counties with more than 1 survey route) occurred in Apache County where they observed 0.042 bald eagles per minute (Table 11).

DISCUSSION

The total number of bald eagles counted in the 2003 Arizona winter count was 362. This is above the average 324 bald eagles counted annually since the survey routes were standardized in 1995. Including this year, Arizona counts an average of 327 bald eagles during the winter. Also in 2003,

we completed 110 (95.7%) of the 115 standardized routes. This matches the 2000 survey for the most routes completed.

The percentage of adult and subadult bald eagles counted in Arizona again matched the NWF national winter surveys for 1986-1988 (Hastings 1988). Statewide winter counts from 1981 to 1985 and 1992 to 2002 averaged 64% adults (n=2719), 33% subadults (n=1416), and 2% unknown (n=103) (Table 13). In 2003, the percentage of adults (64.1%) and subadults (32.6%) counted matched the historic average.

Arizona's extended drought has dried many high country lakes, smaller cattle tanks, and has reduced many reservoirs to low levels. Mild weather conditions during the winter allowed existing waters to remain clear of ice, and the lack of precipitation minimized turbidity in the flowing river systems. Even though open water was limited in certain areas, we believe the mild weather helped disperse the bald eagles statewide, as we documented no abnormal concentrations. For example, if we were to average the counts of the 3 main riparian corridors (Salt, Verde, and Gila rivers) since 1995, we count an average 164 bald eagles (142 if we eliminate the 2 years with abnormally high concentrations in 1999[236] and 2002[226]). In 2003 the winter count totaled 151 bald eagles in these systems.

RECOMMENDATIONS

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

Continue to encourage consistency by winter count volunteers to follow established routes and methods for long term analysis potential.

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

Compile spatial data from winter count survey maps to document the location and abundance of wintering eagles, spatially identify important habitat use areas, and develop statewide maps for distribution to managing agencies.

Continue to document the location and cause 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.

_____, 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.

_____. 1996. Arizona bald eagle winter count: 1996. Nongame and Endangered Wildlife Program Technical Report 103. Arizona Game and Fish Department, Phoenix, Arizona.

_____. 1998. Arizona bald eagle winter count: 1997-1998. Nongame and Endangered Wildlife Program Technical Report 137. Arizona Game and Fish Department, Phoenix, Arizona.

_____, 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.

_____, 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. Journal of Raptor Research 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.

Driscoll, J.T. and J.G. Koloszar. 2000. Arizona bald eagle winter count: 1999 - 2000. Nongame and Endangered Wildlife Program Technical Report 139. Arizona Game and Fish Department, Phoenix, Arizona.

_____. 2001. Arizona bald eagle winter count: 2001. Nongame and Endangered Wildlife Program Technical Report 184. Arizona Game and Fish Department, Phoenix, Arizona.

_____, K.V. Jacobson, and J.S. Canaca. 2002. Arizona bald eagle winter count: 2002. Nongame and Endangered Wildlife Program Technical Report 205. Arizona Game and Fish Department, Phoenix, Arizona.

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.

_____. 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.

_____. 1984a. A report on the Nongame Branch bald eagle survey flights in January, 1984. Special Report. Arizona Game and Fish Department, Phoenix, Arizona.

_____. 1984b. Memo re: winter bald eagle counts in Arizona. Arizona Game and Fish Department, Phoenix, Arizona.

U.S. Fish and Wildlife Service (USFWS). 1982. Bald eagle recovery plan (southwestern population). U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

_____. 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.

_____. 1995. Endangered and Threatened Species: Bald Eagle Reclassification; Final Rule. Volume 60, No. 133. Department of the Interior, Washington D.C.

_____. 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: 2003 WINTER COUNT

Table 1. Results of the 2003 Arizona bald eagle winter count, Apache County.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
1	Becker Lake	20	3	1	0	0
2	Little Colorado River (LCR)	18	1	0	0	0
3	S. Fork LCR – Campground	24	1	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	0	0	0
7	Mexican Hay Lake	120	3	5	0	0
8	White Mountain Hereford Ranch (Trinity, Glen Livet, McKay reservoirs)	90	0	0	0	0
9	The Ranch Lake	10	0	0	0	0
10	Ortega Lake	15	0	0	0	0
11	Concho Lake	20	1	0	0	0
12	Luna Lake	90	2	0	0	0
13	Nelson Reservoir	52	2	2	0	0
14	Nutrioso Reservoir	35	5	0	0	0
15	Tenney Pond	17	0	0	0	0
16	San Francisco River (Alpine RD to New Mexico)	Not Surveyed				
17	Campbell Blue Creek	Not Surveyed				
Total		651	19	8	0	0

Table 2. Results of the 2003 Arizona bald eagle winter count, Cochise County.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
18	Parker Canyon Lake	60	0	0	0	0
19	Willcox Playa	258	1	0	0	1
20	Sulphur Springs Valley – Whitewater Draw	65	0	0	0	0
Total		383	1	0	0	1

Table 3. Results of the 2003 Arizona bald eagle winter count, Coconino County.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
21	Long Lake Complex	220	4	1	0	1
22	Stoneman Lake	248	5	3	0	0
23	FH3	40	1	0	0	0
24	I-17, Sedona to Flagstaff	230	14	16	1	0
25	Bellemont	265	1	1	0	0
26	Townsend/Winona A/B	275	2	0	0	1
27	HWY 89 North/Sunset Crater - Wupatki	385	3	0	0	1
28	FH3 Lakes (Mary, Mormon, Marshall, Prime)	435	4	5	0	1
29	Continental Country Club Lakes	130	4	1	0	0
30	Chevelon Canyon Lake	115	1	1	0	0
31	Holden Lake	15	0	0	0	0
32	Spring Valley Wash	98	0	0	0	0
33	Red Lake Valley	10	0	0	0	0
34	Kaibab Lake	30	1	0	0	0
35	Pittman Valley	20	3	0	0	0
36	Davenport Lake	20	1	0	0	0
37	Scholz Lake	30	1	3	0	0
38	Cataract Lake	15	0	0	0	0
39	Willow Springs Lake	113	0	0	0	0
40	West Chevelon Canyon	60	1	0	0	0
41	Willow Creek	20	0	0	0	0
42	White Horse Lake – Pomeroy Tanks	90	1	0	0	0
43	JD Dam Lake	15	0	2	0	0
44	Barney Flat Wetland	10	0	0	0	0
45	Steel/Stone Road	300	2	0	0	0
46	Pine Flat	60	0	0	0	0
47	Boggy Tank	60	0	0	0	0
48	Blue Stem Wash-Babbitt property	60	0	0	0	0
49	Glen Canyon Nat'l Rec Area (Lee's Ferry)	45	4	1	0	0
50	Colorado River, Lee's Ferry to Little Colorado River	Not Surveyed				
Total		3414	54	34	1	4

Table 4. Results of the 2003 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	200	7	2	0	2
52	Greys Peak	35	0	0	0	0
53	Painted Rock Reservoir	Not Surveyed				
Total		235	7	2	0	2

Table 5. Results of the 2003 Arizona bald eagle winter count, Mohave County.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
54	Lake Mohave	360	6	2	0	0
55	Havasu National Wildlife Refuge, Topock Marsh	Not Surveyed				
56	Lake Mead, Temple Bar	240	10	7	0	3
57	Alamo Lake	180	1	1	0	0
Total		780	17	10	0	3

Table 6. Results of the 2003 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	50	2	0	0	0
59	Rainbow Lake	60	3	3	0	0
60	Little Mormon Lake	30	0	0	0	0
61	Whipple Lake	30	0	0	0	0
62	Long Lake	60	1	0	0	0
63	Lone Pine Lake	25	0	0	0	0
64	Schoens Reservoir	45	0	0	0	0
65	White Mountain Lake	150	3	0	0	0
66	Dry Lake	45	0	0	0	0
67	Jacques Marsh	60	0	0	0	0
68	Scott's Reservoir	45	2	0	0	0
69	Showlow Lake	69	1	0	0	0
70	Pintail Lake	15	0	0	0	0
71	Telephone Lake	45	2	2	0	1
72	Fool Hollow Lake	120	6	5	0	0
73	Fred's Lake	10	0	0	0	0
74	Edeler's Lake	7[1]	0	0	0	0
75	Cottonwood Wash/Clay Springs	32	0	0	0	0
76	White Lake	10	0	0	0	0
Total		953	20	10	0	1

[1]Minutes not recorded. Times averaged from those reported 1994 – 2002.

Table 7. Results of the 2003 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	160	0	0	0	0
78	Picacho Reservoir	117[1]	0	0	0	0
79	Bog Hole	90	0	0	0	0
80	Patagonia Lake	210	0	0	0	0
81	San Raphael Valley	60	0	0	0	0
82	Pena Blanca Lake	120	0	0	0	0
Total		757	0	0	0	0

[1]Minutes not recorded. Times averaged from those reported 1994 – 2002.

Table 8. Results of the 2003 Arizona bald eagle winter count, Yavapai County.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
83	Wet Beaver Creek	450	2	0	0	0
84	Oak Creek	480	0	1	0	0
85	Willow Lake	240	1	3	0	0
86	Lynx Lake	240	2	0	0	0
87	Watson Lake	165	1	0	0	0
88	Goldwater Lake	240	1	1	0	0
Total		1815	7	5	0	0

Table 9. Results of the 2003 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	1	0	0	0
Total		60	1	0	0	0

Table 10. Results of the 2003 Arizona bald eagle winter count, helicopter surveys.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
90	Verde River	175	22	6	0	0
91	Lower East Verde River	12	0	0	0	0
92	Lower West Clear Creek	10	0	1	0	0
93	Lower Salt River	256	9	13	0	0
94	Upper Salt River	40	2	0	0	0
95	Lower Tonto Creek	73	4	0	0	0
96	Lower Cherry Creek	7	0	0	0	0
97	Lower Canyon Creek	14	1	0	0	0
98	Lower Cibecue Creek	12	2	1	0	0
99	Lower Carrizo Creek	3	0	0	0	0
100	White River	60	2	0	0	0
101	North Fork White River	8	4	0	0	0
102	Lower Black River	28	31	16	0	0
103	Big and Little Bonito Creeks	31	5	0	0	0
104	San Carlos River (Talkalai Lake)	68	3	3	0	0
105	San Carlos Reservoir	14	2	4	0	0
106	Upper and Lower Gila River	42	2	3	0	0
107	Eagle Creek	40	10	0	0	0
108	Bonita Creek	14	1	0	0	0
109	Lower San Francisco River	35	4	0	0	0
110	Blue River	11	0	0	0	0
111	Sunrise Lake	1	0	0	0	0
112	Big Lake	5	2	2	0	0
113	Lee Valley Reservoir	1	0	0	0	0
114	Crescent Lake	2	1	0	0	0
115	Lake Pleasant	26	0	0	0	0
Totals		988	107	49	0	0

Table 11. Summary of 2003 Arizona bald eagle winter count.

County	Routes	Minutes	Adult	Subadult	Unknown	Total	Total/minute
Verde River drainage	3	197	22	7	0	29	0.1472
Salt River drainage	11	532	60	30	0	90	0.1692
Gila River drainage	7	224	22	10	0	32	0.1429
Various helicopter	5	35	3	2	0	5	0.1429
Apache	15	651	19	8	0	27	0.0415
Cochise	3	383	1	0	1	2	0.0052
Coconino	29	3414	54	34	5	92	0.0269
Graham	1	200	7	2	2	11	0.0550
Greenlee	1	35	0	0	0	0	0
Maricopa	--	--	--	--	--	--	--
Mohave	3	780	17	10	3	30	0.0385
Navajo	19	953[1]	20	10	1	31	0.0325
Pima	1	160	0	0	0	0	0
Pinal	1	117[1]	0	0	0	0	0
Santa Cruz	4	480	0	0	0	0	0
Yavapai	6	1815	7	5	0	12	0.0066
Yuma and LaPaz	1	60	1	0	0	1	0.0167
Totals	110	10036	232	118	12	362	0.0360

[1]Minutes not recorded. Times averaged from those reported 1994 – 2002.

Table 12. Results of the 2003 Arizona bald eagle winter count, non-standardized routes.

Route Name	County	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
HWY 180	Coconino	195	0	0	0	0
HWY 87 South	Coconino	150	0	0	0	3
HWY 87 North	Coconino	85	0	0	0	0
Lake Mohave	Mojave	580	1	2	0	0
Parker Tank	Navajo	1	1	0	0	0
Woodland Lake/Big Springs	Navajo	32	0	0	0	0
Camp Verde	Yavapai	40	0	0	0	0

Table 13. Summary of statewide Arizona bald eagle winter counts, 1981-1985, 1992-2003.

Year	Survey Time	Birds/minute	Adults	Subadults	Unknown	Total
1981	-[1]	-	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[2]	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[3]	0.0416	183 (63%)	103 (36%)	4(1%)	290
1999	8378[3]	0.0500	248 (62%)	144 (36%)	11 (3%)	403
2000	9402[3]	0.0346	202 (62%)	115 (35%)	8 (2%)	325
2001	8726[3]	0.0248	141 (66%)	70 (32%)	5 (2%)	216
2002	9032	0.0445	236 (59%)	147 (37%)	19 (5%)	402
2003	10036[3]	0.0360	232 (64%)	118 (33%)	12 (3%)	362
Totals	104998	0.0438	2951 (64%)	1534 (33%)	115 (3%)	4600

[1]The effort for the 1981-1984 counts was described in miles flown.
[2]Beginning of use of 115 standardized routes from the 1992-1994 surveys.
[3]Some survey times not recorded. Times averaged from reported times of previous counts.