ARIZONA BALD EAGLE NESTWATCH PROGRAM: 2001 SUMMARY REPORT

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

Technical Report 188
Nongame and Endangered Wildlife Program
Program Chief: Terry B. Johnson
Arizona Game and Fish Department
2221 West Greenway Road
Phoenix, Arizona 85023-4399

March 2002

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. 2002. Arizona bald eagle nestwatch program: 2001 summary report. Nongame and Endangered Wildlife Program Technical Report 188. Arizona Game and Fish Department, Phoenix, Arizona.

ACKNOWLEDGMENTS

This report summarizes the breeding area (BA) reports submitted by contractors of the Arizona Bald Eagle Nestwatch Program in 2001. Those include: Jorge Canaca and Laura Lutz, Box Bar BA; Jennifer Ottinger, Kelly Fabri, Terry Ellis, and Michael Medina, Fort McDowell BA; Kerry Noonan and Jason Beason, Horseshoe BA, Jorge Canaca and Laura Lutz, Luna BA; Todd Martin and Joelle Viau, Pleasant BA; Thomas Magarian and Paula Shannon, Tonto BA; Marie-France Julien and Melanie Pilon, Tower BA.

The authors acknowledge and appreciate the assistance of the following people: Michael Neil, Arizona Public Service; Marilyn Ethelbah, Fort McDowell Yavapai Nation; Darcy Kinsman, Maricopa County Parks and Recreation Department; Dave Ritchie, Rio Verde Ranch; Steve Parker, Debra Frein, and Dixie Padilla, Salt River Pima Maricopa Indian Community; John Keane, Salt River Project; Bob Berry, U.S.A.F. Luke Air Force Base; Amy Heuslin, U.S. Bureau of Indian Affairs; Bob Hall, U.S. Bureau of Land Management; Henry Messing, U.S. Bureau of Reclamation; Michelle James and Greg Beatty, U.S. Fish and Wildlife Service; Janie Agyagos, Jim Copeland, Cavetta Jones, Albert Sillas, Mike Ross, Todd Willard, and Craig Woods, U.S. Forest Service; Kim Benedict, Bill Berger, Pat Crouch, Dan Groebner, Mike Ingraldi, Terry Johnson, Susan McVean, Shelly Shepard, and Bill Van Pelt, Arizona Game and Fish Department.

PROJECT FUNDING

Funding for this project was provided by: Arizona's Nongame Wildlife Checkoff; the Arizona Game and Fish Department's Heritage Fund; Project W-95-M (Jobs 2 and 5), under the Federal Aid in Wildlife Restoration Act (Pittman-Robertson Act); Arizona Public Service, Fort McDowell Yavapai Nation; Salt River Project; U.S. Bureau of Land Management; U.S. Bureau of Reclamation; U.S. Department of Defense (Luke Air Force Base); and U.S. Forest Service.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDIXES

ARIZONA BALD EAGLE NESTWATCH PROGRAM: 2001 SUMMARY REPORT

James T. Driscoll and John G. Koloszar

INTRODUCTION

In 1978 the U.S. Fish and Wildlife Service (USFWS) classified the bald eagle (*Haliaeetus leucocephalus*) as endangered in 43 states (including Arizona) and threatened in five others (USFWS 1982). In Alaska, the USFWS did not list the species and it does not occur in Hawaii. The USFWS downlisted the bald eagle to threatened in 1995 (USFWS 1995), and has proposed to delist in the future (USFWS 1999). Until delisting, the bald eagle remains protected under the Endangered Species Act. Thereafter, the Airborne Hunting Act, the Bald and Golden Eagle Protection Act, the Lacey Act, and the Migratory Bird Treaty Act, and Arizona Revised Statute Title 17 will protect the species.

Due to urban sprawl and an increase in metropolitan Phoenix's human population, many Arizona bald eagle breeding areas (BAs) are located near high recreation areas. As land and wildlife management agencies became more informed on the affects of human recreation to bald eagles in these areas, the demand for protective management increased. In 1978, efforts began to monitor these areas when the U.S. Forest Service (USFS) and two Maricopa Audubon Society volunteers monitored a BA near Bartlett Reservoir. This monitoring effort eventually expanded into other areas, and developed into the Arizona Bald Eagle Nestwatch Program (ABENWP).

To adequately address the needs for Arizona's breeding bald eagles, the ABENWP operates under three goals: conservation, data collection, and education. Due to high recreation pressures along some of Arizona's lakes and rivers, land management agencies enact seasonal closures to protect the bald eagle breeding cycle. Nestwatchers interact with members of the public who visit these areas, educate them on bald eagles, distribute brochures, and/or direct them out of the closures. To help the land and wildlife management agencies make better decisions, nestwatchers collect basic demographic information and behaviors in response to human activities. Possibly the most tangible benefit of the ABENWP is determining when the bald eagles are in life threatening situations. Daily monitoring allows for the rescue of bald eagles in those situations.

As we found new BAs, interagency coordination became more important. To provide oversight and increase communication, the land and wildlife management agencies formed the Southwestern Bald Eagle Management Committee (SWBEMC) in 1984. The SWBEMC is comprised of various federal, state, and county land and wildlife management agencies, Native American Tribes, and private organizations interested in bald eagle conservation. In 1986, the USFWS assumed coordination of the ABENWP on behalf of the SWBEMC, and expanded its scope. In 1991, as a result of the passage of the Heritage Initiative, the USFWS transferred the lead to the Arizona Game and Fish Department (AGFD).

This report summarizes significant discoveries at each monitored BA in 2001. Detailed reports of each monitored BA are centralized at AGFD, and distributed to the land and wildlife management agencies where the BA occurs.

STUDY AREA

Nestwatchers monitored BAs along various creeks, lakes, reservoirs, and rivers throughout Arizona (Figure 1). All monitored BAs (except the Luna BA) were in the central part of the state. We monitored BAs as far north as Tower, near Clarkdale, south to Sycamore, on the lower Verde River, east to Luna, near Alpine, and west to Pleasant, on the Agua Fria River. Elevations of the monitored BAs ranged from Luna at 7900 ft (2409 m) to Orme at 1440 ft (439 m).

Most bald eagles breed in central Arizona at elevations of 1080 ft (329 m) to 5640 ft (1719 m). Vegetation commonly associated within this area is comprised of the Upper and Lower Sonoran Life Zones (Merriam 1898), which includes riparian habitats and transition areas of both zones. Representative vegetation includes Arizona sycamore (*Platanus wrightii*), blue palo verde (*Cercidium floridum*), Fremont cottonwood (*Populus fremontii*), Goodding willow (*Salix gooddingii*), mesquite (*Prosopis* spp.), saguaro (*Carnegiea gigantea*), and tamarisk (*Tamarix pentandra*) (Brown 1982). Pinyon pine (*Pinus* spp.) and juniper (*Juniperus* spp.) are found in the transition areas.

The Luna BA is one of two known Arizona bald eagle BAs found at high elevations. Vegetation commonly associated within this area is comprised of the Montane-Conifer Forest zone and includes ponderosa pine (*Pinus ponderosa*), white fir (*Abies concolor*), Douglas fir (*Pseudotsuga menziesii*), and quaking aspen (*Populus tremuloides*) (Brown 1982).

METHODS

In the fall of 2000, we advertised the ABENWP contract positions through the American Ornithologists Union Newsletter, American Birding Associations Job Listing, AGFD Internet site, and at universities and colleges job placement services nationwide. Presentations, brochures, and word-of-mouth also contributed to the pool of applicants.

We held two orientation meetings and several question and answer sessions for the ABENWP contractors. The first two meetings offered an introduction to the program, background and the ABENWP's role in bald eagle management, and an explanation of data forms and emergency protocols. After the orientation meetings, the nestwatchers chose partners, BAs, and were taken into the field. The question and answer sessions occurred after the first ten-day work period and before every other ten day period thereafter. In these sessions we discussed filling out forms, consistency in data collection, problems and issues, and the requirements for the report. We handled any additional problems or questions on an individual basis.

We selected the monitored BAs by weighing the levels of recreation activity and necessary management needs. These included BAs with seasonal closures (Box Bar, Luna, Pleasant, and Tower), those without (Fort McDowell, Horseshoe, Sycamore, and Tonto), and as supplementary information (Doka).

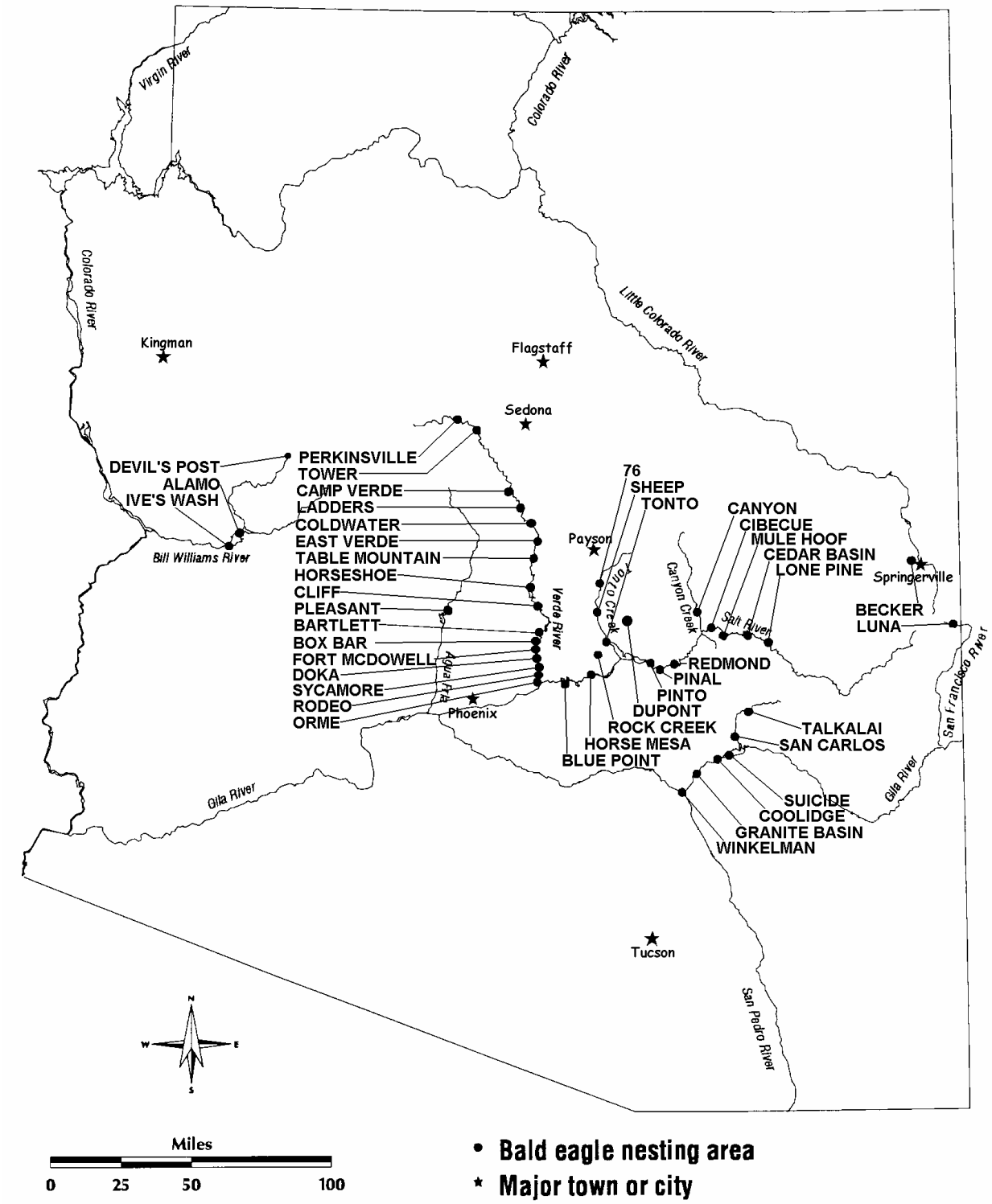

Figure 1. Location of known bald eagle BAs in Arizona, 2001.

Fieldwork began February 2, 2001, and continued until the nestlings fledged. Teams of two maintained a ten-day on four-day off schedule. Each work period included all weekends and every other Fridays as dawn-to-dusk days, to cover times of high recreation use. Nestwatchers collected supplemental data on bald eagle behavior and habitat use on the remaining weekdays. Due to constant human activity, two teams monitored the Box Bar BA on a staggered schedule for everyday coverage.

Nestwatchers recorded all bald eagle behavior and recreation use data from assigned observation points within the BA. We selected observation points to provide optimal viewing while minimizing the impact to the breeding bald eagles. Nestwatchers were provided spotting scopes, cellular telephones, and/or USFS radios for viewing and communication needs. They recorded all bald eagle behavioral data on supplied field forms. We supplied BA maps with river kilometer designations and a guide to commonly taken fish species. Nestwatchers provided their own transportation, gas, supplies, binoculars, and housing on days off.

Within an arbitrary 1.0 km (3300 ft) radius of a bald eagle or active nest, nestwatchers recorded all human activity and the associated bald eagle behavior. They classified bald eagle behavior in response to a human activity into seven categories: none, watched, restless, flushed, left area, unknown, and bird not in area. If the bald eagles performed their normal activities without acknowledging the human activity, nestwatchers recorded a "none" response. "Watched" was a bald eagle looking in the direction of the human activity without displaying any other observable reaction. If the bald eagle vocalized and/or moved noticeably without leaving the nest or perch, nestwatchers recorded "restless." If a bald eagle left its location quickly in response to a human activity, nestwatchers recorded a "flushed" response. "Left area" is when a bald eagle became intolerant of the human activity and flies away. They recorded an "unknown" response if the bald eagle could not be observed, a "not in area" if a bald eagle was not present at the time of the activity, and an "other" response if the associated behavior did not fit into one of the above categories. To accurately describe activities which caused bald eagle behavior change, a "restless", "flushed", "left area", and various "other" responses, are considered as significant responses.

At the Lake Pleasant and Box Bar closures, nestwatchers recorded human activity different than described above. They recorded compliance with the Lake Pleasant closure by documenting the number of boats and jet skis approaching the buoy line and those that entered. If the watercraft entered the closure and proceeded past the nestwatchers, they were documented as "inside the closure." Conversely, they recorded those who complied with the closure or those who were contacted by the nestwatchers as "at the closure." Due to the high level of recreation activity at the Box Bar BA within 1.0 km of the active nest, nestwatchers only recorded the human activities and the bald eagle's associated behavior that occurred within the closure boundaries.

Nestwatchers documented all aircraft below the Federal Aviation Administration's 2000 ft (600 m) recommended ceiling, and within the arbitrary 1.0 km radius of a bald eagle or active nest. They estimated the height of aircraft using elevations of known landmarks derived from topographic maps. We sent the forms with known identification numbers and aircraft type to the USFWS Law Enforcement Division for processing.

Nestwatchers documented all aspects of the bald eagle's behavior at their BA. They documented interactions with other wildlife; forage events; frequency, type, and prey species delivered to the nest; incubation time; time attending the nest; and feeding frequency. In this report, we only discuss foraging attempts, prey deliveries, human activity, and management recommendations.

Management recommendations included in this report are taken directly from the individual BA reports and therefore are not the opinions of the authors or AGFD. We have included them as informational material for land and wildlife management agencies reviewing this report, and for further discussion and possible implementation at the next SWBEMC meeting.

The ABENWP contractors concentrate their monitoring efforts within the BA, and therefore a bias must be considered when extrapolating conclusions about habitat utilization. Information gathered by this method informs land and wildlife management agencies about a breeding pair's behavior and potential conflicts only within the BA. Therefore, other habitat use by a particular pair should be considered when proposing projects or habitat alterations near known BAs.

RESULTS AND DISCUSSION

PRODUCTIVITY OVERVIEW

The 2001 Arizona bald eagle breeding season produced the second highest number of young (Appendix A, Tables 1 and 2). We were on track to tie or break the 1999 record of 31 young by midseason, however, timing of ORA flights and in monitoring caused subsequent time gaps where we may have missed young fledging. Therefore, some nestlings were less than the minimum age terminology requires for us to call them fledged. Still, out of 29 breeding attempts, 19 pairs successfully produced 28 juveniles.

PROGRAM

The ABENWP monitored 10 BAs in 2001. Those BAs monitored include: Bartlett, Box Bar, Doka, Fort McDowell, Ladders, Luna, Pleasant, Sycamore, Tonto, and Tower. The final status of monitored BAs was 1 failed, 9 successful, and 15 young fledged.

Some BAs were not monitored the entire season due to breeding attempt failures (Bartlett), subsequent moving of contractors to new sites (Ladders), and incidental observations (Doka). Therefore observation days vary, and all collected data reflects only those instances observed during the documented time frame. Since the Doka BA was monitored only for supplemental information by the Fort McDowell nestwatchers, the summary is not included in this report. In addition, no final report was ever received from the Sycamore contractors, and thus is not summarized.

BREEDING AREA SUMMARIES

Box Bar Breeding Area

Observation Period.—Observation dates.....February 2 to May 17
Total monitoring days/hours..... 75 days/767 hours
Dawn-to-Dusk Hours..... 454 hours

Eagle Identification.—Male.....Blue VID band left leg, USFWS band right leg, adult plumage
Female .....Blue VID band left leg, USFWS band right leg, adult plumage

Management Activities.—1. The Tonto National Forest reinstated the seasonal BA closure, 2. ABENWP contractors were active in educating the public visiting the Rio Verde Ranch, 3. The owners of Rio Verde Ranch allowed ABENWP to camp and monitor from their lawn.

Human Activity. —Nestwatchers recorded 403 human activities (Appendix B, Table 3). Aircraft (small planes and helicopters) represented 45 percent (n=180), terrestrial activity 54 percent (n=216) of 12 types, and watercraft (rafters/boaters and tubers) two percent (n=7).

Eleven activities elicited 48 significant responses from the breeding pair. The bald eagles were restless to 13 horseback riders, eight OHV's, one woodcutter, and one small plane. The breeding pair flushed in response to 10 hikers and three horseback riders. The birds left the area in response to two campers, and one helicopter, OHV, vehicle, agency worker, and picnicker each. Finally, the adults flew from their perch to attend the nest in response to five gunshots.

Situated near two communities, Rio Verde Ranch not only offers a good place to view the river (and bald eagles) for visiting guests, but also allows the ABENWP contractors a unique opportunity to educate a large group of people. During their 75 days of observation, ABENWP contacted 3,793 people visiting the ranch.

Food Habits.—Nestwatchers observed 23 forage attempts (Appendix B, Table 4). The male was successful in 100 percent (1 of 1), the female in 86 percent (18 of 21), and an unknown adult was unsuccessful (0 of 1). Ninety-six percent (n=22) of the forage attempts were for fish, and four percent (n=1) unknown.

The breeding pair delivered 83 items to the nest (Appendix B, Table 5). The male delivered 18 percent (n=15), the female 71 percent (n=59), and an unknown adult 11 percent (n=9). The most common prey types were fish (n=71), and unknown prey (n=7).

Of the 57 prey items that could be identified to species (Appendix B, Table 6), 82 percent (n=47) were suckers, seven percent (n=4) rainbow trout, four percent each small mouth bass and carp (n=2 each), and two percent each channel catfish and tilapia (n=1 each).

Fort McDowell Breeding Area

Observation Period.—Observation dates.....February 6 to May 5
Total monitoring days/hours..... 65 days/ 680 hours
Dawn-to-dusk hours..... 413 hours
Eagle Identification.—Male.....Blue VID band left leg, USFWS band right leg, adult plumage
Female .....Unbanded, adult plumage

On March 29, one of the two eight week old nestlings appeared lethargic and injured. On March 30, we climbed the nest where we found the nestling responsive and in good health. Both nestlings successfully fledged near the end of April.

Management Activities.—1. The Fort McDowell Yavapai Nation continues to restrict non-tribal member use of the river area, 2. The Fort McDowell Police visited the ABENWP contractors on nearly a daily basis, 3. ABENWP contractors were introduced to the Fort McDowell police in an orientation session held on their first day in the field.

Human Activity.—Nestwatchers recorded 447 human activities (Appendix C, Table 7). Aircraft (small planes, helicopters, and jets) accounted for 92 percent (n=410), terrestrial activity eight percent (n=36) of eight different types, and watercraft (canoes/kayaks) less than one percent (0.2 percent, n=10).

Four activities elicited seven significant responses from the breeding pair. The bald eagles were restless to three small planes, flushed in response to one vehicle, left the area in response to one helicopter, and reacted to the banding and examination of the reported injured nestling.

Food Habits.—Nestwatchers observed 3 forage attempts. Both the male (1 of 1) and female (2 of 2) were successful in 100 percent of the attempts. All attempts were for fish.

The breeding pair delivered 58 prey items to the nest (Appendix C, Table 8). The male delivered 59 percent (n=34), and the female 41 percent (n=24). Sixty-four percent of those items were fish (n=37), 14 percent unknown (n=8), ten percent birds (n=6), nine percent carrion (n=5), and two percent each mammals and herps (n=2, each).

Of the 8 prey items that could be identified to species, 25 percent each were suckers, channel catfish, and carp (n=2, each), and 13 percent (n=1) American coots and common mergansers (n=1, each).

Horseshoe Breeding Area

Observation Period.—Observation dates.....February 3 to April 8
Total monitoring days/hours..... 48 days/ 467 hours
Dawn-to-dusk hours..... 297 hours
Eagle Identification.—Male.....Unbanded, adult plumage
Female .....USFWS band right leg, adult plumage

Management Activities.—None.

Human Activity.—Nestwatchers recorded 937 human activities during 48 days of observation (Appendix D, Table 9). Aircraft (small planes, helicopters, and jets) accounted for 13 percent (n=120), and terrestrial activity 87 percent (n=817) of six different types.

Two activities elicited five significant responses from the breeding pair. The bald eagles flushed in response to four hikers and once during banding.

Food Habits.—Nestwatchers observed no forage attempts, and no prey items were identified to species. The breeding pair delivered 19 prey items to the nest. The male delivered 63 percent (n=12), and the female 37 percent (n=7). Seventy-nine percent of those items were fish (n=15), 16 percent unknown (n=3), and five percent birds (n=1).

Luna Breeding Area

Observation Period.—Observation dates.....February 2 to March 17
Total monitoring days/hours..... 29 days/ 212 hours
Dawn-to-Dusk Hours..... 125 hours
Eagle Identification.—Male.....Black VID band right leg, USFWS band left leg, adult plumage
Female .....Black VID band right leg, USFWS band left leg, adult plumage

The adults abandoned the breeding attempt between March 9 and 16 when the nestlings were one to two weeks old.

Management Activities.— 1. The USFS reinstated the seasonal breeding area closure around the nest, 2. Nestwatchers were stationed at the boat ramp to talk to fisherman launching boats, 3. The USFS housed the nestwatchers in a trailer.

Human Activity.—Nestwatchers recorded 32 human activities during their 29 days of observation (Appendix E, Table 10). Aircraft (small planes and jets) represented 13 percent (n=4), terrestrial activities 78 percent (n=25) of two different types, and watercraft (boats an kayaks) nine percent (n=3). One jet elicited restless response from the breeding pair.

Food Habits.—Nestwatchers observed no forage attempts, although 14 prey items were delivered to the nest. The male delivered 71 percent (n=10), female delivered 14 percent (n=2), and an unknown adult 14 percent (n=2). Fish were 71 percent (n=10) of the items delivered, seven percent (n=1) birds, and 21 percent (n=3) unknowns.

Of the 11 prey items that could be identified to species, 91 percent (n=10) were rainbow trout, and nine percent (n=1) American coots.

Pleasant Breeding Area

Observation Period.—Observation dates.....February 3 to May 11
Total monitoring days/hours..... 69 days/680 hours
Dawn-to-Dusk hours..... 276 hours
Eagle Identification.—Male.....Blue VID band left leg, USFWS band right leg, adult plumage
Female .....Unbanded, adult plumage

Management Activities.—1. Maricopa County parks reinstated the seasonal closure around the active nest, 2. Maricopa County Parks marked closure boundaries with buoys, 3. Nestwatchers were stationed at the southern closure boundary on dawn-to-dusk days to educate recreationists on the closure and bald eagles, 4. The SWBEMC distributed closure boundary maps and brochures at the 10-lane boat ramp on every other Saturday during the breeding season.

Human Activity.—Nestwatchers recorded 439 human activities (Appendix F, Table 11). Aircraft (jets, military planes, helicopters, and ultra lights) represented 44 percent (n=191), and watercraft (boats and jet skis) 56 percent (n=248).

Three activities elicited nine significant responses by the breeding pair. The bald eagles were restless to one jet, one small plane, and four boats. The breeding pair flushed in response to two boats, one boat response was documented as "other" with no explanation offered.

Of the 6,506 watercraft that approached the southern buoy line, only 193 (three percent) did not comply (agency boats omitted) (Appendix F, Table 12). Boats represented 80 percent (n=154), and 20 percent (n=39) jet skis. However within the type of watercraft, only three percent of the boats and five percent of the jet skis did not comply with the closure. For the second consecutive year, noncompliance has been at its lowest since the closure was enacted in 1994 (Beatty et al. 1995a, 1995b, 1997, 1998, 1999, Driscoll et al. 2001).

Food Habits.—Nestwatchers observed 30 forage attempts (Appendix F, Table 13). The male was successful in 63 percent (12 of 19), the female 44 percent (4 of 9), and both adults 50 percent (1 of 2) during tandem foraging events. The most common forage item was fish (n=17), although birds (n=11) and unknown items (n=2) were captured.

The breeding pair delivered 90 prey items to the nest (Appendix F, Table 14). The male delivered 81 percent (n=73), the female 18 percent (n=16), and an unknown adult one percent (n=1). Seventy-eight percent of those items (n=70) were fish, 16 percent (n=14) unknown, and seven percent (n=6) birds.

Of the 19 prey items that could be identified to species, 79 percent (n=15) were large-mouth bass, 11 percent (n=2) American coots, and five percent each northern pintail and channel catfish (n=1, each).

Tonto Breeding Area

Observation Period.—Observation dates..... February 17 to April 22
Total monitoring days/hours..... 49 days/471 hours
Dawn-to-dusk hours..... 283 hours

Eagle Identification.—Male.....Blue VID band left leg, USFWS band right leg, adult plumage
Female .....Blue VID band left leg, USFWS band right leg, adult plumage

Management Activities.—1. The newly constructed Indian Point campground remained closed throughout the breeding season, 2. The Southwestern Willow Flycatcher Closure limited recreational activities in the area.

Human Activity.—Nestwatchers recorded 29 human activities during their 49 days of observation (Appendix G, Table 15). Aircraft (small planes and helicopters) represented 76 percent (n=22), terrestrial activities seven percent (n=2) of two different types, and 17 percent (n=5) watercraft (airboats and canoes).

Two activities elicited two significant responses from the breeding pair. A gunshot caused the adults to be restless and AGFD biologists caused the adults to flush during banding.

Food Habits.—Although no forage attempts were observed by the nestwatchers, they did observe the adults returning from the vicinity of Roosevelt Lake with prey items.

The breeding adults delivered 32 prey items to the nest (Appendix G, Table 16). The male delivered 56 percent (n=18), and the female 44 percent (n=14). Thirty-one percent of those items (n=10) were fish, 56 percent (n=18) unknown, and 13 percent (n=4) birds. No prey items were identified to species.

Tower Breeding Area

Observation Period.—Observation dates..... February 3 to April 29
Total monitoring days/hours..... 50 days/489 hours

Eagle Identification.—Male..... Purple VID band left leg, USFWS band right leg, adult plumage
Female ..... Unbanded, adult plumage

Management Activities.—1. The USFS reinstated a seasonal breeding area closure surrounding the nest area, 2. The USFS posted closure signs at the upstream and downstream access points to the Verde River, 3. The USFS hauled a trailer and restroom to the nestwatch camp.

Human Activity.— Nestwatchers recorded 271 human activities (Appendix H, Table 17). Aircraft (small planes, and helicopters) represented 35 percent (n=96), terrestrial activities 63 percent (n=271) of 12 different types, and watercraft (canoes/kayaks and rafters) one percent (n=4).

Four activities elicited 15 significant responses from the breeding pair. The bald eagles were restless to five trains, and two small planes. The breeding pair flushed in response to four trains, one small plane, and one helicopter. The adults left the area in response to two vehicles.

Food Habits.— Nestwatchers observed no forage attempts and no pery items were identified to species. The breeding adults delivered 30 prey items to the nest (Appendix H, Table 18). The male delivered 47 percent (n=14), and the female 53 percent (n=16). Forty-seven percent (n=14) of the prey items were fish, 43 percent (n=13) unknown, and ten percent (n=3) mammals.

MANAGEMENT RECOMMENDATIONS

Box Bar Breeding Area

1. Enlarge the current closure to include the campground at the end of USFS Road 160.
2. Increase closure signs on the western side of the Verde River near the river crossings. New closure signs should be in English and Spanish.
3. In the future, one ABENWP member at this site should be fluent in the Spanish language.
4. The dirt road from Hwy 87 which passes under the nest tree should be closed and signed annually.
5. Trashcans are needed at the campground to keep recreationists from leaving potentially lethal litter in the breeding area.

Fort McDowell Breeding Area

1. Coordinate the application of pesticides/herbicides to avoid complications with the breeding chronology of the local breeding pair.
2. Eliminate the grazing of cattle and horses in the riparian areas of the reservation.
3. Maintain the working relationship with the Tribal Police Force, as the safety of the birds and nestwatchers are dependent upon their help.

Horseshoe Breeding Area

None.

Luna Breeding Area

1. Add more signs, or extended the fence between the nest area and the campgrounds.
2. Add trashcans in the parking lot for monofilament.
3. Continue education efforts on the affects of monofilament on bald eagles.

Pleasant Breeding Area

1. Always include the additional 14th buoy on the west side of the southern closure boundary.
2. Contact boat, jet ski, and ultra-light rental companies and ask that they inform customers about the closure.
3. Continue to have a patrol boat visit the northern buoy line daily.
4. Continue strict enforcement of closure boundaries.
5. Contact the coordinators of "Big Bass Days" and ask they institute measures to eliminate contestants entering the closure boundaries.

Tonto Breeding Area

1. A BA closure needs to be enacted around the nest tree when the lake levels rise.

Tower Breeding Area

1. Continue to replace river closure signs and add additional signs and informative postings to all access points.
2. Communicate the importance of not blowing the train horn to the Verde Valley Train owners.

LITERATURE CITED

Beatty, G.L., J.T. Driscoll, and J.G. Koloszar. 1995a. Arizona bald eagle nestwatch program: 1995 summary report. Nongame and Endangered Wildlife Program Technical Report Number 85. Arizona Game and Fish Department, Phoenix, Arizona.

Beatty, G.L., J.T. Driscoll, and J.G. Koloszar. 1997. Arizona bald eagle nestwatch program: 1996 summary report. Nongame and Endangered Wildlife Program Technical Report Number 117. Arizona Game and Fish Department, Phoenix, Arizona.

Beatty, G.L., J.T. Driscoll, and J.G. Koloszar. 1998. Arizona bald eagle nestwatch program: 1997 summary report. Nongame and Endangered Wildlife Program Technical Report Number 131. Arizona Game and Fish Department, Phoenix, Arizona.

Beatty, G.L., J.T. Driscoll, and J.G. Koloszar. 1999. Arizona bald eagle nestwatch program: 1998 summary report. Nongame and Endangered Wildlife Program Technical Report Number 139. Arizona Game and Fish Department, Phoenix, Arizona.

Beatty, G.L., J.T. Driscoll, and M.C. Siemens. 1995b. Arizona bald eagle nestwatch Program: 1994 Summary Report. Nongame and Endangered Wildlife Program Technical Report Number 72. Arizona Game and Fish Department, Phoenix, Arizona.

Brown D.E. (ed.). 1982. Biotic communities of the American Southwest - United States and Mexico. University of Arizona. Desert Plants 4:1-342.

Driscoll J.T. and G.L. Beatty. 1994. 1993 Arizona bald eagle nest survey. Nongame and Endangered Wildlife Program Technical Report 31. Arizona Game and Fish Department, Phoenix, Arizona.

Driscoll J.T., G.L. Beatty, and J.D. Hanna. 1992. 1992 Arizona bald eagle nest survey final report and recommendations. Nongame and Endangered Wildlife Program Technical Report. Arizona Game and Fish Department, Phoenix, Arizona.

Driscoll J.T., G.L. Beatty, and J.G. Koloszar. 1995b. Arizona bald eagle 1995 nest survey. Nongame and Endangered Wildlife Program Technical Report 87. Arizona Game and Fish Department, Phoenix, Arizona.

Driscoll J.T., G.L. Beatty, and J.G. Koloszar. 1997. Arizona bald eagle 1996 nest survey. Nongame and Endangered Wildlife Program Technical Report 117. Arizona Game and Fish Department, Phoenix, Arizona.

Driscoll J.T., G.L. Beatty, and J.G. Koloszar. 1998. Arizona bald eagle 1997 nest survey. Nongame and Endangered Wildlife Program Technical Report 127. Arizona Game and Fish Department, Phoenix, Arizona.

Driscoll J.T., G.L. Beatty, and J.G. Koloszar. 1999. Arizona bald eagle 1998 nest survey. Nongame and Endangered Wildlife Program Technical Report 138. Arizona Game and Fish Department, Phoenix, Arizona.

Driscoll J.T., G.L. Beatty, and M.C. Siemens. 1995a. Arizona bald eagle 1994 nest survey. Nongame and Endangered Wildlife Program Technical Report 71. Arizona Game and Fish Department, Phoenix, Arizona.

Driscoll J.T. and J.G. Koloszar. 2001. Arizona bald eagle nestwatch program: 1999 - 2000 summary report. Nongame and Endangered Wildlife Program Technical Report 181. Arizona Game and Fish Department, Phoenix, Arizona.

Koloszar J.G. and J.T. Driscoll. 2001. Arizona bald eagle 1999 - 2000 nest survey. Nongame and Endangered Wildlife Program Technical Report 182. Arizona Game and Fish Department, Phoenix, Arizona.

Postupalsky, S. 1974. Raptor reproductive success: some problems with methods, criteria, and terminology. *In* F.N. Hammerstrom, B.E. Harrell and R.R. Olendorff, Eds. Management of raptors. Proceedings of the conference on raptor conservation techniques. Raptor Research Report 2:21-31.

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. 1995. Endangered and threatened species: bald eagle reclassification; final rule. Federal Register. 60(133): 36000-10. 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: 2001 BALD EAGLE REPRODUCTION SUMMARY

Table 1. Arizona bald eagle breeding area productivity summary, 2001.

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs	Hatch Date	Young	Fledged	Fledge Date
Alamo	F	4	1/8-1/29	2	Failed 3/12-23			
Bartlett	F	2	2/3-3/4	1+	Failed 3/22-4/12			
Becker	O							
Blue Point	S	10	1/9-30	3+	1/30-3/1	3	1	4/19-5/21
	Two nestlings disappeared between 5.5–10.0 weeks of age.							
Box Bar*	S	3	>1/8	2+	2/9	2	2	5/7-12
Camp Verde	U							
Canyon	U							
Cedar Basin	O							
Cibecue	O							
Cliff	O							
Coldwater	F	3	1/29-3/12	1+	Failed 3/12-4/12			
Coolidge	F	2	1/30-3/6	1+	Failed 3/6-4/19			
Devil's Post	U							
Doka*	S	1	>1/8	2+	1/8-29	2	2	4/4, 4/5
Dupont	O							
East Verde	F	6	3/12-4/12	1+	Failed 4/12-6/15			
Fort McDowell*	S	17	>1/8	2+	2/4	2	2	4/27, 5/9-11
Granite Basin	F	1	1/30-3/6	1+	Failed 3/6-4/19			
Horse Mesa	S	4	1/9-30	2+	1/30-3/6	2	1	4/19-5/21
	One nestling disappeared between 6.0-10.5 weeks of age.							
Horseshoe*	S	11	1/29-2/3	2	3/6, 8	2	2	4/20-6/15
Ive's Wash	O							
Ladders*	S	4	1/29-2/5	2+	3/12-19	2	1	4/30-6/15
	One nestling disappeared between 6.0-12.5 weeks of age.							
Lone Pine	S	2	1/30-3/6	2+	3/6-4/19	2	1	>5/21
	One nestling died at 4.5 weeks old. Second nestling last observed on 5/21 at 7.5 weeks old.							
Luna*	F	1	>2/3	1+	3/5	1	Failed 3/11-16	
Mule Hoof	U							
Orme	S	6	1/30-3/1	1+	3/12-4/12	1	1	5/21-6/15
Perkinsville	S	4	1/30-3/12	1+	3/12-4/12	1	1	>6/15
Pinal	U							
Pinto	S	5	>1/15	2+	1/30-2/18	2	2	4/19-5/8
Pleasant*	S	2	1/8-2/3	2+	2/12-15	2	2	5/6, 5/7-11
Redmond	S	5	1/30-3/6	1+	3/6-4/19	1	1	5/21-6/15
Rodeo	F	1	1/30-3/1	1+	Failed 1/30-3/1			
Rock Creek	O							
San Carlos	O							
76	S	3	1/15-30	2+	3/6-31	2	2	5/21-6/15
Sheep	F	1	2/18-3/6	2+	3/6-4/19	2	Failed 5/11-21	
	Two nestlings disappeared between 5.0-6.0 weeks old.							
Suicide	S	1	1/30-3/6	2+	3/6-16	2	2	>5/21
Sycamore*	S	4	1/8-29	2+	2/12-15	2	2	5/9, 5/11

[1] Breeding area status codes (Postupalsky 1974): U=unoccupied, O=occupied, S=successful, F=failed.
[2] Nest numbers are from Hunt et al. 1992; Driscoll et al. 1992; Driscoll and Beatty 1994; Driscoll et al. 1995a, 1995b, 1997, 1998, 1999, 2001.
* Nests monitored by the Arizona Bald Eagle Nestwatch Program.

Table 1 (continued).

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs	Hatch Date	Young	Fledged	Fledge Date
Table Mountain	F	4	1/29-2/12	1+	3/12-4/12	1	Failed 4/12-6/15	
	Nestling disappeared between 2.5-11.5 weeks of age.							
Talkalai	S	7	1/15-30	1+	1/30-3/6	1	1	4/19-5/21
	Nestling disappeared between 7.0-11.5 weeks of age.							
Tonto*	S	2	>1/15	2	1/30-2/16	1	1	4/22-5/8
Tower*	S	8	1/21-24	2	2/26-3/1	1	1	5/20-30
Winkelman	U							

[1] Breeding area status codes (Postupalsky 1974): U=unoccupied, O=occupied, S=successful, F=failed.
[2] Nest numbers are from Hunt et al. 1992; Driscoll et al. 1992; Driscoll and Beatty 1994; Driscoll et al. 1995a, 1995b, 1997, 1998, 1999, 2001.
* Nests monitored by the Arizona Bald Eagle Nestwatch Program.

Table 2. Arizona bald eagle productivity summary, 2001.

Number of Bas	43	Number of Active BAs	29
Number of Occupied BAs	37	Number of Failed Breeding Attempts	10
Number of Eggs	47	Number of Successful Breeding Attempts	19
Nest Success = 19/37	0.51	Number of Young Hatched	37
Mean Brood Size = 28/19	1.47	Number of Young Fledged	28
		Productivity = 0.51 x 1.47	0.75

APPENDIX B: BOX BAR BREEDING AREA SUMMARY

Table 3. Observed human activity and bald eagle behavior, Box Bar BA, Arizona, 2001.

Human Activity	N[1]	W	R	F	L	X	U	D-D[2] Total	Total
Small Plane	56	53	1	--	--	--	25	92 (29.4%)	135 (33.5%)
Horseback Rider	8	27	13	3	--	--	1	35 (11.2%)	52 (12.9%)
Helicopter	13	23	--	--	1	--	8	31 (9.9%)	45 (11.2%)
Hiker	5	28	--	10	--	--	--	43 (13.7%)	43 (10.7%)
OHV	1	20	8	--	1	--	3	21 (6.7%)	33 (8.2%)
Camper	--	21	--	--	2	--	--	23 (7.3%)	23 (5.7%)
Fisherman	3	10	--	--	--	--	8	15 (4.8%)	21 (5.2%)
Gunshots	5	10	--	--	--	5	--	15 (4.8%)	20 (5.0%)
Vehicle	--	7	--	--	1	--	5	11 (3.5%)	13 (3.2%)
Agency Worker	--	3	--	--	1	--	--	4 (1.3%)	4 (1.0%)
Rafter/Boater	--	1	--	--	--	--	3	4 (1.3%)	4 (1.0%)
Tuber	1	2	--	--	--	--	--	3 (0.9%)	3 (0.7%)
Swimmer	3	--	--	--	--	--	--	3 (0.9%)	3 (0.7%)
Hunter	2	--	--	--	--	--	--	2 (0.6%)	2 (0.5%)
Picnicker	--	--	--	--	1	--	--	0	1 (0.2%)
Woodcutter	--	--	1	--	--	--	--	1 (0.3%)	1 (0.2%)
Total	97	205	23	13	7	5	53	313	403

[1] Bald eagle behavior, N=none, W=watched, R=restless, F=flushed, L=left area, X=other (bird flies from perch to attend nest), U=unknown.

Table 4. Observed forage event and success, Box Bar BA, Arizona, 2001.

Sex	Fish		Unknown		Total	
	E[1]	S[2]-U	E	S-U	E	S-U
Male	1	1-0	--	--	1	1-0
Female	21	18-3	--	--	21	18-3
Unknown	--	--	1	0-1	1	0-1
Total	22	19-3	1	0-1	23	19-4

[1] E=A Single forage event, not the number of attempts during one event.
[2] S-U=Successful – Unsuccessful forage events.

Table 5. Observed prey types delivered to the nest, Box Bar BA, Arizona, 2001.

Sex	Fish	Birds	Unknown	Carrion	Total
Male	10	--	3	2	15 (18.1%)
Female	56	1	1	1	59 (71.1%)
Unknown	5	--	3	1	9 (10.8%)
Total	71 (85.5%)	1 (1.2%)	7 (8.4%)	4 (4.8%)	83

Table 6. Observed prey items delivered to the nest, Box Bar BA, Arizona, 2001.

Sex	Fish						Total
	S[1]	RT	SMB	C	T	CC	
Male	5	2	1	--	--	--	8 (14.0%)
Female	42	2	--	2	1	1	48 (84.2%)
Unknown	--	--	1	--	--	--	1 (1.8%)
Total	47	4	2	2	1	1	57

[1] S=sucker spp., RT= Rainbow Trout, SMB=Smallmouth Bass, CC=Channel Catfish, T=Tilapia, C=carp.

APPENDIX C: FORT MCDOWELL BREEDING AREA SUMMARY

Table 7. Observed human activity and bald eagle behavior, Fort McDowell BA, Arizona, 2001.

Human Activity	N[1]	W	R	F	L	X	U	D-D[2] Total	Total
Small Plane	202	43	3	--	--	--	73	223 (78.8%)	321 (71.8%)
Helicopter	38	31	--	--	1	--	16	33 (11.7%)	86 (19.2%)
Vehicle	7	7	--	1	--	--	6	13 (4.6%)	21 (4.7%)
Fisherman	4	1	--	--	--	--	--	5 (1.8%)	5 (1.1%)
OHV	1	3	--	--	--	--	--	3 (1.1%)	4 (0.9%)
Jets	2	--	--	--	--	--	1	3 (1.1%)	3 (0.7%)
Agency Worker	--	--	--	--	--	2	--	0	2 (0.4%)
Picnicker	1	--	--	--	--	--	--	1 (0.4%)	1 (0.2%)
Power Company	1	--	--	--	--	--	--	1 (0.4%)	1 (0.2%)
Canoe/Kayak	1	--	--	--	--	--	--	1 (0.4%)	1 (0.2%)
Horseback Riders	--	1	--	--	--	--	--	0	1 (0.2%)
Hiker	--	--	--	--	--	--	1	0	1(0.2%)
Total	257	86	3	1	1	2	97	283	447

[1] Bald eagle behavior, N=none, W=watched, R=restless, F=flushed, L=left area, X=other (birds extensively vocalizing and flying from one perch to another), U=unknown.
[2] D-D Total=Observations on dawn-to-dusk days.

Table 8. Observed prey types delivered to the nest, Fort McDowell BA, Arizona, 2001.

Sex	Fish	Birds	Carrion	Mammals	Herps	Unknown	Total
Male	19	5	5	1	1	3	34 (58.6%)
Female	18	1	--	--	--	5	24 (41.4%)
Total	37 (63.8%)	6 (10.3%)	5 (8.6%)	1 (1.7%)	1 (1.7%)	8 (13.8%)	58

APPENDIX D: HORSESHOE BREEDING AREA SUMMARY

Table 9. Observed human activity and bald eagle behavior, Horseshoe BA, Arizona, 2001.

Human Activity	N[1]	W	F	U	D-D[2] Total	Total
Vehicles	602	--	--	--	477 (63.1%)	602 (64.2%)
OHV	207	--	--	--	185 (24.5%)	207 (22.1%)
Small Plane	71	10	--	22	74 (9.8%)	103 (11.0%)
Helicopter	9	3	--	4	13 (1.7%)	16 (1.7%)
Hiker	1	--	4	--	4 (0.5%)	5 (0.5%)
Jets	--	1	--	--	1 (0.1%)	1 (0.1%)
Shooter	1	--	--	--	1 (0.1%)	1 (0.1%)
Hunter	--	1	--	--	1 (0.1%)	1 (0.1%)
Agency Worker	--	--	1	--	0	1 (0.1%)
Total	891	15	5	26	756	937

[1] Bald eagle behavior, N=none, W=watched, R=restless, F=flushed, U=unknown.
[2] D-D Total=Observations on dawn-to-dusk days.

APPENDIX E: LUNA BREEDING AREA SUMMARY

Table 10. Observed human activity and bald eagle behavior, Luna BA, Arizona, 2001.

Human Activity	N[1]	W	R	D-D[2] Total	Total
Fisherman	16	6	--	10 (83.3%)	22 (68.8%)
Jets	1	1	1	2 (16.6%)	3 (9.4%)
Agency Worker	1	2	--	1 (8.3%)	3 (9.4%)
Boater	1	1	--	1 (8.3%)	2 (6.3%)
Kayaker	--	1	--	0	1 (3.1%)
Small Plane	1	--	--	0	1 (3.1%)
Total	20	11	1	12	32

[1] Bald eagle behavior, N=none, W=watched, R=restless, F=flushed, L=left area, X=other (no explanation offered), B=bird not in area, U=unknown.
[2]D-D Total=Observations on dawn-to-dusk days.

APPENDIX F: PLEASANT BREEDING AREA SUMMARY

Table 11. Observed human activity and bald eagle behavior, Pleasant BA, Arizona, 2001.

Human Activity	N[1]	W	R	F	X	U	Total
Small Plane	50	21	1	--	--	86	158 (36.0%)
Boats	68	59	4	2	1	20	154 (35.1%)
Agency Boats	24	25	--	--	--	6	55 (12.5%)
Jet-Ski	14	13	--	--	--	12	39 (8.8%)
Helicopter	5	5	--	--	--	7	17 (3.9%)
Jets	1	1	1	--	--	9	12 (2.7%)
Military Plane	--	--	--	--	--	3	3 (0.7%)
Ultralight	--	--	--	--	--	1	1 (0.2%)
Total	162	124	6	2	1	144	439

[1] Bald eagle behavior, N=none, W=watched, R=restless, F=flushed, L=left area. X=other (no explanation offered), U=unknown.
[2] D-D Total=Observations on dawn-to-dusk days.

Table 12. Watercraft compliance at the southern closure boundary, Pleasant BA, Arizona, 2001.

Date	Boats at Closure	Boats in Closure	Agency Boats in Closure	Jet Skis at Closure	Jet Skies in Closure	Total
2/3 – 11	306	4	5	13	--	328
2/18 – 25	452	8	3	16	--	479
3/2 – 11	374	13	6	40	--	433
3/16 – 25	1333	42	7	157	4	1543
3/30 – 4/8	928	33	8	126	4	1099
4/13 – 22	814	17	15	171	14	1031
4/27 – 5/6	1242	37	6	291	17	1593
Total	5449 (83.8%)	154 (2.4%)	50 (0.8%)	814 (12.5%)	39 (0.6%)	6506

Table 13. Observed forage event and success, Pleasant BA, Arizona, 2001.

Sex	Fish		Birds		Unknown		Total	
	E[1]	S[2]-U	E	S-U	E	S-U	E	S-U
Male	13	12-1	4	0-4	2	0-2	19	12-7
Female	4	4-0	5	0-5	--	--	9	4-5
Both	--	--	2	1-1	--	--	2	1-1
Total	17	16-1	11	1-10	2	0-2	30	17-13

[1] E=A Single forage event, not the number of attempts during one attempt.
[2] S-U=Successful – Unsuccessful forage events.

Table 14. Observed prey types delivered to the nest, Pleasant BA, Arizona, 2001.

Sex	Fish	Birds	Unknown	Total
Male	55	6	12	73 (81.1%)
Female	14	--	2	16 (17.8%)
Unknown	1	--	--	1 (1.1%)
Total	70 (77.8%)	6 (6.7%)	14 (15.6%)	90

APPENDIX G: TONTO BREEDING AREA SUMMARY

Table 15. Observed human activity and bald eagle behavior, Tonto BA, Arizona, 2001.

Human Activity	N[1]	W	R	F	U	D-D[2] Total	Total
Small Plane	7	2	--	--	4	8 (40.0%)	13 (44.8%)
Helicopter	4	2	--	--	3	5 (25.0%)	9 (31.0%)
Airboat	2	1	--	--	--	3 (15.0%)	3 (10.3%)
Canoe	2	--	--	--	--	2 (10.0%)	2 (6.9%)
Agency Worker	--	--	--	1	--	1 (5.0%)	1 (3.4%)
Gunshot	--	--	1	--	--	1 (5.0%)	1 (3.4%)
Total	15	5	1	1	7	20	29

[1] Bald eagle behavior, N=none, W=watched, R=restless, F=flushed, U=unknown.
[2] D-D Total=Observations on dawn-to-dusk days.

Table 16. Observed prey types delivered to the nest, Tonto BA, Arizona, 2001.

Sex	Fish	Birds	Unknown	Total
Male	7	3	8	18 (56.3%)
Female	3	1	10	14 (43.8%)
Total	10 (31.2%)	4 (12.5%)	18 (56.3)	32

[1] D-D Total=Observations on dawn-to-dusk days.

APPENDIX H: TOWER BREEDING AREA SUMMARY

Table 17. Observed human activity and bald eagle behavior, Tower BA, Arizona, 2001.

Human Activity	N[1]	W	R	F	L	X	U	D-D[2] Total	Total
Trains	4	73	5	4	--	1	14	70 (37.0%)	101
Small Plane	48	22	2	1	--	3	17	55 (29.1%)	93
Vehicle	--	32	--	--	2	--	15	41 (21.7%)	49
Gunshot	2	1	--	--	--	--	3	5 (2.6%)	6
Helicopter	--	2	--	1	--	--	--	2 (1.1%)	3
Cattle	2	1	--	--	--	--	--	3 (1.6%)	3
OHV	2	--	--	--	--	--	1	3 (1.6%)	3
Canoe/Kayaker	1	--	--	--	--	--	1	2 (1.1%)	2
Hiker	2	--	--	--	--	--	--	2 (1.1%)	2
Agency Worker	2	--	--	--	--	--	--	0	2
Rafter	--	1	--	--	--	--	1	2 (1.1%)	2
Climber	1	--	--	--	--	--	--	1 (0.5%)	1
Camper	1	--	--	--	--	--	--	1 (0.5%)	1
Picnicker	1	--	--	--	--	--	--	1 (0.5%)	1
Hunter	1	--	--	--	--	--	--	0	1
Horseback Rider	--	--	--	--	--	--	1	1 (0.5%)	1
Total	67	132	7	6	2	4	53	189	271

[1] Bald eagle behavior, N=none, W=watched, R=restless, F=flushed, L=left area, X=other (no explanation offered), U=unknown.
[2] D-D Total=Observations on dawn-to-dusk days.

Table 18. Observed prey types delivered to the nest, Tower BA, Arizona, 2001.

Sex	Fish	Mammals	Unknown	Total
Male	7	2	5	14 (46.6%)
Female	7	1	8	16 (53.3%)
Total	14 (46.6%)	3 (10.0%)	13 (43.3%)	30