ARIZONA BALD EAGLE MANAGEMENT PROGRAM
2010 SUMMARY REPORT

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Photo by Kyle McCarty

Technical Report 261
Nongame and Endangered Wildlife Program
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5000 West Carefree Highway
Phoenix, Arizona 85086

December 2010

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McCarty, K.M. and K.V. Jacobson. 2010. Arizona bald eagle management program 2010 summary report. Nongame and Endangered Wildlife Program Technical Report 261. Arizona Game and Fish Department, Phoenix, Arizona.

ACKNOWLEDGMENTS

The authors acknowledge and appreciate the assistance of the following people: Carole Glenn, Arizona Department of Transportation; Nick Fiscina, Arizona Public Service; Arizona State Parks Department; Tony Cecchi, GeoMarine Inc. (U.S. Air Combat Command); Mark Frank, Ft. McDowell Yavapai Nation; The Hopi Tribe; Liberty Wildlife Rehabilitation Foundation; Terry Gerber, Don Harris, Rick Poel, and Kyle Randall, Maricopa County Parks and Recreation Department; National Audubon Society (Arizona chapters); Arthur Benally and Keith Lyons, National Park Service; Dave Mikesic and Jeff Cole, Navajo Department of Fish and Wildlife; Freeport McMoRan; Tom Weissmeuller, Rio Verde Ranch; Dan Daggett, Brian Gewecke, Joe Herrera, and Tudor Montague, Salt River Pima-Maricopa Indian Community; John Keane, Dave Scott, Jeff Campbell, Lynn Bredimus, Kathy Morgan, and Ruth Valencia, Salt River Project; April Howard, Daniel Juan, and Jeff McFadden, San Carlos Apache Tribe; Tonto Apache Tribe; John Arnett, U.S. Air Force (Luke Air Force Base); Wade Eakle, U.S. Army Corps of Engineers; Amy Heuslein, U.S. Bureau of Indian Affairs; Tim Hughes, U.S. Bureau of Land Management; Henry Messing, Alex Smith, Nicole Olsker, and Mark Santee, U.S. Bureau of Reclamation; Greg Beatty, Carrie Marr, and Mary Richardson, U.S. Fish and Wildlife Service; Robert Mesta, USFWS Sonoran Joint Venture; Janie Agyagos, Jim Copeland, Beth Dykstra, Noel Fletcher, Kelly Kessler, Amyann Madara, Vicente Ordonez, Henry Provencio, Albert Sillas, Andre Silva, Rachael Vaughn, Linda Whitetrifaro, Fred Wong, and Todd Willard, U.S. Forest Service; Robin Brean, Teresa Propeck, Verde Canyon Railroad; Cynthia Dale and Tim Gatewood, White Mountain Apache Tribe; Donna Bailloux, Elisabeth Burgard, James Driscoll, Barbara Jewett, Gloria Morales, Bill Van Pelt, and Arlene West, Arizona Game and Fish Department. A special thanks goes out to winter count coordinators and volunteers for their hard work and dedication, as well as to volunteers Ron and Doris Bell, Dave and Kathy Burton, Dave and Marcia Lamkin, Marta Peddie, and Perry and Irene Smith.

This report, in part, summarizes the results of monitoring by the Arizona Bald Eagle Nestwatch Program using the breeding area reports submitted in 2010. Those include: Quinn Harrison and Dayna Hawes, Saguaro Breeding Area (BA); Gretchen Henne, Bartlett and Saguaro BAs; Lisa Helgren, Barlett, Saguaro, and Woods Canyon BAs; Joe Peddie and Marta Peddie, Luna BA; Sarah Bassing and Jonathan Linch, Cliff and Goldfield BAs; Jen Ottinger and Leah Vader, Sycamore, Rodeo, and Doka BAs; Jack Larriviere and Russell Seeley, Needle Rock BA; Emily Pollom and Katarina Smail, Orme and Granite Reef BAs; David Janssen, Lake Pleasant and Woods Canyon BAs; Troy Maikis, Lake Pleasant BA; Kristen Ward, Tonto BA; Joan Wike, Tonto and Woods Canyon BAs; Jean Spilker and Ernie O'Toole, Ladders and Goldfield BAs.

PROJECT FUNDING

Funding for this project was provided by: Arizona Game and Fish Department's Heritage Fund; W95; Arizona Public Service; Federal Highways; Geo-Marine Inc.; Salt River Pima-Maricopa Indian Community; Salt River Project; San Carlos Apache Tribe; U.S. Bureau of Land Management; U.S. Bureau of Reclamation; U.S. Department of Defense (Luke Air Force Base); U.S. Forest Service (Coconino, Prescott, and Tonto National Forests); U.S. Fish and Wildlife Service (State Wildlife Grant); and Verde Canyon Railroad.

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

ARIZONA BALD EAGLE MANAGEMENT PROGRAM 2010 SUMMARY REPORT

Kyle M. McCarty and Kenneth V. Jacobson

INTRODUCTION

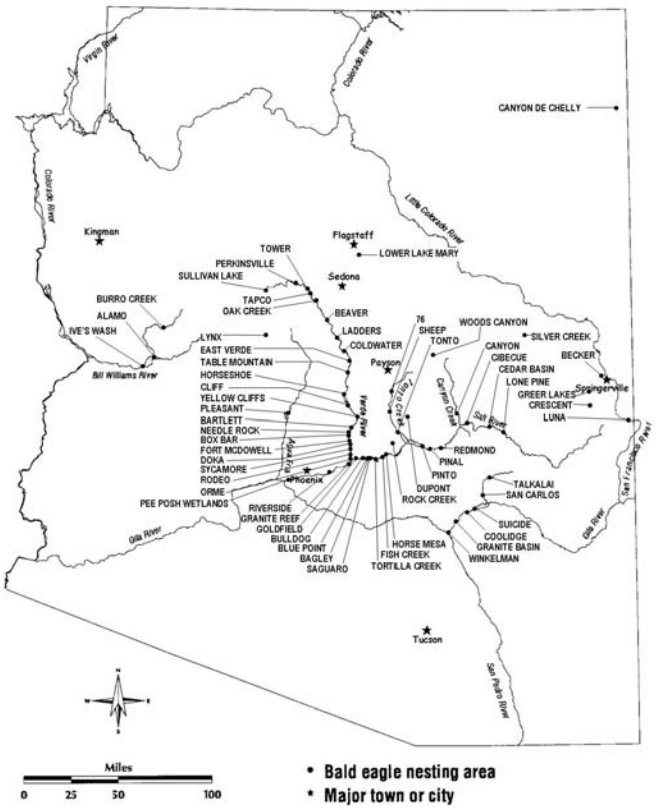
In 1978, the U.S. Fish and Wildlife Service (USFWS) listed the bald eagle (*Haliaeetus leucocephalus*) as endangered under the Endangered Species Act (ESA) as amended (1973) in 43 states (including Arizona), and threatened in 5 others (USFWS 1982). In Alaska, the USFWS did not list the species and it does not occur in Hawaii. The USFWS downlisted the bald eagle to threatened in 1995 and delisted the species in 2007 (USFWS 1995, 2007). In August 2006, the USFWS denied a petition to recognize bald eagles breeding in the Sonoran Desert of central Arizona as a Distinct Population Segment (DPS). As a result of a lawsuit challenging this decision, the U.S. District Court for the District of Arizona issued a ruling in March 2008 ordering the USFWS to conduct a 12-month status review to determine if listing the population as a DPS was warranted, and if so, then to decide if listing the DPS as threatened or endangered under the ESA was warranted (USFWS 2008). Pending the outcome of the 12-month review, bald eagles in central Arizona remained protected as threatened under the ESA in all of Gila, Graham, Pinal, Maricopa, and Yavapai Counties, and parts of Mohave, La Paz, and Yuma Counties (USFWS 2008). In the February 2010 status review finding, the USFWS re-affirmed its previous determination that the population did not meet the definition of a DPS and was therefore not a listable entity under the ESA (USFWS 2010). In October 2010, the District Court lifted its injunction against the USFWS, removing ESA protection for bald eagles throughout Arizona. The bald eagle remains protected in the state under Arizona Revised Statute Title 17 and nationally under the Airborne Hunting Act, Bald and Golden Eagle Protection Act, Lacey Act, Migratory Bird Treaty Act, and the Convention on International Trade in Endangered Species of Wild Flora and Fauna.

To enhance coordination, increase communication, and provide oversight for Arizona bald eagle management, land and wildlife management agencies formed the Southwestern Bald Eagle Management Committee (SWBEMC) in 1984. Today, the members include: Arizona Game and Fish Department (AGFD), Arizona Army National Guard, Arizona Department of Transportation, Arizona Public Service (APS), Arizona State Parks Department, American Eagle Research Institute, Fort McDowell Yavapai Nation (FMYN), Geo-Marine (U.S. Air Combat Command), Gila River Indian Community, The Hopi Tribe, Maricopa County Parks and Recreation Department (MCPRD), Navajo Nation Fish and Wildlife, Phelps Dodge, Salt River Pima-Maricopa Indian Community (SRPMIC), Salt River Project (SRP), San Carlos Apache Tribe (SCAT), Tonto Apache Tribe, U.S. Army Corps of Engineers (ACE), U.S. Bureau of Indian Affairs, U.S. Bureau of Land Management, U.S. Bureau of Reclamation (USBR), U.S. Department of Defense (Luke Air Force Base), U.S. Forest Service (USFS), USFWS, U.S. National Park Service, and White Mountain Apache Tribe. In 2007, eleven members of the SWBEMC signed the Conservation Assessment and Strategy for Bald Eagles in Arizona (CAS), which describes bald eagle management in the state and outlines the strategy for continuing management (Driscoll et al. 2006). The CAS also specifies current threats facing bald eagles in

Arizona and identifies management actions necessary to maintain their distribution and abundance in the state following delisting.

STUDY AREA

Statewide monitoring and surveys were conducted primarily within 6 biotic communities (Brown 1994): Rocky Mountain (Petran) and Madrean Montane Conifer Forest, Great Basin Conifer Woodland, Plains and Great Basin Grasslands, Sonoran Desertscrub-Arizona Upland Subdivision, Interior Chaparral, and Sonoran Riparian Deciduous Forest and Woodlands. Other biotic communities visited included Chihuahuan Desertscrub, Mohave Desertscrub, Great Basin Desertscrub, Semidesert Grassland, Subalpine Grassland, Madrean Evergreen Woodland, and Sonoran Desertscrub-Lower Colorado River Valley Subdivision.



Most bald eagle breeding areas (BAs) are in central Arizona between elevations of 329 m (1,080 ft) and 1,341 m (4,400 ft). They are primarily found within the riparian areas of the Sonoran Riparian Scrubland and Sonoran Interior Strands as described in Brown (1994) (Figure 1). Representative riparian vegetation includes Fremont cottonwood (*Populus fremontii*), Goodding willow (*Salix gooddingii*), Arizona sycamore (*Platanus wrightii*), and nonnative salt cedar (*Tamarix* spp.). Surrounding uplands include the Sonoran Desertscrub biome-Arizona Upland subdivision, Interior Chaparral biome, and Great Basin Conifer Woodland biome. These areas are commonly vegetated with blue palo verde (*Cercidium floridium*), mesquite (*Prosopis* spp.), ironwood (*Olneya tesota*), saguaro (*Carnegiea gigantea*), teddy bear cholla (*Opuntia bigelovii*), juniper (*Juniperus* spp.), and pinyon pine (*Pinus edulis*).

Figure 1. Location of known bald eagle BAs in Arizona, 2010.

Twelve BAs are located outside of or do not include Sonoran Riparian Scrubland areas (Brown 1994). The Becker, Silver Creek, and Sullivan Lake BAs are within the Plains and Great Basin Grassland biome where the nests are in isolated stands of Fremont cottonwoods. Crescent, Dupont, Greer Lakes, Lower Lake Mary, Luna, Lynx, and Woods Canyon BAs are in Rocky Mountain and Madrean Montane Conifer Forest, where riparian vegetation includes narrow-leaf cottonwood (*Populus angustifolia*), thin-leaf alder (*Alnus tenuifolia*), Bebb's willow (*Salix bebbiana*), and coyote willow (*S. exigua*) (Brown 1994). Rock Creek is located in Rocky Mountain Montane Conifer Forest surrounded by Interior Chaparral, consisting mainly of

pinyon-juniper woodland, shrub live oak (*Quercus turbinella*), and pointed (*Arctostaphylos pungens*) and pringle manzanita (*A. pringlei*). Canyon De Chelly BA is located in a Rocky Mountain Conifer forest mixed with Great Basin Conifer Woodland and Desertscrub, consisting mainly of big sagebrush (*Artemisia tridentata*), blackbrush (*Coleogyne ramosissima*), and shadscale (*Atriplex confertifolia*).

With the exception of the Dupont, Rock Creek, and Canyon de Chelly BAs, bald eagles in Arizona nest within a mile of water. BAs were located along: Burro, Canyon, Cibecue, Oak, Pinal, Silver, Tangle, Tonto, and Walnut creeks; Alamo, Apache, Bartlett, Crescent, Greer, Horseshoe, Lower Lake Mary, Luna, Lynx, Pleasant, Roosevelt, Saguaro, San Carlos, Talkalai, and Woods Canyon lakes or reservoirs; and the Agua Fria, Bill Williams, Little Colorado, Gila, Salt, San Carlos, San Francisco, and Verde rivers. Nests within these drainages are usually on cliff ledges, rock pinnacles, and in cottonwood trees. However they also have been found in junipers, pinyon and ponderosa pines, sycamores, willows, snags, and 1 artificial structure (Horseshoe BA 1980) (Grubb 1980).

ARIZONA BALD EAGLE WINTER COUNT

INTRODUCTION

Because bald eagles are nomadic in winter, national winter surveys are an effective tool to monitor the species throughout its range (Stalmaster 1987). The knowledge of wintering bald eagle habitat use allows for the consideration and implementation of management to protect important wintering areas. Even though the USFWS delisted the species nationwide in 2007 (USFWS 2007), the importance of the national winter count persists. Through each state's consistent efforts, the winter count will continue to provide post-delisting data on national population trends (Steenhof et al. 2002, 2008).

The National Wildlife Federation (NWF) initiated and organized the national midwinter bald eagle count from 1979-1992. Coordination shifted to the U.S. Geological Survey (USGS), Forest and Rangeland Ecosystem Science Center, Snake River Field Station, which in 2007 partnered with the ACE, who now coordinates the national winter count effort. Arizona participated in the program from the 1970s to the early 1980s (e.g. Todd 1981). However, in 1986 the national coordinators changed the survey protocol to only count 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 in 1989-1991 such as Roosevelt Lake and Nankoweap Creek (e.g. Brown and Stevens 1992). Arizona's statewide winter counts resumed in 1992, using a combination of terrestrial (foot, snowmobile, vehicle), boat, and aircraft surveys (e.g. McCarty and Jacobson 2009). In 1995, AGFD and NWF established 115 standardized routes for Arizona's bald eagle winter count. In 2005, after 10 years of surveying the 115 established routes, we analyzed the data to eliminate those routes that did not meet USGS standards, and included new routes for future surveys. If a route produced 3 or fewer birds during the past 10 years of surveys, the route was dropped per USGS protocol. As a result, in 2006 we dropped 23 routes and added 12 new routes to the survey for a net result of 104 standardized routes.

Additionally, in order to simplify reporting of data to ACE we dropped two more routes in 2008, Lake Mead and Lake Mohave, for a total of 102 standardized routes. These routes covered areas along the Colorado River both in Arizona and Nevada, and will be reported by the state coordinators of the Nevada winter count.

METHODS

We continued to use, and strived to complete, the established 102 standardized survey routes for the 2010 Arizona bald eagle winter count. Additional routes were completed and integrated into this document for management purposes, but were not included in the results submitted to the ACE. We scheduled the winter count for January 4-10, 2010, which included weekdays for agency personnel and a weekend for volunteers. The short survey period minimized the chance for any large-scale bald eagle movements between survey routes and related duplicate counts.

We used a variety of survey methods due to the diverse habitats in Arizona and our desire to maximize (but not duplicate) statewide coverage in a narrow period with minimal effort. The best method to survey the rugged terrain and deep canyons of linear drainages was by helicopter. USBR and SRP contributed a total of 4 days of helicopter time for 2-3 biologists and a pilot to fly 25 routes. While the helicopter's altitude and speed were dependent upon terrain, height and density of power lines, and wind speed, a height of 31-61 m (100-200 ft) above ground level and 55-65 knots (63-75 mph) was optimum for observing bald eagles. Highways, large lakes, and point counts were surveyed by boats, vehicles, and on foot. We solicited surveyors for terrestrial and aquatic surveys from cooperating agencies and volunteers from private groups. We supplied survey forms from the ACE and instructed participants on the National Survey Protocol.

We classified the bald eagle sightings into adult and subadult age classes. In addition, we included sightings of unknown age bald eagles and unidentified eagles in our totals in order to maintain consistency with the national count. 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 sightings of golden eagles (*Aquila chrysaetos*) during the survey, but did not report them in this document. We divided the data into 2 sections for comparison: 1) the terrestrial and boat survey by county and 2) the helicopter survey by drainage or lake (Appendix A).

Due to our refinement of the statewide winter count routes in 2005, 4 counties are no longer surveyed by ground methods for wintering bald eagles. These include Greenlee, Maricopa, Pima, and Pinal counties. However, Greenlee, Maricopa, and Pinal counties are surveyed for wintering bald eagles, in part, by the helicopter flights.

RESULTS AND DISCUSSION

The 2010 Arizona bald eagle winter count tallied 253 bald eagles (Table 1). We documented 160 adults (63%), 81 subadults (32%), and 12 unknown eagles (5%) (Table 2). The highest number of eagles observed during ground surveys occurred in Coconino County (n=53, 32 routes), and the largest concentration seen on a single ground survey occurred along I-17 south of Flagstaff (survey route 24) in Coconino County (n=15) (Appendix A). Also, a large number of bald eagles were observed by helicopter on 9 routes covering the Salt River drainage (n=84).

Table 1. Summary of the Arizona bald eagle winter count 2010.								
County	Routes surveyed	Minutes	Adult	Subadult	Unknown[1]	Total	Total/ Minute	Total/ Hour
Apache	13	860	18	3	0	21	0.02	1.5
Cochise	2	250	4	0	0	4	0.02	1.0
Coconino	32	4,449	30	15	8	53	0.01	0.7
Graham	Not surveyed.							
Mohave	1	160	4	0	0	4	0.03	1.5
Navajo[2]	16	970	5	6	3	14	0.01	0.9
Santa Cruz	1	60	0	0	0	0	0	0
Yavapai	6	2,025	9	6	1	16	0.01	0.5
Yuma and La Paz	1	90	1	0	0	1	0.01	0.7
Verde River drainage	3	202	25	11	0	36	0.18	10.7
Gila River drainage	8	367	11	5	0	16	0.04	2.6
Salt River drainage	9	228	49	35	0	84	0.4	22.1
Various helicopter	5	37	4	0	0	4	0.11	6.5
Totals	97	9,698	160	81	12	253	0.03	1.6

[1] Unknown age bald eagles and unidentified eagles.
[2] Includes one route for which survey time was not recorded, but averaged from previous year's counts.

An additional one bald eagle was counted on four non-standardized routes (Appendix A), but was not included in summary results.

In 2010, Arizona surveyed 97 of the 102 standardized routes (95%) (Table 2). Survey effort was above average, with a total of 9,698 minutes (162 hours). Coconino County had the most number of routes and therefore had the most effort with 4,449 minutes (74.2 hours) (Appendix A). Deep snow and muddy roads caused several areas to be inaccessible, including most of the 5 routes that were not surveyed. Poor road conditions or other access issues limited 9 other routes to being only partially surveyed.

Despite some challenging conditions, weather during the survey overall did not seem to be unusual. Surveyors are asked each year to rate the weather during the count compared to previous years as being either very mild, mild, normal, harsh, or very harsh. Most responded that this year's weather was normal (88% of responses, n=80), and a few responded mild (6.6%, n=6), harsh (4.4%, n=4), or very mild (1.1%, n=1). There were no responses for very harsh weather. Similarly, ice cover was rated as being normal (71%, n=61), more than normal (22%, n=19), much more than normal (3.5%, n=3), and less than normal (3.5%, n=3). There were no responses for much less than normal ice cover.

The total of 253 bald eagles counted in 2010 was lower than the average of 302 birds counted annually during standardized counts 1995-2009, and brings the new average down to 299. On 47 (48%) of the 97 routes, no bald eagles were counted.

The age composition of the 2010 bald eagle winter count was 63% adults, 32% subadults, and 5% unknown. This approximates the ratio of adults to subadults seen in Arizona's winter counts overall which has averaged 65% adults, 32% subadults, and 3% unknown (Table 2).

Table 2. Summary of Arizona bald eagle winter counts 1995-2010.

Year	Survey Time	Surveys completed	Birds/minute	Adults		Subadults		Unknown[4]		Total
1995	9,563	103	0.025	164	(66%)	76	(31%)	8	(3%)	248
1996	7,255	102	0.049	232	(64%)	127	(35%)	2	(1%)	361
1997	7,718	96	0.044	193	(56%)	134	(39%)	16	(5%)	343
1998	7,190[1]	93	0.041	183	(63%)	103	(36%)	4	(1%)	290
1999	8,378[1]	105	0.050	248	(62%)	144	(36%)	11	(3%)	403
2000	9,402[1]	110	0.034	202	(62%)	115	(35%)	8	(2%)	325
2001	8,726[1]	108	0.024	141	(66%)	70	(32%)	5	(2%)	216
2002	9,032	109	0.044	236	(59%)	147	(37%)	19	(5%)	402
2003	10,036[1]	110	0.036	232	(64%)	118	(33%)	12	(3%)	362
2004	10,587	110	0.034	243	(66%)	113	(31%)	13	(3%)	369
2005	8,910	97	0.069	153	(68%)	56	(25%)	15	(7%)	224
2006[2]	10,074	104	0.031	239	(74%)	77	(24%)	7	(2%)	323
2007	11,632[1]	100	0.024	192	(68%)	81	(29%)	8	(3%)	281
2008[3]	9,362	96	0.020	152	(82%)	29	(16%)	4	(2%)	185
2009	9,357	94	0.022	139	(68%)	62	(30%)	3	(2%)	204
2010	9,698[1]	97	0.026	160	(63%)	81	(32%)	12	(5%)	253
Average	9,183	102	0.036	194	(65%)	96	(32%)	9	(3%)	299

[1]Some survey times not recorded. Times averaged from reported times of previous counts.
[2]Beginning of 104 standardized routes derived from the analysis of 1995-2005 surveys.
[3]Beginning of 102 standardized routes (no longer reporting Lake Mead and Lake Mohave).
[4]Unknown age bald eagles and unidentified eagles.

MANAGEMENT RECOMMENDATIONS

1. Maintain the current 102 standardized routes.
2. Continue to assess non-standardized routes and add new routes for areas with consistent sightings of more than 3 bald eagles. The national coordinators require at least 4 years of data before a route is included in trend analyses.
3. Maintain winter count consistency by following established routes and methods to enable long-term analysis.
4. Continue updating the Nongame Branch bald eagle winter count database with information from the standardized survey forms.
5. Compile spatial data from winter count survey maps to document the location and abundance of wintering bald eagles, spatially identify important habitat use areas, and develop statewide maps for distribution to cooperating agencies.

ARIZONA BALD EAGLE NEST SURVEY

INTRODUCTION

The bald eagle nest survey enhances our understanding of breeding bald eagle ecology in Arizona. Discovery of new BAs and alternate nests within BAs, coupled with the knowledge of current and historical BAs, allows for an accurate description of the distribution, status, and annual productivity of the breeding population in Arizona. Timely discovery of BAs also identifies sensitive areas requiring proactive management to prevent potentially adverse impacts.

In 1972, concern about bald eagle population declines nationwide prompted surveys for the species throughout Arizona (Rubink and Podborny 1976). These annual surveys have continued to the present, excluding 1976 and 1977 (e.g. McCarty and Jacobson 2009). The AGFD coordinated and implemented the 2010 nest surveys in cooperation with the SWBEMC.

METHODS

Habitat quality, the presence of nests, previous bald eagle sightings, and spacing between BAs prioritized survey effort. We monitored breeding activity at current and historical BAs, and nest sites discovered between 1992 and 2009 (e.g. McCarty and Jacobson 2009). We also investigated reports of bald eagles and nests by other agencies, biologists, and the public. A two to three-person team conducted surveys between January and June 2010. Winter count flights (January), monthly Occupancy and Reproductive Assessment (ORA) flights (February to June), and nest search flights (April and May) were used to locate nests and survey for new BAs. Timing of the ORA flights corresponded with the timing of different breeding stages (incubation, hatching, nestling, and fledging).

Boats, helicopters, and vehicles were used to access survey areas. Helicopters, provided by APS, SRP, and USBR, flew at approximately 60 meters (200 ft) above ground level and at 50-60 knots (58-70 mph). Drainage topography, high-tension wires, and wind influenced altitude and speed. If nest occupancy could not be determined from the air, a ground survey ensued. We used Questar® spotting scopes (40-160x), binoculars (10x), and nest map atlases from Hunt et al. (1992) and SRP (2003) to relocate historical BAs and find alternate nests in existing BAs. New nests were numbered consecutively according to the last number assigned within that BA as reported in previous Arizona bald eagle nest survey reports (e.g. McCarty and Jacobson 2009).

Determination of breeding status followed operational definitions derived from Postupalsky (1974, 1983) and Steenhof and Kochert (1982) (Appendix B). Additionally, we use the terms “tall” and “short” in this section to describe heights of cliffs, and “large” and “small” to describe the size of trees and nests. “Tall” and “large” refer to substrates and nests we deemed suitable for breeding bald eagles as compared to current bald eagle nests and locations in Arizona. The terms “small” and “short” refer to structures and nests of inadequate height and size. A “nest site” refers to a nest of large size (unless otherwise noted) in appropriate bald eagle habitat that has not been documented as having been built or used by bald eagles, but which is routinely monitored for its potential to be utilized by bald eagles.

RESULTS

We examined all known BAs (n=62) for breeding activity (Fig. 1). Of 52 occupied BAs, 48 pairs attempted to breed, and 27 pairs successfully produced 44 fledglings (Table 3; Appendix C). Significant findings of the 2010 nest survey include 3 new bald eagle BAs, 7 new alternate bald eagle nests, 5 fallen nests within BAs (Coolidge #2, Crescent #2, Fort McDowell #17, Greer Lakes #1, and Pee Posh Wetlands #1), 1 fallen nest within a historic BA (Mule Hoof #1), and 9 potential nest sites.

Table 3. Summary of Arizona bald eagle productivity 2010.

Number of BAs	62	Number of Active BAs	48
Number of Occupied BAs	52	Number of Failed Breeding Attempts	21
Number of Eggs	69	Number of Successful Breeding Attempts	27
Nest Success = 27/52	0.52	Number of Young Hatched	57
Mean Brood Size = 44/27	1.63	Number of Young Fledged	44
		Productivity = 0.52*1.63	0.85

Results of the individual flights are located in Appendix D. Areas worthy of further discussion (bald eagle observations, fallen nests, new nests, potential nest sites) are described here. Nest locations are sensitive data, considered confidential by AGFD, and omitted from this report. Management agencies requiring specific locations should contact the AGFD Heritage Data Management System at (623) 236-7612.

New Locations Surveyed (Table 4)

Black Canyon Lake. – On May 7, we saw two ospreys in new platform nest #1.

Buckeye. – In February 2010, we received a report from the public about bald eagles building a nest on a farm near Buckeye, AZ. On February 18, we observed an adult perched by a large nest in a small tree in an agricultural field, but no nesting activity. On March 2 and March 19, there was no activity observed.

Gleason Flat. – On January 28, we saw five immature bald eagles in the area. No new nests were found.

Point of Pines Lake. – On May 28, we found one osprey incubating in new nest #1. No bald eagles were seen.

Pee Posh Wetlands. – In December 2009, we received photographs from the public of a pair of bald eagles at a nest on the lower Salt River. During a winter count flight on January 4, 2010 we confirmed that the pair was incubating. The female eagle had no bands, with some markings on the head and tail indicating a near-adult. The adult male eagle had a blue band on the left leg (20/E; 2006 Bulldog nestling). The nest (#1) was in a dead cottonwood tree on the Gila River Indian Community. On August 4, the nest was reported as fallen.

Rogers Lake. – On May 7, we saw two adults in the area. No new nests were found.

Silver Creek. – On May 25, we confirmed a new breeding area in Snowflake, AZ, with one 8-9 week old bald eagle nestling in a new cottonwood tree nest #1. Two days earlier one of the nestlings had been found injured on the ground below the nest and reported by the landowner, leading to our awareness of this nest.

Sunflower Flat. – On May 7, we found one osprey incubating in a new snag nest #1. Another osprey was perched by a new snag nest #2. No bald eagles.

Tortilla Creek. – In early January 2010, we received a report from the USFS of a pair of bald eagles at a nest at Canyon Lake and further received a photograph from the public. After documenting incubation at the Saguaro BA, we confirmed this as a new BA with incubation in a new pinnacle nest (#1) by January 13.

Table 4. 2010 Arizona bald eagle nest survey summary, new locations.

Location	Date	Survey Method	Results
Ashurst Lake	5/7	Helicopter	No new nests or bald eagles.
Black Canyon Lake	5/7	Helicopter	5/7- Two ospreys in new platform nest #1. No bald eagles.
Buckeye	2/18, 3/2, 3/19	Helicopter, Ground	2/18- One adult perched by new large tree nest #1.
Dry Lake	5/28	Helicopter	No new nests or bald eagles.
Fossil Creek	3/19	Helicopter	No new nests or bald eagles.
Gleason Flat	1/28, 3/17	Helicopter	1/28- Five immatures in area. No new nests.
Kinnikinick Lake	5/7	Helicopter	No new nests or bald eagles.
Pee Posh Wetlands (lower Salt River)	12/24, 1/4, 1/22, 2/1, 2/24, 3/19, 3/22, 4/16	Helicopter, Ground	1/4- One adult incubating in new cottonwood tree nest #1.
Point of Pines Lake	5/28	Helicopter	5/28- One osprey incubating in new nest #1. No bald eagles.
Rogers Lake	5/7	Helicopter	Two adults in area. No new nests.
Salome Creek	3/17, 4/19	Helicopter	No new nests or bald eagles.
Scholz Lake	5/7, 6/4	Helicopter	No new nests or bald eagles.
Silver Creek	5/25	Ground	5/25- One 8-9 week old nestling in new tree nest #1.
Sunflower Flat	5/7, 6/4	Helicopter	5/7- One osprey incubating in new snag nest #1. Osprey by new snag nest #2. No bald eagles.
Tortilla Creek	1/28, 3/15, 3/17, 4/19, 5/7, 5/28	Helicopter, Ground	1/28- One adult incubating in new pinnacle nest #1.
Tremaine/Soldier Annex/ Soldier/Long Lakes	5/7	Helicopter	No new nests or bald eagles.
Upper Sycamore Canyon	6/4	Helicopter	No new nests or bald eagles.

Historical Breeding Areas (Table 5)

Mule Hoof. – On January 28, we found that nest #1 had partly fallen.

Upper Lake Mary. – Ospreys were active in nests #1, 2, 3, 4 and a new snag nest #6.

Table 5. 2010 Arizona bald eagle nest survey summary, historical breeding areas.			
Location	Date	Survey Method	Results
Camp Verde	2/1	Helicopter	No new nests or bald eagles.
Chino	2/1	Helicopter	No new nests or bald eagles.
Devil's Post	2/1	Helicopter	All known nests empty. No bald eagles.
Hell Point	2/1, 3/19, 4/16	Helicopter	All known nests empty. No bald eagles.
Mule Hoof	1/5, 1/28, 3/17, 4/19	Helicopter	1/28- Nest #1 partly fallen. No bald eagles.
Upper Lake Mary	5/7	Helicopter	5/7- Ospreys incubating in nests #1,2, 3, 4 and new snag nest #6.
Winkelman	3/17, 4/19	Helicopter	No new nests or bald eagles.

Survey Sites with Existing Large Nests (Table 6)

Bear Canyon Lake. – On May 7, we saw an osprey standing in nest #1, and on June 4 an osprey was incubating or brooding in new snag nest #2. No bald eagles were seen.

Blue Ridge Reservoir. – On May 7, an osprey was incubating in nest #2. No bald eagles were seen.

Chevelon Canyon Lake. – On June 4, we saw an adult bald eagle perched on Chevelon Canyon Creek just before its inflow to the lake, in the same location an adult was seen last year. On May 7, an osprey was incubating in nest #1, and on June 2 we saw an osprey incubating or brooding in nest #2. We will continue to monitor the area for further activity.

JD Dam Lake. – On June 4, nest #1 was not found and presumed to have fallen.

Knoll Lake. – On May 7, we found that nest #3 had fallen and an osprey was standing in nest #1. On June 4, we saw an osprey incubating or brooding in nest #1. No bald eagles were observed.

Willow Springs Lake. – On May 7, we found two ospreys at a new snag nest #3. Ospreys were also active at a new snag nest #4. No bald eagles were seen.

White Horse Lake. – We continue to receive reports of bald eagles at this lake and in the area. We saw one adult bald eagle perched by the lake during the May 7 flight, however we found no evidence of nesting. Ospreys were incubating or brooding in nests #1 and 2. We will continue to monitor the area for further activity.

Table 6. 2010 Arizona bald eagle nest survey summary, nest sites (continued next page).			
Location	Date	Survey Method	Results
Bear Canyon Lake	5/7, 6/4	Helicopter	5/7- Osprey standing in nest #1. 6/4- Osprey incubating in new snag nest #2. No bald eagles.
Blue Ridge Reservoir	5/7	Helicopter	5/7- Osprey incubating in nest #2. No bald eagles.
Chevelon Canyon Lake	5/7, 6/4	Helicopter	5/7- Osprey incubating in nest #1. 6/4- One adult in area. Osprey incubating/brooding in nest #2.
Dogtown Lake	5/7	Helicopter	All known nests empty. No bald eagles.

Table 6 continued.

Location	Date	Survey Method	Results
Eagle (Eagle Creek)	1/7, 5/28	Helicopter	No new nests or bald eagles.
Granite (Verde River)	2/1, 3/19, 4/16	Helicopter	All known nests empty. No bald eagles.
JD Dam Lake	6/4	Helicopter	6/4- Nest #1 fallen. No new nests or bald eagles.
Knoll Lake	5/7, 6/4	Helicopter	5/7- Osprey standing in nest #1. Nest #3 fallen. No bald eagles. 6/4- Osprey incubating in nest #1.
Mormon Pocket (Verde River)	2/1, 4/16	Helicopter	All known nests empty. No bald eagles.
Muldoon (Verde River)	2/1, 3/19	Helicopter	All known nests empty. No bald eagles.
Parker Canyon	3/17	Helicopter	All known nests empty. No bald eagles.
Pinto Creek	4/19	Helicopter	All known nests empty. No bald eagles.
Sullivan (Verde River)	2/1	Helicopter	All known nests empty. No bald eagles.
Watson Lake	2/1, 4/16	Helicopter	2/1- One golden eagle in area. All known nests empty. No bald eagles.
West Clear Creek	1/4	Helicopter	All known nests empty. No bald eagles.
White Horse Lake	5/7, 6/4	Helicopter	5/7- One adult in area. Ospreys incubating in nest #1 and 2.
Willow (Willow Creek)	1/7, 5/28	Helicopter	No new nests or bald eagles.
Willow Springs Lake	5/7	Helicopter	5/7- Two ospreys at new snag nest #3. Ospreys active in new snag nest #4. No bald eagles.

Breeding Areas (Table 7)

Box Bar. – On January 13, March 19, and April 16, we saw two adult bald eagles in the area. All known nests were empty and no breeding activity was observed this year.

Burro Creek. – On February 1, we saw one adult perched in the area of the old fallen nest. No new nests were found.

Canyon. – On January 5, we saw one adult and one immature bald eagle in the area. During three other searches (January 28, March 17, and April 19) we saw no bald eagles, making 2010 the tenth consecutive year that this BA has been unoccupied. Canyon will now be designated as a historical BA. We will continue to monitor the area for bald eagle breeding activity.

Canyon de Chelly. – On April 30, Navajo Nation biologists reported two 3-week old nestlings in a new tree nest (#2).

Coolidge. – On January 5, we found that nest #2 and its supporting branch had fallen. On March 17, an adult was incubating in nest #4.

Crescent. – On March 17, we found that nest #2 had fallen. On April 19, an adult was incubating in nest #1.

Fort McDowell. – We observed one adult in the area on January 4, and two adults on February 1, February 16, and March 19. On February 1 we found that nest #17 had fallen. All known nests were empty and no breeding activity was observed this year.

Goldfield. – On March 17, we confirmed an adult incubating in new nest #2, which was in the same tree as nest #1 on a lower branch. Nest #1 had partially fallen.

Granite Basin. – On April 19, we saw one adult bald eagle in the area.

Greer Lakes. – On March 17, we found that nest #1 had fallen. On April 19, we saw one adult bald eagle perched in the area. During a ground visit on June 2, we saw one immature (3 or 4-year old) foraging in the area. On May 28, ospreys were incubating in nests #2 and #3.

Horse Mesa. – On March 17, we discovered two adult bald eagles with one 2.5-week old nestling in a new cliff nest (#5).

Ive's Wash. – On January 12, we saw two adult bald eagles building a new nest on the cliffs downstream of the dam. On February 1, an adult was incubating in the new nest (#4).

Pinto. – In December 2009, the USFS reported a new large nest built within the BA. On January 5, 2010 we found an adult bald eagle incubating in this new snag nest (#7).

San Carlos. – On January 28, we saw an adult bald eagle standing on the remnants of the old fallen nest #4, with a second adult in the area. During a ground visit on February 23, we observed two unbanded adults taking branches to a new large nest (#6) in a cottonwood tree. On a March 17 helicopter flight we saw one adult fly to the new nest, but it was empty.

Sheep. – On January 5, we saw an adult bald eagle perched near a new cottonwood tree nest, and confirmed incubation at the new nest (#5) on January 28.

Sycamore. – On January 4, we found an adult bald eagle incubating in a new snag nest (#5).

Tapco. – On March 19, we saw one adult bald eagle in the area.

Tower. – On January 25, we saw one adult bald eagle standing in nest #8. On February 1, we saw an adult flying in the area and a second adult in nest #8; although it appeared to have been incubating, this was not supported by later observations.

Table 7. 2010 Arizona bald eagle nest survey summary, breeding areas (continued next page).

Location	Date	Survey Method	Results
Becker	6/2	Ground	No new nests or bald eagles.
Blue Point	1/5, 1/28, 3/17, 4/19	Helicopter Ground	All known nests empty. No bald eagles.
Box Bar	1/4, 1/13, 2/1, 3/19, 4/16	Helicopter Ground	1/13, 3/19, 4/16- Two adults in area. All known nests empty.
Burro Creek	2/1, 3/19	Helicopter Ground	2/1- One adult in area. All known nests empty.
Canyon	1/5, 1/28, 3/17, 4/19	Helicopter	1/5- One adult and 1 immature in area.

Table 7 continued.

Location	Date	Survey Method	Results
Cedar Basin	1/6, 1/28, 3/17, 4/19	Helicopter	All known nests empty. No bald eagles.
Coolidge	1/5, 1/28, 3/17, 4/19, 5/11, 5/28	Helicopter Ground	1/5- Nest #2 fallen. 3/17-One adult incubating in nest #4.
Crescent	1/6, 3/17, 4/19, 5/28, 6/1	Helicopter Ground	3/17- Nest #2 fallen. 4/19-One adult incubating in nest #1.
Dupont	3/17, 4/19	Helicopter	No new nests or bald eagles.
Fort McDowell	1/4, 2/1, 2/16, 3/19, 4/16	Helicopter Ground	2/1- Two adults in area. Nest #17 fallen. 2/16- Two adults in area. 3/19- Two adults in area.
Goldfield	1/5, 1/28, 2/10, 3/17, 4/16, 5/7, 5/18	Helicopter Ground	3/17- One adult incubating in new nest #2.
Granite Basin	1/5, 1/28, 3/17, 4/19	Helicopter	4/19- One adult in area.
Greer Lakes	3/17, 4/19, 5/28, 6/2	Helicopter Ground	3/17- Nest #1 fallen. 4/19- One adult in area. 5/28- Ospreys incubating in nests #2 and #3. 6/2- One immature in area.
Horse Mesa	1/5, 1/28, 3/17, 4/19, 5/7, 5/28	Helicopter Ground	3/17- One 2.5-week old nestling in new cliff nest #5. Two adults in nest.
Ive's Wash	1/12, 2/1, 3/19, 4/5, 5/7	Helicopter Ground	2/1- One adult incubating in new cliff nest #4.
Pinto	1/5, 1/20, 1/28, 3/17	Helicopter Ground	1/5- One adult incubating in new snag nest #7.
Rock Creek	3/17, 4/19	Helicopter	4/19- One golden eagle in area. All known nests empty. No bald eagles.
San Carlos	1/5, 1/28, 2/23-2/24, 3/17, 4/19	Helicopter Ground	1/28- One adult standing in remnants of old nest #4. 2/23- Two adults building new large tree nest #6. 3/17- One adult flew to new nest. Nest empty.
Sheep	1/5, 1/20, 1/28, 3/17, 3/23-3/24, 4/19, 5/7	Helicopter Ground	1/28- One adult incubating in new tree nest # 5.
Sycamore	1/4, 2/1, 2/17, 3/19, 4/16	Helicopter Ground	1/4- One adult incubating in new snag nest #5.
Tapco	1/4, 1/25, 2/1, 3/16, 3/19, 4/16	Helicopter Ground	3/19- One adult in area. All known nests empty.
Tower	1/4, 1/25, 2/1, 3/16, 3/19, 4/16	Helicopter Ground	2/1- One adult in nest #8. Second adult in area.

Overview

Significant findings of the 2010 nest survey include: 3 new bald eagle BAs, 7 new alternate bald eagle nests within BAs, 5 fallen nests within BAs, 1 fallen nest within a historic BA, and 9 new potential nest sites. In 2010, we documented a record number of BAs, occupied BAs, active BAs, and failed BAs (Table 8).

This year's addition of another new BA (Tortilla Creek) on the lower Salt River, between Granite Reef and Roosevelt Dams, represents the continuation of a trend over recent years. Prior to 2007, 6 BAs were known along that portion of the river. Since 2007, 5 more BAs have been established there.

The second new BA (Pee Posh Wetlands) this year was pioneered in the Phoenix metropolitan area along the Salt River channel on the Gila River Indian Community. Along with the Riverside BA discovered in 2009, this is the second urban bald eagle nest in the state. This is an area where we had anticipated growth might occur and the potential exists for more pairs to move into similar habitat along the urban Gila River where pockets of water and a prospective prey base still occur. The sighting of a single adult bald eagle perching by a new nest site in Buckeye supports this possibility.

The third new BA this year was found in a less expected area, with a pair establishing a nest in the Snowflake area. This area is dominated by grasslands and preliminary observations imply prairie dogs may be important prey, suggesting that we may need an expanded "search image" for breeding bald eagles in Arizona to include these alternate nesting strategies.

The increase in breeding density in some areas and expansion into urban zones and other less typical habitats is associated with factors such as population growth, prey abundance, and availability of suitable nest sites. The continued creation of new breeding areas and nests, and the loss of alternate nests, coupled with the potential for changes in the distribution of Arizona bald eagles further demonstrates the necessity and importance of ORA flights. These flights allow for the consistent monitoring of bald eagle demography, including population size, distribution, and reproductive success, in the rugged terrain of Arizona. Without the aid of these flights, we would not be able to accurately document these important population parameters.

Table 8. Arizona bald eagle 10-year productivity summary.

	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
Number of BAs	62	59	56	53	50	47	46	47	46	41
Number of occupied BAs	52	50	48	48	43	39	40	42	41	36
Number of eggs (minimum)	69	78	71	74	68	57	59	46	57	47
Number of active BAs	48	48	44	45	39	36	39	31	34	29
Failed breeding attempts	21	19	14	20	11	12	12	13	11	10
Successful breeding attempts	27	29	30	25	28	24	27	18	23	19
Young hatched	57	68	65	61	55	48	50	35	46	37
Young fledged	44	47	53	42	42	37	42	25	37	28
Nest success	0.52	.58	0.63	0.52	0.65	0.62	0.67	0.43	0.56	0.53
Mean Brood Size	1.6	1.6	1.8	1.7	1.5	1.5	1.6	1.4	1.6	1.5
Productivity	0.85	0.94	1.10	0.88	0.98	0.95	1.05	0.6	0.9	0.78

MANAGEMENT RECOMMENDATIONS

1. Future survey efforts should continue to monitor historical BAs, potential BAs, and large nests reported in previous nest survey reports. These documents are useful tools for identifying occupancy trends, locating new BAs, and monitoring population expansion.
2. Bald eagles banded in Arizona have been observed near or on El Novillo Reservoir, Sonora, Temecula Lake, California, and southwestern New Mexico. This suggests that the current distribution may extend into Sonora, Mexico, Southern California, and western New Mexico.

Identifying breeding bald eagles through banding, visual identification and transmitters would clarify the extent to which the bald eagles hatched in Arizona reach into these surrounding areas, and would help to accurately estimate survivorship.

3. Determine the identification of the breeding pair at Copper Basin, CA, and in Black Canyon on the Colorado River, NV, and yearly band the nestlings if accessible.
4. Surveyors should continue to use the nest survey, Occupancy and Reproductive Assessment (ORA), and winter count flights, in concert with follow-up ground surveys to inspect areas. From the air, surveyors can easily cover large sections of bald eagle habitat. Follow-up ground surveys thoroughly investigate an area.
5. Examine the following areas for breeding bald eagles and/or nests:
   - Agua Fria River drainage – Up and downstream from Lake Pleasant.
   - Anderson Mesa Lakes – Ashurst Lake, Deep Lake, Horse Lake, Kinnikinick Lake, Long Lake, Marshall Lake, Potato Lake, Prim Lake, Tremaine Lake, Yaeger Lake.
   - Big Sandy River drainage.
   - Bill Williams River drainage – Bill Williams National Wildlife Refuge.
   - Black River drainage – Little and Big Bonito creeks to the confluence of the Black River, Paucity Creek, Pacheta Creek, Reservation Creek, and Osprey nesting areas on East and West Fork and main stem of the Black River.
   - Central and Eastern Mountain Lakes – Bear Canyon, Black Canyon, Blue Ridge, Casadore Springs, Chevelon Canyon, Cholla, Doney Park, Dry, George's Basin, JD Dam, Knoll, Lyman, Nash Creek, Phillips Park Tank, Paucity Lake, Point of Pines, Rogers, Tonto, White Horse, and Willow Springs.
   - Colorado River drainage – Lake Havasu, Topock Marsh, Lake Mead (Grand Wash), Nankoweap Creek, Lee's Ferry.
   - North Fork of White River – Known osprey nesting locations.
   - Gila River drainage – Lower Blue River, San Francisco River to Gila River confluence, Gila Box.
   - Salt River Drainage – Gun/Tonto Creek confluence, Mormon Flat Dam, Redmond BA to Canyon BA, Cibecue BA to Cedar Basin BA, Pinto Creek, Salome Creek, Tanks Canyon.
   - Verde River drainage – Beaver Creek, East Verde River, West Clear Creek.
   - White Mountain Lakes – Carnero, Christmas Tree, Horseshoe Cienega, Hawley, Lee Valley Reservoir, Nelson Reservoir, Nutrioso, Pacheta, Reservation, Sierra Blanca.
   - White River – Whiteriver to confluence with Black and Salt rivers.

ARIZONA BALD EAGLE NESTWATCH PROGRAM

INTRODUCTION

In 1978, the USFS and two Maricopa Audubon Society volunteers monitored bald eagles breeding near Bartlett Reservoir to understand the effects of recreation on nesting behavior and success (Forbis et al. 1985). This monitoring effort eventually expanded to other BAs, and developed into the Arizona Bald Eagle Nestwatch Program. In 1986, the USFWS assumed coordination of the ABENWP on behalf of the SWBEMC, and expanded its scope. In 1991, the USFWS transferred the lead to the AGFD after passage of the Heritage Initiative, a voter initiative creating a fund from Arizona Lottery proceeds for wildlife and natural areas conservation.

To address the continuing management needs for Arizona's breeding bald eagles, the ABENWP operates under 3 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 when necessary to protect bald eagles during the breeding cycle. Nestwatchers interact with members of the public who enter these closures, educate them about bald eagles, distribute brochures, and/or direct them away from the breeding attempt. To help the land and wildlife agencies make better bald eagle management decisions, nestwatchers collect basic biological information and behavioral responses 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 biologists to intervene in these situations, and eliminate or reduce the threat.

In this report, we summarize significant discoveries at each BA monitored by the ABENWP in 2010. Detailed reports of each monitored BA are centralized at AGFD, and distributed to the appropriate land and wildlife management agencies.

METHODS

We selected the BAs to be monitored by weighing the level of recreation activity and management needs. Included are those with seasonal closures (Bartlett, Cliff, Goldfield-Kerr, Ladders, Luna, Needle Rock, Pleasant, Tonto, Tower, and Woods Canyon), those without (Orme, Saguaro, Sycamore), and those monitored opportunistically for information (Bagley, Doka, Granite Reef, Rodeo). In the fall of 2009, we advertised the ABENWP contract positions through newsletters, web pages, and at university and college job placement services nationwide. Presentations, brochures, and word-of-mouth also contributed to the pool of applicants.

We held two orientation meetings, and three question and answer sessions for the selected ABENWP contractors. The two meetings offered an introduction to the program, background information and the ABENWP's role in bald eagle management, and an explanation of data forms and emergency protocols. After the orientation meetings, the contractors chose a partner, a BA, and were taken into the field. The question and answer sessions occurred after the first 10-day work period, and subsequently after every second 10-day work period. In these sessions, we discussed filling out forms, consistency in data collection, requirements for the final report, and

any additional concerns or comments. When appropriate, additional problems or questions were handled on an individual basis.

Field work began February 5, 2010 and continued until nestlings fledged. Teams of two nestwatchers maintained a 10 days on/4 days off schedule. During each work period, weekend observations were conducted from dawn-to-dusk to cover times of high recreation use and document the resulting habitat use of the breeding pair. Monday through Thursday observations were a minimum of eight hours with emphasis on identifying territory boundaries, home range, and overall habitat use of the breeding pair.

Nestwatchers recorded bald eagle behavior and recreation use data from assigned observation points (OP) within the BA. We selected each OP to provide optimal viewing while minimizing the impact to the breeding bald eagles. Alternate OPs were identified when the breeding pair utilized areas out of the primary OP view. Nestwatchers were provided spotting scopes, Motorola® radios, cellular telephones, and/or USFS radios for viewing and communication needs. We supplied BA maps with river and/or lake kilometer (rk/lk) designations, and a guide to commonly taken fish species. They recorded all bald eagle data on supplied field forms. Nestwatchers provided their own transportation, gas, field supplies, binoculars, and housing on days off.

Within an arbitrary 1.0 km (3,300 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 human activity into 7 categories: none, watched, restless, flushed, left area, bird not in area, and unknown. 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" was recorded when a bald eagle became intolerant and flew away. Nestwatchers recorded "bird not in area" if a bald eagle was not present, and an "unknown" response if the bald eagle could not be observed. Activities that caused a change in bald eagle behavior, provoking a response of "restless," "flushed," and "left area" were considered significant.

At the Box Bar and Needle Rock BAs, nestwatchers recorded human activity differently than described above. Due to the high level of recreation activity at the Box Bar and Needle Rock BAs within 1.0 km of the active nest, nestwatchers only recorded the human activities and the bald eagle's associated behavior that occurred on the east side of the river, which is closed. At the Tonto BA, nestwatchers were able to document non-compliance with a water closure by observing the number of watercraft that entered the closure, in addition to recording human activity as described above. Nestwatchers at the Pleasant BA typically record compliance with the Pleasant BA closure by documenting the number of watercraft approaching the buoy line and those that entered. However this year the location of the nest and OP were out of view of the buoy line and nestwatchers were unable to consistently gather data on compliance. At the Woods Canyon BA, one nestwatcher was stationed at the trailhead to collect human activity data at the land-based closure, while 1-2 nestwatchers were stationed at the OP to observe the water-based

closure. Additional data on activities at the lake was collected via boat or kayak.

Nestwatchers documented all aspects of bald eagle behavior at their BA including: interactions with other wildlife; habitat use; forage events; type of prey species delivered and frequency of deliveries to the nest; incubation time; time attending the nest; and feeding frequency. In this report, we only describe human activity, foraging attempts, prey deliveries, habitat use, and site-specific management recommendations.

RESULTS AND DISCUSSION

The ABENWP monitored 17 breeding areas in 2010 including Bagley, Bartlett, Cliff, Doka, Goldfield-Kerr, Granite Reef, Ladders, Luna, Needle Rock, Orme, Pleasant, Rodeo, Saguaro, Sycamore, Tonto, Tower, and Woods Canyon. The final status of the monitored BAs was 7 failed, 10 successful, and 20 young fledged (Appendix C).

One team of nestwatchers divided monitoring time between the Bagley and Saguaro BAs. The Granite Reef BA was monitored opportunistically by nestwatchers at the Orme BA, and the Doka and Rodeo BAs by nestwatchers at the Sycamore BA. Therefore, data for these BAs (excepting Saguaro) are not included in the following section of this report.

Bartlett Breeding Area (Appendix E)

Observation Period. – February 19 to May 24. Total monitoring 60 days/632 hours.

Bald Eagle Identification. – The male was unbanded and in adult plumage (unknown origin). The female had a blue VID band on her left leg, USFWS band on the right leg, and was in adult plumage (unknown origin, but blue band indicative of an Arizona nestling).

Figure 2. Bartlett breeding area. Maricopa County, Arizona. Photo by K. McCarty.

Management Activities. – 1) The USFS enacted the seasonal BA closure.

Human Activity. – Nestwatchers recorded 46 human activities. Aircraft (helicopters and small planes) represented 80.4% (n=37), terrestrial activity of 5 types represented 17.4% (n=8), and watercraft (kayak) represented 2.2% (n=1). None of the activities elicited significant responses from the breeding pair.

Food Habits. – Nestwatchers observed 24 forage events. The male was successful in 83.3% (n=12), and the female was successful in 16.7% (n=12) of forage events. Fish accounted for 87.5% of these events, reptiles 8.3%, and mammals 4.2%. The breeding pair was observed delivering 79 prey items to the nest, of which the male delivered 77.2%, and the female 22.8%. Fish comprised 82.3% (n=65) of the deliveries, mammals 8.9% (n=7), reptiles 2.5% (n=2), birds

1.3% (n=1), and unknown prey types 5.1% (n=4). Of the 30 prey items further identified, 33.3% (n=10) were catfish (*Ictalurus* or *Pylodictis sp.*), 16.7% (n=5) each were bass (*Micropterus sp.*) and ground squirrels (unidentified species), 10.0% (n=3) were rainbow trout (*Oncorhynchus mykiss*), 6.7% (n=2) were black crappie (*Pomoxis nigromaculatus*), and 3.3% (n=1) each were Sonoran sucker (*Catostomus insignis*), woodrat (*Neotoma sp.*), double-crested cormorant (*Phalacrocorax auritus*), chuckwalla (*Sauromalus obesus*), and rattlesnake (unidentified species).

Habitat Use. – The Bartlett nestwatchers identified 25 separate habitat use areas, spanning a 3.0 km stretch of the Verde River ranging from rk 34.0 to 37.0. The bald eagle pair spent 67.3% of the observed time at rk 34.9, 29.9% at rk 35.0, and 2.8% at the remaining locations.

Cliff Breeding Area (Appendix F)
Observation Period. – February 5 to April 28. Total monitoring 61 days/540 hours.

Bald Eagle Identification. – The male was unbanded and in adult plumage (unknown origin). The female had a blue VID band "12/C" on her left leg, USFWS band on the right leg, and was in adult plumage (2001 Box Bar nestling).

Management Activities. – 1) The USFS enacted the seasonal BA closure. 2) The USFS maintained "Sensitive Species Area" signs around the nest area, as well as markers, posts, and natural barriers to prevent off-road traffic and to keep people on existing roads. 3) One female and two male nestlings were blue VID banded "25/R", "25/N", and "25/P", respectively, on May 3.

Figure 3. Cliff breeding area. Maricopa County, Arizona. Photo by K. McCarty.

Interventions. – On April 27, nestwatchers observed an intruding near-adult bald eagle attack a nestling in the nest, knocking it to the ground. We rescued the female nestling and after it received several days of care at Liberty Wildlife for minor injuries we fostered it to the Orme BA on May 4. On April 28, we retrieved the remaining two male nestlings from the nest due to the nestwatchers' observations of the continued absence of the resident adult female and additional attempted attacks by the intruding bald eagle on the nestlings. These two nestlings were fostered to the Needle Rock BA on May 3.

Human Activity. – Nestwatchers recorded 185 human activities during the monitoring period. Aircraft (helicopters, small planes, and military jets) accounted for 56.2%, terrestrial activities of 9 different types for 41.6%, and watercraft (canoes) for 2.2%. Three types of activities elicited 5 significant responses from the breeding pair. The bald eagles were restless in response to 2 helicopters, and flushed in response to 1 nestwatcher, 1 helicopter, and 1 AZGFD biologist.

Food Habits. – Nestwatchers observed 6 forage events. The male was successful in 60.0% (n=5), and the female in 100% (n=1) of forage events. Fish and mammals each accounted for

16.7% (n=1) and unknown prey for 66.7% (n=4) of these events. The breeding pair was observed delivering 98 prey items to the nest, of which the male delivered 80.6%, and the female 19.4%. Fish comprised 67.4% (n=66) of the deliveries, mammals 5.1% (n=5), birds and reptiles each for 1.0% (n=1), and unknown prey types 25.5% (n=25). Of the 6 prey items further identified, 50.0% (n=3) were bass, and 16.7% (n=1) each were common carp (*Cyprinus carpio*), catfish species, and rabbit (unidentified species).

Habitat Use. – The Cliff nestwatchers identified 24 separate habitat use areas, spanning a 6.1 km stretch of the Verde River ranging from rk 64.5 to 70.6. The bald eagle pair spent 33.2% of the observed time at rk 66.8, 27.8% at rk 67.0, 17.8% at rk 66.6, 5.8% at rk 66.7, 4.4% at rk 67.6, 4.1% at rk 67.1, and 6.9% at the remaining locations.

Goldfield-Kerr Breeding Area (Appendix G)
Observation Period. – February 5 to May 17. Total monitoring 44 days/418 hours.

Bald Eagle Identification. – The male was unbanded and in near-adult plumage (unknown origin). The female was unbanded and in adult plumage (unknown origin).

Management Activities. – 1) The USFS closed off vehicle access to the nest area. 2) The USFS posted wildlife breeding area signs along the river prohibiting entry. 3) On May 18, we climbed to the nest to retrieve the carcass of the 4-week old dead nestling.

Human Activity. – Nestwatchers recorded 9,144 human activities during the nesting period, with float tubers accounting for 95.5% (n=8,737). Out of the 407 remaining activities, other watercraft (canoes/kayaks, rafts, and Sheriff airboat) represented 82.6%, aircraft (helicopters and small planes) 14.5%, and terrestrial activity of 6 different types 2.9%. Seven types of activities elicited 12 significant responses from the breeding pair. The bald eagles flushed in response to 6 Sheriff airboat, and once each in response to canoe/kayak, helicopter, hiker, AZGFD biologist, nestwatcher, and police helicopter.

Figure 4. Goldfield-Kerr breeding area. Maricopa County, Arizona. Photo by K. McCarty.

Food Habits. – The nestwatchers observed 28 forage events. The male was successful in 58.3% (n=12), the female in 76.9% (n=13), and an unidentified adult in 100% (n=3) of forage events. Fish accounted for 64.3% of these events, mammals 3.6%, and unknown prey for 32.1%. The breeding pair was observed delivering 14 prey items to the nest. Fish comprised 71.4% of those items, birds and mammals 7.1% each, and unknown prey types 14.3%.

Habitat Use. – The Goldfield-Kerr nestwatchers identified 17 habitat use areas, spanning a 2.7 km stretch of the Salt River ranging from rk 8.7 to rk 11.4. The bald eagle pair spent 52.0% of the observed time at rk 10.2, 32.6% at rk 10.0, 6.6% at rk 10.1, 3.1% at rk 10.5, and 5.7% at the remaining locations.

Ladders Breeding Area (Appendix H)
Observation Period. – February 19 to March 15. Total monitoring 20 days/151 hours.

Bald Eagle Identification – The male had a blue VID band "9/W" on his right leg, USFWS band on the left leg, and was in adult plumage (1998 76 nestling). The female had a blue VID band on her right leg, USFWS band on the left leg, and was in adult plumage (unconfirmed origin, but blue band indicative of an Arizona nestling).

Management Activities. – 1) The USFS enacted the seasonal BA closure.

Human Activity. –The nestwatchers recorded 43 human activities. Watercraft (canoes/kayaks) accounted for 74.4%, aircraft (small planes and helicopters) 20.9%, and terrestrial activities of 1 type for 4.7%. Three types of activities elicited 4 significant responses from the breeding pair. The bald eagles flushed in response to 2 canoes/kayaks, 1 small plane, and 1 agency worker.

Figure 5. Ladders breeding area. Yavapai County, Arizona. Photo by K. McCarty.

Food Habits. – The nestwatchers observed 1 forage event, during which the female was successful but the prey type was not identified. The breeding pair was observed delivering 6 prey items to the nest, of which the male delivered 5 and the female 1. None of the prey items was identified to type or species.

Habitat Use. – The Ladders nestwatchers identified 19 separate habitat use areas. The bald eagle pair spent 42.6% of the observed time at rk 162.9, 17.3% at rk162.7, 15.1% at rk162.2, 14.8% at rk 162.8, and 10.2% at the remaining locations.

Luna Breeding Area (Appendix I)
Observation Period. – February 5 to July 29. Total monitoring 130 days/1,238 hours.

Bald Eagle Identification – The male had a black VID band "Δ/A" on his right leg, USFWS band on the left leg, and was in adult plumage (1988 Texas nestling). The female had a black VID band "Δ/B" on her right leg, USFWS band on the left leg, and was in adult plumage (unknown origin).

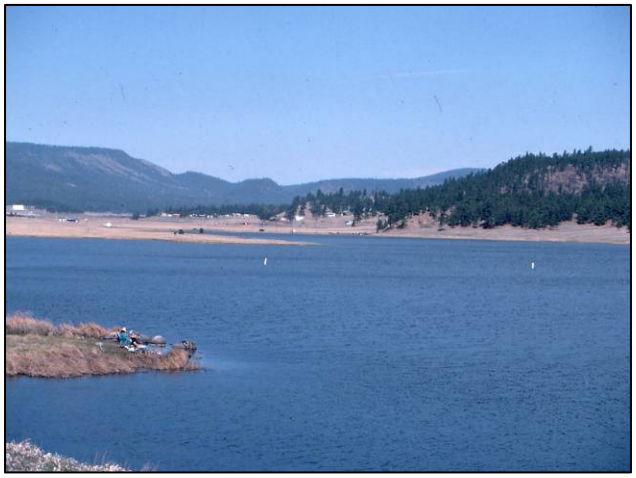


Figure 6. Luna breeding area. Apache County, Arizona. Photo by J. Driscoll.

Management Activities. – 1) The USFS enacted the seasonal BA closure. 2) Nestwatchers were stationed at the boat ramp to talk to fisherman launching boats. 3) One male nestling was blue VID banded "25/X" at 5 weeks of age on June 1. 4) One female eaglet (blue VID banded "25/Z") was fostered from the Silver Creek BA to the nest at 14 weeks of age on July 15.

Human Activity. – The nestwatchers recorded 1,027 human activities. Terrestrial activity of 13 different types accounted for 74.5%, water pursuits (boats, canoes/kayaks, float tubers, and swimmers) for 23.9%, and aircraft (helicopters and military jets) 1.7%. Four types of activities elicited 5 significant responses from the breeding pair. The bald eagles were restless in response to 1 military jet, flushed in response to 1 driver, ice fisherman, and military jet each, and left the area in response to 1 OHV.

Food Habits. – The nestwatchers observed 122 forage events. The male was successful in 89.8% (n=88) and the female was successful in 97.1% (n=34) of forage events. Fish accounted for 45.9% (n=56), birds 42.6% (n=52), carrion 10.7% (n=13), and reptiles 0.8% (n=1) of these events. The breeding pair was observed delivering 93 prey items to the nest, of which the male delivered 76.3% (n=71) and the female 23.7% (n=22). Birds and fish each comprised 47.3% (n=44) of the deliveries and carrion 5.4% (n=5). Of the 93 prey items further identified, 44.1% (n=41) were American coots (*Fulica americana*), 43.0% (n=40) were rainbow trout, 5.4% (n=5) were elk (*Cervus canadensis*) carrion, 4.3% (n=4) were cutthroat trout (*Oncorhynchus clarki*), 2.2% (n=2) were waterfowl (unidentified species), and 1.1% (n=1) were Canada goose (*Branta canadensis*) goslings.

Habitat Use. – The Luna nestwatchers identified 23 separate habitat use areas around Luna Lake. The bald eagle pair spent 60.9% of the observed time at lk 2.4, 12.7% at lk 2.7, 7.7% at lk 5.1, 5.3% at lk 2.6, 3.6% at lk 0.1, 2.5% at lk 3.5, and 7.3% at the remaining locations.

Needle Rock Breeding Area (Appendix J)
Observation Period. – February 6 to June 5. Total monitoring 93 days/865 hours.

Bald Eagle Identification. – The male had a blue VID band on the left leg, USFWS band on the right leg, and was in adult plumage (unknown origin, but blue band indicative of an Arizona nestling). The female had a USFWS band on her right leg, no band on the left leg, and was in adult plumage (unknown origin).

Management Activities. – 1) The USFS enacted the seasonal BA closure. 2) The owners of Rio Verde Ranch allowed ABENWP contractors to camp on their lawn. 3) ABENWP contractors were active in educating the public visiting the Needle Rock Recreation Area. 4) One female

nestling was blue VID banded "25/K" at 6 weeks of age on April 20. 5) Two male nestlings (blue VID banded "25/N" and "25/P") were fostered from the Cliff BA to the nest at 9 weeks of age on May 3.

Human Activity. – Nestwatchers recorded 40 human activities. Aircraft (helicopters and small planes) represented 80.0%, and terrestrial activities of 3 types 20.0%. Two types of activities elicited 4 significant responses from the breeding pair. The eagles were flushed in response to 1 nestwatcher, and left the area in response to 2 drivers and 1 nestwatcher.

Food Habits. – Nestwatchers observed 6 forage events. The male was successful in 100% (n=5) and the female in 100% (n=1) of forage events. Fish accounted for 33.3% (n=2), mammals 33.3% (n=2), and unknown prey types 33.3% (n=2) of these events. The breeding pair was observed delivering 118 prey items to the nest, of which the male delivered 53.4%, the female 40.7%, and an unidentified adult 5.9%. Fish comprised 3.4% (n=4) of the deliveries, mammals 1.7% (n=2), carrion 1.7% (n=2), reptiles 0.8% (n=1), and unknown prey types 92.4% (n=109). No prey items were identified to species.

Figure 7. Needle Rock breeding area. Maricopa County, Arizona. Photo by J. Driscoll.

Habitat Use. – The Needle Rock nestwatchers identified 124 separate habitat use areas along the Verde River, spanning a total of 5.1 km and ranging from rk 24.6 to 29.7. The bald eagle pair spent 31.9% of the observed time at rk 25.9, 16.0% at rk 25.4, 10.0% at rk 25.8, 8.9% at rk 25.7, 7.9% at rk 26.0, 5.2% at rk 25.6, and 20.1% at the remaining locations.

Orme Breeding Area (Appendix K)
Observation Period. – February 5 to May 15. Total monitoring 72 days/664 hours.

Bald Eagle Identification. – The male and female were unbanded and in adult plumage (unknown origins).

Management Activities. – 1) The SRPMIC continues to restrict non-tribal member use of the river area. 2) The SRPMIC police visited the ABENWP contractors each work cycle and patrolled the nesting area during times of elevated recreation use. 3) On April 6, two female nestlings were blue VID banded "25/A" and "25/B" at 5.5 weeks of age. 4) On May 4, one female nestling (blue VID banded "25/R") was fostered from the Cliff BA to the nest at 9 weeks of age. 5) On September 8, AGFD and SRPMIC treated the nest branch to eradicate a tick infestation.

Interventions. – On May 12, SRPMIC personnel found a nestling on the ground below the nest, and AGFD returned it to the nest the same day. Then, during three individual events between

May 14 and May 15, nestwatchers found each nestling in turn on the ground below the nest. All three birds were rescued and transferred to Liberty Wildlife for treatment. All of the nestlings died by May 18. Necropsy results indicated cause of death was from a tick infestation and/or West Nile Virus infection.

Human Activity – Nestwatchers recorded 1,201 human activities. Aircraft (helicopters, small planes, military jets, blimps) represented 59.0%, water activities of 6 different types 20.6% and terrestrial activities of 13 different types 20.5%. Five types of activities elicited 11 significant responses by the breeding pair. The bald eagles were restless in response to 2 hikers, 1 driver, and 1 agency worker. They flushed in response to 2 drivers, 2 nestwatchers, 1 hiker, and 1 boater, and they left the area in response to 1 boater.

Food Habits. – Nestwatchers observed 10 forage events. The male was successful in 20.0% (n=5) and the female in 60.0% (n=5). Fish accounted for 80.0% and unknown prey types 20.0% of these events. The breeding pair was observed delivering 26 prey items to the nest, of which the male delivered 57.7% and the female 42.3%. Fish comprised 53.8% (n=14) of these deliveries and unknown prey types 46.2% (n=12). Of the 4 prey items further identified, 50.0% (n=2) were common carp, and 50.0% (n=2) were rainbow trout.

Figure 8. Orme breeding area. Maricopa County, Arizona. Photo by J. Driscoll

Habitat Use. – The Orme nestwatchers identified 44 separate habitat use areas along the Verde and Salt Rivers, spanning a total of 3.3 km ranging from rk 0.3 to 1.0 on the Verde River and rk 4.9 to 7.5 on the Salt River. The bald eagle pair spent 59.8% of the observed time at rk 0.5 (Verde River), 31.9% at rk 0.6 (Verde River), and 8.3% at the remaining locations.

Pleasant Breeding Area (Appendix L)
Observation Period. – February 5 to May 9. Total monitoring 70 days/645 hours.

Bald Eagle Identification. – The male had a blue VID band "W" on his left leg, USFWS band on the right leg, and was in adult plumage (1987 Horse Mesa nestling). The female was unbanded and in adult plumage (unknown origin).

Management Activities. – 1) MCPRD enacted the seasonal closure. 2) MCPRD marked closure boundaries with buoys, flags, and signs. 3) Nestwatchers were supplied a boat by AGFD and educated recreationists about the closure and bald eagles. 4) Two female nestlings were banded with blue VID bands "24/P" and "24/R" at 5.5 weeks old on March 18.

Human Activity. – Nestwatchers recorded 410 human activities. Aircraft of 7 different types represented 87.8%, water pursuits (boaters, jet skis, water skiers) 8.5%, and terrestrial activity of

3 different types 3.9%. One type of activity elicited 2 significant responses by the breeding pair. The bald eagles flushed in response to 2 nestwatchers. Due to the location of the nest this year, the nestwatchers were out of view of the buoy line and were unable to gather data on compliance with the closure.

Food Habits. – Nestwatchers observed 7 forage events. The male was successful in 75.0% (n=4), the female in 50.0% (n=2), and an unidentified adult in 100% (n=1) of forage events. Fish accounted for 85.7%, and unknown prey types 14.3%, of these events. The breeding pair was observed delivering 57 prey items to the nest, of which the male delivered 61.4%, the female 36.8%, and an unidentified adult 1.8%. Fish comprised 68.4% (n=39) of the deliveries, birds 7.0% (n=4), mammals 1.8% (n=1), and unknown prey types 22.8% (n=13). Of the 16 prey items further identified, 56.3% (n=9) were largemouth bass (*Micropterus salmoides*), 25.0% (n=4) were white bass (*Morone chrysops*), and 18.8% (n=3) were American coots.

Figure 9. Pleasant breeding area. Maricopa County, Arizona. Photo by J. Driscoll.

Habitat Use. – The Pleasant nestwatchers identified 78 separate habitat use areas along the Agua Fria arm of Lake Pleasant, spanning a total of 8.8 km and ranging from rk 69.1 to 77.9. The bald eagle pair spent 78.8% of the observed time at rk 73.3, 14.8% at rk 73.4, and 6.4% at the remaining locations.

Saguaro Breeding Area (Appendix M)

Observation Period. – February 19 to May 23. Total monitoring 71 days/581 hours. Nestwatchers divided their monitoring time between the Saguaro (75%) and Bagley (25%) BAs.

Bald Eagle Identification. – The male was blue VID banded "6/D"on his left leg, USFWS banded on the right leg, and in adult plumage (1995 Lake Pleasant nestling). The female was unbanded and in adult plumage (unknown origin).

Management Activities. – 1) Nestwatchers were supplied a boat by AGFD and educated recreationists about the bald eagles.

Figure 10. Saguaro breeding area. Maricopa County, Arizona Photo by K. McCarty.

Human Activity. – Nestwatchers recorded 5,336 human activities. Water activities of 5 types accounted for 99.3%, aircraft (helicopters, small planes, and military aircraft) 0.6%, and terrestrial activities (AGFD researchers) 0.1%. Three types of activities elicited 13 significant responses from the breeding pair. The bald eagles were restless in response to 1 helicopter and 1 AGFD researcher, and flushed in response to 11 boats.

Food Habits. – The nestwatchers observed 30 forage events. The male was successful in 100% (n=4) and the female in 65.4% (n=26) of events. Fish accounted for 90.0% (n=27), mammals 6.7% (n=2), and unknown prey types 3.3% (n=1) of these forage events. The breeding pair was observed delivering 71 prey items to the nest, of which the female delivered 91.5% and the male 8.5%. Fish comprised 81.7% (n=58) of the deliveries, mammals 12.7% (n=9), birds 4.2% (n=3), and unknown prey types 1.4% (n=1). Of the 47 prey items further identified, 48.9% (n=23) were smallmouth bass (*Micropterus dolomieu*), 14.9% (n=7) each were largemouth bass and ground squirrels (unidentified species), 12.8% (n=6) were channel catfish (*Ictalurus punctatus*), 4.2% (n=2) were American coots, and 2.1% (n=1) each were black crappie and rock squirrel (*Spermophilus variegatus*).

Habitat use. – The Saguaro nestwatchers identified 42 separate habitat use areas along Saguaro Lake, spanning 6.5 km of the Salt River and ranging from rk 28.7 to 35.2. The bald eagle pair spent 35.7% of the observed time at rk 31.5, 16.4% at rk 32.2, 14.3% at rk 32.0, 10.8% at rk 31.9, 8.2% at rk 31.8, 4.1% at rk 31.7, and 10.5% at the remaining locations.

Sycamore Breeding Area (Appendix N)
Observation Period. – February 19 to May 6. Total monitoring 54 days/495 hours.

Bald Eagle Identification. – The male was blue VID banded on his left leg, USFWS banded on the right leg, and in adult plumage (unknown origin, but blue band indicative of an Arizona nestling). The female was unbanded and in adult plumage (unknown origin).

Management Activities. – 1) The FMYN continues to restrict non-tribal member use of the river area. 2) Nestwatchers, Fort McDowell Adventures, Green Zebra Tomcar tours, and community members worked collaboratively to ensure protection of eagles and promote outreach opportunities.

Figure 11. Sycamore breeding area. Maricopa County, Arizona. Photo by Arizona Game & Fish Department.

Human Activity. – Nestwatchers recorded 135 human activities during the monitoring period. Aircraft (helicopters, small planes, and military jets) accounted for 51.1%, terrestrial activities of 7 different types for 48.1%, and water pursuits (swimmer) for 0.7%. Four types of activities elicited 4 significant responses from the breeding pair. The bald eagles were restless in response

to 1 horseback rider, flushed in response to 1 OHV and 1 hiker, and left the area in response to 1 helicopter.

Food Habits. – Nestwatchers observed 5 forage events. The male was successful in 100% (n=3), and the female in 50% (n=2) of forage events. Fish accounted for 40% (n=2), and mammals, carrion, and unknown prey each for 20% (n=1) of these events. The breeding pair was observed delivering 51 prey items to the nest, of which the male delivered 58.8%, and the female 41.2%. Fish comprised 68.6% (n=35) of the deliveries, mammals and carrion each for 5.9% (n=3), and unknown prey types 19.6% (n=10).

Habitat Use. – The Sycamore nestwatchers identified 15 separate habitat use areas on the Verde River and Sycamore Creek, spanning a 5.5 km stretch of the Verde River (ranging from rk 6.8 to 12.3) and a 0.5 km stretch of Sycamore Creek (rk 0.4 to 0.9). The bald eagle pair spent 90.6% of the observed time at rk 10.4, 2.6% at rk 10.2, 2.0% at rk 9.4, and 4.8% at the remaining locations.

Tonto Breeding Area (Appendix O)
Observation Period. – February 5 to May 25. Total monitoring 84 days/600 hours.

Bald Eagle Identification. – The male was blue VID banded "14/E" on his left leg, USFWS banded on the right leg, and in adult plumage (2002 Talkalai nestling). The female was blue VID banded "G" on her left leg, USFWS banded on the right leg, and in adult plumage (1987 Horseshoe nestling).

Management Activities. – 1) Part of the Indian Point campground remained closed throughout the breeding season. 2) The Southwestern Willow Flycatcher Closure limited recreational activities in the area. 3) The USFS enacted the seasonal bald eagle closure. 4) AGFD maintained a buoy line around the nest area. 4) Nestwatchers were supplied a boat by AGFD and educated recreationists about the closure and bald eagles.

Figure 12. Tonto breeding area. Gila County, Arizona. Photo by J. Driscoll.

Human Activity. – Nestwatchers recorded 991 human activities. Watercraft (boats, canoes/kayaks, and jet skis) represented 93.4%, terrestrial activities of 5 different types 5.8%, and aircraft (ultralights, helicopters and small planes) 0.8%. One type of activity elicited 2 significant responses from the breeding pair. The bald eagles flushed in response to 2 fishing boats. Nestwatchers observed 226 watercraft approaching the buoy closure, and 10.6% (n=24) did not comply. In addition, 82.3% (186) of these watercraft were present during weekends.

Food Habits. – The nestwatchers observed 25 forage events. The male was successful in 100% (n=16), the female in 85.7% (n=7), an unknown adult in 100% (n=1), and both adults together in

100% (n=1) of events. Fish accounted for 100% (n=30) of forage types. The breeding pair was observed delivering 51 prey items to the nest, of which the male delivered 70.6% and the female 29.4%. Fish comprised 96.1% (n=49) of delivered items, and mammals 3.9% (n=2). Of the 25 prey items further identified, 60.0% (n=15) were largemouth bass, 20.0% (n=5) were smallmouth bass, 8.0% (n=2) were black crappie, and 4.0% (n=1) each were common carp, jackrabbit (*Lepus sp.*), and desert cottontail (*Sylvilagus audubonii*).

Habitat use. – The Tonto nestwatchers identified 19 separate habitat use areas along Tonto Creek, spanning 7.4 km and ranging from rk 10.0 to 17.4. The bald eagle pair spent 82.8% of the observed time at rk 16.9, 5.1% at rk 17.1, 4.9% at rk 16.1, 3.8% at rk 16.5, and 3.4% at the remaining locations.

Woods Canyon Breeding Area (Appendix P)
Observation Period. – May 7-August 1. Total monitoring 80 days/540 hours.

Bald Eagle Identification. – Both resident eagles were unbanded and in adult plumage (unknown origins).

Management Activities. – 1) The Black Mesa Ranger District established a closure around the nest area, placed closure signs, fencing, and barriers, and re-routed the lake trail around the nest. 2) AGFD established a water closure around the nest site. 3) Nestwatchers were supplied a kayak and electric-motored boat by AGFD and educated recreationists about the closure, bald eagles, and the disposal of fishing line. 4) Three nestwatchers monitored the site to provide daily coverage.

Figure 13. Woods Canyon breeding area. Coconino County, Arizona. Photo by K. McCarty.

Human Activity. – Nestwatchers recorded 4,758 human activities. Terrestrial activities (hikers and anglers) accounted for 72.5%, water pursuits (boats, canoes/kayaks, and tubers/rafters) for 27.3%, and aircraft (helicopters, small planes) 0.2%. None of the activities elicited any significant responses from the breeding pair. Of 1,301 watercraft observed approaching the buoy closure, 1.0% (n=13) did not comply. Nestwatchers stationed at the trailhead closure recorded 3,400 hikers and anglers, of which 0.4% (n=14) did not comply.

Food Habits. – The nestwatchers observed 45 forage events. The male was successful in 92.9% (n=28), the female in 72.7% (n=11), and an unknown adult in 66.7% (n=6) of events. Fish accounted for 97.8% and carrion for 2.2% of forages. The breeding pair was observed delivering 133 prey items to the nest, of which the male delivered 56.4%, the female 33.1%, and an unidentified adult 10.5%. Fish comprised 100% (n=133) of delivered items, all of which were further identified as rainbow trout.

Habitat Use. – The Woods Canyon nestwatchers identified 71 separate habitat use areas around the lake. The bald eagle pair spent 12.7% of the observed time at lk 3.7, 8.4% at lk 1.1, 8.4% at lk 1.0, 6.3% at lk 4.8, 6.0% at lk 5.0, 5.9% at lk 3.4, 5.2% at lk 1.8, and 47.1% at the remaining locations.

MANAGEMENT CONSIDERATIONS

Management considerations included below are summarized directly from the individual nestwatch reports and therefore are not 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 at SWBEMC meetings.

Bartlett

1. Ensure that posted closure signs are in working order before the nesting season begins.
2. Erect a barrier at river kilometer 34.5 to prevent vehicles from crossing the river and entering the closure.

Cliff Breeding Area

1. Post closure signs along FS Road 205 where it borders the closure, at the main access point to the area from the road (marked on the map in the nestwatch report).
2. Band eagles from different nests with different colors of bands in order to make identification easier and add more insight to eagle activity and distribution, for example when non-resident birds intrude in the breeding area.

Goldfield-Kerr

1. Continue to implement the closure order. The north side of the river near the nest tree is especially important for the eagles as a refuge from human activity.
2. Consider placing signs along the area near the nest informing boaters that there is no stopping or disembarking allowed in the area. Salt River Tubing used canoes to cross the river and place signs marking their take-out spot near the nest. Perhaps they would be willing to place signs informing boaters of the closure as well.
3. Replace the small, outdated information sign near the restrooms at the Goldfield parking area with a larger, more noticeable, better-placed closure sign to inform the public about the sensitivity of the species and suggest appropriate behavior for the area.
4. Continue to work with the Maricopa County Sheriff's office to reduce airboat disturbances to the eagles and unnecessary use of the airboat in the breeding area (e.g., when not involved in rescue operations), in order to reduce the number of flushed responses from the birds.
5. Delay the start of the tubing season if the Goldfield pair nests late again, or have the Forest Service restrict the number of tubers. The reduced human activity could benefit the eagles in a late-nesting situation by allowing the eagles more hunting opportunities and reducing stress on the young chick.

Luna Breeding Area

1. Continue the Nestwatch program at the Luna BA.
2. Maintain closure boundaries, including Group Campsite A, as they currently exist.

3. Consider establishing islands by cutting off ends of peninsulas to benefit breeding waterfowl.
4. Install support for the nest as soon as possible.

Needle Rock Breeding Area

1. Place larger 'motor vehicle restriction' signs to prevent OHVs from knocking them down and driving out to the observation point.
2. Place larger 'Eagle Nest Watching Program' educational and restriction signs along the river with clearer language.

Orme Breeding Area

1. Treat the nest with a safe insecticide a couple of times during the season the prevent the tick infestation.
2. Consider closing the southern half of the Pole 4 road that runs toward the confluence (we found that the eagles were generally not bothered by people traveling or fishing on the northern part of the Pole 4 road along the river).
3. Inform the staff at the water plant about the eagle nest and that it should be avoided.

Pleasant Breeding Area

1. Continue the management of the Agua Fria Conservation area as a walk-in only closure during the time the bald eagle closure is in effect. Once the closure was properly signed, the number of people in the area upstream of the nest was low enough to have no noticeable effect on the foraging behaviors of the RAs.
2. Continue to place "No Wake" buoys at river km 71.5, as it slows boats and helps nestwatchers respond to closure violators.
3. Continue to place a secondary buoy line in the small cove/branch of the Agua Fria River near the observation point and nestwatcher camp to end confusion fishermen are having with the boundaries of the closure.
4. Notify law enforcement about the nestwatchers' off days and the possible tendency for larger boats to access the upper Agua Fria arm through the closure during these times (larger boats unable to access from Table Mesa Road).

Saguaro Breeding Area

None.

Sycamore Breeding Area

1. Inform future nestwatchers about the numerous educational opportunities available through collaboration with Fort McDowell Adventures, Green Zebra Tomcars, the FMYN school and library, and the Asah gweh oou-o Eagle View RV Resort.
2. Consider formal or informal fundraising requests to grateful education recipients if appropriate, e.g. an ABENWP 'tip jar.'
3. Continued use of nestwatchers would be helpful for deterrence of OHVs particularly when water levels are low and the nest area is more accessible from Forest Service land via Sycamore Creek. Placing signs may be advisable if OHV traffic becomes a problem.

Tonto Breeding Area

1. Post information about the bald eagles and sensitive habitat (to reduce OHV impact) at the Indian Point boat ramp and other launch sites and include information on use restrictions. With the opening of the Indian Point campgrounds and the increased use of primitive camping adjacent to the wildlife closure, large groups of OHVs have been accessing and creating new roadways throughout the area.
2. Add "No Wake" buoy lines at the drowned willow thickets and along the main channel of the inflow to reduce impact of wakes to nesting waterbirds caused by jet-skis and high-speed boats.
3. Install additional signs on the land closure at the southern fence line from the lake to the main road. The path from the fence/gate to the observation point is very obvious and people wander into the observation area with no knowledge of the closure limits.
4. Maintain the closure buoys surrounding the nest tree, and add additional buoys behind the drowned vegetation to the backside of the nest where openings have been created by fishing boats. In addition, snowy egrets and black-crowned night herons have relocated rookeries in this area just behind the nest.
5. Continue dawn to dusk observations from both the observation point and boat, especially during weekends and holidays as most violations occurred during these times.

Woods Canyon Breeding Area

1. Consider additional marketing for monofilament removal and preparing people for packing trash out. Monofilament bins were often full and camp hosts and maintenance personnel requested nestwatchers to empty bins at Woods Canyon, Willow Springs an Black Canyon lakes as they were not emptied all season.
2. Continue to use fencing at the Lake Trail trailhead from lake shore up the hill to the forest road.
3. Fencing, where the bypass trail around the closure returns to the lake, should run from lake shore to the top of the steps in that area.
4. Place red, metal 'sensitive species' stop signs near the shoreline on posts.
5. Place a concentration of the red 'sensitive species' signs where the fence lines end, as these are problem areas were people often believe the closure ends at these areas.
6. Place more red 'sensitive species' signs around the perimeter of the closure within sight of each other for individuals that approach the closure from odd angles off trail.
7. Place red 'sensitive species' signs on barriers at entrances to closed trails leading through the closure.
8. Place a red 'sensitive species' sign, with self supporting base, on the Rocky Point flat rock area to deter boaters from landing in the closure to fish; buoys are often ignored at this favorite fishing spot.
9. Continue to use the large plasticized maps on all barriers and the smaller map at the picnic area pay station, which are useful to notify the public about the location and length of the closure bypass trail and the closed shoreline.
10. All plasticized paper signs and maps should have a wide enough border to staple to the substrate without puncturing the paper. Rain soaks into the paper and damages the sign to the point were it is often hard to read.

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APPENDIX A: 2010 ARIZONA BALD EAGLE WINTER COUNT RESULTS

Table 9. 2010 Arizona bald eagle winter count volunteer survey results.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
Apache County						
1	Becker Lake	10	2	0	0	0
2	Little Colorado River (LCR)	20	0	0	0	0
3	S. Fork LCR – Campground	20	1	2	0	0
4	Casa Malapais – LCR	10	0	0	0	0
5	Greer Lakes (River, Bunch, and Tunnel Reservoirs)	210	1	0	0	0
6	Sponseller Lake	30	1	0	0	0
7	Mexican Hay Lake	Not surveyed.				
8	White Mountain Hereford Ranch (Trinity, Glen Livet, McKay reservoirs)	60	9	1	0	0
9	The Ranch Lake	20	2	0	0	0
10	Ortega Lake	30	0	0	0	0
11	Concho Lake	40	0	0	0	0
12	Luna Lake	100	2	0	0	0
13	Nelson Reservoir	240	0	0	0	0
14	Nutrioso Reservoir	70	0	0	0	0
16	San Francisco River (Luna Lake to New Mexico line)	Not surveyed.				
Total		**860**	**18**	**3**	**0**	**0**
Cochise County						
18	Parker Canyon Lake	100	2	0	0	0
19	Willcox Playa	150	2	0	0	0
Total		**250**	**4**	**0**	**0**	**0**
Coconino County						
21	Long Lake Complex	225	1	0	0	0
22	Stoneman Lake	205	2	5	0	0
23	FH-3	50	2	0	0	0
24	I-17, Section to Flagstaff	220	6	6	1	2
25	Bellemont	230	0	0	0	0
26	Townsend/Winona A/B	518	4	1	0	0
27	HWY 89 North /Sunset Crater – Wupatki	330	1	0	0	0
28	FH-3 Lakes (Mary, Mormon, Marshall, Prime, etc.)	450	2	1	0	0
29	Continental Country Club Lakes	120	0	0	0	0
30	Chevelon Canyon Lake	240	3	0	0	0
32	Spring Valley Wash	20	0	1	0	0
33	Red Lake Valley	25	1	0	0	0
34	Kaibab Lake	45	0	0	0	5
35	Pittman Valley	54	1	0	0	0
36	Davenport Lake	3	0	0	0	0
37	Scholz Lake	120	1	0	0	0
38	Cataract Lake	30	0	0	0	0
39	Willow Springs Lake	145	0	0	0	0
40	West Chevelon Canyon	83	0	0	0	0
41	Willow Creek	Not surveyed.				

Table 9 continued.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
42	White Horse Lake – Pomeroy Tanks	45	2	0	0	0
43	JD Dam Lake	45	0	0	0	0
45	Steel/Stone Road	180	0	0	0	0
48	Blue Stem Wash-Babbit property	20	0	0	0	0
49	Glen Canyon Nat'l Rec. Area (Lake Powell to Lee's Ferry)	80	4	0	0	0
118	Bill Williams Loop Road	135	0	0	0	0
119	Johnson Canyon	70	0	0	0	0
120	Highway 64 east	40	0	0	0	0
121	Highway 64	80	0	0	0	0
122	Camp Navajo	Not surveyed.				
123	Partridge Creek	170	0	0	0	0
124	Odell Lake	40	0	0	0	0
125	Highway 87 north	176	0	1	0	0
126	Highway 180	225	0	0	0	0
Total		**4449**	**30**	**15**	**1**	**7**
Graham County						
51	Point of Pines Lake area	Not surveyed.				
Mohave County						
57	Alamo Lake	160	4	0	0	0
Total		**160**	**4**	**0**	**0**	**0**
Navajo County						
58	Lake of the Woods	25	0	0	0	0
59	Rainbow Lake	90	0	0	0	0
61	Whipple Lake	20	0	0	0	0
62	Long Lake	20	0	0	0	0
63	Lone Pine Dam	60	0	0	0	0
64	Schoens Reservoir	60	0	0	0	0
65	White Mountain Lake	90	2	0	0	0
67	Jacques Marsh	60	2	1	0	0
68	Scott's Reservoir	30	1	1	0	0
69	Show Low Lake	180	0	1	1	1
70	Pintail Lake	30	0	0	0	0
71	Telephone Lake	20	0	0	0	0
72	Fool Hollow Lake	115[1]	0	3	0	1
75	Cottonwood Wash/ Clay Springs	55	0	0	0	0
76	White Lake	10	0	0	0	0
127	Mortenson Wash	105	0	0	0	0
Total		**970**	**5**	**6**	**1**	**2**
Santa Cruz County						
82	Pena Blanca Lake	60	0	0	0	0
Total		**60**	**0**	**0**	**0**	**0**
Yavapai County						
83	Wet Beaver Creek	555	1	0	0	0
84	Oak Creek	510	1	0	0	0
85	Willow Lake	240	1	0	0	0
86	Lynx Lake	240	2	0	0	0

[1]Time was averaged from previous years (1992-2009).

Table 9 continued.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
87	Watson Lake	240	2	2	0	0
88	Goldwater Lake	240	2	4	1	0
Total		**2025**	**9**	**6**	**1**	**0**
Yuma and La Paz Counties						
89	Imperial N.W.R. Cibola/Martinez Lake – Colorado River	90	1	0	0	0
Total		**90**	**1**	**0**	**0**	**0**

Table 10. 2010 Arizona bald eagle winter count helicopter survey results.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
90	Verde River	170	24	9	0	0
91	Lower East Verde River	11	1	1	0	0
92	Lower West Clear Creek	21	0	1	0	0
93	Lower Salt River	128	9	23	0	0
94	Upper Salt River	70	8	1	0	0
95	Lower Tonto Creek	21	2	0	0	0
97	Lower Canyon Creek	10	1	1	0	0
98	Lower Cibecue Creek	12	0	0	0	0
100	White River	18	2	1	0	0
101	North Fork White River	35	4	1	0	0
102	Lower Black River	47	22	8	0	0
103	Big and Little Bonito Creeks	26	1	0	0	0
104	San Carlos River–Talkalai Lake	18	3	1	0	0
105	San Carlos Reservoir	23	0	2	0	0
106	Upper and Lower Gila River	62	2	2	0	0
107	Eagle Creek	38	4	0	0	0
108	Bonita Creek	14	0	0	0	0
109	Lower San Francisco River	37	0	0	0	0
110	Blue River	13	0	0	0	0
111	Sunrise Lake	2	0	0	0	0
112	Big Lake	1	0	0	0	0
114	Crescent Lake	3	2	0	0	0
115	Lake Pleasant	30	2	0	0	0
116	Del Rio Ponds	1	0	0	0	0
117	Tres Rios	23	2	0	0	0
Total		**834**	**89**	**51**	**0**	**0**

Table 11. 2010 Arizona bald eagle winter count non-standardized survey route results.

Route Name	County	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
Hwy. 87 South (991)	Coconino	81	1	0	0	0
Rain Tank Wash	Coconino	93	0	0	0	0
Hwy 87 to Cragin Dam (977)	Coconino	180	0	0	0	0
Coconino National Forest	Yavapai	255	0	0	0	0
Total		**609**	**1**	**0**	**0**	**0**

APPENDIX B: RAPTOR REPRODUCTIVE STATUS CRITERIA

Breeding Area (BA): An area containing 1 or more nests within the range of 1 mated pair of birds. Operationally, once a BA is established, we consider it a BA whether it is occupied by bald eagles in a given year or not, until or unless it is designated historical.

Occupied BA/Nest: An occupied BA must have an occupied nest, which is any nest, where at least 1 of the following activity patterns was observed during the breeding season:

a. Young were raised.
b. Eggs were laid.
c. One adult sitting low in the nest, presumably incubating.
d. Two adults present on or near the nest.
e. One adult and 1 bird in immature plumage at or near a nest, if mating behavior was observed (display flight, nest repair, coition).
f. A recently repaired nest with fresh sticks, or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath.

Active Nest: One in which eggs have been laid. Activity patterns (a), (b), and (c) above are diagnostic of an active nest.

Unoccupied BA/Nest: A nest or group of alternate nests at which none of the activity patterns diagnostic of an occupied nest were observed in a given breeding season. BAs must exist as occupied before they can be recognized and classified as unoccupied.

Successful BA/Nest: An occupied nest from which at least 1 young fledged during the breeding season under consideration. Nests were successful if at least 1 young was raised past 8 weeks of development.

Failed BA/Nest: An occupied nest from which no young fledged regardless of cause.

Historical BA: A BA that has remained unoccupied for 10 consecutive years. This term also applies to BAs identified before the 1970s and have been unoccupied since the beginning of annual monitoring.

Reoccupied Historical BA: A Historical BA, which shows signs indicative of being active.

Pioneer Effort: The occupancy of a new nest, in previously undocumented breeding habitat, where there is no evidence of prior activity. These occur in areas monitored by the ORA flights before discovery due to: 1) the presence of a large nest built by another or unknown species, or 2) the observed suitability of the habitat.

Existing Status: A BA that shows signs of prior occupancy (e.g. multiple large nests) and/or signs of prior activity (e.g. prey remains below an existing nest) upon discovery.

APPENDIX C: 2010 ARIZONA BALD EAGLE PRODUCTIVITY

Table 12. Arizona bald eagle breeding area productivity summary, 2010 (continued next page).

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs	Hatch Date	Young[3]	Fledged	Fledge Date
Alamo	F	4	<1/12	1+	Failed 3/19.			
Bagley*	S	1	<1/5	2+	1/28-2/9	2	2	4/26-4/30
Bartlett*	F	2	2/1-2/13	1+	3/5-3/14	1	Failed 5/23.	
Beaver	S	1	<1/4	2+	2/1-3/19	2	2	4/16-5/5
Becker	U							
Blue Point	U							
Box Bar	O							
Bulldog	S	2	<1/5	2+	1/28-3/11	2	2	4/19-5/7
Burro	U							
Canyon	U							
Canyon de Chelly	S	2	<4/30	2+	<4/30	2	2	>6/29
Cedar Basin	U							
Cibecue	F	2	1/28-3/17	1+	3/17-4/19	1	Failed 6/10.	
Cliff*	F	6	1/14-2/1	3	2/26	3	Failed 4/28.	
	All 3 nestlings were recovered. Two were fostered to Needle Rock, one was fostered to Orme.							
Coldwater	F	3	2/1-3/19	1+	3/19-4/16	1	Failed 6/4.	
Coolidge	S	4	1/28-3/17	1+	3/17-4/19	1	1	>5/28
Crescent	F	1	3/17-4/19	1+	Failed 5/28.			
Doka*	S	5	1/4-2/1	2+	2/1-2/16	2	2	5/10-5/15
Dupont	U							
East Verde	F	6	1/4-2/1	1+	Failed 3/19.			
Fish Creek	S	1	1/5-1/28	2+	1/28-3/17	2	2	5/7-5/28
Fort McDowell	O							
Goldfield-Kerr*	F	2	3/1-3/16	1+	4/14	1	Failed 5/16.	
Granite Basin	U							
Granite Reef*	F	2	1/5-1/26	1+	2/1-3/19	1	Failed 4/13.	
Greer Lakes	U							
Horse Mesa	F	5	<3/17	1+	<3/17	1	Failed 5/7.	
Horseshoe (1st)	F	11	1/4-2/1	1+	Failed 2/1-3/19.			
Horseshoe (2nd)	F	11	2/1-3/19	1+	Failed 5/5.			
Ive's Wash	S	4	1/12-2/1	3	2/1-3/19	3	3	4/5-5/7, >5/7
Ladders*	F	3	1/25-2/1	2+	3/5-3/14	2	Failed 3/15.	
Lone Pine	S	5	1/28-3/17	1+	3/17-4/19	1	1	>5/28
Lower Lake Mary	F	2	4/24	1+	5/30	1	Failed 6/7.	
Luna* (1st)	F	1	<2/5	1+	Failed 2/19			
Luna* (2nd)	S	1	3/14	1+	4/19	1 + 1FS	2	7/13, 7/15
	Fostered 1 nestling from Silver Creek BA on July 15.							
Lynx	S	3	1/4-2/1	1+	2/23	1	1	5/23-5/24
Needle Rock*	S	2	1/13-2/1	1+	3/6	1 + 2FS	3	5/16-5/17
	Fostered 2 nestlings from Cliff BA on May 3.							
Oak Creek	S	4	1/4-1/13	1+	2/1-3/16	1	1	5/5-5/16

[1]Breeding area status codes (Postupalsky 1974): U=unoccupied, O=occupied, S=successful, F=failed.

[2]Nest numbers are from Hunt and others 1992; Driscoll and Beatty 1994; Driscoll and others 1992,1995a, 1995b, 1997, 1998, 1999; Jacobson and others 2004, 2005, 2006, 2007; Koloszar and Driscoll 2001a, 2001b; Koloszar and others 2002; Canaca and others 2004; McCarty and Jacobson 2008, 2009.

[3]FS=foster nestling

*Nests monitored by the Arizona Bald Eagle Nestwatch Program.

Table 12 continued.

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs	Hatch Date	Young[3]	Fledged	Fledge Date
Orme*	F	6	1/4-1/26	2+	2/20	2 + 1FS	Failed 5/15.	
	Fostered 1 nestling from Cliff BA on May 4. All 3 were rescued from ground 5/14-5/15 and died in rehabilitation.							
Pee Posh Wetlands	S	1	12/24-1/4	1+	2/1-2/24	1	1	4/28-5/4
Perkinsville	S	4	2/1-3/19	1+	3/19-4/16	1	1	>6/4
Pinal	S	3	<1/5	1+	1/28-3/17	1	1	4/19-5/7
Pinto	F	7	12/14-1/5	1+	Failed 2/5.			
Pleasant*	S	3	<1/4	2+	2/1-2/5	2	2	5/2, 5/6
Redmond	F	5	1/5-1/28	1+	Failed 3/17.			
Riverside	S	1	1/10-1/20	1+	2/11-3/2	1	1	4/16-5/9
Rock Creek	U							
Rodeo*	S	3	1/4-2/1	2+	2/1-2/16	2	2	5/14-5/16
Saguaro*	S	1	1/5-1/28	2+	2/25	2	2	5/16, 5/23
San Carlos	O							
76	F	4	1/28-3/17	1+	1/28-3/17	1	Failed 5/28.	
	Nestling was found dead under nest on 6/2.							
Sheep	S	5	1/5-1/20	1+	1/28-3/17	1	1	4/19-5/7
Silver Creek	S	1	<5/25	2+	<5/25	2	1	>5/25
	One nestling injured in fall from nest; taken to rehabilitation 5/24, fostered to Luna 7/15.							
Suicide	F	1	1/5-1/28	1+	Failed 3/17.			
Sullivan Lake	S	2	2/1-3/19	1+	3/17-3/29	1	1	6/8
Sycamore*	S	5	<1/4	1+	2/1-2/17	1	1	5/1
Table Mountain	F	4	2/1-3/19	1+	Failed 4/16.			
Talkalai	F	7	1/5-1/17	1+	Failed 3/17.			
Tapco	U							
Tonto*	S	2	1/20-1/26	2+	3/1-3/5	2	2	5/14-5/22
Tortilla Creek	S	1	<1/13	2+	2/1-3/15	2	2	4/19-5/7
Tower*	O							
Woods Canyon*	S	3	<5/6	2+	<5/6	2	2	7/14, 7/15
Yellow Cliffs	F	1	2/1-3/19	1+	Failed 5/28.			

[1]Breeding area status codes (Postupalsky 1974): U=unoccupied, O=occupied, S=successful, F=failed.

[2]Nest numbers are from Hunt and others 1992; Driscoll and Beatty 1994; Driscoll and others 1992,1995a, 1995b, 1997, 1998, 1999; Jacobson and others 2004, 2005, 2006, 2007; Koloszar and Driscoll 2001a, 2001b; Koloszar and others 2002; Canaca and others 2004; McCarty and Jacobson 2008, 2009.

[3]FS=foster nestling

*Nests monitored by the Arizona Bald Eagle Nestwatch Program.

APPENDIX D: NEST SURVEY RESULTS

Table 13. Results of the 2010 winter count, ORA, and nest survey flights.

Location	Time	Comments
January 4, 2010		
Orme	0816	One adult standing in nest #6.
Rodeo	0817	One adult standing in nest #3. Second adult perched in area.
Sycamore	0823	One adult incubating in new snag nest #5. Second adult in area.
Doka	0826	All known nests empty. Two adults perched in area.
Fort McDowell	0827	All known nests empty. One adult perched in area.
Box Bar	0836	All known nests empty. No bald eagles.
Needle Rock	0837	All known nests empty. No bald eagles.
Bartlett	0836	All known nests empty. No bald eagles.
Yellow Cliffs	0849	All known nests empty. Two adults perched in area.
Cliff	0902	All known nests empty. No bald eagles.
Horseshoe	0919	All known nests empty. No bald eagles.
Table Mountain	0929	All known nests empty. No bald eagles.
East Verde	1118	One adult standing in nest #6.
Coldwater	1128	All known nests empty. No bald eagles.
Ladders	1133	All known nests empty. One adult perched in area
Beaver	1216	One adult incubating in nest #1. Second adult in area.
Oak Creek	1225	All known nests empty. No bald eagles.
Tapco	1238	All known nests empty. No bald eagles.
Tower	1242	All known nests empty. No bald eagles.
Perkinsville	1250	All known nests empty. No bald eagles.
Sullivan Lake	1316	All known nests empty. No bald eagles.
Lynx	1411	Two adults standing in nest #3.
Pleasant	1428	One adult incubating in nest #3. Second adult in area.
Pee Posh Wetlands	1540	One adult incubating in new tree nest #1. Second adult perched in area.
January 5, 2010		
Riverside	0800	All known nests empty. No bald eagles.
Granite Reef	0809	All known nests empty. No bald eagles.
Goldfield-Kerr	0814	All known nests empty. No bald eagles.
Bulldog	0822	One adult incubating in nest #2.
Blue Point	0830	All known nests empty. No bald eagles.
Bagley	0833	One adult incubating in nest #1. Second adult in area.
Saguaro	0836	All known nests empty. No bald eagles.
Fish Creek	0857	All known nests empty. No bald eagles.
Horse Mesa	0904	All known nests empty. No bald eagles.
Tonto	0917	All known nests empty. No bald eagles.
Sheep	0921	One adult perched near new tree nest #5.
76	0934	All known nests empty. No bald eagles.
Pinto	1122	One adult incubating in new snag nest #7. Second adult in area.
Pinal	1130	One adult incubating in nest #3. Flushed, returned immediately.
Redmond	1138	One adult perched near nest #5. Second adult in area.
Canyon	1210	All known nests empty. One adult and one immature in area.
Talkalai	1330	One adult standing in nest #7. Second adult in area.
San Carlos	1343	All known nests empty. No bald eagles.
Suicide	1400	All known nests empty. No bald eagles.
Coolidge	1427	All known nests empty. No bald eagles. Nest #2 fallen.
Granite Basin	1442	All known nests empty. No bald eagles.

Table 13 continued.

Location	Time	Comments
January 6, 2010		
Cibecue	1004	All known nests empty. No bald eagles.
Mule Hoof historical BA	1019	All known nests empty. No bald eagles.
Cedar Basin	1035	All known nests empty. No bald eagles.
Lone Pine	1044	Two adults standing in nest #5. One flushed.
Crescent	1157	One adult perched by nest #1. Second adult in area.
January 7, 2010		
Willow nest site	0920	No new nests or bald eagles.
Eagle nest site	0930	No new nests or bald eagles.
January 28, 2010		
Granite Reef	1054	One adult incubating in nest #2. Second adult in area.
Orme	1055	One adult incubating in nest #6. Second adult in area.
Goldfield-Kerr	1058	Two adults perched in area.
Bulldog	1102	One adult incubating.
Blue Point	1105	All known nests empty. No bald eagles.
Bagley	1108	One adult incubating. Second adult in area.
Saguaro	1111	One adult incubating in nest #1.
Tortilla Creek	1116	One adult incubating in new pinnacle nest #1.
Fish Creek	1120	One adult incubating in nest #1.
Horse Mesa	1123	All known nests empty. No bald eagles.
Tonto	1134	One adult incubating in nest #2. Second adult in nest tree.
Sheep	1139	One adult incubating in new tree nest #5.
76	1147	One adult standing in nest #4. Second adult in area.
Pinto	1244	One adult incubating. Second adult in area.
Pinal	1248	One adult incubating.
Redmond	1253	One adult incubating in nest #5.
Gleason Flat	1259	No new nests. Five immatures in area.
Canyon	1306	All known nests empty. No bald eagles.
Cibecue	1312	All known nests empty. One adult in area.
Mule Hoof historical BA	1318	All known nests empty. No bald eagles. Nest #1 partly fallen.
Cedar Basin	1327	All known nests empty. No bald eagles.
Lone Pine	1338	All known nests empty. One adult in area.
Talkalai	1524	One adult incubating in nest #7. Second adult in area.
San Carlos	1530	One adult standing on remnants of fallen nest #4. Second adult in area.
Suicide	1538	One adult incubating in nest #1. Second adult flew to nest.
Coolidge	1540	One adult standing in nest #4, flushed. Second adult in area.
Granite Basin	1608	All known nests empty. No bald eagles.
February 1, 2010		
Riverside	0757	One adult incubating in nest #1.
Orme	0804	One adult incubating. Second adult in area.
Rodeo	0807	One adult incubating in nest #3. Second adult in area.
Sycamore	0810	One adult incubating.
Doka	0811	One adult incubating in nest #5.
Fort McDowell	0814	All known nests empty. Two adults in area. Nest #17 fallen.
Box Bar	0818	All known nests empty. No bald eagles.
Needle Rock	0819	One adult incubating in nest #2. Second adult in area.
Bartlett	0822	One adult standing in nest #2. Second adult in area.
Yellow Cliffs	0825	One adult standing nest #1. Second adult in area.
Cliff	0840	One adult incubating in nest #6.
Horseshoe	0852	One adult incubating in nest #11.

Table 13 continued.

Location	Time	Comments
Table Mountain	0905	All known nests empty. One adult in area.
East Verde	0915	One adult incubating in nest #6.
Coldwater	0923	All known nests empty. One adult and one immature in area.
Ladders	0928	One adult incubating in nest #3.
Camp Verde historic BA	0933	No new nests or bald eagles.
Beaver	0939	One adult incubating.
Oak Creek	0947	One adult incubating in nest #4.
Tapco	1000	All known nests empty. No bald eagles.
Tower	1003	One adult in nest #8. Second adult in area.
Mormon Pocket nest site	1021	All known nests empty. No bald eagles.
Perkinsville	1023	Two adults standing in nest #4.
Hell Point historic BA	1035	All known nests empty. No bald eagles.
Muldoon nest site	1040	All known nests empty. No bald eagles.
Granite nest site	1045	All known nests empty. No bald eagles.
Sullivan nest sites	1049	All known nests empty. No bald eagles.
Sullivan Lake	1052	All known nests empty. No bald eagles.
Watson Lake nest site	1225	All known nests empty. No bald eagles. One golden eagle in area.
Lynx	1233	One adult incubating in nest #3.
Devil's Post historic BA	1255	All known nests empty. No bald eagles.
Burro Creek	1320	All known nests empty. One adult in area.
Chino historic BA	1335	No new nests or bald eagles.
Alamo	1339	One adult incubating in nest #4.
Ive's Wash	1343	One adult incubating in new cliff nest #4. Second adult in area.
Pleasant	1420	One adult incubating.
Pee Posh Wetlands	1442	One adult incubating. Second adult in area.
March 17, 2010		
Granite Reef	0700	One adult in nest incubating/brooding.
Orme	0701	Two 3-3.5 week old nestlings. One adult in nest. Second adult in area.
Goldfield-Kerr	0705	One adult incubating in nest #2.
Bulldog	0710	Two 3-4 week old nestlings.
Blue Point	0713	All known nests empty. No bald eagles.
Bagley	0714	Two 6-week old nestlings.
Saguaro	0716	One 2-week old nestling.
Tortilla Creek	0719	Two 4.5-week old nestlings.
Fish Creek	0727	Two 2-3 week old nestlings. Two adults in nest.
Horse Mesa	0732	One 2-3 week old nestling in new cliff nest #5. Two adults in nest.
Rock Creek	0738	All known nests empty. No bald eagles.
Tonto	0742	One adult in nest brooding at least one 1-2 week old nestling.
Sheep	0747	One 4.5-5 week old nestling. One adult flushed from nest.
76	0756	One adult appeared to be brooding nestling(s) in nest #4.
Dupont	0809	No new nests or bald eagles.
Salome Creek	0820	No new nests or bald eagles.
Parker Canyon	0822	All known nests empty. No bald eagles.
Pinto	0829	All known nests empty. One adult in area.
Pinal	0834	One 4.5-week old nestling. One adult flushed from cliff.
Redmond	0837	Failed. Two adults standing in nest, but nest empty.
Canyon	0855	All known nests empty. No bald eagles. One golden eagle in area.
Cibecue	1023	One adult incubating/brooding in nest #2.
Mule Hoof historical BA	1025	All known nests empty. No bald eagles.
Cedar Basin	1039	All known nests empty. No bald eagles.

Table 13 continued.

Location	Time	Comments
Lone Pine	1046	One adult incubating/brooding in nest #5.
Crescent	1115	One adult perched near nest #1. Nest #2 fallen.
Greer Lakes	1120	All known nests empty. No bald eagles. Nest #1 fallen.
Talkalai	1321	Failed. One unhatched egg in nest. No bald eagles.
San Carlos	1323	One adult flew to new tree nest #6. Nest empty.
Suicide	1336	Failed. Nest empty. No bald eagles.
Coolidge	1339	One adult incubating/brooding in nest #4.
Granite Basin	1408	All known nests empty. No bald eagles.
Winkelman historic BA	1418	No new nests or bald eagles.
March 19, 2010		
Riverside	0733	Two 3.5-week old nestlings.
Granite Reef	0739	One 2-week old nestling.
Orme	0740	Two 4-week old nestlings.
Sycamore	0752	One 5-week old nestling.
Doka	0755	Two 4.5-week old nestlings.
Fort McDowell	0802	All known nests empty. Two adults in area.
Box Bar	0810	All known nests empty. Two adults in area.
Needle Rock	0813	One adult incubating/brooding.
Bartlett	0816	One 1-week old nestling in nest #2.
Yellow Cliffs	0824	One adult incubating in nest #1.
Cliff	0835	Three 3.5-week old nestlings.
Horseshoe	0840	One adult incubating.
Table Mountain	0852	One adult incubating in nest #4.
East Verde	0859	Failed. Nest empty. No bald eagles.
Fossil Creek	0901	No new nests or bald eagles.
Oak Creek	1011	One 4-week old nestling.
Beaver	1017	Two 5-week old nestlings.
Ladders	1024	Failed. Nest empty. No bald eagles.
Coldwater	1028	One adult incubating in nest #3.
Tapco	1052	All known nests empty. One adult in area.
Tower	1102	All known nests empty. No bald eagles.
Perkinsville	1118	One adult incubating in nest #4.
Hell Point historic BA	1129	All known nests empty. No bald eagles.
Muldoon nest site	1134	All known nests empty. No bald eagles.
Granite nest site	1138	All known nests empty. No bald eagles.
Sullivan Lake	1143	One adult incubating in nest #2.
Lynx	1159	One 2-week old nestling.
Burro Creek	1340	No new nests or bald eagles.
Alamo	1405	Failed. Nest empty. No bald eagles.
Ive's Wash	1417	Two 4-week old nestlings.
Buckeye nest site	1500	All known nests empty. No bald eagles.
Pee Posh Wetlands	1511	One 5-week old nestling.
April 16, 2010		
Riverside	0752	One 7.5-8 week old nestling. Two adults flushed, perched nearby.
Goldfield	0809	One adult incubating/brooding.
Orme	0817	Two 7.5-8 week old nestlings. Two adults flushed, perched nearby.
Rodeo	0820	Two 8-week old nestlings.
Sycamore	0828	One 9-week old nestling.
Doka	0835	Two 8.5-week old nestlings.
Fort McDowell	0837	All known nests empty. No bald eagles.

Table 13 continued.

Location	Time	Comments
Box Bar	0840	All known nests empty. Two adults in area.
Needle Rock	0850	One 5.5-6 week old nestling.
Bartlett	0855	One 4-week old nestling.
Yellow Cliffs	0904	One adult incubating.
Cliff	0910	Three 7.5-8 week old nestlings. One adult in area.
Horseshoe	0915	One adult incubating.
Table Mountain	0925	Failed. Nest empty. No bald eagles.
East Verde	0933	All known nests empty. Two adults at nest #6.
Coldwater	0945	One hatchling. One adult standing at nest flushed, returned to nest.
Ladders	0950	All known nests empty. No bald eagles.
Beaver	1115	Two 8.5-9 week old nestlings.
Oak Creek	1127	One 8-week old nestling. One adult in area.
Tapco	1136	All known nests empty. No bald eagles.
Tower	1149	All known nests empty. No bald eagles.
Mormon Pocket nest site	1158	All known nests empty. No bald eagles.
Perkinsville	1200	One 3.5-week old nestling. One adult in nest.
Hell Point historic BA	1210	All known nests empty. No bald eagles.
Granite nest site	1215	All known nests empty. No bald eagles.
Sullivan Lake	1227	One 3-week old nestling. One adult in area flew to nest.
Watson Lake nest site	1240	All known nests empty. No bald eagles.
Lynx	1250	One 6-week old nestling. Two adults in area.
Pee Posh Wetlands	1430	One 9-week old nestling branching by nest. One adult in area.
April 19, 2010		
Bulldog	0655	Two 8.5-week old nestlings. One adult in area.
Blue Point	0657	All known nests empty. No bald eagles.
Bagley	0804	Two 10-11 week old nestlings.
Saguaro	0806	Two 6.5-week old nestlings.
Tortilla Creek	0702	Two 9-week old nestlings.
Fish Creek	0706	Two 7.5-week old nestlings.
Horse Mesa	0710	One 7.5-week old nestling. One adult flying in area.
Rock Creek	0821	All known nests empty. No bald eagles. One golden eagle in area.
Tonto	0719	Two 6.5-7 week old nestlings. One adult perched in nest tree.
Sheep	0724	One 9.5-week old nestling.
76	0734	One 4.5-5 week old nestling. Two adults in area.
Dupont	0750	No new nests or bald eagles.
Salome Creek	0755	No new nests or bald eagles.
Pinto Creek nest site	0807	All known nests empty. No bald eagles.
Pinal	0810	One 9-week old nestling.
Redmond	0814	All known nests empty. No bald eagles.
Canyon	0829	All known nests empty. No bald eagles.
Cibecue	0940	One 2-2.5 week old nestling. Two adults in nest, one flushed to perch.
Mule Hoof historic BA	0944	All known nests empty. No bald eagles.
Cedar Basin	0956	All known nests empty. No bald eagles.
Lone Pine	1002	One 5.5-6 week old nestling.
Crescent	1028	One adult incubating in nest #1.
Greer Lakes	1035	All known nests empty. One adult in area.
Talkalai	1221	All known nests empty. No bald eagles.
San Carlos	1227	All known nests empty. No bald eagles.
Suicide	1233	All known nests empty. No bald eagles.
Coolidge	1236	One 2-2.5 week old nestling. Two adults in area, flushed.

Table 13 continued.		
Location	Time	Comments
Granite Basin	1305	All known nests empty. One adult flying in area, perched.
Winkelman historic BA	1314	No new nests or bald eagles.
May 7, 2010		
Goldfield-Kerr	0710	One adult in nest with 1 nestling. Second adult in area.
Bulldog	0715	Nest empty, presume fledged. No bald eagles. Confirmed fledged on 5/14.
Tortilla Creek	0727	Nest empty, presume fledged. Last seen at 9 weeks old on 4/19. Two adults in area.
Fish Creek	0735	Two 9.5-week old nestlings. Two adults in nest.
Horse Mesa	0740	Failed. Nest empty. No bald eagles.
Pinal	0755	Nest empty, presume fledged. Last seen at 9 weeks old on 4/19. No bald eagles.
Sheep	0816	One fledgling perched in area.
76	0825	One 7-week old nestling. One adult in nest. Second adult in area.
Black Canyon Lake	0850	Two ospreys in new platform nest #1. No bald eagles.
Willow Springs Lake	0858	Two ospreys at new snag nest #3.One osprey at new snag nest #4. No bald eagles.
Woods Canyon Lake	0905	One adult in nest #1 with at least one 1-week old nestling.
Bear Canyon Lake	0911	One osprey standing in nest #1. No bald eagles.
Knoll Lake	0920	One osprey standing in nest #1. Nest #3 fallen. No bald eagles.
Chevelon Canyon Lake	1020	One osprey incubating in nest #1. No bald eagles.
Blue Ridge Reservoir	1045	One osprey incubating in nest #2. No bald eagles.
Tremaine/Soldier Annex/Long Lakes	1110	No new nests or bald eagles.
Kinnickinick Lake	1118	No new nests or bald eagles.
Ashurst Lake	1125	No new nests or bald eagles.
Upper Lake Mary historic BA	1130	Ospreys incubating in nests #1, 2, 3, 4, and new snag nest #6.
Lower Lake Mary	1135	One adult incubating in nest #2. Second adult in area.
Rogers Lake	1315	Two adults in area. No new nests.
Scholz Lake	1322	No new nests or bald eagles.
White Horse Lake	1328	One adult in area. Ospreys incubating in nests #1, 2.
Sunflower Flat	1330	One osprey incubating in new snag nest #1. Osprey by new snag nest #2. No bald eagles.
Dogtown Lake	1348	All known nests empty. No bald eagles.
Ive's Wash	1455	Two 9.5-10 week old nestlings. One fledgling in area. One adult in area.
May 28, 2010		
Bartlett	0730	Failed. Nestling dead in nest. No adults in area.
Yellow Cliffs	0742	Failed. Nest empty. No adults in area.
76	0752	Failed. Nest empty. No adults in area.
Lone Pine	0835	One 10.5-11 week old nestling. One adult in nest. Second adult in area.
Crescent	0905	Failed. Nest empty. No adults in area.
Greer Lakes	0823	Ospreys incubating in nests # 2 and 3. No new nests or bald eagles.
Point of Pines Lake	1050	One osprey incubating in new snag nest #1. No bald eagles.
Dry Lake	1100	No new nests or bald eagles.
Willow Creek	1105	No new nests or bald eagles.
Eagle Creek	1118	No new nests or bald eagles.
Coolidge	1435	One 8-week old nestling. One adult in area.
Horse Mesa	1515	All known nests empty. No bald eagles.
Fish Creek	1519	Nest empty. Presume fledged. Last seen at 9.5 weeks old on 5/7.
Tortilla Creek	1523	Nest empty. Presume fledged. Last seen at 9 weeks old on 4/19.

Table 13 continued.

Location	Time	Comments
June 4, 2010		
Needle Rock	0719	Two nestlings/fledglings at nest. Third not seen.
Coldwater	0743	Failed. Nest empty. No adults in area.
Knoll Lake	0808	Osprey incubating in nest #1. Nest #3 mostly fallen. No bald eagles.
Bear Canyon Lake	0815	Osprey incubating in new snag nest #2. No bald eagles.
Chevelon Canyon Lake	0845	No new nests. One adult perched in area of inflow. One osprey incubating in nest #2.
Lower Lake Mary	0921	One adult in nest brooding at least one nestling.
Scholz Lake	1015	No new nests or bald eagles.
Sycamore Canyon (upper)	1030	No new nests or bald eagles.
JD Dam Lake	1035	No new nests or bald eagles.
White Horse Lake	1040	No new nests or bald eagles.
Sunflower Flat	1045	Ospreys active in nests #1 and 2. No bald eagles.
Perkinsville	1058	One 10-week old nestling on ledge by nest.
Sullivan Lake	1108	One 9.5-10 week old nestling. Two adults in area.

APPENDIX E: BARTLETT BREEDING AREA SUMMARY

Table 14. Observed human activity and bald eagle behavior, Bartlett BA, Arizona, 2010.

Human Activity	N[1]	W	Total	Percent
Small plane	8	9	17	36.7
Helicopter	7	13	20	43.4
Hiker	3	--	3	6.5
Cyclist	2	--	2	4.4
Gunfire	1	--	1	2.2
Hunter	1	--	1	2.2
OHV	1	--	1	2.2
Kayaker	1	--	1	2.2
Total	24	22	46	

[1]Bald eagle response: N=none, W=watched.

Table 15. Observed forage events and success, Bartlett BA, Arizona, 2010.

Sex	Fish		Reptiles		Mammals		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	10	8-2	1	1-0	1	1-0	12	10-2
Female	11	1-10	1	1-0	--	--	12	2-10
Total	21	9-12	2	2-0	1	1-0	24	12-12

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

Table 16. Observed prey types delivered to the nest, Bartlett BA, Arizona, 2010.

Sex	Fish	Mammals	Reptiles	Birds	Unknown	Total	Percent
Male	51	5	1	--	4	61	77.2
Female	14	2	1	1	--	18	22.8
Total	65	7	2	1	4	79	
Percent	82.3	8.9	2.5	1.3	5.1		

Table 17. Observed prey species delivered to the nest, Bartlett BA, Arizona 2010.

Sex	Fish					Mammal		Bird	Reptile		Total	Percent
	CS[1]	BS	RT	BC	SS	GS	WR	DC	CW	RS		
Male	7	4	3	2	1	3	1	--	1	--	22	73.3
Female	3	1	--	--	--	2	--	1	--	1	8	26.7
Total	10	5	3	2	1	5	1	1	1	1	30	
Percent	33.3	16.7	10.0	6.7	3.3	16.7	3.3	3.3	3.3	3.3		

[1]CS=catfish species, BS=bass species, RT=rainbow trout, BC=black crappie, SS=Sonoran sucker, GS=ground squirrel species, WR=wood rat species, DC=double-crested cormorant, CW=chuckwalla, RS=rattlesnake.

Table 18. Bald eagle habitat analysis at the Bartlett BA, Arizona, 2010.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
34.7	CF	Right	Yes	4	--	CL
34.8	CT	Right	No	4	--	CL
34.9a	CF	Right	No	3	--	CL
34.9b	SH	Right	No	4	--	UP
34.9c	CF	Right	No	3	--	CL
34.9d	CF	Right	Yes	3	--	CL
34.9e	CT	Right	No	4	--	CL
34.9f	SO	Right	Yes	1	RB	--
34.9g	MS	Right	No	4	--	MB
34.9h	CF	Right	No	3	--	CL
34.9i	CF	Right	No	2	--	CL
34.9j	CF	Right	No	3	--	CL
34.9k	CF	Right	Yes	3	--	CL
34.9l	CF	Right	No	2	--	CL
34.9m	CF	Right	Yes	3	--	CL
35.0a	SH	Right	No	4	--	UP
35.0b	CF	Right	Yes	3	--	CL
35.0c	PT	Right	No	3	--	CL
35.0d	CT	Right	No	4	--	CL
35.0e	CT	Right	No	4	--	CL
35.1a	SO	Right	Yes	1	RB	--
35.1b	SL	Right	No	2	--	CL
35.1c	PV	Right	No	4	--	UP
35.5d	CM	Left	No	1	RB	--
36.0	MS	Right	No	1	RB	--

[1]River kilometer (Hunt et. al. 1992).
[2]CF=cliff ledge, CT=cliff top, CM=cottonwood medium/10-20m, MS=mesquite, PT=pinnacle top, PV=palo verde, SH=shrub, SL=slope, SO=shore.
[3]Facing downstream.
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[5]RB=river bend.
[6]CL=cliffs, MB=mesquite bosque, UP=desert upland.

Table 19. Bald eagle habitat use at the Bartlett BA, Arizona, 2010.

River km[1]	PW[2,3]	PP	PK	PH	EC	PV	PI	CO	CL	Total	Percent
34.0	50	--	--	--	--	--	--	--	--	50	0.4
34.7	133	--	--	--	--	--	--	--	--	133	1.0
34.8	67	--	4	--	--	--	--	--	--	71	0.5
34.9	8,645	37	--	58	30	2	2	--	--	8,774	67.3
35.0	3,535	142	140	56	--	21	1	2	1	3,898	29.9
35.1	45	5	7	11	--	--	--	--	--	68	0.5
36.0	44	1	--	--	--	--	--	--	--	45	0.4
37.0	--	--	--	--	--	1	--	--	--	1	0.1
Total	12,519	185	151	125	30	24	3	2	1	13,040	
Percent	96.0	1.4	1.2	1.0	0.2	0.2	0.1	0.1	0.1		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, PK=perched with prey, PH=perched hunting, EC=eating on cliff, PV=perched vocalizing, PI=perched interaction, CO=copulating, CL=perched close to mate.

APPENDIX F: CLIFF BREEDING AREA SUMMARY

Table 20. Observed human activity and bald eagle behavior, Cliff BA, Arizona, 2010.

Human Activity	N[1]	W	R	F	U	Total	Percent
Small plane	39	15	--	--	--	54	29.2
Helicopter	23	14	2	1	--	40	21.6
Driver	18	14	--	--	5	37	20.0
OHV	10	--	--	--	--	10	5.4
Fisherman	8	--	--	--	--	8	4.3
Military jet	3	3	--	--	--	6	3.2
Nestwatcher	2	2	--	1	--	5	2.7
AZGFD biologist	--	4	--	1	--	5	2.7
Canoe	--	4	--	--	--	4	2.2
Construction	2	2	--	--	--	4	2.2
Hunter	3	--	--	--	--	3	1.6
Picnicker	3	--	--	--	--	3	1.6
Apache helicopter	1	1	--	--	--	2	1.1
Horseback rider	2	--	--	--	--	2	1.1
Police helicopter	1	--	--	--	--	1	0.5
Sheriff helicopter	--	1	--	--	--	1	0.5
Total	115	60	2	3	5	185	

[1]Bald eagle response: N=none, W=watched, R=restless, F=flushed, U=unknown.

Table 21. Observed forage events and success, Cliff BA, Arizona, 2010.

Sex	Fish		Mammals		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	1	1-0	1	1-0	3	1-2	5	3-2
Female	--	--	--	--	1	1-0	1	1-0
Total	1	1-0	1	1-0	4	2-2	6	4-2

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

Table 22.Observed prey types delivered to the nest, Cliff BA, Arizona, 2010.

Sex	Fish	Mammals	Birds	Reptiles	Unknown	Total	Percent
Male	56	3	1	--	19	79	80.6
Female	10	2	--	1	6	19	19.4
Total	66	5	1	1	25	98	
Percent	67.4	5.1	1.0	1.0	25.5		

Table 23. Observed prey species delivered to the nest, Cliff BA, Arizona 2010.

Sex	Fish			Mammals	Total	Percent
	BS[1]	CS	CP	RS		
Male	2	1	1	1	5	83.3
Female	1	--	--	--	1	16.7
Total	3	1	1	1	6	
Percent	50.0	16.7	16.7	16.7		

[1] BS=bass species, CS=catfish species, CP=common carp, RS=rabbit species.

Table 24. Bald eagle habitat analysis at the Cliff BA, Arizona, 2010.						
Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
64.5	CT	Left	No	1	RU	UP
66.4	WO	Right	Partial	1	RU	WT
66.5	HS	Right	No	5	--	MB
66.6a	SG	Right	No	4	--	MB
66.6b	SG	Right	No	4	--	MB
66.6c	CT	Left	No	1	RU	UP
66.7	HS	Right	No	4	--	MB
66.8	SG	Right	No	4	--	MB
67.0a	CM	Right	Yes	1	RU	WT
67.0b	HS	Right	No	1	RU	WT
67.1a	HS	Right	No	1	RU	WT
67.1b	RW	Right	No	1	PW	WT
67.1c	SM	Right	No	8	--	UP
67.2	MS	Right	No	1	RU	TX
67.6	CF	Left	Partial	1	RB	CL
67.7	HS	Right	No	2	--	MB
67.8	SG	Right	No	1	RU	TX
67.9	CT	Left	No	8	--	UP
68.1	SM	Right	No	1	RU	TX
69.3	ST	Left	No	1	RU	MB
69.7	SP	Right	No	6	--	UP
70.2	ST	Left	No	2	RU	MB
70.6a	HS	Left	No	1	RU	MB
70.6b	HS	Right	No	8	--	MB

[1]River kilometer (Hunt et. al. 1992).
[2]CF=cliff ledge, CM=cottonwood medium/10-20m, CT=cliff top, HS=hard snag (main branches only), MS=mesquite, RW=rock in water, SG=soft snag, SM=snag, mesquite, SP=stump/fallen tree, ST=snag top, WO=willow.
[3]Facing downstream.
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[5]PW=pocket water, RB=river bend, RU=run.
[6]CL=cliffs, MB=mesquite bosque, TX=tamarisk thicket, UP=upland desert, WT=willow thicket.

Table 25. Bald eagle habitat use at the Cliff BA, Arizona, 2010.												
River Km[1]	PR[2,3]	PP	PH	NP	PD	PU	ET	PK	PW	OT	Total	Percent
64.5	7	--	--	--	--	--	--	--	--	--	7	0.1
66.4	18	--	--	--	--	--	--	--	--	--	18	0.2
66.5	126	128	--	--	6	--	28	8	4	13	313	3.2
66.6	1,459	231	22	--	--	3	--	--	4	7	1,726	17.8
66.7	--	--	--	565	--	--	--	--	--	--	565	5.8
66.8	2,404	535	--	--	149	49	6	--	62	24	3,229	33.2
67.0	1,983	314	--	--	132	99	92	32	6	40	2,698	27.8
67.1	164	82	2	--	83	3	14	46	2	2	398	4.1
67.2	--	2	107	--	--	8	--	2	--	--	119	1.2
67.6	110	--	315	--	--	--	--	--	--	1	426	4.4
67.7	37	--	--	--	--	--	--	--	--	--	37	0.4
67.8	--	--	10	--	--	--	--	--	--	--	10	0.1
67.9	3	--	--	--	--	--	--	--	--	--	3	0.1
68.1	47	--	--	--	--	--	--	--	--	--	47	0.5
69.3	--	--	54	--	--	--	--	--	--	--	54	0.6
69.7	3	--	--	--	--	--	--	--	--	--	3	0.1
70.2	--	--	13	--	--	--	--	--	--	--	13	0.1
70.6	--	--	55	--	--	--	--	--	--	--	55	0.6
Total	6,361	1,292	578	565	370	162	140	88	78	87	9,721	
Percent	65.4	13.3	5.9	5.8	3.8	1.7	1.4	0.9	0.8	0.9		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PR=perched roosting, PP=perched preening, PH=perched hunting, NP=perched in nest tree, PD=perched drying, PU=perched unknown, ET=eating in tree, PK=perched with prey, PW=perched watching, OT=other behaviors (includes perched vocalizing, perched close to mate, perched interaction, and copulating).

APPENDIX G: GOLDFIELD-KERR BREEDING AREA SUMMARY

Table 26. Observed human activity and bald eagle behavior, Goldfield-Kerr BA, Arizona, 2010.

Human Activity	N[1]	W	F	B	U	Total	Percent
Tuber	8,737	--	--	--	--	8,737	95.5
Canoe/kayak	181	127	1	--	--	309	3.4
Helicopter	10	3	1	1	22	37	0.4
Rafter	8	8	--	--	--	16	0.2
Apache helicopter	--	4	--	1	10	15	0.2
Sheriff airboat	--	5	6	--	--	11	0.1
Horseback rider	3	--	--	--	--	3	0.1
Military helicopter	--	2	--	--	1	3	0.1
Hiker	1	--	1	--	1	3	0.1
Photographer	2	--	--	--	--	2	0.1
Small plane	2	--	--	--	--	2	0.1
AGFD biologist	--	--	1	--	1	2	0.1
Fisherman	1	--	--	--	--	1	0.1
Nestwatcher	--	--	1	--	--	1	0.1
Police helicopter	--	--	1	--	--	1	0.1
AGFD Helicopter	--	--	--	--	1	1	0.1
Total	8,945	149	12	2	36	9,144	

[1]Bald eagle response: N=none, W=watched, F=flushed, B=bird not in area, U=unknown.

Table 27. Observed forage events and success, Goldfield-Kerr BA, Arizona, 2010.

Sex	Fish		Mammals		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	6	4-2	--	--	6	3-3	12	7-5
Female	9	7-2	1	1-0	3	2-1	13	10-3
Unknown	3	3-0	--	--	--	--	3	3-0
Total	18	14-4	1	1-0	9	5-4	28	20-8

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

Table 28. Observed prey types delivered to the nest, Goldfield-Kerr BA, Arizona, 2010.

Sex	Fish	Bird	Mammal	Unknown	Total	Percent
Male	3	1	--	2	6	42.9
Female	7	--	1	--	8	57.1
Total	10	1	1	2	14	
Percent	71.4	7.1	7.1	14.3		

Table 29. Bald eagle habitat analysis at the Goldfield-Kerr BA, Arizona, 2010.						
Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
8.7	CL	Right	Partial	2	RU	TX
8.9	ST	Right	No	5	RU	MB
9.5	CL	Right	No	4	RU	MB
9.7	HS	Right	No	6	RU	MB
10.0a	HS	Right	N	6	RU	MB
10.0b	CM	Left	No	2	RU	MB
10.0c	HS	Right	No	1	RU	WT
10.1a	SG	Right	No	5	RU	MB
10.1b	ST	Right	No	4	RU	MB
10.1c	HS	Right	No	1	RU	WT
10.2a	CL	Right	Partial	1	RU	MB
10.2b	HS	Right	No	6	RU	MB
10.2c	SP	Right	Partial	1	RU	TX
10.5	CM	Right	No	4	RU	MB
10.9	CT	Right	No	2	RU	UP
11.1	CT	Right	No	1	RU	CL
11.4	CT	Right	No	2	RU	CL

[1]River kilometer (Hunt et. al. 1992).
[2]CL=cottonwood large (20-30+m), CM=cottonwood medium (10-20+m), CT=cliff top, HS=hard snag (main branches only), SG=soft snag (dead but branches still intact),ST=snag top, SP=stump/fallen tree.
[3]Facing downstream.
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[5]RU=run.
[6]CL=cliff, MB=mesquite bosque, TX=tamarisk thicket, WT=willow thicket, UP=desert upland.

Table 30. Bald eagle habitat use at the Goldfield-Kerr BA, Arizona, 2010.										
River km[1]	PW[2,3]	PH	PP	ET	CL	PD	PK	OT	Total	Percent
8.7	38	--	--	--	--	--	--	--	38	0.3
8.9	2	5	--	--	--	--	--	--	7	0.1
9.5	2	--	--	--	--	--	--	--	2	--
9.7	30	--	--	49	--	--	--	--	79	0.5
10.0	3,982	334	417	47	51	17	6	16	4,870	32.6
10.1	893	66	18	6	--	--	--	--	983	6.6
10.2	7,294	65	180	33	124	87	2	--	7,785	52.0
10.5	323	21	9	72	1	--	38	--	464	3.1
10.9	81	17	--	--	--	--	--	--	98	0.7
11.1	175	176	--	--	--	--	--	--	351	2.4
11.4	90	182	--	--	--	--	--	10	282	1.9
Total	12,910	866	624	207	176	104	46	26	14,959	
Percent	86.3	5.8	4.2	1.4	1.2	0.7	0.3	0.2		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PH=perched hunting, PP=perched preening, ET=eating in tree, CL=perched close to mate, PD=perched drying, PK=perched with prey, OT=other (includes perched roosting and eating on cliff).

APPENDIX H: LADDERS BREEDING AREA SUMMARY

Table 31. Observed human activity and bald eagle behavior, Ladders BA, Arizona, 2010.

Human Activity	N[1]	W	F	Total	Percent
Canoe/kayak	12	18	2	32	74.4
Small plane	2	2	1	5	11.6
Helicopter	--	4	--	4	9.3
Agency worker	1	--	1	2	4.7
Total	15	24	4	43	

[1]Bald eagle response: N=none, W=watched, F=flushed.

Table 32. Bald eagle habitat analysis at the Ladders BA, Arizona, 2010.

Perch Location[1]	Perch Type[2]	Side[3]	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
161.7	SJ	Right	5	RU	CL
162.0	CF	Right	5	RI	UP
161.1	SJ	Right	3	RI	CL
162.2a	JN	Right	4	RI	UP
162.2b	SJ	Right	3	RI	UP
162.4	JN	Right	4	RI	CL
162.5	SJ	Right	5	RI	UP
162.6	SX	Left	4	RI	UP
162.7a	CT	Left	4	RU	CL
162.7b	JN	Left	3	RU	CL
162.7c	SJ	Left	8	RU	UP
162.8a	CT	Left	2	RU	CL
162.8b	JN	Left	3	RU	CL
162.8c	JN	Right	1	RU	CL
162.9a	CF	Right	2	RU	CL
162.9b	CT	Left	2	RU	CL
162.9c	CT	Right	1	RU	CL
162.9d	JN	Right	5	RU	UP
163.0	SO	Left	1	RU	CL

[1]River kilometer (Hunt et. al. 1992).
[2]CF=cliff ledge, CT=cliff top, SJ=snag, juniper, JN=juniper, SO=shore, SX=snag, unidentified type.
[3]Facing downstream.
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[5]RU=run, RI-riffle.
[6]CL=cliffs, UP=upland desert.

Table 33. Bald eagle habitat use at the Ladders BA, Arizona, 2010.					
River km[1]	PW[2,3]	PP	DW	Total	Percent
161.7	--	6	--	6	1.6
162.1	2	10	--	12	3.2
162.2	56	--	--	56	15.1
162.4	16	--	--	16	4.3
162.6	2	--	--	2	0.5
162.7	64	--	--	64	17.3
162.8	55	--	--	55	14.8
162.9	158	--	--	158	42.6
163.0	--	--	2	2	0.5
Total	353	16	2	371	
Percent	95.1	4.3	0.5		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, DW=drinking water.

APPENDIX I: LUNA BREEDING AREA SUMMARY

Table 34. Observed human activity and bald eagle behavior, Luna BA, Arizona, 2010.

Human Activity	N[1]	W	R	F	L	Total	Percent
Fisherman	523	--	--		--	523	50.9
Boater	174	--	--		--	174	16.9
Picnicker	65	--	--		--	65	6.3
Driver/vehicle	49	--	--	1	--	50	4.9
Canoe/kayak	45	--	--		--	45	4.4
Birder	44	--	--		--	44	4.3
Ice fisherman	24	--	--	1	--	25	2.4
Float tuber	21	--	--		--	21	2.0
Agency worker	20	--	--		--	20	1.9
Hiker	19	--	--		--	19	1.9
Helicopter	11	--	--		--	11	1.1
Snowmobile	5	1	--		--	6	0.6
Military jet	4	--	1	1	--	6	0.6
Swimmer	5	--	--	--	--	5	0.5
Photographer	4	--	--	--	--	4	0.4
OHV	3	--	--	--	1	4	0.4
Bicycle	2	--	--	--	--	2	0.2
Gunshot	2	--	--	--	--	2	0.2
Rancher	1	--	--	--	--	1	0.1
Total	1,021	1	1	3	1	1,027	

[1]Bald eagle response: N=none, W=Watched, R=restless, F=flushed, L=left area.

Table 35. Observed forage events and success, Luna BA, Arizona, 2010.

Sex	Fish		Birds		Carrion		Reptiles		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U	E	S-U
Male	37	34-3	41	35-6	9	9-0	1	1-0	88	79-9
Female	19	19-0	11	10-1	4	4-0	--	--	34	33-1
Total	56	53-3	52	45-7	13	13-0	1	1-0	122	112-10

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

Table 36. Observed prey types delivered to the nest, Luna BA, Arizona, 2010.

Sex	Fish	Birds	Carrion	Total	Percent
Male	30	36	5	71	76.3
Female	14	8	--	22	23.7
Total	44	44	5	93	
Percent	47.3	47.3	5.4		

Table 37. Observed prey species delivered to the nest, Luna BA, Arizona 2010.

Sex	Fish		Birds			Mammal	Total	Percent
	RT[1]	CT	AC	CG	WS	EC		
Male	30	--	34	1	1	5	71	76.3
Female	10	4	7	--	1	--	22	23.7
Total	40	4	41	1	2	5	93	
Percent	43.0	4.3	44.1	1.1	2.2	5.4		

[1]RT=rainbow trout, CT=cutthroat trout, AC=American coot, CG=Canada gosling, WS=waterfowl species, EC=elk carrion.

Table 38. Bald eagle habitat analysis at the Luna BA, Arizona, 2010.

Perch Location[1]	Perch Type[2]	Shade	Distance to H_2O[3]	Land Type[4]
0.3	PS	No	1	RS
0.5	HS	No	2	RC
0.9	HS	No	2	RC
1.1	PS	Yes	1	RC
1.7	PS	Yes	2	RC
1.8	PS	Yes	1	RC
2.0	HS	Yes	8	CF
2.1	PO	No	7	CF
2.2	HS	No	7	CF
2.3	PO	Partial	7	CF
2.4a	HS	No	7	CF
2.4b	PS	Yes	7	CF
2.5	PS	No	2	CF
2.6a	WF	No	1	RS
2.6b	PS	No	6	CF
2.7	PS	No	2	RS
2.8	HS	Yes	7	CF
3.0	PS	Yes	2	CF
3.5	ST	No	2	RC
4.5	FP	No	1	RC
4.6	PS	No	1	RC
5.1a	FP	No	1	RC
5.1b	PO	Yes	7	CF

[1]Lake kilometer (counterclockwise from boat ramp).
[2]PS=pine/conifer 2nd growth (10-20m), HS= hard snag (main branches only), PO= pine/conifer old growth (20-30+m), WF=waterfowl closure sign, BL=beaver lodge, ST=snag top, FP=fence post.
[3]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[4]RS=reservoir main body, RC=reservoir cove, CF=coniferous forest.

Table 39. Bald eagle habitat use at the Luna BA, Arizona, 2010.									
Lake km[1]	PW[2,3]	PR	PH	PP	PU	CL	OT	Total	Percent
0.1	2,229	--	--	--	--	--	--	2,229	3.6
0.5	62	--	--	--	--	--	--	62	0.1
1.8	121	--	--	--	--	--	--	121	0.2
2.0	646	--	5	--	--	--	--	651	1.0
2.1	514	--	--	--	--	--	--	514	0.8
2.2	803	--	--	58	96	--	--	957	1.5
2.3	571	204	--	11	--	--	--	786	1.3
2.4	33,314	2,219	--	1,773	597	94	19	38,016	60.9
2.5	80	34	27	--	--	--	--	141	0.2
2.6	2,792	--	518	7	--	--	7	3,324	5.3
2.7	6,190	--	1,751	--	--	--	--	7,941	12.7
2.8	123	--	224	--	--	--	--	347	0.6
3.0	275	--	167	--	--	--	--	442	0.7
3.4	248	--	--	--	--	--	--	248	0.4
3.5	1,317	--	244	--	--	--	--	1,561	2.5
4.0	12	--	7	--	--	--	--	19	0.0
4.5	--	--	52	--	--	--	12	64	0.1
5.1	4,068	714	--	--	--	--	--	4,782	7.7
5.3	230	--	--	--	--	--	--	230	0.4
Total	53,595	3,171	2,995	1,849	693	94	38	62,435	
Percent	85.8	5.1	4.8	3.0	1.1	0.2	0.1		

[1]Lake kilometer (counterclockwise from boat ramp).
[2]Observation time (minutes).
[3]PW=perched watching, PR=perched roosting, PH=perched hunting, PP=perched preening, PU=perched unknown, CL=perched close to mate, OT=other behavior (includes perched drying, perched with prey, and perched vocalizing).

APPENDIX J: NEEDLE ROCK BREEDING AREA SUMMARY

Table 40. Observed human activity and bald eagle behavior, Needle Rock BA, Arizona, 2010.

Human Activity	N[1]	W	F	L	B	U	Total	Percent
Helicopter	17	--	--	--	--	1	18	45.0
Small plane	11	--	--	--	--	--	11	27.5
Driver	2	--	--	2	--	--	4	10.0
Helicopter, Sheriff	1	1	--	--	--	--	2	5.0
OHV	2	--	--	--	--	--	2	5.0
Nestwatcher	--	--	1	1	--	--	2	5.0
Helicopter, Military	--	--	--	--	1	--	1	2.5
Total	33	1	1	3	1	1	40	

[1]Bald eagle response: N=none, W=watched, F=flushed, L=Left area, B=birds not in area, U=unknown.

Table 41. Observed forage events and success, Needle Rock BA, Arizona, 2010.

Sex	Fish		Mammals		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	2	2-0	1	1-0	2	2-0	5	5-0
Female	--	--	1	1-0	--	--	1	1-0
Total	2	2-0	2	2-0	2	2-0	6	6-0

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

Table 42. Observed prey types delivered to the nest, Needle Rock BA, Arizona, 2010.

Sex	Fish	Mammals	Reptiles	Carrion	Unknown	Total	Percent
Male	3	1	--	2	57	63	53.4
Female	1	1	1	--	45	48	40.7
Unknown	--	--	--	--	7	7	5.9
Total	4	2	1	2	109	118	
Percent	3.4	1.7	0.8	1.7	92.4		

Table 43. Bald eagle habitat analysis at the Needle Rock BA, Arizona, 2010.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
24.6	CL	Right	No	2	RU	CW
25.0	SM	Right	No	1	RU	MB
25.1	SM	Left	No	1	RU	MB
25.2a	SM	Left	No	1	RU	MB
25.2b	SM	Left	Yes	1	RU	MB
25.3	SM	Left	No	1	RU	MB
25.4a	SM	Left	Yes	1	RU	MB
25.4b	SM	Left	No	1	RU	MB
25.4c	SM	Left	No	2	RU	MB
25.4d	SM	Left	No	2	--	MB
25.4e	SM	Left	No	4	--	MB
25.4f	SM	Left	Yes	4	--	MB
25.4g	CS	Right	No	1	RU	CW
25.4h	SS	Left	No	4	--	UP
25.4i	YL	Left	No	4	--	MB
25.4j	WO	Left	No	1	RB	WT
25.4k	WO	Right	No	1	RB	WT
25.4l	SO	Right	Yes	1	RU	WT
25.4m	YL	Left	Yes	4	--	MB
25.4n	WO	Left	Yes	1	RU	WT
25.5a	WO	Right	Yes	1	RU	WT
25.5b	SM	Left	Yes	1	RU	MB
25.5c	SM	Left	Yes	4	--	MB
25.6a	CM	Left	No	1	RU	CW
25.6b	CM	Left	Yes	1	RU	CW
25.6c	CM	Left	Yes	2	RU	CW
25.6d	YM	Left	Yes	1	RU	CW
25.6e	SM	Left	Yes	1	RU	MB
25.6f	WO	Left	Yes	1	RU	WT
25.6g	SM	Right	Yes	3	--	MB
25.6h	SM	Right	Yes	5	--	UP
25.6i	WO	Right	Yes	1	RU	WT
25.6j	YL	Left	Yes	4	--	MB
25.6k	SM	Left	Yes	3	--	MB
25.7a	CM	Left	Yes	1	RU	CW
25.7b	CM	Left	Yes	2	--	CW
25.7c	WM	Left	No	6	--	MB
25.7d	WO	Right	Yes	1	RB	WT
25.7e	WO	Right	Yes	1	RU	WT
25.7f	SM	Left	Yes	4	--	MB
25.7g	ST	Right	Yes	1	RB	WT

[1]River kilometer (Hunt et. al. 1992).

[2]CL=cottonwood large/20-30m, CM=cottonwood medium/10-20m, CS=cottonwood small/0-10m, HS=hard snag (only main branches), MS=mesquite, SG=soft snag, SH=hard snag, SM=snag mesquite, SO=shore, SS=snag shrub, ST=snag top, WO=willow, YL=sycamore large 10-20+m, YM=sycamore medium 5-10m.

[3]Facing downstream.

[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.

[5]RU=run, RB=river bend.

[6] CW=cottonwood grove, MB=mesquite bosque, UP=desert upland, WT=willow thicket.

Table 43 continued.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
25.7h	ST	Right	No	1	RB	WT
25.7i	WO	Right	No	1	RB	WT
25.8a	SM	Left	Yes	4	--	MB
25.8b	ST	Left	No	4	--	MB
25.8c	CS	Left	No	2	--	MB
25.8d	ST	Left	No	2	--	MB
25.8e	HS	Left	No	3	--	MB
25.8f	WO	Left	Yes	1	RU	WT
25.8g	CM	Left	Yes	1	RU	CW
25.8h	SM	Left	Yes	1	RU	MB
25.8i	YL	Left	No	4	--	MB
25.8j	SM	Left	No	4	--	MB
25.9a	SM	Left	No	4	--	MB
25.9b	SM	Left	No	5	--	MB
25.9c	SM	Left	Yes	4	--	MB
25.9d	ST	Right	No	1	RU	WT
25.9e	SM	Left	No	2	--	MB
25.9f	ST	Right	Partial	1	RB	CW
25.9g	YL	Left	Yes	4	--	MB
25.9h	CM	Left	No	1	RU	CW
25.9i	SM	Left	No	1	RU	MB
25.9j	WO	Left	Yes	1	RU	WT
25.9k	SM	Left	No	3	--	MB
25.9l	YL	Left	No	4	--	MB
25.9m	SO	Left	No	1	RU	
25.9n	ST	Left	Yes	2	--	MB
25.9o	SG	Left	No	1	RU	WT
25.9p	WO	Right	No	1	RU	WT
26.0a	SM	Left	No	1	RU	MB
26.0b	YL	Left	Yes	4	--	MB
26.0c	SM	Left	Yes	4	--	MB
26.0d	YL	Left	No	4	--	MB
26.0e	SM	Left	No	4	--	MB
26.0f	ST	Left	No	1	RU	WT
26.0g	WO	Left	Yes	1	RU	WT
26.0h	YL	Left	Partial	5	--	MB
26.0i	SS	Right	Yes	1	RU	WT
26.0j	SM	Left	No	2	--	MB
26.0k	CM	Left	Yes	1	RU	CW
26.0l	CL	Right	No	2	RU	CW
26.1a	SM	Left	Yes	4	--	MB

[1]River kilometer (Hunt et. al. 1992).

[2]CL=cottonwood large/20-30m, CM=cottonwood medium/10-20m, CS=cottonwood small/0-10m, HS=hard snag (only main branches), MS=mesquite, SG=soft snag, SH=hard snag, SM=snag mesquite, SO=shore, SS=snag shrub, ST=snag top, WO=willow, YL=sycamore large 10-20+m, YM=sycamore medium 5-10m.

[3]Facing downstream.

[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.

[5]RU=run, RB=river bend.

[6] CW=cottonwood grove, MB=mesquite bosque, UP=desert upland, WT=willow thicket.

Table 43 continued.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
26.1b	CM	Left	Yes	1	RU	CW
26.1c	SM	Left	No	1	RU	MB
26.2a	CM	Left	No	1	RU	CW
26.2b	CM	Left	Yes	2	--	CW
26.2c	SM	Left	No	3	--	MB
26.2d	SM	Left	No	4	--	MB
26.2e	SM	Left	Yes	4	--	MB
26.3a	WO	Right	Yes	1	RU	WT
26.3b	CM	Right	No	5	--	CW
26.4	SM	Left	Yes	3	--	MB
26.5	SM	Left	Yes	1	RU	MB
26.6	SM	Left	Yes	1	RU	MB
26.7	SM	Left	Yes	1	RU	MB
27.0a	SM	Left	No	4	--	MB
27.0b	HS	Right	Yes	4	--	CW
27.1	SM	Left	No	4	--	MB
27.3a	SM	Left	No	4	--	MB
27.3b	CS	Left	No	4	--	MB
27.3c	WO	Right	Yes	1	RU	WT
27.4a	SM	Left	No	3	--	MB
27.4b	SM	Left	No	4	--	MB
27.5a	SM	Left	No	4	--	MB
27.5b	SM	Left	No	1	RU	SO
27.5c	ST	Right	No	5	--	CW
27.5d	CL	Left	Yes	3	--	CW
27.5e	ST	Left	Partial	1	RU	CW
27.6a	CL	Left	Yes	2	RU	CW
27.6b	ST	Left	No	1	RU	CW
27.6c	SM	Left	No	4	--	MB
27.7a	SG	Right	Yes	1	RU	WT
27.7b	WO	Right	Yes	1	RU	WT
27.7c	SS	Right	No	1	RU	WT
27.7d	SM	Left	No	4	--	MB
27.7e	CM	Left	Yes	2	RU	CW
27.7f	SM	Left	No	5	--	MB
27.7g	SM	Left	No	3	--	MB
27.8a	CS	Left	Yes	2	--	CW
27.8b	ST	Left	No	1	RU	CW
27.8c	SM	Left	No	5	--	MB
28.1	SM	Left	No	4	--	MB
28.3	ST	Right	No	1	RU	CW
29.7	SM	Left	No	4	--	MB

[1]River kilometer (Hunt et. al. 1992).
[2]CL=cottonwood large/20-30m, CM=cottonwood medium/10-20m, CS=cottonwood small/0-10m, HS=hard snag (only main branches), SG=soft snag, SM=snag mesquite, SS=snag shrub, ST=snag top, WO=willow.
[3]Facing downstream.
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[5]RU=run, RB=river bend.
[6] CW=cottonwood grove, MB=mesquite bosque, UP=desert upland, WT=willow thicket.

Table 44. Bald eagle habitat use at the Needle Rock BA, Arizona, 2010.										
River km[1]	PW[2,3]	PR	PP	PU	PD	PH	SS	OT	Total	Percent
24.6	15	--	--	--	--	--	--	--	15	0.2
25.0	14	--	--	--	--	--	--	--	14	0.1
25.1	53	--	--	--	--	--	--	--	53	0.5
25.2	83	119	--	--	--	--	--	--	202	2.1
25.3	35	74	--	--	--	--	--	--	109	1.1
25.4	1,309	45	163	--	51	--	--	--	1,568	16.0
25.5	63	--	--	--	--	--	--	--	63	0.6
25.6	500	--	9	--	--	--	--	--	509	5.2
25.7	825	--	45	--	--	--	--	2	872	8.9
25.8	977	--	--	--	--	--	--	--	977	10.0
25.9	2,478	565	88	--	--	--	4	--	3,135	31.9
26.0	662	--	43	70	--	--	--	2	777	7.9
26.1	103	--	--	--	--	--	--	--	103	1.0
26.2	429	--	--	--	--	--	--	--	429	4.4
26.3	75	--	--	--	--	--	--	--	75	0.8
26.6	9	--	--	--	--	--	--	--	9	0.1
26.7	12	--	--	--	--	--	--	--	12	0.1
27.0	77	--	--	--	--	--	--	--	77	0.8
27.3	45	--	--	--	--	13	--	--	58	0.6
27.5	332	--	--	--	--	--	--	--	332	3.4
27.6	173	--	--	--	--	--	--	--	173	1.8
27.7	177	--	--	--	--	--	--	--	177	1.8
27.8	60	--	--	--	--	--	--	--	60	0.6
28.1	4	--	--	--	--	--	--	--	4	--
28.3	2	--	--	--	--	--	--	--	2	--
29.7	9	--	--	--	--	--	--	--	9	0.1
Total	8,521	803	348	70	51	13	4	4	9,814	
Percent	86.8	8.2	3.5	0.7	0.5	0.1	--	--		

[1]River kilometer (Hunt et. al. 1992).

[2]Observation time (minutes).

[3]PW=perched watching, PR=perched roosting, PP=perched preening, PU=perched unknown, PD=perched drying, PH=perched hunting, SS=standing on shore, OT=other behaviors (includes perched interaction and eating in tree).

APPENDIX K: ORME BREEDING AREA SUMMARY

Table 45. Observed human activity and bald eagle behavior, Orme BA, Arizona 2010.

Human Activity	N[1]	W	R	F	L	B	U	X	Total	Percent
Small plane	422	10	--	--	--	--	--	--	432	36.0
Helicopter	229	15	--	--	--	--	1	--	245	20.4
Kayak/canoe	212	3	--	--	--	--	1	--	216	18.0
Water plant alarm	66	6	--	--	--	--	1	--	73	6.1
Driver	27	18	1	2	--	1	5	--	54	4.5
Fisherman	55	--	--	--	--	--	--	--	55	4.6
Hiker	39	2	2	1	--	--	1	1	46	3.8
Helicopter, Military	19	7	--	--	--	--	--	--	26	2.2
Rafter	23	--	--	--	--	--	--	--	23	1.9
Nestwatcher	--	5	--	2	--	--	--	--	7	0.6
Boater	2	--	--	1	1	1	--	--	5	0.4
Swimmer	1	2	--	--	--	--	--	--	3	0.2
Helicopter, Sheriff	1	--	--	--	--	--	1	--	2	0.2
Military jet	2	--	--	--	--	--	--	--	2	0.2
Cycler	2	--	--	--	--	--	--	--	2	0.2
Agency worker	1	--	1	--	--	--	--	--	2	0.2
Birder	2	--	--	--	--	--	--	--	2	0.2
Rancher	1	--	--	--	--	--	--	--	1	0.1
Blimp	--	1	--	--	--	--	--	--	1	0.1
Construction	1	--	--	--	--	--	--	--	1	0.1
AGFD researcher	--	1	--	--	--	--	--	--	1	0.1
Picnicker	1	--	--	--	--	--	--	--	1	0.1
Camper	1	--	--	--	--	--	--	--	1	0.1
Total	1,107	70	4	6	1	2	10	1	1,201	

[1]Bald eagle response: N=none, W=watched, R=restless, F=flushed, L=left area, B=birds not in area, U=unknown, X=other.

Table 46. Observed forage events and success, Orme BA, Arizona, 2010.

Sex	Fish		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	3	1-2	2	0-2	5	1-4
Female	5	3-2	--	--	5	3-2
Total	8	4-4	2	0-2	10	4-6

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

Table 47. Observed prey types delivered to the nest, Orme BA, Arizona, 2010.

Sex	Fish	Unknown	Total	Percent
Male	6	9	15	57.7
Female	8	3	11	42.3
Total	14	12	26	
Percent	53.8	46.2		

Table 48. Observed prey species delivered to the nest, Orme BA, Arizona 2010.				
Sex	Fish		Total	Percent
	CP[1]	RT		
Male	1	--	1	25.0
Female	1	2	3	75.0
Total	2	2	4	
Percent	50.0	50.0		

[1]CP=common carp, RT=rainbow trout.

Table 49. Bald eagle habitat analysis at the Orme BA, Arizona, 2010.						
Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
V 0.3a	PV	Left	No	1	RU	--
V 0.3b	CL	Left	Yes	5	RU	CW
V 0.4a	CL	Right	Yes	5	--	CW
V 0.4b	CM	Right	Yes	4	--	CW
V 0.4c	SM	Left	No	1	--	BA
V 0.5a	CL	Right	No	2	--	CW
V 0.5b	ST	Right	No	2	--	CW
V 0.5c	CL	Right	No	3	--	CW
V 0.5d	SS	Left	No	1	RU	CW
V 0.5e	CS	Right	Yes	4	--	CW
V 0.5f	SM	Right	No	1	--	BA
V 0.5g	SO	Left	No	1	--	BA
V 0.5h	SM	Left	No	1	--	CW
V 0.5i	MS	Left	No	1	RU	MB
V 0.6a	CM	Right	No	2	PW	CW
V 0.6b	SB	Island	No	1	RU	--
V 0.6c	SO	Right	Yes	1	RB	--
V 0.6d	CM	Right	No	3	RU	--
V 0.6e	RW	Island	No	1	RU	--
V 0.6f	CS	Left	No	1	RI	CW
V 0.6g	SO	Left	No	1	RU	--
V 0.6h	CL	Left	Yes	1	RI	MB
V 0.6i	SM	Left	No	2	RI	MB
V 0.6j	CL	Left	Yes	1	RI	MB
V 0.7a	ST	Right	No	4	--	CW
V 0.7b	HS	Left	No	1	RU	--
V 0.7c	CL	Right	Yes	2	RU	TX
V 0.8a	SM	Left	No	1	--	BA
V 0.8b	CL	Right	Yes	3	--	CW
S 1.0	SM	Left	No	1	--	--
S 4.9	ST	Left	No	3	--	CW
S 5.0	ST	Left	No	1	--	CW

[1]River kilometer (Hunt et. al. 1992). V=Verde River; S=Salt River.
[2]CL=cottonwood large (20m+), CM=cottonwood medium (10-20m), CS=cottonwood small (0-10m), HS=hard snag (main branches only), MS=mesquite tree, PV=palo verde, RW=rock in water, SB=sandbar, SM=snag, mesquite, SO=shore, SS=snag, shrub, ST=snag top, WO=willow.
[3]Facing downstream.
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[5]PW=pocket water, RB=river bend, RI=riffle, RU=run.
[6]BA=cut bank, CW=cottonwood grove, MB=mesquite bosque, TX=tamarisk thicket, WT=willow thicket.

Table 49 continued.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
S 5.0	CL	Right	No	2	--	CW
S 5.0	WO	Right	No	1	--	TX
S 5.1	CL	Right	No	3	--	CW
S 5.2	CL	Right	Yes	3	RU	CW
S 5.2	CL	Right	No	2	--	CW
S 5.3	ST	Right	No	3	PW	CW
S 5.3	WO	Left	No	1	RU	WT
S 5.5	RW	Island	No	1	RI	--
S 6.0	CL	Left	Yes	1	RU	MB
S 6.1	CL	Right	No	2	--	CW
S 6.5	CL	Right	No	3	--	CW
S 7.5	CL	Right	Yes	6	--	CW

[1]River kilometer (Hunt et. al. 1992). V=Verde River; S=Salt River.
[2]CL=cottonwood large (20m+), CM=cottonwood medium (10-20m), CS=cottonwood small (0-10m), HS=hard snag (main branches only), MS=mesquite tree, PV=palo verde, RW=rock in water, SB=sandbar, SM=snag, mesquite, SO=shore, SS=snag, shrub, ST=snag top, WO=willow.
[3]Facing downstream.
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[5]PW=pocket water, RB=river bend, RI=riffle, RU=run.
[6]BA=cut bank, CW=cottonwood grove, MB=mesquite bosque, TX=tamarisk thicket, WT=willow thicket.

Table 50. Bald eagle habitat use at the Orme BA, Arizona, 2010.

River km[1]	PW[2,3]	PP	PU	PH	PK	PV	PD	Total	Percent
0.3 V	144	8	--	--	--	--	--	152	1.6
0.4 V	86	59	5	--	--	--	-	150	1.6
0.5 V	3,984	1,393	204	41	14	10	--	5,646	59.8
0.6 V	2,293	404	61	217	34	--	1	3,010	31.9
0.7 V	51	3	--	31	2	--	--	87	0.9
0.8 V	5	--	1	--	--	--	--	6	0.1
1.0 V	8	--	--	--	--	--	--	8	0.1
4.9 S	--	--	5	--	--	--	--	5	0.1
5.0 S	--	16	--	--	--	--	--	16	0.2
5.1 S	--	5	--	--	--	--	--	5	0.1
5.2 S	91	90	83	--	--	--	--	264	2.8
5.3 S	12	--	1	32	--	--	--	45	0.5
5.5 S	1	--	--	--	--	--	--	1	0.1
6.0 S	--	--	--	20	--	--	--	20	0.2
6.5 S	--	26	--	--	--	--	--	26	0.3
7.5 S	2	--	--	--	--	--	--	2	0.1
Total	6,677	2,004	360	341	50	10	1		
Percent	70.7	21.2	3.8	3.6	0.5	0.1	0.1	9,443	

[1]River kilometer (Hunt et al. 1992). V=Verde River, S=Salt River.
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, PU=perched unknown, PH=perched hunting, PK=perched with prey, PV=perched vocalizing, PD=perched drying.

APPENDIX L: PLEASANT BREEDING AREA SUMMARY

Table 51. Observed human activity and bald eagle behavior, Lake Pleasant BA, Arizona, 2010.

Human Activity	N[1]	W	F	B	U	X	Total	Percent
Small plane	172	18	--	16	57	--	263	64.0
Helicopter	20	8	--	5	18	6	57	13.9
Military jet	13	8	--	--	5	1	27	6.6
Boat	15	3	--	6	--	--	24	5.8
Agency worker	5	6	--	1	1	--	13	3.2
Ultralight flier	--	6	--	--	--	--	6	1.5
Boat fisherman	1	--	--	5	--	--	6	1.5
Large plane	3	1	--	--	1	--	5	1.2
Jet ski	--	2	--	1	--	--	3	0.7
Nestwatcher	--	--	2	--	--	--	2	0.5
Apache helicopter	--	--	--	--	1	--	1	0.2
Sailboat	1	--	--	--	--	--	1	0.2
Glider	--	--	--	--	1	--	1	0.2
Gunshot	--	1	--	--	--	--	1	0.2
Water skier	1	--	--	--	--	--	1	0.2
Total	231	53	2	34	84	7	410	

[1]Bald eagle response: N=none, W=watched, F=flushed, B=birds not in area, U=unknown, X=nestlings lay flat in nest.

Table 52. Observed forage events and success, Lake Pleasant BA, Arizona, 2010.

Sex	Fish		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	3	2-1	1	1-0	4	3-1
Female	2	1-1	--	--	2	1-1
Unknown	1	1-0	--	--	1	1-0
Total	6	4-2	1	1-0	7	5-2

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

Table 53. Observed prey types delivered to the nest, Lake Pleasant BA, Arizona, 2010.

Sex	Fish	Birds	Mammals	Unknown	Total	Percent
Male	23	3	1	8	35	61.4
Female	15	1	--	5	21	36.8
Unknown	1	--	--	--	1	1.8
Total	39	4	1	13	57	
Percent	68.4	7.0	1.8	22.8		

Table 54. Observed prey species delivered to the nest, Lake Pleasant BA, Arizona 2010.

Sex	Fish		Birds	Total	Percent
	LB[1]	WB	AC		
Male	6	3	2	11	68.8
Female	3	1	1	5	31.3
Total	9	4	3	16	
Percent	56.3	25.0	18.8		

[1]LB=largemouth bass, WB=white bass, AC=American coot.

Table 55. Bald eagle habitat analysis at the Lake Pleasant BA, Arizona, 2010.

Perch Location[1]	Perch Type[2]	Side[3]	Shade[4]	Distance to H_2O[5]	H_2O Type[6]	Land Type[7]
69.1	CF	Left	Yes	1	RB	CL
72.3	CT	Right	Overcast	1	RB	CL
73.1A	HS	Right	No	3	RU	UP
73.1B	CF	Right	Yes	1	RU	CL
73.2A	BO	Left	Yes	1	RU	TA
73.2B	BO	Left	Partial	1	RU	TA
73.2C	BO	Left	No	1	RC	UP
73.2D	BO	Left	No	2	RC	UP
73.2E	BO	Left	Yes	1	RU	TA
73.2F	CT	Left	No	3	RU	CL
73.2G	BO	Left	No	1	RU	UP
73.2H	CF	Right	Yes	2	RU	CL
73.3A	NE	Left	Partial	5	RU	CL
73.3B	CF	Left	Partial	5	RU	CL
73.3C	CT	Left	Partial	5	RU	CL
73.3D	CF	Left	Yes	5	RU	CL
73.3E	CT	Left	No	5	RU	UP
73.3F	CF	Left	Partial	3	RU	CL
73.3G	BO	Left	Yes	3	RU	TA
73.3H	CF	Left	Yes	5	RU	CL
73.3I	CF	Left	Yes	5	RU	CL
73.3J	CF	Left	Yes	5	RU	CL
73.3K	CF	Left	Yes	5	RU	CL
73.3L	SO	Left	Partial	1	RU	UP
73.3M	BO	Left	No	1	RU	RS
73.3N	DW	Left	Partial	1	RU	UP
73.3O	BO	Left	Yes	1	RU	UP
73.3P	SO	Left	Partial	1	RU	RS
73.3Q	CT	Left	No	5	RU	UP
73.3R	SO	Left	Overcast	1	RU	UP
73.3S	DW	Left	Overcast	1	RU	UP
73.3T	CF	Right	Yes	2	RU	CL
73.4A	BO	Left	Partial	5	RU	TA
73.4B	BO	Left	No	5	RU	CL
73.4C	CF	Left	Partial	5	RU	CL
73.4D	CT	Left	No	5	RU	CL
73.4E	CF	Left	Yes	5	RU	CL
73.4F	CF	Left	Overcast	5	RU	CL
73.4G	BO	Left	Overcast	5	RU	TA
73.4H	CT	Left	Overcast	5	RU	TA

[1]River kilometer (Hunt et. al. 1992).
[2]BO=boulder, CF=cliff ledge, CT=cliff top, DW=drift wood, HS=hard snag (main branches only), NE=nest, PT=pinnacle top, SO=shore.
[3]Facing downstream.
[4]Yes=perch only used when shaded, No=perch only used when un-shaded, Partial=perch used both when shaded and when un-shaded, Overcast=perch only used when sky was overcast.
[5]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[6]RB=river bend, RU=run, RC=reservoir cove.
[7]UP=desert upland, CL=cliffs, TA=talus, RS=reservoir main body.

Table 55 continued.

Perch Location[1]	Perch Type[2]	Side[3]	Shade[4]	Distance to H_2O[5]	H_2O Type[6]	Land Type[7]
73.4I	CT	Left	No	5	RU	UP
73.4J	CT	Left	Partial	5	RU	CL
73.4K	CT	Left	No	5	RU	UP
73.4L	BO	Left	Yes	4	RU	TA
73.4M	BO	Left	Yes	5	RU	TA
73.4N	CF	Left	Yes	5	RU	CL
73.4O	CF	Left	Yes	5	RU	CL
73.4P	CT	Left	No	5	RU	UP
73.4Q	CF	Left	Partial	5	RU	CL
73.4R	CF	Left	No	5	RU	CL
73.4S	CF	Left	Yes	5	RU	CL
73.4T	BO	Left	Yes	2	RU	TA
73.4U	PT	Left	Yes	5	RU	CL
73.4V	CT	Right	No	4	RB	CL
73.4W	CF	Right	No	3	RB	CL
73.4X	CF	Right	Yes	3	RB	CL
73.4Y	CF	Right	Yes	3	RB	CL
73.4Z	BO	Left	Yes	2	RU	TA
73.4AA	CF	Left	Yes	5	RC	CL
73.5A	BO	Left	No	3	RU	UP
73.5B	CF	Right	Partial	3	RB	CL
73.5C	CT	Right	Yes	2	RB	CL
73.5D	CT	Left	No	5	RU	UP
73.6A	CF	Right	Yes	3	RB	CL
73.6B	CF	Right	No	3	RB	CL
73.6C	CF	Right	No	2	RB	CL
73.7A	CF	Right	Yes	2	RB	CL
73.7B	CF	Right	Yes	2	RB	CL
73.8A	CT	Right	Partial	1	RB	CL
73.8B	BO	Right	No	1	RB	UP
73.8C	CF	Right	Yes	1	RB	CL
73.8D	CF	Right	Yes	1	RU	CL
73.9A	DW	Left	No	1	RB	UP
73.9B	CF	Right	Yes	1	RB	CL
75.8	CF	Left	Yes	1	RU	CL
76.0	HS	Left	No	5	RU	UP
77.9	SO	Right	No	1	RU	UP
79.5	*	Right	No	2	RU	UP

[1]River kilometer (Hunt et. al. 1992).
[2]BO=boulder, CF=cliff ledge, CT=cliff top, DW=drift wood, HS=hard snag (main branches only), NE=nest, PT=pinnacle top, SO=shore, UN=eagle was perched but was flushed before perch type was determined.
[3]Facing downstream.
[4]Yes=perch only used when shaded, No=perch only used when un-shaded, Partial=perch used both when shaded and when un-shaded, Overcast=perch only used when sky was overcast.
[5]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[6]RB=river bend, RU=run, RC=reservoir cove.
[7]UP=desert upland, CL=cliffs, TA=talus, RS=reservoir main body.

Table 56. Bald eagle habitat use at the Pleasant BA, Arizona, 2010.

River km[1]	PW[2,3]	NS	NH	NF	NB	EN	PP	DW	OT	Total	Percent
69.1	--	--	--	--	--	--	--	--	11	11	0.1
72.3	7	--	--	--	--	--	--	--	--	7	0.1
72.8	--	--	--	--	--	--	--	--	1	1	0.1
73.1	479	--	--	--	--	--	6	--	2	487	2.5
73.2	33	--	--	--	--	--	--	--	49	82	0.4
73.3	6,218	2,452	2,151	1,948	1,458	357	123	144	314	15,165	78.8
73.4	2,602	--	--	--	--	--	73	--	179	2,854	14.8
73.5	31	--	--	--	--	--	--	--	48	79	0.4
73.6	44	--	--	--	--	--	11	--	1	56	0.3
73.7	270	--	--	--	--	--	8	--	--	278	1.4
73.8	179	--	--	--	--	--	2	--	8	189	1.0
73.9	3	--	--	--	--	--	--	5	--	8	0.1
75.8	2	--	--	--	--	--	--	--	--	2	0.1
76.0	34	--	--	--	--	--	--	--	--	34	0.2
77.9	--	--	--	--	--	--	--	--	1	1	0.1
Total	9,902	2,452	2,151	1,948	1,458	357	223	149	614	19,254	
Percent	51.4	12.7	11.2	10.1	7.6	1.9	1.2	0.8	3.2		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation Time (minutes).
[3]PW=perched watching, NS=standing in or on nest, NH=nest, shading, NB=nest, brooding, NF=nest, feeding young, EN=eating in nest, PP=perched preening, DW=drinking water, OT=other (includes perched drying, perched close to mate, nest maintenance, perched watching or hunting, perched with prey, eating on cliff, perched unknown, eating on ground, nest activity, bathing, perched vocalizing, standing in water, perched interaction, vocalizing at nest, gathering nest material, and copulation.

APPENDIX M: SAGUARO BREEDING AREA SUMMARY

Table 57. Observed human activity and bald eagle behavior, Saguaro BA, Arizona, 2010.

Human Activity	N[1]	W	R	F	B	Total	Percent
Boat	2,217	25	--	11	1,644	3,897	73.0
Fisherman (boat)	1,140	1	--	--	79	1,220	22.9
Jet ski	79	--	--	--	93	172	3.2
Small plane	10	1	--	--	--	11	0.2
Helicopter	9	6	1	--	2	18	0.4
AGFD researcher	5	--	1	--	--	6	0.1
Kayak	4	--	--	--	1	5	0.1
Swimmer	--	--	--	--	3	3	0.1
Military plane	2	--	--	--	--	2	0.1
Sheriff helicopter	1	--	--	--	--	1	0.1
Apache helicopter	1	--	--	--	--	1	0.1
Total	3,468	33	2	11	1,822	5,336	

[1]Bald eagle response: N=none, W=watched, R=restless, F=flushed, B=bird not in area.

Table 58. Observed forage events and success, Saguaro BA, Arizona, 2010.

Sex	Fish		Mammals		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	3	3-0	1	1-0	--	--	4	4-0
Female	24	17-7	1	0-1	1	0-1	26	17-9
Total	27	20-7	2	1-1	1	0-1	30	21-9

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

Table 59. Observed prey types delivered to the nest, Saguaro BA, Arizona, 2010.

Sex	Fish	Mammals	Birds	Unknown	Total	Percent
Male	3	2	1	--	6	8.5
Female	55	7	2	1	65	91.5
Total	58	9	3	1	71	
Percent	81.7	12.7	4.2	1.4		

Table 60. Observed prey species delivered to the nest, Saguaro BA, Arizona 2010.

Sex	Fish				Birds	Mammals		Total	Percent
	SB[1]	LB	BC	CC	AC	GS	RS		
Male	2	--	--	--	--	1		3	6.4
Female	21	7	1	6	2	6	1	44	93.6
Total	23	7	1	6	2	7	1	47	
Percent	48.9	14.9	2.1	12.8	4.2	14.9	2.1		

[1]SB=smallmouth bass, LB=largemouth bass, BC=black crappie, CC=channel catfish, AC=American coot, GS=ground squirrel species, RS=rock squirrel.

Table 61. Bald eagle habitat analysis at the Saguaro BA, Arizona, 2010.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
28.7	CT	Right	No	2	RS	UP
30.3	CT	Right	Partial	2	RS	UP
30.5	CT	Right	Partial	2	RS	UP
31.0	CT	Right	Partial	2	RS	UP
31.2	CT	Right	Partial	2	RS	UP
31.4	BO	Left	Partial	1	RU	UP
31.5a	PT	Left	No	1	RU	CF
31.5b	RW	Left	Partial	1	RU	CF
31.6a	PT	Left	No	2	RU	CF
31.6b	BO	Left	Partial	1	RU	CF
31.6c	CF	Left	Partial	1	RU	CF
31.7a	CF	Left	Partial	1	RB	CF
31.7b	BO	Left	Partial	2	RB	UP
31.7c	CT	Left	Partial	1	RB	CF
31.8a	BO	Left	Partial	1	RB	CF
31.8b	CF	Left	Partial	1	RB	CF
31.8c	CT	Left	Partial	2	RB	CF
31.8d	BO	Left	Partial	2	RB	UP
31.8e	BO	Left	Partial	3	RB	UP
31.9a	BO	Left	Partial	1	RB	CF
31.9b	CF	Left	Partial	1	RB	CF
31.9c	CF	Left	Partial	2	RB	CF
31.9d	CT	Left	Partial	2	RB	CF
31.9e	BO	Left	Partial	3	RB	UP
32.0a	PT	Left	Partial	1	RB	CF
32.0b	CF	Left	Partial	1	RB	CF
32.0c	CT	Left	Partial	2	RB	CF
32.0d	BO	Left	Partial	2	RB	UP
32.0e	CT	Left	Partial	5	RB	CF
32.1a	PT	Left	Partial	1	RB	CF
32.1b	BO	Left	Partial	1	RB	CF
32.1c	CF	Left	Partial	1	RB	CF
32.1d	PT	Left	Partial	2	RB	CF
32.1e	CF	Left	Partial	3	RB	CF
32.2a	PT	Left	Partial	1	RB	CF
32.2b	CF	Left	Partial	1	RB	CF
32.2c	PT	Left	Partial	2	RB	CF
32.2d	BO	Right	Partial	1	RB	CF
32.3	PT	Left	Partial	1	RB	CF
32.4	CT	Left	Partial	1	RB	CF
34.2	BO	Right	Partial	1	RU	CF
35.2	CT	Left	Partial	1	RU	CF

[1]River kilometer (Hunt et. al. 1992).
[2]BO=boulder, CF=cliff ledge, CT=cliff top, PT=pinnacle top, RW=rock in water.
[3]Facing downstream.
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[5]RB=river bend, RS=reservoir main body, RU=river run.
[6]CL=cliffs, UP=upland desert.

Table 62. Bald eagle habitat use at the Saguaro BA, Arizona, 2010.

River km[1]	PW[2,3]	PR	PH	PD	ES	PU	GN	PV	EC	OT	Total	Percent
28.7	37	--	--	--	--	--	--	--	--	--	37	0.5
30.3	20	--	--	--	35	--	--	--	--	--	55	0.7
30.5	--	--	--	--	--	9	--	5	--	1	15	0.2
31.2	124	--	--	--	--	--	--	--	--	--	124	1.7
31.4	14	--	--	25	--	--	--	--	--	--	39	0.5
31.5	2,341	74	20	155	42	--	1	17	--	19	2,669	35.7
31.6	14	--	3	--	25	--	--	--	--	5	47	0.6
31.7	205	96	3	--	--	--	--	--	--	--	304	4.1
31.8	595	--	--	--	--	--	2	--	--	19	616	8.2
31.9	774	--	25	--	--	7	2	--	--	--	808	10.8
32.0	793	175	30	--	--	31	40	4	--	--	1,073	14.3
32.1	133	--	16	2	--	3	2	7	--	--	163	2.2
32.2	957	--	196	40	--	1	2	2	32	--	1,230	16.4
32.3	229	--	--	--	--	--	--	--	--	--	229	3.1
32.4	40	--	3	--	--	--	--	--	--	--	43	0.6
34.2	--	--	--	--	--	--	--	--	--	23	23	0.3
35.2	4	--	--	--	--	--	--	--	--	--	4	0.1
Total	6,280	345	296	222	102	51	49	35	32	67	7,479	
Percent	84.0	4.6	4.0	3.0	1.4	0.7	0.7	0.5	0.4	0.9		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PR=perched roosting/watching, PH=perched hunting, PD=perched drying, ES=eating on shore, PU=perched unknown, GN=gathering nest material, PV=perched vocalizing, EC=eating on cliff, OT=other behaviors (includes eating on rock, drinking water, perched with prey, and bathing).

APPENDIX N: SYCAMORE BREEDING AREA SUMMARY

Table 63. Observed human activity and bald eagle behavior, Sycamore BA, Arizona, 2010.

Human Activity	N[1]	W	R	F	L	B	Total	Percent
Horseback rider	18	14	1	--	--	3	36	26.6
Helicopter	20	4	--	--	1	3	28	20.7
Small plane	16	1	--	--	--	1	18	13.3
OHV	9	4	--	1	--	2	16	11.9
Apache helicopter	10	3	--	--	--	1	14	10.4
Military helicopter	4	2	--	--	--	--	6	4.4
Driver	2	2	--	--	--	2	6	4.4
Hiker	1	1	--	1	--	--	3	2.2
Gunshot	2	--	--	--	--	--	2	1.5
Military plane	1	1	--	--	--	--	2	1.5
Swimmer	--	1	--	--	--	--	1	0.7
Sheriff helicopter	1	--	--	--	--	--	1	0.7
Fisherman	1	--	--	--	--	--	1	0.7
Birder	1	--	--	--	--	--	1	0.7
Total	86	33	1	2	1	12	135	

[1]Bald eagle response: N=none, W=watched, R=restless, F=flushed, L=left area, B=bird not in area.

Table 64. Observed forage events and success, Sycamore BA, Arizona, 2010.

Sex	Fish		Mammal		Carrion		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U	E	S-U
Male	1	1-0	1	1-0	--	--	1	1-0	3	3-0
Female	1	0-1	--	--	1	1-0	--	--	2	1-1
Total	2	1-1	1	1-0	1	1-0	1	1-0	5	4-1

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

Table 65. Observed prey types delivered to the nest, Sycamore BA, Arizona, 2010.

Sex	Fish	Mammals	Carrion	Unknown	Total	Percent
Male	17	3	2	8	30	58.8
Female	18	--	1	2	21	41.2
Total	35	3	3	10	51	
Percent	68.6	5.9	5.9	19.6		

Table 66. Bald eagle habitat analysis at the Sycamore BA, Arizona, 2010.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
6.8	SS	Left	No	2	PN	MP
9.3	YL	Right	No	6	RU	MB
9.4	SM	Left	No	1	RU/RI	MB
10.0	CL	Left	Partial	5	RU	CW
10.2	SG	Right	No	3	RI	TX
10.4	SG	Left	No	6	RU	MB
10.5	TX	Left	No	1	RI	CW
11.7	ST	Right	Partial	2	RU/RI	TX
11.7	HS	Right	No	2	RI	TX
12.2	CL	Left	No	3	RU	TX
12.3	CL	Left	Partial	5	RU	CW
S 0.4	HS	Right	No	4	PO	CW
S 0.7	SG	Left	No	5	RU	MB
S 0.8	SG	Right	No	4	RU	TX
S 0.9	YL	Left	No	6	RU	MB

[1]River kilometer (Hunt et. al. 1992). S=Sycamore Creek.
[2]CL=cottonwood large/20-30+ m, HS=hard snag (only main branches), SG=soft snag, SM=snag, mesquite, SS=snag, shrub, ST=snag top, TX=tamarisk, YL=sycamore large/10-20+ m.
[3]Facing downstream.
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[5]PN=pond, PO=river pool, RI=riffle, RU=run.
[6]CW=cottonwood grove, MB=mesquite bosque, MP=materials plant, TX=tamarisk thicket.

Table 67. Bald eagle habitat use at the Sycamore BA, Arizona, 2010.

River km[1]	PW[2,3]	PH	PP	CL	PD	PR	PK	Total	Percent
6.8	--	122	--	--	--	--	--	122	0.7
9.3	66	--	--	--	--	--	--	66	0.4
9.4	35	314	13	--	--	--	--	362	2.0
10.0	115	--	18	10	--	--	--	143	0.8
10.2	94	375	--	--	15	--	--	484	2.6
10.4 (nest)	15,349	--	743	460	78	12	3	16,645	90.6
10.5	1	128	--	--	--	--	--	129	0.7
11.7	81	229	--	--	--	--	--	310	1.7
12.2	8	18	--	--	--	--	--	26	0.1
12.3	3	20	--	--	--	--	--	23	0.1
S 0.4	13	--	--	--	--	--	--	13	0.1
S 0.7	14	--	--	--	--	--	--	14	0.1
S 0.8	4	--	--	--	--	--	--	4	0.1
S 0.9	25	--	--	--	--	--	--	25	0.1
Total	15,808	1,206	774	470	93	12	3	18,366	
Percent	86.1	6.6	4.2	2.6	0.5	0.1	--		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PH=perched hunting, PP=perched preening, CL=perched very close to mate, PD=perched drying, PR=perched, roosting, PK=perched with prey.

APPENDIX O: TONTO BREEDING AREA SUMMARY

Table 68. Observed human activity and bald eagle behavior, Tonto BA, Arizona, 2010.

Human Activity	N[1]	W	R	F	Total	Percent
Boat - fishing	825	15	--	2	842	85
Canoe/kayak	44	--	--	--	44	4.4
Birdwatcher	36	--	--	--	36	3.7
Boater	33	2	--	--	35	3.5
Camper	8	--	--	--	8	0.8
Horseback rider	8	--	--	--	8	0.8
Jet ski	4	1	--	--	5	0.5
Ultralight	3	--	--	--	3	0.3
Helicopter	1	1	1	--	3	0.3
Gunshot	2	1	--	--	3	0.3
Agency worker	2	--	--	--	2	0.2
Small plane	2	--	--	--	2	0.2
Total	968	20	1	2	991	

[1]Bald eagle response: N=none, W=watched, R=restless, F=flushed.

Table 69. Watercraft compliance at the closure boundary, Tonto BA, Arizona, 2010.

Date	Boats at Closure	Boats in Closure	Jet Skis at Closure	Jet Skies in Closure	Total
2/5-2/14	22	1	--	--	23
2/19-2/28	12	1	--	--	13
3/5-3/14	6	1	--	--	7
3/19-3/28	43	6	--	--	49
4/2-4/11	50	9	--	--	59
4/16-4/25	31	2	--	--	33
4/30-5/9	19	3	3	--	25
5/14-5/26	16	1	--	--	17
Total	199	24	3	--	226
Percent	88.1	10.6	1.3	--	

Table 70. Watercraft compliance: weekend vs. weekday, Tonto BA, Arizona, 2010.

Date	Boats at Closure	Boats in Closure	Jet Skis at Closure	Jet Skies in Closure	Total	Percent
Weekend	165	21	--	--	186	82.3
Weekday	34	3	3	--	40	17.7
Total	199	24	3	--	226	

Table 71. Observed forage events and success, Tonto BA, Arizona, 2010.				
Sex	Fish		Total	
	E[1]	S-U[2]	E	S-U
Male	16	16-0	16	16-0
Female	7	6-1	7	6-1
Unknown	1	1-0	1	1-0
Tandem	1	1-0	1	1-0
Total	25	24-1	25	24-1

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

Table 72. Observed prey types delivered to the nest, Tonto BA, Arizona, 2010.				
Sex	Fish	Mammals	Total	Percent
Male	36	--	36	70.6
Female	13	2	15	29.4
Total	49	2	51	
Percent	96.1	3.9		

Table 73. Observed prey species delivered to the nest, Tonto BA, Arizona 2010.								
Sex	Fish				Mammals		Total	Percent
	LB[1]	SB	BC	CP	JK	DC		
Male	12	4	2	--	--	--	18	72
Female	3	1	--	1	1	1	7	28
Total	15	5	2	1	1	1	25	
Percent	60.0	20.0	8.0	4.0	4.0	4.0		

[1]LB=largemouth bass, SB=smallmouth bass, BC=black crappie, CP=common carp, JK=jackrabbit species, DC=desert cottontail.

Table 74. Bald eagle habitat analysis at the Tonto BA, Arizona, 2010.						
Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
10.0	CT	Left	No	1	RC	UP
16.0	LG	Right	No	1	RS	CW
16.1a	SG	Right	No	1	RS	CW
16.1b	SP	Right	No	1	RS	CW
16.3	BA	Left	Partial	1	RS	CW
16.4	HS	Right	No	1	RS	CW
16.5a	HS	Right	No	1	RS	CW
16.5b	LG	Right	No	1	RS	CW
16.5c	SG	Right	No	1	RS	CW
16.9a	SG	Right	Partial	1	RS	CW
16.9b	HS	Right	No	1	RS	CW
16.9c	SG	Right	Partial	1	RS	CW
16.9d	LG	Left	Partial	1	RS	CW
17.1a	SM	Left	No	1	RS	CW
17.1b	MS	Left	No	1	RS	CW
17.2	HS	Left	No	1	RS	CW
17.3a	YL	Right	No	1	RS	CW
17.3b	SM	Left	No	1	RS	CW
17.4	HS	Right	No	1	RS	CW

[1]River kilometer (Hunt et. al. 1992).
[2]BA= cut bank, CT=cliff top, HS=hard snag (main branches only), LG=log, MS=mesquite bosque, SG=soft snag (dead but branches still intact), SM=snag (mesquite), SP=stump, YL=Sycamore large/10-20+m.
[3]Facing downstream.
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[5]RC=reservoir cove, RS=reservoir main body.
[6]CW=cottonwood grove, UP=upland desert.

Table 75. Bald eagle habitat use at the Tonto BA, Arizona, 2010.										
River km[1]	PW[2,3]	PP	CL	DW	ET	PD	PR	OT	Total	Percent
16.0	32	--	--	--	8	--	--	7	47	0.3
16.1	705	106	--	10	41	--	--	2	864	4.9
16.3	20	--	--	--	--	--	--	--	20	0.1
16.4	294	27	--	--	--	--	--	--	321	1.8
16.5	647	12	--	--	--	--	--	17	676	3.8
16.9	13,812	325	161	111	27	55	50	19	14,560	82.8
17.1	830	30	--	--	4	--	--	28	892	5.1
17.2	8	--	--	--	11	--	--	--	19	0.1
17.3	61	--	--	--	--	--	--	2	63	0.4
17.4	131	--	--	--	--	--	--	--	131	0.7
Total	16,540	500	161	121	91	55	50	75	17,593	
Percent	94.0	2.8	0.9	0.7	0.5	0.3	0.3	0.5		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, CL=perched close to mate, DW=drinking, ET=eating in tree, PD=perched Drying, PR=perched roosting, OT=other (includes gathering nest material, perched vocalizing, perched hunting).

APPENDIX P: WOODS CANYON BREEDING AREA SUMMARY

Table 76. Observed human activity and bald eagle behavior, Woods Canyon BA, Arizona, 2010.

Human Activity	N[1]	W	U	X	Total	Percent
Hiker	3,267	--	--	--	3,267	68.7
Boater	1,144	--	--	--	1,144	24.0
Fisherman	179	--	3	--	182	3.8
Canoe/kayak	140	--	--	--	140	2.9
Tuber/rafter	17	--	--	--	17	0.4
Helicopter	--	1	1	--	2	0.1
Small plane	5	--	--	1	6	0.1
Total	4,752	1	4	1	4,758	

[1]Bald eagle response: N=none, W=watched, U=unknown, X=abandoned forage attempt.

Table 77. Watercraft compliance at the south shore closure boundary, Woods Canyon BA, Arizona, 2010.

Date	Boats in cove[1]	Boats entering closure	Total
5/7-5/9	53	0	53
5/28-6/10	173	2	175
6/11-6/24	291	3	294
6/25-7/8	392	5	397
7/9-7/22	271	3	274
7/23-7/25	108	0	108
Total	1,288	13	1,301
Percent	99.0	1.0	

[1]Number of occurrences

Table 78. Land closure compliance at the Rocky Point trailhead, Woods Canyon BA, Arizona, 2010.

Date	Hikers			Shore fisherman			Total
	At closure	Entered closure	Sub total	At closure	Entered closure	Sub total	
5/7-5/9	63	3	66	30	1	31	97
5/28-6/10	821	3	824	17	0	17	841
6/11-6/24	791	0	791	58	1	59	850
6/25-7/8	817	2	819	13	0	13	832
7/9-7/22	597	3	600	46	0	46	646
7/23-7/25	118	0	118	16	0	16	134
Total	3,207	11	3,218	180	2	182	3,400
Percent	99.7	0.3		98.9	1.1		

Table 79. Observed forage events and success, Woods Canyon BA, Arizona, 2010.						
Sex	Fish		Carrion		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	27	25-2	1	1-0	28	26-2
Female	11	8-3	--	--	11	8-3
Unknown	6	4-2	--	--	6	4-2
Total	44	37-7	1	1-0	45	38-7

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

Table 80. Observed prey types delivered to the nest, Woods Canyon BA, Arizona, 2010.			
Sex	Fish (rainbow trout)	Total	Percent
Male	75	75	56.4
Female	44	44	33.1
Unknown	14	14	10.5
Total	133	133	
Percent	100.0		

Table 81. Bald eagle habitat analysis, Woods Canyon BA, Arizona, 2010.					
Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]
0.1a	HS	Left	No	1	RS
0.1b	PS	Left	No	1	RS
0.2	PS	Left	Partial	1	RS
0.3	PS	Left	Yes	1	RS
0.8	PS	Left	Partial	1	RS
0.9a	PS	Left	Yes	1	RS
0.9b	HS	Left	No	1	RS
1.0a	PS	Left	Yes	2	RS
1.0b	PS	Left	No	1	RS
1.0c	HS	Left	No	1	RS
1.1a	SG	Left	No	1	RS
1.1b	PS	Left	Partial	1	RS
1.1c	HS	Left	No	1	RS
1.1d	ST	Left	No	1	RS
1.2	PS	Left	Partial	1	RS
1.3a	PS	Left	Partial	1	RS
1.3b	SG	Left	No	1	RS
1.4	PS	Left	No	1	RS
1.5	HS	Left	No	1	RS
1.6a	PS	Left	Partial	1	RC
1.6b	HS	Left	No	1	RC
1.7	PS	Left	Partial	1	RS
1.8a	PS	Left	No	1	RS
1.8b	HS	Left	No	1	RS
1.8c	SG	Left	No	1	RS

[1]Lake kilometer (counterclockwise from middle of dam).
[2]HS=hard snag (main branches only), PS=pine 2nd growth (10-20m), SG=soft snag (dead but branches still intact), ST=snag top.
[3]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[4]RC=reservoir cove, RS=reservoir main body.

Table 81 continued.

Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]
1.9	PS	Left	No	1	RS
2.0	PS	Left	No	1	RS
2.1a	PS	Left	Partial	1	RS
2.1b	HS	Left	No	1	RC
2.2	PS	Left	No	1	RC
2.3a	SG	Left	No	1	RS
2.3b	PS	Left	No	1	RS
2.4a	PS	Left	No	1	RS
2.4b	SP	Left	No	1	RS
2.5	PS	Left	Partial	1	RC
3.4a	HS	Right	No	1	RS
3.4b	SG	Right	No	1	RS
3.4c	PS	Right	No	2	RS
3.4d	PS	Right	Partial	1	RS
3.4e	ST	Right	No	1	RS
3.5a	SG	Right	No	1	RS
3.5b	PS	Right	No	1	RS
3.5c	HS	Right	No	1	RS
3.6a	SG	Right	No	1	RS
3.6b	HS	Right	No	1	RS
3.6c	HS	Right	No	2	RS
3.6d	PS	Right	Partial	1	RS
3.7a	PS	Right	No	1	RS
3.7b	PS	Right	No	1	RS
3.7c	HS	Right	No	1	RS
3.8a	PS	Right	Partial	1	RS
3.8b	SG	Right	Partial	1	RS
3.9	SG	Right	No	1	RS
4.0a	PS	Right	No	1	RS
4.0b	HS	Right	Partial	1	RS
4.0c	SG	Right	No	1	RS
4.1	SG	Right	No	1	RS
4.3	PS	Right	Partial	1	RC
4.4	PS	Right	No	1	RS
4.7a	PS	Right	Partial	1	RS
4.7b	SG	Right	No	1	RS
4.7c	HS	Right	No	1	RS
4.8a	PS	Right	Partial	1	RS
4.8b	ST	Right	No	1	RS
4.8c	HS	Right	Partial	1	RS
4.9	PS	Right	Partial	1	RS
5.0a	PS	Right	Partial	1	RS
5.0b	SG	Right	No	1	RS
5.1	PS	Right	Partial	1	RS
5.2	SG	Right	No	1	RS

[1]Lake kilometer (counterclockwise from middle of dam).
[2]HS=hard snag (main branches only), PS=pine 2nd growth (10-20m), SG=soft snag (dead but branches still intact), SP=stump or fallen tree, ST=snag top.
[3]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[4]RC=reservoir cove; RS=reservoir main body.

Table 82. Bald eagle habitat use at the Woods Canyon BA, Arizona, 2010.

Lake km[1]	PW[2,3]	PH	PK	ET	PI	Total	Percent
0.1	15	25	--	--	--	40	0.7
0.2	141	--	--	--	--	141	2.5
0.3	45	--	--	--	--	45	0.8
0.8	65	--	--	--	--	65	1.2
0.9	191	--	3	--	--	194	3.5
1.0	451	6	5	4	--	466	8.4
1.1	450	14	4	--	--	468	8.4
1.2	86	6	--	--	--	92	1.7
1.3	56	25	--	3	--	84	1.5
1.4	85	--	2	7	--	94	1.7
1.5	15	--	--	--	--	15	0.3
1.6	--	--	5	--	--	5	0.1
1.7	77	--	5	--	--	82	1.5
1.8	272	18	--	--	--	290	5.2
1.9	71	27	--	--	--	98	1.8
2.0	85	--	--	--	--	85	1.5
2.1	59	--	--	--	--	59	1.1
2.2	50	29	--	--	--	79	1.4
2.3	12	6	--	--	--	18	0.3
2.4	73	5	--	--	2	80	1.4
2.5	5	--	--	--	--	5	0.1
3.4	316	9	--	--	1	326	5.9
3.5	144	25	--	--	8	177	3.2
3.6	81	--	--	--	--	81	1.5
3.7	704	--	--	--	--	704	12.7
3.8	257	--	--	10	--	267	4.8
3.9	211	--	--	--	--	211	3.8
4.0	212	--	--	--	--	212	3.8
4.1	10	--	--	--	--	10	0.2
4.3	--	5	--	--	--	5	0.1
4.4	18	--	--	--	--	18	0.3
4.7	61	--	--	--	--	61	1.1
4.8	352	--	--	--	--	352	6.3
4.9	172	--	--	--	--	172	3.1
5.0	333	--	--	--	--	333	6.0
5.1	100	--	--	--	--	100	1.8
5.2	27	--	--	--	--	27	0.5
Total	5,302	200	24	24	11	5,561	
Percent	95.4	3.6	0.4	0.4	0.2		

[1]Lake kilometer (counterclockwise from middle of dam).
[2]Observation time (minutes).
[3]PW=perched watching, PH=perched hunting, PK= perched with prey, ET=eating in tree, PI=perched interaction.