ARIZONA BALD EAGLE MANAGEMENT PROGRAM
2009 SUMMARY REPORT

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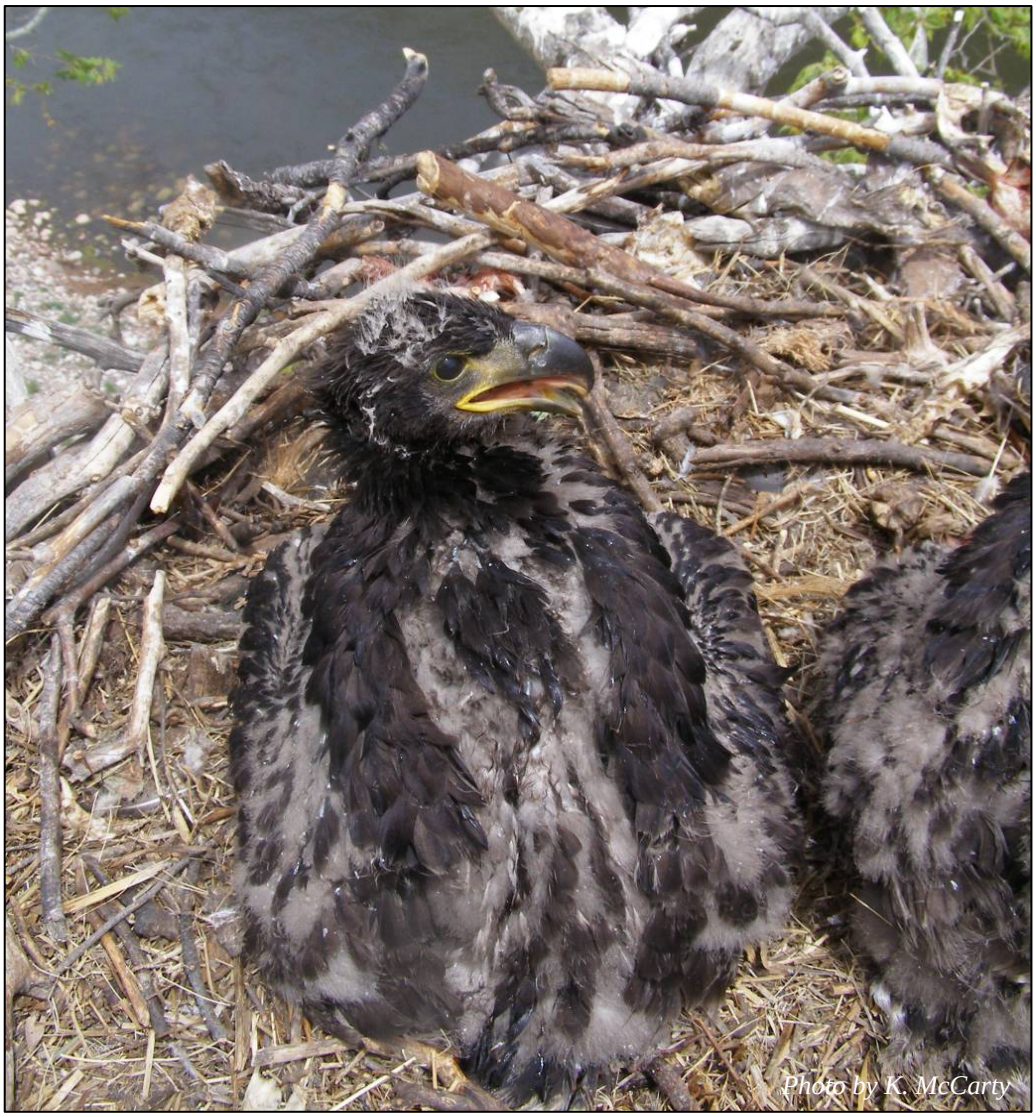

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This report, in part, summarizes the results of monitoring by the Arizona Bald Eagle Nestwatch Program using the breeding area reports submitted in 2009. Those include: Jennifer Lemieux and Philip MacAskill, Box Bar and Woods Canyon Breeding Areas (BA); Joe Peddie and Marta Peddie, Luna BA; Cori Indelicato and Jean Marie Spilker, Cliff BA; Jen Ottinger and Leah Vader, Goldfield-Kerr BA; Dayna Hawes and Ashley Persinger, Needle Rock BA; Erin Brandt and Scott Olmstead, Orme and Granite Reef BAs; Gretchen Henne and Jennifer Stroh, Pinto BA; David Janssen, Lake Pleasant and Woods Canyon BAs; Troy Maikis, Lake Pleasant BA; Ken O'Brien and Joan Wike, Tonto and Crescent BAs; Brandy Corbett and Eilene Lyon, Saguaro and Bagley BAs.

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ARIZONA BALD EAGLE MANAGEMENT PROGRAM 2009 SUMMARY REPORT

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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 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). The deadline for the status review was December 5, 2008, but was extended to October 12, 2009, with an additional extension granted to February 12, 2010. Consequently, although bald eagles were delisted nationally, bald eagles in central Arizona are currently 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). 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 Department of Transportation, Arizona Public Service (APS), Arizona State Parks Department, Fort McDowell Yavapai Nation, Geo-Marine (U.S. Air Combat Command), 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, some 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.

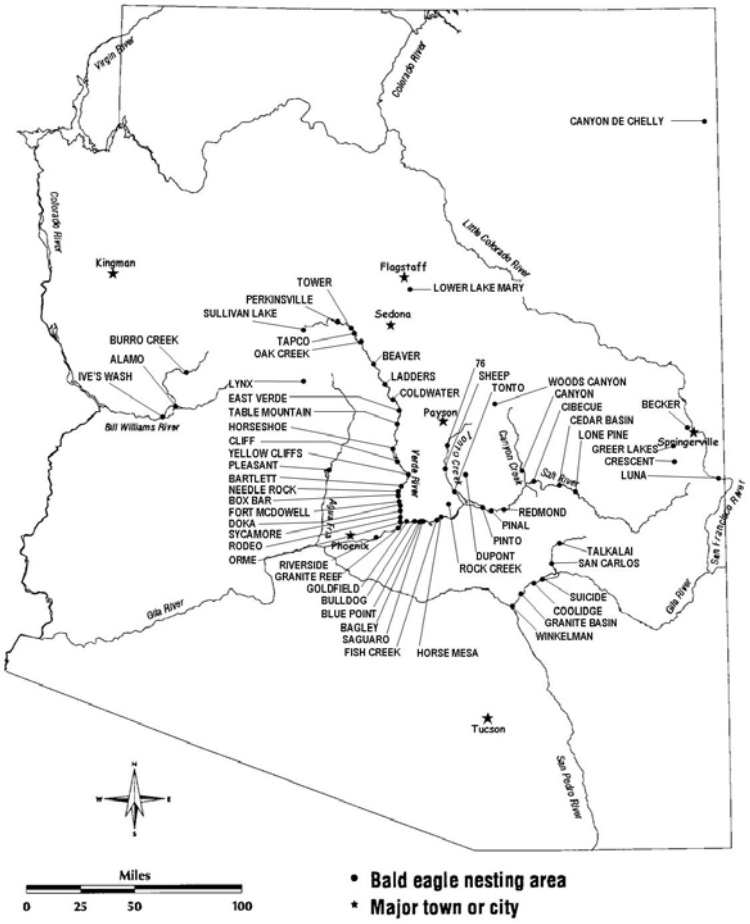

Figure 1. Location of known bald eagle BAs in Arizona, 2009.

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 fremonti*), 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*).

Eleven BAs are located outside of or do not include Sonoran Riparian Scrubland areas (Brown 1994). The Becker 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 and Rock Creek BAs, bald eagles in Arizona nest within a mile of water. BAs were located along: Burro, Canyon, Cibecue, Oak, Pinal, 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, Forest and Rangeland Ecosystem Science Center, Snake River Field Station (USGS), which in 2007 partnered with the U.S. Army Corps of Engineers, 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 2008). 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 2009 Arizona bald eagle 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 5-11, 2009, 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 USGS/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 2009 Arizona bald eagle winter count tallied 204 bald eagles (Table 1). We documented 139 adults (68.1%), 62 subadults (30.4%), and 3 unknown eagles (1.5%) (Tables 1 & 2). The highest number of bald eagles observed during ground surveys occurred in Coconino County (n=37, 30 routes), while the largest concentration seen on a single ground survey occurred at Goldwater Lake in Yavapai County (n=9) (Appendix A). Also, a large number of bald eagles were observed by helicopter along nine Salt River routes (n=53, or 26.0% of the total count).

Table 1. Summary of the Arizona bald eagle winter count 2009.								
County	Routes surveyed	Minutes	Adult	Subadult	Unknown[1]	Total	Total/ Minute	Total/ Hour
Apache	13	465	10	3	1	14	0.030	1.81
Cochise	2	320	1	0	0	1	0.003	0.19
Coconino[2]	30	4,615	27	10	0	37	0.008	0.48
Graham	Not surveyed.							
Mohave	1	116	4	2	0	6	0.052	3.10
Navajo	16	753	3	3	2	8	0.011	0.64
Santa Cruz	1	60	0	0	0	0	0	0
Yavapai	6	2,025	5	7	0	12	0.006	0.36
Yuma and La Paz	1	58	0	2	0	2	0.034	2.07
Verde River drainage	3	290	32	9	0	41	0.141	8.48
Gila River drainage	7	207	16	8	0	24	0.116	6.96
Salt River drainage	9	397	37	16	0	53	0.134	8.01
Various helicopter	5	51	4	2	0	6	0.118	7.06
Totals	94	9,357	139	62	3	204	.0218	1.31

[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 six bald eagles were counted on four non-standardized routes (Appendix A), but were not included in summary results.

In 2009, Arizona surveyed 94 of the 102 standardized routes (92%) (Table 2). Survey effort was modestly above average, with a total of 9,357 minutes (156 hours). Coconino County had the most number of routes and therefore had the most effort with 4,615 minutes (76.9 hours) (Appendix A). Deep snow and muddy roads caused several areas to be inaccessible, including most of the 8 routes that were not completed. Poor road conditions or other access issues limited 8 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=79), and a few responded harsh (8%, n=7) or mild (4%, n=4). There were no responses for either very harsh or very mild weather. Similarly, ice cover was rated as being normal (69%, n=58), more than normal (26%, n=22), less than normal (4%, n=3), and much more than normal (1%, n=1). There were no responses for much less than normal ice cover.

The total of 204 bald eagles counted in 2009 was much lower than the average of 309 birds counted annually during standardized counts, 1995-2008, and represents the second-lowest total during this period. When including this year's count, the average since 1995 drops to 302 birds. On 47 (50%) of the 94 routes, no bald eagles were counted.

The age composition of the 2009 bald eagle winter count was 68% adults, 30% subadults, and 2% unknown. This approximates the ratio of adults to subadults seen in Arizona's winter counts which has averaged 65% adults, 32% subadults, and 3% unknown (Table 2).

Table 2. Summary of Arizona bald eagle winter counts 1995-2009.

Year	Survey Time	Surveys completed	Birds/minute	Adults	Subadults	Unknown[3]	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	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
Average	9,148	102	0.036	197 (65%)	97 (32%)	9 (3%)	302

[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]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 2008). The AGFD administered and performed the 2009 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 2008 (e.g. McCarty and Jacobson 2008). 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 2009. 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 2008).

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=59) for breeding activity (Fig. 1). Of 50 occupied BAs, 48 pairs attempted to breed, and 29 pairs successfully produced 47 fledglings (Table 3; Appendix C). Significant findings of the 2009 nest survey include 4 new bald eagle BAs, 3 new alternate bald eagle nests, 7 fallen nests within BAs (Box Bar #3, Cliff #6, Lynx #3, Pinto #6, Sheep #4, Yellow Cliffs #2 and #3), and 5 potential nest sites.

Table 3. Summary of Arizona bald eagle productivity 2009.

Number of BAs	59	Number of Active BAs	48
Number of Occupied BAs	50	Number of Failed Breeding Attempts	19
Number of Eggs	77	Number of Successful Breeding Attempts	29
Nest Success = 29/50	0.58	Number of Young Hatched	68
Mean Brood Size = 47/29	1.62	Number of Young Fledged	47
		Productivity = 0.58*1.62	0.94

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)

Bagley Flat. – On February 6, 2009, we discovered bald eagles incubating in a new nest on cliffs downstream of Bagley Flat at Saguaro Lake. After confirming breeding activity at the nearby Bulldog, Blue Point, and Saguaro BAs, we named this new breeding area Bagley.

Bear Canyon Lake. – On June 3, 2009, a near-adult bald eagle was briefly seen flying over the lake. It began to descend toward a perch but was intercepted and chased from the area by a pair of ravens. A pair of ospreys was active at a new snag nest (#1).

Black Canyon Lake. – In November 2008, we received a report with a photograph from the public of a pair of adult bald eagles perching on a nest platform at the lake. During a helicopter flight on May 11, we observed an adult perched on the east side of the lake, but saw no nesting activity in the area and the nest on the platform had not been built up. A ground search on June 1 yielded no bald eagles, however a pair of ospreys was present (but not nesting). We will continue to monitor this area for breeding activity.

Gleason Flat. – On February 2, 2009, we saw one immature bald eagle in the area.

Goldfield (on lower Salt River) – In December 2008, we received reports from the USFS of bald eagles building a nest on the lower Salt River between the Orme BA and Bulldog BA. During a helicopter flight on January 5, we confirmed the pair was incubating in a new cottonwood tree nest (#1).

JD Dam Lake. – On May 11, 2009, we found an osprey incubating or brooding in a new snag nest (#1).

Parker Canyon. – We explored this canyon near Roosevelt Lake via helicopter due to repeated sightings of adult bald eagles at Salome Bay. Although no bald eagles were seen on May 11, 2009 we found one large empty nest on the west side near the mouth of the canyon.

Riverside (lower Salt River). – In January 2009, we received reports from the SRPMIC of bald eagles at a nest on SRPMIC lands. During a helicopter flight on February 3, we saw two adults standing in the new cottonwood tree nest (#1) and confirmed incubation by February 18.

Salome Creek. – On January 28, 2009, during a boat survey of Roosevelt Lake, we observed a pair of adult bald eagles copulating and perched with a fish on the southeast side of Salome Bay. One of the adults was later seen soaring near the high cliffs north of the bay. On January 29, the pair was again seen perched at the same location in the bay. On April 3, we received a report from the USFS of an adult with a fish circling over Salome Bay that flew to the northeast. No other activity was observed despite extensive helicopter surveys of the area throughout the season. We will continue to monitor this area for breeding activity.

Tapco (upper Verde River). – In December 2008, we received reports from the operators of the Verde Canyon Railroad of a new nest being attended by bald eagles downstream of the Tower BA. During a helicopter flight on January 5, we observed two adults at this new cottonwood tree nest (#1) and confirmed incubation on February 3. After observing occupancy at the Tower BA, approximately 4.6 river miles upstream, we named this new breeding area Tapco.

Willow Lake. – On February 3, 2009, we saw one adult bald eagle perched at the lake. No new nests were found.

Table 4. 2009 Arizona bald eagle nest survey summary, new locations (continued next page).

Location	Date	Survey Method	Results
Ashurst Lake	5/11	Helicopter	No new nests or bald eagles.
Bagley Flat	2/6, 2/10, 2/11, 3/18, 4/16	Helicopter, Boat	2/6- One adult incubating in new cliff nest #1.
Bear Canyon Lake	5/11, 6/3	Helicopter, Kayak	6/3- One near-adult bald eagle flying. Osprey incubating/brooding in new snag nest #1.
Beaver Creek	3/16, 4/22	Helicopter	No new nests or bald eagles.
Bill Williams River	4/8	Helicopter	No new nests or bald eagles.
Black Canyon Lake	5/11, 6/1	Helicopter, Ground	5/11- One adult flushed from perch. No new nests.
Cherry Creek	3/18	Helicopter	No new nests or bald eagles.
City Reservoir	4/22	Helicopter	No new nests or bald eagles.
Gila River (Hwy. 85 to 75th Ave.)	3/16	Helicopter	No new nests or bald eagles.
Gleason Flat	2/2	Helicopter	One immature in area. No new nests.
Goldfield (on lower Salt River)	1/6, 1/26, 2/2, 3/18, 4/16	Helicopter, Ground	1/6- One adult incubating in new cottonwood tree nest #1.

Table 4 continued.

Location	Date	Survey Method	Results
Goldwater Lake	3/16	Helicopter	No new nests or bald eagles.
Horse/Veil Lakes	4/22	Helicopter	No new nests or bald eagles.
JD Dam Lake	5/11	Helicopter	Osprey incubating in new snag nest #1. No bald eagles.
Kinnikinick Lake	5/11	Helicopter	No new nests or bald eagles.
LF Ranch	1/1	Helicopter	No new nests or bald eagles.
Parker Canyon	3/18, 4/16, 5/11	Helicopter	5/11- One large empty nest. No bald eagles.
Marshall Lake	4/22	Helicopter	One immature in area. No new nests.
Riverside (on lower Salt River)	2/3, 2/17, 3/4, 3/16, 3/30, 4/22, 5/6, 5/8, 5/26, 5/27	Helicopter, Ground	2/3-One adult standing in new cottonwood tree nest #1. 3/4- One adult incubating in nest #1. 4/22- Two 4-week old nestlings. 5/26- One 8-week old nestling. Second nestling dead in nest.
Rogers Lake	4/22	Helicopter	One immature in area. No new nests.
Santa Fe Reservoir	4/22	Helicopter	No new nests or bald eagles.
Salome Creek	1/28, 1/29, 3/18, 4/16, 5/11	Helicopter, Boat	1/28- Pair of adults in Salome Bay perched with prey, copulated. 1/29- Pair of adults perched in Salome Bay. No new nests.
Scholz Lake	4/22, 5/11	Helicopter	No new nests or bald eagles.
Tapco (on upper Verde River)	1/5, 1/21, 2/3, 3/16, 3/26, 4/8	Helicopter, Ground	1/5- Two adults at new cottonwood tree nest #1. 2/3- One adult incubating. 3/26- Failed.
Tonto Creek (Gisela to Mogollon Rim)	5/11	Helicopter	No new nests or bald eagles.
Upper Sycamore Canyon	4/22, 5/11	Helicopter	No new nests or bald eagles.
Willow Lake	2/3, 3/16	Helicopter	One adult perched in area. No new nests.

Historical Breeding Areas (Table 5)

Hell Point. – On January 5, 2009, we saw an adult and immature bald eagle downstream of the Hell Point nests. On March 16, we saw two adult bald eagles flying in the downstream area. None of the known nests were active. We will continue to monitor the area for further activity.

Upper Lake Mary. – Ospreys were active in nests #2, 3, and 4.

Table 5. 2009 Arizona bald eagle nest survey summary, historical breeding areas.

Location	Date	Survey Method	Results
Camp Verde	1/5, 2/3	Helicopter	No new nests or bald eagles.
Chino	2/3, 4/22	Helicopter	No new nests or bald eagles.
Devil's Post	2/3, 3/16, 4/22	Helicopter	All known nests empty. No bald eagles.
Hell Point	1/5, 2/3, 3/16, 4/8	Helicopter	1/5- One adult and one immature in area. 3/16- Two adults in area. 4/8- One golden eagle in area.
Mule Hoof	1/7, 2/2, 3/18, 4/16	Helicopter	All known nests empty. No bald eagles.
Upper Lake Mary	4/22, 5/11	Helicopter	4/22- Ospreys incubating in nests #2 and 4. 5/11- Ospreys incubating/brooding in nests #2, 3, and 4. Nest #1 empty. Nest #5 not found. No bald eagles.
Winkelman	2/2, 4/16	Helicopter	No new nests or bald eagles.

Survey Sites with Existing Large Nests (Table 6)

Chevelon Canyon. – On the May 11, 2009 helicopter survey, we found an adult bald eagle perched on Chevelon Canyon Creek just before its inflow to the lake. During a kayak and ground survey on June 2, we saw an adult again perched in the same area, however we observed no nesting activity. We found ospreys incubating or brooding in a new snag nest (#3). Ospreys were also active in nest #2.

Knoll Lake. – On May 11, 2009, we found an osprey incubating or brooding in a new snag nest (#4).

Mormon Pocket. – On January 5, 2009, one adult and one immature bald eagle were seen perched in the area, but not seen on subsequent ORA flights. On March 16, we found a golden eagle incubating in nest #2.

Muldoon. – On January 5, 2009, one adult and two immature bald eagles were seen in the area, but not seen on subsequent ORA flights. We will continue to monitor the area for further activity.

Pinto Creek. – On March 18, 2009, we found a golden eagle incubating in nest #1.

Watson Lake. – On March 16, 2009, we found a golden eagle incubating in nest #1.

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 11 flight, however we found no evidence of nesting. Ospreys were incubating or brooding in nests #1, 2, and 3. We will continue to monitor the area for further activity.

Willow Springs Lake. – On June 3, 2009, we saw an adult and immature bald eagle perched at the lake. The adult foraged at various points on the lake, and wore no bands. Although its identity was unknown it was likely to have been one of the adults from the nesting pair at Woods Canyon Lake. We saw the adult at Willow Springs Lake make several attempts to pirate fish from Ospreys, and it flew toward Woods Canyon Lake after finally succeeding. On June 4, we again observed the adult attempting to steal food from Ospreys. We found Ospreys incubating or brooding in nest #1 and in a new snag nest (#2).

Table 6. 2009 Arizona bald eagle nest survey summary, nest sites.

Location	Date	Survey Method	Results
Blue Ridge Reservoir	5/11	Helicopter	Ospreys incubating in nests #2 and 3. Nests #1, 4, and 5 not found. No bald eagles.
Chevelon Canyon (Slim Jim Canyon to Chevelon campground)	5/11, 6/2	Helicopter, Ground	5/11- One adult perched at inflow to lake. Ospreys incubating in nest #2 and new snag nest #3.
Dogtown Lake	4/22, 5/11	Helicopter	All known nests empty. No bald eagles.
Eagle (Eagle Creek)	1/8	Helicopter	No new nests or bald eagles.
Granite (Verde River)	1/5, 2/3, 3/16, 4/8	Helicopter	All known nests empty. No bald eagles.
Knoll Lake	5/11	Helicopter	Osprey incubating in new snag nest #4. Nest #1 empty. Nest #2 and #3 not found. No bald eagles.
Mormon Pocket (Verde River)	1/5, 3/16	Helicopter	1/5- One adult and one immature in area. 3/16- Golden eagle incubating in nest #2.
Muldoon (Verde River)	1/5, 2/3, 4/8	Helicopter	1/5- One adult and two immatures in area. No new nests.
Pinto Creek	3/18	Helicopter	3/18- Golden eagle incubating in nest #1.
Sullivan (Verde River)	3/16, 4/8	Helicopter	All known nests empty. No bald eagles.
Tremaine/Soldier Annex/ Soldier/Long Lakes	5/11	Helicopter	No new nests or bald eagles.
Watson Lake	2/3, 3/16	Helicopter	3/16- Golden eagle incubating in nest #1. No bald eagles.
West Clear Creek	1/5	Helicopter	No new nests or bald eagles.
White Horse Lake	4/22, 5/11	Helicopter	5/11- One adult perched by lake. Ospreys incubating/brooding in nests #1, 2, and 3.
Willow (Willow Creek)	1/8	Helicopter	No new nests or bald eagles.
Willow Springs Lake	5/11, 6/3, 6/4	Helicopter, Ground	5/11- Ospreys incubating in nest #1 and new snag nest #2. 6/3, 6/4- One adult bald eagle at lake.

Breeding Areas (Table 7)

Box Bar. – On May 11, 2009, we found that nest #3 and its supporting limb had fallen after the nestlings had fledged.

Bulldog. – On February 2, 2009, we found an adult bald eagle incubating in a new cliff nest (#2). The new nest is higher up on the same cliff as nest #1.

Burro Creek. – On February 3, 2009, we saw one adult flying upstream of the Highway 93 bridge. On April 22, we saw one adult in the area of several nests that were discovered last year downstream of the campground. All known nests were empty and no nesting was observed.

Cliff. – On August 24, 2009, the USFS reported that nest #6 and its supporting branches had fallen.

Granite Basin. – On January 6, 2009, we saw an adult bald eagle perched by nest #1. No eagles were seen on subsequent visits and all known nests were empty.

Doka. – On February 3, 2009, we found an adult bald eagle incubating in a new cottonwood tree nest (#5).

Ladders. – On January 5, 2009, we saw two adult bald eagles perched in the area. On March 16, one adult was in the area, and a second adult was near Beasley Flat. On April 8, we saw two adults standing in nest #8 but the was nest empty. All known nests were empty and no nesting was observed.

Lynx. – On February 3, 2009, we found an adult bald eagle incubating in a new snag nest (#3) along Lynx Creek. On May 21, volunteers monitoring the new nest reported that it had completely fallen after the young fledged.

Pint.o – On October 26, 2009, the USFS reported that nest #6 tree had fallen.

Sheep. – On April 16, 2009, we discovered that the entire snag supporting nest #4 had fallen, likely causing the nestlings to have fledged a little early. One of the eaglets was seen flushing from a live tree nearby, and the second eaglet was perched on the fallen snag.

Tower. – On March 16, 2009, one adult bald eagle flushed from nest #8, but the nest was empty. All other known nests were empty.

Yellow Cliffs. – On January 5, 2009, we found that nests #2 and #3 and their supporting limbs had fallen. On March 16, we found an adult bald eagle incubating in nest #1, which had been discovered in 2005 but was first used this year.

Table 7. 2009 Arizona bald eagle nest survey summary, breeding areas (continued next page).

Location	Date	Survey Method	Results
Becker	6/8	Ground	All known nests empty. No bald eagles.
Box Bar	1/5, 2/3, 3/16, 4/1, 4/22, 5/11	Helicopter, Ground	5/11- Nest #3 fallen.
Bulldog	1/6, 2/2, 2/11, 3/18, 3/23, 4/16, 5/11, 5/13, 6/19	Helicopter, Ground	2/2- One adult incubating in new cliff nest #2.
Burro Creek	2/3, 3/16, 4/22	Helicopter Ground	2/3- One adult flying upstream of bridge. 4/22- One adult in area of nests below campground.
Canyon	1/6, 2/2, 3/18, 4/16	Helicopter	All known nests empty. No bald eagles.
Cedar Basin	1/7, 2/2, 3/18, 4/16	Helicopter	All known nests empty. No bald eagles.
Cliff	1/5, 2/3, 3/13, 3/16, 4/22, 5/11, 5/26	Helicopter, Ground	8/24- Nest #6 reported by USFS as fallen.
Doka	1/5, 2/3, 3/3, 3/16, 3/30, 4/22, 5/11	Helicopter, Ground	1/5- Two adults perched at new cottonwood nest #5. 2/3- One adult incubating in nest #5.
Dupont	2/2, 3/18, 4/16, 5/11	Helicopter	No new nests or bald eagles.
Granite Basin	1/6, 2/2, 3/18, 4/16	Helicopter	1/6- One adult perched by nest #1. All known nests empty.
Greer Lakes	3/18, 4/16, 6/9	Helicopter, Ground	All known nests empty. No bald eagles.

Table 7 continued.

Location	Date	Survey Method	Results
Ladders	1/5, 2/3, 3/16, 4/8	Helicopter	1/5- Two adults in area. 3/16- Two adults in area. 4/8- Two adults standing in nest #8; nest empty. All other known nests empty.
Lynx	2/3, 3/16	Helicopter	2/3- One adult incubating in new snag nest #3. 5/21- Nest #3 reported as fallen.
Rock Creek	2/2, 3/18, 4/16	Helicopter	All known nests empty. No bald eagles.
San Carlos	1/6, 2/2, 3/18, 4/16	Helicopter	4/16- Red-tailed hawk incubating in nest #5.
Sheep	1/6, 2/2, 3/18, 4/16, 4/21	Helicopter Ground	4/16- Nest #4 fallen.
Tower	1/5, 2/3, 2/18, 3/16, 4/8	Helicopter, Ground	3/16- One adult flushed from nest #8; nest empty. All other known nests empty.
Yellow Cliffs	1/5, 2/3, 3/16, 4/22, 5/11, 5/26	Helicopter	1/5- Nests #2 and #3 fallen.

Overview

Significant findings of the 2009 nest survey include: 4 new bald eagle BAs, 3 new alternate bald eagle nests within BAs, 7 fallen nests within BAs, and 5 new potential nest sites. In 2009, we documented a record number of BAs, occupied BAs, active BAs, and number of young hatched (Table 3).

Three of the 4 new bald eagle BAs this year were found on the lower Salt River. Prior to 2007, only 6 BAs were known along the Salt River below Roosevelt Dam (Rock Creek, Horse Mesa, Blue Point, Bulldog, Orme, and Granite Reef). This has nearly doubled in the last 3 years with the establishment of the Fish Creek BA in 2007, Saguaro BA in 2008, and Bagley, Goldfield-Kerr, and Riverside BAs this year. Similar growth occurred on the lower, regulated Verde River below Horseshoe Dam, but over a longer period with 5 new BAs established 1996-2002. The current density on that portion of the Verde River is 7.3 km/BA (n=10; 73.4 river kilometers). By comparison, on the Salt River between Granite Reef and Roosevelt Dams the density is now 7.9 km/BA (n=10; 79.1 river kilometers).

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. The sightings we had of adult or near-adult bald eagles at multiple sites in May-June this year, particularly at higher-elevation lakes, underscores the need for repeated surveys of potential nest areas.

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 yearly band the nestlings.
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 Cienaga, 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 ABENWP. 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 2009. 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 (Box Bar, Cliff, Crescent, Goldfield-Kerr, Luna, Needle Rock, Pinto, Pleasant, Tonto, and Woods Canyon), those without (Bagley, Orme, Saguaro), and those monitored opportunistically for information (Granite Reef). In the fall of 2008, 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.

Fieldwork began February 6, 2009 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 and Pinto BAs, 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.

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 14 breeding areas in 2009 including Bagley, Box Bar, Cliff, Crescent, Goldfield-Kerr, Granite Reef, Luna, Needle Rock, Orme, Pinto, Pleasant, Saguaro, Tonto, and Woods Canyon. The final status of the monitored BAs was 1 failed, 13 successful, and 22 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 nearby BAs. Therefore, data for this BA is not included in the following section of this report.

Bagley Breeding Area (Appendix E)

Observation Period. – February 7 to May 6. Total monitoring 40 days/283 hours. Nestwatchers divided their monitoring time between the Bagley and Saguaro BAs.

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

Bald Eagle Identification. – The male had a blue Visual Identification (VID) band "15/P" on his left leg, USGS band on the right leg, and was in adult plumage (2003 Suicide BA nestling). The female had no band on her left leg, a USGS band on the right leg, and was in adult plumage (unknown origin).

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

Human Activity. – Nestwatchers recorded 7,519 human activities during the monitoring period. Watercraft (boats, jet skis, boats with tuber/skier, and canoes/kayaks) accounted for 98.3%, aircraft (helicopters, small planes, military aircraft, and jets) for 1.6%, and terrestrial activities of 1 type (gunshots) for 0.1%. Four types of activities elicited 31 significant responses from the breeding pair. The bald eagles were restless in response to 1 boat and boat with tuber/skier each, and flushed from a perch in response to 14 boats, 10 jet skis, 4 canoes or kayaks, and 1 boat with tuber/skier.

Food Habits. – Nestwatchers observed 57 forage events. The male was successful in 36.7% (n=30), the female was successful in 72.2% (n=18), and an unknown adult in 42.9% (n=7) of forage events. The pair also participated in two tandem forage events, one of which was successful. Fish accounted for 86.0% (n=49), birds for 7.0% (n=4), reptiles/amphibians for 1.8% (n=1), and unknown prey for 5.3% (n=3) of all events. The breeding pair was observed delivering 53 prey items to the nest, of which the male delivered 41.5%, the female 47.2%, and

an unidentified adult 11.3%. Fish comprised 60.4% (n=32) of the deliveries, birds 7.5% (n=4), mammals 5.7% (n=3), reptiles 1.9% (n=1), and unknown prey types 24.5% (n=13). Of the 4 prey items further identified, 50.0% (n=2) were American coots (*Fulica americana*), 25.0% (n=1) were koi (a domesticated variety of the common carp, *Cyprinus carpio*), and 25.0% (n=1) were black crappie (*Pomoxis nigromaculatus*).

Habitat Use. – The Bagley nestwatchers identified 94 separate habitat use areas along Saguaro Lake, spanning 2.8 km of the Salt River ranging from rk 24.7 to 27.5. The bald eagle pair spent 28.8% of the observed time at rk 26.6, 22.5% at rk 26.2, 17.0% at rk 26.3, 9.8% at rk 25.4, 4.6% at rk 25.1, 4.0% at rk 24.9, and 13.3% at the remaining locations.

Box Bar Breeding Area (Appendix F)
Observation Period. – February 6 to April 27. Total monitoring 59 days/596 hours.

Bald Eagle Identification. – The male had a blue VID band "5/G" on his left leg, USGS band on the right leg, and was in adult plumage (1994 Pleasant nestling). The female had a blue VID band "5/H" on her left leg, USGS band on the right leg, and was in adult plumage (1994 Pleasant nestling). The male and female are siblings.

Figure 3. Box Bar breeding area. Maricopa County, Arizona. Photo by J. Driscoll.

Management Activities. – 1) The USFS enacted the seasonal BA closure. 2) The owners of Rio Verde Ranch allowed ABENWP contractors to camp and monitor from their lawn. 3) ABENWP contractors were active in educating the public visiting the Rio Verde Ranch and the campground at the end of USFS road 161.

Human Activity. – Nestwatchers recorded 42 human activities within the closure. Aircraft activity (helicopters, small planes, motorized parachutes, and ultralights) represented 73.8% (n=31), and terrestrial activity of 5 types represented 26.2% (n=11). Three types of activities elicited 3 significant responses from the breeding pair. The bald eagles were restless in response to 1 motorized parachute, flushed from 1 OHV, and left the area in response to 1 hiker.

Food Habits. – Nestwatchers observed 3 forage events. The male was successful in 0% (n=1), the female was successful in 100% (n=1) and an unknown adult was successful in 0% (n=1) of forage events. Fish accounted for 100% of these events. The breeding pair was observed delivering 63 prey items to the nest, of which the male delivered 57.1%, the female 30.2%, and an unidentified adult 12.7%. Fish comprised 58.7% (n=37) of the deliveries, reptiles 1.6% (n=1), and unknown prey types 39.7% (n=25). No prey items were identified to species.

Habitat Use. – The Box Bar nestwatchers identified 18 separate habitat use areas, spanning a 3.8 km stretch of the Verde River ranging from rk 22.0 to 25.8. The bald eagle pair spent 55.4% of

the observed time at rk 23.0, 16.5% at rk 23.8, 8.5% at rk 24.9, 5.4% at rk 25.6, and 14.2% at the remaining locations.

Cliff Breeding Area (Appendix G)
Observation Period. – February 6 to April 26. Total monitoring 60 days/556 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, USGS 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.

Figure 4. Cliff breeding area. Maricopa County, Arizona. Photo by K. McCarty.

Human Activity. – Nestwatchers recorded 141 human activities during the monitoring period. Terrestrial activities of 6 different types accounted for 64.5%, and aircraft (helicopters, small planes, and military jets) for 35.5%. Five types of activities elicited 36 significant responses from the breeding pair. The bald eagles were restless in response to 30 gunshots, flushed in response to 2 nestwatchers and 1 helicopter, and left the area in response to 2 military jets and 1 hiker.

Food Habits. – Nestwatchers observed 3 forage events. The male was successful in 1 of 2 forage events, and the female was unsuccessful in 1 event. Mammals accounted for 33.3% (n=1) and unknown prey for 66.7% (n=2) of these events. The breeding pair was observed delivering 63 prey items to the nest, of which the male delivered 69.8%, the female 28.6%, and an unidentified adult 1.6%. Fish comprised 50.8% (n=32) of the deliveries, mammals 7.9% (n=5), birds 3.2% (n=2), and unknown prey types 38.1% (n=24). Of the 8 prey items further identified, 37.5% (n=3) were suckers (*Catostomus sp.*), 37.5% (n=3) were desert cottontails (*Sylvilagus audubonii*), 12.5% (n=1) were common carp, and 12.5% (n=1) were waterfowl (unidentified species).

Habitat Use. – The Cliff nestwatchers identified 17 separate habitat use areas, spanning a 7.0 km stretch of the Verde River ranging from rk 66.0 to 73.0. The bald eagle pair spent 34.3% of the observed time at rk 66.7, 25.8% at rk 67.5, 13.3% at rk 66.6, 11.8% at rk 66.4, 5.6% at rk 66.9, 4.1% at rk 66.5, and 5.1% at the remaining locations.

Crescent Breeding Area (Appendix H)
Observation Period. – April 25 to July 19. Total monitoring 85 days/558 hours.

Bald Eagle Identification. – The male had a blue VID band "8/R" on his left leg, USGS band on the right leg, and was in adult plumage (1997 Luna BA nestling). The female was unbanded and in adult plumage (unknown origin).

Management Activities. – 1) The USFS posted "No Entry" signs surrounding the nest area knoll. 2) The USFS posted "No Stopping" signs along the west boat ramp access road.

Figure 5. Crescent breeding area. Apache County, Arizona. Photo by K. McCarty.

Human Activity. – Nestwatchers recorded 1,548 human activities during the monitoring period. Terrestrial activity of 12 different types represented 90.1%, water pursuits (boaters, float tubers, kayaks/canoes, and swimmers) 9.3%, and aircraft (small planes and helicopters) 0.6%. Four types of activities elicited 10 significant responses from the breeding pair. The bald eagles were restless in response to 2 hikers and horseback riders each, and 1 photographer. The pair flushed in response to 3 vehicles and 1 hiker, and left the area in response to 1 vehicle.

Food Habits. – The nestwatchers observed 33 forage events. The male was successful in 93.8% (n=16) and the female in 94.1% (n=17). Of these forage attempts, 90.9% were for fish, 6.1% birds, and 3.0% mammals. The breeding pair was observed delivering 106 prey items to the nest. The male delivered 41.5%, the female 55.7%, and an unidentified adult 2.8%. Fish comprised 86.8% of those items, mammals 1.9%, birds 1.9%, and unknown prey types 9.4%. Of the 64 prey items further identified, 73.4% (n=47) were rainbow trout (*Oncorhynchus mykiss*), 9.4% (n=6) were brook trout (*Salvelinus fontinalis*), 7.8% (n=5) were cutthroat trout (*Oncorhynchus clarki*), 4.7% (n=3) were brown trout (*Salmo trutta*), 3.1% (n=2) were American coots, and 1.6% (n=1) were ground squirrels (unidentified species).

Habitat Use. – The Crescent nestwatchers identified 21 habitat use areas around Crescent Lake. The bald eagle pair spent 66.1% of the observed time at lk 2.5, 28.7% at lk 2.3, 4.5% at lk 2.4, and 0.7% at the remaining locations (including <0.1% at nearby Basin Lake).

Goldfield-Kerr Breeding Area (Appendix I)
Observation Period. – February 6 to May 25. Total monitoring 89 days/863 hours.

Bald Eagle Identification. – The male had a blue VID band on his left leg which read either "18/C" or "18/S", a USGS band on the right leg, and was in near-adult plumage (either a 2005 Tower or Talkalai nestling). The female had no bands and was 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.

Human Activity. – Nestwatchers recorded 628 human activities during the nesting period. Aircraft (helicopters, small planes, and military planes) represented 42.5%, terrestrial activity of 10 different types 35.8%, and water pursuits (canoes/kayaks, Sheriff airboat, rafters, and tubers) 21.7%. Eleven types of activities elicited 19 significant responses from the breeding pair. The bald eagles were restless in response to 1 helicopter, Sheriff airboat, Sheriff helicopter, and driver each. The pair flushed in response to 3 horseback riders in addition to 2 canoes/kayaks, hikers, Sheriff airboat, and Sheriff helicopter each, and 1 small plane, rafter, tuber, and gunshot each. Nestwatchers also recorded 25,313 recreational water activities on May weekends after the nestling had fledged, including tubers (99.5%), canoes or kayaks (<1%), and rafters (<1%).

Figure 6. Goldfield-Kerr breeding area. Maricopa County, Arizona. Photo by K. McCarty.

Food Habits. – The nestwatchers observed 2 forage events. The female was successful in 100% of these forage attempts, 1 of which was for a fish and 1 was for a mammal. The female was observed delivering 51 prey items to the nest. Fish comprised 66.7% of those items, mammals 11.8%, carrion 5.9%, and unknown prey types 15.7%. Of the 8 prey items further identified, 50.0% (n=4) were suckers (*Catostomus sp.*), and 12.5% (n=1) each were catfish (unidentified species), common carp, rock squirrel (*Spermophilus variegatus*), and white-tailed jackrabbit (*Lepus townsendii*).

Habitat Use. – The Goldfield-Kerr nestwatchers identified 25 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 68.3% of the observed time at rk 10.2, 21.3% at rk 10.0, 4.1% at rk 10.9, and 6.3% at the remaining locations.

Luna Breeding Area (Appendix J)
Observation Period. – February 6 to June 7. Total monitoring 68 days/692 hours.

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

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) Two male nestlings were blue VID banded "23/Z" and "24/A" at 6 weeks of age on April 13.

Human Activity. – The nestwatchers recorded 430 human activities. Terrestrial activity of 12 different types accounted for 71.1%, water pursuits (boats, float tubers, canoes/kayaks, and

swimmers) for 25.1%, and aircraft (military jets, small planes, and helicopters) 3.7%. Three types of activities elicited 4 significant responses from the breeding pair. The bald eagles were restless in response to 2 military jets and 1 gunshot, and they left the area in response to 1 emergency vehicle.

Food Habits. – The nestwatchers observed 74 forage events. The male was successful in 83.3% (n=36), the female was successful in 86.1% (n=36), and an unidentified adult was successful in 100% (n=2) of forage events. Birds accounted for 73.0% (n=54), fish 18.9% (n=14), mammals 2.7% (n=2), and carrion 5.4% (n=4) of these events. The breeding pair was observed delivering 63 prey items to the nest, of which the male delivered 49.2% (n=31) the female 47.6% (n=30), and an unidentified adult 3.2% (n=2). Birds comprised 69.8% (n=44) of the deliveries, fish 20.6% (n=13), mammals 3.2% (n=2), and carrion 6.3% (n=4). Of the 56 prey items further identified, 73.2% (n=41) were American coots, 17.9% (n=10) were rainbow trout, 5.4% (n=3) were cutthroat trout, 1.8% (n=1) each were bufflehead (*Bucephala albeola*) and rabbit (unidentified species).

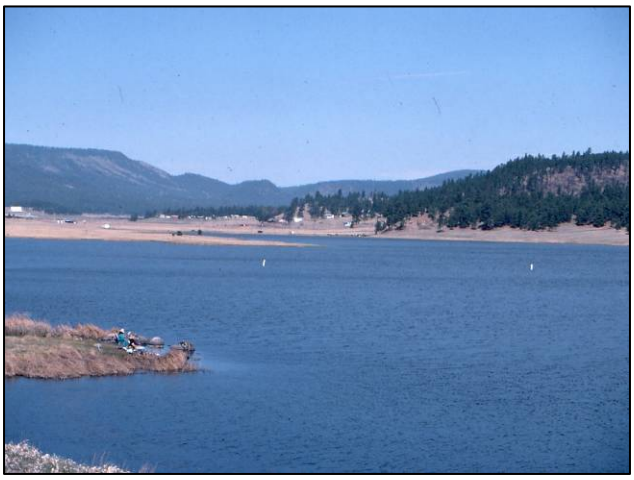

Figure 7. Luna breeding area. Apache County, Arizona. Photo by J. Driscoll.

Habitat Use. – The Luna nestwatchers identified 23 separate habitat use areas around Luna Lake. The bald eagle pair spent 61.9% of the observed time at lk 2.4, 8.4% at lk 3.5, 7.8% at lk 5.1, 7.4% at lk 2.7, 4.8% at lk 2.2, and 9.7% at the remaining locations.

Needle Rock Breeding Area (Appendix K)
Observation Period. – February 7 to May 21. Total monitoring 78 days/792 hours.

Bald Eagle Identification. – The male had a blue VID band on the left leg, USGS band on the right leg, and was in adult plumage (unknown origin). The female had a USGS 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) Two male nestlings were blue VID banded "23/U" and "23/V" at 5.5 weeks of age on April 9.

Human Activity. – Nestwatchers recorded 38 human activities. Aircraft (helicopters and small planes) represented 55.3%, terrestrial activities of 5 types 39.5%, and watercraft (tubers and canoes/kayaks) 5.3%. Five types of activities elicited 13 significant responses from the breeding pair. The eagles were restless in response to 1 OHV, flushed in response to 2 OHVs and 1 nestwatcher. The eagles left the area in response to 5 OHVs, 2 small planes, and 1 helicopter and tuber each.

Food Habits. – Nestwatchers observed 46 forage events. The male was successful in 60.0% (n=5), the female in 88.6% (n=35), and an unidentified adult in 83.3% (n=6) of forage events. Fish accounted for 63.0% (n=29), mammals 8.7% (n=4), reptiles/amphibians 4.3% (n=2), and unknown prey types 23.9% (n=11) of these events. The breeding pair was observed delivering 37 prey items to the nest, of which the male delivered 8.1%, the female 78.4%, and an unidentified adult 13.5%. Fish comprised 70.2% (n=26) of the deliveries, mammals 8.1% (n=3), reptiles 5.4% (n=2), and unknown prey types 16.2% (n=6). No prey items were identified to species.

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

Habitat Use. – The Needle Rock nestwatchers identified 43 separate habitat use areas along the Verde River, spanning a total of 4.2 km and ranging from rk 25.3 to 29.5. The bald eagle pair spent 21.3% of the observed time at rk 25.9, 17.4% at rk 25.7, 16.3% at rk 25.8, 11.0% at rk 28.3, 4.8% at rk 25.6, 4.4% at rk 26.2, and 24.8% at the remaining locations.

Orme Breeding Area (Appendix L)
Observation Period. – February 6 to May 25. Total monitoring 83 days/754 hours.

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

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 on a daily basis and patrolled the nesting area during times of elevated recreation use. 3) On April 9, two female and one male nestlings were blue VID banded “23/W”, “23/X” and “23/Y” at 6, 5.5, and 5.5 weeks of age, respectively.

Interventions. – On May 3, 2009, we searched the area under the nest for a missing nestling and found only a few feathers and odor of decay which indicated the fallen bird had been scavenged. On May 17, 2009, personnel from Liberty Wildlife rescued the remaining two nestlings which had fallen from the nest at 11 weeks old. Both nestlings died a few days later from multiple causes.

Human Activity – Nestwatchers recorded 536 human activities. Aircraft (helicopters and small planes) represented 44.2%, terrestrial activities of 10 different types 26.3%, and water activities of 6 different types 29.5%. Six types of activities elicited 27 significant responses by the breeding pair. The bald eagles were restless in response to 4 helicopters, 1 small plane, and 1 agency vehicle, and they flushed in response to 9 drivers, 4 kayaks/canoes, and 1 helicopter. They left the area in response to 2 rafters and drivers each, and 1 kayak/canoe, helicopter, and small plane each.

Food Habits. – Nestwatchers observed 25 forage events. The male was successful in 73.3% (n=15) and the female in 50.0% (n=10). Fish accounted for 80.0%, birds 4.0%, and unknown prey types 16.0% of these events. The breeding pair was observed delivering 50 prey items to the nest, of which the male delivered 54.0%, the female 44.0%, and an unidentified adult 2.0%. Fish comprised 46.0% (n=23) of these deliveries, mammals 18.0% (n=9), and unknown prey types 36.0% (n=18). Of the 6 prey items further identified, 66.7% (n=4) were Sonora suckers (*Catostomus insignis*), and 16.7% (n=1) each were common carp and flathead catfish (*Pylodictis olivaris*).

Habitat Use. – The Orme nestwatchers identified 70 separate habitat use areas along the Verde and Salt Rivers, spanning a total of 5.0 km ranging from rk 0.1 to 1.0 on the Verde River and rk 4.7 to 8.8 on the Salt River. The bald eagle pair spent 30.0% of the observed time at rk 0.7 (Verde River), 25.1% at rk 0.4 (Verde River), 16.7% at rk 5.2 (Salt River), 5.4% at rk 0.6 (Verde River), and 22.8% at the remaining locations.

Pinto Breeding Area (Appendix M)
Observation Period. – February 7 to April 26. Total monitoring 58 days/467 hours.

Bald Eagle Identification. – The male and female both had blue VID bands on the left leg, USGS bands on the right leg, and were in adult plumage (unknown origins).

Management Activities. – 1) The USFS enacted the seasonal bald eagle closure. 2) AGFD maintained a buoy line around the nest area. 2) The Southwestern Willow Flycatcher Closure limited recreational activities on the west side of the Salt River. 3) Nestwatchers were supplied a boat by AGFD and educated recreationists about the closures and bald eagles.

Figure 10. Pinto breeding area. Gila County, Arizona. Photo by K. McCarty.

Human Activity. – Nestwatchers recorded 1,102 human activities. Watercraft (boaters, jet skis, and kayaks) represented 97.1%, terrestrial activities (gunshots and nestwatchers) 1.8%, and aircraft (helicopters and small planes) 1.1%. Two types of activities elicited 9 significant responses from the breeding pair. The bald eagles were restless in response to 5 boaters and 1

gunshot. The pair flushed in response to 1 gunshot and boater each, and they left the area in response to 1 gunshot.

Food Habits. – The nestwatchers observed 12 forage events. The male was successful in 100% (n=3) and the female was successful in 77.7% (n=9) of forage events. Fish accounted for 83.3% (n=10), birds for 8.3% (n=1), and unknown prey types 8.3% (n=1) of these events. The breeding pair was observed delivering 101 prey items to the nest, of which the male delivered 55.4% and the female 44.6%. Fish comprised 77.2% (n=78), mammals 6.9% (n=7), birds 4.0% (n=4), reptiles 3.0% (n=3), amphibians 1.0% (n=1), and unknown prey types 7.9% (n=8) of the deliveries. Of the 12 prey items further identified, 33.3% (n=4) were black crappie, 16.7% (n=2) each were channel catfish (*Ictalurus punctatus*) and great blue heron chicks (*Ardea herodias*), and 8.3% (n=1) each were flathead catfish, double-crested cormorant chicks (*Phalacrocorax auritus*), ground squirrels (unidentified species), and garter snakes (unidentified species).

Habitat Use. – The Pinto nestwatchers identified 22 separate habitat use areas along the Salt River, spanning 3.4 km and ranging from rk 101.1 to 104.5. The bald eagle pair spent 89.4% of the observed time at rk 104.2, 7.4% at rk 104.1, and 3.2% at the remaining locations.

Pleasant Breeding Area (Appendix N)
Observation Period. – February 6 to May 10. Total monitoring 70 days/648 hours.

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

Figure 11. Pleasant breeding area. Maricopa County, Arizona. Photo by J. Driscoll.

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) One female nestling was banded with a blue VID band "23/D" at 5.5 weeks old on March 24.

Human Activity. – Nestwatchers recorded 452 human activities. Aircraft of 5 different types represented 75.9%, watercraft (boats and jet skis) 19.7%, and terrestrial activity of 5 different types 4.4%. Five types of activities elicited 5 significant responses by the breeding pair. The bald eagles flushed in response to 1 helicopter, jet, agency worker, nestwatcher, and OHV each. 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 8 forage events. The male was successful in 50% (n=2), the female in 66.7% (n=3), and an unidentified adult in 66.7% (n=3) of forage events. Fish

accounted for 100% of these events. The breeding pair was observed delivering 57 prey items to the nest, of which the male delivered 47.4%, the female 45.6%, and an unidentified adult 7.0%. Fish comprised 61.4% (n=35) of the deliveries, birds 7.0% (n=4), mammals 1.8% (n=1), and unknown prey types 29.8% (n=17). Of the 6 prey items further identified, 50.0% (n=3) were largemouth bass (*Micropterus salmoides*), and 16.7% (n=1) each were white bass (*Morone chrysops*), bass (unidentified species), and woodrat (*Neotoma sp.*).

Habitat Use. – The Pleasant nestwatchers identified 49 separate habitat use areas along the Agua Fria arm of Lake Pleasant, spanning a total of 3.6 km and ranging from rk 72.4 to 76.0. The bald eagle pair spent 60.6% of the observed time at rk 73.3, 26.1% at rk 73.2, 6.5% at rk 73.4, and 6.8% at the remaining locations.

Saguaro Breeding Area (Appendix O)
Observation Period. – February 6 to May 25. Total monitoring 52 days/394 hours. Nestwatchers divided their monitoring time between the Bagley and Saguaro BAs.

Bald Eagle Identification. – The male had a blue VID band on his left leg, USGS band on the right leg, and was in adult plumage (unknown origin). 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.

Human Activity. – Nestwatchers recorded 5,293 human activities. Water activities of 5 types accounted for 95.9%, aircraft (helicopters, small planes, military aircraft, and ultralights) 3.9%, and terrestrial activities (gunshots, researchers, and nestwatchers) 0.2%. Four types of activities elicited 23 significant responses from the breeding pair. The bald eagles were restless in response to 11 boats and 1 gunshot, flushed from a perch in response to 9 boats, 1 helicopter, and 1 nestwatcher.

Figure 12. Saguaro breeding area. Maricopa County, Arizona Photo by K. McCarty.

Food Habits. – The nestwatchers observed 20 forage events. The male was successful in 28.6% (n=7), the female in 72.7% (n=11), and an unidentified adult in 100% (n=2) of events. Fish accounted for 75.0% (n=15), birds 15.0% (n=3), and unknown prey types 10.0% (n=2) of these forage events. The breeding pair was observed delivering 28 prey items to the nest, of which the female delivered 92.9% and an unidentified adult 7.1%. Fish comprised 67.9% (n=19) of the deliveries, birds and mammals 3.6% (n=1) each, and unknown prey types 25.0% (n=7). No prey items were identified to species.

Habitat use. – The Saguaro nestwatchers identified 74 separate habitat use areas along Saguaro Lake, spanning 6.2 km of the Salt River and ranging from rk 26.9 to 33.1. The bald eagle pair spent 26.3% of the observed time at rk 31.4, 13.4% at rk 28.7, 12.4% at rk 31.5, 10.9% at rk 28.8, 9.9% at rk 30.3, 5.6% at rk 31.9, and 21.5% at the remaining locations.

Tonto Breeding Area (Appendix P)
Observation Period. – February 6 to May 25. Total monitoring 85 days/481 hours.

Bald Eagle Identification. – The male had a blue VID band "14/E" on his left leg, USGS band on the right leg, and was in adult plumage (2002 Talkalai nestling). The female had a blue VID band on her left leg, USGS band on the right leg, and was in adult plumage (unknown origin).

Management Activities. – 1) 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 13. Tonto breeding area. Gila County, Arizona. Photo by J. Driscoll.

Human Activity. – Nestwatchers recorded 900 human activities. Watercraft (boats, canoes/kayaks, and jet skis) represented 94.1%, terrestrial activities of 6 different types 5.0%, and aircraft (helicopters and small planes) 0.9%. No significant responses were recorded from the breeding pair. Nestwatchers observed 847 watercraft approaching the buoy closure, and 2.6% (n=22) did not comply. In addition, 94.3% (799) of these watercraft were present during weekends.

Food Habits. – The nestwatchers observed 34 forage events. The male was successful in 76.9% (n=13), the female in 73.7% (n=19), and an unknown adult in 100% (n=2) of events. Fish accounted for 88.2% (n=30) and unknown prey types 11.8% (n=4). The breeding pair was observed delivering 110 prey items to the nest, of which the male delivered 44.5%, the female 45.5%, and an unidentified adult 10.0%. Fish comprised 79.1% (n=87) of delivered items, mammals 3.6% (n=4), and unknown prey 17.3% (n=19). Of the 26 prey items further identified, 50.0% (n=13) were black crappie, 30.8% (n=8) largemouth bass, and 3.8% (n=1) each were catfish (unidentified species), smallmouth bass (*Micropterus dolomieu*), common carp, flathead catfish, and rabbit (unidentified species).

Habitat use. – The Tonto nestwatchers identified 27 separate habitat use areas along Tonto Creek, spanning 7.8 km and ranging from rk 10.0 to 17.8. The bald eagle pair spent 90.6% of the observed time at rk 16.9 and 9.4% at the remaining locations.

Woods Canyon Breeding Area (Appendix Q)
Observation Period. – May 1 to August 16. Total monitoring 98 days/885 hours.

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

Management Activities. – 1) The Black Mesa Ranger District established a closure around the nest area and placed closure signs. 2) AGFD established a water closure around the nest site. 3) Nestwatchers were supplied a canoe by AGFD and educated recreationists about the closure and bald eagles.

Human Activity. – Nestwatchers recorded 113 human activities. Watercraft (boats, canoes/kayaks) accounted for 54.0%, terrestrial activities of 9 different types for 38.9%, and aircraft (helicopters, small planes) 7.1%. Four types of activities elicited 11 significant responses from the breeding pair. The bald eagles were restless in response to 5 boats, 1 fisherman, and 1 OHV. They flushed in response to 3 boats and 1 helicopter. Of 974 watercraft observed approaching the buoy closure, 0.7% (n=7) did not comply.

Figure 14. Woods Canyon breeding area. Coconino County, Arizona. Photo by K. McCarty.

Food Habits. – The nestwatchers observed 39 forage events. The male was successful in 78.9% (n=19), the female in 70.6% (n=17), and an unknown adult in 100% (n=3) of events. Fish accounted for 100% of forages. The breeding pair was observed delivering 135 prey items to the nest, of which the male delivered 68.9%, the female 20.7%, and an unidentified adult 10.4%. Fish comprised 98.5% (n=133) of delivered items, mammals 0.7% (n=1), and unknown prey 0.7% (n=1). Of the 134 prey items further identified, 99.3% (n=133) were rainbow trout and 0.7% (n=1) were ground squirrels (unidentified species).

Habitat Use. – The Woods Canyon nestwatchers identified 59 separate habitat use areas around the lake. The bald eagle pair spent 24.8% of the observed time at lk 3.60, 8.8% at lk 4.70, 6.6% at lk 2.30, 6.1% at lk 0.15, 5.6% at lk 3.70, 3.9% at lk 2.35, 3.7% at lk 0.90, 3.6% at lk 0.25, 3.4% at lk 3.85, and 33.5% at the remaining locations.

MANAGEMENT CONSIDERATIONS

Management considerations included below are taken 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.

Bagley

1. Creating closures is not feasible due to the size and configuration of the lake, and the eagles seem to be comfortable with human activity. However, for one month after the nestlings have fledged, post a closure of Smith Cove (the small cove near the nest) and a buffer zone around the pinnacle at river kilometer 26.2 to help protect fledglings.
2. Designate Smith Cove as a No Wake Zone.

Box Bar Breeding Area

1. Close the area known as the Airstrip, just south of Rio Verde ranch, to motorized vehicles to preserve vegetation and archaeological sites, and limit access to hiking, biking, horseback riding, fishing, backcountry camping and hunting.
2. Establish a non-motorized trail in the Airstrip area, complete with parking lot and toilet at entrance, and restore the area with native plantings.
3. Place more "No target shooting" bilingual signs within the Airstrip area, especially near the "Cliff" perch.
4. Place closure signs with dates along the Ft. McDowell Reservation boundary.

Cliff Breeding Area

1. Close road 161 farther upstream to allow the eagles more regular access to a favorite perch area (river kilometer 67.5) and to eliminate vehicular traffic to the area.
2. Clarify wording on the restricted area signs, using "Do not enter" or "Closed to public access" instead of "…*may* violate" certain laws to enter the area. Also clarify what types of activities are restricted.
3. Coordinate with KA Ranch to avoid flying their helicopter over the nest.
4. Use a variety of color bands on eagles to differentiate between residents and non-residents.

Crescent Breeding Area

1. Continue Bald Eagle Nestwatch Program at the Crescent Breeding Area.
2. Install "No Stopping" signs along the length of the road fronting the nest.
3. Install more of the yellow "Closed Wildlife Area" signs all the way around the knoll.
4. Install the information kiosk along the entrance road to the bait shop.

Goldfield-Kerr

1. Create a portable weather-resistant educational display.
2. Solicit presentation opportunities with Goldfield Recreation Area campers.
3. Explore offering field trips to schools and community groups.
4. Have a visitor guestbook/log available.

5. During times of greatest visitation, two nestwatchers at the observation point are necessary for the most accurate data collection and effective education/public relations. Having support from a third nestwatcher was a big help as tubing began.
6. Continue to sustain and enhance relationships with Liberty Wildlife.
7. Discuss impact to the breeding area of airboat and helicopter use with Maricopa County Sheriff's Office.
8. Maintain the closure on the north side of the Salt River in order to keep activities in the vicinity of the nest to a minimum. Although there were closure signs posted along the river indicating that it was a wildlife breeding area, they were too small to be seen from the main river channel.
9. Continue to close off the jeep road that comes off AZ State Highway 87 and passes by the nest tree.

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.
5. Complete the repainting or replacing weather-worn signage for the waterfowl closure and entire lake area.
6. Gain support for the management plan from the new concessionaire and clients at the Marina.
7. Continue cooperative and proactive efforts to address conflicting management concerns and increasing recreational demands.
8. Do not allow de-listing of bald eagles to interfere with the management plan for the Luna breeding area.

Needle Rock Breeding Area

1. Produce larger, clearly printed signs to avoid any confusion on the closure area, dates, and boundaries. The current signs are very small, sparsely distributed, or have been torn down or shot up and blend into the desert.

Orme Breeding Area

1. Consider a seasonal closure (January 1- June 30) of the dirt track running from Fort McDowell Road at Pole 3 toward the Verde River. This road provides access to the immediate Orme nest area and foraging areas.
2. Signs posted within the breeding area are confusing and ineffective and should be addressed.
3. Remove the trash can placed near Pole 3 where the dirt track runs from Fort McDowell Road toward the Verde River. Having a trash can here implies that this is a use area and may invite recreationists to enter the nest area.
4. Inform nestwatchers if there are any scheduled SRPMIC ceremonies or events that may interfere with the nestwatchers' observation schedule during the season.
5. Place monofilament recovery bins at Phon D Sutton Recreation Area, Coon Bluff, and other recreation sites.

6. Maintain the seasonal camping restriction in place at Phon D Sutton.
7. It would be very helpful if the FAA mandated that aircraft display their N numbers more clearly.
8. Continue to work with local airports and aircraft manufacturers to remind pilots to respect the advisory.

Pinto Breeding Area

1. Impose a no wake zone and a no stopping zone in front of the enclosure, or at least no stopping at the enclosure boundary.
2. Put up a sign at the Schoolhouse boat dock with information, warnings, and recommendations.

Pleasant Breeding Area

1. If the Agua Fria Conservation area closure is in effect next year, it would be beneficial for the nestwatchers to know the rules and limits of the closure. The nestwatchers are often looked upon by the public as officials who are familiar with laws and rules. While the nestwatchers do not enforce the Agua Fria closure, they do run into people who are accessing the river through the closed area.
2. Delete old information/press releases from AGFD web page regarding early opening of the closure (as happened in 2006 when the nest failed).
3. Continue to place "No Wake" buoys at river km 71.5, as it slows boats and helps nestwatchers respond to closure violators.
4. Continue to place a secondary buoy line in the small cove/branch of the Agua Fria River near the OP and nestwatcher camp to end confusion fishermen are having with the boundaries of the closure.
5. Replace (as needed) the weathered/damaged plastic traffic barriers that are used to block the dirt road that leads into the eagle closure from the north, at the existing closure sign.

Saguaro Breeding Area

1. Provide bald eagle brochures to the Desert Belle Boat Tours for tourists.
2. Place signs in the restaurant and in the boat loading dock areas with information about keeping an appropriate distance from eagles and reminding people about the no wake zone.
3. Post informative signs on the bathroom walls in the Bagley Flat Campground.

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.
2. Add "No Wake" buoy lines at the drowned willow thickets and along the main channel of the inflow to reduce impact of wakes 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. Post additional signs along the shore/cut bank near the O.P. to stop people from debarking from a boat and entering the closure by land.

5. Maintain a minimum closure of 300 meters surrounding the nest tree, and add an additional buoy behind the drowned willows to the backside of the nest.
6. 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. Use a different fencing material or a more effective fencing method. The orange plastic fencing used for the land closure was generally ineffective from the shore to about 100 feet from shore, and was torn down repeatedly.
2. Extend the land closure fence so that it goes all the way down to or into the water to prevent people from climbing around it.
3. Post bilingual (Spanish/English) signs clearly marking the dates and purpose for the closure, all along the closure including the shoreline. The red closure signs provided by state "…*may* be in violation of state, federal, or tribal laws…" and some individuals take this as meaning it's okay to climb around the fence.
4. The barricade with the closure map and re-route signs at the Rocky Point trailhead should be placed just off the parking area at the trailhead. Post an informational flyer about the re-routed trail on the barricade, including length of trail to eagle observation point (1 mile), and length of entire lake trail (3.9 miles).
5. Add a sign at the Rocky Point contact hut and at the post marking the trailhead that informs visitors: "LAKE TRAIL OPEN, EAGLE CLOSURE IN EFFECT, FOLLOW DETOUR"; many individuals see the fence and assume the trail is closed and leave.
6. Post closure information at the junction of the Rocky Point (trailhead behind contact hut) and Lake Trail re-route for visitors accessing the trail from the Aspen campground.
7. Post closure maps at all vault toilet bulletin boards.
8. Create a poster about the eagles, closure map, litter, monofilament, fines associated with the closure, and the nestwatch program.
9. Install animal-proof trash cans along the shore from the Spillway campground to the Rocky Point trailhead, and on the flat rock fishing spot (near the nest). Trash and monofilament is a major issue at this recreation area.
10. Make Woods Canyon Lake a fee area to pay for the costs of litter control and to help control the number of people in the area.
11. Remove the monofilament collection bins until trash receptacles are in place, as the bins are currently used for trash and rarely for monofilament.
12. Provide a stronger law enforcement (USFS, AGFD, and county sheriff) presence at the lake. We observed numerous illegal acts. The USFS forest protection officer had a great affect but was only present four hours mid-day on Saturdays.
13. Post bilingual "No target shooting" signs upon entering the Woods Canyon recreation area and at high use areas around the lake.
14. We recommend that AGFD put on a "fishing for trout" workshop on free fishing day and at other times throughout the year, including barbless fishing. We observed very few people who know how to handle trout without killing them.

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APPENDIX A: 2009 ARIZONA BALD EAGLE WINTER COUNT RESULTS

Table 8. 2009 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	15	3	2	0	0
2	Little Colorado River (LCR)	10	0	0	0	0
3	S. Fork LCR – Campground	20	0	0	0	0
4	Casa Malapais – LCR	10	0	0	0	0
5	Greer Lakes (River, Bunch, and Tunnel Reservoirs)	48	0	0	0	0
6	Sponseller Lake	30	2	0	0	0
7	Mexican Hay Lake	Not surveyed.				
8	White Mountain Hereford Ranch (Trinity, Glen Livet, McKay reservoirs)	90	1	0	0	1
9	The Ranch Lake	25	0	0	0	0
10	Ortega Lake	45	0	0	0	0
11	Concho Lake	25	1	0	0	0
12	Luna Lake	60	2	0	0	0
13	Nelson Reservoir	60	1	1	0	0
14	Nutrioso Reservoir	30	0	0	0	0
16	San Francisco River (Luna Lake to New Mexico line)	Not surveyed.				
Total		**468**	**10**	**3**	**0**	**1**
Cochise County						
18	Parker Canyon Lake	90	0	0	0	0
19	Willcox Playa	230	1	0	0	0
Total		**320**	**1**	**0**	**0**	**0**
Coconino County						
21	Long Lake Complex	270	4	1	0	0
22	Stoneman Lake	215	0	1	0	0
23	FH-3	70	0	0	0	0
24	I-17, Section to Flagstaff	183	5	1	0	0
25	Bellemont	285	3	1	0	0
26	Townsend/Winona A/B	435	0	0	0	0
27	HWY 89 North /Sunset Crater – Wupatki	290	1	0	0	0
28	FH-3 Lakes (Mary, Mormon, Marshall, Prime, etc.)	418	0	0	0	0
29	Continental Country Club Lakes	360	2	0	0	0
30	Chevelon Canyon Lake	Not surveyed.				
32	Spring Valley Wash	180	0	0	0	0
33	Red Lake Valley	20	1	0	0	0
34	Kaibab Lake	60	0	0	0	0
35	Pittman Valley	67	1	0	0	0
36	Davenport Lake	29	0	0	0	0
37	Scholz Lake	90	0	0	0	0
38	Cataract Lake	32	0	0	0	0
39	Willow Springs Lake	185	0	0	0	0
40	West Chevelon Canyon	81	0	0	0	0
41	Willow Creek	Not surveyed.				

Table 8 continued.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
42	White Horse Lake – Pomeroy Tanks	Not surveyed.				
43	JD Dam Lake	Not surveyed.				
45	Steel/Stone Road	60	0	0	0	0
48	Blue Stem Wash-Babbit property	45	0	0	0	0
49	Glen Canyon Nat'l Rec. Area (Lake Powell to Lee's Ferry)	56[1]	0	0	0	0
118	Bill Williams Loop Road	364	1	0	0	0
119	Johnson Canyon	150	0	1	0	0
120	Highway 64 east	15	3	0	0	0
121	Highway 64	45	0	0	0	0
122	Camp Navajo	115	2	2	0	0
123	Partridge Creek	210	2	2	0	0
124	Odell Lake	30	0	0	0	0
125	Highway 87 north	125	2	1	0	0
126	Highway 180	130	0	0	0	0
Total		**4,615**	**27**	**10**	**0**	**0**
Graham County						
51	Point of Pines Lake area	Not surveyed.				
Mohave County						
57	Alamo Lake	116	4	2	0	0
Total		**116**	**4**	**2**	**0**	**0**
Navajo County						
58	Lake of the Woods	15	0	1	0	0
59	Rainbow Lake	45	0	0	0	0
61	Whipple Lake	30	0	0	0	0
62	Long Lake	50	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	57	0	0	0	0
67	Jacques Marsh	45	0	0	0	0
68	Scott's Reservoir	15	1	0	0	2
69	Show Low Lake	40	0	0	0	0
70	Pintail Lake	35	0	1	0	0
71	Telephone Lake	25	0	0	0	0
72	Fool Hollow Lake	85	1	1	0	0
75	Cottonwood Wash/ Clay Springs	30	1	0	0	0
76	White Lake	11	0	0	0	0
127	Mortenson Wash	150	0	0	0	0
Total		**753**	**3**	**3**	**0**	**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	540	0	1	0	0
84	Oak Creek	540	0	0	0	0
85	Willow Lake	225	1	0	0	0
86	Lynx Lake	240	1	0	0	0

[1]Time was averaged from previous years (1995-2008).

Table 8 continued.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
87	Watson Lake	240	0	0	0	0
88	Goldwater Lake	240	3	6	0	0
Total		**2,025**	**5**	**7**	**0**	**0**
Yuma and La Paz Counties						
89	Imperial N.W.R. Cibola/Martinez Lake – Colorado River	58	0	2	0	0
Total		**58**	**0**	**2**	**0**	**0**

Table 9. 2009 Arizona bald eagle winter count helicopter survey results.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
90	Verde River	248	30	9	0	0
91	Lower East Verde River	14	0	0	0	0
92	Lower West Clear Creek	28	2	0	0	0
93	Lower Salt River	110	13	8	0	0
94	Upper Salt River	84	5	2	0	0
95	Lower Tonto Creek	29	6	1	0	0
97	Lower Canyon Creek	16	0	0	0	0
98	Lower Cibecue Creek	13	0	0	0	0
100	White River	15	3	1	0	0
101	North Fork White River	38	1	1	0	0
102	Lower Black River	55	9	3	0	0
103	Big and Little Bonito Creeks	37	0	0	0	0
104	San Carlos River–Talkalai Lake	20	2	0	0	0
105	San Carlos Reservoir	21	6	3	0	0
106	Upper and Lower Gila River	60	2	5	0	0
107	Eagle Creek	43	4	0	0	0
108	Bonita Creek	16	1	0	0	0
109	Lower San Francisco River	34	1	0	0	0
110	Blue River	13	0	0	0	0
111	Sunrise Lake	1	0	0	0	0
112	Big Lake	1	0	0	0	0
114	Crescent Lake	1	0	0	0	0
115	Lake Pleasant	47	2	2	0	0
116	Del Rio Ponds	1	2	0	0	0
117	Tres Rios	Not surveyed.				
Total		**945**	**89**	**35**	**0**	**0**

Table 10. 2009 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	130	1	2	0	0
Kachina Wetlands (986)	Coconino	30	0	1	0	0
Blue Ridge Reservoir	Coconino	120	0	0	0	0
Coconino National Forest	Yavapai	165	1	1	0	0
Total		**445**	**2**	**4**	**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: 2009 ARIZONA BALD EAGLE PRODUCTIVITY

Table 11. Arizona bald eagle breeding area productivity summary, 2009 (continued next page).

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs	Hatch Date	Young	Fledged	Fledge Date
Alamo	S	4	<1/13	2+	2/3-3/10	2	1	4/22-5/12
Bagley*	S	1	<2/6	3	<2/6	3	2	4/13-4/19
Bartlett	F	2	1/5-2/3	2+	2/3-3/13	2	Failed 3/16-4/22.	
Beaver	S	1	<1/5	2+	2/3-3/16	2	1	4/22-5/11
Becker	U							
Blue Point	S	10	<1/6	2+	2/2-2/12	2	2	4/16-5/11
Box Bar*	S	3	<1/2	2+	2/3-2/4	2	2	4/22-4/27
Bulldog	S	2	1/6-2/2	2+	2/2-3/18	2	2	4/16-5/13
Burro	U							
Canyon	U							
Canyon de Chelly	S	1	3/2	2+	4/3	2	2	6/18-6/25
Cedar Basin	U							
Cibecue	F	2	2/2-3/18	1+	3/18-4/16	1	Failed >5/7.	
Cliff*	S	6	1/9-2/3	2+	2/27-3/2	2	2	5/11-5/26
Coldwater	F	3	1/5-2/3	1+	Failed 3/16-4/22.			
Coolidge	F	2	2/2-3/18	1+	Failed 3/18-4/16.			
Crescent*	S	2	1/7-3/18	1+	4/25-5/1	1	1	7/12
Doka	S	5	1/26-2/3	1+	2/3-3/3	1	1	4/22-5/11
Dupont	U							
East Verde	F	6	2/3-2/23	1+	Failed 3/16-4/22.			
Fish Creek	F	1	1/6-2/2	1+	2/2-3/18	1	Failed 3/18-4/16.	
Fort McDowell	F	17	1/5-1/26	1+	Failed 2/3-3/3.			
Goldfield-Kerr*	S	1	<1/6	1+	2/4-2/5	1	1	4/28
Granite Basin	U							
Granite Reef*	S	2	1/6-2/2	2+	2/26-3/2	2	2	5/11-5/19
Greer Lakes	U							
Horse Mesa	S	4	1/6-2/2	1+	2/2-3/18	1	1	>5/26
Horseshoe	S	11	1/6-2/3	2+	2/3-3/16	2	1	5/11-5/26
Ive's Wash	S	3	1/13-2/3	3	2/3-3/10	3	2	>5/12
Ladders	O							
Lone Pine	S	5	2/2-3/18	2+	3/18-4/16	2	2	>6/3
Lower Lake Mary	F	2	3/18-3/22	1+	4/29	1+	Failed 5/5-5/6.	
Luna*	S	1	<1/27	2+	2/28-3/1	2	2	5/24
Lynx	S	3	<2/3	2+	2/3-2/18	2	2	5/15, 5/21
Needle Rock*	S	2	1/9-2/3	2+	2/26	2	2	5/16-5/17
Oak Creek	F	4	1/5-2/3	1+	2/3-3/16	1	Failed 4/13.	
	Nestling found injured on ground 4/13. Taken to rehabilitation; survived but not releasable.							
Orme*	F	6	1/6-2/2	3	2/15-2/20	3	Failed 5/17.	
	One nestling gone 4/27-5/1. Two nestlings injured on ground 5/17; died in rehabilitation.							
Perkinsville	F	4	2/3-3/16	1+	Failed 3/16-4/8.			
Pinal	F	3	<1/6	1+	Failed 2/2-3/18.			
Pinto*	S	6	<12/30	2+	2/2-2/6	2	2	4/17-4/22
Pleasant*	S	3	<12/31	1+	1/5-2/3	1	1	4/27-5/1

[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.

*Nests monitored by the Arizona Bald Eagle Nestwatch Program.

Table 11 continued.

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs	Hatch Date	Young	Fledged	Fledge Date
Redmond	F	5	1/6-2/2	1+	Failed 3/18-4/16.			
	F	5	3/18-4/16	1+	Failed 4/16-5/4.			
Riverside	F	1	2/3-2/18	2+	3/16-3/30	2	Failed 6/6.	
	One nestling dead in nest 5/26. Second nestling dead 6/6.							
Rock Creek	U							
Rodeo	F	3	1/5-2/3	2+	2/3-3/4	2	Failed 5/11-5/26.	
	Nestlings dead in nest at 10.5-12.5 weeks old.							
San Carlos	U							
Saguaro*	S	1	2/2-2/6	1+	3/10-3/20	1	1	5/11-5/19
76	S	4	1/6-2/2	1+	2/3-3/18	1	1	>5/26
Sheep	S	4	<1/6	2+	2/3-3/18	2	2	3/18-4/16
Suicide	S	2	1/6-2/2	3	2/2-3/18	3	3	>5/8
Sullivan Lake	F	2	1/5-2/3	1+	2/3-3/16	1	Failed 4/12-4/17.	
Sycamore	S	4	<1/5	1+	2/3-3/3	1	1	4/22-5/11
Table Mountain	F	4	2/3-2/25	1+	Failed 3/16-4/22.			
Talkalai	S	7	1/6-2/2	1+	2/2-3/18	1	1	>5/8
Tapco	F	1	1/5-2/3	1+	Failed 3/16-3/26.			
Tonto*	S	2	1/11-1/18	3	2/26	3	3	5/14-5/19
Tower	O							
Woods Canyon*	S	3	<4/16	1+	4/23-5/10	1	1	7/24
Yellow Cliffs	F	1	2/3-3/16	2+	3/16-4/22	2	Failed 4/22-5/26.	

[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.

*Nests monitored by the Arizona Bald Eagle Nestwatch Program.

APPENDIX D: NEST SURVEY RESULTS

Table 12. Results of the 2009 winter count, ORA, and nest survey flights.

Location	Time	Comments
January 5, 2009		
Lake Pleasant	0755	One adult incubating in nest #3.
Sullivan Lake	0934	All known nests empty. Two adults perched near nest #2.
Granite nest site	0944	All known nests empty. No bald eagles.
Muldoon nest site	0952	All known nests empty. One adult and two immatures in area.
Hell Point historical BA	1006	All known nests empty. One adult and one immature in area.
Perkinsville	1033	All known nests empty. No bald eagles.
Mormon Pocket nest site	1037	All known nests empty. One adult and one immature in area.
Tower	1048	All known nests empty. No bald eagles.
Tapco	1058	Two adults at new cottonwood tree nest #1.
Oak Creek	1255	All known nests empty. One adult in area.
Beaver	1306	One adult incubating in nest #1.
Camp Verde historic BA	1311	No new nests or bald eagles.
Ladders	1400	All known nests empty. Two adults in area.
Coldwater	1406	All known nests empty. No bald eagles.
East Verde	1417	All known nests empty. No bald eagles.
Table Mountain	1528	All known nests empty. One adult in area.
Horseshoe	1540	All known nests empty. No bald eagles.
Cliff	1558	All known nests empty. One adult in area.
Yellow Cliffs	1610	All known nests empty. No bald eagles. Nests #2 and #3 fallen.
Bartlett	1627	All known nests empty. No bald eagles.
Needle Rock	1633	All known nests empty. Two adults in area.
Box Bar	1634	One adult incubating in nest #3.
Fort McDowell	1639	All known nests empty. Two adults perched at nest #17.
Doka	1641	Two adults perched at new cottonwood nest #5.
Sycamore	1643	One adult incubating in nest #4. Second adult perched in area.
Rodeo	1647	All known nests empty. No bald eagles.
Orme	1649	All known nests empty. No bald eagles.
January 6, 2009		
Granite Reef	0751	All known nests empty. No bald eagles.
Orme	0752	All known nests empty. Two adults in area.
Goldfield-Kerr	0759	One adult incubating in new cottonwood tree nest #1.
Bulldog	0805	All known nests empty. No bald eagles.
Blue Point	0812	All known nests empty. No bald eagles.
Saguaro	0821	All known nests empty. No bald eagles.
Fish Creek	0834	One adult perched at nest #1. Second adult perched in area.
Horse Mesa	0843	All known nests empty. No bald eagles.
Tonto	0900	One adult at nest #4. Second adult in area.
Sheep	0905	One adult incubating in nest #4. Second adult perched in area.
76	0924	One adult at nest #4. Second adult in area.
Pinto	1112	One adult incubating in nest #6. Second adult perched in area.
Pinal	1121	One adult incubating in nest #3.
Redmond	1132	One adult perched at nest #5.
Canyon	1157	All known nests empty. No bald eagles.
Talkalai	1337	All known nests empty. Two adults perched in area.
San Carlos	1357	All known nests empty. No bald eagles.
Suicide	1410	Two adults standing in nest #2.
Coolidge	1427	All known nests empty. Four immatures perched in area..

Table 12 continued.

Location	Time	Comments
Granite Basin	1438	One adult perched by nest #1.
January 7, 2009		
Cibecue	1007	All known nests empty. One adult perched in area.
Mule Hoof historical BA	1021	All known nests empty. No bald eagles.
Cedar Basin	1039	All known nests empty. No bald eagles.
Lone Pine	1050	All known nests empty. No bald eagles.
Crescent	1156	All known nests empty. No bald eagles.
January 8, 2009		
Willow nest site	0920	No new nests or bald eagles.
Eagle nest site	0930	No new nests or bald eagles.
February 2, 2009		
Granite Reef	0719	One adult incubating in nest #2.
Orme	0720	One adult incubating in nest #6.
Goldfield-Kerr	0723	One adult incubating. Second adult perched in nest tree.
Bulldog	0727	One adult incubating in new cliff nest #2.
Blue Point	0730	One adult incubating in nest #10.
Saguaro	0732	One adult standing in nest #1. Second adult in area.
Fish Creek	0739	One adult incubating in nest #1.
Horse Mesa	0742	One adult incubating in nest #4.
Rock Creek	0748	All known nests empty. No bald eagles.
Tonto	0752	One adult incubating in nest #2.
Sheep	0757	One adult incubating.
76	0807	One adult incubating in nest #4.
Dupont	0820	No new nests or bald eagles.
Pinto	0842	One adult incubating.
Pinal	0846	One adult incubating.
Redmond	0850	One adult incubating in nest #5.
Gleason Flat	0855	No new nests. One immature in area.
Canyon	0907	All known nests empty. No bald eagles.
Cibecue	1022	All known nests empty. No bald eagles.
Mule Hoof historical BA	1023	All known nests empty. No bald eagles.
Cedar Basin	1035	All known nests empty. No bald eagles.
Lone Pine	1043	Two adults standing in nest #5.
Talkalai	1208	One adult incubating in nest #7. Second adult flying in area.
San Carlos	1216	All known nests empty. No bald eagles.
Suicide	1226	One adult incubating in nest #2. Second adult perched in area.
Coolidge	1228	All known nests empty. No bald eagles.
Granite Basin	1234	All known nests empty. No bald eagles.
Winkelman historic BA	1243	No new nests or bald eagles.
February 3, 2009		
Riverside	0742	One adult standing in new cottonwood tree nest #1.
Rodeo	0755	One adult incubating in nest #3.
Sycamore	0758	One adult incubating.
Doka	0759	One adult incubating in new cottonwood tree nest #5.
Fort McDowell	0801	One adult incubating in nest #17.
Box Bar	0804	One adult incubating. Second adult perched in area.
Needle Rock	0805	One adult incubating in nest #2. Second adult perched in area.
Bartlett	0809	One adult incubating in nest #2.
Yellow Cliffs	0815	One adult standing in old hawk nest near fallen nest #3, second adult flushed from tree.

Table 12 continued.

Location	Time	Comments
Cliff	0821	One adult incubating in nest #6. Second adult in area. Nest partly fallen.
Horseshoe	0830	One adult incubating in nest #11.
Table Mountain	0840	All known nests empty. One adult in area.
East Verde	0850	All known nests empty. No bald eagles.
Coldwater	0902	One adult incubating in nest #4.
Ladders	0910	All known nests empty. No bald eagles.
Camp Verde historic BA	0924	No new nests or bald eagles.
Beaver	0927	One adult incubating.
Oak Creek	0935	One adult incubating in nest #4.
Tapco	0945	One adult incubating in nest #1.
Tower	0952	All known nests empty. No bald eagles.
Perkinsville	1000	All known nests empty. No bald eagles.
Hell Point historic BA	1017	All known nests empty. No bald eagles.
Muldoon nest site	1020	All known nests empty. No bald eagles.
Granite nest site	1022	All known nests empty. No bald eagles.
Sullivan Lake	1027	One adult standing in nest #2. Second adult perched in area.
Willow Lake	1205	No new nests. One adult perched in area.
Watson Lake nest site	1213	All known nests empty. No bald eagles.
Lynx	1223	One adult incubating in new snag nest #3.
Devil's Post historic BA	1253	All known nests empty. No bald eagles.
Burro Creek	1305	All known nests empty. One adult flying in area.
Chino historic BA	1425	No new nests or bald eagles.
Alamo	1430	One adult incubating in nest #4.
Ive's Wash	1440	One adult incubating in nest #3.
Pleasant	1600	One adult standing in nest; appeared to have hatched.
March 16, 2009		
Riverside	0726	One adult incubating in new cottonwood tree nest #1.
Granite Reef	0736	One adult brooding nestling(s).
Orme	0737	At least two 3-week old nestlings. One adult perched in area.
Rodeo	0740	At least one 3-week old nestling. One adult flushed from nest. Second adult in area.
Sycamore	0743	One 5.5-week old nestling.
Doka	0745	One 3.5-week old nestling. One adult in nest brooding.
Fort McDowell	0747	Failed. Nest #17 empty. No bald eagles.
Box Bar	0752	At least two 4.5-week old nestlings. One adult in nest.
Needle Rock	0753	At least one 2.5-week old nestling. One adult in nest.
Bartlett	0755	One adult brooding nestling(s).
Yellow Cliffs	0803	One adult incubating in nest #1. Second adult in area.
Cliff	0807	Two 2.5-week old nestlings. One adult in nest. Second adult in area.
Horseshoe	0813	Two 2-week old nestlings.
Table Mountain	0821	One adult incubating in nest #4.
East Verde	0827	One adult incubating in nest #6.
Coldwater	0833	One adult incubating.
Ladders	0843	All known nests empty. Two adults in area.
Beaver	0910	Two 3.5-week old nestlings. One adult flushed from perch.
Beaver Creek	0911	No new nests or bald eagles.
Oak Creek	0925	One 3-week old nestling.
Tapco	0933	One adult incubating.
Tower	0940	One adult flushed from nest #8. Nest empty.
Mormon Pocket	1105	One golden eagle incubating in nest #2.
Perkinsville	1107	One adult incubating in nest #4.

Table 12 continued.

Location	Time	Comments
Hell Point historic BA	1121	All known nests empty. Two adults flying in area.
Granite nest site	1128	All known nests empty. No bald eagles.
Sullivan nest site	1130	All known nests empty. No bald eagles.
Sullivan Lake	1135	One 3-week old nestling in nest #2.
Willow Lake	1145	No new nests or bald eagles.
Watson Lake nest site	1150	One golden eagle incubating in nest #1.
Lynx	1158	Two 3-week old nestlings. One adult in area.
Goldwater Lake	1200	No new nests or bald eagles.
Devil's Post historic BA	1220	All known nests empty. No bald eagles. One golden eagle in area.
Burro Creek	1244	All known nests empty. No bald eagles.
Gila River (Hwy 85 to 75th Ave)	1345	No new nests or bald eagles.
March 18, 2009		
Granite Reef	0749	Two 2-week old nestlings. One adult perched in nest tree.
Goldfield-Kerr	0753	One 4.5-week old nestling.
Bulldog	0757	Two 3-4 week old nestlings.
Blue Point	0800	Two 4.5-week old nestlings. Two adults in area.
Bagley	0801	Two 5.5-week old nestlings in nest #1.
Fish Creek	0805	One 2-week old nestling. One adult in nest.
Horse Mesa	0808	One 2-week old nestling. One adult in nest possibly brooding a second nestling.
Rock Creek	0813	All known nests empty. No bald eagles.
Tonto	0820	At least two 2.5-week old nestlings. Two adults in nest tree.
Sheep	0823	Two 5.5-week old nestlings. One adult flew to nest.
76	0836	One adult appeared to be brooding nestling(s).
Dupont	0850	No new nests or bald eagles.
Salome Creek	0855	No new nests or bald eagles.
Parker Canyon	0905	No new nests or bald eagles.
Pinto	0910	Two 6-week old nestlings.
Pinto Creek nest site	0912	One golden eagle incubating in nest #1.
Pinal	0923	Failed. Nest empty. One adult flushed from perch.
Redmond	0927	One adult incubating. Second adult flew to perch.
Cherry Creek	0929	No new nests or bald eagles.
Canyon	0945	All known nests empty. No bald eagles.
Cibecue	1109	One adult incubating/brooding in nest #2.
Mule Hoof historical BA	1111	All known nests empty. No bald eagles.
Cedar Basin	1124	All known nests empty. No bald eagles.
Lone Pine	1132	One adult incubating in nest #5. Second adult flying in area.
Crescent	1156	One adult incubating in nest #2. Second adult in nest.
Greer Lakes	1201	All known nests empty. No bald eagles.
Talkalai	1400	One 1.5-week old nestling. One adult shading nestling.
San Carlos	1406	All known nests empty. No bald eagles.
Suicide	1422	At least two 3-week old nestlings. One adult in nest. Second adult in area.
Coolidge	1425	One adult incubating in nest #2.
Granite Basin	1503	All known nests empty. No bald eagles.
April 8, 2009		
Ive's Wash	0815	Three 5.5-week old nestlings.
Bill Williams River	1030	No new nests or bald eagles.
Sullivan Lake	1243	One 6-week old nestling. One adult in nest.
Sullivan nest site	1245	All known nests empty. No bald eagles.
Granite nest site	1249	All known nests empty. No bald eagles.

Table 12 continued.

Location	Time	Comments
Muldoon nest site	1252	All known nests empty. No bald eagles.
Hell Point historic BA	1257	All known nests empty. No bald eagles. One golden eagle in area.
Perkinsville	1314	Failed. Nest empty. No bald eagles.
Tower	1320	All known nests empty. No bald eagles.
Tapco	1324	Failed. Nest empty. No bald eagles.
Ladders	1345	Two adults standing in nest #8. Nest empty.
April 16, 2009		
Granite Reef	0752	Two 6-week old nestlings. One adult flushed from tree.
Orme	0753	Three 6-week old nestlings.
Goldfield-Kerr	0756	One 8-week old nestling.
Bulldog	0759	Two 7-week old nestlings.
Blue Point	0800	Two 8-week old nestlings.
Bagley	0804	One 9.5-week old nestling. One fledgling flushed from ground.
Saguaro	0806	One 5-week old nestling in nest #1.
Fish Creek	0814	Failed. nest empty. No bald eagles.
Horse Mesa	0817	One 4.5-week old nestling. One adult flying in area.
Rock Creek	0821	All known nests empty. No bald eagles.
Tonto	0827	Three 6.5-week old nestlings. Two adults perched in nest tree.
Sheep	0835	One fledgling flushed from ground. Second fledgling perched on fallen nest tree #4. Two adults perched in area.
76	0848	One 4-week old nestling. One adult at nest.
Dupont	0903	All known nests empty. No bald eagles.
Salome Creek	0905	No new nests or bald eagles.
Parker Canyon	0915	No new nests or bald eagles.
Pinto	0923	Two 10-week old nestlings. Two adults at nest.
Pinal	0925	Nest #7 empty.
Redmond	0928	One adult incubating in nest #5 (second clutch – looked like unhatched egg next to adult)
Canyon	0949	All known nests empty. No bald eagles.
Cibecue	1113	One 2-week old nestling. One adult in area.
Mule Hoof historic BA	1115	All known nests empty. No bald eagles.
Cedar Basin	1125	All known nests empty. No bald eagles.
Lone Pine	1134	At least one 2-week old nestling. One adult in nest.
Crescent	1204	One adult incubating. Second adult flushed from perch.
Greer Lakes	1208	All known nests empty. No bald eagles.
Talkalai	1353	One 6-week old nestling. One adult in area.
San Carlos	1406	All known nests empty. No bald eagles. Red-tailed hawk incubating in nest #5.
Suicide	1408	Three 6-week old nestlings. One adult in area.
Coolidge	1413	Failed. Nest empty. No bald eagles.
Granite Basin	1442	All known nests empty. No bald eagles.
Winkelman historic BA	1455	No new nests or bald eagles.
April 22, 2009		
Riverside	0718	Two 4-week old nestlings. One adult in nest.
Rodeo	0727	Two 8-week old nestlings. One adult flushed from nest.
Sycamore	0729	One 11-week old nestling.
Doka	0730	One 9-week old nestling.
Box Bar	0735	One fledgling perched in tree. One 10-week old nestling branching. Third nestling/fledgling not seen.
Needle Rock	0736	Two 8-week old nestlings.
Bartlett	0740	One adult in nest. Nestling(s) appeared dead in nest.

Table 12 continued.

Location	Time	Comments
Yellow Cliffs	0745	Two 3-week old nestlings. One adult flushed from nest.
Cliff	0749	Two 8-week old nestlings.
Horseshoe	0755	One 6-week old nestling. One adult perched in nest tree.
Table Mountain	0800	Failed. Nest empty. No bald eagles.
East Verde	0823	Failed. One unhatched egg in nest. No bald eagles.
Coldwater	0828	Failed. Nest empty. No bald eagles.
Beaver	0837	One 8-week old nestling branching.
Beaver Creek	0838	No new nests or bald eagles.
Lower Lake Mary	0907	One adult incubating in nest #2.
Upper Lake Mary	0908	Ospreys incubating in nests #2 and #4. No bald eagles.
Horse/Veil Lakes	0920	No new nests or bald eagles.
Marshall Lake	0925	One immature perched in area. No new nests.
Rogers Lake	1005	One immature perched in area. No new nests.
White Horse Lake	1020	Ospreys incubating in nest #1, 2, and 3. No bald eagles.
Upper Sycamore Canyon	1022	No new nests or bald eagles.
Scholz Lake	1026	No new nests or bald eagles.
Dogtown Lake	1034	All known nests empty. No bald eagles.
Santa Fe/City Reservoirs	1042	No new nests or bald eagles.
Devil's Post historic BA	1108	All known nests empty. No bald eagles.
Burro Creek	1125	One adult in area of nests below campground.
Alamo	1138	One 7.5-week old nestling.
Ive's Wash	1143	Three 7-week old nestlings.
May 4, 2009		
Lone Pine	0905	Two 5-week old nestlings.
Cibecue	1310	One 6-week old nestling.
Redmond	1325	Failed. Nest empty. No bald eagles.
Horse Mesa	1340	One 7-week old nestling. One adult in nest.
May 11, 2009		
Bulldog	0734	Nest empty and no bald eagles. Fledged.
Blue Point	0737	Nest empty and no bald eagles. Fledged.
Saguaro	0739	One 8-week old nestling.
Horse Mesa	0748	One 8-week old nestling.
Parker Canyon	0800	One large empty nest. No bald eagles.
Salome Creek	0810	No new nests or bald eagles.
Dupont	0812	No new nests or bald eagles.
76	0821	One 7.5-week old nestling.
Tonto Creek (Gisela to Mogollon Rim)	0822	No new nests or bald eagles.
Knoll Lake	0853	Osprey incubating in new snag nest #4. Nest #1 empty. Nest #2 and #3 not found. No bald eagles.
Bear Canyon Lake	0900	No new nests or bald eagles.
Woods Canyon Lake	0905	One adult standing in nest #3 with one nestling <1.5 week old. Second adult perched in area.
Willow Springs Lake	0912	Ospreys incubating in nest #1 and new snag nest #2. No bald eagles.
Black Canyon Lake	0923	One adult flushed from perch by lake. No new nests.
Chevelon Canyon Lake	0935	One adult flushed from perch at lake inflow. Ospreys incubating nest #2 and new snag nest #3.
Blue Ridge Reservoir	1040	Ospreys incubating in nest #2 and 3. Nests #1, 4, and 5 not found. No bald eagles.
Tremaine/Soldier Annex/Long Lakes	1101	No new nests or bald eagles.

Table 12 continued.

Location	Time	Comments
Kinnickinick Lake	1110	No new nests or bald eagles.
Ashurst Lake	1116	No new nests or bald eagles.
Upper Lake Mary	1130	Ospreys incubating in nests #2, 3, and 4. Nest #1 empty. Nest #5 not found. No bald eagles.
Lower Lake Mary	1134	Failed. Nest empty. No bald eagles.
Scholz Lake	1150	No new nests or bald eagles.
Dogtown Lake	1157	All known nests empty. No bald eagles.
White Horse Lake	1211	One adult perched by lake. Ospreys incubating in nests #1, 2, and 3. No new nests.
Upper Sycamore Canyon	1213	No new nests or bald eagles.
JD Dam Lake	1218	Osprey incubating in new snag nest #1. No bald eagles.
Beaver	1400	Nest empty. Fledged. Two adults flushed in area.
Horseshoe	1421	One 9-week old nestling. One adult perched at nest.
Cliff	1427	Two 11-week old nestlings.
Yellow Cliffs	1432	One adult at nest shading nestlings.
Bartlett	1438	Confirmed failed. Nest empty. No bald eagles.
Needle Rock	1446	Two 10.5-week old nestlings.
Box Bar	1448	Nest #3 and nest limb fallen. Fledglings not seen.
Doka	1454	One fledgling soaring in area.
Sycamore	1455	One fledging perched in area.
Rodeo	1458	Two 10.5-week old nestlings.
May 26, 2009		
Riverside	0721	One 8-week old nestling. Second nestling dead in nest. One adult flushed from nest tree.
Rodeo	0733	Failed. Two nestlings dead in nest. No adults.
Yellow Cliffs	0746	Failed. Two nestlings dead in nest. No adults.
Cliff	0757	One fledgling flying in area. Second eaglet in nest. One adult in area.
Horseshoe	0810	One fledgling flushed from ground. One adult in area.
76	0827	One 9.5-week old nestling. One adult in area.
Horse Mesa	0841	One 10.5-week old nestling.
Bulldog	0851	One fledging in area. Second eaglet not seen.

APPENDIX E: BAGLEY BREEDING AREA SUMMARY

Table 13. Observed human activity and bald eagle behavior, Bagley BA, Arizona, 2009.

Human Activity	N[1]	W	R	X	B	U	Total	Percent
Boat	5,423	85	1	14	706	--	6,229	82.8
Jet ski	548	2	--	10	115	5	680	9.0
Boat with tuber/skier	328	2	1	1	61	2	395	5.3
Canoe/kayak	73	--	--	4	10	--	87	1.2
Small plane	67	--	--	--	5	--	72	1.0
Helicopter	21	1	--	--	3	1	26	0.4
Military aircraft	9	1	--	--	--	--	10	0.1
Apache helicopter	6	1	--	--	--	1	8	0.1
Gunshot	--	8	--	--	--	--	8	0.1
Jet	2	1	--	--	--	--	3	0.1
Sheriff helicopter	1	--	--	--	--	--	1	0.1
Total	6,478	101	2	29	900	9	7,519	

[1]Bald eagle response: N=none, W=watched, R=restless, X=flushed from perch, B=bird not in area, U=unknown.

Table 14. Observed forage events and success, Bagley BA, Arizona, 2009.

Sex	Fish		Birds		Reptiles		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U	E	S-U
Male	24	10-14	3	1-2	--	--	3	0-3	30	11-19
Female	17	12-5	--	--	1	1-0	--	--	18	13-5
Both	2	1-1	--	--	--	--	--	--	2	1-1
Unknown	6	2-4	1	1-0	--	--	--	--	7	3-4
Total	49	25-24	4	2-2	1	1-0	3	0-3	57	28-29

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

Table 15. Observed prey types delivered to the nest, Bagley BA, Arizona, 2009.

Sex	Fish	Birds	Mammals	Reptiles	Unknown	Total	Percent
Male	12	2	2	--	6	22	41.5
Female	17	1	1	1	5	25	47.2
Unknown	3	1	--	--	2	6	11.3
Total	32	4	3	1	13	53	
Percent	60.4	7.5	5.7	1.9	24.5		

Table 16. Observed prey species delivered to the nest, Bagley BA, Arizona 2009.

Sex	Birds	Fish		Total	Percent
	American coot	Koi	Black crappie		
Male	1	--	--	1	25.0
Female	--	1	--	1	25.0
Unknown	1	--	1	2	50.0
Total	2	1	1	4	
Percent	50.0	25.0	25.0		

Table 17. Bald eagle habitat analysis at the Bagley BA, Arizona, 2009 (continued next pages).

Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
24.7	CF	Left	Yes	1	RS	CL
24.8a	CF	Left	Yes	2	RS	CL
24.8b	SO	Right	No	1	RS	UP
24.8c	BO	Right	No	2	RS	UP
24.8d	PF	Left	Yes	1	RS	UP
24.8e	PT	Left	Partial	1	RS	UP
24.8f	PT	Left	Partial	2	RS	UP
24.9a	BO	Right	No	2	RS	UP
24.9b	SO	Right	--	1	RS	UP
24.9c	PT	Left	No	2	RS	CL
24.9d	RW	Right	--	1	RS	UP
24.9e	CT	Left	No	1	RS	CL
25.0a	CF	Left	Yes	1	RS	CL
25.0b	CF	Left	Yes	3	RS	CL
25.0c	CT	Right	No	2	RS	UP
25.1a	BO	Left	Yes	3	RS	CL
25.1b	CF	Right	Partial	2	RS	UP
25.1c	PT	Right	Partial	1	RS	UP
25.1d	CT	Right	Yes	1	RS	UP
25.1e	CF	Left	Yes	3	RS	CL
25.1f	BO	Right	No	1	RS	UP
25.2a	CF	Left	Yes	1	RS	CL
25.2b	CF	Left	Yes	3	RS	CL
25.2c	CT	Left	No	3	RS	CL
25.2d	BO	Right	No	1	RS	UP
25.2e	CT	Right	Partial	2	RS	UP
25.3a	CF	Left	Yes	2	RB	CL
25.3b	BO	Right	No	1	RS	UP
25.3c	BO	Left	Yes	2	RB	CL
25.4a	CF	Left	Partial	2	RB	CL
25.4b	CT	Left	No	2	RB	CL
25.4c	CF	Left	Yes	1	RC	CL
25.4d	CT	Left	No	1	RC	CL
25.4e	CT	Left	No	1	RB	CL
25.4f	CF	Left	Yes	2	RB	CL
25.5	CT	Left	Partial	1	RB	CL
25.7	CF	Left	No	1	RB	CL
25.8a	CT	Left	No	2	RB	CL
25.8b	CF	Left	Partial	1	RB	CL
25.8c	CT	Left	No	1	RB	CL
25.9a	BO	Left	No	1	RB	CL
25.9b	CT	Left	Yes	1	RB	CL
26.0a	RI	Left	No	2	RB	CL
26.0b	RW	Left	No	1	RB	UP

[1]River kilometer (Hunt et. al. 1992).
[2]CF=cliff ledge, SO=shore, BO=boulder, PF=pinnacle ledge, PT=pinnacle top, RW=rock in water, CT=cliff top, RI=ridgeline.
[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, RB=river bend, RC=reservoir cove.
[5]CL=cliffs, UP=desert upland.

Table 17 continued.

Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
26.0c	SO	Left	Yes	1	RB	UP
26.0d	HS	Left	No	1	RB	UP
26.0e	MS	Left	No	1	RB	UP
26.1a	BO	Left	No	2	RC	UP
26.1b	HS	Left	No	1	RB	UP
26.2a	PF	Left	Partial	1	RB	CL
26.2b	BO	Left	Partial	1	RC	UP
26.2c	SP	Left	Partial	1	RC	UP
26.2d	PT	Left	No	1	RB	CL
26.2e	BO	Left	No	1	RB	CL
26.2f	BO	Right	No	1	RB	CL
26.2g	SO	Left	No	1	RB	CL
26.2h	RI	Left	Yes	1	RB	UP
26.2i	CT	Right	No	8	RB	UP
26.2j	MS	Left	Partial	1	RC	UP
26.2k	PT	Left	No	2	RB	CL
26.2l	SO	Left	Partial	1	RC	UP
26.3a	PT	Left	No	3	RB	CL
26.3b	PF	Left	No	3	RB	CL
26.3c	PF	Left	Partial	1	RB	CL
26.3d	CT	Right	Partial	1	RB	CL
26.3e	BO	Right	Yes	1	RB	CL
26.3f	BO	Left	Partial	1	RB	CL
26.3g	BO	Left	--	2	RB	CL
26.3h	BO	Left	--	3	RB	CL
26.3i	HS	Left	No	4	RC	UP
26.3j	PT	Left	No	2	RB	CL
26.4a	BO	Left	Partial	1	RB	CL
26.4b	CF	Left	Partial	1	RB	CL
26.4c	CT	Left	--	1	RB	CL
26.5a	CT	Left	Partial	1	RB	CL
26.5b	RW	Left	Yes	1	RB	CL
26.5c	BO	Right	No	4	RB	CL
26.5d	CF	Left	Partial	1	RB	CL
26.5e	CF	Left	Partial	2	RB	CL
26.6a	CF	Left	Partial	1	RB	CL
26.6b	RW	Left	Yes	1	RB	CL
26.6c	CT	Left	--	1	RB	CL
26.6d	BO	Right	No	1	RB	CL
26.6e	PF	Left	No	3	RB	CL
26.7a	PT	Right	No	2	RB	CL
26.7b	CF	Left	Partial	1	RB	CL

[1]River kilometer (Hunt et. al. 1992).
[2]SO=shore, HS=hard snag (main branches only), MS=mesquite, BO=boulder, PF=pinnacle ledge, CF=cliff ledge, SP=stump, PT=pinnacle top, RW=rock in water, CT=cliff top, RI=ridgeline.
[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, RB=river bend, RC=reservoir cove.
[5]CL=cliffs, UP=desert upland.

Table 17 continued.

Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
26.7c	CT	Left	No	1	RB	CL
26.8a	CT	Left	Partial	1	RB	CL
26.8b	CF	Left	Yes	1	RB	CL
26.8c	HS	Right	No	1	RB	CL
26.9a	CT	Left	No	1	RB	CL
26.9b	CF	Left	Partial	1	RB	CL
27.2	CT	Left	No	2	RB	CL
27.5	CT	Right	No	1	RS	UP

[1]River kilometer (Hunt et. al. 1992).
[2]HS=hard snag (main branches only), CF=cliff ledge, CT=cliff 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]RB=river bend, RC=reservoir cove.
[5]CL=cliffs, UP=desert upland.

Table 18. Bald eagle habitat use at the Bagley BA, Arizona, 2009.

River km[1]	PW[2,3]	PH	PD	CL	PK	ES	PU	PP	OT	Total	Percent
24.7	37	--	--	--	--	--	--	--	1	38	0.4
24.8	47	15	--	--	--	--	--	--	--	62	0.7
24.9	218	68	9	1	--	54	1	--	12	363	4.0
25.0	93	--	--	--	--	--	--	--	--	93	1.0
25.1	372	35	3	--	5	--	--	--	3	418	4.6
25.2	34	7	--	--	5	--	40	--	1	87	1.0
25.3	19	--	--	--	--	--	--	--	--	19	0.2
25.4	793	32	--	31	--	--	9	24	--	889	9.8
25.5	--	4	--	1	--	--	--	--	--	5	0.1
25.6	32	--	--	--	--	--	1	--	5	38	0.4
25.7	2	4	--	--	--	--	--	--	--	6	0.1
25.8	108	2	--	--	--	--	--	--	--	110	1.2
25.9	26	--	--	--	--	--	--	--	--	26	0.3
26.0	24	17	2	5	--	--	1	--	6	55	0.6
26.1	6	--	38	10	6	--	--	--	2	62	0.7
26.2	1,464	419	62	14	43	12	--	26	2	2,042	22.5
26.3	1,381	69	6	21	58	--	3	2	8	1,548	17.0
26.4	29	59	37	--	--	--	5	--	--	130	1.4
26.5	109	12	--	--	3	--	--	--	3	127	1.4
26.6	2,305	199	41	46	--	2	7	10	8	2,618	28.8
26.7	113	9	--	12	7	--	--	--	--	141	1.6
26.8	99	--	--	--	--	--	--	--	--	99	1.1
26.9	68	4	--	--	--	--	--	--	--	72	0.8
27.0	--	--	--	--	1	--	--	--	--	1	0.1
27.2	7	--	--	--	--	--	--	--	--	7	0.1
27.5	--	26	--	--	--	--	--	--	--	26	0.3
Total	7,386	981	198	141	128	68	67	62	51	9,082	
Percent	81.3	10.8	2.2	1.6	1.4	0.7	0.7	0.7	0.6		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PH=perched hunting, PD=perched drying, CL=perched close to mate, PK=perched with prey, ES=eating on shore, PU=perched unknown, PP=perched preening, OT=other (includes perched vocalizing, drinking water, eating on cliff, perched interaction, bathing, gathering nest material, copulating).

APPENDIX F: BOX BAR BREEDING AREA SUMMARY

Table 19. Observed human activity and bald eagle behavior, Box Bar BA, Arizona, 2009.

Human Activity	N[1]	W	R	F	L	X	B	U	Total	Percent
Helicopter	--	11	--	--	--	--	9	1	21	50.0
Small plane	--	3	--	--	--	--	3	--	6	14.3
Gunshot	1	3	--	--	--	--	--	--	4	9.5
Motorized parachute	--	--	1	--	--	--	1	--	2	4.8
OHV/dirt bike	--	1	--	1	--	--	--	--	2	4.8
Hiker	1	--	--	--	1	--	--	--	2	4.8
Fisherman	1	--	--	--	--	1	--	--	2	4.8
Horseback rider	--	--	--	--	--	1	--	--	1	2.4
Sheriff helicopter	--	1	--	--	--	--	--	--	1	2.4
Flyer/Ultralite	--	--	--	--	--	--	1	--	1	2.4
Total	3	19	1	1	1	2	14	1	42	

[1]Bald eagle response: N=none, W=watched, R=restless, F=flushed, L=left area, X=bird preoccupied with another human activity occurring at same time, B=bird not in area, U=unknown.

Table 20. Observed forage events and success, Box Bar BA, Arizona, 2009.

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

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

Table 21. Observed prey types delivered to the nest, Box Bar BA, Arizona, 2009.

Sex	Fish	Reptiles	Unknown	Total	Percent
Male	21	1	14	36	57.1
Female	13	--	6	19	30.2
Unknown	3	--	5	8	12.7
Total	37	1	25	63	
Percent	58.7	1.6	39.7		

Table 22. Bald eagle habitat analysis at the Box Bar BA, Arizona, 2009.					
Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]
22.0	HS	Right	No	1	RU
23.0	HS	Left	Partial	2	RU
23.8	CT	Left	Partial	1	RU
23.9	HS	Right	No	1	RI
24.8	MS	Right	No	1	RU
24.9a	CS	Right	Yes	1	RI
24.9b	CL	Left	No	6	RU
25.0a	CL	Left	Yes	6	RU
25.0b	MS	Left	No	6	RU
25.1a	HS	Left	No	6	RU
25.1b	SG	Left	No	6	RU
25.2a	CL	Left	Yes	6	RU
25.2b	HS	Left	No	6	RU
25.3	BO	Right	No	1	RI
25.6	CM	Left	No	4	RU
25.7	CL	Right	Yes	6	RU
25.8a	WO	Right	No	1	RI
25.8b	ST	Left	No	4	RU

[1]River kilometer (Hunt et. al. 1992).
[2]BO=boulder, CL=cottonwood large/20-30m, CM=cottonwood medium/10-20m, CS=cottonwood small/0-10m, CT=cliff top, HS=hard snag (main branches only), MS=mesquite, SG=soft snag (dead but branches still intact), ST=snag top, WO=willow.
[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]RI=riffle, RU=run.

Table 23. Bald eagle habitat use at the Box Bar BA, Arizona, 2009.									
River km[1]	PW[2,3]	PH	PU	PP	PD	PK	PI	Total	Percent
22.0	--	4	--	--	--	--	--	4	0.2
23.0	973	--	92	33	--	--	--	1,098	55.4
23.8	85	242	--	--	--	--	--	327	16.5
23.9	--	27	--	22	--	--	--	49	2.5
24.8	10	--	--	--	--	--	--	10	0.5
24.9	70	75	--	5	11	7	--	168	8.5
25.0	26	--	--	--	--	--	--	26	1.3
25.1	64	--	--	--	--	--	--	64	3.2
25.2	21	--	--	--	--	--	1	22	1.1
25.3	--	--	--	--	--	2	--	2	0.1
25.6	107	--	--	--	--	--	--	107	5.4
25.7	--	--	19	--	--	--	--	19	1.0
25.8	--	51	36	--	--	--	--	87	4.4
Total	1,356	399	147	60	11	9	1	1,983	
Percent	68.4	20.1	7.4	3.0	0.6	0.5	0.1		

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

APPENDIX G: CLIFF BREEDING AREA SUMMARY

Table 24. Observed human activity and bald eagle behavior, Cliff BA, Arizona, 2009.

Human Activity	N[1]	W	R	F	L	U	Total	Percent
Gunshot	32	7	30	--	--	--	69	48.9
Helicopter	6	24	--	1	--	--	31	22.0
Hiker	--	9	--	--	1	--	10	7.1
Military jet	--	3	--	--	2	5	10	7.1
Small plane	1	8	--	--	--	--	9	6.4
Driver	--	4	--	--	--	--	4	2.8
Hunter	4	--	--	--	--	--	4	2.8
OHV	--	2	--	--	--	--	2	1.4
Nestwatcher	--	--	--	2	--	--	2	1.4
Total	43	57	30	3	3	5	141	

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

Table 25. Observed forage events and success, Cliff BA, Arizona, 2009.

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

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

Table 26. Observed prey types delivered to the nest, Cliff BA, Arizona, 2009.

Sex	Fish	Mammals	Birds	Unknown	Total	Percent
Male	27	2	2	13	44	69.8
Female	5	2	--	11	18	28.6
Unknown	--	1	--	--	1	1.6
Total	32	5	2	24	63	
Percent	50.8	7.9	3.2	38.1		

Table 27. Observed prey species delivered to the nest, Cliff BA, Arizona 2009.

Sex	Fish		Mammals	Birds	Total	Percent
	SU[1]	CP	DC	WS		
Male	1	1	1	1	4	50
Female	2	--	2	--	4	50
Total	3	1	3	1	8	
Percent	37.5	12.5	37.5	12.5		

[1]SU=sucker species, CP=common carp, DC=desert cottontail, WS=waterfowl species.

Table 28. Bald eagle habitat analysis at the Cliff BA, Arizona, 2009.						
Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
66.4a	HS	Right	No	3	--	MB
66.4b	HS	Right	No	3	--	CW
66.5	HS	Right	No	2	RU	MB
66.6a	HS	Right	No	2	RU	MB
66.6b	HS	Right	No	3	RU	MB
66.7	HS	Right	No	1	RU	MB
66.9	HS	Right	No	2	--	MB
67.5	CF	Left	Partial	1	PO	CF
69.3	HS	Left	No	1	PO	WT
72.3	HS	Right	No	1	PO	WT

[1]River kilometer (Hunt et. al. 1992).
[2]HS=hard snag (main branches only), CF=cliff ledge.
[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, PO=pool.
[6]MB=mesquite bosque, CW=cottonwood grove, CF=cliff, WT=willow thicket.

Table 29. Bald eagle habitat use at the Cliff BA, Arizona, 2009.									
River Km[1]	PW[2,3]	PP	PH	ET	PK	CL	OT	Total	Percent
66.0	23	--	--	--	--	--	--	23	0.5
66.4	456	63	18	--	--	--	7	544	11.8
66.5	40	148	--	--	--	--	2	190	4.1
66.6	339	264	--	--	8	--	--	611	13.3
66.7	1,063	267	18	68	83	78	4	1,581	34.3
66.8	--	--	--	--	--	--	4	4	0.1
66.9	65	176	5	12	--	--	--	258	5.6
67.0	28	--	--	--	--	--	4	32	0.7
67.2	--	--	9	--	--	--	--	9	0.2
67.3	--	12	--	--	--	--	--	12	0.3
67.5	511	--	678	--	--	--	--	1,189	25.8
67.8	--	--	--	13	--	--	--	13	0.3
67.9	34	--	--	--	--	--	--	34	0.7
68.4	11	--	--	--	--	--	--	11	0.2
69.4	10	--	--	--	--	--	--	10	0.2
69.7	23	--	--	--	--	--	--	23	0.5
73.0	60	--	--	--	--	--	--	60	1.3
Total	2,663	930	728	93	91	78	21	4,604	
Percent	57.8	20.2	15.8	2.0	2.0	1.7	0.5		

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

APPENDIX H: CRESCENT BREEDING AREA SUMMARY

Table 30. Observed human activity and bald eagle behavior, Crescent BA, Arizona, 2009.

Human Activity	N[1]	W	R	F	L	B	Total	Percent
Vehicle	625	7	--	3	1	2	638	41.2
Fisherman	605	--	--	--	--	--	605	39.1
Boat	103	--	--	--	--	--	103	6.7
Agency worker	37	--	--	--	--	--	37	2.4
Birder	32	--	--	--	--	--	32	2.1
Tuber	30	--	--	--	--	--	30	1.9
Hiker	16	1	2	1			20	1.3
OHV	18	1	--	--	--	--	19	1.2
Picnicker	17	--	--	--	--	--	17	1.1
Horseback rider	8	--	2	--	--	--	10	0.6
Small plane	8	--	--	--	--	1	9	0.6
Kayak/Canoe	6	--	--	--	--	--	6	0.4
Cattle rancher	6	--	--	--	--	--	6	0.4
Bicycler	6	--	--	--	--	--	6	0.4
Swimmer	5	--	--	--	--	--	5	0.3
AGFD worker	3	--	--	--	--	--	3	0.2
Photographer	--	--	1	--	--	--	1	0.1
Helicopter	--	1	--	--	--	--	1	0.1
Total	1,525	10	5	4	1	3	1,548	

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

Table 31. Observed forage events and success, Crescent BA, Arizona, 2009.

Sex	Fish		Birds		Mammals		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	14	13-1	2	2-0	--	--	16	15-1
Female	16	15-1	--	--	1	1-0	17	16-1
Total	30	28-2	2	2-0	1	1-0	33	31-2

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

Table 32. Observed prey types delivered to the nest, Crescent BA, Arizona, 2009.

Sex	Fish	Mammals	Birds	Unknown	Total	Percent
Male	41	--	2	1	44	41.5
Female	50	1	--	8	59	55.7
Unknown	1	1	--	1	3	2.8
Total	92	2	2	10	106	
Percent	86.8	1.9	1.9	9.4		

Table 33. Observed prey species delivered to the nest, Crescent BA, Arizona 2009.								
Sex	Fish				Birds	Mammals	Total	Percent
	RT[1]	BK	CT	BT	AC	GS		
Male	23	4	4	3	2	--	36	56.3
Female	23	2	1	--	--	1	27	42.2
Unknown	1	--	--	--	--	--	1	1.6
Total	47	6	5	3	2	1	64	
Percent	73.4	9.4	7.8	4.7	3.1	1.6		

[1]RT=rainbow trout, BK=brook trout, CT=Cutthroat trout, BT=Brown trout, AC=American coot, GS=ground squirrel species.

Table 34. Bald eagle habitat analysis at the Crescent BA, Arizona, 2009.						
Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
0.5	SO	E	No	1	RC	CF
0.8	PO	E	Yes	8	RC	CF
2.2	ST	S	No	8	RC	CF
2.3a	PO	SW	No	7	RC	CF
2.3b	PO	SW	No	8	RC	CF
2.4a	UN	W	Yes	5	RC	CF
2.4b	ST	W	No	8	RC	CF
2.4c	ST	W	No	8	RC	CF
2.4d	ST	SE	No	2	RC	CF
2.5a	PS	E	No	2	RC	CF
2.5b	PO	E	No	3	RC	CF
2.5c	ST	E	No	3	RC	CF
2.5d	DL	SE	Yes	4	RC	CF
2.5e	PO	SE	Yes	4	RC	CF
2.5f	HS	---	No	5	RC	CF
2.5g	UN	E	Yes	5	RC	CF
2.5h	PO	S	No	8	RC	CF
2.5i	DL	W	Yes	8	RC	CF
2.5j	PS	E	No	4	RC	CF
3.3	SO	N	No	1	RC	CF
Basin Lake	SO	N	No	1	PN	CF

[1]Lake kilometer (clockwise from north boat ramp) .
[2]DL=deciduous tree large, HS=hard snag (main branches only), PO=pine/conifer old growth, PS=pine/conifer 2nd growth, SO=shore, ST=snag top, UN=unknown.
[3]Direction from nest.
[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, PN=pond.
[6]CF=coniferous forest.

Table 35. Bald eagle habitat use at the Crescent BA, Arizona, 2009.

Lake km[1]	PW[2,3]	PR	EN	PP	CL	PH	PV	OT	Total	Percent
0.5	47	--	--	--	--	--	--	16	63	0.2
0.8	82	--	--	--	--	--	--	2	84	0.3
2.2	27	--	--	--	--	--	--	--	27	0.1
2.3	7,337	323	--	90	205	--	6	3	7,964	28.7
2.4	848	395	--	6	--	--	--	3	1,252	4.5
2.5	16,894	403	522	232	28	161	44	22	18,306	66.1
3.3	--	--	--	--	--	--	--	4	4	0.1
BL[4]	--	--	--	--	--	--	--	9	9	0.1
Total	25,235	1,121	522	328	233	161	50	59	27,709	
Percent	91.1	4.0	1.9	1.2	0.8	0.6	0.2	0.2		

[1]Lake kilometer (clockwise from north boat ramp).
[2]Observation time (minutes).
[3]PW=perched watching, PR=perched roosting, EN=eating in nest, PP=perched preening, CL=perched close to mate, PH=perched hunting, PV= perched vocalizing, OT=other behaviors (includes gathering nest material and eating in tree).
[4]Basin Lake.

APPENDIX I: GOLDFIELD-KERR BREEDING AREA SUMMARY

Table 36. Observed human activity and bald eagle behavior, Goldfield-Kerr BA, Arizona, 2009.

Human Activity	N[1]	W	R	F	B	U	Total	Percent
Helicopter	87	34	1	--	13	2	137	21.8
Canoe/kayak	68	7	--	2	3	--	80	12.7
Other agency worker	64	5	--	--	--	3	72	11.5
Hiker	42	2	--	2	7	--	53	8.4
Apache helicopter	32	11	--	--	5	1	49	7.8
Horseback rider	37	5	--	3	4	--	49	7.8
Small plane	41	1	--	1	4	1	48	7.6
Sheriff airboat	17	9	1	2	1	3	33	5.3
Sheriff helicopter	11	13	1	2	--	3	30	4.8
Driver	14	--	1	--	--	--	15	2.4
Rafter	10	2	--	1	--	--	13	2.1
Photographer	9	1	--	--	--	--	10	1.6
Tuber (# of events)	--	9	--	1	--	--	10	1.6
Birder	6	2	--	--	--	--	8	1.3
Fisherman	3	--	--	--	4	--	7	1.1
OHV	5	1	--	--	--	--	6	1.0
Gunshot	2	--	--	1	--	--	3	0.5
Military plane	3	--	--	--	--	--	3	0.5
Picnicker	1	1	--	--	--	--	2	0.3
Total	452	103	4	15	41	13	628	

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

Table 37. Observed watercraft activity on May weekends, Goldfield-Kerr BA, Arizona, 2009.

Date	Tuber	Canoe/Kayak	Rafter	Total
May 2-3	2,211	42	12	2,265
May 9-10	2,732	11	2	2,745
May 16-17	3,393	17	--	3,410
May 23-25	16,845	48	--	16,893
Total	25,181	118	14	25,313

Table 38. Observed forage events and success, Goldfield-Kerr BA, Arizona, 2009.

Sex	Fish		Mammals		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	Adult male was absent throughout the breeding season.				--	--
Female	1	1-0	1	1-0	2	2-0
Total	1	1-0	1	1-0	2	2-0

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

Table 39. Observed prey types delivered to the nest, Goldfield-Kerr BA, Arizona, 2009.

Sex	Fish	Mammals	Carrion	Unknown	Total	Percent
Male	Adult male was absent throughout the breeding season.				--	--
Female	34	6	3	8	51	100
Total	34	6	3	8	51	
Percent	66.7	11.8	5.9	15.7		

Table 40. Observed prey species delivered to the nest, Goldfield-Kerr BA, Arizona 2009.							
Sex	Fish			Mammals		Total	Percent
	SU[1]	CS	CP	RS	WJ		
Male	Adult male was absent throughout the breeding season.					--	--
Female	4	1	1	1	1	8	100
Total	4	1	1	1	1	8	
Percent	50.0	12.5	12.5	12.5	12.5		

[1]SU=sucker species, CS=catfish species, CP=common carp, RS=rock squirrel, WJ=White-tailed jackrabbit.

Table 41. Bald eagle habitat analysis at the Goldfield-Kerr BA, Arizona, 2009.						
Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
8.7	CL	Right	No	1	RU	CW
9.2	CL	Right	Yes	5	RU	CW
9.3a	CL	Right	No	6	RU	MB
9.3b	HS	Right	No	6	RI	MB
9.7a*	CF	Right	Yes	8	--	UP
9.7b*	CM	Right	No	5	RI	MB
9.8*	HS	Right	No	7	RI	MB
10.0a	HS	Right	No	6	RU	MB
10.0b	CM	Left	No	2	RI	MB
10.0c	SM	Left	No	2	RI	MB
10.0d*	HS	Right	No	4	RI	MB
10.0e	SO	Right	No	1	RI	MB
10.1a	SG	Right	No	4	RU/RI	MB
10.1b	CM	Right	Partial	3	RU	MB
10.1c	CL	Right	Partial	4	RI	MB
10.2a	CL	Right	No	4	RU/RI	MB
10.2b	SO	Right	No	1	PO/RI	MB
10.3	SO	Right	No	1	PO	MB
10.4a	CM	Right	Yes	5	RU	MB
10.4b	MS	Left	Partial	8	--	MB
10.5	HS	Right	No	4	RU	MB
10.9	CT	Right	No	2	RU	UP
11.1	CT	Right	No	2	RU	UP
11.3	CT	Right	Yes	1	RU	UP
11.4	CT	Right	Yes	2	RU	UP

[1]River kilometer (Hunt et. al. 1992).
[2]CL=cottonwood large (20-30+m), HS=hard snag (main branches only), CF=cliff ledge, CM=cottonwood medium (10-20+m), SM=snag, mesquite, SO=shore, SG=soft snag (dead but branches still intact), MS=mesquite, CT=cliff 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]RU=run, RI=riffle, PO=river pool.
[5]CW=cottonwood grove, MB=mesquite bosque, UP=desert upland.
*Perch used after eaglet fledged.

Table 42. Bald eagle habitat use at the Goldfield-Kerr BA, Arizona, 2009.								
River km[1]	PW[2,3]	PH	PP	PK	ET	OT	Total	Percent
8.7	16	37	--	--	--	--	53	0.2
9.2	23	--	--	--	--	--	23	0.1
9.3	99	--	28	--	--	--	127	0.6
10.0	2,926	1,071	568	--	15	--	4,580	21.3
10.1	366	3	55	--	--	1	425	2.0
10.2	13,336	33	1,308	2	--	12	14,691	68.3
10.3	--	--	--	8	--	2	10	0.1
10.4	253	--	54	13	--	--	320	1.5
10.5	--	--	61	27	10	--	98	0.5
10.9	127	735	28	--	--	--	890	4.1
11.1	5	230	--	--	--	--	235	1.1
11.3	--	41	--	--	--	--	41	0.2
11.4	--	22	--	--	--	--	22	0.1
Total	17,151	2,172	2,102	50	25	15	21,515	
Percent	79.7	10.1	9.8	0.2	0.1	0.1		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PH=perched hunting, PP=perched preening, PK=perched with prey, ET=eating in tree, OT=other (includes standing in water, eating on shore, drinking water, and gathering nest material).

APPENDIX J: LUNA BREEDING AREA SUMMARY

Table 43. Observed human activity and bald eagle behavior, Luna BA, Arizona, 2009.

Human Activity	N[1]	R	L	Total	Percent
Fisherman	165	--	--	165	38.4
Boater	85	--	--	85	19.8
Driver/vehicle	53	--	--	53	12.3
Picnicker	26	--	--	26	6.0
Birder	26	--	--	26	6.0
Float tuber	14	--	--	14	3.3
Agency worker	13	--	--	13	3.0
Military jet	8	2	--	10	2.3
Canoe/kayak	8	--	--	8	1.9
Hiker	8	--	--	8	1.9
Helicopter	5	--	--	5	1.2
Photographer	5	--	--	5	1.2
Gunshot	3	1	--	4	0.9
Construction	2	--	--	2	0.5
Emergency vehicle	1	--	1	2	0.5
Camper	1	--	--	1	0.2
Swimmer	1	--	--	1	0.2
OHV	1	--	--	1	0.2
Small plane	1	--	--	1	0.2
Total	426	3	1	430	

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

Table 44. Observed forage events and success, Luna BA, Arizona, 2009.

Sex	Birds		Fish		Mammals		Carrion		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U	E	S-U
Male	30	24-6	2	2-0	1	1-0	3	3-0	36	30-6
Female	23	18-5	11	11-0	1	1-0	1	1-0	36	31-5
Unknown	1	1-0	1	1-0	--	--	--	--	2	2-0
Total	54	43-11	14	14-0	2	2-0	4	4-0	74	63-11

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

Table 45. Observed prey types delivered to the nest, Luna BA, Arizona, 2009.

Sex	Birds	Fish	Mammals	Carrion	Total	Percent
Male	25	2	1	3	31	49.2
Female	18	10	1	1	30	47.6
Unknown	1	1	--	--	2	3.2
Total	44	13	2	4	63	
Percent	69.8	20.6	3.2	6.3		

Table 46. Observed prey species delivered to the nest, Luna BA, Arizona 2009.

Sex	Birds		Fish		Mammals	Total	Percent
	AC[1]	BH	RT	CT	RS		
Male	22	1	1	1	1	26	46.4
Female	18	--	8	2	--	28	50.0
Unknown	1	--	1	--	--	2	3.6
Total	41	1	10	3	1	56	
Percent	73.2	1.8	17.9	5.4	1.8		

[1]AC=American coot, BH=bufflehead, RT=rainbow trout, CT=cutthroat trout, RS=rabbit species.

Table 47. Bald eagle habitat analysis at the Luna BA, Arizona, 2009.

Perch Location[1]	Perch Type[2]	Shade	Distance to H_2O (m)[3]	Land Type[4]
0.3	PS	No	1	RS
0.7	HS	No	2	RC
0.9	HS	No	2	RC
1.1	PS	Yes	1	RC
1.7	PS	Yes	1	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	BL	No	1	RS
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 48. Bald eagle habitat use at the Luna BA, Arizona, 2009.

Lake km[1]	PW[2,3]	PR	PH	PP	PU	CL	OT	Total	Percent
0.3	45	--	118	--	--	--	--	163	0.5
0.9	146	--	--	--	--	--	--	146	0.5
1.8	--	--	81	--	--	--	--	81	0.3
2.0	44	100	15	--	-	--	--	159	0.5
2.1	303	--	--	3	--	--	--	306	1.0
2.2	646	746	--	68	--	--	--	1,460	4.8
2.3	91	641	--	15	--	--	14	761	2.5
2.4	15,522	1,540	--	948	819	--	52	18,881	61.9
2.5	351	--	--	37	--	--	--	388	1.3
2.6	266	--	295	--	--	--	--	561	1.8
2.7	1,161	--	873	--	--	224	--	2,258	7.4
2.8	81	--	--	13	--	--	--	94	0.3
3.0	--	--	20	--	--	--	--	20	0.1
3.5	2,188	--	348	25	--	--	--	2,561	8.4
4.5	136	--	24	--	--	--	--	160	0.5
4.6	--	--	150	--	--	--	--	150	0.5
5.1	942	1,173	129	--	128	--	--	2,372	7.8
Total	21,922	4,200	2,053	1,109	947	224	66	30,521	
Percent	71.8	13.8	6.7	3.6	3.1	0.7	0.2		

[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 basking, perched vocalizing, and perched with prey).

APPENDIX K: NEEDLE ROCK BREEDING AREA SUMMARY

Table 49. Observed human activity and bald eagle behavior, Needle Rock BA, Arizona, 2009.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Helicopter	4	8	--	--	1	--	2	15	39.5
OHV	--	2	1	2	5	--	--	10	26.3
Small plane	2	--	--	--	2	--	2	6	15.8
Nestwatcher	1	--	--	1	--	--	--	2	5.3
Vehicle	--	1	--	--	--	--	--	1	2.6
Tuber	--	--	--	--	1	--	--	1	2.6
Hiker	1	--	--	--	--	--	--	1	2.6
Canoe/Kayak	--	--	--	--	--	1	--	1	2.6
Gunshot	--	--	--	--	--	1	--	1	2.6
Total	8	11	1	3	9	2	4	38	

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

Table 50. Observed forage events and success, Needle Rock BA, Arizona, 2009.

Sex	Fish		Mammals		Reptiles		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U	E	S-U
Male	--	--	--	--	2	2-0	3	1-2	5	3-2
Female	27	26-1	4	3-1	--	--	4	2-2	35	31-4
Unknown	2	2-0	--	--	--	--	4	3-1	6	5-1
Total	29	28-1	4	3-1	2	2-0	11	6-5	46	39-7

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

Table 51. Observed prey types delivered to the nest, Needle Rock BA, Arizona, 2009.

Sex	Fish	Mammals	Reptiles	Unknown	Total	Percent
Male	--	--	2	1	3	8.1
Female	24	3	--	2	29	78.4
Unknown	2	--	--	3	5	13.5
Total	26	3	2	6	37	
Percent	70.2	8.1	5.4	16.2		

Table 52. Bald eagle habitat analysis at the Needle Rock BA, Arizona, 2009 (continued next page).

Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
25.3	MS	Left	Partial	4	--	MB
25.4a	MS	Left	Partial	6	--	MB
25.4b	TA	Left	Partial	1	RU	MB
25.5a	CM	Left	Partial	3	--	CW
25.5b	MS	Left	Partial	2	--	MB
25.6a	MS	Left	No	4	--	MB
25.6b	CL	Left	Partial	3	--	CW
25.6c	CL	Left	Partial	1	RU	--
25.6d	MS	Left	No	1	--	MB
25.6e	MS	Left	No	1	RU	MB
25.6f	SM	Left	No	1	RU	MB
25.7a	CL	Left	No	5	--	CW
25.7b	CL	Left	Partial	2	--	CW
25.7c	CM	Right	Partial	1	RU	--
25.7d	MS	Left	No	1	--	MB
25.7e	WO	Right	No	1	PW	WT
25.8a	MS	Left	No	5	--	MB
25.8b	MS	Left	No	3	--	MB
25.8c	MS	Left	No	2	RU	MB
25.8d	CL	Left	Partial	1	RU	CW
25.9a	MS	Left	No	6	--	MB
25.9b	MS	Left	No	5	--	MB
25.9c	MS	Left	No	1	RU	WT
26.1a	CL	Right	No	5	--	CW
26.1b	CL	Left	No	3	PW	WT
26.1c	CL	Left	Partial	2	RU	CW
26.2a	PV	Left	No	7	--	UP
26.2b	SS	Right	No	1	RU	--
26.8	ST	Right	No	3	--	MB
26.9	WO	Left	Partial	1	RU	WT
27.0a	MS	Left	No	5	--	MB
27.0b	WO	Right	Partial	1	RU	WT
27.3	SO	Right	No	1	RU	--
27.6	WO	Right	No	1	RU	MB
28.3a	MS	Left	No	2	RU	MB
28.3b	SH	Right	No	1	RU	WT
28.3c	WO	Left	Partial	1	RU	WT
28.3d	WO	Right	Partial	1	RU	--
28.4	WO	Left	Yes	1	RB	WT
28.5	WO	Right	Yes	1	RU	WT
28.7	SO	Right	No	1	RU	--

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

[2]CL=cottonwood large/20-30m, CM=cottonwood medium/10-20m, GR=ground, HS=hard snag (main branches only), MS=mesquite, PT=pinnacle top, PV=palo verde, SH=shrub, SM=snag mesquite, SO=shore, SS=shrub snag, ST=snag top, TA=tamarisk, WO=willow.

[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]RU=run, PW=pocket water, RB=river bend.

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

Table 52 continued.

Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
29.0	HS	Right	No	2	--	MB
29.5	WO	Left	Yes	2	RU	WT

[1]River kilometer (Hunt et. al. 1992).
[2]HS=hard snag (main branches only), WO=willow.
[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]RU=run.
[5]MB=mesquite bosque, WT=willow thicket.

Table 53. Bald eagle habitat use at the Needle Rock BA, Arizona, 2009.

River km[1]	PW[2,3]	PR	PU	PP	PH	CL	PD	OT	Total	Percent
25.0	--	--	--	--	--	184	--	--	184	0.8
25.1	61	--	--	--	--	--	--	--	61	0.3
25.3	29	--	--	--	13	--	--	--	42	0.2
25.4	56	--	--	--	--	--	--	--	56	0.3
25.5	509	43	48	17	1	--	--	--	618	2.8
25.6	785	99	71	99	--	--	--	1	1,055	4.8
25.7	1,293	2,416	40	73	21	--	--	8	3,851	17.4
25.8	1,122	1,859	483	132	9	--	13	--	3,618	16.3
25.9	2,141	2,029	165	279	17	78	--	7	4,716	21.3
26.0	95	55	4	--	2	--	--	--	156	0.7
26.1	668	330	66	61	51	--	46	--	1,222	5.5
26.2	797	79	5	56	2	--	--	27	966	4.4
26.3	51	60	--	2	--	--	--	--	113	0.5
26.5	44	43	--	9	1	--	--	--	97	0.4
26.7	5	7	--	37	6	--	--	--	55	0.2
26.8	27	--	--	--	--	--	--	--	27	0.1
26.9	2	--	6	--	17	--	--	--	25	0.1
27.0	329	108	8	31	12	--	--	--	488	2.2
27.1	2	--	--	--	10	--	--	--	12	0.1
27.2	70	--	--	--	--	--	--	--	70	0.3
27.3	--	--	--	--	2	--	--	2	4	0.1
27.4	--	--	--	--	54	--	--	--	54	0.2
27.5	--	--	--	--	29	--	--	--	29	0.1
27.6	--	--	--	--	4	--	--	--	4	0.1
27.8	127	--	--	--	--	--	--	--	127	0.6
28.0	--	10	--	--	--	--	--	--	10	0.1
28.1	171	--	--	--	27	--	27	--	225	1.0
28.2	150	278	--	--	58	--	--	--	486	2.2
28.3	1,188	738	89	19	358	47	--	--	2,439	11.0
28.4	290	77	--	8	5	--	--	3	383	1.7
28.5	14	--	--	--	4	--	--	--	18	0.1
28.7	--	--	--	--	--	--	--	3	3	0.1
29.0	41	--	1	--	--	--	--	--	42	0.2
29.5	577	178	19	4	82	--	--	--	860	3.9
29.6	--	--	22	--	--	--	--	--	22	0.1
30.0	--	--	27	--	--	--	--	--	27	0.1
31.0	18	--	--	--	--	--	--	--	18	0.1
Total	10,662	8,409	1,054	827	785	309	86	51	22,183	
Percent	48.1	37.9	4.8	3.7	3.5	1.4	0.4	0.2		

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

[2]Observation time (minutes).

[3]PW=perched watching, PR=perched roosting, PU=perched unknown, PP=perched preening, PH=perched hunting, CL=perched close to mate, PD=perched drying, OT=other behaviors (includes eating in tree, various shore activities, and gathering nest materials).

APPENDIX L: ORME BREEDING AREA SUMMARY

Table 54. Observed human activity and bald eagle behavior, Orme BA, Arizona 2009.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Kayak/canoe	32	6	--	4	1	29	58	130	24.3
Helicopter	37	44	4	1	1	6	34	127	23.7
Small plane	31	41	1	--	1	6	19	99	18.5
Driver	1	14	--	9	2	10	18	54	10.1
Agency vehicle	3	16	1	--	--	4	8	32	6.0
Fisherman	2	6	--	--	--	7	10	25	4.7
Picnicker	2	6	--	--	--	4	6	18	3.4
Rafter	3	1	--	--	2	6	6	18	3.4
Apache helicopter	4	5	--	--	--	1	1	11	2.1
Tuber	--	--	--	--	--	4	1	5	0.9
Hiker	--	1	--	--	--	2	1	4	0.7
Horseback rider	--	2	--	--	--	1	--	3	0.6
Birder	2	--	--	--	--	--	--	2	0.4
Sheriff airboat	1	--	--	--	--	--	1	2	0.4
Swimmer	--	2	--	--	--	--	--	2	0.4
Rancher	--	--	--	--	--	1	--	1	0.2
Rowboat	--	--	--	--	--	1	--	1	0.2
Cycler	1	--	--	--	--	--	--	1	0.2
Exiting boat	--	--	--	--	--	--	1	1	0.2
Total	119	144	6	14	7	82	164	536	

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

Table 55. Observed forage events and success, Orme BA, Arizona, 2009.

Sex	Fish		Birds		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	11	7-4	1	1-0	3	3-0	15	11-4
Female	9	4-5	--	--	1	1-0	10	5-5
Total	20	11-9	1	1-0	4	4-0	25	16-9

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

Table 56. Observed prey types delivered to the nest, Orme BA, Arizona, 2009.

Sex	Fish	Mammals	Unknown	Total	Percent
Male	9	7	11	27	54.0
Female	13	2	7	22	44.0
Unknown	1	--	--	1	2.0
Total	23	9	18	50	
Percent	46.0	18.0	36.0		

Table 57. Observed prey species delivered to the nest, Orme BA, Arizona 2009.					
Sex	Fish			Total	Percent
	SU[1]	CP	FC		
Male	2	--	--	2	33.3
Female	1	1	1	3	50.0
Unknown	1	--	--	1	16.7
Total	4	1	1	6	
Percent	66.7	16.7	16.7		

[1]SU=Sonora sucker, CP=common carp, FC=flathead catfish.

Table 58. Bald eagle habitat analysis at the Orme BA, Arizona, 2009 (continued next page).					
Perch Location[1]	Perch Type[2]	Side	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
V 0.1	SH	Left	1	RU	TX
V 0.3a	HS	Right	5	--	CW
V 0.3b	CM	Right	5	--	CW
V 0.4a	CM	Right	5	--	CW
V 0.4b	HS	Right	5	---	CW
V 0.4c	CM	Right	5	--	CW
V 0.4d	CS	Right	5	--	CW
V 0.4e	ST	Right	4	--	CW
V 0.4f	ST	Left	1	RU	MB
V 0.4g	MS	Left	1	RU	MB
V 0.4h	CM	Right	4	--	CW
V 0.5	SP	Right	5	--	CW
V 0.6a	SM	Left	1	RU	MB
V 0.6b	WO	Left	1	RU	WT
V 0.6c	SO	Left	1	RI	TX
V 0.6d	GB	Channel	1	RI	--
V 0.7a	GB	Channel	1	RI	--
V 0.7b	ST	Right	2	PO / RB	TX / CW
V 0.7c	CW	Right	2	PO / RB	TX / CW
V 0.7d	SM	Left	1	RI	TX
V 0.7e	SO	Left , Right , Island	1	RI	WT
V 0.7f	WO	Left	1	RU	WT
V 0.7g	CM	Right	3	RU	TX
V 0.8a	MS	Left	7	--	UP
V 0.8b	SM	Left	1	RU	MB
V 0.8c	BO	Right	1	PO / RU	UP
V 0.8d	PV	Left	1	PO	MB
V 0.9a	SM	Left	1	RU	UP
V 0.9b	RW	Channel	1	PO	--
V 1.0	CS	Left	1	RU	WT

[1]River kilometer (Hunt et. al. 1992). V=Verde River; S=Salt River.

[2]BO=boulder, CF=cliff ledge, CM=cottonwood medium (10-20m), CS=small cottonwood (0-10m), GB=gravel bar, HS=hard snag (main branches only), ID=island, MS=mesquite tree, PV=palo verde, RW=rock in water, SB=sandbar, SG=soft snag (dead but branches still intact), SH=shrub, SM=snag, mesquite, SO=shore, SP=stump, ST=snag top, WO=willow.

[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]PO=pool, RB=river bend, RI=riffle, RU=run.

[5]CL=cliffs, CW=cottonwood grove, MB=mesquite bosque, TX=tamarisk thicket, UP=desert upland, WT=willow thicket.

Table 58 continued.

Perch Location[1]	Perch Type[2]	Side	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
S 4.7a	HS	Left	3	RU	TX
S 4.7b	CM	Left	4		MB
S 4.8	HS	Left	3	RU	MB
S 4.9a	HS	Left	1	RU	CW
S 4.9b	SM	Left	1	RU	MB
S 5.0	MS	Left	1	RU	TX / MB/ WT
S 5.1a	CM	Right	4	RU	MB
S 5.1b	ST	Right	3	RU	TX
S 5.2a	CM	Right	2	RU / RI	TX
S 5.2b	SP	Right	2	RU / RI	TX
S 5.2c	SO	Right, Channel	1	RU / RI	WT
S 5.2d	SG	Right	3	RU / RI	MB
S 5.2e	ID	Channel	1	RU	TX
S 5.3a	CS	Right	4	RU	UP
S 5.3b	ST	Right	4	RU	MB
S 5.3c	SP	Right	3	RU	MB / WT
S 5.3d	CS	Right	3	RU	CW
S 5.4	CM	Right	1	RU	CW
S 5.5a	HS	Left	1	RU	WT
S 5.5b	MS	Left	1	RU	MB
S 5.5c	SH	Left	1	RU	MB
S 5.6a	SM	Left	1	RU	UP
S 5.6b	MS	Left	1	RU	MB
S 5.9	MS	Left	1	RU	MB
S 6.1	CM	Right	2	RU	TX
S 6.2	CM	Right	2	RU	MB
S 6.6	CF	Left	1	RU	CL
S 7.2	HS	Left	2	RU	MB
S 7.7	HS	Right	1	RU	CW /MB
S 7.8a	CM	Right	2	RU	CW
S 7.8b	ST	Right	1	RU	CW
S 7.9	HS	Right	1	RU	MB
S 8.0	SM	Right	1	RU	MB
S 8.3a	CM	Right	3	RB	CW
S 8.3b	HS	Left	2	RB	CW
S 8.4a	SB	Island	1	RB / RI	TX
S 8.4b	CS	Left	1	RB	MB / WT
S 8.7	CM	Right	3	RB	MB
S 8.8a	CM	Right	3	RB	--
S 8.8b	WO	Right	1	RU	TX / MB

[1]River kilometer (Hunt et. al. 1992). V=Verde River; S=Salt River.

[2]BO=boulder, CF=cliff ledge, CM=cottonwood medium (10-20m), CS=small cottonwood (0-10m), GB=gravel bar, HS=hard snag (main branches only), ID=island, MS=mesquite tree, PV=palo verde, RW=rock in water, SB=sandbar, SG=soft snag (dead but branches still intact), SH=shrub, SM=snag, mesquite, SO=shore, SP=stump, ST=snag top, WO=willow.

[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]PO=pool, RB=river bend, RI=riffle, RU=run.

[5]CL=cliffs, CW=cottonwood grove, MB=mesquite bosque, TX=tamarisk thicket, UP=desert upland, WT=willow thicket.

Table 59. Bald eagle habitat use at the Orme BA, Arizona, 2009.

River km[1]	PW[2,3]	PU	PP	PH	PD	CL	PK	DW	OT	Total	Percent
0.1 V	22	--	--	--	--	--	--	--	--	22	0.1
0.3 V	435	116	121	--	--	2	--	--	1	675	3.7
0.4 V	3,055	436	649	129	268	19	18	--	29	4,603	25.1
0.5 V	--	148	--	22	--	--	--	--	2	172	0.9
0.6 V	530	100	63	114	98	--	18	23	45	991	5.4
0.7 V	3,256	1,006	423	432	104	59	15	84	123	5,502	30.0
0.8 V	--	--	51	--	5	--	33	--	35	124	0.7
0.9 V	8	27	--	197	28	--	17	--	7	284	1.5
1.0 V	--	--	--	3	--	--	--	--	--	3	0.1
4.7 S	23	24	--	1	--	--	--	--	--	48	0.3
4.8 S	3	6	33	--	--	--	--	--	3	45	0.2
4.9 S	17	61	--	147	--	46	--	4	--	275	1.5
5.0 S	378	79	--	--	--	--	--	--	--	457	2.5
5.1 S	29	3	--	84	18	--	--	--	--	134	0.7
5.2 S	1,255	1,470	101	47	--	127	6	15	33	3,054	16.7
5.3 S	145	15	14	--	--	--	8	7	7	196	1.1
5.4 S	--	11	--	--	--	--	--	--	--	11	0.1
5.5 S	118	--	--	--	--	--	--	--	--	118	0.6
5.6 S	156	28	--	72	--	--	--	--	--	256	1.4
5.9 S	4	--	--	--	--	--	--	--	--	4	0.1
6.1 S	8	87	--	--	--	--	--	--	2	97	0.5
6.2 S	84	44	11	--	--	--	--	7	28	174	0.9
6.6 S	6	--	--	--	--	--	--	--	--	6	0.1
7.2 S	--	43	--	--	--	--	--	--	35	78	0.4
7.7 S	78	168	6	44	--	--	--	--	3	299	1.6
7.8 S	9	1	–	63	--	--	--	--	6	79	0.4
7.9 S	--	--	--	1	--	--	--	--	--	1	0.1
8.0 S	--	147	--	--	--	--	--	--	--	147	0.8
8.3 S	33	30	--	--	--	--	--	--	1	64	0.3
8.4 S	--	6	7	--	--	--	--	--	2	15	0.1
8.7 S	37	6	--	5	--	--	--	--	--	48	0.3
8.8 S	--	153	112	9	--	--	38	3	36	351	1.9
Total	9,689	4,215	1,591	1,370	521	253	153	143	398	18,333	
Percent	52.9	23.0	8.7	7.5	2.8	1.4	0.8	0.8	2.2		

[1]River kilometer (Hunt et al. 1992). V=Verde River, S=Salt River.

[2]Observation time (minutes).

[3]PW=perched watching, PU=perched unknown, PP=perched preening, PH=perched hunting, PD=perched drying, CL=perched close to mate, PK=perched with prey, DW=drinking water, OT=other behaviors (includes perched interaction, eating on shore, standing on shore, bathing, eating in tree, dragging prey, standing in water, perched vocalizing, gathering nest material, and perched eating).

APPENDIX M: PINTO BREEDING AREA SUMMARY

Table 60. Observed human activity and bald eagle behavior, Pinto BA, Arizona, 2009.

Human Activity	N[1]	W	R	F	L	B	Total	Percent
Boater	207	770	5	1	--	81	1,064	96.6
Gunshot	10	5	1	1	1	--	18	1.6
Helicopter	5	--	--	--	--	2	7	0.6
Jet ski	--	5	--	--	--	--	5	0.5
Small plane	4	1	--	--	--	--	5	0.5
Nestwatcher	--	2	--	--	--	--	2	0.2
Kayak	--	1	--	--	--	--	1	0.1
Total	226	784	6	2	1	83	1,102	

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

Table 61. Observed forage events and success, Pinto BA, Arizona, 2009.

Sex	Fish		Birds		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	2	2-0	--	--	1	1-0	3	3-0
Female	8	6-2	1	1-0	--	--	9	7-2
Total	10	8-2	1	1-0	1	1-0	12	10-2

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

Table 62. Observed prey types delivered to the nest, Pinto BA, Arizona, 2009.

Sex	Fish	Mammals	Birds	Reptiles	Amphibians	Unknown	Total	Percent
Male	44	3	3	1	--	5	56	55.4
Female	34	4	1	2	1	3	45	44.6
Total	78	7	4	3	1	8	101	
Percent	77.2	6.9	4.0	3.0	1.0	7.9		

Table 63. Observed prey species delivered to the nest, Pinto BA, Arizona 2009.

Sex	Fish			Bird		Mammals	Reptiles	Total	Percent
	BC[1]	CC	FC	GH	CY	GS	GT		
Male	4	2	1	2	--	1	1	11	91.7
Female	--	--	--	--	1	--	--	1	8.3
Total	4	2	1	2	1	1	1	12	
Percent	33.3	16.7	8.3	16.7	8.3	8.3	8.3		

[1] BC=black crappie, CC=channel catfish, FC=flathead catfish, GH=great blue heron (chick), CY=cormorant young, GS=ground squirrel species, GT=garter snake species.

Table 64. Bald eagle habitat analysis at the Pinto BA, Arizona, 2009.					
Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	Land Type[4]
101.1	CF	Right	No	1	CL
101.5a	CT	Right	No	2	CL
101.5b	CL	Right	No	1	CW
103.5	CL	Right	No	3	CW
103.9a	CL	Right	No	1	CW
103.9b	CL	Right	No	2	CW
104.0	CL	Right	No	1	CW
104.1a	CS	Right	No	1	CW
104.1b	CM	Right	No	1	CW
104.1c	CL	Right	No	1	CW
104.1d	SP	Right	No	1	CW
104.1e	SS	Right	No	1	CW
104.2a	CS	Right	No	1	CW
104.2b	CM	Right	No	1	CW
104.2c	CL	Right	No	1	CW
104.2d	SP	Right	No	1	CW
104.3a	CS	Right	No	1	CW
104.3b	CM	Right	No	1	CW
104.3c	CL	Right	No	1	CW
104.3d	SP	Right	No	5	TX
104.5a	CS	Right	No	1	CW
104.5b	CL	Right	No	1	CW

[1]River kilometer (Hunt et. al. 1992).
[2]CF=cliff ledge, CT=cliff top, CL=cottonwood large (20-30+ m), CS=cottonwood small (0-10m), CM=cottonwood medium (10-20m), SP=stump, SS=snag shrub.
[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]CL=cliffs, CW=cottonwood grove, TX=tamarisk thicket.

Table 65. Bald eagle habitat use at the Pinto BA, Arizona, 2009.								
River km[1]	PW[2,3]	PP	PK	ET	PV	PH	Total	Percent
101.1	--	--	--	11	--	--	11	0.1
101.5	--	--	--	14	--	--	14	0.1
103.5	20	--	--	--	--	--	20	0.1
103.9	171	--	--	--	--	--	171	1.1
104.0	66	--	--	--	--	--	66	0.4
104.1	1,165	18	--	--	--	--	1183	7.4
104.2	13,322	485	305	106	77	1	14,296	89.4
104.3	151	--	--	28	--	--	179	1.1
104.5	55	--	--	--	--	--	55	0.3
Total	14,950	503	305	159	77	1	15,995	
Percent	93.5	3.1	1.9	1.0	0.5	0.01		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, PK=perched with prey, ET=eating in tree, PV=perched vocalizing, PH=perched hunting.

APPENDIX N: PLEASANT BREEDING AREA SUMMARY

Table 66. Observed human activity and bald eagle behavior, Lake Pleasant BA, Arizona, 2009.

Human Activity	N[1]	W	F	B	U	Total	Percent
Small plane	223	15	--	--	52	290	64.2
Boat	68	6	--	--	1	75	16.6
Helicopter	17	4	1	3	7	32	7.1
Jet	4	10	1	--	1	16	3.5
Agency worker	15	--	1	--	--	16	3.5
Jet ski	10	2	--	2	--	14	3.1
Ultra-light	1	--	--	--	3	4	0.9
Nestwatcher	--	--	1	--	--	1	0.2
Large plane	1	--	--	--	--	1	0.2
AGFD researcher	1	--	--	--	--	1	0.2
OHV	--	--	1	--	--	1	0.2
Hiker	1	--	--	--	--	1	0.2
Total	341	37	5	5	64	452	

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

Table 67. Observed forage events and success, Lake Pleasant BA, Arizona, 2009.

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

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

Table 68. Observed prey types delivered to the nest, Lake Pleasant BA, Arizona, 2009.

Sex	Fish	Birds	Mammals	Unknown	Total	Percent
Male	14	1	1	11	27	47.4
Female	18	3	--	5	26	45.6
Unknown	3	--	--	1	4	7.0
Total	35	4	1	17	57	
Percent	61.4	7.0	1.8	29.8		

Table 69. Observed prey species delivered to the nest, Lake Pleasant BA, Arizona 2009.

Sex	Fish			Mammals	Total	Percent
	LB[1]	WB	BS	WR		
Male	1	--	--	1	2	33.3
Female	2	1	1	--	4	66.7
Total	3	1	1	1	6	
Percent	50.0	16.7	16.7	16.7		

[1]LB=largemouth bass, WB=white bass, BS=bass species (white or striped), WR=wood rat.

Table 70. Bald eagle habitat analysis at the Lake Pleasant BA, Arizona, 2009 (continued next page).

Perch Location[1]	Perch Type[2]	Side	Shade[3]	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
72.4	CF	Right	N	3	RB	UP
72.6	CF	Left	N	3	RU	CL
73.1a	SO	Left	N	1	RC	UP
73.1b	BO	Left	OC	1	RU	TA
73.1c	BO	Left	Y	1	RU	TA
73.2a	CF	Left	P	4	RU	CL
73.2b	CT	Left	OC	5	RU	CL
73.2c	BO	Left	N	1	RC	TA
73.2d	RI	Left	Y	2	RU	UP
73.3a	NE	Left	P	3	RU	CL
73.3b	SO	Left	N	1	RU	UP
73.3c	CT	Left	Y	5	RU	CL
73.3d	CF	Left	Y	4	RU	CL
73.3e	DW	Left	N	1	RU	UP
73.3f	BO	Left	N	1	RU	UP
73.3g	RW	Left	N	1	RU	TA
73.3h	CT	Left	Y	2	RB	CL
73.3i	BO	Left	N	1	RB	TA
73.3j	CF	Right	Y	1	RU	CL
73.4a	BO	Left	N	4	RU	CT
73.4a	CT	Right	N	2	RU	CL
73.4b	BO	Left	Y	3	RU	TA
73.4c	CT	Right	N	2	RU	CL
73.4d	CT	Left	N	3	IF	CL
73.4e	CF	Right	Y	2	RB	CL
73.4f	CT	Left	N	2	RU	CL
73.4g	CF	Right	Y	3	RB	CL
73.4h	CT	Left	N	S	RU	CL
73.4i	CT	Left	Y	2	RU	CL
73.4j	CF	Left	Y	4	RU	CL
73.4k	CF	Left	Y	3	RU	CL
73.4l	CF	Left	Y	3	RU	CL
73.4m	CF	Left	Y	3	RU	CL
73.5a	BO	Left	P	6	RU	CL
73.5b	CT	Left	Y	5	RU	UP
73.5c	BO	Left	Y	4	RU	TA
73.5d	CF	Left	P	5	RU	CL
73.5e	CF	Left	Y	5	RU	CL
73.5f	CT	Left	OC	3	RU	CL
73.6a	CT	Right	N	1	RU	CL
73.6b	CF	Right	Y	2	RB	CL
73.7a	CF	Right	Y	2	RB	CL

[1]River kilometer (Hunt et. al. 1992).
[2]CF=cliff ledge, SO=shore, CT=cliff top, NE=nest, BO=boulder, RI=ridge, DW=drift wood, RW=rock in water.
[3]Y=perch used only when shaded, N=perch only used when not shaded, P=perch used both when shaded and when not shaded, OC=perch only used when sky was overcast.
[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, RU=run, RC=reservoir cove, IF=inflow to reservoir.
[6]UP=desert upland, CL=cliffs, TA=talus.

Table 70 continued.

Perch Location[1]	Perch Type[2]	Side	Shade[3]	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
73.7b	CF	Right	Y	2	RB	CL
73.8	CF	Right	Y	1	RB	CL
74.5a	SG	Left	N	1	RB	MB
74.5b	SO	Left	N	1	RB	MB
74.9	BO	Right	N	1	RC	RC
76.0a	HS	Left	N	5	RU	UP
76.0b	CF	Left	Y	2	RU	CL

[1]River kilometer (Hunt et. al. 1992).
[2]CF=cliff ledge, SO=shore, CT=cliff top, NE=nest, BO=boulder, RI=ridge, DW=drift wood, RW=rock in water.
[3]Y=perch used only when shaded, N=perch only used when not shaded, P=perch used both when shaded and when not shaded, OC=perch only used when sky was overcast.
[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, RU=run, RC=reservoir cove, IF=inflow to reservoir.
[6]UP=desert upland, CL=cliffs, TA=talus, MB=mesquite bosque.

Table 71. Bald eagle habitat use at the Pleasant BA, Arizona, 2009.

River km[1]	PW[2,3]	NS	NH	NB	NF	EN	PP	CL	OT	Total	Percent
71.3	41	--	--	--	--	--	4	--	--	45	0.2
72.4	16	--	--	--	--	--	--	--	--	16	0.1
72.6	33	--	--	--	--	--	--	--	4	37	0.2
73.1	2	--	--	--	--	--	--	--	35	37	0.2
73.2	4,451	--	--	--	--	--	144	111	10	4,716	26.1
73.3	708	3,371	2,669	2,217	1,199	518	53	3	224	10,962	60.6
73.4	900	--	--	--	--	--	146	137	--	1,183	6.5
73.5	478	--	--	--	--	--	16	29	1	524	2.9
73.6	12	--	--	--	--	--	--	--	--	12	0.1
73.7	118	--	--	--	--	--	--	--	--	118	0.7
73.8	53	--	--	--	--	--	--	--	--	53	0.3
74.5	2	--	--	--	--	--	--	--	4	6	0.1
74.9	--	--	--	--	--	--	--	--	1	1	0.1
76	387	--	--	--	--	--	--	--	--	387	2.1
Total	7,201	3,371	2,669	2,217	1,199	518	363	280	279	18,097	
Percent	39.8	18.6	14.7	12.3	6.6	2.9	2.0	1.5	1.5		

[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, CL=perched close to mate, NM=nest maintenance, OT=other behaviors (includes nest maintenance, copulation, drinking, perched drying, weird behavior, perched with prey, perched vocalizing, perched interaction, perched unknown, gathering nest material, standing on shore, standing in water, eating on shore, perched watching or hunting, vocalizing at nest, and nest activity).

APPENDIX O: SAGUARO BREEDING AREA SUMMARY

Table 72. Observed human activity and bald eagle behavior, Saguaro BA, Arizona, 2009.

Human Activity	N[1]	W	R	X	B	U	Total	Percent
Boat	3,835	32	11	9	614	18	4,519	85.4
Jet ski	315	1	--	--	32	2	350	6.6
Tuber	170	1	--	--	13	1	185	3.5
Small plane	112	4	--	--	30	--	146	2.8
Helicopter	25	6	--	1	5	1	38	0.7
Canoe/kayak	11	--	--	--	--	--	11	0.2
Swimmer	11	--	--	--	--	--	11	0.2
Military aircraft	6	3	--	--	--	--	9	0.2
Gunshot	6	--	1	--	--	--	7	0.1
Sheriff helicopter	6	1	--	--	--	--	7	0.1
Apache helicopter	3	2	--	--	--	--	5	0.1
AGFD researcher	1	1	--	--	--	--	2	0.1
Ultralight flyer	1	1	--	--	--	--	2	0.1
Nestwatcher	--	--	--	1	--	--	1	0.1
Total	4,502	52	12	11	694	22	5,293	

[1]Bald eagle response: N=none, W=watched, R=restless, X=flushed from perch, B=bird not in area, U=unknown.

Table 73. Observed forage events and success, Saguaro BA, Arizona, 2009.

Sex	Fish		Birds		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	3	1-2	3	1-2	1	0-1	7	2-5
Female	10	8-2	--	--	1	0-1	11	8-3
Unknown	2	2-0	--	--	--	--	2	2-0
Total	15	11-4	3	1-2	2	0-2	20	12-8

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

Table 74. Observed prey types delivered to the nest, Saguaro BA, Arizona, 2009.

Sex	Fish	Birds	Mammals	Unknown	Total	Percent
Male	--	--	--	--	--	--
Female	18	1	--	7	26	92.9
Unknown	1	--	1*	--	2	7.1
Total	19	1	1*	7	28	
Percent	67.9	3.6	3.6	25.0		

*Delivered to fledgling on cliff ledge.

Table 75. Bald eagle habitat analysis at the Saguaro BA, Arizona, 2009 (continued next page).

Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
26.9	CT	Left	No	4	RB	CL
27.0	BO	Left	No	5	RB	CL
27.1a	BO	Left	No	5	RS	UP
27.1b	CT	Left	No	1	RB	CL
27.1c	CF	Left	Partial	6	RB	CL
27.1d	CF	Left	Partial	1	RB	CL
27.8	SG	Right	Partial	1	RS	UP
28.6a	CF	Right	No	2	RS	UP
28.6b	BO	Right	No	2	RS	UP
28.6c	PF	Right	Partial	2	RS	UP
28.7a	BO	Right	--	2	RS	CL
28.7b	PT	Right	No	3	RS	UP
28.7c	PF	Right	Partial	2	RS	UP
28.8a	SP	Right	--	1	RS	UP
28.8b	CT	Right	No	1	RS	UP
28.8c	SO	Right	--	1	RS	UP
28.8d	CF	Right	No	1	RS	UP
29.2a	SO	Right	Partial	1	RS	UP
29.2b	HS	Right	No	1	RS	UP
29.9	SO	Left	No	1	RB	UP
30.2	CT	Right	No	2	RS	UP
30.3a	CF	Right	Partial	1	RS	CL
30.3b	CT	Right	Partial	1	RS	CL
30.3c	CF	Right	Partial	2	RS	CL
30.3d	CT	Right	Partial	2	RS	UP
30.4	CF	Right	--	1	RS	CL
31.0	CT	Right	No	1	RB	CL
31.1a	BO	Left	Yes	1	RB	CL
31.1b	BO	Left	No	2	RB	CL
31.1c	HS	Left	No	1	RB	UP
31.1d	CF	Right	No	1	RB	CL
31.1e	CT	Right	No	2	RB	CL
31.2a	CF	Left	No	1	RB	CL
31.2b	BO	Left	Partial	2	RB	UP
31.2c	BO	Left	No	1	RB	UP
31.3a	CT	Left	Yes	1	RB	UP
31.3b	CT	Left	Yes	2	RB	UP
31.3c	CT	Left	Yes	3	RB	UP
31.3d	CF	Left	Yes	1	RB	CL
31.4a	BO	Left	Yes	1	RB	CL
31.4b	SO	Left	No	1	RB	CL
31.4c	CF	Left	Partial	1	RB	CL
31.4d	CT	Left	Partial	1	RB	CL

[1]River kilometer (Hunt et. al. 1992).
[2]BO=boulder, CF=cliff ledge, CT=cliff top, HS=hard snag (main branches only), PF=pinnacle ledge, PT=pinnacle top, RI=ridge, RW=rock in water, SG=soft snag (dead but branches still intact), SH=shrub, SM=snag, mesquite, SO=shore, SP=stump or fallen tree.
[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]RB=river bend, RS=reservoir main body.
[5]CL=cliffs, UP=upland desert.

Table 75 continued.

Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
31.5a	RW	Left	No	1	RB	CL
31.5b	SO	Left	No	1	RB	CL
31.5c	CT	Left	No	2	RB	CL
31.5d	CT	Left	No	1	RB	CL
31.5e	CF	Left	Partial	1	RB	CL
31.5f	CF	Left	Yes	2	RB	CL
31.7	CF	Left	Partial	1	RB	CL
31.8a	CF	Left	Partial	1	RB	CL
31.8b	CT	Left	No	2	RB	CL
31.8c	CT	Left	Yes	1	RB	CL
31.8d	RI	Left	Partial	5	RB	UP
31.9a	CT	Left	Partial	1	RB	CL
31.9b	RI	Left	No	5	RB	UP
31.9c	CF	Left	Partial	1	RB	CL
31.9d	BO	Left	No	6	RB	CL
32.0a	CT	Left	No	1	RB	CL
32.0b	CF	Left	Partial	1	RB	CL
32.1a	CT	Left	Partial	1	RB	CL
32.1b	PT	Left	No	1	RB	CL
32.1c	PT	Left	No	4	RB	CL
32.1d	CF	Left	Partial	1	RB	CL
32.2a	CT	Left	No	1	RB	CL
32.2b	CF	Left	No	5	RB	CL
32.2c	CF	Left	Yes	1	RB	CL
32.2d	CF	Left	Yes	3	RB	CL
32.3	CF	Left	Yes	3	RB	CL
32.4	CT	Left	Yes	1	RB	CL
32.5a	CF	Right	Partial	1	RB	UP
32.5b	CF	Left	Partial	1	RU	UP
33.1a	CF	Right	No	1	RU	UP
33.1b	CF	Left	Yes	1	RU	UP

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

[2]BO=boulder, CF=cliff ledge, CT=cliff top, HS=hard snag (main branches only), PF=pinnacle ledge, PT=pinnacle top, RI=ridge, RW=rock in water, SG=soft snag (dead but branches still intact), SH=shrub, SM=snag, mesquite, SO=shore, SP=stump or fallen tree.

[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]RB=river bend, RU=run.

[5]CL=cliffs, UP=upland desert.

Table 76. Bald eagle habitat use at the Saguaro BA, Arizona, 2009.

River km[1]	PW[2,3]	PH	PU	CL	PD	PP	PK	EC	PV	OT	Total	Percent
26.9	14	--	--	--	--	--	--	--	--	--	14	0.2
27.0	7	--	--	--	--	--	--	--	--	--	7	0.1
27.1	17	9	5	--	--	--	--	--	--	--	31	0.4
27.8	--	1	--	--	--	--	--	--	--	--	1	0.1
28.6	22	45	--	--	--	--	--	--	--	--	67	0.9
28.7	727	27	211	32	--	27	--	--	4	--	1,028	13.4
28.8	527	160	--	144	--	3	--	--	1	--	835	10.9
29.2	3	3	--	--	43	--	--	--	--	6	55	0.7
29.9	--	--	--	--	--	--	--	--	--	6	6	0.1
30.2	3	--	--	--	--	--	--	--	--	--	3	0.1
30.3	350	325	--	33	38	5	4	--	--	--	755	9.9
30.4	11	--	--	--	--	--	--	10	--	--	21	0.3
31.0	9	--	--	--	--	--	1	--	--	--	10	0.1
31.1	19	--	--	--	8	--	18	16	1	--	62	0.8
31.2	35	--	--	--	--	--	1	--	2	11	49	0.6
31.3	165	--	--	--	--	--	15	--	9	--	189	2.5
31.4	1,758	156	28	25	--	8	10	14	9	2	2,010	26.3
31.5	869	--	11	--	29	19	9	6	--	10	953	12.4
31.7	37	--	--	--	--	--	2	--	4	--	43	0.6
31.8	258	--	--	--	--	1	--	--	1	1	261	3.4
31.9	414	--	3	--	--	6	--	--	2	3	428	5.6
32.0	267	--	3	--	--	--	--	--	1	--	271	3.5
32.1	195	--	--	--	--	2	--	--	1	2	200	2.6
32.2	195	--	--	--	--	--	--	--	1	2	198	2.6
32.3	84	--	--	--	--	3	--	--	--	--	87	1.1
32.4	3	--	--	--	--	--	--	--	--	--	3	0.1
32.5	17	--	--	--	--	--	--	--	--	4	21	0.3
33.1	9	29	--	--	--	9	--	--	--	--	47	0.6
33.3	--	2	--	--	--	--	--	--	--	--	2	0.1
Total	6,015	757	261	234	118	83	60	46	36	47	7,657	
Percent	78.6	9.9	3.4	3.1	1.5	1.1	0.8	0.6	0.5	0.6		

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

[2]Observation time (minutes).

[3]PW=perched watching, PH=perched hunting, PU=perched unknown, CL=perched close to mate, PD=perched drying, PP=perched preening, PK=perched with prey, EC=eating on cliff, PV=perched vocalizing, OT=other behaviors (includes drinking water, perched interaction, eating on shore, gathering nest material, and perched with nest material).

APPENDIX P: TONTO BREEDING AREA SUMMARY

Table 77. Observed human activity and bald eagle behavior, Tonto BA, Arizona, 2009.

Human Activity	N[1]	W	U	Total	Percent
Boat	834	6	--	840	93.3
Birdwatcher	32	--	--	32	3.6
Hiker	6	--	--	6	0.7
Small plane	4	--	1	5	0.6
Jet ski	3	1	--	4	0.4
Helicopter	--	3	--	3	0.3
Agency worker	3	--	--	3	0.3
Canoe/kayak	3	--	--	3	0.3
Photographer	2	--	--	2	0.2
Hunter	1	--	--	1	0.1
Gunshot	1	--	--	1	0.1
Total	889	10	1	900	

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

Table 78. Watercraft compliance at the closure boundary, Tonto BA, Arizona, 2009.

Date	Boats at Closure	Boats in Closure	Jet Skis at Closure	Jet Skies in Closure	Total
2/6-2/15	18	--	--	--	18
2/20-3/1	63	--	--	--	63
3/6-3/15	141	3	--	--	144
3/20-3/29	157	4	--	--	161
4/3-4/12	105	6	1	--	111
4/17-4/26	168	3	3	--	174
5/1-5/10	84	3	--	--	87
5/15-5/24	85	3	--	--	88
Total	821	22	4	--	847
Percent	96.9	2.6	0.5	--	

Table 79. Watercraft compliance: weekend vs. weekday, Tonto BA, Arizona, 2009.

Date	Boats at Closure	Boats in Closure	Jet Skis at Closure	Jet Skies in Closure	Total	Percent
Weekend	776	20	3	--	799	94.3
Weekday	45	2	1	--	48	5.7
Total	821	22	4	--	847	

Table 80. Observed forage events and success, Tonto BA, Arizona, 2009.

Sex	Fish		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	11	10-1	2	0-2	13	10-3
Female	17	14-3	2	0-2	19	14-5
Unknown	2	2-0	--	--	2	2-0
Total	30	26-4	4	0-4	34	26-8

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

Table 81. Observed prey types delivered to the nest, Tonto BA, Arizona, 2009.					
Sex	Fish	Mammals	Unknown	Total	Percent
Male	42	1	6	49	44.5
Female	35	3	12	50	45.5
Unknown	10	--	1	11	10.0
Total	87	4	19	110	
Percent	79.1	3.6	17.3		

Table 82. Observed prey species delivered to the nest, Tonto BA, Arizona 2009.									
Sex	Fish						Mammals	Total	Percent
	BC[1]	LB	SB	CP	CS	FC	RS		
Male	8	4	1	--	--	1	--	14	53.8
Female	3	3	--	1	1	--	1	9	34.6
Unknown	2	1	--	--	--	-	--	3	11.5
Total	13	8	1	1	1	1	1	26	
Percent	50.0	30.8	3.8	3.8	3.8	3.8	3.8		

[1]BC=black crappie, LB=largemouth bass, SB=smallmouth bass, CP=common carp, CS=catfish species, FC=flathead catfish, RS=rabbit species.

Table 83. Bald eagle habitat analysis at the Tonto BA, Arizona, 2009 (continued next page).						
Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
10.0	CT	Left	No	1	RC	UP
16.0	SG	Right	No	1	RS	CW
16.2	SG	Right	No	1	RS	CW
16.3	BA	Left	Partial	1	RS	CW
16.4a	BA	Left	Partial	1	RS	CW
16.4b	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
16.6	HS	Right	No	1	RS	CW
16.8	SO	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
17.0	WO	Left	Yes	1	RS	CW
17.1a	CM	Left	No	1	RS	CW
17.1b	SM	Left	No	1	RS	CW
17.2	HS	Left	No	1	RS	CW
17.3a	YL	Right	No	1	RS	CW
17.3b	SO	Left	No	1	RS	CW
17.3c	SM	Left	No	1	RS	CW
17.4a	CM	Left	No	1	RS	CW

[1]River kilometer (Hunt et. al. 1992).
[2]BA= cut bank, CM=cottonwood medium/10-20m, CT=cliff top, HS=hard snag (main branches only), LG=log, SG=soft snag (dead but branches still intact), SM=snag (mesquite), SO=shore, WO=willow, CL=cottonwood large/20-30+m, YL=Sycamore large/10-20+m.
[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.
[5]CW=cottonwood grove, UP=upland desert.

Table 83 continued.

Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
17.4b	HS	Right	No	1	RS	CW
17.5a	CM	Right	No	1	RS	CW
17.5b	SG	Right	No	1	RS	CW
17.8	CL	Right	Partial	1	RS	CW

[1]River kilometer (Hunt et. al. 1992).
[2] CL=cottonwood large/20-30+m, CM=cottonwood medium/10-20m, HS=hard snag (main branches only), SM=snag (mesquite).
[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.
[5]CW=cottonwood grove.

Table 84. Bald eagle habitat use at the Tonto BA, Arizona, 2009.

River km[1]	PW[2,3]	ET	PR	DW	PP	PH	PV	GN	Total	Percent
16.0	82	--	--	--	--	--	--	--	82	0.5
16.2	115	--	--	--	--	--	--	--	115	0.6
16.3	432	--	--	--	--	--	--	--	432	2.4
16.4	207	--	--	--	--	--	--	--	207	1.2
16.5	58	--	--	10	--	--	--	--	68	0.4
16.6	246	--	--	--	5	--	--	--	251	1.4
16.8	45	--	--	--	--	--	--	--	45	0.3
16.9	15,727	167	150	128	23	--	6		16,201	90.6
17.0	32	--	--	--	--	--	--	--	32	0.2
17.1	33	--	--	--	--	20	--	--	53	0.3
17.2	12	--	--	--	--	--	--	--	12	0.1
17.3	5	--	--	--	--	--	--	--	5	0.1
17.4	220	--	--	--	--	--	--	--	220	1.2
17.5	130	--	--	--	--	--	--	1	131	0.7
17.8	35	--	--	--	--	--	--	--	35	0.2
Total	17,379	167	150	138	28	20	6	1	17,889	
Percent	97.1	0.9	0.8	0.8	0.2	0.1	0.1	0.1		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, ET=eating in tree, PR=perched roosting, DW=drinking water, PP=perched preening, PH=perched hunting, PV=perched vocalizing, GN=gathering nest material.

APPENDIX Q: WOODS CANYON BREEDING AREA SUMMARY

Table 85. Observed human activity and bald eagle behavior, Woods Canyon BA, Arizona, 2009.[1]

Human Activity	N[2]	W	R	F	U	X	Total	Percent
Boat	6	40	5	3	--	--	54	47.8
Fisherman	8	10	1	--	1	1	21	18.6
Hiker	7	6	--	--	--	--	13	11.5
Canoe/kayak	--	7	--	--	--	--	7	6.2
Helicopter	--	5	--	1	--	--	6	5.3
Small plane	--	2	--	--	--	--	2	1.8
Agency worker	2	--	--	--	--	--	2	1.8
Picnicker	1	1	--	--	--	--	2	1.8
Gunshot	--	2	--	--	--	--	2	1.8
Horseback rider	1	--	--	--	--	--	1	0.9
Shooter	--	1	--	--	--	--	1	0.9
OHV	--	--	1	--	--	--	1	0.9
Photographer	--	1	--	--	--	--	1	0.9
Total	25	75	7	4	1	1	113	

[1]Activities within 50m of an adult and all aircraft <2,000 feet above ground level and within 1km of the nest.
[2]Bald eagle response: N=none, W=watched, R=restless, F=flushed, U=unknown, X=abandoned forage attempt.

Table 86. Watercraft compliance at the south shore closure boundary, Woods Canyon BA, Arizona, 2009.

Date	Boats in cove[1]	Boats in closure	Total
5/1-5/28	157	--	157
5/29-6/21	412	2	414
6/23-7/19	381	2	383
7/20-8/16	17	3	20
Total	967	7	974
Percent	99.3	0.7	

[1]Number of occurrences

Table 87. Observed forage events and success, Woods Canyon BA, Arizona, 2009.

Sex	Fish		Total	
	E[1]	S-U[2]	E	S-U
Male	19	15-4	19	15-4
Female	17	12-5	17	12-5
Unknown	3	3-0	3	3-0
Total	39	30-9	39	30-9

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

Table 88. Observed prey types delivered to the nest, Woods Canyon BA, Arizona, 2009.					
Sex	Fish	Mammals	Unknown	Total	Percent
Male	92	--	1	93	68.9
Female	27	1	--	28	20.7
Unknown	14	--	--	14	10.4
Total	133	1	1	135	
Percent	98.5	0.7	0.7		

Table 89. Observed prey species delivered to the nest, Woods Canyon BA, Arizona 2009.				
Sex	Fish	Mammals	Total	Percent
	RT[1]	GS		
Male	92	--	92	68.7
Female	27	1	28	20.9
Unknown	14	--	14	10.4
Total	133	1	134	
Percent	99.3	0.7		

[1]RT=Rainbow trout, GS=ground squirrel species.

Table 90. Bald eagle habitat analysis at the Woods Canyon BA, Arizona, 2009 (continued next page).					
Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]
0.05	HS	Left	No	2	RS
0.06*	PS	Left	Yes	1	RS
0.10	PS	Left	Yes	1	RS
0.15	PS	Left	Yes	1	RS
0.20	PS	Left	Yes	1	RS
0.25	PS	Left	Yes	1	RS
0.80	HS	Left	No	1	RS
0.90	PS	Right	Yes	1	RS
0.93	SG	Left	No	1	RS
1.05	PS	Left	Yes	1	RS
1.08	PS	Left	Yes	2	RS
1.10	PS	Left	No	1	RS
1.25	HS	Left	No	1	RS
1.30	SG	Left	No	1	RS
1.30	PS	Left	No	1	RS
1.35	HS	Left	No	1	RS
1.40	HS	Left	No	1	RS
1.55	PS	Left	Yes	1	RC
1.60*	PS	Left	Yes	2	RC
1.70	PS	Left	Yes	1	RC
1.71	PS	Left	Yes	1	RC
1.75	PS	Left	No	1	RS
1.75	PS	Left	Yes	2	RS
1.80	PS	Left	Yes	2	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).
[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.
*Indicates a perch new during the post-fledge period.

Table 90 continued.

Perch Location[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]
1.90	PS	Left	Yes	1	RS
1.95	PS	Left	Yes	2	RS
2.10	PS	Left	Yes	2	RS
2.30	PS	Left	Yes	2	RS
2.30	PS	Left	Yes	1	RS
2.30	HS	Left	No	1	RS
2.31	HS	Left	No	1	RS
2.35	PS	Left	Yes	1	RS
2.42	PS	Left	Yes	2	RC
2.88	PS	Right	Yes	1	RC
3.40	SG	Right	No	2	RS
3.40	PS	Right	Yes	2	RS
3.45	PS	Right	Yes	2	RS
3.59	HS	Right	No	2	RS
3.60	HS	Right	No	2	RS
3.60	SG	Right	No	2	RS
3.60	HS	Right	No	2	RS
3.65	HS	Right	No	1	RS
3.70	HS	Right	No	1	RS
3.80	SG	Right	No	1	RS
3.80*	PS	Right	Yes	3	RS
3.85	SG	Right	No	2	RS
3.86	SG	Right	No	1	RS
3.90	PS	Right	Yes	2	RS
3.90	SG	Right	No	1	RS
3.92	HS	Right	No	3	RS
4.00	SG	Right	No	1	RS
4.00	SG	Right	No	2	RS
4.10	PS	Right	No	1	RS
4.23*	PS	Right	No	1	RS
4.65	PS	Right	No	1	RS
4.70	PS	Right	Yes	1	RS
5.08	SG	Right	No	1	RS
5.14	PS	Right	Yes	1	RS
5.20	HS	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).
[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.
*Indicates a perch new during the post-fledge period.

Table 91. Bald eagle habitat use at the Woods Canyon BA, Arizona, 2009.										
Lake km[1]	PW[2,3]	PH	PP	PV	PU	PD	PK	PX	Total	Percent
0.05	35	38	--	--	--	--	--	--	73	1.3
0.10	10	29	--	3	--	--	--	--	42	0.8
0.15	328	4	--	--	--	--	--	--	332	6.1
0.20	54	--	--	--	--	--	--	--	54	1.0
0.25	198	--	--	--	--	--	--	--	198	3.6
0.90	108	93	--	2	--	--	--	--	203	3.7
1.05	57	--	--	--	--	--	4	--	61	1.1
1.10	145	12	--	1	--	--	--	--	158	2.9
1.25	87	3	--	--	--	--	--	--	90	1.6
1.30	41	11		1	11	7	4	5	80	1.5
1.70	51	--	--	1	--	--	--	--	52	0.9
1.75	85	--	--	38	--	--	--	--	123	2.2
1.80	94	15	--	--	--	--	--	--	109	2.0
2.10	51	28	21	--	--	--	--	--	100	1.8
2.30	299	38	14	2	--	6	--	--	359	6.6
2.35	163	9	39	--	--	--	--	--	211	3.9
2.40	59	--	31	--	--	--	--	--	90	1.6
2.80	10	20	--	3	--	--	--	2	35	0.6
3.40	70	51	29	5	--	--	--	--	155	2.8
3.45	50	--	--	4	25	--	--	--	79	1.4
3.60	1,309	--	19	8	--	23	--	--	1,359	24.8
3.65	15	--	14	--	21	--	--	--	50	0.9
3.70	287	20	--	--	--	--	--	--	307	5.6
3.85	185	--	--	--	--	--	--	--	185	3.4
3.90	128	12	--	--	--	--	--	--	140	2.6
4.00	129	--	--	6	--	--	--	--	135	2.5
4.65	77	6	--	--	--	--	--	--	83	1.5
4.70	474	6	--	1	--	--	--	--	481	8.8
5.10	134	2	--	--	--	--	--	--	136	2.5
Total	4,733	397	167	75	57	36	8	7	5,480	
Percent	86.4	7.2	3.0	1.4	1.0	0.7	0.1	0.1		

[1]Lake kilometer (counterclockwise from middle of dam).
[2]Observation time (minutes).
[3]PW=perched watching, PH=perched hunting, PP=perched preening, PV=perched vocalizing, PU=perched unknown, PD=perched drying, PK= perched with prey, PX=perched, other.