ARIZONA BALD EAGLE MANAGEMENT PROGRAM
2014 SUMMARY REPORT

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Photo by Kurt Licence

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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 2014. Those include: Zoe Johnston and Brian Long, Cliff and Bartlett Breeding Areas (BA); Joe Peddie and Marta Peddie, Crescent and Luna BA; Olivia DaRugna and Margaret Kennedy, Goldfield BA; Nick Beauregard and Emily Willard, Granite Reef BA; Rya Rubenthaler and Russell Seeley, Ladders and Greer BAs; Mary Cole and Stephanie Frederick, Pleasant BA; Leah Vader and Amy Zimmerman, Rodeo, Sycamore, and Ft. McDowell BAs; Mary Cole, Stephanie Frederick, Genifer Lara, and Wyatt Nimitz, Armer Gulch and Pinto BAs; Sara Eno and Aaron James, Tonto BA; Wyatt Nimitz and Amy Zimmerman, White Horse Lake BA; Dave Janssen and Brian Smucker, Woods Canyon BA.

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ARIZONA BALD EAGLE MANAGEMENT PROGRAM
2014 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). The species was not listed in Alaska 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, 2007a).

Bald eagles in central Arizona were temporarily designated as a Distinct Population Segment (DPS) and listed as threatened in 2008 due to a court order requiring a 12-month status review of the Sonoran Desert Area population (USFWS 2008). As a result of the status review, the USFWS determined the population did not satisfy the definition of a DPS and was therefore not eligible for listing (USFWS 2010). Bald eagles in the Sonoran Desert Area were removed from the list of endangered and threatened species in 2011 (USFWS 2011). Further legal challenges resulted in a subsequent 12-month finding which supported the previous conclusions (USFWS 2012).

The bald eagle remains protected in the state under Arizona Revised Statute Title 17 and nationally under the Bald and Golden Eagle Protection Act (Eagle Act), Migratory Bird Treaty Act, Lacey Act, Airborne Hunting Act, and the Convention on International Trade in Endangered Species of Wild Flora and Fauna. Along with delisting from the ESA, the USFWS revised the Eagle Act to codify the definition of "disturb" (USFWS 2007b) and finalize regulations to provide a mechanism to authorize take of eagles and eagle nests under limited circumstances (USFWS 2009). For implementation of take permits to be compatible with the Eagle Act, take must be "*consistent with the goal of stable or increasing breeding populations*." In the Southwest, take thresholds are extremely limited.

The Southwestern Bald Eagle Management Committee (SWBEMC) was formed in 1984 by land and wildlife management agencies to enhance coordination, increase communication, and provide oversight for Arizona bald eagle management. In 2007 and again in 2014, some members of the SWBEMC signed the Conservation Assessment and Strategy for Bald Eagles in Arizona (CAS), which described strategies for continuing management post-delisting (Driscoll et al. 2006). The CAS also specified threats facing bald eagles in Arizona and identified actions necessary to maintain their distribution and abundance in the state. Today, the SWBEMC consists of 26 members, with the Arizona Game and Fish Department (AGFD) as the lead implementation agency for management projects. This report covers the 2014 results for three of these projects: the Bald Eagle Winter Count, Nest Survey, and Arizona Bald Eagle Nestwatch Program.

STUDY AREA

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

Most bald eagle breeding areas (BAs) are in central Arizona between elevations of 296 m (970 ft) and 1,341 m (4,400 ft), where they are 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 (*Parkinsonia florida*), mesquite (*Prosopis* spp.), ironwood (*Olneya tesota*), saguaro (*Carnegiea gigantea*), teddy bear cholla (*Opuntia bigelovii*), juniper (*Juniperus* spp.), and pinyon pine (*Pinus edulis*).

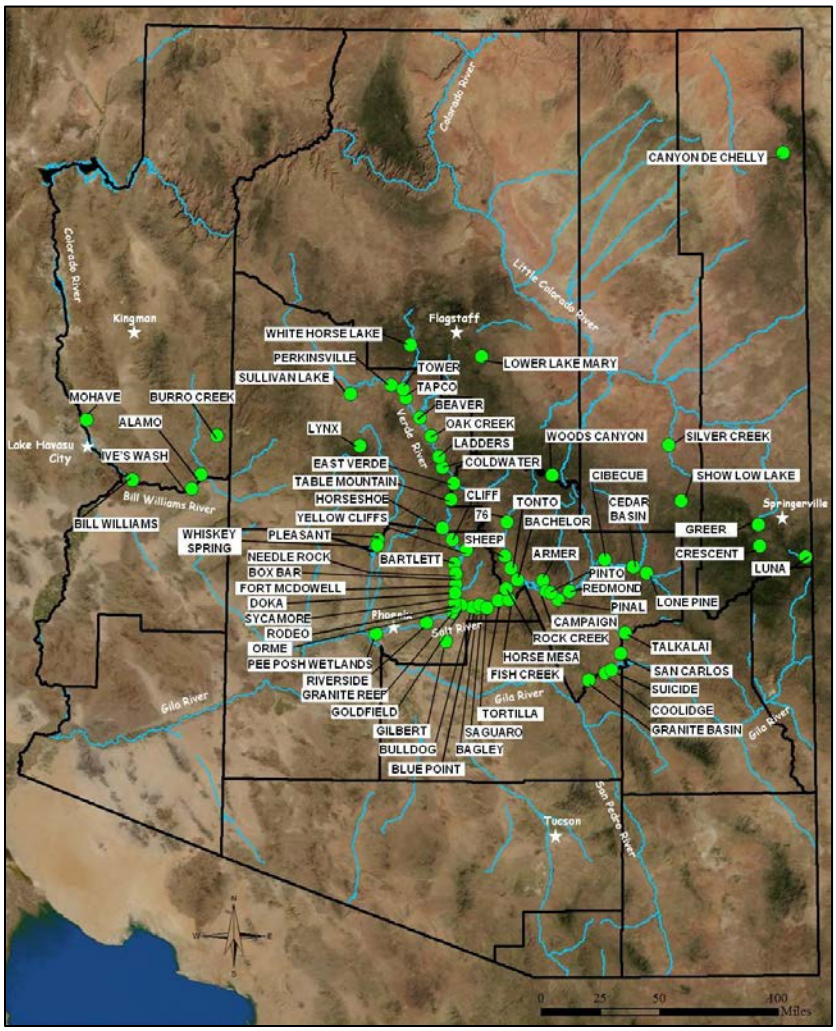

Figure 1. Location of known bald eagle BAs in Arizona, 2014.

At middle and higher elevations, BAs are located outside of or do not include Sonoran Riparian Scrubland areas (Brown 1994). The Silver Creek and Sullivan Lake BAs in the Plains and Great Basin Grassland biome contain isolated stands of Fremont cottonwoods. Crescent, Greer Lakes, Lower Lake Mary, Luna, Lynx, Show Low Lake, White Horse, 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 BA includes Interior Chaparral consisting of pinyon-juniper woodland, shrub live oak (*Quercus turbinella*), and pointed (*Arctostaphylos pungens*) and pringle manzanita (*A. pringlei*). Canyon De Chelly BA includes components of Rocky Mountain Conifer forest and Great Basin Conifer Woodland and Desertscrub, consisting of big sagebrush (*Artemisia tridentata*), blackbrush (*Coleogyne ramosissima*), and shadscale (*Atriplex confertifolia*). The Gilbert BA is located in the Phoenix metropolitan area and includes no natural riparian communities, with only artificial water formations such as recharge basins, urban ponds, and canals.

With a few exceptions, the majority of bald eagles in Arizona nested within a mile of water sources providing sufficient foraging opportunities for fish or waterfowl. However, distance to water within some BAs may vary between years depending on fluctuating creek and lake levels (e.g., Alamo Lake and Roosevelt Lake), and the distance of alternate nests. BAs were located along: Burro, Cibecue, Oak, Pinal, Silver, Tangle, Tonto, and Walnut creeks; Alamo, Apache, Bartlett, Canyon, Crescent, Greer, Horseshoe, Lower Lake Mary, Luna, Lynx, Pleasant, Roosevelt, Saguaro, San Carlos, Show Low, Talkalai, White Horse, and Woods Canyon lakes or reservoirs; and the Agua Fria, Bill Williams, Colorado, 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 two artificial structures (Horseshoe BA and White Horse BA) (Grubb 1980, McCarty and Jacobson 2012). Additionally, terrestrial prey comprises a substantial dietary proportion at some BAs, most notably prairie dogs at Canyon de Chelly and Silver Creek.

ARIZONA BALD EAGLE WINTER COUNT

INTRODUCTION

National winter surveys are an effective tool to monitor bald eagles throughout their range (Millsap 1986, Stalmaster 1987), and 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, 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 Army Corps of Engineers (ACE), who now coordinates the national winter count effort. Arizona participated in the program from the 1970s to the early 1980s (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 two 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 (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 et al. 2013). 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 to include new routes for future surveys. If a route produced three or fewer birds during the previous 10 years of surveys, the route was dropped per USGS protocol. As a result, in 2006 we removed 23 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 are 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 2014 Arizona bald eagle winter count. Additional, non-standard 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 6-12, 2014, 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 Arizona's remote terrain and the deep canyons of linear drainages was by helicopter. The U.S. Bureau of Reclamation (USBR) and Salt River Project (SRP) contributed a total of four days of helicopter time for 2-3 biologists and a pilot to fly 25 of the winter count 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 typical for observing bald eagles. Highways, large lakes, and point counts were surveyed by boats, vehicles, and on foot. We solicited surveyors from cooperating agencies and volunteers from private groups, supplied survey forms from ACE, and instructed participants on the National Survey Protocol.

We classified bald eagle sightings into adult and immature age classes. In addition, we included sightings of unknown-age bald eagles and unidentified eagles in our totals 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. Sightings of golden eagles (*Aquila chrysaetos*) were also recorded during the survey, but were not reported in this document. We divided the data presented below into two 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, four counties are no longer surveyed by ground methods for wintering bald eagles, including Greenlee, Maricopa, Pima, and Pinal counties. However, portions of Greenlee, Maricopa, and Pinal counties were covered by the helicopter flights.

RESULTS AND DISCUSSION

The 2014 Arizona bald eagle winter count tallied 266 bald eagles, including 188 adults (71%), 77 subadults (29%), and 1 unknown eagle (0.4%) (Tables 1 & 2). Participants covered 98 of 102 standardized routes (96%) with a total survey effort of 9,325 minutes (155 hours) (Table 2).

The highest total number of bald eagles observed during ground surveys occurred in Coconino County (n=79), and the largest concentration on a single ground survey occurred along Interstate-17 south of Flagstaff (n=17) (Appendix A). Observers noted 13 of the eagles near the highway, likely attracted to a road-killed elk. Also, a large number of bald eagles were observed by helicopter along the lower Salt River (n=49). An additional three bald eagles were counted on three non-standard routes (Appendix A).

The total of 266 bald eagles counted in 2014 was below the average of 293 birds counted annually during standardized counts, 1995-2013. The age composition of this year's count represents a slightly higher than usual ratio of adults to subadults (71% to 29%) in Arizona's winter counts which over the long term has averaged 65% adults and 32% subadults.

Table 1. Summary of the Arizona bald eagle winter count 2014.

County	Routes surveyed	Minutes	Adult	Subadult	Unknown[1]	Total	Total/ Hour
Apache	14	465	19	3	0	22	1.5
Cochise	2	210	0	0	0	0	0
Coconino	32	4,674	54	24	1	79	1.0
Graham	Not surveyed.						
Mohave	1	270	1	2	0	3	0.7
Navajo	16	615	14	10	0	24	2.3
Santa Cruz	1	160	0	0	0	0	0
Yavapai	6	1,830	8	1	0	9	0.3
Yuma and La Paz	1	204	2	3	0	5	1.5
Verde River drainage	3	273	26	7	0	33	7.3
Salt River drainage	9	364	52	22	0	74	12.1
Gila River drainage	8	202	9	4	0	13	3.9
Various helicopter	5	58	3	1	0	4	4.1
Totals	98	9,325	188	77	1	266	1.7

[1] Unknown age bald eagles and unidentified eagles.

Table 2. Summary of Arizona bald eagle winter counts 2005-2014.

Year	Survey time (min)	Surveys completed	Birds/hour	Adults	Subadults	Unknown[1]	Total
2005	8,910	97	1.5	153 (68%)	56 (25%)	15 (7%)	224
2006[2]	10,074	104	1.9	239 (74%)	77 (24%)	7 (2%)	323
2007	11,632*	100	1.4	192 (68%)	81 (29%)	8 (3%)	281
2008	9,362	96	1.2	152 (82%)	29 (16%)	4 (2%)	185
2009	9,357	94	1.3	139 (68%)	62 (30%)	3 (2%)	204
2010	9,138*	96	1.7	159 (63%)	81 (32%)	12 (5%)	252
2011	8,713*	93	1.5	157 (71%)	57 (26%)	8 (4%)	222
2012	10,320	100	1.7	189 (63%)	94 (32%)	15 (5%)	298
2013	9,902*	98	1.5	169 (66%)	76 (30%)	10 (4%)	255
2014	9,325	98	1.7	188 (71%)	77 (29%)	1 (0.4%)	266

[1]Unknown age bald eagles and unidentified eagles.
[2]Beginning of 104 standardized routes derived from the analysis of 1995-2005 surveys.
*Some survey times not recorded. Times averaged from reported times of previous counts.

Winter count surveyors are asked each year to rate the general weather conditions compared to previous years as being either very mild, mild, normal, harsh, or very harsh. Of those that rated, most responded that this year's weather was mild (59%) or normal (36%), and very mild (6%). There were no responses for harsh or very harsh weather. Similarly, ice cover was rated as being normal (49%), less than normal (39%), and much less than normal (11%). There were no responses for more than normal or much more than normal ice cover.

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 three bald eagles. The national coordinators require at least four 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 Wildlife 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 et al. 2013). The AGFD administered and performed the 2014 nest surveys in cooperation with the SWBEMC.

METHODS

We monitored breeding activity at current and historic BAs, nest sites discovered between 1992 and 2013 (e.g. McCarty et al. 2013), and also investigated reports of bald eagles and nests by other agencies, biologists, and the public. Habitat quality, the presence of nests, previous bald eagle sightings, and spacing between BAs prioritized survey effort. A two to three-person team conducted surveys between January and June 2014. Winter count flights (January), monthly Occupancy and Reproductive Assessment (ORA) flights (February to May), and nest search flights (April and May) were used to locate nests and search for new BAs. Timing of the ORA flights corresponded with the timing of different breeding stages (incubation, hatching, nestling, and fledging). We also opportunistically visited some BAs during aerial searches for golden eagle nests (February-May).

Boats, helicopters, and vehicles were used to access survey areas. Helicopters, provided by Arizona Public Service (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), nest map atlases from Hunt et al. (1992) and SRP (2010), and handheld GPS units 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 et al. 2013).

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 (e.g., Grubb and Eakle 1987). 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 eagles.

RESULTS

All known BAs (n=68) were examined for breeding activity (Figure 1). Of 52 occupied BAs, 47 pairs were active, and 30 pairs successfully produced 43 fledglings (Table 3; Appendix C).

Significant findings of the 2014 nest survey included one new bald eagle BA, 11 new alternate bald eagle nests (Cliff #7, Coldwater #9, Goldfield #3, Horseshoe #13 and #14, Lone Pine #6 and #7, Orme #8, Perkinsville #5, 76 #5, and Tapco #3), seven fallen or partially fallen nests within BAs (Campaign Bay #1, Cliff #6, Greer #5, Orme #8, Rodeo #3, 76 #5, and White Horse Lake #4), and ten new potential nests at six sites.

Table 3. Summary of Arizona bald eagle productivity 2014.

Number of BAs	68	Number of Active BAs	47
Number of Occupied BAs	52	Number of Failed Breeding Attempts	17
Number of Eggs	73+	Number of Successful Breeding Attempts	30
Nest Success = 30/52	0.58	Number of Young Hatched	58
Mean Brood Size = 43/30	1.43	Number of Young Fledged	43
		Productivity = 0.58*1.43	0.83

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)

Armer Gulch. – On December 17, 2013, the U.S. Forest Service (USFS) discovered a pair of bald eagles building a new nest (#1) in a live cottonwood near Roosevelt Lake, and confirmed incubation by January 15. Initially, it was suspected that the nest was an alternate for the Campaign Bay BA as that nest had fallen and no bald eagles had been observed. However, nestwatcher observations revealed neither of the pair was banded similar to the Campaign Bay pair observed in 2013.

Cibecue Creek. – On April 16, while in transit to the Cibecue BA we noticed a large nest (#1) in the pocket of a cliff along Cibecue Creek. The nest was in poor condition.

Gila River. – On March 14, we found two large nests on the cliffs in the Gila River canyon, one in the Needles Eye area (#1) and one near Porphyry Gulch (#1), both of them between the Coolidge BA and Granite Basin BA. The nests were in poor condition.

Jump Off Canyon. – During helicopter surveys for golden eagles on March 6, we found five large, eagle-sized nests (#1-5) on cliffs in the Jump Off Canyon area of the Salt River Canyon Wilderness. All nests contained large branches indicative of eagles, and one of these nests was in good to very good condition and decorated with greenery. Golden eagles were active in nest #1 and we associate the other nests with that breeding area. However due to the proximity of two of these nests to the river, we will continue to monitor them during bald eagle surveys.

Oak Creek (Hidden Valley). – On February 3, March 13, and April 17, we searched Oak Creek from the Oak Creek BA to just south of the Sedona area. On March 13, we saw two adults north of Bubbling Ponds and checked one nest (#1) found during surveys last year, as well as a nest

(#2) in a sycamore tree discovered after the breeding season in June 2013 (both medium to large nests). This year, we also discovered a new medium nest on a small cliff near Page Springs. None of these three known nests exhibited signs of recent use.

Sheep Creek. – On January 6, one adult bald eagle was perched at the confluence of the Verde River and Sheep Creek, an area where we have consistently observed eagles in previous years. No new nests were found.

Upper Salt River. – On March 14, we found a medium to large nest (#1) in fair condition on a cliff upstream of the Cibecue BA.

Table 4. 2014 Arizona bald eagle nest survey summary, new locations.

Location	Date(s)	Survey Method	Results
Armer Gulch	1/7, 1/29, 2/4, 2/12, 2/13, 3/14, 4/16	Helicopter, Ground	1/7: Adult standing in new nest #1. 1/29: Adult incubating.
Cibecue Creek	4/16	Helicopter	4/16: One large, old cliff nest. No bald eagles.
Gila River	3/14, 4/16	Helicopter	3/14: Two large, old nests.
Jump Off Canyon	3/6, 3/14	Helicopter	3/6: Five large nest nests. No bald eagles.
Oak Creek	2/3, 3/13, 4/17	Helicopter	All known nests empty. 3/13: Two adults in area.
Sheep Creek	1/6, 2/3	Helicopter	1/6: One adult in area. No new nests.
Upper Salt River	3/14	Helicopter	3/14: One medium-large nest. No bald eagles.

Survey Sites with Existing Large Nests (Table 5)
Granite. – On March 13, one golden eagle was incubating in nest #1. One very small nestling was present with an adult on April 17, and the nestling was 4.5 weeks old on May 9.

Mormon Pocket. – On February 3, two adult golden eagles were observed. On March 13, a golden eagle was incubating in nest #2. The nest was empty on April 17.

Roosevelt Dam. – On February 4, two adult bald eagles were perched together. Although no breeding activity was detected during multiple searches, the potential for bald eagle occupancy exists. On April 16, an immature bald eagle was perched in, and flushed from, nest #2.

Sunset Mountain. – In 2013, an adult bald eagle was seen perched near two large nests (#1, #2), however occupancy was not documented. Therefore it was not considered a breeding area. On March 5 2014, incubation was observed in nest #1. Since the nests fall within the historic range of the Horseshoe BA, and there was no breeding activity observed elsewhere in the Horseshoe BA, these nests will be re-assigned as Horseshoe nests #13 and #14.

Table 5. 2014 Arizona bald eagle nest survey summary, potential nest sites.			
Location	Date(s)	Survey Method	Results
Deadman Mesa	2/3	Helicopter	All known nests empty. No bald eagles.
Eagle (Eagle Creek)	1/9	Helicopter	No new nests or bald eagles.
George's Basin	1/8, 2/4, 3/14	Helicopter	All known nests empty. No bald eagles.
Granite (Verde River)	1/6, 2/3, 3/13, 4/17, 5/9	Helicopter	1/6: One adult bald eagle in area. 3/13: Golden eagle incubating in nest #1. 4/17: Golden eagle in nest with one small nestling. 5/9: One golden eagle nestling, 4.5 weeks old.
Hess Creek (Salt River)	1/7, 2/4, 4/16	Helicopter	All known nests empty. No bald eagles.
Mormon Pocket (Verde River)	1/6, 2/3, 3/13, 4/17	Helicopter	2/3: Two golden eagles in area. 3/13: Adult golden eagle incubating in nest #2. 4/17: Nest empty, failed.
Roosevelt Dam	1/7, 2/4, 3/14, 4/16	Helicopter	All known nests empty. 2/4: Two adult bald eagles in area. 4/16: One immature bald eagle in area.
Sunset Mountain	1/6, 2/3, 3/5, 3/13, 4/17	Helicopter	3/5: Adult bald eagle incubating in nest #1.
Watson Lake	3/13, 5/9	Helicopter	All known nests empty. No bald eagles.
Willow (Willow Creek)	1/9	Helicopter	No new nests or bald eagles.

Historic Breeding Areas (Table 6)
Canyon historic BA. – A soaring golden eagle was observed on February 4. None of the historic bald eagle nests were found.

Dupont historic BA. – A new cliff nest (#5) was discovered in 2013 near nests #3 and #4. This year, a golden eagle was found incubating in another new cliff nest (#6) on March 6, and was in the nest with an egg on April 11. The nest was empty on May 21.

Table 6. 2014 Arizona bald eagle nest survey summary, historic breeding areas.			
Location	Date(s)	Survey Method	Results
Canyon	1/7, 2/4	Helicopter	All known nests empty. 2/4: One golden eagle in area.
Devil's Post	4/17	Helicopter	All known nests empty. No bald eagles.
Dupont	3/6, 4/11, 5/21	Helicopter	3/6: Golden eagle incubating in new cliff nest #6.
Hell Point	1/6, 2/3, 3/13, 4/17	Helicopter	All known nests empty. No bald eagles.
Mule Hoof	1/8, 2/4, 3/14	Helicopter	All known nests empty. No bald eagles.
Winkelman	1/7, 3/14	Helicopter	No new nests or bald eagles.

Breeding Areas (Table 7)
Bachelor Cove BA. – On February 4, we observed a pair of adult bald eagles standing in nest #1. The two adults were observed at other times during the season by USFS personnel and Arizona Bald Eagle Nestwatch Program (ABENWP) contractors monitoring the nearby Tonto BA, but no eggs were laid.

Bagley BA and Blue Point BA. – On January 7, an adult was incubating in Bagley nest # 2 (formerly Blue Point nest #10). Although the identity of the nesting eagles was not confirmed, we believe the nest was occupied by the Bagley pair since they were the last pair known occupying the area, and no other pairs were observed.

Bill Williams BA. – The USFWS monitored the area and did not report any sightings of bald eagles or nesting activity.

Box Bar BA. – On February 3 and March 13, a pair of adults was perched together near nest #4, but no eggs were laid.

Campaign Bay BA. – On January 7, we observed nest #1 had fallen.

Coldwater BA. – In 2012, a large nest was found on a cliff during a survey for golden eagles, however no eagles were observed. Due to its proximity to the Coldwater BA it seems likely to serve as an alternate nest (#9). Therefore we will continue to monitor the nest on bald eagle surveys. On March 13 this year, one adult bald eagle was perched above nest #3.

Coolidge BA. – An adult bald eagle was soaring on February 4, but there are currently no known nests in the area.

Cibecue BA. – On March 14, we saw a perched adult bald eagle. Nest #2 appeared to be in good condition but no activity was observed and no new nests were found.

Cliff BA. – On January 6, we observed nest #6 had fallen. On February 25, ABENWP contractors confirmed a bald eagle incubating in a new nest (#7) in a live cottonwood tree. This tree contained 30+ heron nests, some of which were used (primarily by great blue herons) in 2013, and again in 2014. It is unclear if the bald eagles built this nest upon one of these heron structures. The herons continued utilizing the tree until early April before abandoning the area.

Doka BA. – A pair of bald eagles was observed numerous times throughout the season, but no eggs were ever laid. On May 14, the resident breeding female was found dead at Roosevelt Lake. Due to the location and poor condition of the carcass upon its discovery, we surmised the old female died during the winter and had been replaced by a new female early in the breeding season.

Gilbert BA. – No bald eagles were observed on February 26 and the property owner did not report any nesting activity, but said that the nest had been used by owls in 2013.

Goldfield BA. – On December 12, 2013, we received a photo of a pair of bald eagles at a new nest in a cottonwood tree. On December 18, we confirmed it as a new nest (#3) in the Goldfield BA and also noted nest #2 had fallen.

Granite Basin BA. – On January 7, an adult bald eagle was standing in nest #2, but the nest was empty during the remainder of the season.

Greer BA. – Nest #5 was blown out of the tree sometime between June 9 and 12.

Horseshoe BA. – In 2013, we observed an adult bald eagle perched near two large nests and named the nest site Sunset Mountain. In 2014, an adult bald eagle was incubating in one of the nests. Since there was no observed activity and no sightings of eagles elsewhere in the BA, we consider the Sunset Mountain nests as alternates of the Horseshoe BA, and numbered them #13 and #14.

Lone Pine BA. – On February 4, we found an adult incubating in a new nest (#6) in a sycamore tree, and also discovered a new large cliff nest (#7).

Needle Rock BA. – On February 3, we observed an adult bald eagle but no new nests were found on this or subsequent visits.

Orme BA. – During the latter part of 2013, a new large nest (#8) in the Orme BA was reported by the public. A pair of adult bald eagles was observed throughout the breeding season, but no eggs were laid. On March 13, one adult was perched in nest #7, and a second adult by nest #8.

Perkinsville BA. – An adult was incubating on March 13 in nest #4, and was possibly brooding on April 17. The nest was empty on May 9, however on June 20 an injured fledgling bald eagle was recovered by the railroad tracks. This bird's origin is unknown.

Redmond BA. – On January 7 and March 6 an adult bald eagle was observed, and on February 4 one adult was standing in nest #5.

Rodeo BA. – After several years of disuse and slow decay, nest #3 was noted as fallen by January.

San Carlos BA. – On January 7, nest #6 had fallen, and two immature bald eagles were observed. A near-adult was in the nest area on February 4, and an adult on March 14.

76 BA. – On April 1, the USFS found a new nest (#5) in a dead cottonwood, and there was at least one nestling on April 16. The nest fell by May 21.

Sheep BA. – On February 4, an adult bald eagle was observed. On April 16, a pair of adults was perched together, but all known nests were empty.

Tapco BA. – In March, we received a report and photo from the public of a bald eagle incubating in a new nest (#3), and indications that the eagles had been using the nest in late January. During a survey flight on March 13, we observed a pair of eggs in the nest and two adults. After the nest attempt failed, we collected the unhatched eggs on April 18 for analysis. Photos of the banded adults revealed the male had blue VID band 17/A on the left leg and USFWS band on the right (2003 Ladders nestling). The female had blue VID band 19/K on the left leg (2006 Oak Creek nestling) but did not have a band on the right leg.

Whiskey Spring BA. – On February 3, an immature bald eagle was perched in nest #1. ABENWP contractors monitoring the nearby Pleasant BA in February and March did not observe any adults or nesting activity at Whiskey Spring.

Table 7. 2014 Arizona bald eagle nest survey summary, breeding areas (continued next page).

Location	Date(s)	Survey Method	Results
Bachelor Cove	1/7, 2/4, 3/14, 4/16	Helicopter	2/4: Two adults standing in nest #1.
Blue Point	1/7, 2/4, 3/14, 4/16	Helicopter	No new nests or bald eagles.
Box Bar	1/6, 2/3, 3/13, 4/17	Helicopter	1/6: One adult in area. 2/3 and 3/13: Two adults.
Burro Creek	4/17	Helicopter	No new nests or bald eagles.
Campaign Bay	1/7	Helicopter	1/7: Nest #1 fallen.
Cedar Basin	1/8, 2/4, 3/14, 4/16	Helicopter	All known nests empty. No bald eagles.
Cibecue	1/8, 2/4, 3/14, 4/16	Helicopter	All known nests empty. 3/14: One adult.
Cliff	1/6, 1/24, 2/3, 3/13, 4/17, 5/5	Helicopter, Ground	1/6: Nest #6 fallen. Two adults possibly nest building. 3/13: Active in new nest #7.
Coldwater	1/6, 2/3, 3/13, 4/17	Helicopter	All known nests empty. 3/13: One adult perched.
Coolidge	1/7, 2/4, 3/14, 4/16	Helicopter	2/4: One adult soaring.
Doka	1/6, 2/3, 3/13, 4/17	Helicopter	2/3: Two adults in area.
Gilbert	2/26	Ground	No new nests or bald eagles.
Goldfield	12/18, 12/20, 1/7, 1/31, 2/4, 3/14, 4/16	Helicopter, Ground	12/18: Two adults at new tree nest #3. Nest #2 fallen.
Granite Basin	1/7, 2/4, 3/14, 4/16	Helicopter	1/7: One adult standing in nest #2.
Greer	3/14, 4/9, 4/22, 5/12, 6/2, 7/8	Helicopter, Ground	6/12: Nest #5 reported by nestwatchers as fallen.
Horseshoe	1/6, 2/3, 3/5, 3/13, 4/17	Helicopter	3/5: Incubating in new cliff nest #13.
Lone Pine	1/8, 2/4, 3/14, 4/16	Helicopter	2/4: Adult incubating in new tree nest #6. Another new nest (#7) found on a cliff.
Needle Rock	1/6, 2/3, 3/13, 4/17	Helicopter	2/3: One adult.
Orme	12/18, 1/6, 2/3, 2/4, 2/28, 3/13	Helicopter, Ground	All known nests empty. 1/6: New nest #8 seen. 2/28 and 3/13: Two adults.
Perkinsville	1/6, 2/3, 3/13, 4/17, 5/9	Helicopter	1/6: New cliff nest (#5).
Redmond	1/7, 2/4, 3/6, 3/14, 4/16	Helicopter	1/7, 2/4, and 3/6: One adult.
Rock Creek	3/14	Helicopter	All known nests empty. No bald eagles.
Rodeo	1/6, 2/3, 3/13, 4/17, 5/9	Helicopter	1/6: Nest #3 fallen.
San Carlos	1/7, 2/4, 3/14, 4/16	Helicopter	1/7: Nest #6 fallen. 3/14: One adult.
76	1/7, 2/4, 3/14, 4/16, 5/21	Helicopter	4/16: One nestling, 4-4.5 weeks old, in new nest #5. 5/21: Nest #5 fallen
Sheep	1/7, 2/4, 3/14, 4/16	Helicopter	2/4: One adult in area. 4/16: Two adults.
Tapco	1/6, 2/3, 3/13, 3/20, 4/17, 4/18	Helicopter, Ground	3/13: Two eggs in new nest #3. Two adults flew to nest.
Tower	1/6, 2/3, 3/13, 4/17	Helicopter	All known nests empty. No bald eagles.
White Horse Lake	4/17, 5/16, 6/19, 6/20	Helicopter, Ground	8/5: Part of nest platform #4 fallen.
Whiskey Spring	12/6, 1/6, 2/3, 2/7, 3/13	Helicopter, Boat	All known nests empty. 2/3: One immature perched on nest #1.

Overview

Significant findings of the 2014 nest survey include: one new bald eagle BA, 10 new alternate bald eagle nests within BAs, six fallen or partially fallen nests within BAs, and ten new potential nests at six sites. Although productivity of 0.83 young per occupied BA in 2014 was lower than recent years (Table 8), productivity over the last decade (2004-2013) was very good, averaging 0.98. By comparison, the average productivity of the previous ten-year period was 0.74 (1994-2003).

The one new BA discovered this year (Armer Gulch) was several miles from Roosevelt Lake, and successfully fledged one young. While success elsewhere at lower elevations was variable, occupied breeding areas at elevations >5,500 feet (n=11) were all successful.

The continued creation of new breeding areas and nests, and the loss of alternate nests, coupled with the potential for changes in the distribution of Arizona bald eagles further demonstrates the necessity and importance of ORA flights. These flights allow for the consistent monitoring of bald eagle demography, including population size, distribution, and reproductive success, in the rugged terrain of Arizona. Without the aid of these flights, we would not be able to accurately document these important population parameters.

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

	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Number of BAs	68	68	66	62	62	59	56	53	50	47
Number of occupied BAs	52	54	54	55	52	50	48	48	43	39
Number of eggs (minimum)	73	79	80	79	69	78	71	74	68	57
Number of active BAs	47	49	50	51	48	48	44	45	39	36
Failed breeding attempts	17	14	19	17	21	19	14	20	11	12
Successful breeding attempts	30	35	31	34	27	29	30	25	28	24
Young hatched	58	71	66	66	57	68	65	61	55	48
Young fledged	43	58	52	56	44	47	53	42	42	37
Nest success	0.58	0.65	0.57	0.62	0.52	0.58	0.63	0.52	0.65	0.62
Mean brood size	1.4	1.7	1.7	1.6	1.6	1.6	1.8	1.7	1.5	1.5
Productivity	0.83	1.07	0.96	1.0	0.85	0.94	1.10	0.87	0.98	0.95

MANAGEMENT RECOMMENDATIONS

1. Future survey efforts should continue to monitor historic BAs, potential breeding habitat, large nests, and sightings of adult eagles reported in previous nest survey reports. These documents are useful tools for identifying occupancy trends, locating new BAs, and monitoring population expansion.
2. Surveyors should continue to use the nest survey, 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. From the ground, surveyors can investigate areas in more detail.

3. Confirm the band status and identify blue-banded adults observed at all new and recent breeding areas, including Bachelor Cove, Bill Williams Refuge, Campaign Bay, Greer Lakes, Mohave, Show Low Lake, Tapco, and White Horse Lake.
4. Bald eagles banded in Arizona have been observed near or on El Novillo Reservoir, Sonora, Temecula Lake, California, and southwestern New Mexico, suggesting that the current distribution may extend into northern 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.
5. Determine the identification of the breeding pair at Copper Basin, CA and yearly band the nestlings.
6. 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, Chevelon Canyon, Cholla, Dry, JD Dam, Knoll, Lyman, Nash Creek, Pacheta, Point of Pines, Reservation, Rogers, Tonto, 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 – Redmond BA to Canyon BA, Cibecue BA to Cedar Basin BA, Tonto Creek north of Tonto BA, Pinto Creek, Salome Creek, Tanks Canyon, George's Basin.
    - Verde River drainage – Beaver Creek, East Verde River, Oak Creek, Sheep Creek, West Clear Creek.
    - White Mountain Lakes – Carnero, Christmas Tree, Horseshoe Cienega, Hawley, Lee Valley Reservoir, Nelson Reservoir, Nutrioso, Pacheta, Reservation.
    - White River – Whiteriver to confluence with Black and Salt rivers.

ARIZONA BALD EAGLE NESTWATCH PROGRAM

INTRODUCTION

In 1978, the USFS and two Maricopa Audubon Society volunteers monitored bald eagles breeding near Bartlett Reservoir to understand the effects of recreation on nesting behavior and success (Forbis et al. 1985). This monitoring effort eventually expanded to other BAs, and developed into the Arizona Bald Eagle Nestwatch Program (ABENWP). In 1986, the USFWS assumed coordination of the ABENWP on behalf of the SWBEMC, and expanded its scope. Following passage of the Heritage Initiative in 1990, a voter initiative which created a fund from Arizona Lottery proceeds for conservation of wildlife and natural areas, AGFD was able to develop and support a comprehensive bald eagle management program. In 1991, the USFWS transferred coordination of the ABENWP to AGFD.

To address the continuing management needs for Arizona's breeding bald eagles, the ABENWP operates under three goals: education, data collection, and conservation. 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. One of the most tangible benefits of the ABENWP is determining when bald eagles are in life-threatening situations, allowing AGFD biologists to intervene in these situations and either eliminate or reduce the threat, or rescue injured eagles. In this report, we summarize significant discoveries at each BA monitored by the ABENWP in 2014. Detailed reports of each monitored BA are centralized at AGFD, and are distributed to the appropriate land and wildlife management agencies.

METHODS

We selected the BAs to be monitored by weighing the level of recreation activity and management needs. Included are those with seasonal closures (Bartlett, Cliff, Crescent, Goldfield-Kerr, Greer, Ladders, Luna, Pinto, Pleasant, Tonto, Whiskey Spring, White Horse, and Woods Canyon), those without (Armer Gulch, Granite Reef, Orme, Rodeo, Sycamore), and those monitored opportunistically for information (Bachelor Cove, Doka, Fort McDowell). In the fall of 2013, 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 (nestwatchers). The two meetings offered an introduction to the program, background information on the ABENWP's role in bald eagle management, and an explanation of data forms and emergency protocols. After the orientation meetings, the nestwatchers 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 data 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 7, 2014 and continued until nestlings fledged. If a nesting attempt failed, nestwatchers were moved to alternate sites for the remainder of the season. 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 human activity 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 view of the primary OP. Nestwatchers were provided spotting scopes, Motorola® radios, and/or USFS radios for viewing and communication needs. We supplied standardized data forms, BA maps with river and/or lake kilometer (rk/lk) designations, and other reference materials. 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. Aircraft flying below the 2000 foot FAA advisory over bald eagle breeding areas were also recorded. Nestwatchers classified bald eagle behavior in response to human activity into seven 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 far away. Nestwatchers recorded “bird not in area” if a bald eagle was not present, and “unknown” if a bald eagle was present but its response 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 Granite Reef, Greer, White Horse, and Woods Canyon BAs, nestwatchers recorded human activity differently than described above. At Granite Reef, activities at the USFS Granite Reef Recreation Area were not recorded unless a watercraft was launched or the activity continued across the river onto Salt River Pima-Maricopa Indian Community (SRPMIC) land, and only aircraft below 1000 feet were recorded due to the high volume of air traffic. At the Greer BA, due to the limited view of the area from the primary OP, nestwatchers recorded activities within about 200 meters of the nest. At the White Horse BA, because of the proximity and high volume of background activity at the campgrounds, nestwatchers only recorded activities that caused a response from eagles or those that occurred within the trail closure around the nest. At the Woods Canyon BA, due to the high volume of recreationists at the lake,

nestwatchers recorded eagle behavioral responses to violations of the nest area closure.

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 19 breeding areas in 2014 including Armer Gulch, Bartlett, Cliff, Crescent, Doka, Fort McDowell, Goldfield-Kerr, Granite Reef, Greer, Ladders, Luna, Pinto, Pleasant, Rodeo, Sycamore, Tonto, Whiskey Spring, White Horse, and Woods Canyon. The final status of the monitored BAs was 6 failed, 11 successful, 1 occupied, 1 unoccupied and 16 young fledged (Appendix C).

The Bartlett, Doka, Fort McDowell, Ladders, and Whiskey Spring BAs were either monitored part-time or opportunistically by nestwatchers at nearby BAs. Therefore, data for these BAs are not included in the following section of this report.

Armer Gulch Breeding Area (Appendix E)

Observation Period. – February 7 to May 11. Total monitoring 70 days/521 hours.

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

Management Activities. – 1) The USFS placed "No Entry" signs within the BA. 2) On April 8, one female nestling was blue VID banded "29/U" at six weeks of age.

Figure 2. Armer Gulch breeding area. Gila County, Arizona. Photo by K. McCarty.

Human Activity. – Nestwatchers recorded 77 human activities. Terrestrial activity of four types represented 72.7%, aircraft activity represented 19.5%, and watercraft 7.8%. None of the activities elicited significant responses from the breeding pair.

Food Habits. – Nestwatchers observed eight forage events. The male was successful in 25.0% (n=4) and the female in 50.0% (n=4) of events. The breeding pair was observed delivering 42 prey items to the nest, of which the male delivered 61.9% and the female 38.1%. Fish comprised

66.7% (n=28) of the deliveries and unknown prey types 33.3% (n=14). Of the 24 prey items further identified, there were 11 suckers (unidentified species) and 13 common carp (*Cyprinus carpio*).

Habitat Use. – The Armer Gulch nestwatchers identified 17 separate perch locations, spanning 7.1 km of the Salt River/Roosevelt Lake and ranging from river kilometer (rk) 92.2 to 99.3. The bald eagle pair spent 69.6% of the observed time perched at four locations within the immediate area of the nest tree, 12.6% at rk 94.0, 6.6% at rk 99.3, and 15.0% at the remaining 12 locations.

Cliff Breeding Area (Appendix F)
Observation Period. – February 24 to May 3. Total monitoring 47 days/439 hours.

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

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.

Interventions. – On April 27, nestwatchers reported one of the nestlings had fallen to the ground below the nest. We recovered the injured bird and transferred it to Liberty Wildlife for treatment of a broken humerus. On May 5, after nestwatchers reported the second nestling had gone missing, we climbed to the nest and found it empty.

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

Human Activity. – Nestwatchers recorded 22 human activities during the monitoring period. Aircraft (helicopters, small planes, and jets) accounted for 63.6% and terrestrial activities of four different types for 36.4%. Four types of activities elicited 5 significant responses from the breeding pair. The bald eagles were restless in response to a shooter, and flushed in response to two AGFD biologists, an angler, and an OHV.

Food Habits. – Nestwatchers were unable to observe any forage events. The breeding pair was observed delivering 19 prey items to the nest, of which the male delivered 21.1%, the female 68.4%, and unknown adult 10.5%. Fish comprised 89.5% (n=17) of the deliveries, and unknown prey types 10.5% (n=2). Of the three prey items further identified, all were channel catfish (*Ictalurus punctatus*).

Habitat Use. – The Cliff nestwatchers identified six separate habitat use areas, spanning a 0.9 km stretch of the Verde River ranging from river kilometer (rk) 66.6 to 67.5. The bald eagle pair spent 92.6% of the observed time at rk 67.0, 5.4% at rk 67.3, and 1.6% at the remaining locations.

Crescent Breeding Area (Appendix G)
Observation Period. – May 19 to July 20. Total monitoring 44 days/418 hours.

Bald Eagle Identification. – Both adults were in adult plumage, but their identification and band status were undetermined.

Management Activities. – 1) The USFS posted "No Entry" signs surrounding the nest area knoll. 2) The USFS maintained a bald eagle information board along the west access road.

Human Activity. – Nestwatchers recorded 1,240 human activities during the monitoring period. Terrestrial activity of 11 different types represented 80.7%, water pursuits (boaters, float tubers, and kayaks/canoes) 19.0%, and aircraft (small planes) 0.3%. Three types of activities elicited four significant responses from the breeding pair. The bald eagles were restless in response to a hiker and a motorcycle, and flushed in response to a hiker and a small plane.

Food Habits. – The nestwatchers observed 63 forage events, with fish accounting for 98.4% and 1.6% reptiles. The male was successful in 96.6% (n=29) and the female in 97.1% (n=34) of forage events. The breeding pair was observed delivering 59 prey items to the nest, of which the male delivered 44.1% and the female 55.9%. Fish (rainbow trout, *Oncorhynchus mykiss*), comprised 98.3% (n=58) of these deliveries and reptiles (unidentified species of snake) 1.7% (n=1).

Figure 4. Crescent breeding area. Apache County, Arizona. Photo by K. McCarty.

Habitat Use. – The Crescent nestwatchers identified 12 perch locations around Crescent Lake. The bald eagle pair spent 33.8% of the observed time at lake kilometer (lk) 2.1, 29.8% at lk 2.25, 18.5 % at lk 2.3, 8.6% at lk 2.4, 3.6% at lk 2.0, and 5.8% at the remaining locations.

Goldfield-Kerr Breeding Area (Appendix H)
Observation Period. – February 7 to May 10. Total monitoring 62 days/606 hours.

Bald Eagle Identification. – The female had no bands and was in adult plumage (unknown origin). The male had a blue VID band "19/D" on his left leg, USFWS band on the right leg, and was in adult plumage (2006 Needle Rock nestling).

Management Activities. – 1) The USFS enacted the seasonal BA closure. 2) The USFS closed off vehicle access to the nest area. 3) The USFS maintained wildlife breeding area signs along the river prohibiting entry.

Human Activity. – Nestwatchers recorded 370 human activities during the observation period. Aircraft (helicopters, small planes, jets, motorized parachute) represented 57.0%, terrestrial activity of 10 different types 37.0%, and watercraft 5.9%. Six types of activities elicited 11 significant responses from the breeding pair. The bald eagles were restless in response to six helicopters, two drivers, a small plane, and a horseback rider. They also flushed in response to a kayak/canoe.

Food Habits. – Nestwatchers were unable to observe any forage events. The breeding pair was observed delivering 157 prey items to the nest, of which the male delivered 70.7%, the female 28.7%, and an unidentified adult 0.6%. Fish comprised 35.7% (n=56) of these deliveries, mammals 17.2% (n=27), birds 7.6% (n=12), reptiles 4.5% (n=7), and unknown prey types 35.0% (n=55). Of the 26 prey items further identified, 46.2% (n=12) were suckers (unidentified species), 19.2% (n=5) were turtles (unidentified species), 15.4% (n=4) were rodents (unidentified species), 7.7% (n=2) each were common carp and waterfowl (unidentified species), and 3.8% (n=1) were mourning doves (*Zenaida macroura*).

Figure 5. Goldfield-Kerr breeding area. Maricopa County, Arizona. Photo by K. McCarty.

Habitat Use. – The Goldfield-Kerr nestwatchers identified 20 perch locations, spanning a 1.7 km stretch of the Salt River ranging from river kilometer (rk) 9.4 to 11.1. The bald eagle pair spent 63.5% of the observed time at rk 10.2, 27.1% at rk 9.7, 2.8% at rk 9.9, and 6.6% at the remaining locations.

Granite Reef Breeding Area (Appendix I)
Observation Period. – February 7 to May 15. Total monitoring 75 days/666 hours.

Bald Eagle Identification – Nestwatchers reported the male had a blue VID band on his left leg, USFWS band on the right leg, and was in adult plumage (unknown, but blue VID consistent with Arizona origin). The female was reported as unbanded and in near-adult plumage (unknown origin).

Management Activities. – 1) The SRPMIC continues to restrict non-tribal member use of the river area. 2) Nestwatchers were issued a kayak and educated recreationists on the river about

bald eagles and the no entry on tribal land. 3) On April 21, one male nestling was blue VID banded "29/R" at five weeks of age.

Human Activity. – The nestwatchers recorded 924 human activities. Water pursuits (fishing boats, canoes/kayaks, float tubers) accounted for 65.6%, terrestrial activity of 10 different types for 19.3%, and aircraft (small planes, helicopters, motorized parachutes) 15.1%. Seven types of activities elicited 20 significant responses from the breeding pair. The bald eagles flushed in response to 13 canoes/kayaks, 2 rafters, 2 helicopters, 1 hiker, 1 boater, and 1 motorized parachute.

Food Habits. – The nestwatchers observed 23 forage events with fish accounting for 52.2% (n=12), birds 17.4% (n=4), and unknown prey 30.4% (n=7). The male was successful in 60.0% (n=15) and the female was successful in 71.4% (n=7) of forage events. The breeding pair was observed delivering 22 prey items to the nest, of which the male delivered 63.6% (n=14) and the female 36.4% (n=8). Fish comprised 68.2% (n=15) of the deliveries, birds and mammals 4.5% (n=1) each, and unknown prey types 22.7 (n=5). Of the three prey items further identified, 33.3% (n=1) each common carp, waterfowl (unidentified species), and ground squirrel (unidentified species).

Figure 6. Granite Reef breeding area. Maricopa County, Arizona. Photo by J. Driscoll.

Habitat Use. – The Granite Reef nestwatchers identified 18 separate habitat use areas spanning 4.2 km along the Salt River ranging from river kilometer (rk) -0.5 to 3.7. The bald eagle pair spent 43.4% of the observed time at rk 1.7, 24.3% at rk 1.5, 13.0% at rk 2.7, 11.3% at rk 3.0, and 8.0% at the remaining locations.

Greer Breeding Area (Appendix J)
Observation Period. – April 5 to July 13. Total monitoring 76 days/545 hours.

Bald Eagle Identification – The female had no bands and was in adult plumage (unknown origin). The male had a blue VID band "16/K" on his left leg, USFWS band on the right leg, and was in adult plumage (2004 Luna nestling).

Management Activities. – 1) On May 12, two female nestlings were blue VID banded "29/Z and 30/A", respectively, at six weeks of age. 2) On June 2, both nestlings were fitted with backpack satellite transmitters at nine weeks old.

Interventions. – On June 14, nestwatchers observed one of the 12-week old fledglings on the ground, apparently unable to fly. AGFD personnel recovered the bird and placed it in a tree. On June 27, one of the fledglings was observed on the ground and it was lethargic and approachable. AGFD personnel recovered the bird transported it to rehabilitation. This juvenile was successfully released back to the nest area on July 8.

Figure 7. Greer breeding area. Apache County, Arizona. Photo by K. McCarty.

Human Activity. – Nestwatchers recorded 696 human activities. Terrestrial activities of seven types represented 99.7%, aircraft (helicopter) 0.1%, and water activities (kayak) 0.1%. Four types of activities elicited five significant responses from the breeding pair. The bald eagles flushed in response to two anglers, a vehicle, a OHV, and a kayak.

Food Habits. – Nestwatchers observed 10 forage events, with fish accounting for 90% and unknown prey 10%. The male was successful in 71.4% (n=7) and the female in 100% (n=3) of forage events. The breeding pair was observed delivering 65 prey items to the nest, of which the male delivered 70.8%, and the female 29.2%. Fish comprised 61.5% (n=40) of these deliveries, carrion 24.6% (n=16) and birds 13.8% (n=9). Of the 49 prey items further identified, 77.6% (n=38) were trout (unidentified species), 16.3% (n=8) were American coots (*Fulica americana*), 4.1% (n=2) were common carp, and 2.0% (n=1) were waterfowl (unidentified species).

Habitat Use. – The Greer nestwatchers identified 31 separate perch areas within a 1.2 km^2 area around the lakes, primarily (69.1%) at four locations within 600 m of the nest tree.

Luna Breeding Area (Appendix K)
Observation Period. – February 7 to June 4. Total monitoring 86 days/857 hours.

Bald Eagle Identification – Nestwatchers reported the male had a black VID band "Δ/A" on his right leg, USFWS band on the left leg, and was in adult plumage (1988 Texas nestling). The female had a black VID band "Δ/B" on her right leg, USFWS band on the left leg, and was in adult plumage (unknown origin; trapped as an unbanded adult at Luna Lake in 1994).

Management Activities. – 1) The USFS enacted the seasonal BA closure. 2) Nestwatchers were stationed at the boat ramp to talk to visitors. 3) On April 22, one male nestling was blue VID banded "29/V" at five weeks old.

Human Activity. – The nestwatchers recorded 925 human activities. Terrestrial activity of eight different types accounted for 75.8%, water pursuits (fishing boats, kayaks, float tubers) for

22.5%, and aircraft (small planes, jets, and helicopters) 1.7%. Three types of activity elicited four significant responses from the breeding pair. The bald eagles were restless in response to a military jet, and flushed in response to a hiker, an angler, and a military jet.

Food Habits. – The nestwatchers observed 94 forage events, with birds accounting for 68.1%, fish 27.7%, carrion and mammals 1.1% each, and unknown prey 2.1%. The male was successful in 83.7% (n=49) and the female was successful in 95.6% (n=45) of forage events. The breeding pair was observed delivering 71 prey items to the nest, of which the male delivered 52.1% (n=37) and the female 47.9% (n=34). Birds comprised 67.6% (n=48), fish 29.6 (n=21), carrion 1.4% (n=1), and unknown prey 1.4% (n=1) of the deliveries. Of the 69 prey items further identified, 62.3% were American coots (n=43) 27.5% (n=19) were rainbow trout, 4.3% (n=3) were Canada geese (*Branta canadensis*), 2.9% (n=2) were cutthroat trout, and 1.4% (n=1) each were gadwall (*Anas strepera*) and ruddy duck (*Oxyura jamaicensis*).

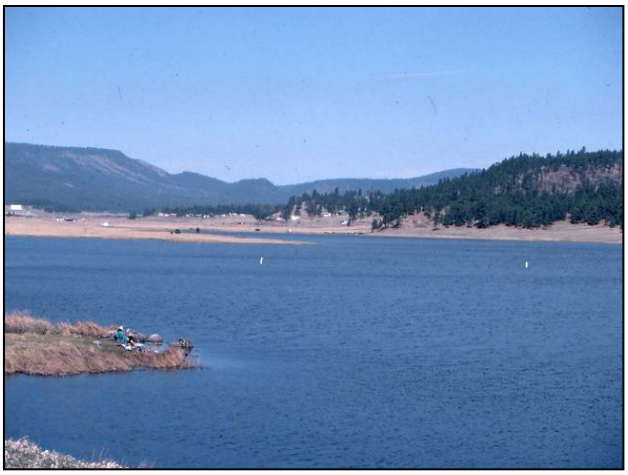

Figure 8. Luna breeding area. Apache County, Arizona. Photo by J. Driscoll.

Habitat Use. – The Luna nestwatchers identified 24 separate habitat use areas around Luna Lake. The bald eagle pair spent 70.1% of the observed time at lk 2.4, 6.6% at lk 2.2, 5.1% at lk 2.3, 3.6% at lk 2.7, 3.6% at lk 5.1, 3.1% at lk 3.5, and 7.9% at the remaining locations.

Pinto Breeding Area (Appendix L)
Observation Period. – March 29 to May 11. Total monitoring 34 days/195 hours.

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

Management Activities. – 1) The USFS enacted the seasonal bald eagle closure. 2) The Southwestern Willow Flycatcher Closure limited recreational activities on the west side of the Salt River.

Human Activity. – Nestwatchers recorded 39 human activities. Terrestrial activities of two types represented 64.1% and aircraft (helicopters, small planes, and jets) 35.9%. Two types of activities elicited five significant responses from the breeding pair. The bald eagles were restless in response to four gunshots and flushed in response to a helicopter.

Food Habits. – The nestwatchers were unable to observe any forage events by the breeding pair. The breeding pair was observed delivering 10 prey items to the nest, of which the male delivered

80% and the female 20%. Fish comprised 90.0% and mammals 10.0% of the deliveries. Of the four prey items further identified, 25.0% (n=1) each were common carp, catfish (unknown species), shad (*Dorosoma petense*), and rabbit (unknown species).

Habitat Use. – The Pinto nestwatchers identified 33 separate habitat use areas along the Salt River, spanning 3.2 km and ranging from river kilometer (rk) 101.5 to 104.7. The bald eagle pair spent 23.0% of the observed time at rk 104.1, 16.0% at rk 104.2, 14.0% at rk 104.3, 12.0% at rk 103.2, 5.9% at rk 101.6, 5.3% at rk 103.0, 4.7% at 103.4, and 19.1% at the remaining locations.

Figure 9. Pinto breeding area. Gila County, Arizona. Photo by K. McCarty.

Pleasant Breeding Area (Appendix M)
Observation Period. – February 7 to March 25. Total monitoring 34 days/275 hours.

Bald Eagle Identification. – Nestwatchers reported that both the female and male had no bands and were in adult plumage (unknown origins).

Management Activities. – 1) Maricopa County Parks and Recreation Department (MCPRD) enacted the seasonal closure. 2) MCPRD marked closure boundaries with buoys and signs. 3) Nestwatchers were supplied a boat by AGFD and educated recreationists about the closure and bald eagles. 4) On March 25, we climbed into the nest and retrieved the unhatched egg. 5) Due to failure of the breeding attempt, the seasonal closure was lifted on March 31.

Figure 10. Pleasant breeding area. Maricopa County, Arizona. Photo by J. Driscoll.

Human Activity. – Nestwatchers recorded 434 human activities. Aircraft (small planes, jets, and helicopters) accounted for 76.0%, watercraft (boats, jet skis) for 13.6%, and terrestrial activities of 8 types for 10.4%. Eight types of activities elicited 18 significant responses from the breeding pair. The bald eagles were restless in response to five small planes, four jets, two gunshots, a boat, and a nestwatcher. The pair flushed in response to a small plane and a nestwatcher, and left the area in response to an AGFD biologist, a nestwatcher, and a Sheriff boat.

Food Habits. – The nestwatchers observed two forage events, both successful captures of fish by the female. Due to the early failure of the breeding attempt, no prey deliveries were observed.

Habitat use. – At the Pleasant BA, nestwatchers identified 47 separate habitat use areas along the Agua Fria River arm of the lake, spanning a total of 8.3 km and ranging from river kilometer (rk) 69.1 to 77.4. The Pleasant bald eagle pair spent 36.6% of the observed time at rk 73.6, 30.9% at rk 73.2, 15.6% at rk 73.5, and 16.9% at the remaining locations.

Rodeo Breeding Area (Appendix N)
Observation Period. – February 7 to May 11. Total monitoring 52 days/423 hours.

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

Management Activities. – 1) The FMYN continues to restrict non-tribal member use of the river area.

Human Activity. – Nestwatchers recorded 245 human activities. Terrestrial activities of 5 types accounted for 46.1% and aircraft (helicopters and small planes) for 53.9%. One type of activity elicited one significant response from the breeding pair. The bald eagles flushed from a perch in response to a hiker.

Food Habits. – The nestwatchers were unable to observed any forage events. The breeding pair was observed delivering 40 prey items to the nest, of which the male delivered 32.5%, and the female 67.5%. Fish comprised 82.5% (n=33), birds and mammals 5.0% (n=2) each, and unknown prey types 7.5% (n=3) of the deliveries. Of the 17 prey items further identified, 35.3% (n=6) were common carp, 29.4% (n=5) were suckers (unidentified species), 11.7% (n=2) were bass (unidentified species), and 5.9% (n=1) each were American coot, desert cottontail (*Sylvilagus audubonii*), and trout (unidentified species).

Figure 11. Rodeo breeding area. Maricopa County, Arizona. Photo by Arizona Game and Fish Department.

Habitat use. – The Rodeo nestwatchers identified 14 perch locations along the Verde River, spanning a total of 2.0 km and ranging from river kilometer (rk) 2.5 to 4.5. The bald eagle pair spent 64.0% of the observed time at rk 3.8, 14.2% at rk 4.1, 7.5% at rk 2.8, 6.0 % at rk 3.2, 4.1% at rk 3.9, and 4.2% at the remaining locations.

Sycamore Breeding Area (Appendix O)
Observation Period. – February 7 to March 23. Total monitoring 32 days/267 hours.

Bald Eagle Identification. – Nestwatchers reported the male had a blue VID band on the left leg, USFWS band on the right leg, and was in adult plumage (unknown origin, but blue band indicative of an Arizona nestling). The female was reported as unbanded and in adult plumage (unknown origin).
Management Activities. – 1) The FMYN restricts non-tribal member use of the river area. 2) Nestwatchers, Fort McDowell Adventures, Green Zebra Tomcar tours, and community members worked collaboratively to ensure protection of eagles and promote outreach opportunities.

Figure 12. Sycamore breeding area. Maricopa County, Arizona. Photo by Arizona Game & Fish Department.

Human Activity. – Nestwatchers recorded 272 human activities. Terrestrial activities of 7 types represented 74.6%, and aircraft (helicopters and small planes) 25.4%. Two types of activities elicited three significant responses from the breeding pair. The bald eagles flushed in response to two OHVs and a driver.

Food Habits. – Nestwatchers were unable to observe any forage events. Due to the early failure of the breeding attempt, no prey deliveries were observed.

Habitat use. – The Sycamore nestwatchers identified 6 separate habitat use areas, spanning a total of 3.2 km along the Verde River ranging from river kilometer (rk) 7.6 to 10.8, and 0.1 km along Sycamore Creek at rk 0.9. The bald eagle pair spent 66.5% of the observed time at rk 10.4, 21.0% at rk 10.8, 6.0% at rk 7.6, and 6.5% at the remaining locations.

Tonto Breeding Area (Appendix P)
Observation Period. – February 7 to May 20. Total monitoring 77 days/646 hours.

Bald Eagle Identification. – The male had a blue VID band “14/E” on the left leg, USFWS band on the right leg, and was in adult plumage (2002 Talkalai nestling). The female had no bands and was in adult plumage (unknown origin).

Management Activities. – 1) A portion of the Indian Point campground remained closed throughout the breeding season. 2) The Southwestern Willow Flycatcher Closure limited recreational activities in the area. 3) The USFS enacted the seasonal bald eagle closure.

Human Activity. – Nestwatchers recorded 47 human activities. Terrestrial activities of 10 types represented 57.4% and aircraft (helicopters, small planes, and ultralights) 42.6%. One type of activity elicited one significant response from the breeding pair. The bald eagles flushed from a perch in response to a dog.

Food Habits. – The nestwatchers observed 4 forage events, with birds accounting for 25.0% and unknown prey types 75.0%. The male was successful in 66.7% (n=3) and the female in 0% (n=1) of forage events. The breeding pair was observed delivering 56 prey items to the nest, of which the male delivered 73.2% and the female 25.0%. Fish comprised 60.7% (n=34), birds 12.5% (n=7), mammals 1.8% (n=1), and unknown prey types 25.0% (n=14) of delivered items. None of prey items were further identified.

Figure 13. Tonto breeding area. Gila County, Arizona. Photo by K. McCarty.

Habitat use. – The Tonto nestwatchers identified 34 separate perch locations along Tonto Creek and Roosevelt Lake, spanning 6.1 km and ranging from river kilometer (rk) 12.5 to 18.6. The bald eagle pair spent 23.1% of the observed time at rk 16.8, 16.6% at rk 17.0, 12.3% at rk 13.6, 11.3% at rk 12.5, 10.4% at rk 16.7, 7.5% in the Bachelor Cove area, 4.9% at rk 16.4, 4.1% at rk 12.7, and 9.8% at the remaining locations.

White Horse Breeding Area (Appendix Q)
Observation Period. – May 16 to June 22. Total monitoring 31 days/263 hours.

Bald Eagle Identification. – The male had a blue VID band "20/C" on the left leg, USFWS band on the right leg, and was in adult plumage (2006 Lower Lake Mary nestling). The female had no bands and was in near-adult plumage (unknown origin).

Management Activities. – 1) The USFS established a trail closure around the nest area.

Figure 14. White Horse breeding area. Coconino County, Arizona. Photo by K. McCarty.

Human Activity. – Nestwatchers recorded 44 human activities within or at the closure. Terrestrial activities of 6 types represented 88.6% and aircraft (helicopters and small planes) accounted for 11.4%. Three types of activity elicited six significant responses from the breeding pair. The bald

eagles were restless in response to an AGFD biologist and a nestwatcher, and flushed in response to three hikers and an AGFD biologist.

Food Habits. – Nestwatchers did not observe any forage events. The breeding pair was observed delivering 32 prey items to the nest, of which the male and female each delivered 50.0%. Fish comprised 59.5% (n=19), mammals 25.0% (n=8), birds 6.0% (n=2) and unknown prey types 9.5% (n=3) of the delivered items. Of the 18 prey items further identified, 38.9% (n=7) were rainbow trout, 33.3% (n=6) were small mammals, and 5.6% (n=1) each were common carp, American coot, sucker, waterfowl, and rabbit (unknown species).

Habitat Use. – The White Horse nestwatchers identified 15 separate perch areas within a 0.1 km^2 area around the lakes, primarily (63.5%) at three locations within 150 m of the nest tree.

Woods Canyon Lake Breeding Area (Appendix R)
Observation Period. – March 22 to July 20. Total monitoring 116 days/963 hours.

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

Management Activities. – 1) The USFS established a closure around the nest area, including re-routing the lake trail, and placed closure signs. 2) AGFD established a water closure around the nest site. 3) Nestwatchers were supplied a boat by AGFD and educated recreationists about the closure and bald eagles.

Human Activity. – Nestwatchers recorded 40 human activities within or at the closure. Aircraft (helicopters and small planes) accounted for 40.0%, watercraft (boats, kayaks, swimmers) for 35.0%, and terrestrial activities (hiker, anglers) 25.0%. None of the activities elicited significant responses from the breeding pair.

Food Habits. – The nestwatchers observed 41 forage events. The male was successful in 84.2% (n=19) and the female in 63.6% (n=22), of forages, which were all for fish. The breeding pair was observed delivering 154 prey items to the nest, of which the male delivered 55.8%, the female 43.5%., and an unknown adult 0.7%. Fish comprised 97.5% (n=150), mammals 1.9% (n=3), and birds 0.6% (n=1) of the delivered items. Of 151 prey items further identified, 99.3% (n=150) were rainbow trout and 0.7% (n=1) were ground squirrels (unidentified species).

Figure 15. Woods Canyon breeding area. Coconino County, Arizona. Photo by K. McCarty.

Habitat Use. – The Woods Canyon nestwatchers identified 64 separate habitat use areas around the lake. The bald eagle pair spent 13.5% of the observed time at lake kilometer (lk) 4.7, 10.7% at lk 5.0, 9.1% at lk 4.5, 8.6% at lk 3.8, 8.3% at lk 3.5, 7.5% at lk 4.6, 6.4% at lk 4.1, 6.3% at lk 2.2, 5.1% at lk 4.9, and 24.5% at the remaining locations.

MANAGEMENT CONSIDERATIONS

Management considerations included below are summarized in an edited format 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.

Armer Gulch

1. Provide nestwatchers with a boat and/or kayaks.
2. In the future take blood samples from nestlings/fledglings and or recover eggs (if the BA fails) and test them for mercury and other environmental contaminants.

Crescent

1. Implement a conscientious supplementation of food for this pair through the tough times of February and March. With the already high use and projected major increase in human activity in the area, this could become a wildlife viewing destination with eagle viewing added as a highlight if we can aid their breeding attempts.
2. Enforce speed limits in recreation areas and off road vehicle use.

Goldfield

1. Place more emphasis on visitor and education outreach and progression toward these goals, perhaps requiring nestwatchers to conduct programs 1-2 times a week at the nearby recreation site or local town.
2. The closure on the north side of the Salt River is effective and should be maintained in order to keep activities in the vicinity of the nest to a minimum. Signage (in addition to the closure signs posted along the river) could be useful to prevent entry from areas other than the river, both at the boundaries of the closure itself and in the nearby parking areas where people normally access the area.

Granite Reef

1. Place signs indicating private property and tribal lands along the riverbank to deter trespassing and watercraft landing from the recreating public. Signs could be placed strategically in places where watercraft are most likely to land and directly across from river access points in the Tonto National Forest.
2. The nestwatchers had good communication by cell phone with the Salt River Rangers, but no method of communication with the Salt River Patrol Police except through Dispatch. This made communication in the field difficult. To avoid confusion, the SRPMIC Police Officers and Dispatch should be provided nestwatcher's cell phone numbers, a map that includes the locations of Orme and GR nests, the nestwatchers' primary OP, and numbered poles.

3. We recommend that monofilament fishing line recycle bins be installed at recreation areas contiguous with the Orme and Granite Reef breeding areas.
4. The Forest Service Tonto passes allowing nestwatchers to park at the Phon D. Sutton and Granite Reef Recreation Areas should also include Coon Bluff, as this is within the eagles' territory. The passes should cover the whole nestwatch period from the beginning of February to the end of May.
5. The SRPMIC special use permit awarded to the nestwatchers should allow for nestwatcher habitat investigations on foot within the river corridor (approximately 300 meters on each side of the Salt and Verde Rivers).
6. Nestwatchers should be permitted to speak with closure violators and any person/s stopped along the closure boundary. This would prevent many human activities from escalating into bald eagle disturbances and would strengthen the relationship between the Community and the Arizona Bald Eagle Nestwatch Program

Greer

1. A closure may be necessary if the eagles use the same nest area. Although human disturbances were relatively low, especially early in the breeding season, more people visit and vacation in Greer as the season progresses and there is potential benefit of a closure. Although visitors and residents were excited about the eagles, they did not always know the proper way to respect the birds. However, a signed-off closure area could have negative consequences to the natural beauty of the area and could draw unwanted attention to the nest.
2. Nestwatchers do not recommend building a nest structure to replace the nest that fell, in the hope that the eagles relocate to a more remote location.

Luna

1. Retain the nestwatch program at Luna Lake.
2. Maintain closure boundaries as they are, including Group Campsite A.
3. Consider creating "islands" isolated from shore by cutting off ends of peninsulas. These "islands" will enhance breeding areas for resident waterfowl and improve survival rates for their chicks.

Pinto

1. Given the limited amount of human activity in the Pinto area, it should be considered if there are other breeding areas which would benefit more from having nestwatchers.
2. If nestwatchers are assigned to Pinto in the future, consider shifting monitoring downstream (northwest) to better assess this area, which was so frequently used by the eagles, for human activity instead of the 1 km radius around the nest, the southern part of which was rarely seen being used by the eagles.
3. Investigate the eagles' use of the Eads Wash area to determine if high recreation is preventing eagles from hunting there, and implement any necessary management actions.
4. Increase efforts to educate the public in the area about the potential negative affects of gunfire to disturb eagles, or consider a ban on recreational shooting around within the breeding area.

Pleasant

1. Extend the breeding area closure to river kilometer 78.0 to prevent boating access to the eagles' hunting areas around Tule's bay and the Agua Fria Conservation Area.
2. Remind and provide more education to military personnel and recreational pilots from local airports about the importance of not flying low in the breeding area.
3. Train the Maricopa County Sheriff's office on the importance of not disturbing eagles within the breeding area.
4. Construct a larger, more substantial and effective barricade on the northern jeep road to prevent entrance into the breeding area.

Sycamore

1. Increase FMYN Police patrol of signed areas, particularly along Sycamore Creek where it enters the Verde River, and discuss other options for preventing or intervening vehicle traffic in that area, including maintaining the new FMYN boundary sign.
2. Inform FMYN tribal council of nest failures and significant increase in trespassing along Sycamore Creek.
3. Consider retaining nestwatchers at the Rodeo, Doka, and Fort McDowell nest sites until young have fledged in order to ensure nest success as well as continue communication and to facilitate observation with community members.
4. Continue collaboration with FMYN elders, Yavapai News, H'man 'Shawa ECDC, Fort McDowell Adventures.
5. Include Rodeo and Sycamore breeding areas in all discussions regarding recreational activities and development (e.g., zip line, birding tours, race events).

Tonto

1. Nestwatchers observed few closure violations, yet speculated that some violations may have been due to inability to see signage, therefore placement of more signs around the closure may be helpful.

White Horse

1. Add a sign to the barricade on the trail northwest of the nest tree indicating that the trail is accessible from the southwest side of the lake.
2. Assign a two-person Nestwatcher team (if possible) to facilitate 10-minute weekend presentations attached to the regularly scheduled USFS presentations for greater outreach potential.

Woods Canyon

1. Create a "You Are Here" map showing hikers their location, the location of the observation point and spotting scopes , and distance along the detour trail to the scopes.
2. Consider creating signs to post when the nestlings fledge cautioning that young eagles may be on the ground and to please keep dogs on leash.
3. Assign a third nestwatcher to the site during Memorial Day and Fourth of July weekends, in order to facilitate quality data collection and public outreach.

4. Nestwatchers received no direct information regarding the fire that occurred during this season and the resulting closure of part of the trail. E-mail messages or phone calls to nestwatchers would allow them to provide accurate information to the public.

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APPENDIX A: 2014 ARIZONA BALD EAGLE WINTER COUNT RESULTS

Table 9. 2014 Arizona bald eagle winter count volunteer survey results (continued next page).

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
Apache County						
1	Becker Lake	20	2	0	0	0
2	Little Colorado River (LCR)	15	3	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)	30	1	1	0	0
6	Sponseller Lake	20	0	0	0	0
7	Mexican Hay Lake	15	0	0	0	0
8	White Mountain Hereford Ranch (Trinity, Glen Livet, McKay reservoirs)	60	6	1	0	0
9	The Ranch Lake	30	1	0	0	0
10	Ortega Lake	30	0	0	0	0
11	Concho Lake	60	3	0	0	0
12	Luna Lake	20	2	0	0	0
13	Nelson Reservoir	60	0	0	0	0
14	Nutrioso Reservoir	75	1	1	0	0
16	San Francisco River (Luna Lake to New Mexico line)	Not surveyed.				
Total		**465**	**19**	**3**	**0**	**0**
Cochise County						
18	Parker Canyon Lake	60	0	0	0	0
19	Willcox Playa	150	0	0	0	0
Total		**210**	**0**	**0**	**0**	**0**
Coconino County						
21	Long Lake Complex	113	2	0	0	0
22	Stoneman Lake	180	1	2	0	1
23	FH-3	41	0	0	0	0
24	I-17, Section to Flagstaff	240	12	5	0	0
25	Bellemont	302	2	0	0	0
26	Townsend/Winona A/B	355	3	0	0	0
27	HWY 89 North /Sunset Crater – Wupatki	386	4	0	0	0
28	FH-3 Lakes (Mary, Mormon, Marshall, Prime, etc.)	419	1	1	0	0
29	Continental Country Club Lakes	150	2	0	0	0
30	Chevelon Canyon Lake	368	0	0	0	0
32	Spring Valley Wash	120	3	3	0	0
33	Red Lake Valley	50	0	0	0	0
34	Kaibab Lake	40	3	2	0	0
35	Pittman Valley	95	1	1	0	0
36	Davenport Lake	12	0	0	0	0
37	Scholz Lake	120	4	3	0	0
38	Cataract Lake	30	1	0	0	0
39	Willow Springs Lake	165	4	2	0	0

Table 9 continued.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
40	West Chevelon Canyon	70	0	0	0	0
41	Willow Creek	74	0	0	0	0
42	White Horse Lake – Pomeroy Tanks	100	3	0	0	0
43	JD Dam Lake	68	1	1	0	0
45	Steel/Stone Road	80	1	0	0	0
48	Blue Stem Wash-Babbit property	80	0	2	0	0
49	Glen Canyon Nat'l Rec. Area (Lake Powell to Lee's Ferry)	Not surveyed.				
118	Bill Williams Loop Road	87	3	2	0	0
119	Johnson Canyon	120	0	0	0	0
120	Highway 64 east	140	0	0	0	0
121	Highway 64	28	1	0	0	0
122	Camp Navajo	212	0	0	0	0
123	Partridge Creek[1]	120	0	0	0	0
124	Odell Lake	Not surveyed.				
125	Highway 87 north	89	2	0	0	0
126	Highway 180	220	0	0	0	0
Total		**4,674**	**54**	**24**	**0**	**1**
Graham County						
51	Point of Pines Lake area	Not surveyed.				
Mohave County						
57	Alamo Lake	270	1	2	0	0
Total		**270**	**1**	**2**	**0**	**0**
Navajo County						
58	Lake of the Woods	28	0	1	0	0
59	Rainbow Lake	30	5	6	0	0
61	Whipple Lake	15	0	0	0	0
62	Long Lake	20	0	0	0	0
63	Lone Pine Dam	37	0	0	0	0
64	Schoens Reservoir	23	0	0	0	0
65	White Mountain Lake	55	0	0	0	0
67	Jacques Marsh	30	0	0	0	0
68	Scott's Reservoir	30	0	0	0	0
69	Show Low Lake	40	2	0	0	0
70	Pintail Lake	15	1	0	0	0
71	Telephone Lake	12	2	1	0	0
72	Fool Hollow Lake	120	4	2	0	0
75	Cottonwood Wash/ Clay Springs	25	0	0	0	0
76	White Lake	5	0	0	0	0
127	Mortenson Wash	130	0	0	0	0
Total		**615**	**14**	**10**	**0**	**0**
Santa Cruz County						
82	Pena Blanca Lake	160	0	0	0	0
Total		**160**	**0**	**0**	**0**	**0**
Yavapai County						
83	Wet Beaver Creek	420	2	0	0	1
84	Oak Creek	450	2	0	0	0

Table 9 continued.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
85	Willow Lake	240	2	0	0	0
86	Lynx Lake	240	1	0	0	0
87	Watson Lake	240	0	0	0	0
88	Goldwater Lake	240	1	1	0	0
Total		**1,830**	**8**	**1**	**0**	**0**
Yuma and La Paz Counties						
89	Imperial N.W.R. Cibola/Martinez Lake – Colorado River	204	2	3	0	0
Total		**204**	**2**	**3**	**0**	**0**

Table 10. 2014 Arizona bald eagle winter count helicopter survey results.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
90	Verde River	247	26	7	0	0
91	Lower East Verde River	10	0	0	0	0
92	Lower West Clear Creek	16	0	0	0	0
93	Lower Salt River	111	21	14	0	0
94	Upper Salt River	66	5	2	0	0
95	Lower Tonto Creek	25	3	1	0	0
97	Lower Canyon Creek	8	0	0	0	0
98	Lower Cibecue Creek	8	0	0	0	0
100	White River	20	5	1	0	0
101	North Fork White River	43	7	3	0	0
102	Lower Black River	54	9	0	0	0
103	Big and Little Bonito Creeks	29	2	1	0	0
104	San Carlos River–Talkalai Lake	14	2	2	0	0
105	San Carlos Reservoir	18	2	1	0	0
106	Upper and Lower Gila River	63	1	0	0	0
107	Eagle Creek	40	3	0	0	0
108	Bonita Creek	15	0	0	0	0
109	Lower San Francisco River	36	1	0	0	0
110	Blue River	14	0	0	0	0
111	Sunrise Lake	0	0	0	0	0
112	Big Lake	1	0	1	0	0
114	Crescent Lake	1	0	0	0	0
115	Lake Pleasant	26	1	1	0	0
116	Del Rio Ponds	1	1	0	0	0
117	Tres Rios	31	1	0	0	0
Total		**897**	**90**	**34**	**0**	**0**

Table 11. 2014 Arizona bald eagle winter count non-standardized survey route results.						
Route Name	County	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagle	Unknown Eagle
Highway 260 and F.R. 618 (976)	Yavapai	210	0	0	0	0
Blue Ridge Reservoir (977)	Coconino	75	1	0	0	0
Clint's Well (991)	Coconino, Yavapai	164	0	2	0	0
Total		**449**	**1**	**2**	**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 active 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 active 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: 2014 ARIZONA BALD EAGLE PRODUCTIVITY

Table 12. Arizona bald eagle breeding area productivity summary, 2014 (continued next page).

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs	Hatch Date	Young	Fledged	Fledge Date
Alamo	F	4	2/19-3/13	1	Failed by 4/17 during incubation			
Armer Gulch*	S	1	1/11-1/15	2	2/23	1	1	>5/20
Bachelor Cove*	O							
Bagley	S	2	<1/7	3	2/4-3/14	3	2	4/16, >4/16
Bartlett*	F	2	1/6-2/3	1	Failed during hatching 2/16-2/21			
Beaver	S	1	<1/6	2	1/6-3/4	2	1	4/17-5/9
Bill Williams	U							
Blue Point	N/A	Overtaken by Bagley Pair.						
Box Bar	O							
Bulldog	F	2	12/18-1/7	1	1/7-2/4	1	Failed by 2/4-3/14 during incubation	
Burro Creek	U							
Campaign Bay	U							
Canyon de Chelly	S	2	<3/31	2	<5/8	2	2	>6/19
Cedar Basin	U							
Cibecue	U							
Cliff*	F	7	2/3-2/25	2	3/30	2	1 nestling fell from nest and is being treated at Liberty Wildlife	
Coldwater	U							
Coolidge	U							
Crescent*	S	1	<4/16	2	4/16-5/19	2	2	7/13
Doka	O							
East Verde	S	6	1/6-2/3	1	2/3-3/13	1	1	>5/9
Fish Creek	S	1	1/7-2/4	1	2/4-3/14	1	1	>5/21
Fort McDowell*	S	15	1/6/2/3	1	3/3	1	1	5/11-5/24
Gilbert	U							
Goldfield-Kerr*	S	3	12/18-12/20	2	1/7-1/31	2	2	4/19-4/20
Granite Basin	U							
Granite Reef*	S	5	1/7-2/3	1	3/9	1	1	5/21-6/7
Greer Lakes	S	3	<2/25	2	3/14-4/5	2	2	6/21
Horse Mesa	S	4	1/7-2/4	2	2/4-3/14	2	2	>5/21
Horseshoe	F	13	2/3-3/5	1	Failed by 3/14-4/17 during incubation.			
Ive's Wash	F	5	2/3-2/19	2	3/13-4/17	2	Failed by 6/6.	
Ladders*	F	3	<12/20	1	1/6-2/3	1		
		Appeared to be brooding on 2/3. Male incubating through 3/2. Female abandoned.						
Lone Pine	F	6	1/8-2/4	1	Failed 2/4-3/14 during incubation.			
Lower Lake Mary	S	3	2/21-3/5	1	3/19-4/17	1	1	6/20-7/1
Luna*	S	1	<2/5	2	2/5-3/7	1	1	6/1
Lynx	S	3	1/6-2/3	1	3/13-4/17	1	1	5/9-6/9
Mohave	S	1	<3/20	2	<3/20	2	2	>4/28

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

[2]Nest numbers are from Hunt and others 1992; Driscoll and Beatty 1994; Driscoll and others 1992, 1995a, 1995b, 1997, 1998, 1999; Jacobson and others 2004, 2005, 2006, 2007; Koloszar and Driscoll 2001a, 2001b; Koloszar and others 2002; Canaca and others 2004; McCarty and Jacobson 2008-2012; McCarty et al. 2013.

[3]Represents minimum number of eggs laid.

*Nests monitored by the Arizona Bald Eagle Nestwatch Program.

Table 12 continued.

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs	Hatch Date	Young	Fledged	Fledge Date
Needle Rock	U							
Oak Creek	S	4	<1/6	2	1/6-2/8	2	2	5/1-5/15
Orme*	O							
Pee Posh Wetlands	S	4	<1/6	1	2/3-3/13	1	1	>4/17
Perkinsville	F	4	2/3-3/13	1	Failed 4/17-5/9.			
Pinal	F	3	2/4-3/14	2	Failed 3/14-4/16.			
Pinto*	F	7	2/4-2/16	1	3/25	1	Nestling dead in nest 6/9.	
Pleasant*	F	3	2/3-2/7	1	Failed by 3/24 during incubation.			
Redmond	U							
Riverside	S	1	<12/20	2	1/7-1/25	2	2	>3/26
Rock Creek	U							
Rodeo*	S	4	1/6-2/4	2	2/4-3/14	2	2	5/11-5/18
Saguaro	S	2	1/7-2/4	3	2/4-3/14	3	1	4/16-5/21
San Carlos	U							
76	F	5	<4/2	1	<4/2	1	Nest fell 4/16-5/21.	
Sheep	O							
Show Low Lake	S	1	2/20-2/24	1 (2?)	3/14-4/8	1	1	6/10-6/19
Silver Creek	S	2	1/29-2/4	3	3/3-3/14	3	3	5/12-6/3
Suicide	S	1	1/7-2/4	1	2/4-3/14	1	1	4/16-5/30
Sullivan Lake	S	2	1/6-1/10	2	2/3-3/6	2	2	4/17-5/9, >5/9
Sycamore*	F	5	1/6-2/3	2	Failed by 3/22 during incubation.			
Table Mountain	F	4	1/6-2/3	1	Failed 4/17-5/9 after prolonged incubation.			
Talkalai	S	8	<1/7	1	2/4-3/14	1	1	4/16-5/30
Tapco	F	3	2/3-2/27	2	Failed by 3/20 during incubation.			
Tonto*	S	5	1/7-1/19	1	2/22-2/23	1	1	5/20
Tortilla Creek	F	1	1/7-2/4	1	Failed 2/4-3/14 during incubation.			
Tower	U							
Whiskey Spring*	U							
White Horse	S	4	3/12-4/17	1	5/12-5/13	1	1	>7/24
Woods Canyon	S	3	3/18	2	4/12	2	2	6/26, 7/6
Yellow Cliffs	S	1	1/6-2/3	2	2/3-3/13	2	1	>5/9

[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 2008-2012; McCarty et al. 2013.

[3]Represents minimum number of eggs laid.

*Nests monitored by the Arizona Bald Eagle Nestwatch Program.

APPENDIX D: NEST SURVEY RESULTS

Table 13. Results of the 2014 winter count, ORA, and nest survey flights (continued next page).

Location	Time	Comments
January 6, 2014		
Riverside BA	0749	Two adults standing in nest #1. Possibly seen in midst of nest exchange.
Orme BA	0803	All known nests empty. New nest #8 seen. One adult in area.
Rodeo BA	0805	All known nests empty. No bald eagles.
Sycamore BA	0810	All known nests empty. One adults in area.
Doka BA	0813	All known nests empty. Two adults flying in area.
Fort McDowell BA	0815	One perched by nest #15.
Box Bar BA	0819	All known nests empty. One adult in area.
Needle Rock BA	0822	All known nests empty. No bald eagles.
Bartlett BA	0825	One adult standing in nest #2.
Yellow Cliffs BA	0834	All known nests empty. One adult in area.
Sheep Creek	0847	One adult perched in area.
Cliff BA	0853	Nest # 6 fallen. Two adults perched in area possibly building new nest.
Horseshoe BA	0908	All known nests empty. No bald eagles.
Table Mountain BA	0924	All known nests empty. One adult in area.
East Verde BA	0933	All known nests empty. Two adults in area.
East Verde River	0935	No new nests or bald eagles.
Coldwater BA	1000	All known nests empty. No bald eagles.
Ladders BA	1008	Adult incubating in nest #3. Second adult in area.
West Clear Creek	1014	No new nests. One immature golden eagle in area.
Beaver BA	1239	Adult incubating in nest #1.
Oak Creek BA	1246	Adult incubating in nest #4.
Tapco BA	1302	All known nests empty. One adult in area.
Tower BA	1308	All known nests empty. No bald eagles.
Mormon Pocket nest site	1314	All known nests empty. No bald eagles.
Perkinsville BA	1316	All known nests empty. No bald eagles.
Hell Point historic BA	1328	All known nests empty. No bald eagles.
Granite nest site	1336	All known nests empty. One adult in area.
Sullivan Lake BA	1344	All known nests empty. One adult in area.
Lynx BA	1423	All known nests empty. No bald eagles.
Whiskey Spring BA	1445	All known nests empty. No bald eagles.
Pleasant BA	1451	One adult standing by nest #3.
Pee Posh Wetlands BA	1550	Adult incubating in nest #4.
January 7, 2014		
Granite Reef BA	0809	One adult standing at nest #5.
Goldfield-Kerr BA	0815	Adult incubating in new nest #3.
Bulldog BA	0824	Adult incubating in nest #2.
Bagley & Blue Point BAs	0831	Adult incubating in Bagley nest #2.
Saguaro BA	0834	All known nests empty. No bald eagles.
Tortilla BA	0838	One adult standing in nest #1. Second adult in area.
Fish Creek BA	0844	All known nests empty. Two adults in area.
Horse Mesa BA	0854	One adult perched by nest #5.
Roosevelt Dam nest site	0900	All known nests empty. No bald eagles.
Bachelor Cove BA	0906	All known nests empty. No bald eagles.
Tonto BA	0910	One adult half-standing in nest #5. Unknown if incubating.
Sheep BA	0918	All known nests empty. No bald eagles.

Table 13 continued.

Location	Time	Comments
76 BA	0930	All known nests empty. No bald eagles.
Armer Gulch	1022	Adult standing in new nest #1.
Campaign Bay BA	1024	Nest #1 fallen. No bald eagles.
Pinto BA	1028	All known nests empty. No bald eagles.
Pinal BA	1220	All known nests empty. No bald eagles.
Redmond BA	1232	All known nests empty. One adult in area.
Hess Creek nest site	1245	All known nests empty. No bald eagles.
Canyon historic BA	1255	No new nests or bald eagles.
Talkalai BA	1314	Adult incubating in nest #8. Second adult in area.
San Carlos BA	1323	Nest #6 fallen. No new nests. Two immatures in area.
Suicide BA	1337	All known nests empty. One adult in area.
Coolidge BA	1353	No new nests or bald eagles.
Granite Basin BA	1400	One adult standing in nest #2.
Winkelman historic BA	1410	No new nests or bald eagles.
January 8, 2014		
Cibecue BA	1013	All known nests empty. No bald eagles.
Mule Hoof historic BA	1016	All known nests empty. No bald eagles.
Cedar Basin BA	1030	All known nests empty. No bald eagles.
Lone Pine BA	1040	All known nests empty. One adult in area.
Crescent BA	1153	All known nests empty. No bald eagles.
George's Basin nest site	1337	All known nests empty. No bald eagles.
January 9, 2014		
Willow nest site	--	No new nests or bald eagles.
Eagle nest site	--	No new nests or bald eagles.
February 3, 2014		
Riverside BA	0755	Adult in nest #1 with two nestlings, 3 weeks old.
Granite Reef BA	0803	Adult incubating in nest #5.
Orme BA	0806	All known nests empty. One immature in area.
Rodeo BA	0812	Adult incubating in nest #4. Second adult in area.
Sycamore BA	0815	Adult incubating in nest #5.
Doka BA	0817	All known nests empty. Two adults in area.
Fort McDowell BA	0818	Adult incubating in nest #15. Nest #18 fallen.
Box Bar BA	0822	All known nests empty. Two adults in area.
Needle Rock BA	0823	No new nests. One adult in area.
Bartlett BA	0826	Adult incubating in nest #2.
Yellow Cliffs BA	0832	Adult incubating in nest #1.
Sheep Creek	0835	No new nests or bald eagles.
Cliff BA	0838	No new nests or bald eagles.
Horseshoe BA	0849	Adult incubating in new nest #13.
Table Mountain BA	0901	Adult incubating in nest #4.
East Verde BA	0907	Adult incubating in nest #6. Second adult in area.
Coldwater BA	0921	All known nests empty. No bald eagles.
Ladders BA	0925	Adult sitting up in nest. Nest contents unconfirmed.
Beaver BA	0936	Adult incubating.
Oak Creek BA	0943	Adult incubating
Oak Creek	0956	Searched area. All known nests empty. No bald eagles.
Tapco BA	1130	No new nests. One adult in area.
Tower BA	1138	All known nests empty. No bald eagles.
Mormon Pocket nest site	1143	All known nests empty. Two adult golden eagles in area.

Table 13 continued.

Location	Time	Comments
Perkinsville BA	1145	All known nests empty. No bald eagles.
Hell Point historic BA	1155	All known nests empty. No bald eagles.
Granite nest site	1205	All known nests empty. No bald eagles.
Sullivan Lake BA	1239	Adult incubating in nest #2.
Lynx BA	1255	Adult incubating in nest #3.
Alamo BA	1340	All known nests empty. No bald eagles.
Ive's Wash BA	1350	All known nests empty. No bald eagles.
Pleasant BA	1513	All known nests empty. Two adults in area.
Whiskey Spring BA	1517	All known nests empty. One immature perched on nest #1.
Pee Posh Wetlands BA	1540	Adult incubating.
February 4, 2014		
Orme BA	0820	All known nests empty. No bald eagles.
Goldfield-Kerr BA	0823	At least one 2-week old nestling. One adult perched above nest.
Bulldog BA	0828	Adult in nest appears to be brooding. Fish seen in nest.
Bagley BA	0831	Adult in nest appears to be brooding.
Saguaro BA	0835	Adult incubating in nest #2.
Tortilla Creek BA	0837	Adult incubating in nest #1.
Fish Creek BA	0841	Adult incubating in nest #1.
Horse Mesa BA	0844	Adult incubating in nest #4.
Roosevelt Dam nest site	0850	All known nests empty. Two adults in area.
Bachelor Cove BA	0900	Two adults standing in nest #1.
Tonto BA	0904	Adult incubating in nest #5.
Sheep BA	0908	All known nests empty. One adult in area.
76 BA	0915	No new nests. One adult in area.
Armer Gulch BA	0935	Adult incubating in nest #1
Pinto BA	0945	All known nests empty. No bald eagles.
Pinal BA	0950	All known nests empty. No bald eagles.
Redmond BA	0958	One adult standing on nest #5, flushed then flew back. Nest empty.
Hess Creek nest site	1003	All known nests empty. No bald eagles.
Canyon historic BA	1015	All known nests empty. One golden eagle in area.
Cibecue BA	1140	All known nests empty. No bald eagles.
Mule Hoof historic BA	1152	All known nests empty. No bald eagles.
Cedar Basin BA	1200	All known nests empty. No bald eagles.
Lone Pine BA	1215	Adult incubating in new nest #6.
George's Basin nest site	1222	All known nests empty. No bald eagles.
Show Low Lake BA	1243	One adult standing in nest #1.
Silver Creek BA	1255	Adult incubating in nest #2. Second adult perched by nest.
Talkalai BA	1432	Adult incubating.
San Carlos BA	1440	No new nests. One near-adult perched in area.
Suicide BA	1456	Adult incubating in nest #1.
Coolidge BA	1459	No new nests. One adult in area.
Granite Basin BA	1515	All known nests empty. No bald eagles.
March 13, 2014		
Riverside BA	0930	Two nestlings, 8-8.5 weeks old.
Granite Reef BA	0940	Adult brooding at least one hatchling.
Orme BA	0940	One adult standing in nest #7. Second adult in area.
Rodeo BA	0941	Adult feeding two nestlings, 3-4 weeks old.
Sycamore BA	0945	Two eggs in nest. Both adults off of nest perched in tree.
Doka BA	0946	All known nests empty. No bald eagles.

Table 13 continued.

Location	Time	Comments
Fort McDowell BA	0948	Adult feeding at least one hatchling. Second adult in area.
Box Bar BA	0958	All known nests empty. Two adults in area..
Needle Rock BA	0958	No new nests or bald eagles.
Bartlett BA	1000	Nest empty, failed.
Yellow Cliffs BA	1007	Adult in nest with at least one nestling, 2 weeks old.
Cliff BA	1012	Adult appeared to be incubating in new nest #7. Second adult in area.
Horseshoe BA	1017	Adult incubating.
Table Mountain BA	1027	Adult incubating, possibly brooding. Second adult in area.
East Verde BA	1033	One nestling, 3 weeks old. Adult flushed from nest, then flew back.
Coldwater BA	1041	All known nests empty. One adult in area.
Ladders BA	1043	Nest empty, failed.
Beaver BA	1049	One nestling, 4.5 week old.
Oak Creek BA	1054	Adult in nest brooding at least one nestling.
Oak Creek	1105	All known nests empty. Two adults in area north of Page Springs.
Tapco BA	1120	Two adults at new nest #3. Two eggs in nest. Appeared to find adults during an exchange.
Tower BA	1124	All known nests empty. No bald eagles.
Mormon Pocket nest site	1127	Adult golden eagle incubating in nest #2.
Perkinsville BA	1129	Adult incubating in nest #4.
Hell Point historic BA	1351	All known nests empty. No bald eagles.
Granite nest site	1359	Adult golden eagle incubating.
Sullivan Lake BA	1403	Adult in nest with two nestlings, 3 weeks old. Second adult in area.
Watson Lake nest site	1418	All known nests empty. No bald eagles.
Lynx BA	1426	Adult incubating.
Alamo BA	1500	Adult incubating in nest #4.
Ive's Wash BA	1507	Adult incubating in nest #6.
Pleasant BA	1614	Adult incubating in nest #3.
Whiskey Spring BA	1616	All known nests empty. No bald eagles.
Pee Posh Wetlands BA	1641	One nestling, 5.5 weeks old.
March 14, 2014		
Goldfield BA	0757	Two nestlings, 8-9 weeks old. Two adults in area.
Bulldog BA	0800	Nest empty, failed.
Bagley BA	0805	Three nestlings, 5 weeks old.
Saguaro BA	0807	Adult in nest with at least two nestlings, 2.5 weeks old.
Tortilla Creek BA	0810	Nest empty, failed.
Fish Creek BA	0817	Adult in nest with one nestling, 1-2 weeks old.
Horse Mesa BA	0820	Adult in nest with two nestlings, 2-3 weeks old.
Roosevelt Dam nest site	0825	All known nests empty. No bald eagles.
Rock Creek BA	0835	All known nests empty. No bald eagles.
Bachelor Cove BA	0841	All known nests empty. No bald eagles.
Tonto BA	0845	Adult at nest with one nestling, 2-3 weeks old.
Sheep BA	0850	All known nests empty. No bald eagles.
76 BA	0908	All known nests empty. One adult in area.
Armer Gulch BA	0925	Adult in nest with one nestling, 2 weeks old.
Pinto BA	0929	Adult incubating in nest #7. Second adult in area.
Pinal BA	0935	Two eggs in nest #3. One adult flying, unknown if flushed from nest.
Redmond BA	0939	All known nests empty. No bald eagles.
Cibecue BA	1106	All known nests empty. One adult in area.
Mule Hoof historic BA	1121	All known nests empty. No bald eagles.

Table 13 continued.

Location	Time	Comments
Cedar Basin BA	1130	All known nests empty. No bald eagles.
Lone Pine BA	1136	Nest empty, failed. Two adults in area.
George's Basin nest site	1150	All known nests empty. No bald eagles.
Greer Lakes BA	1210	Adult incubating in nest #3.
Silver Creek BA	1240	Adult brooding at least one small nestling, 1-2 weeks old.
Show Low Lake BA	1330	Adult incubating in nest #1.
Talkalai BA	1418	Adult in nest with one nestling, 5 weeks old.
San Carlos BA	1425	All known nests empty. One adult in area.
Suicide BA	1435	Adult in nest with one nestling 3-4 weeks old.
Coolidge BA	1440	All known nests empty. No bald eagles.
Granite Basin BA	1450	All known nests empty. No bald eagles.
Winkelman historic BA	1500	No new nests or bald eagles.
April 16, 2014		
Granite Reef BA	0748	One nestling, 5 weeks old. One adult in area.
Goldfield BA	0752	Two nestlings, 12 weeks old.
Bagley BA	0800	Two nestlings, 9-10 weeks old. One flushed and perched. One adult in area.
Saguaro BA	0804	Three nestlings, 7 weeks old.
Tortilla Creek BA	0806	All known nests empty. No bald eagles.
Fish Creek BA	0810	One nestling, 6 weeks old.
Horse Mesa BA	0814	Two nestlings, 6-7 weeks old.
Roosevelt Dam nest site	0820	All known nests empty. One immature in area.
Bachelor Cove BA	0828	All known nests empty. No bald eagles.
Tonto BA	0833	One nestling, 6.5 weeks old. One adult in area.
Sheep BA	0840	All known nests empty. Two adults perched in area.
76 BA	0852	One nestling, 4 weeks old, in new snag nest #5.
Armer Gulch BA	0908	One nestling, 6.5 week old. One adult in area.
Pinto BA	0912	Adult shading one nestling, 3-4 weeks old.
Pinal BA	0915	Nest empty, failed.
Redmond BA	0920	All known nests empty. No bald eagles.
Hess Creek nest site	0925	All known nests empty. No bald eagles.
Cibecue BA	1040	All known nests empty. One adult perched in area.
Cedar Basin BA	1108	All known nests empty. No bald eagles.
Lone Pine BA	1114	All known nests empty. One adult and two immatures in area.
Crescent BA	1142	Adult incubating in nest #1.
Greer BA	1148	Adult in nest incubating or brooding.
Talkalai BA	1342	Adult in nest with one nestling, 9 weeks old.
San Carlos BA	1349	All known nests empty. No bald eagles.
Suicide BA	1355	One nestling, 7-8 weeks old.
Coolidge BA	1357	No new nests or bald eagles.
Granite Basin BA	1405	All known nests empty. No bald eagles.
April 17, 2014		
Riverside BA	0748	One fledgling in area, second juvenile in nest.
Rodeo BA	0759	Two nestlings, 7-8 weeks old.
Sycamore BA	0801	Two unhatched eggs in nest, failed. No bald eagles.
Doka BA	0802	All known nests empty. No bald eagles.
Fort McDowell BA	0803	One nestling, 5-6 weeks old. Two adults in area.
Box Bar BA	0807	All known nests empty. No bald eagles.
Yellow Cliffs BA	0815	Two nestlings, 5 weeks old.

Table 13 continued.

Location	Time	Comments
Cliff BA	0822	One nestling, 3 weeks old. Adult flushed from nest, then flew back.
Horseshoe BA	0826	Nest empty, failed.
Table Mountain BA	0835	Adult incubating.
East Verde BA	0840	One nestling, 6.5-7 weeks old.
Coldwater BA	0847	All known nests empty. No bald eagles.
Beaver BA	0857	One nestling, 8.5-9 weeks old.
Oak Creek BA	0902	Two nestlings, 7 weeks old.
Oak Creek	0905	All known nests empty. No bald eagles.
Tapco BA	0925	Two unhatched eggs, failed. One adult in area.
Tower BA	0927	All known nests empty. No bald eagles.
Mormon Pocket nest site	0931	Nest empty, failed.
Perkinsville BA	0934	Adult in nest, incubating or brooding.
White Horse Lake BA	0945	Adult incubating in nest # 4.
Hell Point historic BA	1000	All known nests empty. No bald eagles.
Granite nest site	1007	Adult golden eagle in nest, appeared to be with very small nestling.
Sullivan Lake BA	1010	Two nestlings, 7-8 weeks old. One adult in area.
Lynx BA	1158	One adult at nest with one nestling, 3-4 weeks old.
Devil's Post historic BA	1240	All known nests empty. No bald eagles.
Burro BA	1253	All known nests empty. No bald eagles.
Alamo BA	1311	Nest empty, failed.
Ive's Wash BA	1317	Two nestlings, 3 weeks old. One adult flew to nest.
May 9, 2014		
Ive's Wash BA	0825	One nestling 5.5 weeks old. Two adults in area.
Lynx BA	1045	One nestling, 6-7 weeks old.
Watson Lake nest site	1050	All known nests empty. No bald eagles.
Sullivan Lake BA	1230	One nestling in nest, 10-11 weeks old. Two adults in area.
Granite nest site	1237	Adult golden eagle with one nestling, 4.5 weeks old.
Perkinsville BA	1245	Nest empty, failed. No bald eagles.
Oak Creek BA	1255	Nest empty, presume fledged. Two adults in area.
Beaver BA	1300	Nest empty, presume fledged.
East Verde BA	1340	One nestling, 10 weeks old. One adult in area.
Table Mountain BA	1350	Nest empty, failed.
Cliff BA	1400	Nest empty, failed.
Yellow Cliffs BA	1405	One nestling 8 weeks old.
Fort McDowell BA	1412	One nestling, 8-9 weeks old. One adult in area.
Rodeo BA	1418	Two nestlings, 10-11 weeks old.
May 21, 2014		
Granite Reef BA	0815	One nestling, 9.5 weeks old. One adult flushed, then flew back.
Bagley BA	0829	Two fledglings in area.
Saguaro BA	0840	One nestling dead in nest. No other eagles seen.
Fish Creek BA	0845	One nestling, 11 weeks old.
Horse Mesa BA	0850	One nestling, 12 weeks old.
Pinto BA	0902	One nestling, 8 weeks old.
76 BA	0943	Nest #5 fallen, failed.

APPENDIX E: ARMER GULCH BREEDING AREA SUMMARY

Table 14. Observed human activity and bald eagle behavior, Armer Gulch BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Drivers	20	15	--	--	--	--	--	35	45.5
OHVs	6	6	--	--	--	--	--	12	15.6
Small plane	9	--	--	--	--	--	--	9	11.7
Fisherman	4	1	--	--	--	--	--	5	6.5
Hunter	2	2	--	--	--	--	--	4	5.2
Boater	5	--	--	--	--	--	--	5	6.5
Helicopter	4	--	--	--	--	--	--	4	5.2
Military plane	--	2	--	--	--	--	--	2	2.6
Kayaker	1	--	--	--	--	--	--	1	1.3
Total	51	26	--	--	--	--	--	77	

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

Table 15. Observed forage events and success, Armer Gulch BA, Arizona, 2014.

Sex	Birds		Fish		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	3	1-2	1	1-0	4	1-3
Female	4	2-2	--	--	4	2-2
Total	7	3-4	1	1-0	8	3-5

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

Table 16. Observed prey types delivered to the nest, Armer Gulch BA, Arizona, 2014.

Sex	Fish	Unknown	Total	Percent
Male	19	7	26	61.9
Female	9	7	16	38.1
Total	28	14	42	
Percent	66.7	33.3		

Table 17. Observed prey species delivered to the nest, Armer Gulch BA, Arizona 2014.

Sex	Fish		Total	Percent
	Common carp	Sucker spp.		
Male	8	8	16	66.7
Female	5	3	8	33.3
Total	13	11	24	
Percent	54.2	45.8		

Table 18. Bald eagle habitat analysis at the Armer Gulch BA, Arizona, 2014.

Perch Location[1]	Perch Type[2]	Location[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
92.2 (N)	SM	RL	No	5	RS	UP
93.5 (M)	SM	RL	No	1	RS	UP
94.0 (K)	SM	RL	No	5	RS	UP
94.2 (I)	SM	RL	No	4	RS	UP
96.5 (E)	SM	RL	No	5	RS	UP
96.6 (F)	SM	RL	No	4	RS	UP
97.2 (L)	WO	RL	No	0	RS	DB
97.3 (O)	SM	RL	No	4	RS	UP
97.5 (P)	SM	RL	No	4	RS	UP
97.8 (J)	WO	RL	No	0	RS	DB
98.0 (H)	WO	RL	No	0	RS	DB
98.0 (Q)	SM	RL	No	5	RS	UP
98.2 (G)	WO	RL	No	0	RS	DB
99.3 (B)	SM	RL	No	5	IN	DB
n/a (A)	CM	NS	No	8	--	CW
n/a (C)	HS	NS	No	8	--	CW
n/a (D)	FP	NS	No	8	--	UP

[1]River kilometer (Hunt et al. 1992).
[2]CM=Cottonwood Medium/10-20m; FP=fence post; HS= hard snag (only main branches); SM=snag, mesquite; WO=willow.
[3]NS= nest area; RL=Roosevelt Lake (mostly north shore or willows in lake).
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8= >400m.
[5]RS=reservoir main body; IN=inflow of lake.
[6]CW=cottonwood grove, DB=dead bosque, UP=desert upland, SO=shore.

Table 19. Bald eagle habitat use at the Armer Gulch BA, Arizona, 2014.

River km[1]	PW[2,3]	PH	PP	PD	PV	PE	Total	Percent
92.2 (N)	--	135	--	--	--	--	135	2.7
93.5 (M)	--	71	--	--	--	--	71	1.4
94.0 (K)	--	635	--	--	--	--	635	12.6
94.2 (I)	--	31	--	--	--	--	31	0.6
96.5 (E)	--	15	--	--	--	--	15	0.3
96.6 (F)	--	18	--	--	--	--	18	0.4
97.2 (L)	--	105	--	--	--	--	105	2.1
97.3 (O)	--	61	--	--	--	--	61	1.2
97.5 (P)	--	60	--	--	--	--	60	1.2
97.8 (J)	--	9	--	--	--	--	9	0.2
98.0 (H)	--	39	--	--	--	--	39	0.8
98.0 (Q)	--	11	--	--	--	--	11	0.2
98.2 (G)	--	4	--	--	--	--	4	0.1
99.3 (B)	--	229	82	9	--	15	335	6.6
n/a (A)	76	--	103	33	10	--	222	4.4
n/a (C)	63	--	--	--	--	--	63	1.2
n/a (D)	228	--	--	22	--	--	250	5.0
Nest tree	2,698	--	192	74	16	--	2,980	59.1
Total	3,065	1,423	377	138	26	15	5,044	
Percent	60.8	28.2	7.5	2.7	0.5	0.3		

[1]River kilometer (Hunt et al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PH=perched hunting, PP = Perched preening, PD=perched drying, PV = Perched vocalizing, PE = Perched eating.

APPENDIX F: CLIFF BREEDING AREA SUMMARY

Table 20. Observed human activity and bald eagle behavior, Cliff BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Apache Helicopter	5	1	--	--	--	--	--	6	27.3
Fishermen	2	--	--	1	--	--	--	3	13.6
Small plane	1	1	--	--	--	--	--	2	9.1
Military jet	1	1	--	--	--	--	--	2	9.1
Sheriff Helicopter	--	2	--	--	--	--	--	2	9.1
AGFD biologist	--	--	--	2	--	--	--	2	9.1
Shooter	--	1	1	--	--	--	--	2	9.1
AGFD Helicopter	--	1	--	--	--	--	--	1	4.5
OHV/ATV	--	--	--	1	--	--	--	1	4.5
Helicopter	--	1	--	--	--	--	--	1	4.5
Total	9	8	1	4	--	--	--	22	

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

Table 21. Observed prey types delivered to the nest, Cliff BA, Arizona, 2014.

Sex	Fish	Unknown	Total	Percent
Male	3	1	4	21.1
Female	12	1	13	68.4
Unknown	2	--	2	10.5
Total	17	2	19	
Percent	89.5	10.5		

Table 22. Observed prey species delivered to the nest, Cliff BA, Arizona 2014.

Sex	Fish	Total	Percent
	Channel catfish		
Male	1	1	25.0
Female	3	3	75.0
Total	4	4	
Percent	100		

Table 23. Bald eagle habitat analysis at the Cliff BA, Arizona, 2014.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type	Land Type[5]
66.6	HS	Right	No	6	--	MB
67.0NT	CL	Right	Yes	5	--	MB
67.0	HS	Right	No	5	--	MB
67.3	ST	Right	No	5	--	MB
66.7	HS	Right	No	5	--	MB
67.5	CF	Left	Partial	1	--	CL

[1]River kilometer (Hunt et. al. 1992).
[2]CF=cliff ledge, CL=cottonwood large/20-30m, HS=hard snag (main branches only), ST=snag top.
[3]Side of river 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=>400m.
[5]CL=cliff, MB=mesquite bosque.

Table 24. Bald eagle habitat use at the Cliff BA, Arizona, 2014.

River km[1]	PW[2,3]	PP	PV	PE	PK	PH	Total	Percent
66.6	--	--	2	--	--	--	2	<0.1
66.7	--	--	--	--	--	20	20	0.2
67.0	6,709	745	44	25	5	--	7,528	92.6
67.3	406	30	1	--	--	--	437	5.4
67.5	--	--	--	--	--	111	111	1.4
Total	7,115	775	47	25	5	131	8,098	
Percent	87.9	9.5	0.5	0.3	<0.1	1.6		

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

APPENDIX G: CRESCENT BREEDING AREA SUMMARY

Table 25. Observed human activity and bald eagle behavior, Crescent BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Anglers	796	--	--	--	--	--	--	796	64.2
Boater - fishing	167	--	--	--	--	--	--	167	13.5
Birder	67	--	--	--	--	--	--	67	5.4
Picnickers	56	--	--	--	--	--	--	56	4.5
Drivers	37	--	--	--	--	--	--	37	3.0
Float tubers fishing	35	--	--	--	--	--	--	35	2.8
Canoe - kayak	33	--	--	--	--	--	--	33	2.7
Hikers	18	--	1	1	--	2	--	19	1.5
Agency Workers	13	--	--	--	--	--	--	13	1.0
Photographer	6	--	--	--	--	--	--	6	0.5
Campers	4	--	--	--	--	--	--	4	0.3
Small Plane	4	--	--	1	--	--	--	4	0.3
Motorcycle	--	--	1	--	--	--	--	1	0.1
Gunshots	1	--	--	--	--	--	--	1	0.1
AGFD Biologist	1	--	--	--	--	--	--	1	0.1
Total	1,238	--	2	2	--	2	--	1,240	

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

Table 26. Observed forage events and success, Crescent BA, Arizona, 2014.

Sex	Fish		Reptiles		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	28	27-1	1	1-0	29	28-1
Female	34	33-1	--	--	34	33-1
Total	62	60-2	1	1-0	63	61-2

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

Table 27. Observed prey types delivered to the nest, Crescent BA, Arizona, 2014.

Sex	Fish (Rainbow Trout)	Reptiles (water snake)	Total	Percent
Male	25	1	26	44.1
Female	33	--	33	55.9
Total	58	1	59	
Percent	98.3	1.7		

Table 28. Bald eagle habitat analysis at the Crescent BA, Arizona, 2014.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type	Land Type[5]
2.0	HS	West	Partial	6	--	CF
2.05	SC	West	Yes	4	--	CF
2.1a	PS	West	Yes	6	--	CF
2.1b	HS	West	--	8	--	CF
2.15	PO	West	Partial	6	--	CF
2.2a	PO	West	Yes	8	--	CF
2.2b	HS	West	Partial	8	--	CF
2.25	HS	West	No	8	--	CF
2.3a	PO	West	Yes	7	--	CF
2.3b	PO	West	Yes	8	--	CF
2.4	SC	West	No	8	--	CF
2.5	PO	West	No	6	--	CF

[1]Lake kilometer (clockwise from north boat ramp) .
[2]HS=hard snag (main branches only), PO=pine/conifer old growth, PS=pine/conifer 2nd growth, SC=snag, conifer.
[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=>400m.
[5]CF=coniferous forest.

Table 29. Bald eagle habitat use at the Crescent BA, Arizona, 2014.

Lake km[1]	PW[2,3]	PR	PP	ET	PV	PK	Total	Percent
2.0	1,002	150	--	--	--	--	1,152	3.6
2.05	435	--	--	--	--	--	435	1.3
2.1	8,659	2,224	28	--	--	--	10,911	33.8
2.15	298	--	--	--	--	--	298	0.9
2.2	826	130	--	--	--	--	956	3.0
2.25	9,274	345	--	--	--	--	9,619	29.8
2.3	5,013	904	11	28	3	3	5,962	18.5
2.4	2,776	--	--	--	--	--	2,776	8.6
2.5	169	--	--	--	--	--	169	0.5
Total	28,452	3753	39	28	3	3	32,278	
Percent	88.2	11.6	0.1	0.1	<0.1	<0.1		

[1]Lake kilometer (clockwise from north boat ramp).
[2]Observation time (minutes).
[3]PW=perched watching, PR=perched roosting, PP=perched preening, ET=eating in tree, , PV=perched vocalizing, PK=perched with prey.

APPENDIX H: GOLDFIELD-KERR BREEDING AREA SUMMARY

Table 30. Observed human activity and bald eagle behavior, Goldfield BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Helicopters	66	23	2	--	--	--	--	91	24.6
Horseback rider	62	1	1	--	--	--	--	69	18.6
Small Plane	51	12	1	--	--	--	--	64	17.3
Apache helicopter	31	17	4	--	--	--	--	52	14.1
Hiker	27	--	--	--	--	--	--	27	7.3
Driver	10	10	2	--	--	--	--	22	5.9
Tuber	9	1	--	--	--	--	--	10	2.7
Kayak/canoe	9	--	--	1	--	--	--	10	2.7
Photographer	9	--	--	--	--	--	--	9	2.4
Picnicker	3	--	--	--	--	--	--	3	0.8
Sheriff helicopter	1	2	--	--	--	--	--	3	0.8
Agency worker	2	--	--	--	--	--	--	2	0.5
Rafter	2	--	--	--	--	--	--	2	0.5
Angler	2	--	--	--	--	--	--	2	0.5
Shooter	--	1	--	--	--	--	--	1	0.3
OHV	--	1	--	--	--	--	--	1	0.3
Birder	1	--	--	--	--	--	--	1	0.3
Drone	--	1	--	--	--	--	--	1	0.3
Total	290	69	10	1	--	--	--	370	

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

Table 31. Observed prey types delivered to the nest, Goldfield BA, Arizona, 2014.

Sex	Fish	Mammals	Birds	Reptiles	Unknown	Total	Percent
Male	35	23	8	4	41	111	70.7
Female	21	4	4	3	13	45	28.7
Unknown	--	--	--	--	1	1	0.6
Total	56	27	12	7	55	157	
Percent	35.7	17.2	7.6	4.5	35.0		

Table 32. Observed prey species delivered to the nest, Goldfield BA, Arizona 2014.

Sex	Fish		Reptiles	Mammals	Birds		Total	Percent
	[1]SU	CP	TU	Rodent	WS	MD		
Male	8	1	4	4	1	--	18	69.2
Female	4	1	1	--	1	1	8	30.8
Total	12	2	5	4	2	1	26	
Percent	46.2	7.7	19.2	15.4	7.7	3.8		

[1]SU=sucker species, CP=common carp, TU=mud turtle, WS=waterfowl species, MD=mourning dove.

Table 33. Bald eagle habitat analysis at the Goldfield BA, Arizona, 2014.						
Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
9.4	CM	Right	Partial	1	RI	MB
9.5a	SG	Right	Partial	2	RI	CW
9.5b	CM	Right	Partial	2	RI	MB
9.6a	CM	Right	Yes	1	RI	MB
9.6b	HS	Right	No	1	RI	MB
9.6c	HL	Right	No	3	RI	UP
9.7a	CM	Right	Partial	2	RI	WT
9.7b	SP	Right	Partial	2	RI	WT
9.8a	HS	Right	No	3	RI	MB
9.8b	HL	Right	No	3	RI	UP
9.9a	CM	Left	Partial	2	RI	MB
9.9b	HS	Right	No	3	RI	MB
10.0	HS	Right	No	2	RI	MB
10.2a	HS	Right	No	1	RI	WT
10.2b	CL	Right	No	1	RI	WT
10.3a	HL	Right	No	2	RI	UP
10.3b	CS	Right	Partial	2	RI	MB
10.4	SO	Right	No	1	RI	SO
10.5	SO	Right	No	1	RI	GB
11.1	CT	Right	No	1	RU	CL

[1]River kilometer (Hunt et. al. 1992).
[2]CL=cottonwood large (20-30+m), CM=cottonwood medium/10-20+m, CS=cottonwood small/0-10 m, HL=hillside, HS=hard snag (main branches only), SG=soft snag (dead but branches still intact), SO=shore, SP=stump.
[3]Side of river 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=>400m.
[5]RI=riffle, RU=run.
[6]CW=cottonwood grove, CL=cliffs, GB=gravel bar, MB=mesquite bosque, SO=shore, UP=desert upland, WT=willow thicket.

Table 34. Bald eagle habitat use at the Goldfield BA, Arizona, 2014.									
River km[1]	PW[2,3]	PP	PD	PV	ET	FD	CO	Total	Percent
9.4	322	--	--	2	--	--	--	324	1.5
9.5	44	--	--	--	5	--	--	49	0.2
9.6	407	36	--	--	17	66	--	526	2.5
9.7	5,409	240	13	47	--	24	--	5,733	27.1
9.8	68	10	--	--	--	--	--	78	0.4
9.9	565	--	--	7	16	--	--	588	2.8
10.0	--	--	--	--	9	--	--	9	<0.1
10.2	12,817	196	340	77	--	--	6	13,436	63.5
10.3	285	28	--	--	53	--	--	366	1.7
11.1	54	--	--	--	--	--	--	54	0.3
Total	19,971	510	353	133	100	90	6	21,163	
Percent	94.4	2.4	1.7	0.6	0.5	0.4	<0.1		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, PD=perched drying, PV=perched vocalizing, ET=eating in tree, FD=feeding young, CO=copulating.

APPENDIX I: GRANITE REEF BREEDING AREA SUMMARY

Table 35. Observed human activity and bald eagle behavior, Granite Reef BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	X	Total	Percent
Canoe/Kayak	348	66	--	13	--	34	9	1	471	51.0
Helicopter (Apache)	42	37	--	1	--	5	12	--	97	10.5
Hiker	59	--	--	1	--	3	3	--	66	7.1
Fisherman	58	--	--	--	--	4	1	--	63	6.8
Rafter	42	11	--	2	--	5	1	--	61	6.6
Fishing by boat	41	9	--	1	--	2	1	--	54	5.8
Helicopter (civilian)	21	8	--	1	--	1	4	--	35	3.8
Swimmer	13	3	--	--	--	1	--	--	17	1.8
Birder	10	--	--	--	--	1	--	--	11	1.2
Picnicker	11	--	--	--	--	--	--	--	11	1.2
Nestwatcher	7	4	--	--	--	--	--	--	11	1.2
Photographer	8	--	--	--	--	--	--	--	8	0.9
Small plane	4	--	--	--	--	--	--	--	4	0.4
Cattle rancher	3	--	--	--	--	1	--	--	4	0.4
Boater	3	--	--	--	--	--	--	--	3	0.3
Motorized parachute	1	--	--	1	--	1	--	--	3	0.3
Motorcycle	--	2	--	--	--	--	--	--	2	0.2
Gunshot	--	1	--	--	--	--	--	--	1	0.1
Camper	1	--	--	--	--	--	--	--	1	0.1
Tuber	1	--	--	--	--	--	--	--	1	0.1
Total	673	141	--	20	--	58	31	1	924	

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

Table 36. Observed forage events and success, Granite Reef BA, Arizona, 2014.

Sex	Fish		Birds		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	8	7-1	4	1-3	3	1-2	15	9-6
Female	4	4-0	--	--	3	1-2	7	5-2
Unknown	--	--	--	--	1	1-0	1	1-0
Total	12	11-1	4	1-3	7	3-4	23	15-8

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

Table 37. Observed prey types delivered to the nest, Granite Reef BA, Arizona, 2014.

Sex	Fish	Mammals	Birds	Unknown	Total	Percent
Male	8	1	1	4	14	63.6
Female	7	--	--	1	8	36.4
Total	15	1	1	5	22	
Percent	68.2	4.5	4.5	22.7		

Table 38. Observed prey species delivered to the nest, Granite Reef BA, Arizona 2014.

Sex	Fish	Birds	Mammals	Total	Percent
	Common carp	Waterfowl species	Ground squirrel		
Male	1	1	1	3	100
Total	1	1	1	3	
Percent	33.3	33.3	33.3		

Table 39. Bald eagle habitat analysis at the Granite Reef BA, Arizona, 2014.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
-0.5	CL	Right	Partial	1	RU	MB
0.2	MS	Right	No	2	PO	MB
0.4	CL	Right	Yes	2	PO	MB
1.5	CM	Right	No	2	RU	TX
1.5	SG	Right	No	4	--	MB
1.5	CM	Right	Partial	3	--	MB
1.5	CM	Right	Partial	4	--	MB
1.7	SM	Right	Partial	1	RU	MB
1.7	CM	Right	Partial	1	RU	MB
1.9	SM	Right	No	1	RU	MB
2.0	SM	Right	No	1	RU	MB
2.4	HS	Left	No	1	RU	TX
2.7	SG	Left	Partial	1	RU	MB
3.0	CL	Right	Partial	3	RU	MB
3.0	DW	Right	No	1	RU	GB
3.1	SG	Right	No	5	--	MB
3.6	SG	Left	Partial	4	RU	MB
3.7	SG	Left	No	--	--	MB

[1]River kilometer (Hunt et. al. 1992).
[2]CL=cottonwood large (20-30+m), CM=cottonwood medium (10-20+m), DW=drift wood, HS=hard snag, SG=soft snag, SM=snag, mesquite.
[3]Side of river 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=>400m.
[5]PO=pool, RU=run.
[6]GB=gravel bar, MB=mesquite bosque, TX=tamarisk thicket.

Table 40. Bald eagle habitat use at the Granite Reef BA, Arizona, 2014.

River km[1]	PW[2,3]	PH	PP	PD	PX	DW	PU	CL	PE	OT	Total	Percent
-0.5	9	11	--	--	--	--	--	--	--	--	20	0.1
0.2	2	--	--	--	--	--	--	--	--	--	2	<0.1
0.4	--	--	--	--	--	--	--	--	--	2	2	<0.1
0.5	--	15	--	--	--	--	--	--	--	--	15	0.1
1.0	1	--	--	--	--	--	--	--	--	--	1	<0.1
1.5	3,819	9	90	28	130	--	47	14	41	64	4,242	24.3
1.6	40	--	--	1	--	253	--	--	24	242	560	3.2
1.7	6,441	--	602	256	132	8	--	29	48	47	7,563	43.4
1.8	--	--	--	--	--	--	--	--	--	1	1	<0.1
1.9	8	--	--	--	--	--	--	--	--	--	8	<0.1
2.0	79	17	58	--	--	--	--	--	--	2	156	0.9
2.3	6	--	--	--	--	--	--	--	--	--	6	<0.1
2.5	117	88	--	--	--	--	--	--	--	--	205	1.2
2.6	13	--	--	--	--	--	--	--	--	--	13	0.1
2.7	162	1,987	--	--	4	--	--	115	--	--	2,268	13.0
2.9	--	--	--	--	7	--	--	--	--	--	7	0.0
3.0	1,105	703	--	--	--	--	155	--	--	5	1,968	11.3
3.1	192	--	--	--	--	--	--	--	--	--	192	1.1
3.4	6	--	--	--	--	--	--	--	--	--	6	<0.1
3.5	--	--	--	--	--	--	--	--	--	8	8	<0.1
3.6	2	51	--	--	--	--	--	--	--	--	53	0.3
3.7	23	8	24	--	--	--	--	--	--	--	55	0.3
4.5	1	--	--	--	--	--	--	--	--	--	1	<0.1
4.8	--	--	--	--	--	--	9	--	--	--	9	0.1
5.0	79	--	--	--	--	--	--	--	--	--	79	0.5
Total	12,105	2,889	774	285	273	261	211	158	113	371	17,440	
Percent	69.4	16.6	4.4	1.6	1.6	1.5	1.2	0.9	0.6	2.1		

[1]River kilometer (Hunt et. al. 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PH=perched hunting, PP=perched preening, PD=perched, drying, PX=perched various, DW=drinking water, PU=perched unknown, CL=perched close to mate, PE=perched eating, OT=other (includes standing on shore, perched with prey, perched vocalizing, standing in water, gathering nest materials, perched with nest material, bathing, and various or unexplained activities).

APPENDIX J: GREER BREEDING AREA SUMMARY

Table 41. Observed human activity and bald eagle behavior, Greer BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Vehicle	168	25	--	1	--	387	--	581	83.5
OHV	9	3	--	1	--	60	--	73	10.5
Jogger	8	--	--	--	--	4	--	12	1.7
Bicyclist	1	--	--	--	--	8	--	9	1.3
Hiker	1	2	--	--	--	4	--	7	1.0
Fisherman	2	1	--	2	--	2	--	7	1.0
Photographer	4	--	--	--	--	1	--	5	0.7
Kayak	--	--	--	1	--	--	--	1	0.1
Helicopter	--	--	--	--	--	1	--	1	0.1
Total	193	31	--	5	--	467	--	696	

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

Table 42. Observed forage events and success, Greer BA, Arizona, 2014.

Sex	Fish		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	6	4-2	1	1-0	7	5-2
Female	3	3-0	--	--	3	3-0
Total	9	7-2	1	1-0	10	8-2

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

Table 43. Observed prey types delivered to the nest, Greer BA, Arizona, 2014.

Sex	Fish	Unknown Carrion	Birds	Total	Percent
Male	32	9	5	46	70.8
Female	8	7	4	19	29.2
Total	40	16	9	65	
Percent	61.5	24.6	13.8		

Table 44. Observed prey species delivered to the nest, Greer BA, Arizona 2014.

Sex	Fish		Birds		Total	Percent
	TS[1]	CP	AC	WS		
Male	32	--	5	--	37	75.5
Female	6	2	3	1	12	24.5
Total	38	2	8	1	49	
Percent	77.6	4.1	16.3	2.0		

[1] TS=Trout species, CP=Carp, AC=American coot, WS=Waterfowl species.

Table 45. Bald eagle habitat analysis at the Greer BA, Arizona, 2014.

Perch	Perch Type[1]	Side	Shade	Distance to H_2O[2]	H_2O Type[3]	Land Type[4]
Nest Tree	PS	--	Partial	4,5	RS	CF
P1	HS	--	Partial	1	RS	CF
P2	HS	--	Partial	3	RS	CF
P3	PS	--	Yes	1	RS	CF
P4	PS	--	Partial	1,2	RS	CF
P5	GR	--	Yes	1	RS	CF
P6	SO	--	Partial	1	RS	CF
P7	SO	--	No	1	RS	SO
P8	PS	--	No	4	RS	CF
P9	PS	--	Partial	1,2	RS	CF
P10	SO	--	No	1	RS	SO
P11	LG	--	No	1	RS	SO
P12	FP	--	No	1	RS	MD
P13	ST	--	Partial	3,4	RS	CF
P14	PS		Partial	2,3	RS	CF
P15	PS	--	No	1	RS	CF
P16	ST	--	Partial	5	RS	CF
P17	SO	--	No	1	RS	CF
P18	PS	--	No	3	RS	CF
P19	PS	--	No	5	RS	CF
P20	HS	--	Yes	2	RS	MD
P21	ST	--	Partial	4	RS	CF
P22	PO	--	P	5	RS	CF
P23	PO	--	Partial	5	RS	CF
P24	PO	--	Partial	4	RS	CF
P25(F12)	HS	--	No	4	RU	CF
P26(F10)	SS	--	No	4	RU	CF
P27(F9)	HS	--	Partial	4	RU	CF
P28	PS	--	Yes	3	RS	CF
P29(F18)	HS	--	Yes	5	RS	CF
P30	PS	--	Yes	1,2	RS	CF
P31	PS	--	Yes	3	RS	CF

[1]FP=fence post, GR=ground, HS=hard snag (main branches only), LG=log, PO=Pine/Conifer, old growth/20-30+ m, PS=pine/conifer 2nd growth, SO=shore, ST=snag top.

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

[3]RS=reservoir main body, RU=run.

[4]CF=coniferous forest.

Table 46. Adult Bald Eagle Habitat Use, Greer BA, Arizona, 2014.

Perch	PW[1,2]	PH	PP	PK	PE	PV	DW	PG	PX	PI	Total	Percent
Nest Tree	2,591	--	31	177	57	--	--	--	2	--	2,858	20.8
P1	462	246	76	--	--	81	--	--	--	--	865	6.3
P2	45	--	--	--	--	--	--	--	--	--	45	0.3
P3	6	11	--	--	--	--	--	--	--	--	17	0.1
P4	262	245	--	--	--	--	--	--	--	--	507	3.7
P5	--	--	--	--	6	--	--	--	--	--	6	<0.1
P6	--	--	--	--	--	--	19	16	--	--	35	0.3
P7	--	--	--	--	--	--	10	--	1	--	11	0.1
P8	5	--	--	--	--	--	--	--	--	--	5	<0.1
P9	845	1,628	130	--	--	3	--	--	--	--	2,606	19.0
P10	10	36	--	--	22	--	5	--	--	--	73	0.5
P11	--	--	--	--	--	--	--	--	11	--	11	0.1
P12	11	--	--	--	--	--	--	--	--	--	11	0.1
P13	93	--	--	--	--	2	--	--	--	1	96	0.7
P14	1,594	262	156	--	--	--	--	--	--	--	2,012	14.6
P15	--	10	--	--	--	--	--	--	--	--	10	0.1
P16	787	--	--	--	--	--	--	--	--	1	788	5.7
P17	21	44	--	--	--	--	27	27	--	--	119	0.9
P18	--	65	--	--	--	--	--	--	--	--	65	0.5
P19	26	--	--	--	--	--	--	--	--	--	26	0.2
P21	529	27	--	--	--	--	--	--	--	--	556	4.0
P22	43	--	--	--	--	--	--	--	--	--	43	0.3
P23	13	--	--	--	--	--	--	--	--	--	13	0.1
P24	1,941	--	48	--	--	--	--	--	--	--	1,989	14.5
P25	--	--	--	--	--	--	--	--	5	--	5	<0.1
P26	3	--	--	--	--	--	--	--	--	--	3	<0.1
P27	342	--	--	--	--	--	--	--	--	--	342	2.5
P28	153	64	--	--	--	--	--	--	--	--	217	1.6
P29	38	--	--	--	--	--	--	--	--	--	38	0.3
P30	210	93	16	--	21	--	--	--	--	--	340	2.5
P31	29	--	--	--	--	--	--	--	--	--	29	0.2
Total	10,059	2,731	457	177	106	86	61	43	19	2	13,741	
Percent	73.2	19.9	3.3	1.3	0.8	0.6	0.4	0.3	0.1	<0.1		

[1]Observation time (minutes).

[2] PW=perched watching, PH=perched hunting, PP=perched preening, PK=perched with prey, PE=perched eating, PV= perched vocalizing, DW=drinking water, PG=perched on the ground, PX=perched, various, PI=perched, interaction.

APPENDIX K: LUNA BREEDING AREA SUMMARY

Table 47. Observed human activity and bald eagle behavior, Luna BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Fisherman	362	--	--	1	--	--	--	363	39.2
Boaters (fishing)	147	--	--	1	--	--	--	148	16.0
Drivers	102	--	--	--	--	--	--	102	11.0
Birders	81	--	--	--	--	--	--	81	8.8
Picnickers	51	--	--	--	--	--	--	51	5.5
Hikers	49	1	--	--	--	--	--	50	5.4
Float Tubers (fishing)	39	--	--	--	--	--	--	39	4.2
Agency Workers	39	--	--	--	--	--	--	39	4.2
Kayaks/ Canoes	15	--	--	--	--	--	--	15	1.6
Photographers	11	--	--	--	--	--	--	11	1.2
Military Jet	5	--	1	1	--	--	--	7	0.8
Kayak/Canoe (fishing)	6	--	--	--	--	--	--	6	0.6
Small Planes	6	--	--	--	--	--	--	6	0.6
Military Helicopter	3	--	--	--	--	--	--	3	0.3
All Others	4	--	--	--	--	--	--	4	0.4
Total	920	1	1	3	--	--	--	925	

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

Table 48. Observed forage events and success, Luna BA, Arizona, 2014.

Sex	Birds		Fish		Carrion		Mammals		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U	E	S-U	E	S-U
Male	33	27-6	13	11-2	1	1-0	1	1-0	1	1-0	49	41-8
Female	31	30-1	13	12-1	--	--	--	--	1	1-0	45	43-2
Total	64	57-7	26	23-3	1	1-0	1	1-0	2	2-0	94	84-10

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

Table 49. Observed prey types delivered to the nest, Luna BA, Arizona, 2014.

Sex	Birds	Fish	Carrion	Unknown	Total	Percent
Male	26	10	1	--	37	52.1
Female	22	11	--	1	34	47.9
Total	48	21	1	1	71	
Percent	67.6	29.6	1.4	1.4		

Table 50. Observed prey species delivered to the nest, Luna BA, Arizona 2014.

Sex	Birds				Fish		Total	Percent
	AC	CG	RU	GA	RT[1]	CT		
Male	24	1	--	1	9	1	36	52.2
Female	19	2	1	--	10	1	33	47.8
Total	43	3	1	1	19	2	69	
Percent	62.3	4.3	1.4	1.4	27.5	2.9		

[1]AC=American coot, CG=Canada goose, RU=ruddy duck, GA=gadwall, RT=rainbow trout, CT=cutthroat trout.

Table 51. Bald eagle habitat analysis at the Luna BA, Arizona, 2014.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
0.1	PS	R – E	No	1	RS	CF
0.7	SH	R – E	No	2	RC	CF
1.6	PO	R - E	Yes	2	RS	CF
1.8	PS	R - E	Yes	1	RC	CF
1.9	PS	R – NE	Yes	1	RC	CF
2.0a	PS	R -E	Yes	1	RC	CF
2.0b	SH	R – N	Yes	7	--	CF
2.1	PO	R – N	No	7	--	CF
2.2	SH	L – N	No	7	--	CF
2.3a	PO	L – N	Partial	7	--	CF
2.3b	PO	R - N	Yes	7	--	CF
2.4a	SH	L – N	No	7	--	CF
2.4b	PS	L – N	Yes	7	--	CF
2.5	PS	L – NW	No	2	--	CF
2.6a	WF	L – NW	No	1	RS	CF
2.6b	SC	L – NW	No	6	--	CF
2.7	PS	L – NW	No	2	RS	CF
2.8	SH	L – NW	Yes	7	--	CF
3.0	PS	L – NW	Yes	2	--	CF
3.5	ST	L – NW	No	2	RC	CF
4.5	FP	R - SW	No	1	RC	CF
4.6	PS	R – SW	No	1	RC	CF
5.1a	FP	R – SW	No	1	RC	CF
5.1b	PO	R – SW	Yes	8	--	CF

[1]Lake kilometer (counterclockwise from boat ramp).
[2]FP=fence post, PO=Pine/Conifer, old growth/20-30+ m, PS=pine/conifer 2nd growth, SC=snag conifer, SH=hard snag (main branches only), ST=snag top, WF=waterfowl closure sign.
[3]Direction from observation point. L=left, R=right, E=east, NE=northeast, N=north, NW=northwest, SW=southwest
[4]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>400m.
[5]RS=reservoir main body, RC=reservoir cove.
[6]CF=coniferous forest.

Table 52. Bald eagle habitat use at the Luna BA, Arizona, 2014.

River km[1]	PW[2,3]	PR	PH	PP	CL	ET	PV	Total	Percent
0.1	27	--	--	--	--	--	--	27	0.1
0.7	29	--	--	--	--	--	--	29	0.1
1.6	--	--	8	--	--	--	--	8	<0.1
1.8	--	--	16	--	--	--	--	16	<0.1
1.9	121	--	--	--	--	--	--	121	0.3
2.0	3	37	--	--	--	--	--	40	0.1
2.1	327	198	--	--	--	--	--	525	1.2
2.2	2,536	433	--	16	--	--	--	2,985	6.6
2.3	1,721	531	--	15	--	5	10	2,282	5.1
2.4	25,927	4981	3	511	81	--	--	31,503	70.1
2.5	430	--	--	4	--	--	--	434	1.0
2.6	950	68	202	4	--	12	--	1,236	2.7
2.7	950	--	639	--	--	20	--	1,609	3.6
2.8	157	--	108	--	--	12	--	277	0.6
3.0	299	--	63	--	--	--	--	362	0.8
3.4	24	--	--	--	--	--	--	24	0.1
3.5	1,190	--	189	--	--	--	--	1,379	3.1
4.0	--	--	17	--	--	--	--	17	<0.1
4.4	38	--	59	--	--	--	--	97	0.2
4.6	113	--	258	--	--	--	--	371	0.8
5.1	1,050	427	134	8	--	--	--	1,619	3.6
5.2	6	--	--	--	--	--	--	6	<0.1
Total	35,898	6,675	1,696	558	81	49	10	44,967	
Percent	79.8	14.8	3.8	1.2	0.2	0.1	<0.1		

[1]Lake kilometer (counterclockwise from boat ramp).
[2]Observation time (minutes).
[3]PW=perched watching, PR=perched roosting, PH=perched hunting, PP=perched preening, CL=perched close to mate, ET=eating in tree, PV=perched vocalizing.

APPENDIX L: PINTO BREEDING AREA SUMMARY

Table 53. Observed human activity and bald eagle behavior, Pinto BA, Arizona 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Gunfire	17	--	4	--	--	--	--	21	53.8
Small plane	5	--	--	--	--	--	1	6	15.4
Fisherman	4	--	--	--	--	--	--	4	10.3
Jet	2	1	--	--	--	--	--	3	7.7
Military Jet	2	--	--	--	--	--	--	2	5.1
Apache Helicopter	--	--	--	--	--	--	2	2	5.1
Helicopter	--	--	--	1	--	--	--	1	2.6
Total	30	1	4	1	--	--	3	39	

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

Table 54. Observed prey types delivered to the nest, Pinto BA, Arizona, 2014.

Sex	Fish	Mammals	Total	Percent
Male	8	--	8	80.0
Female	1	1	2	20.0
Total	9	1	10	
Percent	90.0	10.0		

Table 55. Observed prey species delivered to the nest, Pinto BA, Arizona 2014.

Sex	Fish			Mammals	Total	Percent
	CS[1]	SH	CP	RS		
Male	1	1	1	--	3	75.0
Female	--	--	--	1	1	25.0
Total	1	1	1	1	4	
Percent	25.0	25.0	25.0	25.0		

[1]CS=Catfish species, SH=Shad (*Dorosoma petenense*), CP=Common carp, RS=Rabbit species.

Table 56. Bald eagle habitat analysis at the Pinto BA, Arizona, 2014.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
101.5	RI	Right	Partial	2	RI	CL
101.6	CT	Right	No	1	RI	CL
101.9	CT	Right	Partial	3	RI	CL
102.2	CF	Right	Partial	2	RI	CL
102.4	CF	Right	Partial	2	RI	CL
102.4	CF	Right	Partial	2	RI	CL
102.7	CF	Right	Partial	1	RI	CL
102.8	CF	Right	No	1	RI/RB	CL
102.9	CF	Right	Partial	1	RI	CL
103.0	CF	Right	Partial	1	RI	CL
103.1	CF	Right	Partial	1	RI	CL
103.1	CF	Right	Partial	1	RI	CL
103.2	CT	Right	Partial	3	RU	CL
103.2	CF	Right	Partial	2	RU	CL
103.2	CF	Right	Partial	2	RI	CL
103.3	CF	Right	Partial	2	RU	CL
103.4	CF	Right	Partial	2	RB	UP
103.4	CF	Right	Partial	2	RI	UP
103.5	HS	Right	No	1	RI	WT
103.6	SS	Right	No	1	RU/RB	TX
103.7	HS	Right	No	3	RI	TX
104.1	HS	Right	No	3	RI	TX
104.1	HS	Right	No	3	RI	TX
104.1	SS	Right	No	1	RI	TX
104.1	SB	Middle	No	1	RI	GB
104.1	SS	Right	No	1	RI	TX
104.1	SB	Middle	No	1	RI	GB
104.2	HS	Right	No	5	RI	TX
104.2	HS	Right	No	5	RI	TX
104.2	HS	Right	No	1	RI	TX
104.3	HS	Right	No	5	RU	TX
104.3	NEST	Right	No	5	RU	TX
104.7	HS	Left	No	2	RU	TX

[1]River kilometer (Hunt et. al. 1992).
[2]CF=cliff ledge, CT=cliff top, HS=hard snag (main branches only), RI=ridge, SB=sand bar, SS=soft snag (dead but branches still intact).
[3]Side of river 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=>400m.
[5]RB=river bend, RI=riffle, RU=run.
[6]CL=cliffs, GB=gravel bar, TX=tamarisk thicket, UP=desert upland, WT=willow thicket.

Table 57. Bald eagle habitat use at the Pinto BA, Arizona, 2014.

River km[1]	PW[2,3]	PH	PP	SL	FD	FR	FU	PV	FX	OT	Total	Percent
100.1	--	--	--	3	--	--	--	--	--	--	3	0.1
101.5	32	--	--	--	1	--	1	--	--	--	34	1.6
101.6	123	--	--	--	--	--	--	--	--	--	123	5.9
101.9	--	71	--	--	--	--	--	--	--	1	72	3.4
102.0	--	--	--	8	--	--	--	--	--	--	8	0.4
102.2	--	92	--	--	--	--	2	--	--	2	96	4.6
102.5	--	--	--	5	--	--	--	--	--	3	8	0.4
102.6	--	--	--	--	2	--	2	--	--	--	4	0.2
102.8	9	--	--	1	1	--	--	--	--	1	12	0.6
102.9	22	--	--	--	--	--	--	--	--	--	22	1.1
103.0	--	111	--	--	--	--	--	--	--	--	111	5.3
103.1	38	--	--	--	1	--	1	--	--	--	40	1.9
103.2	240	--	--	--	1	--	--	--	--	1	242	12.0
103.3	5	--	--	--	1	--	--	--	--	--	6	0.3
103.4	96	--	--	--	2	--	--	--	--	1	99	4.7
103.5	25	--	--	--	--	--	--	--	--	2	27	1.3
103.6	8	--	--	--	--	--	--	11	--	2	21	1.0
103.8	--	--	--	--	1	--	--	--	1	--	2	0.1
103.9	--	--	--	--	--	1	--	--	--	5	6	0.3
104.0	2	--	--	--	--	--	--	--	1	1	4	0.2
104.1	388	22	24	2	5	11	1	--	7	15	475	23.0
104.2	295	--	25	7	3	1	1	1	2	4	339	16.0
104.3	209	--	42	--	11	4	3	1	1	17	288	14.0
104.4	2	--	--	8	1	--	--	--	--	1	12	0.6
104.5	--	--	--	15	--	--	--	--	--	--	15	0.7
104.6	--	--	--	--	--	--	--	--	--	1	1	<0.1
105.0	--	--	--	--	--	--	2	--	--	--	2	0.1
106.4	--	--	--	14	--	--	--	--	1	--	15	0.7
106.5	--	--	--	4	--	--	--	--	--	--	4	0.2
108.9	--	--	--	--	--	--	1	--	--	--	1	<0.1
110.0	--	--	--	--	--	--	--	--	--	1	1	<0.1
Total	1,494	296	91	67	30	17	14	13	13	58	2,093	
Percent	71.4	14	4.3	3.2	1.4	0.8	0.7	0.6	0.6	2.8		

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

[2]Observation time (minutes).

[3]PW=perched watching, PH=perched hunting, PP=perched preening, SL=soaring over land, FD=flying downstream, FR=flying to river, FU=flying upstream, PV=perched vocalizing, FX=flying interaction, OT=other (includes various flying activities, standing on shore, and perched close to mate).

APPENDIX M: PLEASANT BREEDING AREA SUMMARY

Table 58. Observed human activity and bald eagle behavior, Pleasant BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Small plane	188	8	5	1	--	--	--	202	46.5
Jet (<2,000 ft)	101	6	2	--	--	--	--	109	25.1
Boat	38	1	1	--	--	--	15	55	12.6
Gunfire (sound)	14	--	2	--	--	--	--	16	3.7
Helicopter	10	--	--	--	--	--	--	10	2.3
Agency Worker	9	--	--	--	--	--	--	9	2.1
Military jet	4	--	2	--	--	--	2	8	1.8
Cattle	6	--	--	--	--	--	--	6	1.4
Nestwatcher	--	2	1	1	1	--	--	5	1.2
OHV	2	2	--	--	--	--	--	4	0.9
AGFD biologist	2	--	--	--	1	--	--	3	0.7
Jet ski	2	--	--	--	--	--	--	2	0.5
Sherriff boat	--	1	--	--	1	--	--	2	0.5
Hunter	1	--	--	--	--	--	--	1	0.2
Sherriff helicopter	1	--	--	--	--	--	--	1	0.2
Mining	1	--	--	--	--	--	--	1	0.2
Total	379	20	13	2	3	--	17	434	

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

Table 59. Observed forage events and success, Pleasant BA, Arizona, 2014.

Sex	Fish		Total	
	E[1]	S-U[2]	E	S-U
Female	2	2-0	2	2-0
Total	2	2-0	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 60. Bald eagle habitat analysis at the Pleasant BA, Arizona, 2014.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
69.1	CT	Left	Partial	1	RB	CL
71.8	BO	Left	No	2	RB	CL
71.9	CF	Right	Partial	3	RB	CL
72.1a	CF	Left	Yes	1	RU	CL
72.1b	CF	Left	Partial	3	RB	CL
72.8	CF	Left	Partial	5	RB	CL
72.9	CF	Left	No	5	RB	CL
73.1a	PV	Left	No	1	RB	SO
73.1b	CF	Left	Partial	1	RB	CL
73.1c	CF	Left	Partial	1	RB	CL
73.2a	CT	Left	Partial	2	RB	CL
73.2b	CT	Left	Partial	3	RB	CL
73.3a	CT	Left	No	5	RB	UP
73.3b	LG	Left	Partial	2	RB	SO
73.3c	CF	Left	Yes	1	RB	CL
73.3d	BO	Left	No	1	RB	CL
73.3e	BO	Left	Yes	1	RB	CL
73.4	CF	Left	Partial	2	RB	CL
73.5a	CF	Left	Partial	2	RB	CL
73.5b	CF	Left	Partial	3	RB	CL
73.5c	CT	Left	Partial	2	RB	CL
73.5d	CF	Left	Partial	1	RB	CL
73.6a	CF	Left	No	5	RB	CL
73.6b	CF	Left	Partial	5	RB	CL
73.6c	CT	Left	Partial	2	RB	CL
73.6d	CF	Left	Partial	5	RB	CL
73.6e	CF	Left	Partial	6	RB	CL
73.7a	CF	Right	Partial	3	RB	CL
73.7b	CF	Left	Partial	6	RB	CL
74.0	CF	Right	Partial	3	RB	CL
74.5a	HS	Left	No	1	RB	SO
74.5b	HS	Left	No	1	RB	SO
74.6a	HS	Left	No	1	RB	SO
74.6b	LG	Right	Partial	1	RB	SO
74.7a	HS	Left	No	1	RB	SO
74.7b	HS	Left	No	5	RB	SO
74.9	CT	Right	No	1	RB	CL
75.4	MS	Right	No	1	RB	SO
75.7	CT	Left	Partial	1	RB	CL
75.8	CF	Left	Partial	5	RB	CL
75.9	BO	Left	Partial	1	RB	SO
76.3a	CF	Left	Yes	1	RB	CL
76.3b	HS	Left	No	1	RB	CL
76.4a	BO	Left	Yes	5	RB	CL
76.4b	CF	Left	Yes	1	RB	CL
77.1	HS	Right	Yes	1	RB	SO
77.4	CF	Right	No	1	RU	SO

[1]River kilometer (Hunt et. al. 1992).
[2]BO=boulder, CF=cliff face, CT=cliff top, HS=hard snag, LG=log, MS= mesquite snag, SO=shore.
[3]Side of river 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=>400m.
[5]RB=river bend, RU=run.
[6]CL=cliff , SO=shore, UP=upland desert.

Table 61. Bald eagle habitat use at the Pleasant BA, Arizona, 2014.

River km[1]	PW[2,3]	PP	SL	FU	FD	PH	PE	SW	FL	OT	Total	Percent
72.1	11	--	--	2	--	--	--	2	1	3	19	0.5
72.2	--	--	8	--	--	--	--	--	--	--	8	0.2
73.0	--	--	8	--	--	--	--	--	1	--	9	0.2
73.1	25	19	6	2	7	--	--	--	2	7	68	1.6
73.2	736	500	1	21	12	--	--	3	4	2	1,279	30.9
73.3	9	76	11	21	26	--	--	12	5	--	160	3.9
73.5	496	108	6	13	9	--	--	3	2	6	643	15.6
73.6	1,105	352	36	4	6	--	--	--	2	6	1,511	36.6
73.7	1	4	2	1	--	--	--	--	--	5	13	0.3
74.0	8	2	1	1	--	--	--	--	--	--	12	0.3
74.2	--	--	--	6	--	--	--	2	--	--	8	0.2
74.5	10	--	12	1	--	--	9	--	--	10	42	1.0
74.6	36	--	--	6	2	--	--	--	--	--	44	1.1
74.7	24	--	--	7	1	5	--	--	--	1	38	0.9
74.8	4	--	--	1	4	--	--	--	--	--	9	0.2
74.9	17	1	--	3	1	--	--	--	1	--	23	0.6
75.4	26	27	--	--	2	--	--	--	1	--	56	1.4
75.7	33	11	--	--	2	--	--	--	--	--	46	1.1
75.8	13	10	--	3	--	--	--	--	--	--	26	0.6
75.9	8	--	--	--	--	--	14	--	1	--	23	0.6
75.9	4	1	--	--	3	--	--	--	--	--	8	0.2
77.1	--	--	6	--	1	26	--	--	--	--	33	0.8
77.4	18	--	--	1	--	--	--	--	--	--	19	0.5
999*	10	--	23	--	--	--	--	--	--	4	37	0.9
Total	2,594	1,111	120	93	76	31	23	22	20	44	4,134	
Percent	62.7	26.9	2.9	2.2	1.8	0.7	0.6	0.5	0.5	1.1		

[1]River kilometer (Hunt et. al. 1992). *Indicates observations away from the river.

[2]Observation time (minutes).

[3]PW=perched watching, PP=perched preening, SL=soaring over land; FU= flying upstream, FD= feeding young, PH=perched hunting, PE=perched eating, SW = soaring over water, FL= flying over land, OT=other (includes various flying activities and eating while standing).

APPENDIX N: RODEO BREEDING AREA SUMMARY

Table 62. Observed human activity and bald eagle behavior, Rodeo BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Driver	86	--	--	--	--	3	--	89	36.3
Military Helicopter	42	8	--	--	--	1	--	51	20.8
Small Plane	47	1	--	--	--	1	--	49	20.0
Helicopter	25	4	--	--	--	--	--	29	11.8
Gunshots	16	--	--	--	--	--	--	16	6.5
OHV	5	--	--	--	--	--	--	5	2.0
Hikers	1	--	--	1	--	--	--	2	0.8
Sheriff Helicopter	2	--	--	--	--	--	--	2	0.8
Jet	1	--	--	--	--	--	--	1	0.4
Nestwatcher	1	--	--	--	--	--	--	1	0.4
Total	226	13	--	1	--	5	--	245	

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

Table 63. Observed prey types delivered to the nest, Rodeo BA, Arizona, 2014.

Sex	Fish	Birds	Mammals	Unknown	Total	Percent
Male	9	1	2	1	13	32.5
Female	24	1	--	2	27	67.5
Total	33	2	2	3	40	100
Percent	82.5	5.0	5.0	7.5		

Table 64. Observed prey species delivered to the nest, Rodeo BA, Arizona, 2014.

	Fish				Birds	Mammals		Total	Percent
Sex	CP[1]	SU	BA	TR	AC	RS	DC		
Male	2	1	--	--	1	1	1	6	35.3
Female	4	4	2	1	--	--	--	11	64.7
Total	6	5	2	1	1	1	1	17	100
Percent	35.3	29.4	11.7	5.9	5.9	5.9	5.9		

[1]CP=carp, SU=sucker, BA=bass, TR=trout, AC=American coot, RS=rabbit species, DC=desert cottontail.

Table 65. Bald eagle habitat analysis at the Rodeo BA, Arizona, 2014.						
Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
2.5a	CF	Left	Partial	8	RU	CL
2.5b	CT	Left	Partial	4	RU	UP
2.8	CS	Left	Partial	2	RU	CW
3.1	CL	Right	No	1	RU	CW
3.2	CL	Right	Yes	3	RU	CW
3.6	CM	Left	No	5	RU	CW
3.8a	HS	Left	Partial	7	RU	CW
3.8b	MS	Right	No	2	RU	MB
3.8c	CL	Left	No	4	RU	CW
3.9a	CL	Left	Yes	5	RU	CW
3.9b	CL	Left	Partial	6	RU	CW
4.1a	CM	Right	Partial	1	RU	GB
4.1b	HS	Left	No	7	RU	MB
4.5	WO	Left	No	2	RU	WT

[1]River kilometer (Hunt and others 1992).
[2]CF=cliff ledge, CT=cliff top, CS=small cottonwood (0-10 m), CL=large cottonwood (20-30+ m), CM=medium cottonwood (10-20 m), HS=hard snag, MS=mesquite, WO=willow.
[3]Side of river 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=>400.
[5]RU=run.
[6]CL=cliffs, CW=cottonwood grove, GB=gravel bar, MB=mesquite bosque, UP=desert upland, WT=willow thicket.

Table 66. Bald eagle habitat use at the Rodeo BA, Arizona, 2014.										
River km[1]	PW[2, 3]	PP	CL	PH	PD	PX	PK	PV	Total	Percent
2.5	216	--	6	42	--	--	--	--	264	2.9
2.8	595	82	10	--	--	--	--	--	687	7.5
3.1	--	--	--	28	--	--	--	--	28	0.3
3.2	362	132	--	54	--	--	--	--	548	6.0
3.6	65	--	--	--	--	--	--	--	65	0.7
3.7	1	--	--	--	--	--	--	--	1	<0.1
3.8	4,789	463	403	23	162	24	--	1	5,865	64.0
3.9	366	--	--	--	--	--	14	--	380	4.1
4.1	1,135	14	26	131	--	--	--	--	1,306	14.2
4.5	27	--	--	--	--	--	--	--	27	0.3
Total	7,556	691	445	278	162	24	14	1	9,171	
Percent	82.4	7.5	4.9	3.0	1.8	0.3	0.2	<0.1		

[1]River kilometer (Hunt and others 1992).
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, CL=perched close to mate, PH=perched hunting, PD=perched drying, PX=perched, various, PK=perched with prey, PV=perched vocalizing.

APPENDIX O: SYCAMORE BREEDING AREA SUMMARY

Table 67. Observed human activity and bald eagle behavior, Sycamore BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Horseback groups	95	--	--	--	--	--	--	95	34.9
OHV	51	2	--	2	--	--	--	55	20.2
Driver	47	1	--	1	--	--	--	49	18.0
Small plane	34	1	--	--	--	--	--	35	12.9
Helicopter	16	1	--	--	--	--	--	17	6.3
Military Helicopter	17	--	--	--	--	--	--	17	6.3
Woodcutter	1	--	--	--	--	--	--	1	0.4
Construction	1	--	--	--	--	--	--	1	0.4
Rancher	1	--	--	--	--	--	--	1	0.4
Fisherman	1	--	--	--	--	--	--	1	0.4
Total	264	5	--	3	--	--	--	272	

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

Table 68. Bald eagle habitat analysis at the Sycamore BA, Arizona, 2014.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
7.6V	CM	Left	Partial	1	RU	CW
9.5V	SM	Left	No	1	RI	MB
10.1V	MS	Right	Partial	1	RU	MB
10.4V	SG	Left	No	6	RI	MB
10.8V	SG	Right	No	2	RU	MB
0.9S	SM	Left	Partial	8	--	MB

[1]River kilometer (Hunt et. al. 1992). V=Verde River, S=Sycamore Creek.
[2]CM =cottonwood medium/10-20m, MS = Mesquite, SG=soft snag (dead but branches still intact), SM=snag, mesquite.
[3]Side of river 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=>400m.
[5]RI=riffle, RU=run.
[6]CW=cottonwood grove, MB=mesquite bosque.

Table 69. Bald eagle habitat use at the Sycamore BA, Arizona, 2014.

River km[1]	PW[2,3]	PP	PH	ET	PV	PD	PK	CL	Total	Percent
7.6V	--	--	173	--	--	--	--	--	173	6.0
9.5V	74	--	47	--	--	--	--	--	121	4.0
10.1V	16	--	--	--	--	--	--	--	16	0.5
10.4V	1,286	531	--	40	27	26	13	7	1,930	66.5
10.8V	318	98	188	--	--	--	--	--	604	21.0
0.9S	65	--	--	--	--	--	--	--	65	2.0
Total	1759	629	408	40	27	26	13	7	2,909	
Percent	60.5	21.6	14.0	1.4	0.9	0.9	0.4	0.2		

[1]River kilometer (Hunt et. al. 1992). V=Verde River, S=Sycamore Creek.
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, PH=perched hunting, ET=eating in tree, PV=perched vocalizing, PD=perched drying, PK=perched with prey, CL=perched close to mate.

APPENDIX P: TONTO BREEDING AREA SUMMARY

Table 70. Observed human activity and bald eagle behavior, Tonto BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Helicopters	6	3	--	--	--	--	--	9	19.1
Small planes	8	--	--	--	--	--	--	8	17.0
Campers	5	--	--	--	--	--	--	5	10.6
Birders	4	--	--	--	--	--	--	4	8.5
Fishermen	4	--	--	--	--	--	--	4	8.5
Hunters	4	--	--	--	--	--	--	4	8.5
Agency Personnel	2	--	--	--	--	--	--	2	4.3
Dogs	--	1	--	1	--	--	--	2	4.3
Equestrians	2	--	--	--	--	--	--	2	4.3
Gun Shooters	2	--	--	--	--	--	--	2	4.3
Ultralights	--	--	--	--	--	--	2	2	4.3
Hiker	1	--	--	--	--	--	--	1	2.1
Military Plane	--	1	--	--	--	--	--	1	2.1
Youth Group	1	--	--	--	--	--	--	1	2.1
Total	39	5	--	1	--	--	2	47	

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

Table 71. Observed forage events and success, Tonto BA, Arizona, 2014.

Sex	Birds		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	1	0-1	2	2-0	3	2-1
Unknown	--	--	1	0-1	1	0-1
Total	1	0-1	3	2-1	4	2-2

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

Table 72. Observed prey types delivered to the nest, Tonto BA, Arizona, 2014.

Sex	Fish	Birds	Mammals	Unknown	Total	Percent
Male	23	7	1	10	41	73.2
Female	11	--	--	3	14	25.0
Unknown	--	--	--	1	1	1.8
Total	34	7	1	14	56	
Percent	60.7	12.5	1.8	25.0		

Table 73. Bald eagle habitat analysis at the Tonto BA, Arizona, 2014.

Perch Location[1]	Perch Type[2]	Side[3]	Shade	Distance to H_2O[4]	H_2O Type[5]	Land Type[6]
12.5a	HS	Right	No	1	RS	--
12.5b	SP	Right	No	1	RS	--
12.5c	SM	Left	No	1	--	UP
12.7a	SG	Right	No	1	IF	SO
12.7b	HS	Left	No	1	IF	--
13.0	HS	Left	No	2	--	TX
13.6	SM	Right	No	2	--	UP
16.4a	SB	Left	No	1	RU	GB
16.4b	SB	Left	No	1	RU	SO
16.4c	SO	Right	No	1	RU	SO
16.4d	SM	Right	No	1	--	UP
16.5a	SM	Right	No	1	RU	--
16.5b	SO	Right	No	1	RU	UP
16.7a	UN	Right	Partial	--	--	UP
16.7b	LG	Left	No	1	--	SO
16.7c	DW	Left	No	--	--	UP
16.8a	LG	Left	No	1	--	UP
16.8b	GR	Left	No	2	--	UP
16.8c	HS	Left	No	2	--	UP
16.8d	SO	Right	Partial	1	--	SO
17.0a	RW	Left	No	1	RU	--
17.0b	TX	Left	No	1	--	UP
17.0c	SP	Left	No	1	RU	GB
17.0d	HS	Left	No	2	--	UP
17.1	MS	Left	No	2	--	MB
17.2a	TX	Right	No	4	--	UP
17.2b	HS	Right	No	4	--	UP
17.4	YL	Right	No	8	--	UP
18.6	CL	Left	No	6	--	MB
BC a	HL	Right	No	4	--	UP
BC b	UN	Right	No	4	--	UP
BC c	SS	Right	No	8	--	UP
BC d	HL	Right	No	8	--	UP
BC e	CF	Right	No	1	IF	--

[1]River kilometer (Hunt et. al. 1992). BC=refers to the Bachelor Cove recreation site at Roosevelt Lake.

[2]CF=cliff ledge, CL=cottonwood large (20-30m), DW=driftwood, GR=ground, HL=hillside, HS=hard snag (main branches only), LG=log, MS=mesquite, RW=rock in water, SB=sand bar, SG=soft snag (dead but branches still intact), SM= snag, mesquite, SO=shore, SP=stump, SS=snag, shrub, TX=, tamarisk, UN=unidentified tree, YL=sycamore, large (10-20m).

[3]Side of river 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=>400m.

[5]IF=inflow, RS=reservoir main body, RU=run.

[6]GB=gravel bar, MB=mesquite bosque, SO=shore, TX=tamarisk thicket, UP=desert upland.

Table 74. Bald eagle habitat use at the Tonto BA, Arizona, 2014.

River km[1]	PH[2,3]	ES	PP	DW	GN	PG	SH	SS	PX	Total	Percent
12.5	1	120	--	--	--	--	--	--	--	121	11.3
12.7	18	26	--	--	--	--	--	--	--	44	4.1
13.0	--	--	19	--	--	--	--	--	--	19	1.8
13.6	--	132	--	--	--	--	--	--	--	132	12.3
16.4	1	--	--	5	5	19	4	12	6	52	4.9
16.5	1	--	--	--	2	--	--	--	--	3	0.3
16.7	110	--	--	--	--	--	--	--	1	111	10.4
16.8	232	--	9	--	5	--	--	--	1	247	23.1
17.0	10	--	122	26	7	--	13	--	--	178	16.6
17.1	3	--	--	--	--	--	--	--	--	3	0.3
17.2	23	--	--	--	--	--	--	--	--	23	2.2
17.4	18	--	--	--	--	--	--	--	--	18	1.7
18.6	39	--	--	--	--	--	--	--	--	39	3.6
BC	80	--	--	--	--	--	--	--	--	80	7.5
Total	536	278	150	31	19	19	17	12	8	1,070	
Percent	50.1	26.0	14.0	2.9	1.8	1.8	1.6	1.1	0.7		

[1]River kilometer (Hunt et al. 1992). BC=refers to the Bachelor Cove recreation site at Roosevelt Lake.
[2]Observation time (minutes).
[3]PH=perched hunting, ES=eating on shore, PP=perched preening, DW=drinking water, GN=gathering nest material, PG=perched ground, SH=standing in water, PH=perched hunting, SS=standing on shore, PX=perched various/other.

APPENDIX Q: WHITE HORSE BREEDING AREA SUMMARY

Table 75. Observed human activity and bald eagle behavior, White Horse BA, Arizona, 2014.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Hikers	16	9	--	3	--	--	--	28	63.6
Fisherman	5	--	--	--	--	--	--	5	11.4
Small Plane	3	--	--	--	--	--	--	3	6.8
AZGFD Biologist	1	--	1	1	--	--	--	3	6.8
Helicopter	1	1	--	--	--	--	--	2	4.5
Cyclists	--	1	--	--	--	--	--	1	2.3
Gunshots	1	--	--	--	--	--	--	1	2.3
Nestwatcher	--	--	1	--	--	--	--	1	2.3
Total	27	11	2	4	--	--	--	44	

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

Table 76. Observed prey types delivered to the nest, White Horse BA, Arizona, 2014.

Sex	Fish	Mammals	Birds	Unknown	Total	Percent
Male	9	4	1	2	16	50.0
Female	10	4	1	1	16	50.0
Total	19	8	2	3	32	
Percent	59.5	25.0	6.0	9.5		

Table 77. Observed prey species delivered to the nest, White Horse Lake BA, Arizona, 2014.

	Fish			Birds		Mammals		Total
	RT[1]	CP	SU	AC	WS	SM	RS	
Total	7	1	1	1	1	6	1	18
Percent	38.9	5.6	5.6	5.6	5.6	33.3	5.6	

[1]RT=rainbow trout, CP=carp, SU=sucker, AC=American coot, WS=waterfowl species, SM=gopher/prairie dog, RS=rabbit species.

Table 78. Bald eagle habitat analysis at the White Horse BA, Arizona, 2014.						
Perch Location	Perch Type[1]	Side	Shade	Distance to H_2O[2]	H_2O Type	Land Type[3]
A	PO	--	Yes	3	--	CF
B	HS	--	No	7	--	CF
C	PO	--	Yes	3	--	CF
D	SC	--	No	5	--	CF
E	HS	--	No	6	--	CF
F	SC	--	No	5	--	CF
G	HS	--	No	4	--	CF
H	HS	--	No	6	--	CF
I	HS (nest tree)	--	Yes	5	--	CF
J	PO	--	Yes	3	--	CF
K	HS	--	Partial	3	--	CF
L	HS	--	No	3	--	CF
M	SC	--	Partial	6	--	CF
N	PO	--	Partial	5	--	CF
O	PO	--	Partial	3	--	CF

[1]HS=hard snag, SC=conifer snag, PO=ponderosa pine.
[2]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>400.
[3]CF=conifer forest.

Table 79. Bald eagle habitat use at the White Horse BA, Arizona, 2014.

Perch	PW[1,2]	PP	PV	PH	Total	Percent
A	897	43	7	18	965	41.8
B	11	--	--	--	11	0.5
C	195	1	--	--	196	8.5
D	1	--	--	--	1	<0.1
E	240	--	--	--	240	10.4
F	191	--	--	--	191	8.3
G	157	--	1	--	158	6.8
H	52	--	--	--	52	2.3
I	12	--	--	--	12	0.5
J	96	7	--	--	103	4.5
K	89	--	--	--	89	3.9
L	7	--	--	--	7	0.3
M	6	--	--	--	6	0.3
N	203	12	46	--	261	11.3
O	15	--	--	--	15	0.7
Total	2,172	63	54	18	2,307	
Percent	94.1	2.5	2.5	0.8		

[1]Observation time (minutes).
[2]PW=perched watching, PP=perched preening, PV=perched vocalizing, PH=perched hunting.

APPENDIX R: WOODS CANYON BREEDING AREA SUMMARY

Table 80. Observed human activity and bald eagle behavior, Woods Canyon BA, Arizona, 2014.

Human Activity[1]	N[2]	W	R	F	L	B	U	Total	Percent
Airplane	5	10	--	--	--	--	--	15	37.5
Boater	5	2	--	--	--	2	--	9	22.5
Hiker	4	1	--	--	--	--	--	5	12.5
Fisherman	5	--	--	--	--	--	--	5	12.5
Kayak/paddleboard	2	--	--	--	--	2	--	4	10.0
Swimmer	1	--	--	--	--	--	--	1	2.5
Sheriff helicopter	--	1	--	--	--	--	--	1	2.5
Total	22	14	--	--	--	4	--	40	

[1]Includes only activities in or at the closure.
[2]Bald eagle response: N=none, W=watched, R=restless, F=flushed, L=left area, B=birds not in area, U=unknown.

Table 81. Observed forage events and success, Woods Canyon BA, Arizona, 2014.

Sex	Fish		Total	
	E[1]	S-U[2]	E	S-U
Male	19	16-3	19	16-3
Female	22	14-8	22	14-8
Total	41	30-11	41	30-11

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

Table 82. Observed prey types delivered to the nest, Woods Canyon BA, Arizona, 2014.

Sex	Fish	Mammal	Bird	Total	Percent
Male	82	3	1	86	55.8
Female	67	--	--	67	43.5
Unknown	1	--	--	1	0.7
Total	150	3	1	154	
Percent	97.5	1.9	0.6		

Table 83. Observed prey species delivered to the nest, Sycamore BA, Arizona 2014.

Sex	Fish	Mammal	Total	Percent
	Rainbow Trout	Ground squirrel		
Male	82	1	83	55.0
Female	67	--	67	44.4
Unknown	1	--	1	0.7
Total	150	1	151	
Percent	99.3	0.7		

Table 84. Bald eagle habitat analysis at the Woods Canyon BA, Arizona, 2014 (continued next page).

Perch Location[1]	Perch Type[2]	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
0.2a	PS	No	1	RS	CF
0.2b	PS	Partial	2	RS	CF
0.9	PS	Partial	1	RS	CF
1.1	PS	No	1	RS	CF
1.3	HS	No	1	RS	CF
1.6	PO	No	1	RS	CF
1.8	PS	No	1	RS	CF
2.0	PS	No	1	RS	CF
2.1	PS	No	1	RS	CF
2.2a	HS	No	1	RS	CF
2.2b	PS	Yes	1	RS	CF
2.3	HS	No	1	RS	CF
2.4a	PO	Yes	1	RS	CF
2.4bc	PS	Yes	1	RS	CF
2.4d	SO	Partial	1	RS	CF
2.5a	PS	No	1	RS	CF
2.5b	SO	No	1	RS	CF
3.0	PS	Partial	1	RS	CF
3.2a	PS	Partial	1	RS	CF
3.2b	SG	No	1	RS	CF
3.3	PS	No	1	RS	CF
3.4a	SG	Partial	1	RS	CF
3.4b	PO	Yes	1	RS	CF
3.4c	SO	Yes	1	RS	CF
3.4d	PS	Partial	1	RS	CF
3.4e	SG	Partial	2	RS	CF
3.5a	HS	No	2	RS	CF
3.5b	SG	No	1	RS	CF
3.5c	PS	No	1	RS	CF
3.5d	PO	Partial	1	RS	CF
3.5e	SO	No	1	RS	CF
3.5f	AS	Yes	2	RS	CF
3.5g	PO	No	2	RS	CF
3.5h	HS	No	2	RS	CF
3.5i	HS	No	3	RS	CF
3.6a	SG	No	1	RS	CF
3.6b	SO	No	1	RS	CF
3.7	SG	No	1	RS	CF
3.8a	SG	No	1	RS	CF
3.8b	HS	Partial	1	RS	CF
3.8c	SG	Yes	1	RS	CF

[1]Lake kilometer (counterclockwise from middle of dam).
[2]AS=aspen, HS=hard snag (main branches only), PO= Pine/Conifer old growth/20-30+ m, PS=pine/conifer, 2nd growth/10-20+ m, SG=soft snag (dead but branches still intact), 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]RS=reservoir main body.
[5]CF=conifer forest.

Table 85 continued.

Perch Location[1]	Perch Type[2]	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
4.0	PS	No	1	RS	CF
4.1a	PS	No	1	RS	CF
4.1b	PO	Partial	1	RS	CF
4.5	PS	No	1	RS	CF
4.6a	PO	Partial	1	RS	CF
4.6b	PO	No	2	RS	CF
4.7a	PO	Partial	1	RS	CF
4.7b	ST	No	1	RS	CF
4.7c	PS	Partial	1	RS	CF
4.7d	PS	Partial	2	RS	CF
4.7e	PO	No	3	RS	CF
4.8a	ST	Partial	1	RS	CF
4.8b	PS	No	1	RS	CF
4.8c	PO	No	1	RS	CF
4.8d	PO	No	2	RS	CF
4.9a	PS	No	1	RS	CF
4.9b	PO	Partial	2	RS	CF
4.9c	PO	Yes	3	RS	CF
5.0a	PS	Yes	1	RS	CF
5.0b	PO	Partial	1	RS	CF
5.0c	PO	Yes	2	RS	CF
5.1	PS	No	1	RS	CF
5.2	PS	No	1	RS	CF

[1]Lake kilometer (counterclockwise from middle of dam).
[2]AS=aspen, HS=hard snag (main branches only), PO= Pine/Conifer old growth/20-30+ m, PS=pine/conifer, 2nd growth/10-20+ m, SG=soft snag (dead but branches still intact), 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]RS=reservoir main body.
[5]CF=conifer forest.

Table 86. Bald eagle habitat use at the Woods Canyon BA, Arizona, 2014.

Lake km[1]	PW[2,3]	PH	PD	CL	PP	PE	BA	SH	DW	PK	PI	Total[2]	Percent
0.2	56	--	--	--	23	--	--	--	--	--	--	79	1.6
0.9	65	27	--	--	--	--	--	--	--	--	--	92	1.9
1.1	51	--	--	--	--	--	--	--	--	--	--	51	1.0
1.3	29	--	--	--	--	--	--	--	--	4	--	33	0.7
1.6	7	--	--	--	--	--	--	--	--	--	--	7	0.1
1.8	2	--	--	--	--	--	--	--	--	--	--	2	<0.1
2.0	10	--	--	--	--	--	--	--	--	--	--	10	0.2
2.1	2	--	--	--	--	--	--	--	--	--	--	2	<0.1
2.2	303	--	--	--	--	10	--	--	--	--	--	313	6.3
2.3	29	--	--	--	--	--	--	--	--	--	--	29	0.6
2.4	52	55	--	--	--	--	--	15	--	--	--	122	2.4
2.5	23	--	3	--	--	--	8	--	--	--	--	34	0.7
3.0	176	--	--	--	--	--	--	--	--	--	--	176	3.6
3.2	15	43	--	--	--	--	--	--	--	--	--	58	1.2
3.3	68	--	--	--	2	--	--	--	--	--	--	70	1.4
3.4	103	47	--	--	--	--	--	--	--	--	--	150	3.0
3.5	384	--	--	--	10	--	14	--	--	3	--	411	8.3
3.6	--	--	59	--	--	--	--	--	14	--	--	73	1.5
3.7	50	--	--	--	--	8	--	--	--	--	--	58	1.2
3.8	425	--	--	--	--	--	--	--	--	--	--	425	8.6
4.0	--	--	--	--	--	--	--	--	--	--	4	4	0.1
4.1	298	--	--	17	--	--	--	--	--	--	--	315	6.4
4.5	453	--	--	--	--	--	--	--	--	--	--	453	9.1
4.6	362	7	--	--	--	5	--	--	--	--	--	374	7.5
4.7	606	46	--	18	--	--	--	--	--	--	--	670	13.5
4.8	133	--	--	16	--	--	--	--	--	--	--	149	3.0
4.9	252	--	--	--	--	--	--	--	--	--	--	252	5.1
5.0	532	--	--	--	--	--	--	--	--	--	--	532	10.7
5.1	7	--	--	--	--	--	--	--	--	--	--	7	0.1
5.2	--	10	--	--	--	--	--	--	--	--	--	10	0.2
Total	4,493	235	62	51	35	23	22	15	14	7	4	4,961	
Percent	90.6	4.7	1.5	0.8	0.7	0.5	0.4	0.3	0.3	0.1	0.1		

[1]Lake kilometer (counterclockwise from middle of dam).

[2]Observation time (minutes).

[3]PW=perched watching, PH=perched hunting, PD=perched drying, CL=perched close to mate, PP=perched preening, PE=perched eating, BA=bathing, SH=standing in water, DW=drinking water, PK=perched with prey, PI=perched interaction.