ARIZONA BALD EAGLE MANAGEMENT PROGRAM
2024 SUMMARY REPORT

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Photo by Kyle McCarty.

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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 2024. Those include: Justin Bright and Quinn Dudley (Bachelor Cove); Leticia Cruz-Paredes and Eduardo Martinez-Leyva (Box Bar); Jennifer Ottinger and Sierra Wilson (Doka, Fort McDowell, Rodeo, and Sycamore); Carrie Coonan and Dalton Sonnenberg (Goldfield); Adam Chatman and Andi Wiedemann (Cole's Bay, Pleasant, and Whiskey Spring); Joe and Marta Peddie (Luna); Julia Godsey and Rainey Miller (Orme and Granite Reef); Justin Bright, Leticia Cruz-Paredes, Eduardo Martinez-Leyva, and Dalton Sonnenberg (Willow Springs and Woods Canyon).

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ARIZONA BALD EAGLE MANAGEMENT PROGRAM 2024 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 five 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). In 2024, the bald eagle was officially designated as the national bird of the United States.

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 2012a). The 2012 finding was upheld by a U.S. District Court in 2014, and that decision was affirmed by an appellate court in 2017.

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. In April 2012, the USFWS proposed revisions to eagle take permits which would have extended programmatic permits to a maximum of 30 years (USFWS 2012b), a rule which was challenged in court and overturned. As a result, the USFWS developed a new rule in 2016 to reinstate a 30-year permit and included other revisions to take permit implementation (USFWS 2016, 2017). In 2024, the USFWS made additional revisions to the regulations governing permits for incidental take and eagle nest take (USFWS 2024).

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 the era of recovery efforts for the species. In 2007, 2014, and 2020 some members of the SWBEMC signed the Conservation Assessment and Strategy for Bald Eagles in Arizona (CAS), which described strategies for continuing conservation and 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, including many of the projects still being implemented today. Currently, the SWBEMC consists of 28 members, with the Arizona Game and Fish Department (AGFD) as the lead implementation agency. This report covers the 2024 results for the following projects: Arizona Bald Eagle Winter Count, Occupancy and Reproductive Assessment, Nest Survey, and Arizona Bald Eagle Nestwatch Program.

STUDY AREA

Nest monitoring and surveys were conducted statewide, and Arizona bald eagle breeding areas (BAs) were located within nine biotic communities (Brown 1994, The Nature Conservancy 2004): Sonoran Desertscrub (n=52 BAs), Rocky Mountain (Petran) Montane Conifer Forest (n=26), Plains and Great Basin Grasslands (n=9), Semidesert Grassland (n=6), Great Basin Conifer Woodland (n=5), Interior Chaparral (n=3), Mohave Desertscrub (n=1), Rocky Mountain (Petran) Subalpine Conifer Forest (n=1), and Subalpine Grassland (n=1).

Nearly half of the 104 bald eagle BAs in 2024 occurred at elevations at or below 3,000 ft (914 m) (49.0% n=51), and were located primarily in central Arizona within the riparian areas of the Sonoran Riparian Scrubland and Sonoran Interior Strands as described in Brown (1994) (Figure 1). Fewer BAs were at elevations between 3,001 and 6,000 ft (915 to 1,829 m) (17.3%, n=18) and one-third were above 6,000 ft (>1,829 m) (33.7%, n=35). Representative riparian vegetation at lower elevations included Fremont cottonwood (*Populus fremonti*), Goodding willow (*Salix gooddingii*), Arizona sycamore (*Platanus wrightii*), and nonnative salt cedar (*Tamarix* spp.), with surrounding uplands of the Sonoran Desertscrub-Arizona Upland subdivision, Interior Chaparral, Semidesert Grassland and Great Basin Conifer Woodland. These upland areas are commonly vegetated with blue palo verde (*Parkinsonia florida*), mesquite (*Prosopis* spp.), ironwood (*Olneya tesota*), saguaro (*Carnegiea gigantea*), teddy bear cholla (*Cylindropuntia bigelovii*), juniper (*Juniperus* spp.), and pinyon pine (*Pinus edulis*).

Grassland communities contained a suite of mixed grasses and vegetation such as grama (*Bouteloua spp.*), agave (*Agave spp.*), yucca (*Yucca spp.*), and prickly pear cacti (*Opuntia spp.*), with degrees of invasion by other grasses, shrubs, and nonnative plants. In these areas, bald eagle nests occurred in stands of cottonwoods, ponderosa pine (*Pinus ponderosa*), or on riverine cliffs. At higher elevations, BAs were found in Rocky Mountain Montane or Subalpine Conifer Forests with the former dominated by ponderosa pine and the latter including limber pine (*Pinus flexilis*), bristlecone pine (*Pinus aristata*), spruce (e.g., Engelmann spruce, *Picea engelmannii*), fir (e.g., subalpine fir, *Abies lasiocarpa*), or aspen (*Populus tremuloides*) trees. Riparian vegetation at higher elevations included Rocky Mountain maple (*Acer glabrum*), narrow-leaf cottonwood (*Populus angustifolia*), thin-leaf alder (*Alnus tenuifolia*), Bebb's willow (*Salix bebbiana*), and coyote willow (*S. exigua*) (Brown 1994). Interior Chaparral included pinyon-juniper woodlands, shrub live oak (*Quercus turbinella*), and pointed (*Arctostaphylos pungens*) and pringle manzanita (*A. pringlei*).

In northwestern Arizona, two bald eagle BAs (Black Canyon and Nevada Bay) were located adjacent to the Colorado River within Mohave Desertscrub, where riparian vegetation was similar to other low-elevation areas and uplands included creosote bush (*Larrea tridentata*), blackbrush

(*Coleogyne ramosissima*), saltbush (*Atriplex spp.*), catclaw acacia (*Acacia sp.*), and a variety of cacti (e.g. silver cholla, *Cylindropuntia echinocarpa*). However, at the Black Canyon BA, the eagle pair has only built a nest on the Nevada side of the river and is not included in regular monitoring by AGFD.

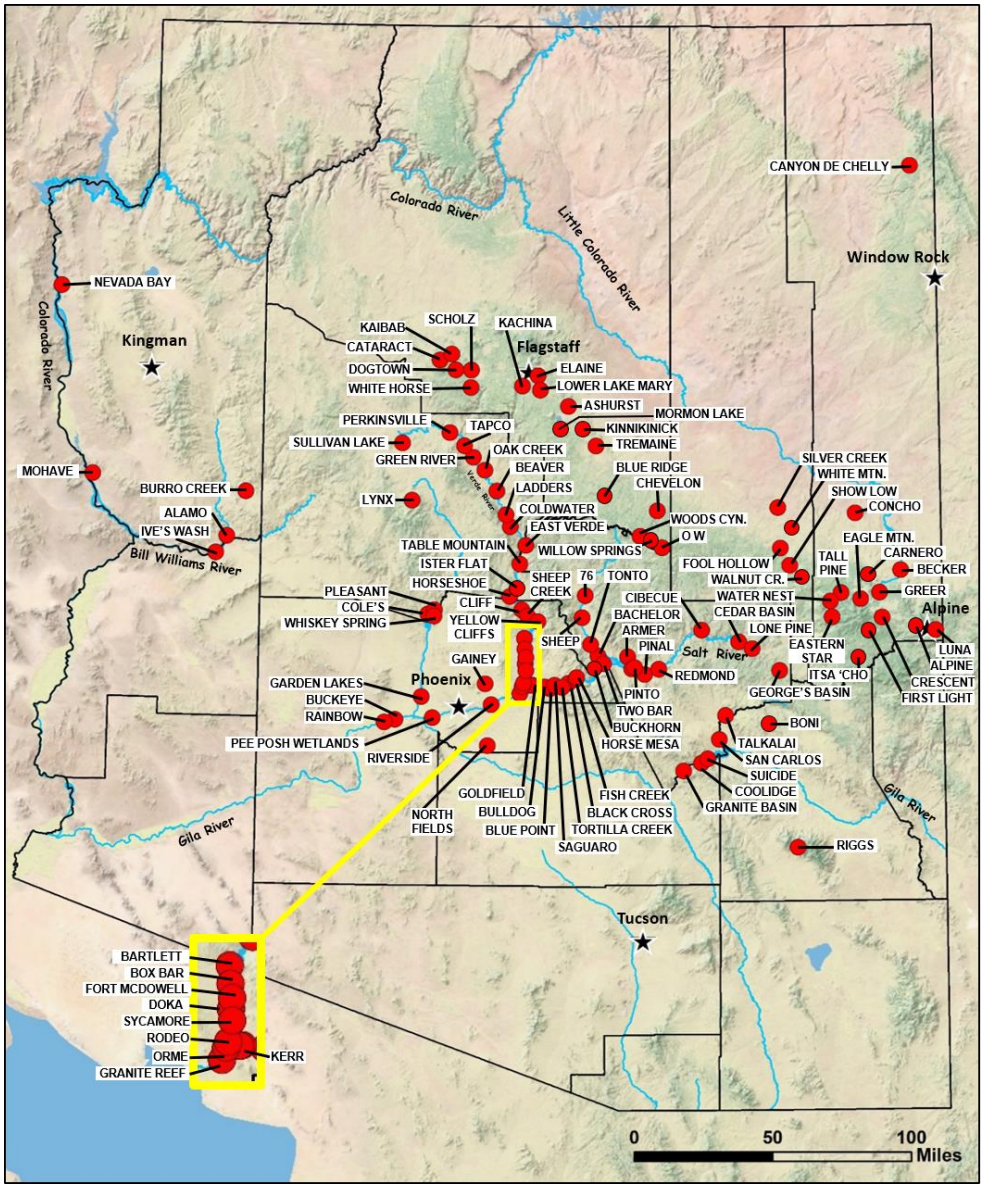

Figure 1. Location of known bald eagle breeding areas in Arizona, 2024.

With some 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 or lake levels (e.g., Alamo Lake and Roosevelt Lake) and the distance of alternate nests. Terrestrial prey comprises an important dietary proportion at some BAs, most notably Gunnison's prairie dogs (*Cynomys gunnisoni*) at Canyon de Chelly, Concho, and Silver Creek, and may also influence habitat

selection. Several BAs are located in the Phoenix metropolitan area or other cities and towns and include disrupted or highly modified riparian communities consisting of artificial water formations such as recharge basins, urban ponds and lakes, and canals.

In 2024, BAs were located along: Burro, Canyon, Cibecue, Moon, Oak, Pinal, Silver, Tonto, and Walnut creeks; Alamo, Apache, Ashurst, Bartlett, Blue Ridge, Canyon, Carnero, Cataract, Chevelon Canyon, Crescent, Dogtown, Fool Hollow, Greer, Horseshoe, Kaibab, Kinnikinick, Lower Lake Mary, Luna, Lynx, Mormon, Pleasant, Reservation, Riggs, Roosevelt, Saguaro, San Carlos, San Francisco, Scholz, Show Low, Talkalai, Tonto, Tremaine, White Horse, White Mountain, Willow Springs, and Woods Canyon lakes or reservoirs; and the Agua Fria, Bill Williams, Black, Colorado, Little Colorado, Gila, North Fork White, Salt, San Carlos, San Francisco, and Verde rivers. Nests within these drainages are usually on cliff ledges, rock pinnacles, and in cottonwood or ponderosa pine trees. However, they have also occurred in sycamore, juniper, pinyon pine, willow, eucalyptus (*Eucalyptus sp.*), mesquite, and snags, as well as artificial structures and saguaro cactus (Grubb 1980, Hunt et al. 1992, McCarty and Jacobson 2012, McCarty et al. 2018, McCarty et al. 2020).

ARIZONA BALD EAGLE WINTER COUNT

INTRODUCTION

National winter surveys are an effective tool to monitor bald eagles throughout their range (Millsap 1986, Stalmaster 1987, Eakle et al. 2015). The knowledge of wintering bald eagle habitat use allows for the consideration and implementation of management actions 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 and help to ensure implementation of Eagle Act permits remain compatible with stable or increasing populations (Steenhof et al. 2002, 2008; Eakle et al. 2015).

The National Wildlife Federation (NWF) initiated and organized the national midwinter bald eagle count from 1979-1992. From 1992-2007, coordination shifted among the Bureau of Land Management (BLM), the National Biological Survey, and then the U.S. Geological Survey (USGS). Since 2008, the U.S. Army Corps of Engineers (ACE) has coordinated 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", minimal information was contributed in 1986 and 1987, and surveys only occurred in 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. In 1995, the Department 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 guidance. 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 Raptor Survey. Finally, starting in 2020 we added two new winter count sites (Buckhead Mesa Landfill and Point of Pines aerial) that have been surveyed for at least the past four years and that had at least three bald eagles seen during one or more surveys, bringing the total number of standardized routes back up to 104 (Figure 2).

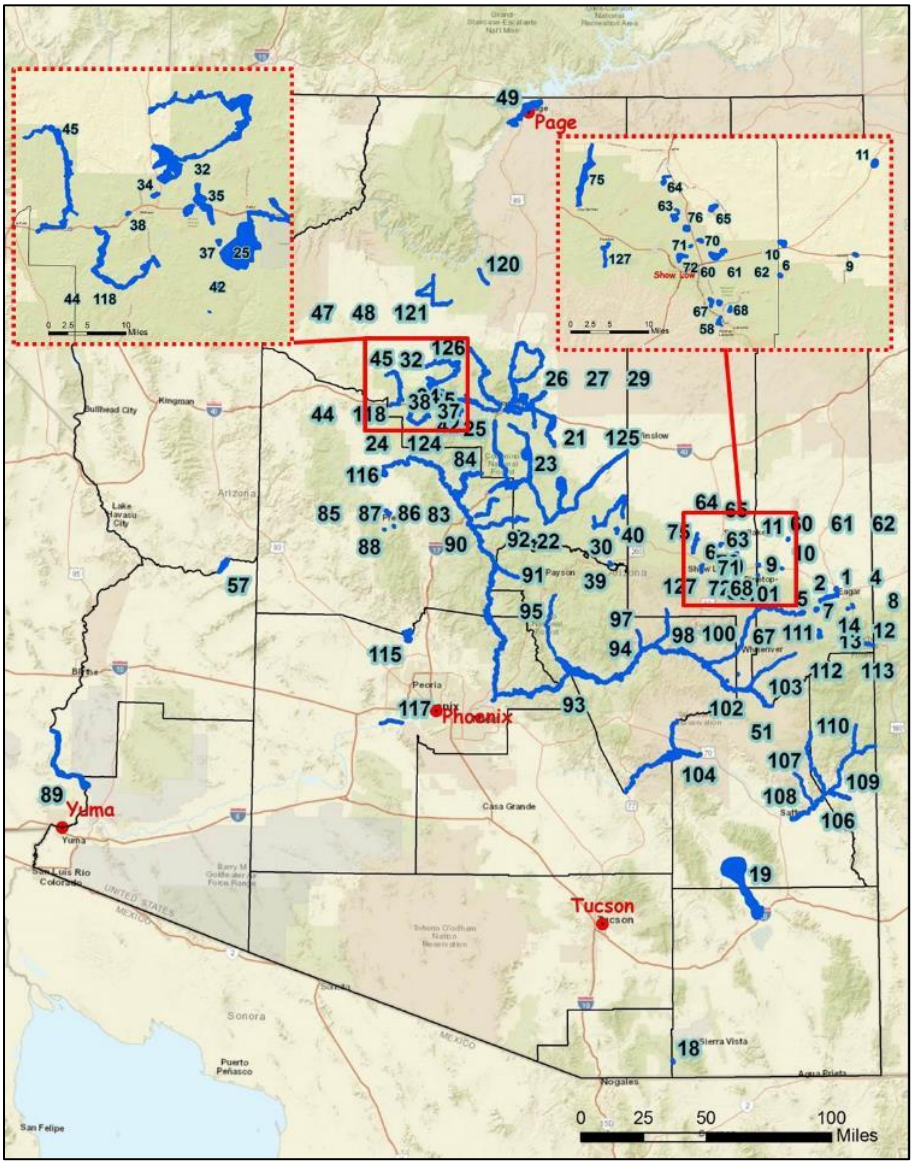

Figure 2. Map of the Arizona Bald Eagle Winter Count survey routes (blue outlines). County lines in black. See Appendix A for the associated route names.

METHODS

We continued to use, and strived to complete, the established standardized survey routes for the 2024 Arizona bald eagle winter count. Additionally, three non-standard routes were completed and integrated into this document for management purposes and were included as non-standard routes in the results submitted to the ACE. We scheduled the winter count for January 6-12, 2024 (within the national survey period of January 3-17) which included weekdays for agency personnel and a weekend for volunteers. The shorter 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 most effective 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 helicopter time for 2-3 biologists and a pilot to fly 26 of the winter count routes. The helicopter's altitude and speed were dependent upon terrain, height, occurrence of power lines, and wind speed. In general, a height of 31-61 m (100-200 ft) above ground level and 55-65 knots (63-75 mph) was typical for surveys. 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, 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*) and other raptors were also recorded during the survey, but are 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. Additionally, the one route representing Graham County was not surveyed in multiple years.

RESULTS AND DISCUSSION

The 2024 Arizona bald eagle winter count tallied 236 bald eagles, including 164 adults (69.5%), 67 subadults (28.4%), and 5 unknown eagles (2.1%). Participants covered 95 of 104 standardized routes (91%) with a total survey effort of 9,782 minutes (163.0 hours) (Tables 1 and 2). An additional three non-standard routes were surveyed for a total of 340 minutes (5.7 hours) and one bald eagle (Appendix A). The highest regional total number of bald eagles observed during ground surveys occurred in Coconino County (32 routes, 63 eagles) (Table 1), which also included the largest concentration occurring on a single ground survey (Appendix A). A large number of bald eagles was also observed by helicopter along the Salt River and associated drainages (9 routes, 56

eagles). The total of 236 bald eagles in 2024 was slightly lower than the average of 240 birds observed annually during standardized counts in 2005-2023 (Table 2). The age composition of this year's count (69% adult, 28% subadult) was equal to the average ratio of adults to subadults in Arizona's winter counts since 2005.

In addition to documenting bald eagle sightings, 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 the weather conditions (n=84), most responded that this year's weather was either normal (68%), mild (18%), followed by harsh (13%), and very mild (1%). There were no responses for very harsh weather. Similarly, of those that rated ice cover (n=85), most responded that it was normal (64%), followed by less than normal (21%), more than normal (8%), much less than normal (6%), and much more than normal (1%).

Table 1. Summary of the Arizona bald eagle winter count 2024.

Survey areas	Routes	Minutes (Hours)	Adults	Subadults	Unknown[1]	Total	Total/ Hr.
Apache County	15	1,053 (17.6)	9	6	0	15	0.9
Cochise County	2	300 (5.0)	0	0	0	0	0
Coconino County	32	5,182 (86.4)	36	22	5	63	0.7
Gila County	2	70 (1.2)	7	1	0	8	6.7
Graham County	Not surveyed by ground.						
Mohave County	1	112 (1.9)	4	0	0	4	2.1
Navajo County	15	498 (8.3)	6	4	0	10	1.2
Santa Cruz County	1	60 (1.0)	0	0	0	0	0.0
Yavapai County	6	1,810 (30.2)	15	7	0	22	0.7
Yuma & La Paz County	Not surveyed.						
Verde River drainage	3	170 (2.8)	27	7	0	34	12.1
Salt River drainage	9	406 (6.8)	41	15	0	56	8.2
Gila River drainage	4	82 (1.4)	7	5	0	12	8.6
Various helicopter	5	39 (0.7)	12	0	0	12	17.1
Totals	95	9,782 (163.0)	164	67	5	236	1.4

[1]Unknown age bald eagles and unidentified eagles.

Table 2. Summary of Arizona bald eagle winter counts 2005-2024.

Year	Survey time (min)	Surveys completed	Adults	Subadults	Unknown[1]	Total eagles	Eagles / hour
2005	8,910	97 (84%)	153 (68%)	56 (25%)	15 (7%)	224	1.5
2006[2]	10,074	104 (100%)	239 (74%)	77 (24%)	7 (2%)	323	1.9
2007	11,632*	100 (96%)	192 (68%)	81 (29%)	8 (3%)	281	1.4
2008[3]	9,362	96 (94%)	152 (82%)	29 (16%)	4 (2%)	185	1.2
2009	9,357	94 (92%)	139 (68%)	62 (30%)	3 (2%)	204	1.3
2010	9,138*	96 (94%)	159 (63%)	81 (32%)	12 (5%)	252	1.7
2011	8,713*	93 (91%)	157 (71%)	57 (26%)	8 (4%)	222	1.5
2012	10,320	100 (98%)	189 (63%)	94 (32%)	15 (5%)	298	1.7
2013	9,902*	98 (96%)	169 (66%)	76 (30%)	10 (4%)	255	1.5
2014	9,325	98 (96%)	188 (71%)	77 (29%)	1 (0.4%)	266	1.7
2015	8,989	93 (91%)	141 (69%)	53 (26%)	10 (5%)	204	1.4
2016	8,814	98 (96%)	161 (65%)	71 (29%)	17 (7%)	249	1.7
2017	9,522	101 (99%)	169 (65%)	84 (32%)	8 (3%)	261	1.6
2018	9,045	101 (99%)	172 (70%)	63 (26%)	9 (4%)	244	1.6
2019[4]	6,645	79 (77%)	137 (65%)	74 (35%)	1 (0.5%)	212	1.9
2020[5]	9,377*	99 (95%)	176 (66%)	78 (29%)	12 (5%)	266	1.7
2021	8,963	73 (70%)	130 (73%)	45 (25%)	2 (1%)	177	1.2
2022	9,111	95 (91%)	174 (70%)	63 (25%)	11 (4%)	248	1.6
2023	8,194	77 (74%)	135 (72%)	38 (20%)	15 (8%)	188	1.4
2024	9,782	95 (91%)	164 (69%)	67 (28%)	5 (2%)	236	1.4
Average	9,259	94 (91%)	165 (69%)	66 (27%)	9 (4%)	240	1.6

[1]Unknown age bald eagles and unidentified eagles.
[2]Beginning of 104 standardized routes derived from the analysis of 1995-2005 surveys.
[3]Beginning of 102 standardized routes with Lake Meade and Lake Mohave routes dropped.
[4]Federal government shutdown affected survey effort and number of eagles.
[5]Beginning of 104 standardized routes after addition of two new routes.
*Some survey times not recorded. Times averaged from reported times of previous counts.

MANAGEMENT RECOMMENDATIONS

1. Maintain the current 104 standardized routes.
2. Continue to assess non-standardized routes and add new routes for areas with consistent sightings of more than four bald eagles. Previously, the national coordinators required at least four years of data before a route was included in trend analyses, although highly productive routes are added to the Department's database.
3. Compile spatial data from winter count survey maps to document the location and abundance of wintering bald eagles, identify important habitat use areas, and develop statewide maps for distribution to cooperating agencies.
4. Continue to collect data on other wintering raptors along survey routes in addition to eagles, and investigate the potential to standardize methods for wintering raptor data collection with other states and organizations.
5. Work with partners and volunteers to improve route coverage, especially in underrepresented areas of the state.
6. Investigate assigning new routes in nontraditional bald eagle wintering locations in urban areas.

OCCUPANCY AND REPRODUCTIVE ASSESSMENT AND NEST SURVEY

INTRODUCTION

The Occupancy and Reproductive Assessment (ORA) and nest surveys enhance 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 and alternate nests also helps the SWBEMC to identify 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. Glinski 1985, Hildebrandt and Glinski 1987, McCarty et al. 2023). The Department administered and performed the 2024 surveys in cooperation with the SWBEMC.

METHODS

We monitored breeding activity at current and historic BAs, nest sites discovered between 1992 and 2023, and also investigated reports of bald eagles and nests by other agencies, biologists, and the public. Outside of known BAs, the presence of large nests, habitat quality, previous sightings of bald eagles, and spacing between BAs prioritized survey effort. A two to three-person team conducted surveys between January and June 2024. Winter count flights (January), and ORA flights (February to 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).

Helicopters, provided or funded by Arizona Public Service (APS), SRP, and USBR, were flown at approximately 60 meters (200 ft) above ground level and at 50-60 knots (58-70 mph). Drainage topography, ground-based obstacles (high-tension wires, meteorological towers), and wind influenced altitude and speed. If nest occupancy could not be determined from the air, a ground survey ensued. Boats and off-road vehicles were also used to access survey areas. We used Questar® spotting scopes (40-160x), binoculars (10x), handheld GPS units, and nest map atlases from Hunt et al. (1992) and SRP (2020), to survey and relocate historic 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. 2023).

Determination of breeding status followed operational definitions derived from Postupalsky (1974, 1983), Steenhof and Kochert (1982), and Driscoll (2010) (Appendix B). Additionally, we used the terms “tall” and “short” in this section to describe heights of cliffs, and “large”, “medium”, 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). “Medium” denotes nests that were not likely to have been

large enough for eagle use and were probable hawk *(Buteo* spp.) or common raven (*Corvus corax*) structures. The terms "small" and "short" refer to structures and nests of inadequate height and size for eagles. 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.

Due to the increase in the number and proximity of BAs in the last decade, some territories have been segmented into multiple smaller territories as pairs of eagles move in and create occupancies. Breeding area names are assigned to each of the new segments. In the event of a reduction in the number of occupied BAs, leaving one pair in an area previously occupied by two or more pairs, then occupancy status will be assigned to the breeding area that existed first.

RESULTS

All known BAs (n=104) were examined at least once for breeding activity. Out of 90 occupied BAs, 79 were active and 51 pairs successfully produced 77 fledglings (Table 3; Appendix C) for productivity of 0.86 statewide. For 56 BAs where laying dates were estimated based on the feather development of nestlings and/or direct observations, the average statewide egg-laying date was January 28 (ranging from December 3 to March 19). Similarly, for 55 BAs where hatching dates were estimated, the average statewide hatching date was March 3 (ranging from January 9 to April 23), and at 48 BAs the average fledging date was May 22 (ranging from April 2 to July 16). Nesting was initiated earlier at lower elevations, with an average laying date of January 14 at BAs at or below 3,000 ft (914 m) (n=30), January 25 at BAs from 3,001 to 6,000 ft (914 to 1,829 m) (n=10), and February 26 at BAs above 6,000 ft (>1,829 m) (n=16). Hatching and fledging dates followed a similar pattern (Table 4).

Table 3. Summary of Arizona bald eagle productivity 2024.

Number of BAs	104	Number of Active BAs	79
Number of Occupied BAs	90	Number of Failed Breeding Attempts	28
Number of Eggs (minimum)	119	Number of Successful Breeding Attempts	51
Nest Success = 51/90	0.57	Number of Young Hatched	96
Mean Brood Size = 77/51	1.5	Number of Young Fledged	77
		Productivity = 77/90	0.86

Table 4. Average estimated egg-laying, hatching and fledging dates by elevation at bald eagle nests in Arizona, 2024.

Elevation (ft.)	Laying Date (n)	Hatching Date (n)	Fledging Date (n)
<3,000	January 14 (30)	February 16 (30)	May 5 (25)
3,001-6,000	January 25 (10)	February 29 (10)	May 18 (9)
>6,000	February 26 (16)	April 2 (16)	June 24 (14)

Noteworthy findings of the 2024 nest survey included seven new bald eagle BAs (Alpine, Blue Ridge, Boni, Buckhorn, First Light, Walnut Creek, and White Mountain), eight new alternate nests within BAs (Ashurst #4, Cedar Basin #10, Granite Reef #8, Kaibab Lake #9, Kerr #3, Pleasant #6, Riverside #5, and Tremaine #3), seven fallen nests within BAs (Bachelor Cove #3, Cedar Basin

#9, Ister Flat #1, Kaibab Lake #8, Pinto #10, Seventy-six #7, and Water Nest #1), and eight new potential nests at six sites (Airplane Flat #1, Bear Canyon Lake #9, Gordon Canyon #1, Knoll Lake #8, Pacheta #1-3, and Valentine #1).

DISCUSSION

Statewide productivity at Arizona bald eagle BAs in 2024 was 0.86 young fledged per occupied BA, with some differences in elevations and river systems. Most of this year's 90 occupied BAs were at low elevations (at or below 3,000 ft.) compared to middle (3,001-6,000 ft.) and high elevations (>6,000 ft.). Productivity was above average compared to the statewide average at the low elevation sites (0.93, n=43; fledged 40), average at the middle elevation sites (0.88, n=16; fledged 14), and below average at the high elevation sites (0.74, n=31; fledged 23).

There were also differences in productivity between breeding areas along the Salt and Verde Rivers, which together supported 36.7% (n=33) of this year's occupied BAs. Productivity was above the statewide average along the Verde River (1.0, n=16; fledged 16), where it was high at BAs on the lower, regulated portions of the river (1.1, n=9; fledged 10) and average on the upper, unregulated portion (0.86, n=7; fledged 6). In contrast, overall productivity on the Salt River was slightly below average (0.82, n=17; fledged 14), where it was high at BAs on the lower, regulated portions of the river (0.93, n=14; fledged 13) and low on the upper, unregulated portion (0.33, n=3; fledged 1).

While statewide productivity varies annually and averaged 0.91 over the last ten years (Figure 3, Table 5), the number of known bald eagle breeding areas in Arizona continues to grow. This increase has been consistent since the 1990s, but has been especially apparent in the last two decades, with an average of over three new BAs identified each year from 2006 to 2024. Since 2015, the majority of new BAs (60%) were found at elevations above 6,000 ft, including four of the seven confirmed this year (Alpine, Blue Ridge, First Light, and Walnut Creek). Along with their expansion to higher elevations, breeding eagles have built new nests on a variety of substrates in recent years, from the typical snags, live trees, and cliffs to artificial platforms and a drag line crane. Changes in occupancy, productivity, and distribution, and the continued discovery of new breeding areas and new nests, demonstrates the necessity of ORA and survey flights as a means to consistently monitor bald eagle demography.

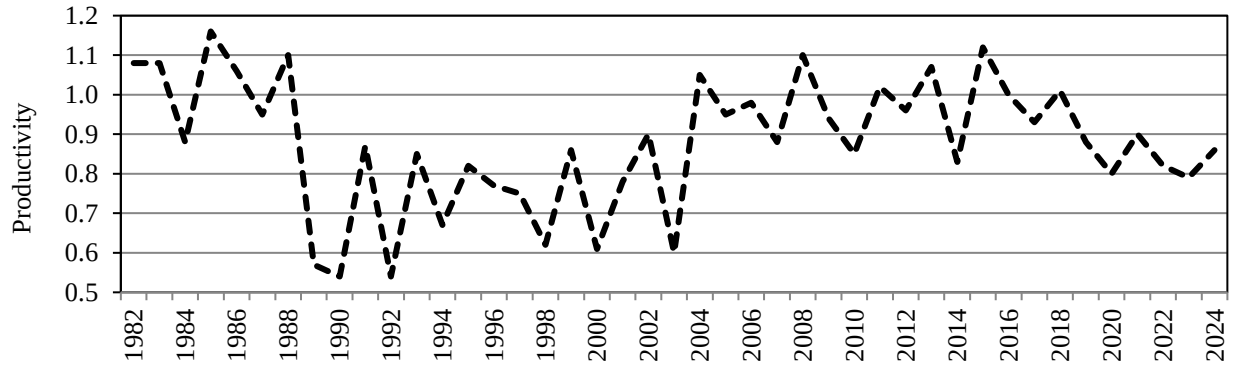

Figure 3. Productivity at bald eagle breeding areas in Arizona, 1982-2024.

Table 5. Arizona bald eagle ten-year productivity summary.

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
Number of BAs	104	99	95	93	92	89	87	85	81	76
Number of occupied BAs	90	82	75	77	73	74	69	68	65	59
Occupancy rate (%)	87	83	79	83	79	83	79	80	80	78
Number of eggs (minimum)	119	102	104	104	92	97	102	97	97	90
Number of active BAs	79	72	63	66	66	67	63	60	60	56
Failed breeding attempts	28	27	24	21	27	26	19	25	19	17
Successful breeding attempts	51	45	39	44	36	41	44	35	41	39
Young hatched	96	76	78	87	71	72	87	82	79	75
Young fledged	77	65	61[a]	69[a]	56[a]	65	70	63	65	66
Nest success	0.57	0.55	0.53[a]	0.58[a]	0.51[a]	0.55	0.64	0.51	0.63	0.66
Mean brood size	1.5	1.4	1.6[a]	1.6[a]	1.6[a]	1.6	1.6	1.8	1.6	1.7
Productivity	0.86	0.79	0.82[a]	0.91[a]	0.80[a]	0.88	1.01	0.93	1.0	1.12

[a]Some active sites were not included where success or failure was not determined.

Results of the individual survey flights are located in Appendix D. Areas worthy of further discussion (new nests, potential nest sites, historic BAs, new breeding areas, bald eagle observations, fallen nests) are described below. Nest locations are sensitive data, considered confidential by the Department, and omitted from this report. Management agencies requiring specific locations should contact the Department's Heritage Data Management System at (623) 236-7618 or hdms@azgfd.gov.

New Locations Surveyed (Table 6)
Included below are descriptions of new large nests found in suitable habitat (new nest sites), new breeding areas discovered, and results of surveys (including bald eagle sightings) outside of known breeding areas.

Airplane Flat. – On May 6, an osprey was incubating in a new large nest #1 in a snag.

Alpine (new BA). – On May 8, a private landowner in Alpine found a dead nestling on the ground below a nest after an overnight windstorm. AGFD confirmed it as a 5.5-week old bald eagle nestling and a new large nest #1 in a live ponderosa pine.

Boni (new BA). – In early February, the San Carlos Apache Tribe reported an adult bald eagle in the area of a new large nest #1 in a cottonwood tree with two adults seen and probable incubation on February 26 (Figure 4).

Buckhorn Creek (new BA). – On February 20, following up on a report from the public, a nestwatcher confirmed a new bald eagle nest #1 in a snag with a 5-week old nestling (Figure 4).

First Light (new BA). – On April 23, an adult bald eagle was incubating in a new large nest #1 in a live pine tree (Figure 5). Due to the sensitivity of the nest location, the specific area is not named in this report.

Figure 4. Boni (left) and Buckhorn (right) breeding areas. Photos by Daniel Juan and Justin Bright.

Gordon Canyon. – On May 6, an osprey was incubating in a new nest in a snag #1.

Indian Bend Wash. – In early April, a member of the public submitted photos of a pair of bald eagles perched by a large nest in a eucalyptus snag along Indian Bend Wash in Tempe. One of the eagles was in adult plumage and the other was in subadult plumage. During a ground visit on April 18, the nest was empty and we did not see any birds. A pair of bald eagles, possibly the same ones, were reported perching together in the area on October 8, 2024. We will continue to montior the nest and area.

Pacheta. – On April 23, three large nests (#1-3) were found in snags. Ospreys were incubating in nests #1-2. No eagles were seen.

Valentine Canyon. – On May 6, a pair of ospreys was perched at a new large nest #1 in a snag.

Walnut Creek (new BA). – On July 8, AGFD received a report from the public of a bald eagle nest on private land. One nestling of advanced age was seen branching by a nest #1 in a live pine tree.

Watson Lake. – In December 2023, an adult and a near-adult bald eagle were observed carrying sticks and possibly building a nest at the lake. The adult male had a red VID band "53/A" on the left leg and USFWS band on the right leg. AGFD had banded and attached a transmitter to this eagle after it was found injured at Lynx Lake in February 2020 and released on April 1 that year. It was already an adult in 2020 and was suspected of being associated with the Lynx BA, possibly injured in a territorial dispute. The near-adult had some dark markings along the eyeline, but was otherwise in adult plumage. No nests were located by AGFD during aerial surveys in 2024 however an adult bald eagle was perched at the lake on January 12. The potential is high for this pair to nest in 2025 and we will continue to monitor the area.

White Mountain (new BA). – On February 2, AGFD confirmed a reported sighting of a bald eagle nest on private land near Show Low, with an adult incubating in the nest #1. On March 22, on nestling was seen approximately 6-7 weeks old (Figure 5).

Figure 5. First Light (left) and White Mountain (right) breeding areas. Photos by Jennifer Presler and Kyle McCarty.

Table 6. Arizona bald eagle nest survey summary, 2024 new locations.

Location	Date(s)	Survey Method	Results
Airplane Flat	5/6	Helicopter	Osprey incubating in a new nest #1. No eagles.
Alpine	5/8	Ground	One nestling found dead under new nest #1.
Black Canyon Lake	5/6	Helicopter	No new nests. One adult and one subadult bald eagle perched.
Boni Tank	3/25, 5/16	Helicopter	3/25: Adult incubating or brooding in nest #1. 5/16: Banded one 5.5-week old nestling.
Buckhorn Creek	3/6, 3/22, 4/1	Helicopter	3/6: One 7.5-week old nestling in nest #1. 3/22: One nestling, 9+ weeks old. 4/1: One nestling, 10-11 weeks old.
First Light	4/23, 6/20	Helicopter	4/23: Adult incubating in a new nest #1. 6/20: Nest empty, failed.
Gordon Canyon	5/6	Helicopter	Osprey incubating in a new nest #1. No eagles.
Indian Bend Wash	4/18	Ground	New large nest #1 was empty. No eagles.
Pacheta Lake	4/23	Helicopter	Ospreys incubating in new nests #1 and #2. New nest #3 also found. No eagles.
Valentine Canyon	5/6	Helicopter	Pair of ospreys perched at a new nest #1.
Walnut Creek	7/8	Ground	One nestling (fledging age) at a new nest #1.
Watson Lake	1/12, 1/29	Helicopter	1/12: One adult perched.
Wet Bottom Creek	5/6	Helicopter	No nests or eagles.
White Mountain	2/2, 3/22, 4/23	Helicopter	2/2: Adult incubating in new nest #1. 3/22: One nestling, 6-7 weeks old. 4/23: One nestling, 11 weeks old.

Potential Nest Sites (Table 7)

Below are findings at previously documented potential nest sites, including observations of bald eagles, new nests, fallen nests, and nesting activity of other raptor species.

Bear Canyon Lake. – On May 6, ospreys were incubating in nests #5 and #6, and a pair of ospreys was standing in nest #8 with one egg (Figure 6). One new large nest #9 was found with an osprey incubating. Nest #7 was fallen and no eagles were seen.

Blue Ridge Reservoir (new BA). – On May 6, an adult bald eagle was found incubating in a new large nest #15 in a live pine (Figure 6). Ospreys were incubating in nests #8, #12, and #13.

Campbell Mesa. – In January and February, a member of the public reported a pair of adult bald eagles perching and copulating at nest #1, which was used by ospreys in 2023. On April 29, an osprey was incubating in the nest, and a pair of adult bald eagles were perched in the area.

Christopher Creek. – On May 6, an osprey was incubating in nest #2. No eagles were seen.

Granite (golden eagle BA). – On April 1, a golden eagle was incubating in nest #6.

Knoll Lake. – On May 6, a pair of ospreys were at nest #6, and an osprey was standing in a new nest #8 in a snag. No eagles were seen.

Mormon Pocket (golden eagle BA). – A golden eagle was incubating in nest #1 on April 1.
Santa Fe Reservoir. – On April 29, ospreys were incubating nests #1-3. No eagles were seen.

Figure 6. Bear Canyon Lake nest site (left) and Blue Ridge breeding area (right). Photos by Jennifer Presler.

Table 7. Arizona bald eagle nest survey summary, 2024 potential nest sites (continued next page).

Location*	Date(s)	Survey Method	Results
Bear Canyon Lake	5/6	Helicopter	Ospreys incubating in nests #5-6 and new nest #9. Pair of ospreys standing in nest #8 with one egg. Nest #7 fallen.
Blue Ridge Reservoir	5/6	Helicopter	Adult bald eagle incubating in a new nest in a tree #15. Ospreys incubating in nests #8, 12, and 13.
Campbell Mesa	4/29	Helicopter	Osprey incubating in nest #1. Pair of adult bald eagles perched together in area.
Christopher Creek	5/6	Helicopter	Osprey incubating in nest #2.
Granite (2GE049)	1/12, 1/29, 4/1	Helicopter	Golden eagle incubating in nest #6 on 4/1.
Hell Point (3GE017)	1/12, 1/29	Helicopter	All known nests empty. No eagles.

*Parentheses indicates corresponding site identification number in the Department's golden eagle database.

Table 7 continued.

Location*	Date(s)	Survey Method	Results
Hidden Valley	5/6	Helicopter	All known nests empty. No eagles.
Knoll Lake	5/6	Helicopter	Pair of ospreys at nest #6. Osprey standing in new nest #8.
Mormon Pocket (2GE031)	1/12, 1/29, 4/1	Helicopter	Golden eagle incubating in nest #1 on 4/1.
Muldoon	1/12, 1/29	Helicopter	All known nests empty. No eagles.
Pineasco Creek	1/30, 3/22, 4/23	Helicopter	All known nests empty. No eagles.
Santa Fe Reservoir	4/29	Helicopter	Ospreys incubating in nests #1-3. All other known nests empty. No eagles.

*Parentheses indicates corresponding site identification number in the Department's golden eagle database.

Historic Breeding Areas (Table 8)
Below are findings at historic breeding areas. No new nests were found, and no bald eagles were observed at any of the areas.

Table 8. Arizona bald eagle nest survey summary, 2024 historic breeding areas.

Location	Date(s)	Survey Method	Results
Bagley	1/18, 1/29, 3/15	Helicopter	All known nests empty. No eagles.
Bill Williams	3/12	Helicopter	No new nests or eagles.
Canyon	1/18	Helicopter	No new nests or eagles.
Coldwater	1/12	Helicopter	All known nests empty. No eagles.
Needle Rock	1/12, 1/29	Helicopter	No new nests or eagles.
Tower	1/12	Helicopter	All known nests empty. No eagles.

Breeding Areas (Table 9)
Below are findings at known breeding areas, limited to observations of new nests, fallen nests, bald eagles without active nests, and breeding activity of other species. For a summary of findings at all known breeding areas, see Appendix C.

Ashurst. – On April 25, an adult bald eagle was found in a new nest #4 with one 4.5-week old nestling. The new nest was built in the same tree that eagles had used in 2016-2017 (nest #1 which fell in 2018).

Bachelor Cove. – On July 1, the U.S. Forest Service (USFS) reported that nest #3 had fallen.

Cedar Basin. – On January 16, nest #9 was fallen and a new large nest #10 was found in a sycamore tree. On January 30, an adult bald eagle was standing in the new nest and was seen incubating on March 22 (Figure 7).

Concho. – A member of the public observed a pair of adult bald eagles in the area from January to April. On March 22, nest #2 empty and two adults were perched nearby.

Granite Basin. – On January 18, two adult bald eagles were seen about one mile upstream of nest #2, which was empty.

Granite Reef. – On January 11, SRP personnel reported bald eagles building a new nest #8 in a snag. An adult was incubating in the nest by February 2, and two nestlings were banded on April 18 (Figure 7).

Ister Flat. – On January 12, nest #1 was fallen. One adult was perched downstream on January 29.

Kaibab Lake. – On March 22, the USFS reported a pair of adult bald eagles at a new nest in a snag #9, and nest #1 was fallen.

Kerr. – On January 29, an adult bald eagle was seen building a new nest #3 in the same tree that had previously supported Granite Reef #2 and Orme #11. On March 15, a small nest base was present, but no eagles were seen.

Figure 7. Cedar Basin (left) and Granite Reef (right) breeding areas. Photos by Kyle McCarty and Jennifer Presler.

Lynx. – On January 6, the USFS observed two adult bald eagles flying and perched together. On February 22, the adult female of the pair was found dead in the area. The female (blue band 20/P) had been nesting at Lynx Lake since at least 2017.

OW. – On March 12, the USFS observed a pair of adult bald eagles soaring together. On May 6, one adult was flying in the area. All known nests were empty.

Pinto. – On January 18, nest #10 fallen and two adult bald eagles were perched by nest #11.

Pleasant. – On January 12 and 29, two adult bald eagles were seen in the area. In February, nestwatchers reported a new large nest on a cliff in the area. On March 12, two adult bald eagles were perched by the new nest #6 (Figure 8).

Riverside Ruin. – In December 2023, the Salt River Pima-Maricopa Indian Community (SRPMIC) reported bald eagles building a new nest #5 in the same tree that supported nest #2. On January 12, an adult was incubating or brooding in the new nest.

San Carlos. – In January, the San Carlos Apache Tribe (SCAT) reported a pair of adults in the area.

Seventy-six. – On March 22, nest #7 fallen.

Sullivan Lake. – On January 12, one adult bald eagle was standing in nest #4, and a second adult was perched nearby. On January 29, a pair of adults were perched in the area, and one adult was perched on April 1. All known nests were empty.

Tortilla Creek. – On March 6, adult bald eagle was perched in the area. On April 1, an adult was standing in nest #1 and a second adult was perched nearby.

Tremaine. – On May 6, a new large nest #3 was found in a snag (Figure 8). No eagles were seen.

Water Nest. – On January 30, nest #1 was fallen.

Figure 8. Pleasant (left) and Tremaine (right) breeding areas. Photos by Kyle McCarty and Jennifer Presler.

Table 9. Arizona bald eagle nest survey summary, 2024 breeding areas (continued next page).

Location	Date(s)	Method	Results
Ashurst	4/25, 4/29, 5/3	Ground, Helicopter	Adult in new nest #4 with one nestling, 4.5 weeks old.
Bachelor Cove	1/18, 1/30, 4/23	Helicopter	USFS reported nest tree #3 fallen on 7/1.
Cedar Basin	1/16, 1/30, 3/22	Helicopter	New large nest #10 found 1/12. Adult incubating in new nest on 3/22.
Concho	1/30, 3/22	Helicopter	Pair of adults perched on 3/22. All known nests empty.
Granite Basin	1/18, 1/30, 3/25	Helicopter	Two adults in area on 1/18. All known nests empty.

Table 9 continued.

Location	Date(s)	Method	Results
Granite Reef	1/12, 1/18, 1/29, 3/15, 4/1, 4/18, 4/23, 5/6	Ground, Helicopter	Pair of adults perched by new nest #8 on 1/12.
Ister Flat	1/12, 1/29, 4/1	Helicopter	Nest #1 fallen on 1/12. One adult in area on 1/29.
Kaibab Lake	4/15, 4/29	Ground, Helicopter	USFS reported a pair of adult bald eagles at a new nest #9 in a snag on 3/22. Nest #1 was fallen.
Kerr	1/18, 1/29, 3/15	Helicopter	Adult building a new nest #3 on 1/29.
Lynx	1/12, 1/29, 4/29	Helicopter	Two adults perched on 1/6. Greenery in nest #6 and one adult in area on 1/29. All known nests empty.
OW	5/6	Helicopter	One adult in area on 5/6. All known nests empty.
Pinto	1/18, 1/30, 3/6, 3/22, 4/1	Helicopter	Two adults perched in area and nest #10 fallen on 1/18.
Pleasant	1/12, 1/29, 3/12	Helicopter	Two adults in area on 1/12 and 1/29, and perched by a new nest #6 on 3/12.
Riverside Ruin	1/12, 1/29, 3/15	Helicopter	Adult incubating in new nest #5 on 1/12.
San Carlos	1/18, 1/30, 3/25	Helicopter	All known nests empty. SCAT reported a pair of adults in January.
Seventy-six	1/18, 1/30, 3/22	Helicopter	Nest #7 fallen on 3/22.
Sullivan Lake	1/12, 1/29, 4/1	Helicopter	Two adults perched in area on 1/12 and 1/29. One adult perched on 4/1.
Tortilla Creek	1/18, 1/29, 3/6, 4/1, 4/23	Helicopter	One adult in area on 3/6. One adult standing in nest #1 on 4/1, and a second adult perched nearby.
Tremaine	5/6	Helicopter	New large nest #3 found on 5/6. No eagles.
Water Nest	1/30, 3/22, 4/23, 6/20	Helicopter	Nest #1 fallen on January 30.

Breeding Areas in Surrounding States (Table 10)

Black Canyon BA (Nevada). – On March 12, one adult bald eagle was in nest #1 with two nestlings, 1-2 weeks old (Figure 9). A second adult flew to the nest.

Table 10. Bald eagle breeding area observations in surrounding states, 2024.

Location	Date(s)	Survey Method	Results
Black Canyon, NV	3/12	Helicopter, Ground	Adult in nest #1 with two nestlings, 1-2 weeks old. Second adult flew to nest.
Copper Basin, CA	3/12	Helicopter	All known nests empty. No eagles.
Whipple Mountains, CA	3/12	Helicopter	All known nests empty. No eagles.

Figure 9. Adult with nestlings (left) and both adults (right) at the Black Canyon breeding area. Photos by Kyle McCarty.

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 new and recently discovered breeding areas including Black Cross, Cataract (2021), Eagle Mountain, Green River, Kachina, Kaibab Lake, OW, Nevada Bay, Rainbow, Two Bar, Water Nest.
4. Identify banded adults at sites where one or both of the pair has long tenure within the breeding area in order to detect when replacement of these important birds has occurred.
5. Examine the following areas for breeding bald eagles and/or nests:
    - Anderson Mesa and area lakes.
    - Big Sandy River drainage – upper Trout Creek.
    - Black River drainage – Known osprey nesting areas on the East and West Fork and main stem of the Black River; Tanks Canyon.
    - Central and Eastern Mountain Lakes – Bear Canyon, Black Canyon, Dry, Knoll, Lyman, Nash Creek, Point of Pines, Rogers.
    - Colorado River drainage – Gene Wash Reservoir (CA), Cibola Havasu National Wildlife Refuge, Havasu National Wildlife Refuge, Imperial National Wildlife Refuge, Black Canyon (Lake Mohave to Lake Mead), Lake Mead (Grand Wash), Nankoweap Creek.
    - North Fork of White River – Known osprey nesting locations.
    - Prescott area – Watson, Willow, and Goldwater lakes.
    - Gila River drainage – Lower Blue River, San Francisco River, Gila Box, Gila River bottom through Phoenix metro area.
    - Salt River Drainage – Search at least two miles upstream on major washes and creeks around Roosevelt Lake (e.g., Greenback Creek, Pinto Creek); Tonto Creek north of Tonto

BA; Redmond BA to Lone Pine BA; major side drainages above Highway 60 bridge (e.g., Sawmill Canyon, Carrizo Creek).
- Verde River drainage – Wet Bottom Creek, Red Creek, Canyon Creek, Houston Creek, Fossil Creek, Camp Verde to Cottonwood, West Clear Creek, Beaver Creek, Oak Creek.
- White Mountain Lakes – Big Lake, Nelson, Nutrioso, Pacheta.
- White River – Whiteriver to confluence with Black and Salt Rivers.
- Williams area lakes – JD Dam and Santa Fe Reservoir.
- Urban and rural areas – Payson, San Tan Valley, Stanfield.
- Southern and southeastern Arizona – Parker Canyon Lake, Patagonia Lake and Sonoita Creek, Peña Blanca Lake.

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, the Department was able to develop and support a comprehensive bald eagle management program. In 1991, the USFWS transferred coordination of the ABENWP to the Department.

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 Department biologists to intervene in these situations and either eliminate or reduce the threat, or rescue injured eagles. In this report, we summarize noteworthy discoveries at each BA monitored by the ABENWP in 2024. Detailed reports of each monitored BA are centralized at the Department, and are distributed to the appropriate land and wildlife management agencies.

METHODS

We selected BAs to be monitored by weighing the level of recreation activity and management needs. Included are those with seasonal closures (Bachelor Cove, Box Bar, Cole's Bay, Goldfield, Granite Reef, Luna, Pleasant, Whiskey Spring, and Woods Canyon), those without closures (Fort

McDowell, Orme, Rodeo, Sycamore, and Willow Springs), and those monitored opportunistically for information (Doka and Tonto). In the fall of 2023, 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 this year's pool of applicants.

We held two orientation meetings and three question-and-answer sessions for the selected ABENWP contractors (nestwatchers) (Figure 10). The two orientation 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, 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. Communication was also achieved via phone, email, and during visits to field sites by AGFD personnel.

Figure 10. Bald eagle nestwatch program orientation in Phoenix, AZ..

Fieldwork began February 2 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 ten-days-on/four-days-off schedule. During each work period, weekend observations were conducted from dawn-to-dusk to cover times of high recreation use, minimize potential disturbances to the nesting attempt, and to 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 with spotting scopes, two-way handheld 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 (3,281 ft) radius of a bald eagle or active nest, nestwatchers recorded all human activity and the associated bald eagle behavior. Aircraft flying below the 2,000-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 Bachelor Cove, Box Bar, Cole's Bay, Doka, Fort McDowell, Sycamore, Willow Springs, and Woods Canyon BAs the nestwatchers recorded human activity differently than described above. At the Bachelor Cove BA, nestwatchers had a limited view of the area with observations primarily restricted to the nest canyon and immediate nest area. Traffic along Highway 188 was not recorded due to its regular presence and no reaction from the resident eagles. At the Box Bar BA, nestwatchers had a limited view of the area to the north, east, and south of the nest tree and no view to the west, and therefore were only able to observe human activity occurring within about 250 m of the nest tree. At the Cole's Bay BA, nest nestwatchers had a limited view of the area with observations primarily restricted to the cove containing the nest. At the Doka, Fort McDowell, and Sycamore BAs, farm activities were not documented as they were frequent and the eagles did not react to them, and due to the frequency of air traffic nestwatchers only recorded aircraft below about 800 ft above ground level. At the Willow Springs and Woods Canyon BAs, due to a high volume of recreationists at the lake, nestwatchers only recorded eagle responses to activities within about 200 m of the nest or an eagle, as well as visitors to the observation point and any activity that elicited a significant response from an eagle.

In addition to recording human activity and associated eagle responses, nestwatchers documented 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 16 breeding areas (either full or part-time) in 2024 including Bachelor Cove, Box Bar, Cole's Bay, Doka, Fort McDowell, Goldfield, Granite Reef, Luna, Orme, Pleasant,

Rodeo, Sycamore, Tonto, Whiskey Spring, Willow Springs, and Woods Canyon (Appendix C). Some BAs were either monitored part-time or opportunistically by nestwatchers at nearby BAs, and data is not included for these sites in the following section of this report.

Bachelor Cove Breeding Area (Appendix E, Figure 11)
Observation Period. – February 3 to April 21. Total monitoring 467 hours over 59 days.

Bald Eagle Identification. – Both eagles were in adult plumage. The female was not banded (unknown origin), and the male had a blue VID band on the left leg and silver band on the right leg (unknown origin, but blue band consistent with Arizona origin).

Management Activities. – 1) The USFS maintained "No Entry" signs around the nest area.

Human Activity. – Nestwatchers recorded 634 human activities. Terrestrial activity of eleven types represented 91.3% of activities, watercraft (fishing by boat, paddleboard/kayak) 6.6%, and aircraft activity (small plane, helicopter, jet) 2.1%. One type of activity elicited one significant response from the breeding pair. The bald eagles left the area in response to one small plane.

Food Habits. – The nestwatchers observed eleven forage events, with fish accounting for 90.9%, and unknown prey 9.1%. The male was successful in 85.7% (n=7) and the female in 100% (n=4) of forage events. The breeding pair was observed delivering 79 prey items to the nest, of which the male delivered 62.0%, the female 35.4%, and an unknown adult 2.5%. Fish comprised 62.0%, birds 8.9%, mammals 1.3%, and unknown prey 27.8% of the deliveries. Of the twelve prey items further identified, 58.3% (n=7) were bass species (e.g., *Micropterus sp.*), 25.0% (n=3) were catfish species (e.g. *Pylodictis olivaris* or *Ictalurus punctatus*), and 8.3% (n=1) each were American coot (*Fulica americana*) and rabbit species (e.g. *Sylvilagus* or *Lepus sp.*).

Habitat Use. – The Bachelor Cove nestwatchers identified 15 separate perch locations spanning 0.4 km of Roosevelt Lake, ranging from lk 82.2 to 82.6. The bald eagle pair spent 89.9% of the observed time at lake km (lk) 82.2, 9.9% at lk 82.4, 0.1% at lk 82.5, and 0.1% at lk 82.6.

Figure 11. Bachelor Cove (left) and Box Bar (right) breeding areas. Gila and Maricopa Counties, Arizona.

Box Bar Breeding Area (Appendix F, Figure 11)
Observation Period. – February 2 to May 19. Total monitoring 724 hours over 80 days.

Bald Eagle Identification. – The male was in adult plumage and not banded (unknown origin), and the female was in adult plumage and not banded (unknown origin).

Management Activities. – 1) The USFS enacted a closure around the nest area and placed or maintained "No Entry" signs.

Human Activity. – Nestwatchers recorded 851 human activities. Terrestrial activity of 12 types represented 83.0%, water pursuits (kayak, swimmer, tuber, paddleboard) 16.5%, and aircraft (helicopter, drone) 0.6% of activities. Three activities elicited five significant responses from the breeding pair. The eagles were restless in response to one gunshot, and flushed in response to two birders and two agency workers.

Food Habits. – The nestwatchers were unable to observe any forage events. The breeding pair was observed delivering 52 prey items to the nest, of which the male delivered 38.5%, the female 57.7%, and an unknown adult 3.8%. Fish comprised 84.6%, mammals 3.8%, birds 3.8%, reptiles 1.9%, and unknown prey 5.8% of the deliveries. Of the 24 prey items further identified, 75.0% were catfish species, 8.3% were tilapia (*Tilapia* spp.), 8.3% were rabbit species, and 4.2% each were waterfowl and snake species.

Habitat Use. – The Box Bar nestwatchers identified 13 separate perch locations spanning 1.7 km of the Verde River ranging from river kilometer (rk) 24.8 to 26.5. The bald eagles spent 80.8% of the observed time at rk 25.5, 12.0% at rk 25.8, 3.9% at rk 25.5, and 3.3% at the remaining locations.

Cole's Bay Breeding Area (Appendix G, Figure 12)
Observation Period. – February 5 to May 2 (part-time). Total monitoring 165 hours over 26 days.

Bald Eagle Identification. – The male was in adult plumage and not banded (unknown origin). The band status of the female was not confirmed (suspected to be not banded).

Management Activities. – 1) Nestwatchers were supplied a boat by AGFD and educated recreationists about the bald eagles. 2) MCPRD closed access to the road above the nest.

Human Activity. – Nestwatchers recorded 406 human activities. Water pursuits of three types represented 94.1%, aircraft activity (small planes, helicopters, and military jets) 5.2%, and terrestrial activity 0.7%. One activity elicited one significant response from the breeding pair. The bald eagles were restless in response to one jet ski.

Food Habits. – The nestwatchers observed nine forage events, with fish accounting for 88.9%, and unknown prey 11.1%. The male was successful in 50.0% (n=2), the female in 66.7% (n=6), and an unknown adult in 100% (n=1) of forage events. The breeding pair was observed delivering 8 prey items to the nest, of which the male delivered 37.5% and the female 62.5%. Fish comprised

100% of the deliveries. None of the prey items were further identified.

Habitat Use. – The Cole's Bay nestwatchers identified 15 separate perch locations (see Nestwatch report for map kilometers). The bald eagle pair spent 47.0% of the observed time at map kilometer 28.0, 36.7% at 27.8, 9.9% at 27.9, 4.0% at 28.1, and 2.3% at the remaining locations.

Figure 12. Cole's Bay (left) and Doka (right) breeding areas. Maricopa County, Arizona.

Doka Breeding Area (Appendix H, Figure 12)
Observation Period. – February 2 to May 20 (full-time April 15 to May 20). Total monitoring 222 hours over 51 days.

Bald Eagle Identification. – Nestwatchers reported that both eagles were in adult plumage and unbanded (unknown origin).

Management Activities. – 1) FMYN restricts access to non-tribal members.

Human Activity. – Nestwatchers recorded 14 human activities. Aircraft activity (small plane and helicopters) represented 92.9%, and terrestrial activity 7.1%. One activity elicited one significant response from the breeding pair. The bald eagles flushed in response to one military helicopter.

Food Habits. – The nestwatchers did not observe any forage events. The breeding pair was observed delivering 19 prey items to the nest, of which the male delivered 57.9%, the female 36.8%, and an unknown adult 5.3%. Fish comprised 10.5% and unknown prey 89.5% of the deliveries. None of the prey items were further identified.

Habitat Use. – Nestwatchers were unable to adequately document habitat use by the Doka breeding pair due to the distance to the nest from the observation point, the lack of an elevated vantage point, and the obstruction of views by vegetation.

Fort McDowell Breeding Area (Appendix I, Figure 13)
Observation Period. – February 2 to May 20 (Full-time February 2 to April 7). Total monitoring 309 hours over 53 days.

Bald Eagle Identification. – Nestwatchers reported that both eagles were in adult plumage and unbanded (unknown origin).

Management Activities. – 1) FMYN placed "No Entry" signs to prevent off-road vehicle access to the nest area. 2) FMYN restricts access to non-tribal members.

Human Activity. – Nestwatchers recorded 39 human activities during the monitoring period. Terrestrial activity of seven types represented 61.5% and aircraft activity (small planes and helicopters) 38.5%. One activity elicited one significant response from the breeding pair. The bald eagles flushed in response to one nestwatcher.

Food Habits. – The nestwatchers observed two forage events, with the female and male each successfully foraging an unknown prey type. The breeding pair was observed delivering 24 prey items to the nest, of which the male delivered 50.0%, the female 37.5%, and un unknown adult 12.5%. Fish comprised 41.7%, mammals 8.3%, birds 4.2%, reptiles 4.2%, and unknown prey 41.7% of the deliveries. None of the prey items were further identified.

Habitat Use. – Nestwatchers identified twelve perch locations spanning 0.9 km of the Verde River ranging from river kilometer 19.2 to 20.1. The bald eagles spent 67.6% of the observed time at rk 19.8, 11.2% at rk 19.5, 6.1% at rk 19.6, 5.0% at rk 19.9, 4.3% at 19.7, and 5.7% at the remaining locations.

Figure 13. Fort McDowell (left) and Goldfield (right) breeding areas. Maricopa County, Arizona.

Goldfield Breeding Area (Appendix J, Figure 13)
Observation Period. – February 2 to April 25. Total monitoring 533 hours over 63 days.

Bald Eagle Identification. – The male had a blue VID band "30/K" on the left leg and USFWS band on the right leg (2015 nestling from the Box Bar BA). Nestwatchers reported the female was in adult plumage and unbanded (unknown origin).

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

Human Activity. – Nestwatchers recorded 7,022 human activities during the observation period. Terrestrial activities of 17 types represented 64.4%, water pursuits (paddleboard, canoe/kayak, tuber, rafter) 33.1%, and aircraft (helicopter, small plane, jet, drone, and sonic boom) 2.5%. Six types of activity elicited eight significant responses from the breeding pair. The bald eagles were restless in response to four helicopters, one jet, one small plane, one drone, and one nestwatcher.

Food Habits. – The nestwatchers observed four forage events, with birds accounting for 25.0%, and unknown prey types 75.0%. The male was successful in 0% (n=3) and an unknown adult in 100% (n=1) of forage events. The breeding pair was observed delivering 126 prey items to the nest, of which the male delivered 59.5%, the female 36.5% and an unknown adult 4.0%. Fish comprised 34.9%, mammals 28.6%, birds 2.4%, reptiles 0.8%, and unknown prey types 33.3% of the deliveries. Of the 23 prey items further identified, 39.1% were desert cottontail (*Sylvilagus audubonii*), 17.4% were rainbow trout (*Oncorhynchus mykiss*), 8.7% were black-tailed jackrabbit (*Lepus californicus*), 8.7% were rock squirrel (*Otospermophilus variegatus*), 8.7% were desert sucker (*Catostomus clarkii*), and 4.3% each were gray fox (*Urocyon cinereoargenteus*), common carp (*Cyprinus carpio*), double-crested cormorant (*Phalacrocorax auritus*), and spiny softshell (*Apalone spinifera*).

Habitat Use. – The Goldfield nestwatchers identified 13 perch locations, spanning a 1.3 km stretch of the Salt River ranging from rk 8.6 to 9.9. The bald eagle pair spent 65.8% of the observed time at rk 9.5, 22.5% at rk 9.0, 7.5% at rk 9.9, 2.2% at rk 8.6, and 2.0% at the remaining locations.

Granite Reef Breeding Area (Appendix K, Figure 14)
Observation Period. – February 3 to May 30. Total monitoring 704 hours over 89 days.

Bald Eagle Identification. – Nestwatchers reported that both eagles were in adult plumage and unbanded (unknown origin).

Management Activities. – 1) Maricopa County Parks and Recreation closed a segment of the Arizona Trail passing by the nest. 2) SRPMIC and SRP restricted vehicle access to a portion of the road system in the nest area. 3) On April 18, one female and one male nestling were blue VID banded “57/C” and “58/C” at 5.5 weeks old. 4) On November 25, AGFD, SRP, and SRPMIC collaborated to install a pole and attached a nest platform to it in an effort to provide the breeding pair with an alternative nesting substrate.

Human Activity. – Nestwatchers recorded 2,184 human activities during the observation period. Aircraft (helicopters and small planes) represented 58.8% and terrestrial activities of nine types 41.2%. Nine types of activities elicited 85 significant responses from the breeding pair. The bald eagles flushed in response to 14 helicopters, 12 cyclists, 8 anglers, 4 police officers, 3 hikers, 1 OHV, and one photographer, and left the area in response to 22 drivers, 7 hikers, 7 cyclists, 4 helicopters, 1 OHV, and 1 motorcycle.

Food Habits. – The nestwatchers observed 38 forage events, with fish accounting for 73.7%, birds 13.2%, mammals 2.6%, and unknown prey types 10.5%. The male was successful in 47.3% (n=19), the female in 81.3% (n=16), tandem adults in 100% (n=1), and an unknown adult in 100% (n=2) of forage events. The breeding pair was observed delivering 45 prey items to the nest, of which the male delivered 71.1%, the female 26.7%, and an unknown adult 2.2%. Fish comprised 80.0%, birds 6.7%, and unknown prey types 13.3% of the deliveries. Of the 19 prey items further identified, 42.1% were rainbow trout, 15.8% were catfish species, 10.5% were channel catfish (*Ictalurus punctatus*), 10.5% were sucker species (e.g., *Catostomus sp.*) 10.5% were American coots, and 5.3% each were flathead catfish (*Pylodictis olivaris*) and common carp.

Habitat Use. – The Granite Reef nestwatchers identified 24 perch locations, spanning a 1.2 km stretch of the Salt River ranging from rk 0.0 to 1.2. The bald eagle pair spent 25.4% of the observed time at rk 0.5, 22.7% at rk 0.6, 22.6% at rk 0.2, 14.2% at rk 0.1, 6.4% at rk 0.3, 4.7% at rk 0.0, 4.0% at rk 0.4, and <1.0% at the remaining locations.

Figure 14. Granite Reef (left) and Luna (right) breeding areas. Maricopa County and Apache County, Arizona.

Luna Breeding Area (Appendix L, Figure 14)
Observation Period. – February 2 to June 22. Total monitoring >900 hours over 106 days.

Bald Eagle Identification. – Both resident eagles were in adult plumage. Band status was unknown.

Management Activities. – 1) The USFS enacted the seasonal BA closure. 2) Nestwatchers were stationed at the boat ramp to talk to visitors.

Human Activity. – The nestwatchers recorded 1,133 human activities. Terrestrial activity of 17 different types accounted for 93.7%, water pursuits (boats, swimmers, rafters, kayaks/canoes) 6.0%, and aircraft (military jets) 0.3%. Four types of activities elicited five significant responses from the breeding pair. The eagles were restless in response to two military jets and one gunshot. They flushed in response to one construction event and left the area in response to one photographer.

Food Habits. – The nestwatchers observed 62 forage events, with fish accounting for 59.7% and birds 40.3%. The male was successful in 97.1% (n=34) and the female in 89.3% (n=28) of forage

events. The breeding pair was observed delivering 56 prey items to the nest, of which the male delivered 51.7% and the female 48.2%. Fish comprised 66.0% and birds 34.0% of these deliveries. Of the 56 prey items further identified, 66.1% were trout species, 32.1% were American coots, and 1.8% were Canada goose (*Branta canadensis*).

Habitat Use. – Nestwatchers identified 29 separate habitat use areas around Luna Lake. The bald eagle pair spent 41.4% of the observed time at lk 4.9, 38.9% at lk 4.8, 6.6% at lk 5.0, 3.9% at lk 5.1, 1.7% at lk 2.6, 1.6% at lk 1.8, 1.5% at lk 0.8, and 4.4% at the remaining locations.

Orme Breeding Area (Appendix M, Figure 15)
Observation Period. – February 9 to May 8 (part-time monitoring).

Bald Eagle Identification – Both eagles were in adult plumage. The male had a blue VID band "26/B" on the left leg and USFWS band on the right leg (2011 nestling from the Riverside BA). The female was unbanded (unknown origin).

Management Activities. – 1) The SRPMIC continues to restrict non-tribal member use to the area. 2) On April 3, one male and one female nestling were blue VID banded "48/C" and "49/C" at 5.5 weeks old.

Human Activity. – Nestwatchers recorded 101 human activities. Terrestrial activities of five types represented 78.2% and aircraft (helicopters, small planes) 21.8%. One type of activity elicited two significant responses from the breeding pair. The bald eagles left the area in response to two hikers.

Food Habits. – The nestwatchers were unable to observe any forage events or prey deliveries.

Habitat Use. – The Orme nestwatchers identified six perch locations spanning 0.3 km along the Verde River ranging from rk 0.6 to 0.9. Due to limited observations of the area, additional habitat use data was not collected.

Figure 15. Orme (left) and Sycamore (right) breeding areas. Maricopa County, Arizona.

Sycamore Breeding Area (Appendix N, Figure 15)
Observation Period. – Full-time observations from February 2 to May 2 (part-time). Total monitoring 234 hours over 32 days.

Bald Eagle Identification. – Nestwatchers reported that both eagles were in adult plumage and unbanded (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.

Human Activity. – Nestwatchers recorded 13 human activities. Aircraft (helicopters and small planes) represented 84.6%, and terrestrial activities (horseback rider, angler) for 15.4%. None of the activities elicited a significant response from the breeding pair.

Food Habits. – Nestwatchers were unable to observe any forage events. Since eggs did not hatch, there were no prey deliveries to the nest.

Habitat Use. – The Sycamore nestwatchers identified six separate perch locations, spanning 3.3 km along the Verde River ranging from rk 7.8 to 11.1. The bald eagle pair spent 34.0% of the observed time at rk 11.1, 30.8% at rk 9.9, 20.7% at rk 10.1, 13.4% at rk 7.8, and 1.1% at the remaining locations.

Whiskey Spring Breeding Area (Appendix O, Figure 16)
Observation Period. – February 3 to May 5. Total monitoring 462 hours over 53 days.

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

Management Activities. – 1) Maricopa County Parks and Recreation Department enacted the seasonal closure for the breeding area and marked closure boundaries with buoys. 2) Nestwatchers were supplied a boat by AGFD and educated recreationists about the closure and bald eagles. 3) On April 4, one male and two female nestlings were blue VID banded “51/C”, “50/C”, and “52/C” respectively at 5.5-6 weeks old.

Human Activity. – Nestwatchers recorded 353 human activities. Watercraft (boats and jet skis) represented 87.3%, aircraft (planes, jets, military jets, and helicopters) 10.5%, and terrestrial activities (OHV, agency worker, and vehicle) 2.3%. One type of activity elicited one significant response from the breeding pair. The bald eagles flushed in response to one boat. Of the 2,137 watercraft that were documented approaching the southern closure buoy line, a total of 391 (18.3%) did not comply and entered the closure.

Food Habits. – The nestwatchers observed 38 forage events, with fish accounting for 86.8%, birds 5.3%, and unknown prey 7.9%. The male was successful in 59.1% (n=22) and the female in 68.8% (n=16) of forage events. The breeding pair was observed delivering 20 prey items to the nest, of

which the male delivered 50.0% and the female 50.0%. Fish comprised 90.0% and birds 10.0% of these deliveries. Of the six prey items further identified, 33.3% were bass species, and 16.7% each were shad (*Dorosoma sp.*), sucker species, double-crested cormorant, and waterfowl species.

Habitat Use. – The Whiskey Spring nestwatchers identified 69 separate perch locations along the Agua Fria River arm of Lake Pleasant. Perches spanned a total of 1.9 km ranging from rk 68.1 to 70.0. The breeding pair spent 24.6% of the observed time at rk 69.1, 21.7% at rk 68.2, 15.1% at rk 68.9, 11.6% at rk 68.3, 5.0% at rk 68.8, 3.9% at rk 69.0, 3.7% at rk 68.4, 3.3% at rk 68.5, and 11.2% at the remaining locations.

Figure 16. Whiskey Spring (left) and Willow Springs Lake (right) breeding areas. Maricopa County and Coconino County, Arizona.

Willow Springs Lake Breeding Area (Appendix P, Figure 16)
Observation Period. – May 19 to July 22. Total monitoring 390 hours over 55 days.

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

Management Activities. – 1) Nestwatchers educated recreationists about the bald eagles. 2) On July 21, AGFD and Nestwatchers recovered one fledgling after it left the nest with monofilament fishing line wrapped around one of its legs and had a severe injury due to the line digging into the flesh of the leg. The juvenile eagle was taken to a wildlife rehabilitation facility where it healed and was released at Roosevelt Lake on November 21. Prior to release, AGFD banded the female eagle with a blue VID band "69/C" on the left leg and USFWS on the right leg, and also attached a transmitter to it.

Human Activity. – Nestwatchers recorded 2,779 human activities. Terrestrial activities of eight types accounted for 50.9%, water pursuits of six types for 49.0%, and aircraft (drones, helicopters) 0.1%. Two types of activities elicited three significant responses from the breeding pair. The bald eagles were restless in response to one agency worker, and flushed in response to one agency worker and one helicopter.

Food Habits. – The nestwatchers observed five forage events, with fish accounting for 100%. The male was successful in 50.0% (n=2) and the female in 0% (n=3) of forage events. The breeding pair was observed delivering 48 prey items to the nest, of which the male delivered 60.4% and the female 39.6%. Fish comprised 72.9%, birds 2.1%, and unknown prey 25.0% of the deliveries. Of the 36 prey items further identified, 97.2% were trout species and 2.9% were Steller's jay (*Cyanocitta stelleri*).

Habitat Use. – Nestwatchers identified 15 perch locations around the lake. The bald eagle pair spent 76.6% of the observed time at lk 6.2, 22.5% at lk 6.3, and 1.0% at the remaining locations.

Woods Canyon Lake Breeding Area (Appendix Q, Figure 17)
Observation Period. – May 5 to July 18. Total monitoring 457 hours over 54 days.

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

Management Activities. – 1) The USFS enacted a closure around the nest area. 2) Nestwatchers educated recreationists about the closure and bald eagles.

Human Activity. – Nestwatchers recorded 3,289 human activities. Water pursuits of six types accounted for 57.0%, terrestrial activities of ten types 42.8%, and aircraft 0.2%. Three types of activities elicited five significant responses from the breeding pair. The bald eagles flushed in response to three photographers, one paddleboard, and one dog.

Food Habits. – The nestwatchers observed 48 forage events, with fish accounting for 95.8% and unknown prey 4.2%. The male was successful in 84.2% (n=19), the female in 47.8% (n=23), and an unknown adult in 66.7% (n=6) of forage events. The breeding pair was observed delivering 92 prey items to the nest, of which the male delivered 57.6% and the female 42.4%. Fish comprised 95.7% and unknown prey types 4.3% of the deliveries. Of the 64 prey items further identified, 95.3% were rainbow trout and 4.7% were bluegill (*Lepomis macrochirus*).

Habitat Use. – The Woods Canyon nestwatchers identified 25 perch locations around the lake. The bald eagle pair spent 19.7% of the observed time at lk 0.9, 13.8% at lk 4.8, 13.0% at lk 1.0, 11.9% at lk 4.9, 10.7% at lk 4.6, 9.4% at lk 0.7, 7.1% at lk 0.1, 5.4% at lk 1.1, 4.1% at lk 4.0, and 4.9% at the remaining locations.

Figure 17. Woods Canyon breeding area. Coconino County, Arizona.

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 the Department. We have included them as informational material for land and wildlife management agencies reviewing this report, and for further discussion at SWBEMC meetings.

Bachelor Cove

1) Consider installing an artificial nest or platform to replace the fallen nest.
2) Replace the broken gate which was supposed to block access to the cove from FR647. Several groups forcibly moved the gate to camp at the shoreline and eventually broke the gate. Also replace aging signage.

Box Bar

1) Although the size of the closure has been increased and some signage has been added to help protect the eagles, nestwatchers would like to recommend that the Box Bar Recreational Area continues to be considered as a priority area to be patrolled by USFS, AZGFD and other law enforcement officers, at least while the breeding area is active, as the number of closure violations and other activities potentially dangerous for the eagles may keep increasing as the number of visitors does as well.
2) A beehive was found in a branch of the nest tree when inspecting it for a possible banding session. We recommend to remove the beehive in as humane a way as possible. Besides preventing banding the nestling, it can be a potential threat for the nestlings at fledge time or before.

Fort McDowell, Doka, Rodeo, and Sycamore

1) Continue to monitor the Fort McDowell eagle nest on weekend days early in the season. pair failed to hatch eggs for the second year in a row. In 2024, the FMD pair successfully fledged eaglets for the first time since 2021. During the previous 2 years, tire tracks were found going out to the nest tree and the nesting attempt failed just after hatching. We believe having nest watchers at the site, especially just after hatching, helped to minimize the amount of activity in the Fort McDowell BA.
2) Monitor the Rodeo nest during the week the Spartan Race is setting up the course they will be using each season. We believe the Rodeo nestling may have died due to the presence of people in the BA setting up the race course during our days off in early February. Ask the Spartan Race to submit a map to FMYN Environmental personnel of the planned layout of the race before they set up the course each year.
3) If possible, develop some regulations concerning the use of drones on FMYN lands. No drones were observed this year, but they have been seen at the RV park in past years. All of the nests may be vulnerable to drones and some consistent regulations from the FMYN would be helpful to keep drones away from active eagle nests.
4) Strongly encourage woodcutters with permits in the vicinity of FMYN breeding areas to cut wood elsewhere from December through June if a nearby nest is active. This truly is vital to the success of future nesting attempts. Woodcutters will spend several days in one

area and should be at least a half mile from an active nest. A woodcutter was heard regularly in the Sycamore BA and occasionally from the Doka observation point.

5) Continue closure of any horse trail proximate to the Sycamore nest from December-June if the nest is active. Advise Fort McDowell Adventures Stables of this and notify them of any changes.

Goldfield

1) Post clear signage outlining the laws regarding drone use in the National Forest and near a bald eagle nest. Many people were observed using drones at Goldfield, including both recreators and USFS employees. Visitors were unaware or had contrasting beliefs about drone use regulations, which led to at least one incident of a drone being flown close to the nest that we observed. Place a sign in the Goldfield parking lot (as this is where people were seen to operate their drones from) stating that drone use is prohibited near the nest. It would also help to discuss with nestwatchers what the exact drone use laws are so that we can educate visitors more effectively.
2) The site would benefit from additional and more detailed signage along the closure perimeter. Many people we met were aware that some part of the site was closed due to the eagle nest but didn't know exactly where that boundary began. A few weeks into the monitoring, biologist Kelly Kessler put up a temporary sign detailing the nesting bald eagle regulations and a map of the closure, but a more permanent sign(s) like this could be present year-round as Goldfield is certainly trafficked in every season.
3) Additional signage could be helpful describing the local ecology and biodiversity, as is present at most of the other recreation areas on the Salt River, as well as a bin for anglers to discard used fishing line and signage outlining the risks and penalty for littering.
4) Continue to educate pilots and law enforcement agencies, including the Maricopa County Sheriff's Department, of locally nesting eagles and encourage them to keep a respectable distance when flying over breeding areas.

Granite Reef & Orme

1) Continue to close Segment Two of the Maricopa Trail from early in the breeding season until the eaglets fledge. Place signs on the Granite Reef Dam Road and Arizona Canal Road to limit vehicle traffic and inform people that they are in a sensitive species area.
2) It is recommended that nestwatchers have someone unlock the gate or provide a community padlock on the gate leading to the observation point so they can bring a shelter and chairs to the site. Recommended shelters include a tent for cold, wet weather and a shade canopy for later in the season. Being given access to the gate midway through the season allowed nestwatchers to drive to the observation point during inclement weather. Trimming tree branches along the trail leading to the OP would also greatly assist nestwatchers in reaching the site.

Luna

1) Establish closure boundaries for the north side breeding area, getting signage in place before breeding season.
2) All USFS projects impacting the Luna Lake Breeding Area should be discussed in advance with AGFD bald eagle management team and nestwatchers prior to implementation.

Pleasant, Cole's Bay, and Whiskey

1) Place more obvious signage at the Agua Fria southern boundary to promote compliance. The most common response the 2024 nestwatchers heard from closure violators was that they did not recognize the "Keep Out" buoys or did not know they were in the Agua Fria. A signage buoy with a large sign detailing the eagle habitat and closure dates at the southern closure line would be effective in deterring recreators who are genuinely unaware and remove plausible deniability for violators who choose to ignore it.
2) Adjust language in the signage at the northern Jeep trail land closure and t-post blockade. Land closure violators expressed to the nestwatchers that the sign at the northern land boundary (by Cow Creek Road) suggested that the closure applied only to water recreation. The sign, which is the same one posted elsewhere around Lake Pleasant, shows a map of the entire closure area but does not clearly indicate where the land closure starts. Clarifying the closure start line and maintaining the t-post blockade (implemented April 2024) would likely reduce land violations. This will be increasingly important if the Pleasant BA becomes active, as the eagles tend to perch along the Jeep trail.

Willow Springs

1) Place a closure around the nest tree that is well marked with closely spaced, high visibility signs. The closure must include the section of Forest Service road 149F immediately behind the nest tree and reach down as close as possible to the shoreline, but we also suggest that some space is left for hikers and fishermen to walk along it, similar to how it is done at the nearby Woods Canyon Lake breeding area.
2) Place educational signs about nesting eagles at the main parking area near the boat ramp and the Sardine Point and SR 260 parking areas. Maps showing where closure areas are located would help limit the number of people trespassing and/or disturbing the eagles. Information about not flying drones near the eagles' nest would be useful too.
3) Place fishing line and tackle disposal tubes at visible places on the south channels of the lake. Fishing activity in that area is very high and the amount of discarded fishing line and tackle along the shore is surprising. Nestwatchers removed several bags of it and observed several ducklings and other birds entangled with it.

Woods Canyon

1) Post drone flying information. Drone activity at the lake and elsewhere was relatively frequent and is likely to keep increasing over the years. It will be helpful to post signage at the boat dock and campgrounds warning recreationists about flying drones near the eagle's nest (with updated nest and observation point locations) and provide nestwatchers with current information about laws permitting (or prohibiting) flying drones inside the different recreational areas.
2) Add more or bigger fishing lines and tackle disposal tubes. The ones already installed get filled quickly and are usually overflowing with that and other trash. More at the docks and one at the Spillway parking lot are especially needed.
3) Place a closure ahead of time. Results from past seasons strongly indicate that it is necessary to establish a closure around the nest tree and adjacent area before Woods Canyon Lake and its recreational areas are open to the public for the season. Although resident adult eagles in the lake can become very tolerant to human activities over the years,

new adults that replace non-returning residents may experience a shocking impact when human activity in their breeding area drastically increases overnight.

4) Continue using the red "STOP" signs to mark the closure, as they are easier to see and understand. Place the signs at shorter intervals, as current signs were placed too far apart, and people commonly entered the closure in between them without noticing them.
5) Provide nestwatchers with parking passes or official signage for day use areas to prevent confusion among the employees who enforce parking rules.

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APPENDIX A: 2024 ARIZONA BALD EAGLE WINTER COUNT RESULTS

Table 11. 2024 Arizona bald eagle winter count volunteer survey results (continued next page).

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagles	Unknown Eagles
Apache County						
1	Becker Lake	89	1	2	0	0
2	Little Colorado River	33	0	0	0	0
3	S. Fork LCR – Campground	85	0	0	0	0
4	Casa Malpais – LCR	34	0	0	0	0
5	Greer Lakes	107	1	0	0	0
6	Sponseller Lake	30	3	0	0	0
7	Mexican Hay Lake	60	0	0	0	0
8	White Mountain Hereford Ranch	120	1	0	0	0
9	The Ranch Lake	15	0	0	0	0
10	Ortega Lake	20	0	0	0	0
11	Concho Lake	30	0	0	0	0
12	Luna Lake	150	3	3	0	0
13	Nelson Reservoir	95	0	1	0	0
14	Nutrioso Reservoir	35	0	0	0	0
16	San Francisco River	150	0	0	0	0
Total		**1,053**	**9**	**6**	**0**	**0**
Cochise County						
18	Parker Canyon Lake	120	0	0	0	0
19	Willcox Playa	180	0	0	0	0
Total		**300**	**0**	**0**	**0**	**0**
Coconino County						
21	Long Lake Complex	390	1	0	0	0
22	Stoneman Lake	150	3	4	0	1
23	FH-3	37	0	0	0	0
24	I-17, Section to Flagstaff	197	1	2	0	0
25	Bellemont	355	5	1	0	0
26	Townsend/Winona A/B	398	1	0	0	0
27	HWY 89 North /Sunset Crater – Wupatki	405	7	1	0	0
28	FH-3 Lakes (Mary, Mormon, Marshall, Prime, etc.)	319	3	6	2	0
29	Continental Country Club Lakes	251	1	0	0	0
30	Chevelon Canyon Lake	275	0	0	0	0
32	Spring Valley Wash	290	4	2	0	0
33	Red Lake Valley	90	0	0	0	0
34	Kaibab Lake	120	0	0	0	0
35	Pittman Valley	80	0	0	0	0
36	Davenport Lake	109	0	0	0	1
37	Scholz Lake	90	2	2	0	0
38	Cataract Lake	120	2	0	0	0
39	Willow Springs Lake	129	0	0	0	0
40	West Chevelon Canyon	58	0	0	1	0
41	Willow Creek	50	0	0	0	0
42	White Horse Lake – Pomeroy Tanks	75	2	2	0	0

Table 11 continued.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagles	Unknown Eagles
43	JD Dam Lake	Not surveyed.				
45	Steel/Stone Road	180	1	0	0	0
48	Blue Stem Wash-Babbit property	62	0	0	0	0
49	Glen Canyon Nat'l Rec. Area (Lake Powell to Lee's Ferry)	Not surveyed.				
118	Bill Williams Loop Road	200	3	2	0	0
119	Johnson Canyon	180	0	0	0	0
120	Highway 64 east	Not surveyed.				
121	Highway 64	18	0	0	0	0
122	Camp Navajo	184	0	0	0	0
123	Partridge Creek	120	0	0	0	0
124	Odell Lake	55	0	0	0	0
125	Highway 87 north	60	0	0	0	0
126	Highway 180	135	0	0	0	0
Total		**5,182**	**36**	**22**	**3**	**2**
Gila County						
129	Buckhead Mesa landfill	40	4	0	0	0
Total		**40**	**4**	**0**	**0**	**0**
Graham County						
51	Point of Pines Lake area	30	3	1	0	0
Total		**30**	**3**	**1**	**0**	**0**
Mohave County						
57	Alamo Lake	112	4	0	0	0
Total		**112**	**4**	**0**	**0**	**0**
Navajo County						
58	Lake of the Woods	20	0	0	0	0
59	Rainbow Lake	45	0	0	0	0
61	Whipple Lake	5	0	0	0	0
62	Long Lake	Not surveyed.				
63	Lone Pine Dam	30	0	0	0	0
64	Schoens Reservoir	40	0	0	0	0
65	White Mountain Lake	30	5	3	0	0
67	Jacques Marsh	30	0	1	0	0
68	Scott's Reservoir	30	0	0	0	0
69	Show Low Lake	30	0	0	0	0
70	Pintail Lake	30	0	0	0	0
71	Telephone Lake	25	0	0	0	0
72	Fool Hollow Lake	58	1	0	0	0
75	Cottonwood Wash/ Clay Springs	35	0	0	0	0
76	White Lake	10	0	0	0	0
127	Mortenson Wash	80	0	0	0	0
Total		**418**	**6**	**4**	**0**	**0**
Santa Cruz County						
82	Pena Blanca Lake	60	0	0	0	0
Total		**60**	**0**	**0**	**0**	**0**
Yavapai County						
83	Wet Beaver Creek	510	2	0	0	0
84	Oak Creek	450	2	0	0	0

Table 11 continued.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagles	Unknown Eagles
85	Willow Lake	240	2	1	0	0
86	Lynx Lake	130	2	0	0	0
87	Watson Lake	240	1	3	0	0
88	Goldwater Lake	240	6	3	0	0
Total		**1,810**	**15**	**7**	**0**	**0**
Yuma and La Paz Counties						
89	Imperial N.W.R. Cibola/Martinez Lake – Colorado River	Not surveyed.				
Total		**0**	**0**	**0**	**0**	**0**

Table 12. 2024 Arizona bald eagle winter count helicopter survey results.

Route Number	Route Name	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagles	Unknown Eagles
90	Verde River	148	26	6	0	0
91	Lower East Verde River	8	1	1	0	0
92	Lower West Clear Creek	14	0	0	0	0
93	Lower Salt River	168	17	10	0	0
94	Upper Salt River	64	6	2	0	0
95	Lower Tonto Creek	22	4	0	0	0
97	Lower Canyon Creek	6	0	0	0	0
98	Lower Cibecue Creek	8	0	0	0	0
100	White River	15	0	0	0	0
101	North Fork White River	31	1	0	0	0
102	Lower Black River	69	11	3	0	0
103	Big and Little Bonito Creeks	23	2	0	0	0
104	San Carlos River–Talkalai Lake	21	0	1	0	0
105	San Carlos Reservoir	21	1	3	0	0
106	Upper and Lower Gila River	24	4	1	0	0
107	Eagle Creek	Not surveyed.				
108	Bonita Creek	Not surveyed.				
109	Lower San Francisco River	Not surveyed.				
110	Blue River	Not surveyed.				
111	Sunrise Lake	1	1	0	0	0
112	Big Lake	3	0	0	0	0
114	Crescent Lake	1	2	0	0	0
115	Lake Pleasant	33	7	0	0	0
116	Del Rio Ponds	1	2	0	0	0
117	Tres Rios	16	2	0	0	0
128	Point of Pines aerial	Not surveyed.				
Total		**697**	**87**	**27**	**0**	**0**

Table 13. 2024 Arizona bald eagle winter count non-standardized survey route results.							
Route Number	Route Name	County	Minutes Surveyed	Adults	Subadults	Unknown Bald Eagles	Unknown Eagles
976	West Clear Creek	Yavapai	195	0	0	0	0
986	Kachina Wetlands	Coconino	55	0	0	0	0
991	Clint's Well to Camp Verde	Coconino, Yavapai	90	1	0	0	0
Total			**340**	**1**	**0**	**0**	**0**

APPENDIX B: TERMINOLOGY AND RAPTOR REPRODUCTIVE STATUS CRITERIA

Breeding Area (BA): An area containing one or more nests within the range of a mated pair of birds. Operationally, a BA is recognized only after an active nest has been documented. 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 historic (i.e., ten consecutive years unoccupied).

Historic BA: A BA that has remained unoccupied for ten consecutive years. This term also applies to BAs identified before the 1970s.

Occupied BA: An area with at least one nest structure where at least one 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 a 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, copulation).

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 nests at which none of the activity patterns diagnostic of occupancy 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 one young fledged during the breeding season under consideration. Nests were successful if at least one young was raised past 80% of fledging age.

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

Productivity: The number of young fledged per occupied BA.

Reoccupied Historic BA: A historic BA which shows signs indicative of being occupied.

Pioneer Effort: The occupancy of a new BA, 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.

Previously Existing BA: A new 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: 2024 ARIZONA BALD EAGLE PRODUCTIVITY

Table 14. Arizona bald eagle breeding area productivity, 2024.

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs[3]	Hatch Date	Young	Fledged	Fledge Date
Alamo	F	4	<1/9	1	Failed by 3/12 during incubation.			
Alpine	F	1	<5/8	1	<5/8	1	Failed 5/8. Nestling fell.	
Armer Gulch	U	No nests or eagles seen.						
Ashurst	S	4	<4/12	2	<4/12	2	1	>6/3
Bachelor Cove*	S	3	<1/18	1	1/18-1/30	1	1	4/15
Bartlett	S	5	<1/12	1	1/12-2/15	1	1	>4/1
Beaver	F	1	1/29-4/1	1	1/29-4/1	1	Failed 4/1-5/22.	
Becker	F	2	<1/30	1	Failed by 3/22 during incubation.			
Black Cross	S	1	<1/18	3	1/18-1/30	2	2	>4/1
Blue Point	F	10	<1/18	1	Failed by 3/6 during incubation.			
Blue Ridge	F	1	<5/6	1	Failed by 6/7 during incubation.			
Box Bar*	S	5	1/12-1/29	2	2/20	2	1	5/16
Boni	S	1	2/7-2/26	1	2/26-4/16	1	1	>6/28
Buckeye	U	No nests or eagles seen.						
Buckhorn	S	1	<2/20	1	<2/20	1	1	>4/1
Bulldog	S	3	1/18-1/29	1	1/29-4/1	1	1	>5/15
Burro Creek	U	No new nests found. No eagles.						
Canyon de Chelly	S	3	<3/13	2	3/13-5/17	2	2	>6/21
Carnero Lake	S	1	<3/22	1	3/22-4/23	1	1	>6/18
Cataract Lake	S	4	<4/15	1	<4/15	1	1	5/10-5/25
Cedar Basin	F	10	1/30-3/22	1	Failed by 4/23.			
Chevelon	S	6	<5/6	1	<5/6	1	1	>6/7
Cibecue	S	9	1/16-3/22	1	3/22-4/23	1	1	>5/20
Cliff	U	All known nests empty. No eagles.						
Cole's Bay*	S	1	1/12-1/29	2	2/20	2	2	>5/13
Concho	O	Pair of adults observed January-April.						
Coolidge	S	5	<1/18	2	1/18-1/30	2	1	>4/15
Crescent	F	1	1/16-3/22	1	Failed by 4/23			
Dogtown	S	3	<4/15	2	<4/15	2	2	>6/21
Doka*	S	9	1/12-1/29	1	2/5-3/4	1	1	5/18
Eagle Mountain	F	1	3/22-4/23	1	Failed by 6/20 during incubation.			
East Verde	F	8	1/29-4/1	1	Failed by 4/29 during incubation.			
Eastern Star	F	2	1/30-3/22	1	Failed by 6/20 during incubation.			
Elaine	U	All known nests empty. No eagles.						
First Light	F	1	<4/23	1	Failed by 6/20 during incubation.			
Fish Creek	S	1	<1/18	1	1/29-3/6	1	1	3/6-4/23
Fool Hollow	S	4	1/11-1/16	1	2/12-2/25	1	1	5/3
Fort McDowell*	S	21	<12/18	2	1/12-1/29	2	2	4/7
Gainey Ranch	S	3	12/19-1/8	2	2/10-2/17	2	1	5/1-5/8
Garden Lakes	S	2	<12/19	2	1/19-1/24	2	2	3/18-4/7

[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, 1997-1999; Jacobson and others 2004-2007; Koloszar and Driscoll 2001a, 2001b; Koloszar and others 2002; Canaca and others 2004; McCarty and Jacobson 2008-2012; McCarty et al. 2013-2023.
[3]Represents minimum number of eggs laid.
*Nests monitored by the Arizona Bald Eagle Nestwatch Program.

Table 14 continued.

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs[3]	Hatch Date	Young	Fledged	Fledge Date
George's Basin	F	1	1/30-3/22	1	Failed by 6/20 during incubation.			
Goldfield*	S	5	<1/18	2	1/18-1/29	2	2	4/3
Granite Basin	O	Pair of adults in area 1/18.						
Granite Reef*	S	8	1/29-2/2	2	3/1-3/10	2	2	5/27, 5/30
Green River	S	2	<1/12	3	1/29-4/1	3	3	4/1-4/29, >4/29
Greer Lakes	F	7	1/30-3/22	1	Failed by 4/23 during incubation.			
Horse Mesa	F	5	<1/18	1	Failed by 3/6 during incubation.			
Horseshoe	U	All known nests empty, no eagles.						
Ister Flat	U	Nest #1 fallen. No other nests found, no eagles.						
Itsa' Cho	S	2	1/30-3/22	2	3/22-4/23	2	1	>6/20
Ive's Wash	F	3	<1/9	1	Failed by 3/12 during incubation.			
Kachina Village	F	1	2/20	1	2/20-4/24	1	Failed 6/6. Nestling fell.	
Kaibab Lake	O	Pair of adults perched at a new nest.						
Kerr*	O	Adult building new nest in same tree as previous nest.						
Kinnikinick	S	1	<4/12	2	<4/12	2	1	>6/21
Ladders	S	4	1/12-1/29	1	1/29-4/1	1	1	>5/22
Lone Pine	U	All known nests empty. One adult in area 1/30 & 3/22.						
Lower Lake Mary	F	5	<4/12	1	Failed by 4/29.			
Luna*	S	2	2/12-2/17	2	3/20-3/21	2	2	6/18, 6/21
Lynx	O	Pair observed in January. Adult female found dead February 22.						
Mohave	U	All known nests empty. No eagles.						
Mormon Lake	U	All known nests empty. No eagles.						
Nevada Bay	S	1	<3/12	1	3/12-5/1	1	1	>5/1-5/23
North Fields	F	1	12/1-12/4	1	1/9	1	Failed 1/16.	
		1	2/27-2/28	2	4/1-4/5	2	Failed 5/20.	
Oak Creek	S	5	1/12-1/29	2	1/29-4/1	2	2	>5/6
Orme*	S	7	1/12-1/29	2	2/16-3/1	2	2	5/6, >5/6
OW	O	All known nests empty. Pair of adults in area 3/12.						
Pee Posh Wetlands	S	8	<1/2	2	1/29-2/14	2	2	4/5-4/23
Perkinsville	U	All known nests empty. No eagles.						
Pinal	F	9	1/18-1/30	2	1/30-3/22	2	Failed by 4/22 with nestling.	
Pinto	O	All known nests empty. Pair of adults in area.						
Pleasant*	O	All known nests empty. New large nest found. Pair of adults in area.						
Rainbow	S	3	12/25-1/12	2	1/12-2/3	2	1	4/8-4/10
Redmond	U	All known nests empty. One adult in area 1/18 & 3/22.						
Riggs	F	1	<3/27	1	Failed by 5/9 during incubation.			
Riverside	F	5	12/14-1/12	2	Failed by 3/15 during incubation.			
Rodeo*	F	7	12/18-1/3	1	1/29-2/5	1	Failed 2/12-2/16.	
Saguaro	S	2	<1/18	1	1/18-2/14	1	1	3/13-4/23
San Carlos	O	All known nests empty. Pair of adults in area.						

[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, 1997-1999; Jacobson and others 2004-2007; Koloszar and Driscoll 2001a, 2001b; Koloszar and others 2002; Canaca and others 2004; McCarty and Jacobson 2008-2012; McCarty et al. 2013-2023.
[3]Represents minimum number of eggs laid.
*Nests monitored by the Arizona Bald Eagle Nestwatch Program.

Table 14 continued.

Breeding Area	Status[1]	Nest[2]	Incubation Date	Eggs[3]	Hatch Date	Young	Fledged	Fledge Date
Scholz Lake	S	1	<4/15	2	<4/15	2	2	>6/10
76	F	7	1/18-1/30	1	Failed by 3/22. Nest fell.			
Sheep	S	8	<1/18	2	1/18-3/22	2	2	>5/6
Sheep Creek	S	2	1/29-4/1	1	1/29-4/1	1	1	>5/30
Show Low Lake	F	1	2/21-2/23	1	3/29	1	Failed by 4/17 with nestling.	
Silver Creek	S	3	2/2-2/7	2	2/7-3/22	2	1	>6/3
Suicide	S	1	1/8-1/18	2	1/30-3/5	2	2	4/26-5/10
Sullivan Lake	O	All known nests empty. Pair of adults in area.						
Sycamore*	F	7	2/25-3/1	1	Failed by 5/5 during incubation.			
Table Mountain	F	4	1/29-4/1	1	Failed by 4/29.			
Talkalai	S	11	1/18-3/22	1	3/22-4/16	1	1	6/7-6/14
Tall Pine	S	1	1/30-3/22	1	3/22-4/23	1	1	>6/20
Tapco	F	6	1/12-1/29	1	Failed by 4/1.			
Tonto	S	6	<1/18	3	1/30-3/6	3	3	>5/6
Tortilla Creek	O	All known nests empty. Pair of adults in area.						
Tremaine	U	New large nest found. No eagles.						
Two Bar	S	2	1/30-3/6	2	3/6-4/23	2	2	>6/10
Walnut Creek	S	1	<7/8	1	<7/8	1	1	>7/8
Water Nest	S	2	1/30-3/22	2	3/22-4/23	2	2	>6/20
Whiskey Spring*	S	2	1/12-1/19	3	2/21	3	3	5/12, 5/15, >5/15
White Horse	U	No new nests. No eagles.						
White Mountain	S	1	<3/12	1	<3/12	1	1	>4/23
Willow Springs*	S	1	<4/4	2	4/4-5/6	2	1	7/14
Woods Canyon*	S	18	<4/26	3	<5/5	3	3	7/9
Yellow Cliffs	S	1	1/12-1/29	2	1/29-4/1	2	2	5/6-5/28

[1]Breeding area status codes (Postupalsky 1974): U=unoccupied, O=occupied, S=successful, F=failed.
[2]Nest numbers are from Hunt and others 1992; Driscoll and Beatty 1994; Driscoll and others 1992, 1995a, 1995b, 1997-1999; Jacobson and others 2004-2007; Koloszar and Driscoll 2001a, 2001b; Koloszar and others 2002; Canaca and others 2004; McCarty and Jacobson 2008-2012; McCarty et al. 2013-2023.
[3]Represents minimum number of eggs laid.
*Nests monitored by the Arizona Bald Eagle Nestwatch Program.

APPENDIX D: NEST SURVEY RESULTS

Table 15. Results of the 2024 bald eagle winter count, ORA, and nest survey flights (continued next page).

Location	Time	Comments
January 12, 2024		
Riverside Ruin BA	753	Adult incubating in new nest #5.
Granite Reef BA	800	All known nests empty. Pair of adults perched by new nest #8.
Orme BA	803	All known nests empty. Pair of adults perched near nest #7.
Rodeo BA	806	Adult incubating in nest #7.
Sycamore BA	810	All known nests empty. One adult in area.
Doka BA	812	All known nests empty. Pair of adults perched.
Fort McDowell BA	816	Adult incubating in nest #21.
Box Bar BA	820	One adult standing in nest #5. Second adult perched above nest.
Needle Rock historic BA	821	No new nests or egles.
Bartlett BA	827	Adult incubating in nest #5.
Yellow Cliffs BA	834	All known nests empty. No eagles.
Sheep Creek BA	844	All known nests empty. Pair of adults perched.
Cliff BA	850	All known nests empty. No eagles.
Horseshoe BA	903	All known nests empty. No eagles.
Ister Flat BA	907	Nest #1 fallen. No eagles.
Table Mountain BA	917	All known nests empty. No eagles.
East Verde BA	925	All known nests empty. One adult flying, interacting with an immature bald eagle.
Coldwater BA	946	All known nests empty. No eagles.
Ladders BA	950	All known nests empty. No eagles.
Beaver BA	1115	All known nests empty. Two adults in area.
Oak Creek BA	1122	Pair of adults standing in nest #5.
Green River BA	1126	Adult incubating in nest #2. Second adult perched upstream.
Tapco BA	1131	All known nests empty. No eagles.
Tower historic BA	1135	All known nests empty. No eagles.
Mormon Pocket (golden eagle)	1139	All known nests empty. No eagles.
Perkinsville BA	1140	All known nests empty. No eagles.
Hell Point (golden eagle)	1149	All known nests empty. No eagles.
Muldoon	1153	All known nests empty. No eagles.
Granite (golden eagle)	1154	All known nests empty. No eagles.
Sullivan Lake BA	1159	One adult standing in nest #4. Second adult perched.
Lynx BA	1336	All known nests empty. No eagles.
Pleasant BA	1358	All known nests empty. Pair of adults perched upstream.
Whiskey Spring BA	1400	One adult perched above nest #2. Second adult in area.
Cole's Bay BA	1421	All known nests empty. One adult perched near nest #1.
Rainbow BA	1450	Adult incubating in nest #3.
Buckeye BA	1451	No nests or eagles.
Pee Posh Wetlands BA	1502	Adult incubating in nest #2.
January 16, 2024		
Cibecue BA	953	All known nests empty. One adult flying in area.
Cedar Basin BA	1020	All known nests empty. New large nest found in sycamore #10. One adult perched upstream.

Table 15 continued.

Location	Time	Comments
Lone Pine BA	1030	All known nests empty. One adult flying.
Crescent BA	1125	One adult standing in nest #1. Second adult perched in area.
George's Basin BA	1349	All known nests empty. Two adults flying low over tank, fishing.
January 18, 2024		
Granite Reef BA	807	One adult standing in nest #8.
Kerr BA	810	No nests or eagles.
Goldfield BA	815	Adult incubating or brooding in nest #5.
Bulldog BA	822	All known nests empty. One adult perched in area.
Blue Point BA	829	Adult incubating in nest #10.
Bagley historic BA	830	All known nests empty. No eagles.
Saguaro BA	833	Adult incubating in nest #2. Second adult in area.
Tortilla Creek BA	837	All known nests empty. No eagles.
Black Cross BA	843	Adult incubating in nest #1.
Fish Creek BA	847	Adult incubating in nest #1.
Horse Mesa BA	855	Adult incubating in nest #5.
Two Bar BA	905	All known nests empty. No eagles.
Bachelor Cove BA	911	Adult incubating in nest #3.
Tonto BA	917	Adult incubating in nest #6.
Sheep BA	922	Adult incubating in nest #8.
Seventy-Six BA	932	One adult standing in nest #7. Second adult perched.
Pinto BA	1043	All known nests empty. Nest #10 fallen. Two adults perched by nest #11.
Pinal BA	1048	All known nests empty. No eagles.
Redmond BA	1056	All known nests empty. One adult in area.
Canyon historic BA	1112	No nests or eagles.
Talkalai BA	1311	All known nests empty. No eagles.
San Carlos BA	1330	All known nests empty. No eagles.
Suicide BA	1345	Adult incubating in nest #1.
Coolidge BA	1350	Adult incubating in nest #5. Second adult perched.
Granite Basin BA	1430	All known nests empty. Two adults flying in area.
January 29, 2024		
Riverside Ruin BA	754	Adult incubating in nest #5. Second adult perched.
Granite Reef BA	801	One adult standing in nest #8. Second adult perched.
Kerr BA	803	Adult nest-building new nest #3.
Orme BA	805	Adult incubating in nest #7.
Goldfield BA	807	Two nestlings, 1.5-2 weeks old. One adult perched above nest.
Bulldog BA	809	Adult incubating in nest #3.
Blue Point BA	813	Adult incubating in nest #10.
Bagley historic BA	814	All known nests empty. No eagles.
Saguaro BA	815	Adult incubating in nest #2.
Tortilla Creek BA	816	All known nests empty. No eagles.
Black Cross BA	820	Adult in nest #1 brooding at least one nestling, 1-2 weeks old.
Fish Creek BA	822	Adult incubating in nest #1.
Horse Mesa BA	826	Adult incubating in nest #5. Second adult standing in nest.
Rodeo BA	835	Adult incubating in nest #7.
Sycamore BA	837	All known nests empty. Two adults in area.
Doka BA	838	Adult incubating in nest #9.
Fort McDowell BA	842	Adult in nest #21 brooding at least one small nestling, 1 week old.
Box Bar BA	844	Adult incubating in nest #5. Second adult perched.

Table 15 continued.

Location	Time	Comments
Needle Rock historic BA	845	No new nests or egles.
Bartlett BA	847	Adult incubating in nest #5. Second adult flying.
Yellow Cliffs BA	851	Adult incubating in nest #1.
Sheep Creek BA	854	All known nests empty. No eagles.
Cliff BA	858	All known nests empty. No eagles.
Horseshoe BA	902	All known nests empty. No eagles.
Ister Flat BA	907	No nests. One adult perched downstream.
Table Mountain BA	915	All known nests empty. No eagles.
East Verde BA	921	All known nests empty. No eagles.
Ladders BA	926	Adult incubating in nest #4.
Beaver BA	934	All known nests empty. No eagles.
Oak Creek BA	938	Adult incubating in nest #5.
Green River BA	1028	Adult incubating in nest #2.
Tapco BA	1031	Adult incubating in nest #6.
Mormon pocket (golden eagle)	1037	All known nests empty. No eagles.
Perkinsville BA	1039	All known nests empty. No eagles.
Hell Point (golden eagle)	1046	All known nests empty. No eagles.
Muldoon	1049	All known nests empty. No eagles.
Granite (golden eagle)	1052	All known nests empty. No eagles.
Sullivan Lake BA	1054	All known nests empty. Pair of adults perched.
Lynx BA	1106	All known nests empty. Greenery in nest #6. One adult perched in area.
Watson (golden eagle)	1112	All known nests empty. No eagles.
Alamo BA	1259	Adult incubating in nest #4.
Ive's Wash BA	1304	Adult incubating in nest #3.
Cole's Bay BA	1339	Adult incubating in nest #1.
Whiskey Spring BA	1340	Adult incubating in nest #2.
Pleasant BA	1345	All known nests empty. Two adults in area.
Rainbow BA	1407	Adult incubating in nest #3.
Pee Posh Wetlands BA	1416	Adult incubating in nest #8.
January 30, 2024		
Seventy-Six BA	809	Adult incubating in nest #7. Second adult perched.
Sheep BA	817	Adult incubating in nest #8.
Tonto BA	820	Adult incubating in nest #6.
Bachelor Cove BA	825	Adult brooding at least one nestling. Second adult flying.
Two Bar BA	828	All known nests empty. One adult perched in area.
Pinto BA	835	All known nests empty. No eagles.
Pinal BA	841	Adult incubating in nest #9. Second adult perched.
Redmond BA	845	All known nests empty. No eagles.
Cibecue BA	901	All known nests empty. No eagles.
Fool Hollow BA	925	Adult incubating in nest #4.
Cedar Basin BA	1032	Adult standing in nest #10.
Lone Pine BA	1038	All known nests empty. One adult upstream.
Pineasco Creek	1047	All known nests empty. No eagles.
George's Basin BA	1051	All known nests empty. Two adults perched.
Itsa'cho BA	1110	All known nests empty. No eagles.
Eastern Star BA	1120	All known nests empty. Two adults perched in area.
Water Nest BA	1125	All known nests empty. Nest #1 fallen.

Table 15 continued.

Location	Time	Comments
Tall Pine BA	1130	All known nests empty. No eagles.
Eagle Mountain BA	1135	All known nests empty. One adult perched in area.
Concho BA	1251	All known nests empty. No eagles.
Becker BA	1305	Adult incubating in nest #1.
Greer Lakes BA	1339	Adult standing in nest #7.
Talkalai BA	1437	All known nests empty. New large nest found in snag #11. Pair of adults in area.
San Carlos BA	1445	All known nests empty. No eagles.
Suicide BA	1450	Adult incubating in nest #1.
Coolidge BA	1453	Adult in nest #5 with two nestlings, 1-2 weeks old.
Granite Basin BA	1458	All known nests empty. No eagles.
March 6, 2024		
Pinto BA	815	One adult perched in nest #11.
Two Bar BA	823	Adult incubating in nest #2.
Buckhorn BA	847	One nestling in nest #1, 7-8 weeks old.
Horse Mesa BA	908	Nest empty, failed.
Fish Creek BA	914	One nestling, 4.5 weeks old. One adult in area.
Black Cross BA	923	Two nestlings, 6-7 weeks old. One adult perched.
Tortilla Creek BA	933	All known nests empty. One adult perched.
Blue Point BA	948	Nest empty, failed.
Saguaro BA	950	One nestling 4-4.5 weeks old.
Bulldog BA	954	Two adults standing in nest #3 with one egg.
March 12, 2024		
Whiskey Spring BA	739	Adult with three nestlings, 2.5 weeks old.
Pleasant BA	742	All known nests empty. Pair of adults perched near new large nest on cliff #6.
Cole's Bay BA	745	Adult with two nestlings, 2.5 weeks old. Second adult flew to nest.
Alamo BA	823	Nest empty, failed.
Ive's Wash BA	827	Nest empty, failed.
Bill Williams historic BA	843	All known nests empty. No eagles.
Copper Basin	850	Nests #2, 3, and 5 empty. Nest #4 not found. No eagles.
Gene Wash	902	Nests #1-6 empty. No eagles.
Whipple Mountains	910	All known nests empty. New large nest found on cliff #2.
Mohave BA	925	All known nests empty. No eagles.
Nevada Bay BA	1050	Adult incubating in nest #1.
Black Canyon	1126	Adult in nest #1 with at least one small nestling, 1+ weeks old.
Burro Creek BA	1409	All known nests empty. No eagles.
March 15, 2024		
Riverside Ruin BA	749	Adult in nest with two eggs. Failed (hatching overdue).
Granite Reef BA	756	Adult in nest with at least one small nestling.
Kerr BA	758	All known nests empty. No eagles.
Orme BA	801	Adult in nest with two nestlings, 4 weeks old.
Goldfield BA	803	Adult in nest with two nestlings, 7-8 weeks old.
Bagley historic BA	808	All known nests empty. No eagles.
Bulldog BA	815	Adult incubating or brooding in nest #3.
Garden Lakes BA	836	Two nestlings, 7+ weeks old.
Pee Posh Wetlands BA	840	Two nestlings, 6-7 weeks old.
Buckeye BA	842	No nests or eagles.
Rainbow BA	855	Adult with two nestlings, 7+ weeks old.

Table 15 continued.

Location	Time	Comments
March 22, 2024		
Seventy-Six BA	815	Nest #7 fallen. No eagles.
Sheep BA	823	Adult with two nestlings, 4-5 weeks old.
Tonto BA	827	Three nestlings, 4 weeks old. One adult perched.
Buckhorn BA	836	One nestling, 9+ weeks old.
Two Bar BA	840	Adult incubating in nest #2.
Armer Gulch BA	849	No nests or eagles.
Pinto BA	854	All known nests empty. No eagles.
Pinal BA	856	Adult with two small nestlings, 1.5 weeks old.
Redmond BA	903	All known nests empty. One adult perched near nest #5.
Cibecue BA	918	Adult brooding at least one nestling.
Show Low Lake BA	1030	Adult incubating in nest #1.
Cedar Basin BA	1050	Adult incubating in nest #10.
Lone Pine BA	1053	All known nests empty. One adult upstream.
Pineasco Creek	1105	All known nests empty. No eagles.
George's Basin BA	1110	Adult incubating in nest #1.
Itsa'cho BA	1127	Adult incubating in nest #2.
Pacheta	1136	All known nests empty. No eagles.
Eastern Star BA	1145	Adult incubating in nest #2.
Water Nest BA	1152	Adult incubating in nest #2.
Tall Pine BA	1156	Adult incubating in nest #1.
Eagle Mountain BA	1201	All known nests empty. Pair of adults perched in area.
Carnero BA	1210	Adult incubating in nest #1.
Greer Lakes BA	1214	Adult incubating in nest #7.
Crescent BA	1220	Adult incubating in nest #1.
Becker BA	1232	Nest empty, failed.
Concho BA	1246	All known nests empty. Pair of adults perched in area.
Silver Creek BA	1300	Adult with two nestlings, 1.5-2 weeks old. Second adult perched in area.
White Mountain BA	1310	One nestling in nest #1, 6-7 weeks old. One adult perched.
Fool Hollow BA	1315	Adult with one nestling, 3.5 weeks old.
March 25, 2024		
Granite Basin BA	1323	All known nests empty. No eagles.
Coolidge BA	1330	One nestling, 9 weeks old. Second nestling not seen in nest or on ground.
Suicide BA	1334	Adult with two nestlings, 6.5-7 weeks old.
San Carlos BA	1342	All known nests empty. No eagles.
Boni BA	1350	Adult incubating or brooding in nest #1. Second adult perched.
Talkalai BA	1404	Adult incubating in new nest in tree #11.
April 1, 2024		
Granite Reef BA	802	Adult with two nestlings, 3-3.5 weeks old.
Bulldog BA	809	Adult with one nestling, 2.5 weeks old.
Saguaro BA	814	Adult with one nestling, 8 weeks old.
Tortilla Creek BA	823	All known nests empty. One adult standing in nest #1. Second adult perched.
Black Cross BA	832	Two nestlings, 9.5-10 weeks old.
Fish Creek BA	837	One nestling, 8-8.5 weeks old.
Buckhorn BA	854	One nestling, 10-11 weeks old.
Two Bar BA	856	Adult incubating in nest #2.
Pinto BA	911	All known nests empty. No eagles.
Doka BA	1001	Adult with one nestling, 4-4.5 weeks old.
Bartlett BA	1006	One nestling, 9 weeks old. One adult in area.

Table 15 continued.

Location	Time	Comments
Yellow Cliffs BA	1010	Adult with at least one nestling, 3.5 weeks old.
Sheep Creek BA	1014	Adult with at least one nestling, 3 weeks old.
Cliff BA	1017	All known nests empty. No eagles.
Horseshoe BA	1020	Nests #17, 18 not found. Unable to survey other nests due to fog.
Ister Flat BA	1022	No nests or eagles.
Table Mountain BA	1034	Adult incubating in nest #4.
East Verde BA	1037	Adult incubating in nest #8.
Ladders BA	1046	One nestling, 3 weeks old.
Beaver BA	1050	Adult with at least one nestling, 1.5 weeks old.
Oak Creek BA	1055	Adult with two nestlings, 4-4.5 weeks old.
Green River BA	1059	Three nestlings, 7+ weeks old.
Tapco BA	1102	Nest empty, failed.
Mormon Pocket (golden eagle)	1108	Golden eagle incubating in nest #1.
Perkinsville BA	1111	All known nests empty. No eagles.
Granite (golden eagle)	1127	Golden eagle incubating in nest #6.
Sullivan Lake BA	1131	All known nests empty. One adult perched.
April 23, 2024		
Granite Reef BA	759	Two nestlings, 6 weeks old.
Bulldog BA	806	One nestling, 6-7 weeks old.
Saguaro BA	813	Nest empty, assumed fledged.
Tortilla Creek BA	816	All known nests empty. One adult in area.
Black Cross BA	819	Nest empty, assumed fledged.
Fish Creek BA	822	Nest empty. One adult perched in nest, second adult perched on cliff below. No juvenile seen, assumed fledged.
Two Bar BA	833	Two nestlings, 3 weeks old.
Bachelor Cove BA	845	Nest empty. Juvenile not seen (recently reported by nestwatchers as fledged).
Tonto BA	852	Three nestlings, 8.5 weeks old.
Sheep BA	855	Two nestlings, 8.5-9 weeks old.
Pinal BA	911	Nest empty, failed.
Cibecue BA	926	One nestling, about 6 weeks old.
Show Low Lake BA	1028	Adult incubating.
Cedar Basin BA	1049	Nest empty, failed.
Pineasco Creek	1057	All known nests empty. No eagles.
George's Basin BA	1100	Adult incubating in nest #1.
Itsa'cho BA	1117	Adult with two nestlings, 1-1.5 weeks old. Second adult perched in area.
Pacheta	1125	Three new large nests found (#1-3). Ospreys incubating in nests #1-2.
First Light BA	1135	Adult incubating in nest #1.
Crescent BA	1141	Nest empty, failed.
Eagle Mountain BA	1156	Adult incubating in nest #1.
Greer Lakes BA	1201	Nest empty, failed.
Carnero BA	1207	Adult with one nestling, 3 weeks old.
Tall Pine BA	1216	Adult with one nestling, 1-1.5 weeks old.
Water Nest BA	1221	Adult with two nestlings, 1 week old.
Eastern Star BA	1229	Adult incubating.
Fool Hollow BA	1325	One nestling, 8 weeks old.
White Mountain BA	1330	One nestling, 11 weeks old, branching/fledged.
Silver Creek BA	1337	Adult with one nestling, 4.5-5 weeks old. Second nestling not seen. Second adult perched.
Sheep Creek BA	1438	Adult with one nestling, 5 weeks old. Second adult in area.

Table 15 continued.

Location	Time	Comments
April 29, 2024		
Bartlett BA	745	Nest empty, assumed fledged. Two adults in area.
Yellow Cliffs BA	750	Two nestlings, 7.5 weeks old.
Sheep Creek BA	755	One nestling, 6-7 weeks old. Two adults in area.
Cliff BA	757	All known nests empty. No eagles.
Horseshoe BA	802	All known nests empty. No eagles.
Table Mountain BA	809	Nest empty, failed.
East Verde BA	815	Nest empty, failed.
Ladders BA	823	One nestling, 7 weeks old.
Beaver BA	828	One nestling, 6 weeks old. One unhatched egg. One adult perched in area.
Oak Creek BA	833	Two nestlings, 8-8.5 weeks old.
Green River BA	837	Two nestlings in nest, 11 weeks old. One fledgling perched nearby.
Mormon Lake BA	859	All known nests empty. No eagles.
Kinnikinick BA	904	Two nestlings, 3-3.5 weeks old. One adult perched.
Ashurst BA	908	Adult in new nest #4 with one nestling, 4.5-5 weeks old. Second adult perched in area.
Lower Lake Mary BA	915	Nest empty, failed.
Elaine BA	923	All known nests empty. No eagles.
Campbell Mesa	929	Osprey incubating in nest #1. Pair of adult bald eagles perched in area.
Kachina BA	936	One nestling, 2.5-3 weeks old.
White Horse Lake BA	1022	Osprey incubating in nest #6. Nest #1, 5, 7-9 not found. No eagles.
Scholz Lake BA	1030	Two nestlings, 3-3.5 weeks old. One adult perched.
Dogtown BA	1037	Adult in nest #3 brooding at least one nestling, 2.5-3 weeks old.
Kaibab Lake BA	1040	Ospreys incubating in nests #1, 5. All other known nests empty. No eagles.
Cataract BA	1047	One nestling, 7.5 weeks old. One adult perched in area.
Santa Fe Reservoir	1049	Ospreys incubating in nests #1-3. All other known nests empty. No eagles.
Perkinsville BA	1106	All known nests empty. No eagles.
Lynx BA	1130	All known nests empty. No eagles.
May 6, 2024		
Granite Reef BA	740	Two nestlings, 8 weeks old.
Orme BA	743	One nestling branching at nest, 10 weeks old. Second nestling not found, assumed fledge. Two adults in area.
Bulldog BA	749	One nestling, 8 weeks old.
Two Bar BA	803	Adult with two nestlings, 5 weeks old.
Tonto BA	809	Three nestlings, 10.5 weeks old.
Sheep BA	812	Two nestlings, 10.5 weeks old (one branching).
Christopher Creek	838	Osprey incubating in nest #2.
Gordon Canyon	843	Osprey incubating in new snag nest #1.
OW BA	850	All known nests empty. One adult flying in area.
Airplane Flat	857	Ospreys incubating in new nest #1.
Valentine Canyon	858	Ospreys incubating in new nest #1.
Willow Springs BA	914	Adult perched at nest #13. Two nestlings, 2-3 weeks old.
Woods Canyon BA	919	Adult in nest with three nestlings, 2.5-3 weeks old.
Bear Canyon Lake	925	Ospreys incubating in nests #5-6 and new nest #9. Pair of ospreys standing in nest #8 with one egg. Nest #7 fallen.
Knoll Lake	936	Pair of ospreys standing in nest #6. One osprey standing in new nest #8.
Blue Ridge BA	1043	Adult incubating in a new nest in a tree #15. Ospreys incubating in nests #8, 12, and 13.
Chevelon BA	1125	Adult in nest #6 with one nestling.
Tremaine BA	1145	New large nest found in snag #3. No eagles.

Table 15 continued.

Location	Time	Comments
Hidden Valley	1345	All known nests empty. No eagles.
Oak Creek BA	1358	Two nestlings, 9-9.5 weeks old.
Yellow Cliffs BA	1440	Two nestlings, 8.5 weeks old.
May 28, 2024		
Yellow Cliffs BA	716	Two fledglings perched on cliff away from the nest.
June 20, 2024		
George's Basin BA	1057	Nest empty, failed.
Itsa'cho BA	1116	Adult with one nestling, 9.5 weeks old.
First Light BA	1124	Nest empty, failed.
Eagle Mountain BA	1129	Nest empty, failed.
Tall Pine BA	1135	One nestling ~9.5 weeks old.
Water Nest BA	1143	Adult with two nestlings, 9+ weeks old.
Eastern Star BA	1149	Nest empty, failed.

APPENDIX E: BACHELOR COVE BREEDING AREA SUMMARY

Table 16. Observed human activity and bald eagle behavior, Bachelor Cove BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Vehicle	395	--	--	--	--	--	--	395	62.3
OHV	96	--	--	--	--	--	--	96	15.1
Fishing by Boat	37	--	--	--	--	--	--	37	5.8
Camper	24	--	--	--	--	--	--	24	3.8
Angler	16	--	--	--	--	--	--	16	2.5
Hiker	15	--	--	--	--	--	--	15	2.4
Motorcycle	10	1	--	--	--	--	--	11	1.7
Agency Worker	9	--	--	--	--	--	--	9	1.4
Small Plane	3	2	--	--	1	--	--	6	0.9
Military Jet	3	3	--	--	--	--	--	6	0.9
Gunshots	4	2	--	--	--	--	--	6	0.9
Kayak/ paddleboard	5	--	--	--	--	--	--	5	0.8
Bicycle	3	--	--	--	--	--	--	3	0.5
Birder	2	--	--	--	--	--	--	2	0.3
Picnicker	2	--	--	--	--	--	--	2	0.3
Helicopter	--	1	--	--	--	--	--	1	0.2
Total	624	9	--	--	1	--	--	634	

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

Table 17. Observed forage events and success, Bachelor Cove BA, Arizona, 2024.

Sex	Fish		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	6	6-0	1	0-1	7	6-1
Female	4	4-0	--	--	4	4-0
Total	10	10-0	1	0-1	11	10-1

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

Table 18. Observed prey types delivered to the nest, Bachelor Cove BA, Arizona, 2024.

Sex	Fish	Birds	Mammals	Unknown	Total	Percent
Male	32	5	--	12	49	62.0
Female	17	2	--	9	28	35.4
Unknown	--	--	1	1	2	2.5
Total	49	7	1	22	79	
Percent	62.0	8.9	1.3	27.8		

Table 19. Observed prey species delivered to the nest, Bachelor Cove BA, Arizona 2024.

Sex	Fish		Birds	Mammals	Total	Percent
	BS[1]	CS	AC	RS		
Male	4	1	--	1	6	50.0
Female	3	2	--	--	5	41.7
Unknown	--	--	1	--	1	2.5
Total	7	3	1	1	12	
Percent	58.3	25	8.3	8.3		

[1]BS=bass species, CS= catfish species, AC=American coot, RS=rabbit species.

Table 20. Bald eagle habitat analysis at the Bachelor Cove BA, Arizona, 2024.

Lake km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type	Land Type[4]
82.2	SP	Right	No	3	--	UP
82.2	SP	Right	No	5	--	UP
82.2	SP	Right	No	4	--	UP
82.2	SP	Right	Partial	3	--	UP
82.2	SP	Right	No	3	--	UP
82.2	SP	Right	No	3	--	UP
82.2	CF	Right	Partial	2	--	TA
82.2	SP	Right	Partial	2	--	UP
82.4	SP	Right	Partial	6	--	UP
82.4	SP	Right	Partial	6	--	UP
82.4	CF	Right	Partial	6	--	TA
82.5	SP	Right	Partial	6	--	CL
82.5	SG	Right	Partial	6	--	CL
82.6	SP	Right	Partial	6	--	UP
82.6	SP	Right	Partial	6	--	UP

[1]Lake kilometer.
[2]CF=cliff ledge, SG=soft snag, SP=palo verde snag.
[3]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[4]CL=cliffs, TA=talus, UP=upland desert.

Table 21. Bald eagle habitat use at the Bachelor Cove BA, Arizona, 2024.

Lake km[1]	PW[2,3]	PT	PV	PD	PP	PG	CO	PU	PK	Total	Percent
82.2	13,877	886	302	224	16	--	11	5	1	15,322	89.9
82.4	1,501	44	33	13	64	32	--	2	--	1,689	9.9
82.5	6	--	--	--	4	--	--	--	--	10	0.1
82.6	14	2	2	--	--	--	--	--	--	18	0.1
Total	15,398	932	337	237	84	32	11	7	1	17,039	
Percent	90.3	5.5	2	1.4	<1	<1	<1	<1	<1		

[1]Lake kilometer.
[2]Observation time (minutes).
[3]PW=perched watching, PT=perched tandem, PV= perched vocalizing, PD=perched drying, PP= perched preening, PG=perched on ground, CO=copulation, PU=perched unspecified, PK=perched with prey.

APPENDIX F: BOX BAR BREEDING AREA SUMMARY

Table 22. Observed human activity and bald eagle behavior, Box Bar BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Hiker	495	--	--	--	--	--	--	495	58.2
Picnicker	80	--	--	--	--	--	--	80	9.4
Kayak	50	--	--	--	--	--	--	50	5.9
Tuber	46	--	--	--	--	--	--	46	5.4
Horseback	44	--	--	--	--	--	--	44	5.2
Birder	31	--	--	2	--	--	--	33	3.9
Swimmer	28	--	--	--	--	--	--	28	3.3
Fisherman	17	--	--	--	--	--	--	17	2.0
Paddleboard	16	--	--	--	--	--	--	16	1.9
Agency worker	10	--	--	2	--	--	--	12	1.4
Camper	11	--	--	--	--	--	--	11	1.3
Photographer	7	1	--	--	--	--	--	8	0.9
Drone	0	4	--	--	--	--	--	4	0.5
Nestwatcher	2	--	--	--	--	--	--	2	0.2
Cycler	2	--	--	--	--	--	--	2	0.2
Runner	1	--	--	--	--	--	--	1	0.1
Gunshot	--	--	1	--	--	--	--	1	0.1
Helicopter	--	1	--	--	--	--	--	1	0.1
Total	840	6	1	4	--	--	--	851	

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

Table 23. Observed prey types delivered to the nest, Box Bar BA, Arizona, 2024.

Sex	Fish	Mammals	Birds	Reptiles	Unknown	Total	Percent
Male	16	1	2	1	--	20	38.5
Female	27	1	--	--	2	30	57.7
Unknown	1	--	--	--	1	2	3.8
Total	44	2	2	1	3	52	
Percent	84.6	3.8	3.8	1.9	5.8		

Table 24. Observed prey species delivered to the nest, Box Bar BA, Arizona 2024.

Sex	Fish		Mammals	Birds	Reptiles	Total	Percent
	CS[1]	TI	RS	WS	SN		
Male	7	1	1	1	1	11	45.8
Female	11	1	1	--	--	13	54.2
Total	18	2	2	1	1	24	
Percent	75.0	8.3	8.3	4.2	4.2		

[1]CS=catfish species, TI=tilapia, RS=rabbit species, WS=waterfowl species, SN=snake species.

Table 25. Bald eagle habitat analysis at the Box Bar BA, Arizona, 2024.

River km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
24.8	MS	Right	No	2	RU	CW
25.0	UP	Right	No	5	RU	MB
25.3	SD	Right	No	2	RU	MB
25.3	CL	Right	No	3	RU	CW
25.4	UP	Right	No	8	RU	MB
25.4	MS	Right	No	5	RU	MB
25.5	CL	Right	No	3	RU	CW
25.5	CL	Right	Partial	3	RU	CW
25.5	GR	Right	Yes	3	RU	MB
25.6	MS	Right	No	5	RU	MB
25.8	CL	Right	No	4	RU	CW
25.8	WI	Left	Partial	1	RU	MB
26.5	WI	Right	No	1	RU	MB

[1]River kilometer.
[2]CL=cottonwood large (>20m), GR=ground, MS=mesquite, SD=cottonwood snag, UP=utility (electrical) pole, WI=willow.
[3]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[4]RU=run.
[5]CW=cottonwood grove, MB=mesquite bosque.

Table 26. Bald eagle habitat use at the Box Bar BA, Arizona, 2024.

River km[1]	PW[2,3]	PP	CL	PD	PV	PK	PE	PH	Total	Percent
24.8	75	--	--	--	--	--	--	--	75	0.4
25.0	68	--	--	--	--	--	3	--	71	0.4
25.2	--	--	--	--	--	--	30	--	30	0.2
25.3	153	--	--	--	--	--	--	--	153	0.8
25.3	80	--	--	--	--	--	--	--	80	0.4
25.4	--	16	--	32	--	--	--	--	48	0.3
25.5	14,453	54	130	56	70	19	--	--	14,782	80.8
25.5	604	30	--	28	4	50	4	--	720	3.9
25.8	1,987	195	--	--	6	--	9	--	2,197	12.0
25.8	76	--	--	--	--	--	--	7	83	0.5
26.5	10	--	--	--	--	--	--	--	10	0.1
999.9	--	--	--	--	47	--	--	--	47	0.3
Total	17,506	295	130	116	127	69	46	7	18,296	
Percent	95.7	1.6	0.7	0.6	0.7	0.4	0.3	<0.1		

[1]River kilometer. 999.9=unknown.
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, CL=perched close to mate, PD=perched drying, PV= perched vocalizing, PK=perched with prey, PE=perched eating, PH=perched hunting.

APPENDIX G: COLE'S BAY BREEDING AREA SUMMARY

Table 27. Observed human activity and bald eagle behavior, Cole's Bay BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Fishing Boat	205	3	--	--	--	--	3	211	52.0
Recreational Boat	150	3	--	--	--	--	--	153	37.7
Jet ski	17	--	1	--	--	--	--	18	4.4
Small Plane	4	3	--	--	--	--	--	7	1.7
Helicopter	4	3	--	--	--	--	--	7	1.7
Military Jet	2	4	--	--	--	1	--	7	1.7
Agency Worker	3	--	--	--	--	--	--	3	0.7
Total	385	16	1	--	--	1	3	406	

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

Table 28. Observed forage events and success, Cole's Bay BA, Arizona, 2024.

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

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

Table 29. Observed prey types delivered to the nest, Cole's Bay BA, Arizona, 2024.

Sex	Fish	Total	Percent
Male	3	3	37.5
Female	5	5	62.5
Total	8	8	
Percent	100		

Table 30. Bald eagle habitat analysis at the Cole's Bay BA, Arizona, 2024.

Lake km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	Water Type[4]	Land Type[5]
27.6	HG	Left	Partial	1	MR	SO
27.7	SO	Left	Partial	1	MR	SO
27.8	RI	Left	No	4	MR	UP
27.8	SO	Left	No	1	MR	SO
27.9	HG	Left	Partial	1	MR	UP
27.9	SO	Left	Partial	1	MR	SO
27.9	RI	Left	No	4	MR	UP
28.0	RI	Left	No	4	MR	UP
28.0	RI	Left	Partial	4	MR	UP
28.2	HS	Left	No	2	MR	UP
28.2	SO	Left	Partial	1	RC	SO
28.3	MS	Left	No	4	MR	UP
32.8	CA	Right	No	4	MR	UP
34.4	CA	Left	No	1	RC	UP
41.6	SO	Left	No	1	RC	SO

[1]Lake kilometer.
[2]CA=cactus, HG=hard snag, HS hillside, MS=mesquite, RI=ridge, SO=shore.
[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]MR=main reservoir, RC=reservoir cove.
[5]SO=shore, UP=upland desert.

Table 31. Bald eagle habitat use at the Cole's Bay BA, Arizona, 2024.

Lake km[1]	PW[2,3]	CL	PP	SS	PV	PD	GN	CO	PH	DW	Total	Percent
26.4	--	13	--	--	--	--	--	--	--	--	13	0.2
27.6	2	--	--	--	--	--	--	--	--	--	2	<0.1
27.7	--	--	--	1	--	--	--	--	--	--	1	<0.1
27.8	1,890	56	--	--	12	--	--	2	--	--	1,960	36.7
27.9	326	--	193	10	--	--	1		--	1	531	9.9
28.0	2,067	396	6	16	12	12	3	1	1	--	2,514	47.0
28.1	39	--	177	--	--	--	--	--	--	--	216	4.0
28.2	32	--	20	1	--	--	--	--	--	--	53	1.0
28.3	23	--	--	--	--	--	--	--	--	--	23	0.4
28.4	2	--	2	--	--	--	--	--	--	--	4	0.1
29.2	--	--	--	12	--	--	--	--	--	--	12	0.2
32.8	14	--	--	--	--	--	--	--	--	--	14	0.3
34.4	1	--	--	--	--	--	--	--	--	--	1	<0.1
41.6	--	--	--	2	--	--	--	--	--	--	2	<0.1
Total	4,396	465	398	42	24	12	4	3	1	1	5,346	
Percent	82.2	8.7	7.4	0.8	0.4	0.2	0.1	0.1	<0.1	<0.1		

[1]Lake kilometer.
[2]Observation time (minutes).
[3]PW=perched watching, CL=perched close to mate, PP=perched preening, SS=standing on shore, PV=perched vocalizing, PD=perched drying, GN=gathering nest materials, CO=copulation, PH=perched hunting, DW=drinking water.

APPENDIX H: DOKA BREEDING AREA SUMMARY

Table 32. Observed human activity and bald eagle behavior, Doka BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Helicopter	3	1	--	--	--	3	--	7	50.0
Small Plane	2	--	--	--	--	2	--	4	28.7
Helicopter, Sheriff	1	--	--	--	--	--	--	1	7.1
Helicopter, Military	--	--	--	1	--	--	--	1	7.1
Nestwatcher	--	--	--	--	--	1	--	1	7.1
Total	6	1	--	1	--	6	--	14	

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

Table 33. Observed prey types delivered to the nest, Doka BA, Arizona, 2024.

Sex	Fish	Unknown	Total	Percent
Male	1	10	11	57.9
Female	1	6	7	36.8
Unknown	--	1	1	5.3
Total	2	17	19	
Percent	10.5	89.5		

APPENDIX I: FORT MCDOWELL BREEDING AREA SUMMARY

Table 34. Observed human activity and bald eagle behavior, Ft. McDowell BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Helicopter	4	--	--	--	--	4	--	8	20.5
Driver	6	--	--	--	--	1	--	7	17.9
Farmer/Rancher	5	--	--	--	--	--	--	5	12.9
Helicopter, Military	2	--	--	--	--	1	--	3	7.7
Small Plane	3	--	--	--	--	--	--	3	7.7
OHV	3	--	--	--	--	--	--	3	7.7
Nestwatcher	2	--	--	1	--	--	--	3	7.7
Fisherman	2	--	--	--	--	--	--	2	5.1
Truck	2	--	--	--	--	--	--	2	5.1
Agency worker	1	--	--	--	--	1	--	2	5.1
Helicopter, Apache	1	--	--	--	--	--	--	1	2.6
Total	31	--	--	1	--	7	--	39	

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

Table 35. Observed forage events and success, Ft. McDowell BA, Arizona, 2024.

Sex	Unknown		Total	
	E	S-U	E	S-U
Male	1	1-0	1	1-0
Female	1	1-0	1	1-0
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 36. Observed prey types delivered to the nest, Ft. McDowell BA, Arizona, 2024.

Sex	Fish	Mammals	Birds	Reptiles	Unknown	Total	Percent
Male	4	2	--	--	6	12	50.0
Female	6	--	1	1	1	9	37.5
Unknown	--	--	--	--	3	3	12.5
Total	10	2	1	1	10	24	
Percent	41.7	8.3	4.2	4.2	41.7		

Table 37. Bald eagle habitat analysis at the Ft. McDowell BA, Arizona, 2024.

River km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
19.2	HS	Left	No	4	RU	MB
19.3	UP	Right	No	6	RU	MB
19.4	UP	Right	No	6	RU	MB
19.4	CL	Left	No	2	RI	MB
19.5	CL	Left	Partial	1	RU	MB
19.6	UP	Right	No	6	RU	MB
19.7	UP	Right	No	2	CA	MB
19.8	HS	Right	No	7	RU	MB
19.9	CL	Right	Partial	6	RI	GB
19.9	HS	Right	No	7	RI	MB
19.9	CL	Right	Partial	6	RI	GB
20.1	CL	Right	Yes	2	RI	GB

[1]River kilometer.
[2]CL=cottonwood large/20-30m, HS=hard snag, UP=utility pole.
[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]CA=canal, RI=riffle, RU=run.
[5]GB=gravel bar, MB=mesquite bosque.

Table 38. Bald eagle habitat use at the Ft. McDowell BA, Arizona, 2024.

River km[1]	PW[2,3]	PP	PH	PD	PK	ET	Total	Percent
19.2	--	--	--	--	--	16	16	0.2
19.3	73	--	--	--	--	--	73	0.9
19.4	196	37	--	--	--	--	233	2.8
19.5	788	86	62	--	--	--	936	11.2
19.6	487	27	--	--	--	--	514	6.1
19.7	341	--	21	--	--	--	362	4.3
19.8	5,253	334	--	78	12	--	5,677	67.6
19.9	398	17	--	--	7	--	422	5.0
20.1	137	23	--	--	--	--	160	1.9
Total	7,673	524	83	78	19	16	8,393	
Percent	91.4	6.2	1.0	1.0	0.2	0.2		

[1]River kilometer.
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, PH=perched hunting, PD= perched drying, PK=perched with prey, ET=eating in tree.

APPENDIX J: GOLDFIELD BREEDING AREA SUMMARY

Table 39. Observed human activity and bald eagle behavior, Goldfield BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Hiker	3,545	--	--	--	--	--	--	3,545	50.5
Paddleboarder	1,377	--	--	--	--	--	--	1,377	19.6
Kayaker	869	--	--	--	--	--	--	869	12.4
Dog	291	--	--	--	--	--	--	291	4.1
Picnicker	258	1	--	--	--	--	--	259	3.7
Horseback Rider	159	1	--	--	--	--	1	161	2.3
Photographer	115	--	--	--	--	--	--	115	1.6
Helicopter	59	47	3	--	--	--	3	112	1.6
Angler	95	--	--	--	--	--	--	95	1.4
Tuber	67	--	--	--	--	--	--	67	1.0
Small Plane	30	16	1	--	--	--	3	50	0.7
Rafter	11	--	--	--	--	--	--	11	0.2
Metal Detector	10	--	--	--	--	--	--	10	0.1
Bicyclist	8	--	--	--	--	--	--	8	0.1
Birder	8	--	--	--	--	--	--	8	0.1
Drone	6	--	1	--	--	--	--	7	0.1
ATV	6	--	--	--	--	--	--	6	0.1
Runner	5	--	--	--	--	--	--	5	0.1
Vehicle	5	--	--	--	--	--	--	5	0.1
Gunshot	--	1	--	--	--	--	4	5	0.1
Car Alarm	1	1	--	--	--	--	2	4	0.1
Helicopter, sheriff	--	3	1	--	--	--	--	4	0.1
Jet	--	2	1	--	--	--	--	3	<0.1
RC Car	2	--	--	--	--	--	--	2	<0.1
Agency Worker	1	1	--	--	--	--	--	2	<0.1
Nestwatcher	--	--	1	--	--	--	--	1	<0.1
Total	6,928	73	8	--	--	--	13	7,022	

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

Table 40. Observed forage events and success, Goldfield BA, Arizona, 2024.

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

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

Table 41. Observed prey types delivered to the nest, Goldfield BA, Arizona, 2024.							
Sex	Fish	Mammals	Birds	Reptiles	Unknown	Total	Percent
Male	29	17	1	1	27	75	59.5
Female	14	17	2	--	13	46	36.5
Unknown	1	2	--	--	2	5	4.0
Total	44	36	3	1	42	126	
Percent	34.9	28.6	2.4	0.8	33.3		

Table 42. Observed prey species delivered to the nest, Goldfield BA, Arizona 2024.											
Sex	Mammals				Fish			Birds	Reptiles	Total	Percent
	DC	BT	RS	GF	RT	DS	CC	DO	SS		
Male	--	--	--	--	--	--	--	--	--	--	--
Female	--	--	--	--	--	--	--	--	--	--	--
Unknown	9	2	2	1	4	2	1	1	1	23	100
Total	9	2	2	1	4	2	1	1	1	23	
Percent	39.1	8.7	8.7	4.3	17.4	8.7	4.3	4.3	4.3		

[1]DC=desert cottontail, BT=black-tailed jackrabbit, RS=rock squirrel, GF= gray fox, RT=rainbow trout, DS=desert sucker, CC=common carp, DO=double-crested cormorant, SS=spiny softshell.

Table 43. Bald eagle habitat analysis at the Goldfield BA, Arizona, 2024.						
River km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
8.6	CL	Right	Partial	5	RU	WT
8.7	CS	Right	No	5	RU	WT
8.8	CL	Right	No	6	RU	WT
9.0	CL	Right	Partial	6	RU	WT
9.0	CL	Right	Partial	6	RU	WT
9.5	CL	Right	No	6	RU	WT
9.5	CL	Right	Partial	6	RU	WT
9.5	CL	Right	No	6	RU	WT
9.5	CL	Right	No	6	RU	WT
9.5	CL	Right	Partial	6	RU	WT
9.6	TX	Right	No	6	RU	WT
9.9	CL	Left	No	2	PO	WT
9.9	CL	Left	Partial	2	PO	WT

[1]River kilometer.
[2]CL=cottonwood large/20-30m, CS=cottonwood small/0-10m, TX=tamarisk.
[3]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[4]PO=pool, RU=run.
[5]WT=willow thicket.

Table 44. Bald eagle habitat use at the Goldfield BA, Arizona, 2024.

River km[1]	PW[2,3]	PP	PD	PX	CL	PV	PU	CO	PI	Total	Percent
8.6	289	--	--	--	--	--	--	--	--	289	2.2
8.7	--	--	--	--	--	8	--	--	--	8	0.1
8.8	249	--	--	--	--	5	--	--	--	254	1.9
9.0	2,555	169	201	10	--	12	--	--	--	2,947	22.5
9.5	7,166	880	289	189	101	42	16	13	2	8,698	65.8
9.6	1	--	--	--	--	--	--	--	--	1	<0.1
9.9	978	11	--	--	--	--	--	--	--	989	7.5
Total	11,238	1,060	490	199	101	67	16	13	2	13,186	
Percent	85.2	8.0	3.7	1.5	0.8	0.5	0.1	0.1	<0.1		

[1]River kilometer.
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, PD= perched drying, PX=perched various/other, CL=perched close to mate, PV=perched vocalizing, PU=perched unknown, CO=copulating, PI=perched interaction.

APPENDIX K: GRANITE REEF BREEDING AREA SUMMARY

Table 45. Observed human activity and bald eagle behavior, Granite Reef BA, Arizona, 2024.									
Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Small Plane	940	--	--	--	--	--	--	940	43.0
Cyclist	521	46	--	12	7	--	--	586	26.8
Helicopter	325	15	--	--	4	--	--	344	15.6
Driver	144	43	--	14	22	--	--	223	10.2
Hiker	18	4	--	3	7	--	--	32	1.5
Angler	7	5	--	8	--	--	--	20	0.9
OHV	13	2	--	1	1	--	--	17	0.8
Horseback Rider	8	--	--	--	--	--	--	8	0.4
Motorcycle	7	--	--	--	1	--	--	8	0.4
Police Officer	--	--	--	4	--	--	--	4	0.2
Photographer	1	--	--	1	--	--	--	2	0.1
Total	1,984	115	--	43	42	--	--	2,184	

Table 46. Observed forage events and success, Granite Reef BA, Arizona, 2024.										
Sex	Fish		Birds		Mammals		Unknown		Total	
	E[1]	S-U[2]	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	12	6-6	4	1-3	1	1-0	2	1-1	19	9-10
Female	14	11-3	1	1-0	--	--	1	1-0	16	13-3
Tandem	--	--	--	--	--	--	1	1-0	1	1-0
Unknown	2	2-0	--	--	--	--	--	--	2	2-0
Total	28	19-9	5	2-3	1	1-0	4	3-1	38	25-13

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

Table 47. Observed prey types delivered to the nest, Granite Reef BA, Arizona, 2024.					
Sex	Fish	Birds	Unknown	Total	Percent
Male	23	3	6	32	71.1
Female	12	--	--	12	26.7
Unknown	1	--	--	1	2.2
Total	36	3	6	45	
Percent	80.0	6.7	13.3		

Table 48. Observed prey species delivered to the nest, Granite Reef BA, Arizona 2024.									
Sex	Fish						Birds	Total	Percent
	RT	CS	CH	SS	FC	CC	AC		
Male	7	2	2	1	1	1	2	16	84.2
Female	1	1	--	1	--	--	--	3	15.8
Total	8	3	2	2	1	1	2	19	
Percent	42.1	15.8	10.5	10.5	5.3	5.3	10.5		

[1]RT=rainbow trout, CS=catfish species, CH=channel catfish, SS=sucker species, FC=flathead catfish, CC=common carp, AC=American coot.

Table 49. Bald eagle habitat analysis at the Granite Reef BA, Arizona, 2024.

River km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
0.0	SB	Island	No	1	--	--
0.0	DW	Island	No	1	PO	--
0.0	UP	Right	No	1	TR	--
0.0	DM	Right	No	1	TR	SO
0.0	UP	Left	No	1	PO	--
0.1	RW	Center	No	1	--	GB
0.1	SO	Center	No	1	--	GB
0.1	UP	Right	No	1	--	SO
0.1	UP	Right	No	4	--	GB
0.2	UP	Left	No	2	--	GB
0.2	UP	Left	No	2	--	GB
0.2	RW	Center	Partial	1	--	GB
0.2	RW	Center	No	1	--	GB
0.2	SO	Center	No	1	--	--
0.3	UP	Right	No	2	--	GB
0.4	UP	Right	No	2	--	UP
0.4	SO	Center	No	1	RI	GB
0.5	CL	Left	Partial	1	--	CW
0.5	SD	Center	No	1	--	CW
0.5	RW	Center	No	4	--	GB
0.5	UN	Center	Partial	1	--	TX
0.6	UP	Right	No	1	--	UP
0.9	DM	Right	No	1	--	SO
1.2	SG	Center	Partial	1	PO	TX

[1]River kilometer.
[2]CL=cottonwood large/20-30m, DM=deciduous medium/5-10m, DW=drift wood, RW=rock in water, SB=sand bar, SD=cottonwood snag, SG=snag, SO=shore, UN=unknown, UP=utility pole.
[3]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[4]PO=pool, RI=riffle, TR=tail race of dam.
[5]CW=cottonwood grove, GB=gravel bar, UP=upland desert, SO=shore, TX= tamarisk.

Table 50. Bald eagle habitat use at the Granite Reef BA, Arizona, 2024.

River km[1]	PW[2,3]	PP	PD	CL	PX	ES	EX	DW	PH	PV	Total	Percent
0.0	500	74	287	--	89	92	5	242	8	--	1,297	4.7
0.1	3,034	376	186	206	--	64	--	11	50	--	3,927	14.2
0.2	3,633	1,996	--	86	151	136	174	8	50	38	6,272	22.6
0.3	1,196	268	--	--	26	85	88	1	3	96	1,763	6.4
0.4	727	202	--	8	68	17	18	--	40	17	1,097	4.0
0.5	5,041	1,547	--	255	105	--	--	--	54	25	7,027	25.4
0.6	3,855	2,289	94	--	--	--	--	--	7	36	6,281	22.7
0.7	--	--	6	--	--	--	--	--	--	--	6	<0.1
0.8	1	--	--	--	--	--	--	--	--	--	1	<0.1
0.9	--	6	--	--	--	--	--	--	--	--	6	<0.1
1.2	--	13	--	--	--	--	--	--	--	--	13	<0.1
999.9*	--	--	--	6	5	--	--	--	--	--	11	<0.1
Total	17,987	6,771	573	561	444	394	285	262	212	212	27,701	
Percent	64.9	24.4	2.1	2.0	1.6	1.4	1.0	0.9	0.8	0.8		

[1]River kilometer. *Unknown.

[2]Observation time (minutes).

[3]PW=perched watching, PP=perched preening, PD= perched drying, CL=perched close to mate, PX=perched various/other, ES=eating on shore, EX=eating various, DW=drinking water, PH=perched hunting, PV=perched vocalizing.

APPENDIX L: LUNA BREEDING AREA SUMMARY

Table 51. Observed human activity and bald eagle behavior, Luna BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Drivers	473	--	--	--	--	--	--	473	41.7
Fisherman	252	--	--	--	--	--	--	252	22.2
Picnickers	110	--	--	--	--	--	--	110	9.7
Hikers	83	--	--	--	--	--	--	83	7.3
Birders	56	--	--	--	--	--	--	56	4.9
Boaters (fishing)	49	--	--	--	--	--	--	49	4.3
Photographer	21	--	--	--	1	--	--	22	1.9
USFS, RRM	21	--	--	--	--	--	--	21	1.9
OHV	14	--	--	--	--	--	--	14	1.2
Kayaks/ Canoes	11	--	--	--	--	--	--	11	1.0
Motorcycle	9	--	--	--	--	--	--	9	0.8
Float Tubers (fishing)	6	--	--	--	--	--	--	6	0.5
Bicycle	5	--	--	--	--	--	--	5	0.4
Camper	5	--	--	--	--	--	--	5	0.4
Alpine Fire dept	3	--	--	--	--	--	--	3	0.3
Construction	2	--	--	1	--	--	--	3	0.3
Military Jet	1	--	2	--	--	--	--	3	0.3
LEO	3	--	--	--	--	--	--	3	0.3
Nest Watcher	1	--	--	--	--	--	--	1	0.1
Swimmer	1	--	--	--	--	--	--	1	0.1
Rafter	1	--	--	--	--	--	--	1	0.1
Artist	1	--	--	--	--	--	--	1	0.1
Gunshots	--	--	1	--	--	--	--	1	0.1
Total	1,128	--	3	1	1	--	--	1,133	

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

Table 52. Observed forage events and success, Luna BA, Arizona, 2024.

Sex	Fish		Birds		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	20	20-0	14	13-1	34	33-1
Female	17	17-0	11	8-3	28	25-3
Total	37	37-0	25	21-4	62	58-4

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

Table 53. Observed prey types delivered to the nest, Luna BA, Arizona, 2024.

Sex	Fish	Birds	Total	Percent
Male	17	12	29	51.7
Female	20	7	27	48.2
Total	37	19	56	
Percent	66.0	34.0		

Table 54. Observed prey species delivered to the nest, Luna BA, Arizona 2024.

Sex	Fish	Birds		Total	Percent
	TS[1]	AC	CG		
Male	17	12	--	29	51.7
Female	20	6	1	27	48.2
Total	37	18	1	56	
Percent	66.1	32.1	1.8		

[1]TS=trout species, AC=American coot, CG=Canada goose.

Table 55. Bald eagle habitat analysis at the Luna BA, Arizona, 2024.

Lake km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
0.6	HS	--	No	2	RC	--
0.8	HS	--	No	2	RS	--
1.4	PO	--	Yes	2	RS	--
1.8	SH	--	No	7	--	CF
1.9	PO	--	Yes	2	RS	--
2.2	PO	--	Yes	7	--	CF
2.3	PO	--	Yes	7	--	CF
2.4	PS	--	No	7	--	CF
2.6	WF	--	No	1	RS	--
2.7	PS	--	Yes	2	RS	--
2.8	PS	--	Yes	2	--	CF
3.0	HS	--	Yes	5	--	CF
3.3	HS	--	No	7	--	CF
3.5	PS	--	Yes	1	--	CF
4.4	FP	--	No	1	RC	--
4.8	PS	--	No	1	RC	--
4.8a	PS	--	No	1	RC	--
4.8b	HS	--	No	4	--	CF
4.8c	PO	--	Yes	7	--	CF
4.8d	PO	--	Yes	8	--	CF
4.9	HS	--	No	5	--	CF
4.9a	HS	--	Yes	8	--	CF
4.9b	PO	--	Yes	8	--	CF
4.9c	PO	--	Yes	8	--	CF
5N	HS	--	No	8	--	CF
5a	PO	--	Yes	8	--	CF
5b	PO	--	Yes	8	--	CF
5.1	FP	--	No	1	RC	--
5.2	RO	--	No	1	RC	--

[1]Lake kilometer.
[2]FP=fence post, HS=hard snag, PO=old growth pine (20-30m+), PS=small pine (10-20m), RO=rock, SH=shrub, WF=waterfowl closure sign.
[3]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[4]RC=reservoir cove, RS=reservoir main body.
[5]CF=conifer forest.

Table 56. Bald eagle habitat use at the Luna BA, Arizona, 2024.

Lake km[1]	PW[2,3]	PR	PH	PP	CL	ET	PD	Total	Percent
0.6	--	--	210	--	--	--	--	210	0.5
0.8	624	--	--	--	--	--	--	624	1.5
1.4	347	--	--	--	--	13	--	360	0.9
1.8	566	--	82	--	--	--	--	648	1.6
1.9	33	--	--	--	--	--	--	33	0.1
2.2	212	--	59	--	--	--	--	271	0.7
2.3	344	--	35	--	85	--	--	464	1.1
2.4	59	--	40	--	--	--	--	99	0.2
2.6	663	--	40	--	--	--	--	703	1.7
2.7	--	--	223	--	--	--	--	223	0.5
2.8	--	--	43	--	--	--	--	43	0.1
3.0	--	--	--	--	--	--	4	4	<0.1
3.3	8	--	--	--	--	--	--	8	<0.1
3.5	--	--	12	--	--	--	--	12	<0.1
4.4	95	--	--	--	--	--	--	95	0.2
4.8	15,200	796	--	144	--	--	--	16,140	38.9
4.9	15,988	1,196	--	22	--	7	--	17,213	41.4
5.0	2,184	558	--	11	--	--	--	2,753	6.6
5.1	1,588	--	--	--	--	13	--	1,601	3.9
5.2	25	--	--	--	--	--	--	25	0.1
Total	37,936	2,550	744	177	85	33	4	41,529	
Percent	91.3	6.1	1.8	0.4	0.2	0.1	<0.1		

[1]Lake kilometer.
[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, PD=perched drying.

APPENDIX M: ORME BREEDING AREA SUMMARY

Table 57. Observed human activity and bald eagle behavior, Orme BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Driver	51	1	--	--	--	--	--	52	51.5
Horseback Rider	14	4	--	--	--	--	--	18	17.8
Small Plane	12	--	--	--	--	--	--	12	11.9
Helicopter	10	--	--	--	--	--	--	10	9.9
Hiker	--	4	--	--	2	--	--	6	5.9
Cyclist	2	--	--	--	--	--	--	2	2.0
Motorcycle	1	--	--	--	--	--	--	1	1.0
Total	90	9	--	--	2	--	--	101	

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

Table 58. Bald eagle habitat analysis at the Orme BA, Arizona, 2024.

River km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
0.6	SD	Right	No	2	--	UP
0.6	UP	Right	No	4	--	UP
0.7	CW	Right	Partial	1	RB	CW
0.7	SG	Right	No	3	--	UP
0.8	CM	Right	Yes	1	RB	CW
0.9	CW	Right	Partial	1	RB	CW

[1]River kilometer (Verde River).
[2]CM=cottonwood medium (10-20m), CW=cottonwood large (20-30m), SG=soft snag, SD=cottonwood snag, UP=utility pole.
[3]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[4]RB=river bend.
[5]CW=cottonwood grove, UP=desert upland.

APPENDIX N: SYCAMORE BREEDING AREA SUMMARY

Table 59. Observed human activity and bald eagle behavior, Sycamore BA, Arizona, 2024.									
Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Small Plane	8	--	--	--	--	--	--	8	61.5
Helicopter, Military	2	--	--	--	--	--	--	2	15.4
Helicopter, Sheriff	--	--	--	--	--	1	--	1	7.7
Horseback Rider	1	--	--	--	--	--	--	1	7.7
Fisherman	1	--	--	--	--	--	--	1	7.7
Total	12	--	--	--	--	1	--	13	

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

Table 60. Bald eagle habitat analysis at the Sycamore BA, Arizona, 2024.						
River km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
7.8	UP	Left	No	1	RU	SO
9.4	UP	Right	No	8	--	FL
9.9	SD	Left	No	1	RI	CW
10.0	SD	Left	No	6	RU	CW
10.1	SD	Left	No	6	RU	CW
11.1	SD	Left	No	6	RU	CW

[1]River kilometer.
[2]SD=snag, cottonwood, UP=utility pole.
[3]1=0-25m, 2=26-50m, 3=51-75m, 4=76-100m, 5=101-200m, 6=201-300m, 7=301-400m, 8=>401m.
[4]RI=riffle, RU=run.
[5]CW=cottonwood grove, FL=farm land, SO=shore.

Table 61. Bald eagle habitat use at the Sycamore BA, Arizona, 2024.					
River km[1]	PW[2,3]	PH	PP	Total	Percent
7.8	219	--	21	240	13.4
9.4	12	--	--	12	0.7
9.9	356	182	14	552	30.8
10.0	--	--	7	7	0.4
10.1	371	--	--	371	20.7
11.1	587	--	23	610	34.0
Total	1,545	182	65	1,792	
Percent	86.2	10.2	3.6		

[1]River kilometer.
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, PH=perched hunting, PD= perched drying, PK=perched with prey, ET=eating in tree.

APPENDIX O: WHISKEY SPRING BREEDING AREA SUMMARY

Table 62. Observed human activity and bald eagle behavior, Whiskey Spring BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Recreational Boat	111	38	--	1	--	21	56	227	64.3
Jet ski	16	15	--	--	--	5	9	45	12.7
Fishing Boat	19	4	--	--	--	10	1	34	9.6
Small Plane	9	3	--	--	--	3	1	16	4.5
Helicopter	4	8	--	--	--	1	--	13	3.7
Jet	2	2	--	--	--	--	--	4	1.1
Military Jet	1	2	--	--	--	1	--	4	1.1
OHV	3	--	--	--	--	--	1	4	1.1
Agency Worker	3	--	--	--	--	--	--	3	0.8
Sheriff Boat	2	--	--	--	--	--	--	2	0.6
Vehicle	--	--	--	--	--	--	1	1	0.3
Total	170	72	--	1	--	41	69	353	

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

Table 63. Watercraft compliance at the southern closure boundary, Whiskey Spring BA, Arizona, 2024.

Date	Boats at Closure	Boats in Closure	Jet Skis at Closure	Jet Skis in Closure	Grand total	In closure	
						Total	Percent
2/16-2/25	171	36	24	2	233	38	16.3
3/1-3/10	201	34	22	5	262	39	14.9
3/15-3/24	147	28	14	5	194	33	17.0
3/29-4/7	131	30	20	5	186	35	18.8
4/12-4/21	513	86	69	39	707	125	17.7
4/26-5/5	365	101	69	20	555	121	21.8
Total	1,528	315	218	76	2,137	391	18.3

Table 64. Observed forage events and success, Granite Reef BA, Arizona, 2024.

Sex	Fish		Birds		Unknown		Total	
	E[1]	S-U[2]	E[1]	S-U[2]	E	S-U	E	S-U
Male	21	13-8	--	--	1	0-1	22	13-9
Female	12	7-4	2	2-0	2	1-1	16	11-5
Total	33	20-12	2	2-0	3	1-2	38	24-14

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

Table 65. Observed prey types delivered to the nest, Whiskey Spring BA, Arizona, 2024.

Sex	Fish	Birds	Total	Percent
Male	10	--	10	50.0
Female	8	2	10	50.0
Total	18	2	20	
Percent	90.0	10.0		

Table 66. Observed prey species delivered to the nest, Goldfield BA, Arizona 2024.

Sex	Fish			Birds		Total	Percent
	BS[1]	SH	SU	DC	WS		
Male	--	1	1	--	--	2	33.3
Female	2	--	--	1	1	4	66.6
Total	2	1	1	1	1	6	
Percent	33.3	16.7	16.7	16.7	16.7		

[1]BS=bass species, SH=shad, SU=sucker species, DC=double-crested cormorant, WS=waterfowl species.

Table 67. Bald eagle habitat analysis at the Whiskey Spring BA, Arizona, 2024 (continued on next page).

Lake km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
68.1	CF	Left	Partial	1	RC	CL
68.1	SO	Left	Partial	1	RC	SO
68.1	CF	Right	Partial	2	RC	CL
68.2	CF	Right	Partial	1	RC	CL
68.2	CT	Right	Partial	3	RC	CL
68.2	MS	Right	No	1	RC	CL
68.2	MS	Right	Partial	1	RC	UP
68.2	NE	Right	Partial	1	RC	CL
68.2	PV	Right	No	2	RC	UP
68.2	PV	Right	No	2	RC	CL
68.2	RI	Right	Partial	1	RC	CL
68.2	SO	Left	Partial	1	IF	SO
68.2	SO	Right	Partial	1	RC	CL
68.3	CF	Right	Partial	1	RC	CL
68.3	CF	Right	Partial	1	RC	CL
68.3	CF	Right	Partial	2	RC	CL
68.3	CT	Right	Partial	1	RC	CL
68.3	CF	Right	Partial	3	RC	CL
68.3	CT	Right	Partial	2	RC	CL
68.3	HL	Right	No	2	RC	CL
68.3	RI	Right	No	2	RC	CL
68.3	SS	Right	Partial	2	RC	CL
68.4	BO	Right	Partial	1	RC	SO
68.4	CF	Right	Partial	1	RC	CL
68.4	CF	Right	Partial	2	RC	CL

[1]River kilometer.
[2]AN=alternate nest, BO=boulder, CF=cliff ledge, CT=cliff top, HL=hillside, HS=hard snag, MS=mesquite tree, NE= nest, PV=palo verde tree, RI=ridge, RW=rock in water, SO=shore, SP=stump, SS=shrub snag.
[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]IF=inflow to reservoir, RC=reservoir cove.
[5]CL=cliff, SO=shore, UP=desert upland.

Table 67 continued

Lake km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
68.4	RW	Right	Partial	1	RC	SO
68.4	SO	Right	Partial	1	RC	SO
68.5	BO	Right	Partial	1	RC	SO
68.5	BO	Right	Partial	3	RC	SO
68.5	CF	Right	No	2	RC	CL
68.5	CF	Right	Partial	1	RC	CL
68.5	SO	Left	Partial	1	IF	CL
68.5	SO	Right	Partial	1	RC	SO
68.6	MS	Right	Partial	5	RC	UP
68.7	CF	Left	Partial	2	IF	CL
68.8	SO	Left	Partial	1	RC	SO
68.8	CF	Left	Partial	2	RC	CL
68.8	HS	Right	No	1	RC	SO
68.8	SO	Right	No	1	RC	SO
68.8	SO	Right	Partial	1	RC	SO
68.9	AN	Left	Partial	2	IF	CL
68.9	CF	Left	Partial	2	IF	CL
68.9	CF	Left	Partial	2	RC	CL
68.9	SO	Right	No	1	RC	SO
68.9	SO	Left	Partial	1	IF	SO
68.9	SP	Right	Partial	1	RC	SO
69.1	CF	Left	Partial	1	RC	CL
69.1	CF	Left	Partial	2	IF	CL
69.2	BO	Left	Partial	1	IF	SO
69.2	CF	Left	Partial	1	IF	CL
69.2	CF	Left	Partial	2	IF	CL
69.2	CF	Right	Partial	1	RC	CL
69.3	BO	Left	Partial	1	IF	SO
69.3	CF	Left	Partial	1	IF	CL
69.3	CF	Left	Partial	2	IF	CL
69.3	CF	Right	Partial	2	RC	CL
69.4	HS	Left	Partial	2	IF	SO
69.4	SO	Left	Partial	1	IF	SO
69.4	SP	Left	Partial	1	IF	SO
69.5	HS	Left	Partial	1	RC	SO
69.5	SO	Left	Partial	1	IF	SO
69.5	SO	Left	Partial	1	RC	SO
69.5	SS	Left	No	1	IF	SO
69.6	HS	Left	Partial	1	IF	SO
69.6	SO	Left	Partial	1	IF	SO
69.7	SO	Left	Partial	1	IF	SO
69.9	CF	Left	Partial	1	RC	CL
69.9	SO	Left	Partial	1	IF	SO
70.0	CF	Right	Partial	1	IF	CL

[1]River kilometer.
[2]AN=alternate nest, BO=boulder, CF=cliff ledge, CT=cliff top, HL=hillside, HS=hard snag, MS=mesquite tree, NE= nest, PV=palo verde tree, RI=ridge, RW=rock in water, SO=shore, SP=stump, SS=shrub snag.
[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]IF=inflow to reservoir, RC=reservoir cove.
[5]CL=cliff, SO=shore, UP=desert upland.

Table 68. Bald eagle habitat use at the Whiskey Spring BA, Arizona, 2024.

River km[1]	PW[2,3]	PP	SS	PE	CL	PV	PD	PH	ES	OT	Total	Percent
67.8	1	--	--	--	--	--	--	--	--	--	1	<0.1
67.9	8	--	--	--	--	--	--	--	--	--	8	0.1
68.0	--	--	22	--	4	--	--	--	3	1	30	0.5
68.1	67	23	2	12	--	1	--	--	--	--	105	1.7
68.2	1,228	27	31	--	17	4	--	--	1	1	1,309	21.7
68.3	649	26	--	6	16	2	--	--	--	1	700	11.6
68.4	201	4	1	9	--	--	--	1	--	9	225	3.7
68.5	118	16	32	10	18	--	--	3	--	5	202	3.3
68.6	50	14	4	--	--	--	--	19	7	--	94	1.6
68.7	95	4	--	--	--	--	--	--	--	--	99	1.6
68.8	198	7	36	29	12	2	--	9	--	7	300	5.0
68.9	771	55	38	24	--	12	--	4	--	7	911	15.1
69.0	223	7	2	2	--	1	--	--	--	--	235	3.9
69.1	1,417	8	--	--	42	16	--	--	--	2	1,485	24.6
69.2	32	--	--	--	--	2	--	--	--	--	34	0.6
69.3	61	4	--	--	--	2	2	--	--	3	72	1.2
69.4	49	--	26	4	--	--	--	--	--	13	92	1.5
69.5	37	--	--		1	--	39	--	27	6	110	1.8
69.7	--	--	--	18	--	--	--	--	--	--	18	0.3
69.9	3	1	--	--	--	--	--	--	1	--	5	0.1
70.0	--	--	--	--	--	--	--	5	--	1	6	0.1
Total	5,208	196	194	114	110	42	41	41	39	56	6,041	
Percent	86.2	3.2	3.2	1.9	1.8	0.7	0.7	0.7	0.6	0.9		

[1]River kilometer.
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, SS=standing on shore, PE=perched eating, CL=perched close to mate, PV=perched vocalizing, PD=perched drying, PH=perched hunting, ES=eating on shore, OT=other (perched various/unknown, bathing, drinking water, gathering nest materials, perched interaction, and perched with prey).

APPENDIX P: WILLOW SPRINGS BREEDING AREA SUMMARY

Table 69. Observed human activity and bald eagle behavior, Willow Springs BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Picnicker	595	11	--	--	--	--	--	606	21.8
Fisherman	519	2	--	--	--	--	--	521	18.7
Kayak	430	--	--	--	--	--	--	430	15.5
Paddleboard	388	--	--	--	--	--	--	388	14.0
Hiker	246	8	--	--	--	--	--	254	9.1
Fishing by boat	242	--	--	--	--	--	--	242	8.7
Swimmer	227	5	--	--	--	--	--	232	8.3
Tuber	50	--	--	--	--	--	--	50	1.8
Dogs Off Leash	24	--	--	--	--	--	--	24	0.9
Boater	20	--	--	--	--	--	--	20	0.7
Agency worker	--	2	1	1	--	--	--	4	0.1
Cycler	2	--	--	--	--	--	--	2	0.1
Helicopter	1	--	--	1	--	--	--	2	0.1
Photographer	2	--	--	--	--	--	--	2	0.1
Drone	1	--	--	--	--	--	--	1	<0.1
Runner	1	--	--	--	--	--	--	1	<0.1
Total	2,748	28	1	2	--	--	--	2,779	

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

Table 70. Observed forage events and success, Willow Springs BA, Arizona, 2024.

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

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

Table 71. Observed prey types delivered to the nest, Willow Springs BA, Arizona, 2024.

Sex	Fish	Birds	Unknown	Total	Percent
Male	20	1	8	29	60.4
Female	15	--	4	19	39.6
Total	35	1	12	48	
Percent	72.9	2.1	25.0		

Table 72. Observed prey species delivered to the nest, Willow Springs BA, Arizona 2024.				
Sex	Fish	Birds	Total	Percent
	TS[1]	SJ		
Male	20	1	21	58.3
Female	15	--	15	41.7
Total	35	1	36	
Percent	97.2	2.9		

[1]TS=trout species, SJ=Steller's jay.

Table 73. Bald eagle habitat analysis at the Willow Springs BA, Arizona, 2024.						
River km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
6.1	SC	Left	No	3	RS	CF
6.2	PO	Left	Yes	1	RS	CF
6.2	PO	Left	Yes	1	RS	CF
6.2	SC	Left	No	1	RS	CF
6.2	PO	Left	Partial	3	RS	CF
6.2	PO	Left	Yes	3	RS	CF
6.2	PO	Left	Partial	2	RS	CF
6.2	PO	Left	Partial	3	RS	CF
6.2	PS	Left	Yes	3	RS	CF
6.2	PO	Left	No	3	RS	CF
6.3	PO	Left	Yes	1	RS	CF
6.3	PO	Left	Partial	1	RS	CF
6.3	PO	Left	Partial	1	RS	CF
6.3	PO	Left	Partial	3	RS	CF
7.8	PO	Left	Partial	1	RS	CF

[1]River kilometer.
[2]PO= pine/conifer, old growth 20-30+m, SC=snag conifer.
[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=coniferous forest.

Table 74. Bald eagle habitat use at the Willow Springs BA, Arizona, 2024.						
Lake km[1]	PW[2,3]	PP	PV	PK	Total	Percent
6.2	7,766	83	68	13	7,930	76.6
6.3	2,278	40	9	--	2,327	22.5
7.8	62	--	--	17	79	0.8
999.9	--	--	17	--	17	0.2
Total	10,106	123	94	30	10,353	
Percent	97.6	1.2	0.9	0.3		

[1]River kilometer. 999.9=out of view.
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, PV= perched vocalizing, PK=perched with prey.

APPENDIX Q: WOODS CANYON BREEDING AREA SUMMARY

Table 75. Observed human activity and bald eagle behavior, Woods Canyon BA, Arizona, 2024.

Human Activity	N[1]	W	R	F	L	B	U	Total	Percent
Hiker	1,078	--	--	--	--	--	--	1,078	32.8
Fishing by boat	768	--	--	--	--	--	--	768	23.4
Kayak	702	--	--	--	--	--	--	702	21.3
Paddleboard	274	--	--	1	--	--	--	275	8.4
Angler	165	--	--	--	--	--	--	165	5.0
Boater	102	--	--	--	--	--	--	102	3.1
Dog	89	--	--	1	--	--	--	90	2.7
Picnicker	57	--	--	--	--	--	--	57	1.7
Swimmer	19	--	--	--	--	--	--	19	0.6
Tuber	8	--	--	--	--	--	--	8	0.2
Photographer	5	--	--	3	--	--	--	8	0.2
Drone	2	3	--	--	--	--	--	5	0.2
Runner	5	--	--	--	--	--	--	5	0.2
Camper	1	2	--	--	--	--	--	3	0.1
Agency worker	2	--	--	--	--	--	--	2	0.1
Cycler	1	--	--	--	--	--	--	1	<0.1
Nestwatcher	--	1	--	--	--	--	--	1	<0.1
Total	3,278	6	--	5	--	--	--	3,289	

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

Table 76. Observed forage events and success, Woods Canyon BA, Arizona, 2024.

Sex	Fish		Unknown		Total	
	E[1]	S-U[2]	E	S-U	E	S-U
Male	19	16-3	--	--	19	16-3
Female	21	11-10	2	0-2	23	11-10
Tandem	6	4-2	--	--	6	4-2
Total	46	31-15	2	0-2	48	

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

Table 77. Observed prey types delivered to the nest, Woods Canyon BA, Arizona, 2024.

Sex	Fish	Unknown	Total	Percent
Male	52	1	53	57.6
Female	36	3	39	42.4
Total	88	4	92	
Percent	95.7	4.3		

Table 78. Observed prey species delivered to the nest, Woods Canyon BA, Arizona 2024.

Sex	Fish		Total	Percent
	RT[1]	BL		
Male	36	--	36	56.3
Female	25	3	28	43.7
Total	61	3	64	
Percent	95.3	4.7		

[1]RT=rainbow trout, BL=bluegill.

Table 79. Bald eagle habitat analysis at the Woods Canyon BA, Arizona, 2024.

Lake km[1]	Perch Type[2]	Side	Shade	Distance to H_2O[3]	H_2O Type[4]	Land Type[5]
0.0	SO	Left	No	1	RS	CF
0.0	PO	Left	Partial	2	RS	CF
0.1	PO	Left	Partial	1	RS	CF
0.2	PO	Left	Partial	1	RS	CF
0.3	PO	Left	Partial	1	RS	CF
0.4	PO	Left	Partial	2	RS	CF
0.7	SC	Left	No	4	RS	CF
0.7	PO	Left	Partial	4	RS	CF
0.7	SC	Left	No	4	RS	CF
0.7	PO	Left	No	2	RS	CF
0.9	SC	Left	No	1	RS	CF
0.9	PO	Left	Partial	2	RS	CF
0.9	SC	Left	No	2	RS	CF
1.0	PO	Left	Partial	1	RS	CF
1.1	PO	Left	No	1	RS	CF
1.2	PO	Left	Partial	1	RS	CF
1.5	PO	Left	No	4	RS	CF
4.0	PO	Right	No	1	RS	CF
4.6	PO	Right	Partial	1	RS	CF
4.8	PO	Right	Partial	2	RS	CF
4.8	PO	Right	No	1	RS	CF
4.9	PO	Right	Yes	1	RS	CF
4.9	PO	Right	Yes	1	RS	CF
5.0	PO	Right	Yes	1	RS	CF
5.0	PO	Left	Yes	2	RS	CF

[1]River kilometer.
[2]PO= pine/conifer, old growth 20-30+m, SC=snag conifer, SO=shore.
[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=coniferous forest.

Table 80. Bald eagle habitat use at the Woods Canyon BA, Arizona, 2024.

Lake km[1]	PW[2,3]	PP	PH	PV	PD	PK	Total	Percent
0.1	844	--	33	7	--	--	884	7.1
0.2	20	--	--	1	--	--	21	0.2
0.3	34	--	--	--	--	--	34	0.3
0.4	204	--	10	45	--	--	259	2.1
0.7	941	227	--	14	--	--	1,182	9.4
0.9	2,380	27	42	17	--	--	2,466	19.7
1.0	1,521	40	--	6	45	15	1,627	13.0
1.1	662	--	4	5	--	3	674	5.4
1.2	--	--	--	--	--	3	3	<0.1
1.5	65	--	--	--	--	--	65	0.5
4.0	518	--	--	--	--	--	518	4.1
4.6	1,304	7	18	10	--	--	1,339	10.7
4.8	1,723	--	--	8	--	--	1,731	13.8
4.9	1,412	--	60	11	--	--	1,483	11.9
5.0	210	7	--	1	--	--	218	1.7
999.9	--	--	--	8	--	--	8	0.1
Total	11,838	308	167	133	45	21	12,512	
Percent	94.6	2.5	1.3	1.1	0.4	0.2		

[1]River kilometer. 999.9=out of view.
[2]Observation time (minutes).
[3]PW=perched watching, PP=perched preening, PH=perched hunting, PV= perched vocalizing, PD=perched drying, PK=perched with prey.