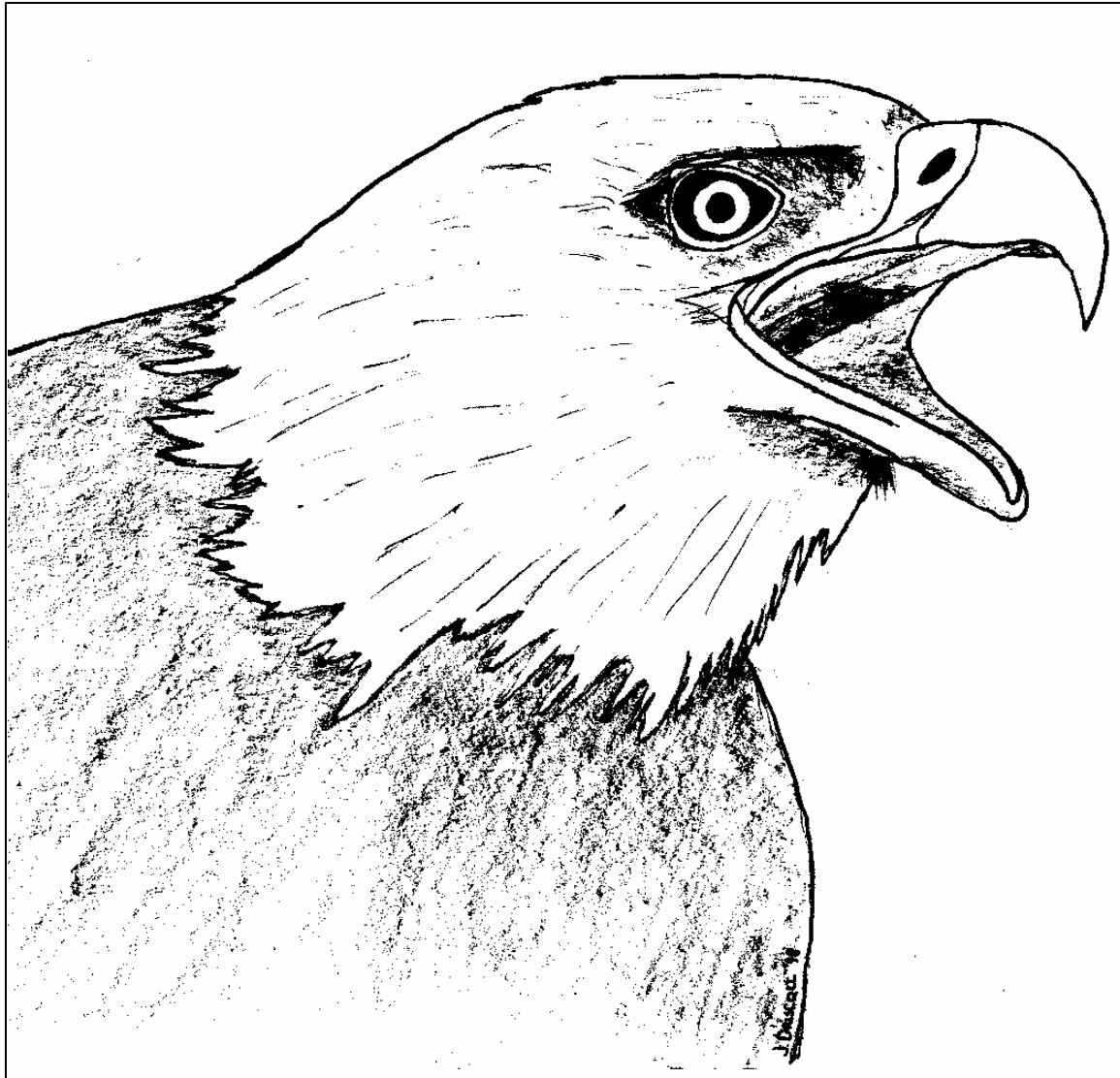


ARIZONA BALD EAGLE 1998 NEST SURVEY

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ARIZONA BALD EAGLE 1998 NEST SURVEY

James T. Driscoll, Gregory L. Beatty, and John G. Koloszar

INTRODUCTION

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

In Arizona, only three breeding areas (BA) existed when bald eagle nest surveys began in 1972 (Rubink and Podborny 1976). These surveys continued annually, excluding 1976 and 1977, from 1972 to present (Glinski 1985, 1986; Grubb 1986; Hildebrandt and Glinski 1987; Gooch et al. 1988; Tibbitts et al. 1989, 1990; Corman and Rayner 1991; Driscoll et al. 1992; Driscoll and Beatty 1994; Driscoll et al. 1995a, 1995b, 1997, 1998). The Arizona Game and Fish Department (AGFD) administered and performed the 1998 nest survey, in cooperation with the Bureau of Land Management, Bureau of Reclamation (USBR), Fort McDowell Indian Community, San Carlos Apache Recreation and Wildlife Department, Salt River Project (SRP), U.S. Forest Service (USFS), USFWS, and White Mountain Apache Game and Fish Department.

The nest survey refines our understanding of breeding bald eagles in Arizona. Discovery of new BAs and alternate nests, coupled with the knowledge of current and historical BAs, accurately describes the distribution, status, and annual productivity of Arizona's breeding population. Timely discovery of BAs also identifies sensitive areas requiring proactive management from adverse impacts.

SURVEY AREA

We conducted our surveys primarily along creeks, reservoirs, and rivers in Arizona. Survey boundaries extended north to Lake Mead (Colorado River), south to Winkelman (Gila River), west to Gene Wash (near Parker), and east to Lake Sierra Blanca (near Alpine). Survey elevations ranged from 750 ft (300 m) at Gene Wash Reservoir, to 8430 ft (2570 m) at Lake Sierra Blanca.

Most surveys were conducted within five biotic communities (Brown 1982): Great Basin Conifer Woodland, Interior Chaparral, Plains and Great Basin Grasslands, Rocky Mountain and Madrean Montane Conifer Forest, and Sonoran Desertscrub-Arizona Upland Subdivision. Other biotic communities visited include Chihuahuan Desertscrub, Mohave Desertscrub, and Sonoran Desertscrub-Lower Colorado Subdivision.

Plant species vary in each of the five biotic communities. Characteristic species of the Great Basin Conifer Woodland are junipers (*Juniperus* spp.) and pinyon pine (*Pinus* spp.). Agave (*Agave* spp.), crucifixion thorn (*Canotia holocantha*), evergreen oak (*Quercus* spp.), juniper, manzanita (*Arctostaphylos* spp.), and skunkbush sumac (*Rhus trilobata*) exist in the Interior Chaparral. Typical species of the Plains and Great Basin Grassland include bluestem grasses (*Andropogon* spp.), cholla and prickly pear cacti (*Opuntia* spp.), grama grasses (*Bouteloua* spp.), junipers, and sagebrush (*Artemisia* spp.). Species often found in the Rocky Mountain and Madrean Montane Conifer Forest are firs (*Pseudotsuga* spp.), junipers, oaks (*Quercus* spp.), pines, and spruces (*Picea* spp.). Common species in the Sonoran Desertscrub-Arizona Upland Subdivision are barrel cacti (*Ferocactus* spp.), cholla and prickly pear cacti, creosotebush (*Larrea tridentata*), foothill palo verde (*Cercidium microphyllum*), mesquite (*Prosopis* spp.), and saguaro (*Carnegiea gigantea*).

Excluding the Luna BA (located in Rocky Mountain and Madrean Montane Conifer Forest), all current BAs contain riparian vegetation of the Sonoran Riparian Deciduous Forest type. This includes plant species such as Arizona black walnut (*Juglans major*), catclaw (*Acacia greggii*), Fremont cottonwood (*Populus fremontii*), mesquite, introduced salt cedar (*Tamarix pentandra*), sycamore (*Platanus* spp.), and willow (*Salix* spp.).

METHODS

The presence of nests, habitat quality, previous sightings, and spacing of current BAs prioritized survey areas. We monitored breeding activity at historical and current BAs, and nest sites discovered between 1992 and 1997 (Driscoll et al. 1992; Driscoll and Beatty 1994; Driscoll et al. 1995a, 1995b, 1997, 1998). Also investigated were reports of bald eagles and/or nests by other biologists, agencies, and the public.

A one to three person team conducted surveys between January and July 1998. Boats, helicopters, and trucks helped us access survey areas. We used Questar spotting scopes (4-160x), 10x50 binoculars, and nest map atlases from Hunt et al. (1992) and SRP to aid observations and to relocate historical and current BAs.

Numbers assigned to new nests are consecutive to the last number assigned in that breeding area (BA). Nest numbers assigned before this document can be found in Driscoll et al. (1992, 1995a, 1995b, 1997, 1998), Driscoll and Beatty (1994), and Hunt et al. (1992).

We recorded habitat quality, human activity, sightings of other species, and plotted nests. Determination of occupancy and breeding status followed Postupalsky's (1974) criteria (Appendix A). "Tall" and "short", "large" and "small" are terms used in this report to describe cliff height, tree, and nest size. "Tall" and "large" refer to structures suitable for breeding bald eagles (compared to current Arizona bald eagle nests and locations). Conversely, "short" and/or "small" are of inadequate height and size.

Winter count flights (January) and monthly occupancy and reproduction assessment (ORA) flights (February to June) helped locate nests and survey for new BAs. ORA flights corresponded with the observation of specific breeding stages (i.e. incubation, the presence of nestlings, fledging). A helicopter, provided by SRP and USBR, flew at approximately 200 ft (70 m) above ground level and at 45 to 70 mph (50 to 60 kt). Drainage topography, high-tension wires, and wind gusts influenced altitude and speed. If occupancy could not be determined from the air, a ground search ensued.

RESULTS

We examined all 39 BAs for breeding activity. In 36 occupied BAs, 24 breeding attempts by 14 breeding pairs produced 21 young (Appendix B).

We surveyed 11 locations for new BAs, found new nests in four, and observed bald eagles in eight (Appendix C, Table 3). Surveyed areas include: lower Black River and nearby tanks (George's Basin and Nash Creek Reservoir), Burro Creek (Six Mile Crossing), Colorado River (Lee's Ferry to Phantom Ranch), lower Gila River (Granite Basin), Lake Mead (Grand Wash), lower Salt River, upper Salt River, lower Verde River, upper Verde River, White Mountain Lakes (Big Lake, Lake Sierra Blanca, The Ranch Lake, White Mountain Lake) and Willow Creek Reservoir. We discovered new nests at: lower Black River and nearby tanks, Lake Mead, lower Salt River, and lower Verde River. Bald eagle sightings were recorded in: Burro Creek, Colorado River, lower Gila River, Lake Mead, lower Salt River, upper Salt River, lower Verde River, and the upper Verde River. A new breeding pair was incubating in Ft. McDowell nest #9 (renamed Doka BA, nest #1).

Of the 22 historical BAs in Arizona (Hunt et al. 1992, Driscoll et al. 1997), we examined 16 for occupancy, relocated nests in eight, and observed bald eagles in three (Appendix C, Table 4). We relocated nests at: Ash, Coldwater, Eagle, Hell Point, Lower Lake Mary, Muldoon, Sullivan and Upper Lake Mary. Coldwater, LF, and Muldoon had sightings of bald eagles. At the Coldwater historical BA, we discovered an adult incubating in a new cliff nest (nest #8). This year, the Chino BA was removed from the list of current BAs and designated as historical after being unoccupied for 10 consecutive years.

We monitored 24 nest sites of other or unknown species (Driscoll et al. 1992, Driscoll and Beatty 1994, Driscoll et al. 1995a, 1995b, 1997, 1998) for bald eagle activity (Appendix C, Table 5). These include: seven golden eagle nest sites (Alchesay Canyon, Granite, Hell Canyon, Lost Mule, Sullivan Lake, R.R. Tunnel, Watson Lake), 16 osprey nest sites (Granite Reef Dam, Lynx Lake, Mormon Lake, Upper Lake Mary, and 12 sites on the upper Black River), and one nest site of unknown species (Gene Wash). We observed bald eagles only at the R.R. Tunnel nest site.

Surveys in four current BAs revealed two new/rebuilt bald eagle nests and two large nests of unknown species (Appendix C, Table 6). We found a rebuilt bald eagle nest at San Carlos (rebuilt nest #1) and a new nest at Sycamore (nest #2). We also discovered a large nest of unknown species at Blue Point (rebuilt nest #2) and at Ft. McDowell (nest #17).

Five bald eagle nests fell this season. Alamo nest #6 slowly fell out of the willow snag. The branches supporting Perkinsville nest #3, 76 nest #2, and Sycamore nest #1 broke causing the nests to fall. Finally, the cottonwood tree supporting Tower nest #7 fell over.

Significant findings of 1998 include one new BA, one reoccupied historical BA, and bald eagles and/or new nests in five new areas. We discovered the new Doka BA on the lower Verde River and the reoccupancy of the Coldwater historical BA on the upper Verde River. Bald eagles and/or new nests were observed at: the lower Black River and nearby tanks, the lower Gila River, Lake Mead, the lower Salt River, and the lower Verde River.

DISCUSSION

A summary of the winter count and ORA flights is found in Appendix D. Areas worthy of further discussion (promising nests sites, bald eagle sightings, new nests, fallen nests) are described below. Nest locations are sensitive, considered confidential by AGFD, and omitted from this report. Management agencies requiring specific locations should contact the AGFD Heritage Data Management System (602-789-3612).

SURVEY SITES

Lower Black River and nearby tanks

Since 1992, we have surveyed the lower Black River during every winter count flight, on a nest search flight, and from the ground. Although we have not documented any resident bald eagles, we have found five large nests of unknown species. Two of these nests (Lost Mule nest site) were first occupied by golden eagles in 1985 (Glinski 1985).

On the April and May flights, we surveyed the lower Black River from the Black River crossing to Turkey Creek. We found two new large nests, one just downstream from the Natanes historical BA, and one just upstream from the Lost Mule nest site; neither nest was occupied and we observed no bald eagles.

Colorado River

Sogge and Tibbitts (1994) reported four large nests and a territorial pair of bald eagles at the Nankoweap Creek confluence with the Colorado River in 1993 and 1994. In 1995, a helicopter survey from Glen Canyon Dam to the Little Colorado River found no nests and one adult (Sogge et al. 1995).

From March 9 to 15, a boat survey from Lee's Ferry to Phantom Ranch revealed no new nests; however we did document six bald eagles from Shinumo Wash to Nankoweap Creek. One adult,

observed at the Nankoweap Creek confluence, was in an aggressive interaction with two golden eagles and a peregrine falcon.

Lower Gila River

In 1997, there were regular sightings of bald eagles in the Granite Basin area, between the Coolidge and Winkelman BAs. We continued to monitor their presence and search for new nests, knowing the bald eagles observed might be the Winkelman birds.

This year, we surveyed this area during the winter count and every flight except May and June. Although we observed no new nests, we did see four adults and one near-adult bald eagle during the winter count, one adult on two occasions and a near-adult in March, and one adult and one subadult in April.

Lake Mead

Since 1996, we have received numerous reports of bald eagles in Grand Wash Bay, Lake Mead. A survey, in July 1996, revealed several small nests and an unbanded adult. In 1998, Joe Kahl (USBR) observed two adults in this area on March 3. Due to the abundance of suitable nesting habitat, we surveyed the area by helicopter on April 10. We discovered two large empty nests and a near-adult bald eagle.

Lower Salt River

In 1997, surveys between the Blue Point and Horse Mesa BAs, and the Orme and Blue Point BAs did not find any new nests. However, we consistently observed bald eagles between the Blue Point and Horse Mesa BAs until May 1997.

This year, we surveyed the lower Salt River during the winter count and on every flight except June. Between the Orme and Blue Point BAs, we found two adults and a near-adult during the winter count. Additionally, on the April flight, we found an adult and rebuilt Blue Point nest #2 in the same area. There were no new nests or bald eagles observed between the Blue Point and Horse Mesa BAs.

Lower Verde River

With the discovery of the reoccupied Box Bar historical BA in 1995, and the new Sycamore BA in 1997, the lower Verde River has been a focus of our surveys. In 1997, we observed an extra pair of adults perched near rebuilt Ft. McDowell nest #9. This year during the winter count, a new pair was incubating in this nest (named the Doka BA nest #1).

HISTORICAL BAS

Chino

The Chino BA was designated as historical in 1998, after being unoccupied for 10 consecutive years. The historical BA was surveyed during the May flight. We did not see any new nests or bald eagles.

Coldwater

Bald eagles and large nests have been observed around the Coldwater historical BA since 1986 (Tibbitts et al. 1989, 1990; Corman and Rayner 1991; Hunt et al. 1992; Driscoll et al. 1992; Driscoll and Beatty 1994; Driscoll et al. 1995a, 1995b, 1997, 1998). Since 1989, seven nests have been found (one occupied by golden eagles and one occupied by red-tailed hawks) and many bald eagles observed.

During routine checks of the historical BA, we found one adult and one golden eagle during the winter count and February flights, respectively. In mid-February, Albert Sillas (USFS) reported bald eagles occupying the Coldwater historical BA. On the March flight, we found an adult either incubating or brooding in a new nest (nest #8).

Lower Lake Mary

Sightings of bald eagles in Walnut Canyon this year, compiled with the observations of bald eagles in the Lower Lake Mary historical BA in 1997, prompted surveys into the area. On July 8 and 9 we ground searched the historical BA and Walnut Canyon. Although we did not find any new nests or bald eagles, we found bald eagle feathers and fresh prey remains around nearby snags. There was no new construction on historical nest #1.

SURVEY SITES WITH EXISTING LARGE NESTS

Black River Osprey Nests

On June 24, we examined 12 osprey nests on the upper Black River for bald eagle occupancy. Using nest locations contained in Vahle and Beatty (1995), we found four of the 12 nest areas active with ospreys. There were no bald eagles observed.

Gene Wash

A large nest and numerous bald eagle sightings in 1996 and 1997 warranted additional surveys to the Gene Wash nest area this year. On the February and March ORA flights, we surveyed the nest site and the adjacent Bill Williams National Wildlife Refuge. We did not see any new nests or bald eagles.

R.R. Tunnel

During the winter count, and every flight except June, we surveyed the R.R. Tunnel nest site. The existing nest was empty, although we observed two adults and two subadults during the winter count and March flights, respectively. The bald eagles observed at this nest site in 1996 may now be occupying the Perkinsville BA 3.0 mi (4.8 km) upstream.

BREEDING AREAS

Alamo

Nest #6, discovered in a willow snag in 1997, had mostly fallen out of the tree by the May ORA flight.

Blue Point

Grubb (1986) rebuilt Blue Point cottonwood tree nest #2 after it fell in 1971. In the late 1980s, fire destroyed the rebuilt structure. In April of this year, we found a new nest in the same location as nest #2. However, the Blue Point pair used nest #7 this year and may not have rebuilt this nest. Additional bald eagle sightings in the area, in combination with the newly rebuilt nest, may indicate a pair pioneering a new BA.

Ft. McDowell

With the addition of the new Doka BA, and new large nests along the lower Verde River, we have altered nest numbers for the Ft. McDowell BA. We renamed Ft. McDowell nest #9 to Doka nest #1. Ft. McDowell nest #17 was discovered between Doka nest #1 and Ft. McDowell nest #16 on the May flight. The nest was empty and we are not certain which pair built the nest.

Perkinsville

Built on top of a great blue heron nest in 1997, the supporting branch for Perkinsville nest #3 broke between the February and March flights. The nest remains in the tree supported by smaller branches.

San Carlos

During the winter count, the San Carlos pair had built on top of the remaining sticks of nest #1 (the supporting branch for nest #1 broke in January 1997, causing the most of the sticks to fall).

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Nest #2 fell when the supporting branch broke before the winter count.

Sycamore

Nest #1 fell when the supporting snag top broke. The resident pair built a new nest #2 just west of nest #1.

Tower

The cottonwood tree supporting Tower nest #7 was at a 45 degree angle when discovered in 1995. The nest tree fell before the winter count.

OVERVIEW

This year, we found one new BA (Doka) and one reoccupied historical BA (Coldwater). Additionally, we observed bald eagles and/or large nests at: the lower Black River, the lower Gila River, Lake Mead, the lower Salt River, the lower Verde River, and the Lower Lake Mary historical BA.

Increased resource competition on the lower Salt and Verde rivers may affect productivity. The new Doka BA has increased the lower Verde River's breeding density to one pair per 4.0 mi (6.5 km). If a pioneering pair occupies rebuilt Blue Point nest #2, the density of the lower Salt River would increase to one pair per 4.5 miles (7.3 km). Increased breeding densities, intraspecific competition, food supply, and expanding populations have attributed to lower productivity rates in Alaska, Minnesota, and Oregon (Hodges 1982, Mathisen 1992, Anthony et al. 1994). Analysis of individual BA productivity over time will be a crucial component in determining density dependence on these rivers.

Surveys in historical BAs are important to identify suitable breeding habitat for new bald eagle BAs. The Coldwater BA is the fourth historical reoccupied BA since 1992. Currently, there are 22 historical BAs (Driscoll et al. 1997, Hunt et al. 1992). However, there is no record of bald eagle occupancy for 11 historical BAs listed in Hunt et al. (1992) and currently nine have no nests (or nests never located).

Some of the large nests recently discovered on the Black River may be from old historical BAs. Natanes and Bronco are the only historical BAs documented on the Black River (Rubink and Podborny 1976). Since 1992, we have relocated one golden eagle nest area (Lost Mule) (Glinski 1985) and discovered four additional nest areas of unknown species. The spacing between these five nest areas is similar to the historical BAs on the upper Verde River.

MANAGEMENT RECOMMENDATIONS

Future survey efforts should monitor historical BAs, potential BAs, and large nests reported in Driscoll et al. (1992, 1995a, 1995b, 1997, 1998), Driscoll and Beatty (1994), and Hunt et al. (1992). These documents are useful tools for locating new BAs. Since 1992, these reports have described two reoccupied historical BAs and six new BAs.

Create digitized maps plotting all current nests and nest sites suitable for bald eagles. Locations should be recorded on 7.5 minute computerized topographic maps to increase accuracy and accessibility. This will also prove beneficial to future studies of other species (i.e. golden eagles and ospreys).

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. Follow-up ground surveys thoroughly investigate an area.

Examine the following areas for breeding bald eagles and/or nests:

Agua Fria River drainage - Lake Pleasant for a second BA.

Big Sandy River drainage - Burro Creek near Six Mile Crossing, Upper Trout Creek.

Bill Williams River drainage - Bill Williams National Wildlife Refuge

Black River drainage - Little and Big Bonito creeks to the confluence of the Black River, Paucity Creek, Pacheta Creek, Reservation Creek, osprey nesting areas on East and West Fork and main stem of the Black River.

Central and Eastern Mountain Lakes - Casadore Springs, Chevelon Canyon Lake, Cholla Lake, Christmas Tree Lake, Doney Park, Dry Lake, George's Basin, Nash Creek Reservoir, Phillips Park Tank, Paucity Lake, Point of Pines, Roger's Lake, Tonto Lake.

Colorado River drainage - Lake Mead (Grand Wash), Gene Wash Reservoir, Nankoweap Creek, Lee's Ferry.

North Fork of White River - Known osprey nesting locations

Gila River drainage - Lower Blue River, San Francisco River to Gila River confluence, Gila Box, lower Gila River between the Winkelman and Coolidge BAs.

Salt River drainage - Blue Point BA to Orme BA, Gun/Tonto creek confluence, Mormon Flat Dam, Redmond BA to Canyon BA, Mule Hoof BA to Cedar Basin BA, Tanks Canyon.

White River - Whiteriver to confluence with Black and Salt rivers.

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APPENDIX A: POSTUPALSKY'S (1974) RAPTOR REPRODUCTIVE SUCCESS CRITERIA

Breeding Area:	An area containing one or more nests within the range of one mated pair of birds.
Occupied Nest:	Any nest, which at least one of the following activity patterns was observed during the breeding season: <ul style="list-style-type: none">a. Young were raised.b. Eggs were laid.c. One adult sitting low in the nest, presumably incubating.d. Two adults present on or near the nest.e. One adult and one bird in immature plumage at or near a nest, if mating behavior was observed (display flight, nest repair, coition).f. A recently repaired nest with fresh sticks, or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath.
Active Nest:	A nest in which eggs have been laid. Activity patterns (a), (b), and (c) are diagnostic of an active nest.
Successful Nest:	An occupied nest from which at least one young fledged during the breeding season under consideration, or, and occupied nest in which at least one young was raised to an advanced stage of development.
Failed Nest:	An occupied nest from which no young fledged due to any cause.
Occupied Breeding Area:	Consists of one occupied nest.
Unoccupied Breeding Area:	A nest or group of alternate nests at which none of the activity patterns diagnostic of an occupied nest were observed in a given breeding season.

APPENDIX B: 1998 BALD EAGLE REPRODUCTION SUMMARIES

Table 1. Arizona bald eagle breeding area productivity summary, 1998.								
Breeding Area	Status ¹	Nest ²	Incubation Date	Eggs	Hatch Date	Young	Fledged	Fledge Date
Alamo	F	4	2/20-3/1	2+	Failed 3/25-4/1.			
Bartlett	S	2	1/5-22	2+	2/22	2	2	5/14, 5/15
Becker	O							
Blue Point	F	7	1/6-28	1+	Failed 1/28-2/23.			
Box Bar	2	S	1/14-26	2+	2/23	2	2	5/18, 5/23
Camp Verde	O							
Canyon	O							
Cedar Basin	F	3	<4/3	1+	Failed 4/3-5/15.			
Cibecue	O							
Cliff	O							
Coldwater	F	8	<3/25	1+	Failed 3/25-4/8.			
Coolidge	F	2	2/10-3/2	2	Failed 3/13, Γ has broken left tibia.			
Devil's Post	U							
Doka	S	1	<1/5	1+	1/27-2/24	1	1	4/25
Dupont	S	2	1/28-3/2	1+	3/2-4/3	1	1	>6/12
East Verde	F	6	1/27-3/2	2	Failed 3/25-4/8.			
Fort McDowell	F	16	1/5-27	2+	2/12	2	Failed 4/4.	
	One young died 3/2-5, one young died 4/11 in rehab after falling from nest 3 times.							
Horse Mesa	F	4	1/6-28	1+	Failed 3/4-4/3.			
Horseshoe	F	11	1/27-2/8	2	3/9	1	Failed 3/25.	
	Γ failed to shade nestling from heat.							
Ive's Wash	O							
Ladders	S	3	1/27-2/6	3+	3/3-5	3	3	5/17, 5/23
Lone Pine	O							
Luna	S	1	<2/19	2+	2/19-3/18	1	1	5/22
Mule Hoof	U							
Orme	S	1	1/28-2/27	1+	2/27-4-3	1	1	5/29-6/12
Perkinsville	O							
Pinal	O							
Pinto	O							

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

² Nest numbers are from Hunt et al. 1992; Driscoll et al. 1992; Driscoll and Beatty 1994; Driscoll et al. 1995a, 1995b, 1997, 1998.

Table 1 (continued).								
Breeding Area	Status ¹	Nest ²	Incubation Date	Eggs	Hatch Date	Young	Fledged	Fledge Date
Pleasant	S	3	1/5-25	1+	2/26	1	1	5/17
Redmond	S	5	1/28-3/2	2	3/11-4/3	2	1	5/15-6/12.
	One young died 4/21-5/7.							
San Carlos	S	2	1/6-28	2+	2/10-3/2	2	2	5/11-13.
	One young broke keel on initial flight. Rehabilitated and released 6/30.							
76	S	3	2/14	2+	3/21	2	2	>6/12
Sheep	O							
Sycamore	S	2	1/5-27	1+	2/27	1	1	5/30
Table Mountain	F	4	3/2-25	1+	Failed 3/25-4/17.			
Talkalai	O							
Tonto	S	2	1/6-23	1+	2/24-25	1	1	5/13-6/9
Tower	S	8	1/27-2/6	2+	3/2-5	2	2	5/21-6/1
Winkelman	O							

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

² Nest numbers are from Hunt et al. 1992; Driscoll et al. 1992; Driscoll and Beatty 1994; Driscoll et al. 1995a, 1995b, 1997, 1998.

Table 2. Arizona bald eagle productivity summary, 1998.			
Number of BAs	39	Number of Active BAs	24
Number of Occupied BAs	36	Number of Failed Breeding Attempts	10
Number of Eggs	38+	Number of Successful Breeding Attempts	14
Nest Success = 14/36	0.38	Number of Young Hatched	25+
Mean Brood Size = 21/14	1.5	Number of Young Fledged	21
		Productivity = 0.38 x 1.5	0.57

APPENDIX C: NEST SURVEY SUMMARIES

Table 3. Arizona bald eagle nest survey summary: new locations surveyed, 1998.			
New Locations	Date	Method	Results
Lower Black River and nearby tanks	4/21, 5/15	Helicopter	Two new nests found. One upstream from Lost Mule nest site and one downstream from Natanes historical BA.
Burro Creek, Six Mile	1/27, 5/14	Helicopter	No new nests. One near-adult near Bagdad Creek on 5/14.
Colorado River, Lee's Ferry to Phantom Ranch	3/9-3/15	Boat	No new nests. Six individual sightings of bald eagles between Nankoweap Creek and Shinumo Wash (23 river mile stretch).
Lower Gila River	1/6, 1/28, 3/2, 4/3 4/21	Helicopter	No new nests. Four adults and one near-adult in area on 1/6. One adult in area on 3/2. One adult and one near-adult in area on 4/3. One adult and one subadult in area on 4/21.
Lake Mead	4/10	Helicopter	Two large nests found, one in Iceberg Canyon, the other just north of Grand Wash Bay. One adult observed on west side of Grand Wash Bay.
Lower Salt River	1/6, 1/28, 4/3, 4/21, 5/15	Helicopter	Found a large nest (possibly rebuilt Blue Point nest #2) and one adult near SRR pullout #4 on 4/21.
Upper Salt River	4/3, 4/21, 5/15	Helicopter	No new nests. One adult and one subadult in area on 4/3. Two subadults in area on 4/21. One osprey near Carrizzo Creek on 5/15.
Lower Verde River	1/5, 1/27, 3/2, 4/17, 5/14	Helicopter	A new pair of bald eagles incubating in Ft. McDowell nest #9 (rebuilt 1997) on 1/5 (named the Doka BA). Found new nest Ft. McDowell nest #17 near nest #15 on 5/14.
Upper Verde River	1/5, 1/27, 4/17, 5/14	Helicopter	No new nests. One adult near I-17 bridge on 4/17. Two subadults near Goat Camp Creek on 5/14.
White Mountain Lakes	6/24, 6/25	Ground	No new nests. One adult observed at Lake Sierra Blanca determined to be Luna BA female.
Willow Creek Reservoir	4/17	Helicopter	No new nests or bald eagles.

Table 4. Arizona bald eagle nest survey summary: historical BAs surveyed, 1998.			
Historical BAs	Date	Method	Results
Ash	1/6, 1/28, 4/21	Helicopter	All known nests empty. No new nests or bald eagles.
Bronco	4/21, 5/15	Helicopter	No new nests or bald eagles.
Chino	5/14	Helicopter	No new nests or bald eagles.
Coldwater	1/5, 1/27, 3/25	Helicopter	One adult in area on 1/5. One golden eagle in area on 1/27. Reoccupied BA, one adult incubating on new nest #8 on 3/25.
Eagle	1/7	Helicopter	All known nests empty. No new nests or bald eagles.
Ft. Whipple	4/17, 5/14	Helicopter	No new nests or bald eagles.
Hell Point	1/5, 1/27, 4/17, 5/14	Helicopter	All known nests empty. No new nests. Two golden eagles in area on 4/17.
LF	1/5, 1/27, 4/17	Helicopter	We observed no new nests. One adult in area on 1/5. Two subadults in area on 1/27.
Lower Lake Mary	7/8, 7/9	Ground	All known nests empty. No new nests.
Muldoon	1/5, 1/27, 4/17, 5/14	Helicopter	All known nests empty. No new nests. Two adults in area on 1/27.
Natanes	4/21, 5/15	Helicopter	No new nests or bald eagles .
Needle Rock	1/5	Helicopter	No new nests or bald eagles.
Stoneman	7/9	Ground	No new nests or bald eagles.
Sullivan	1/5, 1/27, 3/25, 4/17, 5/14	Helicopter	One golden eagle incubating in rebuilt historical nest on 3/25. One red-tailed hawk incubating in nest adjacent to empty historical nest on 4/17. Three red-tailed hawk nestlings in adjacent nest on 5/14.
Upper Lake Mary	7/9	Ground	All known nests empty. No new nests.
Willow	1/7	Helicopter	No new nests or bald eagles.

Table 5. Arizona bald eagle nest survey summary: nest sites surveyed, 1998.			
Nest Sites	Date	Method	Results
Alchesay Canyon	1/6	Helicopter	All known nests empty. No bald eagles.
Black River, osprey nest sites	6/24	Ground	No new nests or bald eagles. Four of eleven known osprey BAs active (Vahle and Beatty 1993).
Gene Wash	1/27, 3/25	Helicopter	All known nests empty. No new nests or bald eagles.
Granite	1/5, 1/27, 4/17, 5/14	Helicopter	All known nests empty. No new nests. Two golden eagles perched above nests on 5/14.
Granite Reef	1/6, 1/28, 4/17, 5/14, 6/12	Helicopter	One osprey incubating in nest, second osprey in area on 4/17. One osprey brooding small young on 5/14. Nest empty on 6/12.
Hell Canyon	1/5	Helicopter	All known nests empty. No bald eagles.
Lost Mule	4/21, 5/15	Helicopter	One golden eagle and one nestling in nest on 4/21.
Lynx Lake	1/5, 1/27, 4/17, 5/14	Helicopter	One osprey incubating in new nest west of platforms on 4/17 and 5/14.
Mormon Lake	7/9	Ground	All known nests empty. No new nests or bald eagles. Two osprey observed near nest on west side.
R.R. Tunnel	1/5, 1/27, 3/2, 4/17, 5/14	Helicopter	All known nests empty. No new nests. Two adults in area on 1/5. Two subadult in area on 3/2.
Sullivan Lake	1/5, 1/27, 4/17, 5/14	Helicopter	All known nests empty. No new nests or bald eagles.
Upper Lake Mary	7/9	Ground	No new nests or bald eagles. Both osprey nests active. Platform nest in The Narrows empty.
Watson Lake	1/27, 4/17, 5/14	Helicopter	One golden eagle incubating in nest on 4/17. Two golden eagle nestlings in nest on 5/14.

Table 6. Arizona bald eagle nest survey summary: BAs surveyed, 1998.			
Breeding Areas	Date	Method	Results
Becker Lake	2/18, 2/19, 3/18, 5/1	Ground	Nest #1 was rebuilt and one adult in area on 2/18 and 3/18. Two adults perched next to nest #1 on 2/19.
Camp Verde	1/5, 1/27, 4/17, 5/14	Helicopter	All known nests empty. No new nests or bald eagles.
Canyon	4/3, 4/21, 5/15	Helicopter	All known nests empty. No new nests or bald eagles.
Cibecue	4/3, 4/21, 5/15	Helicopter	All known nests empty. No new nests or bald eagles.
Cliff	1/5, 1/22, 1/27, 3/2, 3/25, 4/17, 5/14	Helicopter, Ground	All known nests empty. No new nests. Two adults in area on 1/27, 4/17 and 5/14. One adult in area on 3/2. Four subadults in area on 4/17.
Devil's Post	1/27, 5/14	Helicopter	All known nests empty. No new nests or bald eagles.
Ive's Wash	1/27, 3/25, 4/17, 5/14	Helicopter	All known nests empty. No new nests. One adult in area on 1/27.
Lone Pine	4/3, 4/21, 5/15	Helicopter	All known nests empty. No new nests. One adult and one subadult in area on 4/3.
Mule Hoof	4/3, 4/21, 5/15	Helicopter	All known nests empty. No new nests or bald eagles.
Perkinsville	1/5, 1/27, 3/2, 3/25, 4/17, 5/14	Helicopter	All known nests empty. No new nests. Nest #3 rebuilt on 1/5 and the branch broke on 3/2. One adult in area on 1/5, 1/27, 3/2 and 5/14.
Pinal	1/6, 1/28, 2/18, 3/2, 4/3, 4/21, 5/15, 6/12	Helicopter, Ground	All known nests empty. No new nests. One adult in area on 1/6, 3/2 and 6/12. One subadult in area on 4/21.
Pinto	1/6, 1/28, 2/18, 3/2, 4/3, 4/21, 5/15, 6/12	Helicopter, Ground	All known nests empty. No new nests. One adult and one near-adult in area on 1/6. Nest #3 rebuilt on 1/28.
Sheep	1/6, 1/28, 3/2, 4/3, 4/21, 5/15, 6/12	Helicopter	All known nests empty. No new nests. One adult in area on 1/6 and 4/3. One adult with a transmitter in area on 1/28 and 5/15. One near-adult in area on 4/21. Two adults in area on 6/12.
Talkalai	1/6, 1/28, 3/2, 4/3, 4/21, 5/15	Helicopter	All known nests empty. No new nests. One adult in area on 1/6 and 5/15. Two adults standing in nest #4 on 4/3 and 4/21. One subadult in area on 4/21.
Winkelman	1/6, 1/28, 3/2, 4/3, 4/21	Helicopter	All known nests empty. No new nests. One adult upstream on Gila on 1/6 and 3/2. Two adults upstream on Gila on 1/28.

APPENDIX D: WINTER COUNT/ORAF FLIGHT SUMMARIES

Table 7. Results of January 5, 1998, winter count.			
Location	Time	Status ¹	Comments
Orme	0756	O	All known nests empty. One adult near nest #1.
Sycamore	0807	O	Nest #1 fell, new nest #2 found. No bald eagles.
Doka	0814	A	New BA. One adult incubating in old Ft. McDowell nest #9.
Ft. McDowell	0817	O	Two adults standing in nest #16.
Box Bar	0821	O	All known nests empty. One near-adult near nest #2.
Needle Rock historical BA	0823	---	No new nests or bald eagles.
Bartlett	0825	U	All known nests empty. No bald eagles.
Cliff	0904	U	All known nests empty. No bald eagles.
Horseshoe	0915	O	All known nests empty. One adult near nest #1.
Table Mountain	0935	O	All known nests empty, nest #5 fell. One adult near nest #4.
LF historical BA	0954	---	No new nests. One adult near historical nest location.
East Verde	1002	O	All known nests empty. Two adults near nest #6.
Coldwater historical BA	1005	---	All known nests empty. One adult in area.
Ladders	1019	O	One adult standing in nest #3.
Camp Verde	1127	U	No new nests or bald eagles.
Tower	1348	U	All known nests empty, nest #7 fell. Two subadults in area.
R.R. Tunnel nest site	1358	---	All known nests empty. Two adults in area.
Perkinsville	1404	O	All known nests empty. One adult near rebuilt nest #3.
Hell Canyon nest site	1416	---	All known nests empty. No bald eagles.
Hell Point historical BA	1434	---	All known nests empty. No bald eagles.
Muldoon historical BA	1445	---	All known nests empty. No bald eagles.
Granite nest site	1451	---	All known nests empty. No bald eagles.
Sullivan Lake nest site	1455	---	All known nests empty. No bald eagles.
Sullivan historical BA	1456	---	All known nests empty. No bald eagles.
Lynx Lake nest site	1533	---	All known nests empty. No bald eagles.
Pleasant	1554	O	All known nests empty. Two adults and one subadult near nest #2.

¹ BA status codes (Postupalsky 1974): U=unoccupied, O=occupied, A=active, S=successful, F=failed, ---=is not a BA therefore does not receive a status code

Table 8. Results of January 6, 1998, winter count.			
Location	Time	Status ¹	Comments
Orme	0747	O	All known nests empty. One adult near rebuilt nest #1.
Granite Reef nest site	0750	---	All known nests empty. No bald eagles.
Lower Salt River	0752	---	No new nests. Two adults and a near-adult near SRR Cliffs.
Blue Point	0806	U	All known nests empty. No bald eagles.
Horse Mesa	0831	U	All known nests empty. No bald eagles.
Alchey Canyon nest site	0851	---	All known nests empty. No bald eagles.
Tonto	0900	O	All known nests empty. No bald eagles.
Sheep	0916	O	All known nests empty. One adult in area.
76	0928	O	All known nests empty, nest #2 fell. One adult in area.
Dupont	0948	U	All known nests empty. No bald eagles.
Pinto	1104	O	All known nests empty. One adult and one near-adult in area.
Pinal	1112	O	All known nests empty. One adult in area.
Redmond	1127	U	All known nests empty. No bald eagles.
Ash historical BA	1239	---	All known nests empty. No bald eagles.
Talkalai	1402	O	All known nests empty. One adult in area.
San Carlos	1417	O	All known nests empty. One adult near rebuilt nest #1.
Winkelman	1545	O	All known nests empty. One adult on Gila upstream.
Lower Gila River	1600	---	Four adults and one near-adult near Granite Basin.
Coolidge	1610	U	All known nests empty. Two subadults in nest area.

¹ BA status codes (Postupalsky 1974): U=unoccupied, O=occupied, A=active, S=successful, F=failed, ---=is not a BA therefore does not receive a status code.

Table 9. Results of January 7, 1998, winter count.			
Location	Time	Status ¹	Comments
Willow historical BA	1105	---	No new nests or bald eagles.
Eagle historical BA	1134	---	All known nests empty. No bald eagles.

¹ BA status codes (Postupalsky 1974): U=unoccupied, O=occupied, A=active, S=successful, F=failed, ---=is not a BA therefore does not receive a status code.

Table 10. Results of January 27, 1998, ORA flight.			
Location	Time	Status ¹	Comments
Orme	0817	O	One adult standing in nest #3.
Sycamore	0828	A	One adult incubating in nest #2. Second adult in area.
Doka	0832	A	One adult incubating in nest #1. Second adult in area.
Ft. McDowell	0834	A	One adult incubating in nest #16. Second adult in area.
Bartlett	0841	A	One adult incubating in nest #2.
Cliff	0854	O	One adult feeding on old nest #4 pinnacle. Second adult in area.
Horseshoe	0908	O	All known nests empty. No new nests or bald eagles.
Table Mountain	0917	O	All known nests empty. No new nests or bald eagles.
LF historical BA	0929	---	No new nests. Two subadults near historical nest location.
East Verde	0928	O	All known nests empty. No bald eagles.
Coldwater historical BA	0947	---	All known nests empty. One golden eagle in area.
Ladders	0955	O	One adult standing in nest #3.
Camp Verde	1009	U	No new nests or bald eagles.
Tower	1116	O	One adult near nest #8. One adult and one subadult near nest #6.
R.R. Tunnel nest site	1121	---	All known nests empty. No bald eagles.
Perkinsville	1126	O	All known nests empty. One adult near nest #3.
Hell Point historical BA	1134	---	All known nests empty. No bald eagles.
Muldoon historical BA	1139	---	All known nests empty. Two adults in nest area.
Granite nest site	1145	---	All known nests empty. No bald eagles.
Sullivan Lake nest site	1148	---	All known nests empty. No bald eagles.
Sullivan historical BA	1149	---	All known nests empty. No bald eagles.
Watson Lake nest site	1312	---	All known nests empty. No bald eagles.
Lynx Lake nest site	1315	---	All known nests empty. No bald eagles.
Devil's Post	1345	U	All known nests empty. No new nests or bald eagles.
Burro Creek, Six Mile	1350	---	No new nests or bald eagles.
Alamo	1410	O	Two adults standing in nest #5.
Ive's Wash	1416	O	All known nests empty. One adult in area.
Gene Wash nest site	1438	---	All known nests empty. No new nests or bald eagles.

¹ BA status codes (Postupalsky 1974): U=unoccupied, O=occupied, A=active, S=successful, F=failed, ---=is not a BA therefore does not receive a status code.

Table 11. Results of January 28, 1998, ORA flight.			
Location	Time	Status ¹	Comments
Orme	0815	O	All known nests empty. One adult near nest #1.
Granite Reef nest site	0819	---	All known nests empty. No bald eagles.
Blue Point	0831	A	One adult incubating in nest #7.
Lower Salt River	0835	---	No new nests or bald eagles.
Horse Mesa	0842	A	One adult incubating in nest #4.
Sheep	0911	O	All known nests empty. No new nests. One adult with transmitter in area.
76	0917	A	One adult incubating in nest #3. Second adult in area.
Dupont	1021	O	All known nests empty. No bald eagles. Nest #2 rebuilt.
Pinto	1031	O	All known nests empty. No bald eagles. Nest #3 rebuilt.
Pinal	1042	O	All known nests empty. No bald eagles.
Redmond	1046	U	All known nests empty. No bald eagles.
Ash historical BA	1109	---	All known nests empty. No bald eagles.
Talkalai	1127	O	All known nests empty. No new nests or bald eagles.
San Carlos	1136	A	One adult incubating in nest #2. Second adult near nest #1.
Coolidge	1136	U	All known nests empty. No new nests or bald eagles.
Lower Gila River	1145	---	No new nests or bald eagles.
Winkelman	1201	O	All known nests empty. No new nests. Two adults upstream on Gila River.

¹ BA status codes (Postupalsky 1974): U=unoccupied, O=occupied, A=active, S=successful, F=failed, ---=is not a BA therefore does not receive a status code.

Table 12. Results of March 2, 1998, ORA flight.			
Location	Time	Status ¹	Comments
Cliff	0827	O	All known nests empty. No new nests. One adult in area.
Table Mountain	0844	O	All known nests empty. No new nests. Two adults in area.
East Verde	0903	A	One adult incubating in nest #6.
R.R. Tunnel nest site	0932	---	All known nests empty. No new nests. Two subadults in area.
Perkinsville	0942	O	Nest #3 branch broke. No new nests. One adult in area.
Sheep	1151	O	All known nests empty. No new nests or bald eagles.
Dupont	1210	A	One adult incubating in nest #2.
Pinto	1232	O	All known nests empty. No new nests or bald eagles.
Pinal	1239	O	All known nests empty. No new nests. One adult in area.
Redmond	1249	A	One adult incubating in nest #5.
Talkalai	1329	O	All known nests empty. No new nests or bald eagles.
San Carlos	1340	A	One adult brooding small young in nest #2.
Coolidge	1553	A	One adult incubating in nest #3. One adult and six subadults in area.
Lower Gila River	1555	---	No new nests. One adult in area.
Winkelman	1613	O	All known nests empty. No new nests. One adult in area.
Horse Mesa	1641	A	One adult incubating in nest #4.
Blue Point	1656	F	All known nests empty. Two adults in area.
Lower Verde River	1700	---	No new nests or bald eagles.

¹ BA status codes (Postupalsky 1974): U=unoccupied, O=occupied, A=active, S=successful, F=failed, ---=is not a BA therefore does not receive a status code.

Table 13. Results of March 25, 1998, ORA flight.			
Location	Time	Status ¹	Comments
Gene Wash nest site	0851	---	All known nests empty. No new nests or bald eagles.
Ive's Wash	1006	O	All known nests empty. No new nests or bald eagles.
Alamo	1021	A	One adult incubating in nest #4.
Sullivan historical BA	1055	---	One golden eagle incubating in rebuilt historical nest.
Perkinsville	1109	O	No new nests or bald eagles.
Coldwater historical BA	1305	A	Reoccupied BA. One adult incubating/brooding in new nest #8.
East Verde	1309	A	One adult incubating in nest #6.
Table Mountain	1315	A	One adult incubating in nest #4.
Cliff	1323	O	All known nests empty. No new nests or bald eagles.

¹ BA status codes (Postupalsky 1974): U=unoccupied, O=occupied, A=active, S=successful, F=failed, ---=is not a BA therefore does not receive a status code.

Table 14. Results of April 3, 1998, ORA flight.			
Location	Time	Status ¹	Comments
Orme	0842	A	One adult and one 3-week old nestling in nest #1.
Lower Salt River	0844	---	No new nests or bald eagles.
Blue Point	0853	F	All known nests empty. No bald eagles.
Horse Mesa	0904	F	All known nests empty. No new nests or bald eagles.
Tonto	0914	A	One 5.5-week old nestling in nest #2. Two adults and six subadults in area.
Sheep	0922	O	All known nests empty. No new nests. One adult in area.
Dupont	0932	A	One adult and one 2-week old nestling in nest #2.
Pinto	0941	O	All known nests empty. No new nests or bald eagles.
Pinal	0950	O	All known nests empty. No new nests or bald eagles.
Redmond	0954	A	One adult brooding in nest #5.
Canyon	1008	O	All known nests empty. No bald eagles.
Lone Pine	1107	O	All known nests empty. No new nests. One adult and one subadult in area.
Cedar Basin	1143	A	One adult incubating in nest #3. Second adult in area.
Upper Salt River	1145	---	No new nests. One near-adult and one subadult in area.
Mule Hoof	1157	U	All known nests empty. No bald eagles.
Cibecue	1158	O	All known nests empty. No new nests or bald eagles.
San Carlos	1420	A	Two 4.5-week old nestlings in nest #2. One adult in area.
Talkalai	1431	O	Two adults standing in nest #4.
Coolidge	1447	F	All known nests empty. One adult in area.
Lower Gila River	1454	---	No new nests. One adult and one near-adult in area.
Winkelman	1508	O	All known nests empty. No bald eagles.

¹ BA status codes (Postupalsky 1974): U=unoccupied, O=occupied, A=active, S=successful, F=failed, ---=is not a BA therefore does not receive a status code.

Table 15. Results of April 17, 1998, ORA flight.			
Location	Time	Status ¹	Comments
Granite Reef nest site	0724	---	One osprey incubating in nest. Second osprey in area.
Orme	0726	A	One 5-week old nestling in nest #1.
Lower Verde River	0727	---	No new nests.
Doka	0740	A	One 9-week old nestling in nest #1. Three adults in area.
Cliff	0749	O	All known nests empty. No new nests. Two adults and four subadults in area.
Horseshoe	0808	F	All known nests empty. One adult near Chalk Mountain.
Upper Verde River	0810	---	No new nests or bald eagles.
Table Mountain	0816	F	All known nests empty. One adult in area.
Upper Verde River	0817	---	No new nests. Two subadults in area.
East Verde	0825	A	One adult incubating in nest #6.
LF historical BA	0829	---	No new nests or bald eagles.
Coldwater	0918	F	All known nests empty. No bald eagles.
Ladders	0924	A	One adult, three 5.5 week old nestlings nestling in nest #3.
Camp Verde	0937	U	All known nests empty. No new nests or bald eagles.
Upper Verde River	0941	---	No new nests. One adult near I-17 bridge.
R.R. Tunnel nest site	1155	---	All known nests empty. No new nests or bald eagles.
Perkinsville	1202	---	All known nests empty. No new nests or bald eagles.
Hell Point historical BA	1210	---	All known nests empty. Two golden eagles in area.
Muldoon historical BA	1217	---	All known nests empty. No bald eagles.
Granite nest site	1220	---	All known nests empty. No bald eagles.
Sullivan Lake nest site	1224	---	All known nests empty. No bald eagles.
Sullivan historical BA	1225	---	One red-tailed hawk incubating in nest near empty nest #1.
Willow Creek Reservoir	1238	---	No new nests or bald eagles.
Watson Lake nest site	1240	---	One golden eagle incubating in nest.
Ft. Whipple historical BA	1243	---	No new nests or bald eagles.
Lynx Lake nest site	1248	---	One osprey incubating in new nest near platforms.
Alamo	1405	F	All known nests empty. No bald eagles.
Ive's Wash	1409	O	All known nests empty. No new nests or bald eagles.

¹ BA status codes (Postupalsky 1974): U=unoccupied, O=occupied, A=active, S=successful, F=failed, ---=is not a BA therefore does not receive a status code.

Table 16. Results of April 21, 1998, ORA flight.			
Location	Time	Status ¹	Comments
Lower Salt River	0730	---	Found a large nest near SRR pullout #4, possibly rebuilt Blue Point nest #2. One adult in area.
Blue Point	0737	F	All known nests empty. No bald eagles.
Horse Mesa	0759	F	All known nests empty. No bald eagles.
Tonto	0807	A	One adult and one 7.5-week old nestling in nest #2.
Sheep	0808	O	All known nests empty. No new nests observed. One near-adult in area.
Dupont	0833	A	One 4.5-week old nestling in nest #2.
Pinto	0853	O	All known nests empty. No new nests or bald eagles.
Pinal	0902	O	All known nests empty. No new nests. One subadult in area.
Redmond	0908	A	Two 3.5-week old nestlings in nest #5.
Canyon	0923	O	All known nests empty. No bald eagles.
Lower Black River and nearby tanks	1044	---	Found two new nests, one upstream of Lost Mule nest site and one downstream from Natanes historical BA.
Lost Mule nest site	1046	---	One adult and one nestling golden eagle in nest.
Natanes historical BA	1050	---	No new nests or bald eagles.
Bronco historical BA	1102	---	No new nests or bald eagles.
Lone Pine	1107	O	All known nests empty. No bald eagles.
Cedar Basin	1115	A	One adult incubating in nest #3.
Upper Salt River	1125	---	No new nests. Two subadults near Carrizzo Creek.
Mule Hoof	1127	U	All known nests empty. No bald eagles.
Cibecue	1129	O	All known nests empty. No new nests or bald eagles.
Ash historical BA	1343	---	All known nests empty. No bald eagles.
San Carlos	1418	A	Two 7.0-week old nestlings in nest #2. Two adults in area.
Talkalai	1426	O	Two adults standing in nest #4. One subadult downstream of nest #4. One red-tailed hawk nestling in nest #2.
Coolidge	1443	F	All known nests empty. No bald eagles.
Lower Gila River	1451	---	One near-adult and one subadult downstream of Granite Basin.
Winkelman	1459	O	All known nests empty. No bald eagles.

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Table 17. Results of May 14, 1998, ORA flight.			
Location	Time	Status ¹	Comments
Ive's Wash	0820	O	All known nests empty. No new nests or bald eagles.
Alamo	0828	F	All known nests empty. No bald eagles.
Chino historical BA	0832	---	No new nests or bald eagles.
Burro Creek, Six Mile	0855	---	No new nests. One near-adult near Bagdad Creek.
Devil's Post	0911	U	All known nests empty. No new nests or bald eagles.
Lynx Lake nest site	1003	---	One osprey incubating in nest near platforms.
Ft. Whipple historical BA	1008	---	No new nests or bald eagles.
Watson Lake nest site	1013	---	Two golden eagle nestlings in nest.
Sullivan historical BA	1109	---	Historical nest empty. Red-tailed hawk nest has three nestlings.
Sullivan Lake nest site	1111	---	All known nests empty. No bald eagles.
Granite nest site	1115	---	All known nests empty. Two golden eagles perched above nests.
Muldoon historical BA	1118	---	All known nests empty. No bald eagles.
Hell Point historical BA	1124	---	All known nests empty. No bald eagles.
Perkinsville	1136	O	No new nests. One adult in area.
R.R. Tunnel nest site	1139	---	All known nests empty. No new nests or bald eagles.
Tower	1146	A	Two 10-week old nestlings in nest #8.
Camp Verde	1333	U	No new nests or bald eagles.
Ladders	1345	A	Three 10-week old nestlings in nest #3. One adult in area.
Coldwater	1356	F	All known nests empty. Two adults in area.
East Verde	1402	F	All known nests empty. No bald eagles.
Upper Verde River	1407	---	No new nests. Two subadults in area.
Table Mountain	1410	F	All known nests empty. Two adults in area.
Cliff	1423	O	All known nests empty. Two adults perched on old nest #4 cliff.
Bartlett	1433	S	Only one 11.5-week old nestling in nest #2. One adult in area.
Doka	1438	S	Doka nest #1 empty. Two adults in area.
Sycamore	1455	A	One 11.0-week old nestling in nest #2.
Lower Verde River	1455	---	Found new Ft. McDowell nest #17 near nest #15.
Orme	1501	A	One 10.5-week old nestling in nest #1.
Granite Reef nest site	1504	---	One osprey brooding in nest.

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Table 18. Results of May 15, 1998, ORA flight.			
Location	Time	Status ¹	Comments
Lower Salt River	0740	---	No new nests or bald eagles.
Sheep	0822	O	All known nests empty. No new nests. One adult in area.
Dupont	0833	A	One 7.5 week old nestling in nest #2.
Pinto	0850	O	All known nests empty. No new nests or bald eagles.
Pinal	0853	O	All known nests empty. No new nests or bald eagles.
Redmond	0900	A	One 6.5 week old nestling in nest #5.
Canyon	0914	O	All known nests empty. No new nests or bald eagles.
Lower Black River and nearby tanks	1034	---	All known nests empty. No new nests or bald eagles.
Lost Mule nest site	1035	---	All known nests empty. No new nests or bald eagles.
Natanes historical BA	1042	---	No new nests or bald eagles.
Bronco historical BA	1054	---	No new nests or bald eagles.
Lone Pine	1102	O	All known nests empty. No new nests or bald eagles.
Cedar Basin	1110	F	All known nests empty. No new nests or bald eagles.
Upper Salt River	1115	---	No new nests or bald eagles. One osprey near Carrizzo Creek.
Mule Hoof	1123	U	All known nests empty. No new nests or bald eagles.
Cibecue	1125	O	All known nests empty. No new nests or bald eagles.
Talkalai	1400	O	All known nests empty. No new nests. One adult near nest #4.
San Carlos	1419	A	One 10.0 week old nestling and two adults in nest #2. Taking second nestling to Liberty Wildlife Rehabilitation.

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Table 19. Results of June 12, 1998, ORA flight.			
Location	Time	Status ¹	Comments
Granite Reef nest site	1111	---	All known nests empty. No bald eagles.
Orme	1115	S	All known nests empty. One adult observed on river.
Tonto	1135	S	All known nests empty. One adult in area.
Sheep	1142	O	All known nests empty. No new nests. Two adults in area.
76	1148	S	Two 12-week old nestlings in nest #3.
Dupont	1201	S	One 12-week old nestling in nest #2.
Pinto	1304	O	All known nests empty. No new nests.
Pinal	1306	O	All known nests empty. One adult in area.
Redmond	1315	S	One juvenile perched on pinnacle next to nest.

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