

# ARIZONA BALD EAGLE 1997 NEST SURVEY

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## INTRODUCTION

In 1978, the bald eagle (*Haliaeetus leucocephalus*) was classified by the U.S. Fish and Wildlife Service (USFWS) as endangered in 43 states (including Arizona) and threatened in five others (USFWS 1982). It was not listed in Alaska and did not occur in Hawaii. In 1995, the USFWS downlisted the bald eagle to threatened in the lower 48 states (USFWS 1995). It is still protected by the Endangered Species Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act.

In Arizona, bald eagle nest surveys began in 1972 when three breeding areas (BA) were known (Rubink and Podborny 1976). These surveys continued annually, excluding 1976 and 1977, from 1972 to present (Corman and Rayner 1991; Driscoll et al. 1992, 1995a, 1995b, 1997; Driscoll and Beatty 1994; Glinski 1985, 1986; Gooch et al. 1988; Grubb 1986; Hildebrandt and Glinski 1987; Tibbitts et al. 1989, 1990). The 1997 nest survey was administered and performed by the Arizona Game and Fish Department (AGFD) in cooperation with the Bureau of Land Management, Bureau of Reclamation (USBR), Fort McDowell Indian Community (FMIC), 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 (WMAGFD).

The nest survey refines our understanding of breeding bald eagles in Arizona. Discovery of new BAs and alternate nests, compiled with the knowledge of known 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

Surveys were primarily conducted along creeks, rivers, and around reservoirs in Arizona. We surveyed as far north as Aubrey Valley, near Seligman, and as far south as Kearny, on the Gila River. The western boundary occurred at Copper Basin Reservoir, west of the Parker Dam, and the eastern boundary was on Eagle Creek, near Morenci. Survey elevations ranged from 750 ft (230 m) at Gene Wash Reservoir, in California, to 7480 ft (2280 m) on the Black River.

Most of our 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 and Sonoran Desertscrub-Lower Colorado Subdivision.

A variety of plant species occur within the five biotic communities. Typical plants 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*) are found in the Interior Chaparral. Characteristic 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 typical of 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 known BAs contain riparian vegetation of the Sonoran Riparian Deciduous Forest type. Typical plants include: 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 nest survey was conducted between October 1996 and June 1997 by a one to three person team. Areas were prioritized by the presence of nest structures, previous sightings, habitat quality, and spacing of known BAs. Historical and known BAs, and nest sites discovered between 1992 and 1996 (Driscoll et al. 1992, 1995a, 1995b, 1997; Driscoll and Beatty 1994) were visited to monitor breeding activity. Suggestions and sightings of bald eagles by other biologists, agencies, and the public were also investigated.

Survey areas were hiked, floated, flown, and/or driven. Observations were made with 8x35 and 10x50 binoculars, and Questar spotting scopes (4-160x). All nests were plotted and sightings of bald eagles were recorded. Nest and river map atlases from Hunt et al. (1992) and SRP were used to relocate historical and known BAs.

Nest status was categorized using Postupalsky's (1974) criteria (Appendix A). Accordingly, the observation of a raptor near a nest was not considered occupied, but was noted and included in our text. Sightings of other wildlife species observed, along with habitat quality, and human activity were also recorded.

Cliff height, tree, and nest size were classified as "tall" or "short," and "large" or "small." "Tall" and "large" describes structures suitable for breeding bald eagles, compared to known Arizona bald eagle nests and locations. Conversely, "short" and "small" was not considered adequate size for breeding bald eagles.

January's winter count flights and monthly occupancy and reproduction assessment (ORA) flights, were used to locate nests and to survey for new BAs. ORA flights, provided by USBR and SRP, were flown from February to June. Timing of these flights corresponded with the observation of breeding stages (i.e. incubation, the presence of nestlings, fledging). Drainages were flown at approximately 200 ft (70 m) above ground level, at 45 to 70 mph (50 to 60 kt). Speed and altitude were modified for safety concerns associated with wind speed, high tension wires, and drainage topography. BAs were surveyed by ground if occupancy could not be determined from the air.

## RESULTS

All 38 BAs were examined for breeding activity. There were 28 breeding attempts by 27 pairs (the San Carlos pair double clutched) in 34 occupied BAs. Thirteen pairs successfully fledged 23 young (Appendix B).

We surveyed 13 new locations (Appendix C). Surveyed areas include: Aubrey Valley, Becker Lake, Black River and nearby tanks (George's Basin and Nash Creek Reservoir), Burro Creek, lower Gila River, lower Salt River, lower Verde River, Oak Creek, Old Dewey Road, upper Salt River, upper Verde River, Wet and Dry Beaver creeks, and White and North Fork White rivers.

Sixteen of 21 historical BAs (Hunt et al. 1992) were examined for occupancy. Bald eagles were observed at 12 historical BAs: Ash, Bronco, Coldwater, Eagle, Hell Point, LF, Lower Lake Mary, Muldoon, Natanes, Needle Rock, Upper Lake Mary, and Willow. Historical nests were relocated at eight historical BAs: Ash, Coldwater, Eagle, Havasu, Hell Point, Lower Lake Mary, Muldoon, and Upper Lake Mary. No historical BAs were occupied.

We monitored 13 nest sites (of other or unknown species) (Driscoll et al. 1992, 1995a, 1995b, 1997; Driscoll and Beatty 1994) for bald eagle activity. These included: seven golden eagle nest sites (Alchesay Canyon, Granite, Hell Canyon, Lost Mule, Sullivan Lake, R.R. Tunnel, Watson Lake), four osprey nest sites (Granite Reef Dam, Lynx Lake, Mormon Lake, Upper Lake Mary), and two nest sites of unknown species (Dupont, Gene Wash). Bald eagles were observed at: Dupont, Gene Wash, Granite, Lost Mule, Mormon Lake, R.R. Tunnel, and Upper Lake Mary.

Significant findings of 1997 include three new BAs, and bald eagle sightings in five new areas, one historical BA, and one nest site. New BAs were documented at: Becker Lake, near Springerville; Dupont Canyon, in the Sierra Ancha Mountains; and Sycamore Creek, near Ft. McDowell. Bald eagles were observed in new areas at/or between: the Blue Point and Horse Mesa BAs, the Coolidge and Winkelman BAs, the Ft. McDowell and new Sycamore BAs, Lake Mead, and Wet Beaver Creek. The Lower Lake Mary historical BA and the Gene Wash nest site also had consistent sightings of bald eagles.

Eight bald eagle nests and six large nests (species unknown) were discovered in 10 known BAs. New bald eagle nests were found at: Alamo (#6), Becker (#1), Dupont (#2), Ft. McDowell (#16), Perkinsville (#3), San Carlos (#2), Sycamore (#1), and Winkelman (#2). Large nests (species unknown) were also found at: Cibecue (#6, #7, #8), Ft. McDowell (rebuilt #9), and Ladders (#6, #7).

Five nests fell this season. The Alamo snag holding nest #3 fell in December 1996. Cliff nest #4 was blown off the pinnacle. The branch supporting Horseshoe nest #10 broke. The pinyon pine supporting Lone Pine nest #1 broke. Finally, the supporting branch for San Carlos nest #1 broke between January 9 and 21.

#### DISCUSSION

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

#### SURVEY SITES

##### *Becker Lake*

Bald eagles were first observed building a nest at Becker Lake (near Springerville) in summer 1996 (J. Copeland, USFS, pers. comm.). Debbie Moore, AGFD, observed two adults exhibiting territorial behavior, hunting, and perching near the nest in February and March 1997. Although unconfirmed, Moore's observations indicated the pair laid eggs that failed to hatch. After March, sightings of the adults became less common.

We examined the lake on April 9, 22, and May 22. Although no bald eagles were observed, remains of American coots and other waterfowl were underneath the nest. Due to observations indicating a breeding attempt and to immediate management needs (i.e. a nest accessible by foot and boat); we designated Becker as a new BA.

##### *Black River and nearby tanks*

There have been two promising reports in the 1990s of bald eagles near the Black River. In 1990, Bob Barnes, USBR, reported two adults transporting dead bass from George's Basin to the southeast (Hunt et al. 1992). In 1995, Darryl DeClay, WMAGFD, reported a large nest on the Black River, south of George's Basin (Driscoll et al. 1995b).

The Black River was surveyed during the winter count and every ORA flight except June. Surveyed areas include: Black River crossing to Turkey Creek in February, March, and April; and Black River crossing to the pumping station and Conklin Creek, on the winter count and in May, respectively. We found two probable golden eagle nests near Big Bonito Creek in May; neither nest had recent construction. Additionally, one adult and one subadult bald eagle were observed at George's Basin and Nash Creek Reservoir in February, and one subadult in March.

### *Lower Gila River*

Since 1992, we have monitored occurrence of bald eagles along the lower Gila River drainage. Near Granite Basin (between the Coolidge and Winkelman BAs), one near-adult was observed in 1993, one adult and one subadult in 1994, and one subadult in 1995 (Driscoll et al. 1995a, 1995b; Driscoll and Beatty 1994). In addition, we have received reports of bald eagles and large nests near Kearny and Mineral Creek.

The lower Gila River, between the Coolidge and Winkelman BAs, was surveyed during the winter count and every ORA flight except April and June. Additionally, we surveyed from Price to Winkelman in May. Three probable golden eagle nests, two near Granite Basin and one near Price, were found in May. There were no large nests near Kearny and Mineral Creek. One adult and one near-adult bald eagle were observed near Granite Basin during the winter count and in May, and two adults were observed in February. The bald eagles observed at Granite Basin may have been from the Winkelman BA, as both pairs were not observed at the same time.

### *Lake Mead*

Although we did not survey Lake Mead in 1997, bald eagles were observed in the Grand Wash area. Bob McKernon, San Bernadino County Museum, observed bald eagles near Grand Wash from May 12 through July 7. Additionally, Bill Pelle, National Park Service, observed an adult on August 30.

### *Lower Salt River*

Large distances between the Orme, Blue Point, and Horse Mesa BAs, coupled with sightings of additional bald eagles within these BAs, have prompted surveys on the lower Salt River. In 1996, SRP operators at Mormon Flat Dam reported two bald eagles perched above the dam. In addition, an extra pair of adults was observed within the Horse Mesa BA (at Horse Mesa Dam) in February and April 1996 (Driscoll et al. 1997). There also were reports of a large nest at the Salt River Recreation (SRR) cliffs and a pair of adults near Granite Reef Dam.

We surveyed during the winter count, on every ORA flight, and from the ground on October 16, 1996. No large nests were found. An additional pair of adults was observed at Horse Mesa Dam during the winter count and near Mormon Flat Dam in February. Also, Henry Messing, USBR, reported a near-adult near Horse Mesa Dam in June (both Horse Mesa adults were in adult plumage). In addition, two subadults were observed near the SRR cliffs during the winter count, as well as two adults and four subadults in February and one subadult in March.

*Lower Verde River*

Recently, surveys on the lower Verde River have concentrated on finding alternate nests in known BAs (Driscoll et al. 1995a, 1995b, 1997). However, with sightings of additional pairs on the lower Salt River and an increase in breeding density on the lower Verde River, we started examining every BA for additional pairs.

We surveyed during the winter count, on every ORA flight, and from the ground on March 18. In February, a new nest (Sycamore #1) with an incubating adult was found near Sycamore Creek on FMIC. Additionally, Marilyn Ethelbah, FMIC, reported bald eagles at a nest near the old location of Ft. McDowell nest #9. A large nest (rebuilt nest #9) was found with duck prey remains, white wash, and bald eagle feathers below the nest. During the March and April ORA flights, the nest was observed with new construction and an additional pair of adults.

*Wet and Dry Beaver creeks*

Observations of bald eagles near Wet and Dry Beaver creeks prompted us to survey the area. During summer 1996, Susi MacVean, AGFD, observed bald eagles flying over the Interstate 17 rest area near milepost 297. Additionally, Jerry Bradley, USFS, reported bald eagles near Montezuma Well and the Verde River/Wet Beaver Creek confluence in spring 1997. We surveyed Wet and Dry Beaver creeks on the March and May ORA flights and from the ground from May 7 to 9. No bald eagles were observed.

*White and North Fork White rivers*

We investigated the possibility of bald eagles using the osprey nests on the White River and North Fork White River. A total of 23 nests were found in May on the North Fork White River. Seventeen nests contained incubating ospreys. No bald eagles were observed on either drainage.

HISTORICAL BAS

*Ash*

The Ash historical BA, designated to historical status in 1996 (Driscoll et al. 1997), was checked during the winter count and every ORA flight except May and June. The snag holding historical nest #2 broke in half and fell prior to the winter count. Seven adults and 10 subadults were observed at the nearby Tanks Canyon during the winter count.

*Bronco*

The Bronco historical BA was surveyed during the winter count and every ORA flight except April. The historical nest was not located; however, two large tree nests (species unknown) were found in an upstream sycamore tree. One adult was observed during the winter count.

*Hell Point*

The Hell Point historical BA was checked during the winter count and every ORA flight. In March and April, a golden eagle was incubating in historical nest #2. One golden eagle nestling was observed in May and June.

*Lower Lake Mary*

The historical nest at the Lower Lake Mary historical BA was rebuilt in 1996 (Driscoll et al. 1997). We surveyed on every ORA flight except February and June, and from the ground on December 13, February 22, May 8 and 9. Historical nest #1 had no new construction; however, two adults were observed on February 22 and one adult in March. MariAnn McKenzie, AGFD, reported observing a pair of adults and individual bald eagles near the lake often in 1997.

*Sullivan*

The Sullivan historical BA was checked during the winter count and every ORA flight except February and May. A red-tailed hawk pair built a small nest in the location of historical nest #1 in March, and one red-tailed hawk nestling was observed in June. No bald eagles were observed.

SURVEY SITES WITH EXISTING LARGE NESTS

*Dupont*

Bald eagles have been observed near Salome Bay (at Roosevelt Lake) since 1986 (Hunt et al. 1992). In 1988, an adult was observed flying up Salome Creek with prey. During a nest survey in 1990, an adult and subadult were observed at Zimmerman Point and Armer Gulch, respectively (Tibbitts et al. 1990). Early in 1995, an AGFD volunteer observed a pair of adults and a subadult near Lower Thompson Mesa tank (Driscoll et al. 1995b). The following year, a bear hunter reported an adult and a large nest near Dupont Cabin (Driscoll et al. 1997). Later in 1996, a survey of Dupont Canyon revealed an adult perched at a large nest (#1). This year, a new nest (#2) was found in a ponderosa snag during the winter count. Dupont was confirmed as a new BA in February when one adult was incubating.

*Gene Wash*

Bald eagles have been observed at Gene Wash Reservoir since 1994; and a nest was discovered in 1995 (Driscoll et al. 1997). We surveyed Gene Wash Reservoir and adjacent Copper Basin Reservoir on every ORA flight except June. All known nests were empty, and no new nests were found. One adult was observed in May. Additionally, Barbara Raulston, USFWS, reported adults flying east over the Colorado River near the Bill Williams National Wildlife Refuge office in December 1996, and January, April, and June 1997.

### *Lost Mule*

The golden eagle nests near Lost Mule Creek, discovered in 1996 (Driscoll et al. 1997), were monitored during the winter count and every ORA flight except April and June. Two large cliff nests were found upstream in February and March. Four adult and four subadult bald eagles were observed in February.

### *R.R. Tunnel*

Since 1995, we have received reports of bald eagles near the R.R. Tunnel on the upper Verde River. Early in 1995, a large nest was found near Mormon Pocket (Driscoll et al. 1995b). In 1996, a Verde Valley train operator reported an adult and a near-adult in the nest area. On a ground survey in 1996, a near-adult and an adult with a transmitter were identified (Driscoll et al. 1997).

We surveyed from Perkinsville to Sycamore Canyon on the winter count and every ORA flight. No new nests were observed. Bald eagles observed were as follows: two adults and two subadults during the winter count; four adults in February; two adults, one near-adult and five subadults in March; and two subadults in April. We also observed an adult with a transmitter near the Hell Point historical BA in May. The pair observed at the R.R. Tunnel nest site may now be occupying the Perkinsville BA 3.0 mi (4.8 km) upstream.

## BREEDING AREAS

### *Alamo*

Alamo nest #3 snag split at the base and fell in December 1996. In March, the pair was perched at a new willow snag nest (#6) near the location of old nest #3.

### *Cibecue*

We surveyed the Cibecue BA during the winter count, on every ORA flight except June, and from the ground on April 9. Nest #2 had new construction in February. Three large cliff nests (#6, #7, and #8) were discovered in March. Nest #7 and #8 appeared to be old; however, nest #6 had fresh mute stains behind and below the nest. One adult and one subadult; two adults, one near-adult and one subadult; and one adult were observed in March, April, and May, respectively. No breeding activity was documented.

### *Cliff*

We surveyed the Cliff BA during the winter count, on every ORA flight except May and June, and from the ground on November 17, 1996, and February 17, 1997. Nest #4 was blown off the pinnacle prior to the winter count. One adult; one adult and one near-adult; one adult, one near-adult and one subadult were observed on the winter count, in February, and in April, respectively. No breeding activity occurred in any known nest.

*Ft. McDowell*

The Ft. McDowell BA was surveyed during the winter count, on the February ORA flight, and from the ground on January 31 and March 18. A large cottonwood tree nest (#16) was found in January, and adults were incubating in the nest in February. Since the discovery of the new Sycamore BA, we are unsure which pair will use Ft. McDowell nest #6, #9, or #15. Should a different pair (other than Ft. McDowell) use these nests, the BA name and numbers will be changed.

*Horseshoe*

Prior to the winter count, the supporting branch holding Horseshoe nest #10 broke causing the nest to fall.

*Ladders*

On January 28, we observed an adult perched above two large cliff nests (#6 and #7) downstream from nest #3. The adults were not observed building on either nest, nor were they perched near the nests after January 28.

*Lone Pine*

Prior to the winter count, the pinyon pine snag supporting Lone Pine nest #1 broke causing the nest to fall.

*Perkinsville*

We surveyed the Perkinsville BA during the winter count and every ORA flight. In March 1996, an adult was standing on top of a great blue heron nest, one tree downstream from the location of old nest #2 (Driscoll et al. 1997). This year, two adults were perched in the same cottonwood tree, and a large nest (#3) was constructed on top of the heron nest.

*San Carlos*

During a wind storm on January 18 or 19, the supporting branch for San Carlos nest #1 cracked and the nest fell. In March, one adult was observed incubating in a new cliff nest (#2) near San Carlos Reservoir.

*Winkelman*

On February 11, the day after the Winkelman pair failed in nest #1, both adults began building a new cottonwood tree nest (#2) downstream of the R.R. bridge.

OVERVIEW

Three new BAs were discovered: Becker, Dupont, and Sycamore. Additionally, bald eagles were observed at/or between: the Blue Point and Horse Mesa BAs, the Coolidge and Winkelman BAs, the Ft. McDowell and Sycamore BAs, Gene Wash Reservoir, Lake Mead, Lower Lake Mary historical BA, and Wet Beaver Creek.

Similar to other BAs discovered in Arizona (Driscoll et al. 1995a, Hunt et al. 1992), the Dupont BA existed, and may have been active, prior to its discovery. Adults were first sighted near Salome Bay, Roosevelt Lake (the closest consistent food supply to the Dupont BA), from 1986 to 1988 and incidentally in 1990 and 1995 (Driscoll et al. 1995b, Hunt et al. 1992, Tibbitts et al. 1990). Additionally, prey remains were found inside and below nest #1 in 1996; which suggests recent breeding activity (Driscoll et al. 1997).

In contrast, the Becker and Sycamore BAs appear to be pioneer efforts (Driscoll et al. 1992, 1995b). Although Becker Lake has never been surveyed, the observation of adults building the only known nest in 1996 suggests its first year of activity. Similarly, the Cowboy Adventures at FMIC observed Sycamore #1 being built during the summer 1996.

Observations of bald eagles in some new areas could be individuals from adjacent known BAs. For example, the adults observed at Granite Basin have never been observed at the same time as the Winkelmann adults. Additionally, the pairs observed at the R.R. Tunnel nest site and Wet Beaver Creek, may be new pairs reoccupying the Perkinsville and Camp Verde BAs, respectively.

Arizona now has 38 known BAs statewide. The number of known BAs will be reduced to 37 in 1998 when the Chino BA is designated historical. The Chino bald eagles moved downstream to occupy the new Alamo BA in 1986. That same year, a new pair moved into the Chino BA for one year and attempted to breed. The BA has since gone unoccupied for 10 consecutive years, and the only known nest fell between 1992 and 1994. The next two BAs to be designated historical (if they remain unoccupied) will be the Mule Hoof and Devil's Post BAs in 2002.

With the addition of the Box Bar and Sycamore BAs, the lower Verde River has the highest concentration of breeding bald eagles in the state. Three breeding pairs (Box Bar, Ft. McDowell, and Sycamore) occupy 15.5 mi (25.0 km) of the Verde River from Hwy 87 to Needle Rock, or one pair per 5.2 mi (8.3 km). However, an additional pair and a new nest were found between the Sycamore and Ft. McDowell BAs. Should this become a new BA, it would increase the density to one pair per 4.0 mi (6.3 km).

Due to the high breeding density on the lower Verde River, intraspecific competition for food may have an impact on productivity. Eleven percent of breeding failures in Oregon was attributed to intraspecific competition (Anthony et al. 1994). In addition, low productivity in southeast Alaska has contributed to population saturation relative to food supply (Hodges 1982). Increased competition for prey, and/or a decrease in prey availability, may impact an adult's ability to produce or hatch eggs, and/or feed young.

### MANAGEMENT RECOMMENDATIONS

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

Create digitized maps with all known nests and nest sites that could be used by 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 winter count, ORA, and nest survey flights in concert with follow-up ground surveys to inspect areas. From the air, large sections of habitat can easily be inspected for bald eagles and nests. Follow-up ground surveys more thoroughly investigate an area for occupancy.

The following areas should continue to be examined 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, Phillips Park Tank, Dry Lake, Christmas Tree Lake, Point of Pines, Cholla Lake, Tonto Lake, Paucity Lake, George's Basin, Nash Creek Reservoir, Chevelon Canyon 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 - 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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LITERATURE CITED

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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 at which at least one of the following activity patterns was observed during a given breeding season:
- a. Young were raised.
  - b. Eggs were laid.
  - c. One adult sitting low in the nest, presumably incubating.
  - d. Two adults present on or near the nest.
  - e. One adult and 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: 1997 BALD EAGLE REPRODUCTION SUMMARIES

Table 1. Arizona bald eagle breeding area productivity summary, 1997.								
Breeding Area	Status <sup>1</sup>	Nest <sup>2</sup>	Incubation Date	Eggs	Hatch Date	Young	Fledged	Fledge Date
Alamo	F	4	1/12-2/3	1+	Failed 2/21-3/14.			
Bartlett	F	2	1/19-2/5	1+	3/1	1	Nestling blown out and drown 4/25, at 8 weeks old	
Becker	O	1						
Blue Point	S	7	1/9-2/4	3+	2/4-3/14	3	3	5/2-5/23
Box Bar	FOS <sup>3</sup>	2	2/3-2/26	2	Hatched at Phoenix Zoo and fostered to San Carlos.			
Camp Verde	U							
Canyon	O	6						
Cedar Basin	F	3	2/4-3/21	1+	Failed 3/21-4/18.			
Chino	U							
Cibecue	O	2						
Cliff	O	2						
Coolidge	S	2	1/23-2/4	2+	2/4-3/21	2	2	5/14-6/5
Devil's Post	U							
Dupont	F	2	1/17-2/4	1+	Failed 3/21-4/18. Incubating 45 days at 3/21.			
East Verde	F	6	<1/7	1+	Failed 2/3-3/14.			
Ft. McDowell	S	16	1/7-2/3	2+	2/26	2	1	5/17
	One nestling disappeared from nest 4/17, at 7 weeks old.							
Horse Mesa	S	4	1/9-2/4	1+	2/4-3/14	1	1	5/14-6/9
Horseshoe	S	11	1/30-2/3	2	3/10-3/11	2	2	5/26-5/30
Ive's Wash	F	3	2/3-2/21	1	Failed 3/14-3/21.			
Ladders	F	3	2/17	3+	3/24	2	Nestlings died 4/1-4/4, at <10 days old.	
Lone Pine	F	2	2/4-3/21	1+	Failed 4/18-5/16.			
Luna	S	1	<2/5	3+	2/5-3/17	3	3	5/22-6/25
Mule Hoof	U							

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

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

<sup>3</sup> FOS=Fostered Box Bar nestling (hatched and raised at The Phoenix Zoo) to the San Carlos nest.

Table 1 (continued).								
Breeding Area	Status <sup>1</sup>	Nest <sup>2</sup>	Incubation Date	Eggs	Hatch Date	Young	Fledged	Fledge Date
Orme	S	1	1/9-2/3	2+	2/25-3/14	2	2	5/14-5/23
Perkinsville	O	3						
Pinal	F	3	2/4-3/14	1+	Failed 3/21-3/27.			
Pinto	F	3	1/19-1/29	2+	Breeding female replaced while incubating 1/29-3/14.			
Pleasant	S	2	1/7-1/30	2+	2/26-2/28	2	2	5/18
Redmond	F	5	1/9-2/4	2	2/11-3/14	1+	Failed 3/14-3/21.	
	Adult last observed in brooding posture.							
San Carlos 1	F	1	<1/9	1	Branch broke and nest fell 1/9-1/21.			
San Carlos 2	S	2	2/4-3/21	1+	3/21-4/18	1	1	5/14-6/5
	Fostered Box Bar nestling into nest on 4/22. One nestling found dead below nest 6/5.							
76	S	3	1/28-2/7	2+	3/8	2	2	5/14-6/9
Sheep	O	1						
Sycamore	F	1	<2/3	1	Failed 3/19. Incubating at least 44 days on 3/19.			
Table Mountain	S	4	1/7-2/3	2+	2/19-3/14	2	1	5/14-6/5
	One nestling died at <10 days old.							
Talkalai	O	4						
Tonto	S	2	1/9-2/4	2+	2/23	2	2	5/6, 5/11
Tower	S	8	1/7-1/29	2+	3/3-3/6	1	1	5/26-6/9
Winkelman	F	1	2/9	1	Failed 2/10.			

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

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

Table 2. Arizona bald eagle productivity summary, 1997.			
Number of BAs	38	Number of Active BAs	27
Number of Occupied BAs	34	Number of Failed Breeding Attempts	15 <sup>1</sup>
Number of Eggs	46+	Number of Successful Breeding Attempts	13
Nest Success = 13/34	0.38	Number of Young Hatched	30+
Mean Brood Size = 23/13	1.8	Number of Young Fledged	23
		Productivity = 0.38 x 1.8	0.68

<sup>1</sup> San Carlos double clutched. Box Bar fostered into San Carlos; considered a failure for Box Bar.

APPENDIX C: NEST SURVEY SUMMARIES

Table 3. Arizona bald eagle nest survey summary: new locations surveyed, 1997.			
New Locations	Dates	Method	Results
Aubrey Valley	5/7	Ground	No new nests or adults observed.
Becker Lake	4/9, 4/22, 5/22	Ground	Nest #1 found by Jim Copeland, USFS, in summer 1996.
Black River	1/17, 2/4, 3/21, 4/18, 5/15	Air	One adult and one subadult at tanks on 2/4. One subadult at tanks on 3/21. Found two golden eagle nests on 5/15.
Burro Creek, Devil's Post BA to Six Mile Crossing	2/3, 4/17	Air	No new nests or adults observed.
Lower Gila River, Price to Coolidge	1/9, 2/4, 3/21, 5/15	Air	Near Granite Basin: one adult and one near-adult on 1/9; two adults on 2/4; one adult on 3/21; one adult, one near-adult, and two probable golden eagle nests, one on South Butte near Price and one upstream of Granite Basin on 5/15.
Lower Salt River between BAs	10/16, 1/9, 2/4, 3/21, 4/18, 5/14, 6/9	Air Ground	Two subadults near SRR diffs on 1/9. Two adults near Horse Mesa nest #2 and one adult in #4 on 1/9. Two adults and four subadults near SRR cliffs on 2/4. Two adults near Mormon Flat Dam and one incubating in Horse Mesa nest #4 on 2/4. One subadult near SRR cliffs on 3/21. Two adults on 4/17.
Lower Verde River between BAs	1/7, 2/3, 3/18, 3/20, 4/17, 5/14	Air Ground	Found new Sycamore BA, one adult incubating in new nest #1 on 2/3. An additional pair of adults near rebuilt nest #9 on 4/17.
Oak Creek	3/20, 5/7, 5/14, 6/9	Air Ground	Found one red-tailed hawk nest and one active golden eagle nest at Verde River confluence on 5/7. Found one large probable golden eagle nest south of airport on 5/14. Golden eagle nest at confluence empty on 6/9.
Old Dewey Road	5/6	Ground	Reported nest is small. Dark-morph ferruginous hawk in area.
Upper Salt River between BAs	1/17, 2/4, 3/21, 5/15	Air	One adult flying near Gleason Flat on 2/4. One subadult downstream of Cedar Basin on 5/15.
Upper Verde River between BAs	1/7, 2/3, 3/20, 4/17	Air	One near-adult and one adult near I-17 bridge and 1000 Trails R.V. Park, respectively on 2/3. One subadult and one osprey near Tangle Creek and I-17 bridge, respectively on 4/17.
Wet and Dry Beaver creeks	3/20, 5/7-5/9, 5/14	Air Ground	One peregrine eyrie, four active common black-hawk nests, 11 small nests on Wet Beaver Creek on 5/8.
White River and tributaries	1/17, 5/15	Air	Found 17 active osprey nests and six empty osprey nests on the North Fork White River on 5/15.

Table 4. Arizona bald eagle nest survey summary: historical BAs surveyed, 1997.			
Historical BAs	Dates	Method	Results
Ash	1/9, 2/4, 3/21, 4/18	Air	Historical nest #2 fell. Seven adults and ten subadults near carcasses at tanks on 1/9. One osprey at tanks on 3/21.
Bronco	1/17, 2/4, 3/21, 5/15	Air	One adult in area on 1/17. Two large nests found upstream of historical nest location on 5/15.
Coldwater	1/7, 2/3, 3/20, 4/17	Air	One adult near historical nest #2 on 1/7.
Eagle	1/15	Air	All known nests empty. No new nests observed. One adult and one subadult in area.
Havasu	3/20	Air	All known nests empty. No new nests or adults observed.
Hell Point	1/7, 2/3, 3/20, 4/17, 5/14, 6/9	Air	Two adults and one near-adult in area on 1/7. One adult bald eagle in area and one adult golden eagle incubating in nest #2 on 3/20. One golden eagle still incubating in nest #2 on 4/17. One golden eagle nestling in nest #2 and one adult bald eagle with a transmitter in area on 5/14. One five-week old golden eagle nestling in nest #2 on 6/9.
LF	1/7, 2/3, 3/20, 4/17	Air	One adult in area on 1/7. One subadult in area on 4/17.
Lower Lake Mary	12/13, 2/22, 3/20, 4/17, 5/8, 5/9, 5/14	Air Ground	Two adults in snag above road on 2/22. One adult near Upper Lake Mary Dam on 3/20. Surveyed nearby Walnut Canyon on 5/9.
Muldoon	1/7, 2/3, 3/20, 4/17, 5/14, 6/9	Air	One adult in area on 1/7 and 2/3. One subadult in area on 3/20. One near-adult in area on 4/17.
Natanes	1/17, 2/4, 3/21, 5/15	Air	One adult and one subadult in area on 1/17.
Needle Rock	1/7	Air	One adult bald eagle and one golden eagle in area.
Rock Creek	2/11, 2/14	Ground	No new nests or adults observed.
Stoneman	3/20, 5/14	Air	No new nests or adults observed.
Sullivan	1/7, 3/20, 4/17, 6/9	Air	Red-tailed hawk nest in historical nest location on 4/17. One red-tailed hawk nestling in nest on 6/9.
Upper Lake Mary	12/13, 2/22, 3/20, 4/17, 5/14	Air Ground	One adult in area on 2/22. Three adults and five subadults on upstream end of lake on 3/20.
Willow	1/15	Air	No new nests observed. One adult and five subadults in area.

Table 5. Arizona bald eagle nest survey summary: nest sites surveyed, 1997.			
Nests Sites	Date	Method	Results
Alchesay Canyon	1/9	Air	One golden eagle at nests on 1/9.
Dupont	1/9, 1/17, 2/4	Air	Found new nest #2 on 1/9. One adult incubating and one in nest #2 on 2/4.
Gene Wash	2/3, 3/20, 4/17, 5/14	Air	One adult on Gene Wash Reservoir on 5/14.
Granite	1/7, 2/3, 3/20, 4/17, 6/9	Air	One adult in area on 1/7. Two golden eagles in area on 3/20.
Granite Reef Dam	1/9, 2/4, 3/14, 3/21, 4/17, 5/14, 6/9	Air	One osprey in area on 2/4. One osprey incubating in nest on 3/21. One osprey incubating on 4/17. Two ospreys in area, one still incubating on 5/14. Three eggs in nest on 6/9.
Hell Canyon	1/7, 3/20	Air	All known nests empty. No new nests or adults observed.
Lost Mule	1/17, 2/4, 3/21, 5/15	Air	Four adults, four subadults, and one probable golden eagle nest in area on 2/4. Found one probable golden eagle nest on 3/21.
Lynx Lake	1/7, 4/17, 5/14	Air	All known osprey nests empty. No new nests or adults observed.
Mormon Lake	2/22, 3/20, 4/17, 5/14	Air Ground	Osprey nest has new construction, one adult near nest on 2/22. One adult on north end of lake on 3/20. One osprey incubating in nest on 4/17. One osprey still incubating on 5/14.
R.R. Tunnel	1/7, 2/3, 3/14, 3/20, 4/17, 5/14, 6/9	Air	Two adults and two subadults in area on 1/7. Four adults and three subadults in area on 2/3. Three subadults and one near-adult in area on 3/14. One adult and one subadult in area on 3/20. Two subadults in area on 4/17. One adult golden eagle near nest in Mormon Pocket on 5/14.
Sullivan Lake	1/7, 2/3, 3/20, 4/17, 6/9	Air	All known nests empty. No new nests or adults observed.
Watson Lake	1/7, 4/17, 5/14	Air	One golden eagle incubating in nest on 4/17. One golden eagle and small young on 5/14.
Upper Lake Mary	3/20, 4/17	Air Ground	Three ospreys at each nest site on 4/17. Both nests have one incubating osprey on 5/14.

Table 6. Arizona bald eagle nest survey summary: BAs surveyed, 1997.			
Breeding Areas	Date	Method	Results
Alamo	1/12, 3/24	Ground	Nest #3 snag fell 11/27-1/12. Found new nest #6 on 3/24.
Camp Verde	1/7, 2/3, 3/20, 4/17, 5/14, 6/9	Air	One adult in area on 1/7. On subadult in area on 4/17. Small nest built near the location of old nest #1 on 5/14.
Canyon	1/9, 2/4, 3/21, 4/18	Air	Nest #6 had new construction on 3/21.
Chino	2/3, 4/17	Air	No new nests or adults observed.
Cibecue	1/17, 2/4, 3/21, 4/9, 4/18, 5/15	Air Ground	Nest #2 had new construction on 2/4. Found three new large nests (#6, #7, #8), one adult and one subadult in area on 3/21. Two adults, one near-adult, and one three-year old in area on 4/9. One adult in area on 5/15.
Cliff	11/17, 1/7, 2/3, 2/17, 3/14, 3/20, 4/17	Air Ground Boat	One adult in area and nest #4 gone on 1/7. One near-adult in area on 2/3. One banded adult above Bartlett Lake on 2/17. One adult, one near-adult and one subadult in area on 4/17.
Devil's Post	2/3, 3/20, 4/17	Air	All known nests empty. No new nests or adults observed.
Ft. McDowell	1/7, 1/31, 2/3, 3/18	Air Ground	One adult near nest #6 and two near the location of old nest #12. Found new nest #16 on 1/31. One adult incubating in nest #16 on 2/3. Found rebuilt nest #9 on 3/18.
Ladders	1/28	Ground	Found two new nests #6, #7, one adult near nests.
Perkinsville	1/7, 2/3, 3/14, 3/20, 4/17, 5/14, 6/9	Air	One adult in area on 1/7 and 2/3. Two adults and new nest #3 found on 3/14. One subadult in area on 3/20 and 4/17. One osprey in area on 6/9.
San Carlos	2/4, 3/21	Air Ground	Branch supporting nest #1 cracked and fell from 1/9 to 1/20. Two adults near cliff at river inlet on 2/4. One adult incubating in new nest #2 on 3/21.
Sheep	1/9, 1/14, 1/29, 2/4, 3/14, 3/21, 4/18, 5/14	Air Ground	Two subadults in area on 2/4. Two adults in area on 3/14 and 4/18.
Talkalai	1/9, 2/4, 3/21, 4/18	Air	One adult in area on 1/9. One adult and one subadult in area on 3/21. One subadult in area on 4/18.
Winkelman	1/9, 2/4, 2/11, 3/21, 5/15	Air Ground	One adult in area on 3/21.

APPENDIX D: WINTER COUNT/ORAL FLIGHT SUMMARIES

Table 7. Results of January 7, 1997, winter count.			
Location	Time	Status <sup>1</sup>	Comments
Orme	0758	U	All known nests empty. No adults observed.
Ft. McDowell	0805	O	One adult near nest #6 and two near location of old nest #12.
Box Bar	0815	U	All known nests empty. No adults observed.
Needle Rock historical BA	0816	---	No new nests observed. One adult and one golden eagle in area.
Bartlett	0821	U	All known nests empty. No adults observed.
Cliff	0840	O	Nest #4 gone. All known nests empty. One adult in BA.
Horseshoe	0859	O	Nest #10 fell. All known nests empty. Two adults on lake.
Table Mountain	0917	U	All known nests empty. No adults observed.
LF historical BA	0958	---	No new nests observed. One adult in area.
East Verde	1012	A	One adult incubating and one standing in nest #6.
Coldwater historical BA	1017	---	All known nests empty. One adult near nest #2.
Ladders	1027	O	All known nests empty. One adult in area.
Camp Verde	1103	U	No new nests observed. One adult in area.
Tower	1307	O	All known nests empty. Two adults and one near-adult in area.
R.R. Tunnel nest site	1315	---	All known nests empty. Two adults and two subadults in area.
Perkinsville	1320	U	No new nests observed. One adult in area.
Hell Canyon nest site	1332	---	All known nests empty. No adults observed.
Hell Point historical BA	1344	---	All known nests empty. Two adults and a near-adult in area.
Muldoon historical BA	1351	---	All known nests empty. One adult in area.
Granite nest site	1354	---	All known nests empty. One adult in area.
Sullivan Lake nest site	1359	---	All known nests empty. No adults observed.
Sullivan historical BA	1401	---	No new nests or adults observed.
Watson Lake nest site	1415	---	All known nests empty. No adults observed.
Lynx Lake nest site	1419	---	All known nests empty. No adults observed.
Pleasant	1443	O	All known nests empty. One adult in area.

<sup>1</sup> 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 9, 1997, winter count.			
Location	Time	Status <sup>1</sup>	Comments
Orme	0748	O	All known nests empty. One adult near nest #1.
Granite Reef nest site	0751	U	All known nests empty.
Blue Point	0803	O	All known nests empty. One adult near nest #5.
Horse Mesa	0823	O	Two adults near nest #2, one adult in nest #4.
Alchesay Canyon nest site	0843	---	All known nests empty. One golden eagle at nests.
Tonto	0852	U	All known nests empty. No adults observed.
Sheep	0902	U	All known nests empty. No adults observed.
76	0914	O	All known nests empty. One adult in area.
Dupont nest site	0935	---	All known nests empty. No adults observed. New nest #2 found.
Pinto	1042	U	All known nests empty. No adults observed.
Pinal	1048	O	All known nests empty. Two adults in area.
Redmond	1105	O	One adult in nest #5.
Canyon	1158	U	All known nests empty. No adults observed.
Ash historical BA	1204	---	Nest #2 fell. Seven adults and ten subadults near carcasses at nearby tanks.
Talkalai	1341	O	All known nests empty. One adult in area.
San Carlos	1359	A	Two adults in area, one incubating in nest #1.
Winkelman	1519	U	All known nests empty. No adults observed.
Gila River, Winkelman to Coolidge	1532	---	One adult and one near-adult near cliffs in Granite Basin.
Coolidge	1541	O	All known nests empty. Four adults and 16 subadults in BA.

<sup>1</sup> 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 15, 1997, winter count.			
Location	Time	Status <sup>1</sup>	Comments
Willow historical BA	1015	---	No new nests observed. One adult and five subadults in area.
Eagle historical BA	1043	---	All known nests empty. One adult and one subadult in area.

<sup>1</sup> 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 17, 1997, winter count.			
Location	Time	Status <sup>1</sup>	Comments
Cibecue	1151	U	All known nests empty. No adults observed.
Mule Hoof	1206	U	All known nests empty. No adults observed.
Cedar Basin	1223	U	All known nests empty. No adults observed.
Lone Pine	1241	O	Nest #1 fell. All known nests empty. One adult in area.
Bronco historical BA	1448	---	No new nests observed. One adult in area.
Natanes historical BA	1505	---	No new nests observed. One adult and one subadult in area.
Lost Mule nest site	1513	---	All known nests empty. No adults observed.
Dupont	1627	U	All known nests empty. No adults observed.
Bartlett	1645	O	One adult in nest #1.

<sup>1</sup> 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 February 3, 1997, ORA flight.			
Location	Time	Status <sup>1</sup>	Comments
Orme	0805	A	Two adults in area, one incubating in nest #1.
Sycamore	0807	A	Found new BA. One adult incubating in new nest #1.
Ft. McDowell	0816	A	One adult incubating in new nest #16.
Box Bar	0819	O	One adult in nest #2.
Cliff	0825	O	All known nests empty. No new nests observed. One near-adult in area.
Horseshoe	0850	A	One adult incubating in nest #11. One adult in area.
Verde River, Horseshoe Lake to Table Mountain	0854	---	No new nests or adults observed.
Table Mountain	0858	A	One adult incubating in nest #4. One adult in area.
East Verde	0903	A	One adult incubating in nest #6. One adult in area.
LF historical BA	0910	---	No new nests or adults observed.
Coldwater historical BA	0921	---	All known nests empty. No new nests or adults observed.
Ladders	0934	O	All known nests empty. Two adults and one subadult in area.
Camp Verde	0944	U	All known nests empty. No new nests or adults observed.
Verde River, Camp Verde to Tower	0947	---	No new nests observed. One near-adult and one adult near I-17 bridge and 1000 Trails R.V. Park, respectively.
R.R. Tunnel nest site	1009	---	No new nests observed. Four adults and three subadults in area.
Perkinsville	1020	U	No new nests observed. One adult in area.
Hell Point historical BA	1025	---	All known nests empty. No new nests or adults observed.
Muldoon historical BA	1029	---	All known nests empty. No new nests observed. One adult in
Granite nest site	1032	---	All known nests empty. No new nests or adults observed.
Sullivan Lake nest site	1035	---	All known nests empty. No new nests or adults observed.
Devil's Post	1148	U	All known nests empty. No new nests or adults observed.
Burro Creek, Devil's Post to Six Mile Crossing	1209	---	No new nests or adults observed.
Chino	1233	U	No new nests or adults observed.
Alamo	1243	A	One adult incubating in nest #4.
Ive's Wash	1248	U	All known nests empty. No new nests or adults observed.
Gene Wash nest site	1303	---	All known nests empty. No new nests or adults observed.

<sup>1</sup> 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 February 4, 1997, ORA flight.			
Location	Time	Status <sup>1</sup>	Comments
Granite Reef Dam nest site	0815	---	One osprey on power pole near nest.
Salt River, Granite Reef Dam to Bulldog cliffs	0816	---	No new nests observed. Two adults and four subadults near SRR cliffs.
Blue Point	0826	A	One adult incubating in nest #7.
Salt River, Mormon Flat Dam to Horse Mesa Dam	0832	---	No new nests observed. Two adults near Mormon Flat Dam.
Horse Mesa	0843	A	One adult incubating in nest #4.
Tonto	0850	A	One adult incubating in nest #2.
Sheep	0856	U	All known nests empty. No new nests observed. Two subadults in area.
Dupont	0910	A	New BA. Two adults in area, one adult incubating in nest #2.
Pinal	0924	U	All known nests empty. No new nests or adults observed.
Redmond	0935	A	One adult incubating in nest #5.
Salt River, Redmond to Canyon	0943	---	No new nests observed. One adult in area.
Canyon	0950	U	All known nests empty. No new nests or adults observed.
Nash Creek Reservoir	1110	---	No new nests observed. One subadult in area.
George's Basin	1114	---	No new nests observed. One adult in area.
Lost Mule nest site	1117	---	All known nests empty. New probable golden eagle nest found. Four adults and four subadults bald eagles in area.
Natanes historical BA	1133	---	Historical nest not found. No new nests or adults observed.
Bronco historical BA	1138	---	Historical nest not found. No new nests or adults observed.
Lone Pine	1147	O	All known nests empty. No new nests or adults observed.
Cedar Basin	1151	U	All known nests empty. No new nests or adults observed.
Salt River, Cedar Basin to Mule Hoof	1157	---	No new nests or adults observed.
Mule Hoof	1203	U	All known nests empty. No new nests or adults observed.
Cibecue	1206	O	All known nests empty. No new nests or adults observed. Nest #2 had new construction.
Ash historical BA	1336	---	All known nests empty. No new nests or adults observed.
Talkalai	1402	O	All known nests empty. No new nests or adults observed.

<sup>1</sup> 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 (continued).			
Location	Time	Status <sup>1</sup>	Comments
San Carlos	1424	F	No new nests observed. Two adults near inlet to reservoir.
Coolidge	1429	A	One adult incubating in nest #2.
Gila River, Coolidge to Winkelman	1436	---	No new nests observed. Two adults near Granite Basin.
Winkelman	1444	U	All known nests empty. No new nests or adults observed.

<sup>1</sup> 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 14, 1997, ORA flight.			
Location	Time	Status <sup>1</sup>	Comments
Granite Reef Dam nest site	1116	---	Osprey nest empty.
Orme	1118	A	One adult brooding small young in nest #1.
Blue Point	1126	A	Two adults in area, two 2-week old nestlings in nest #7.
Horse Mesa	1125	A	Two adults in nest #4, one brooding small young.
Pinto	1148	F	All known nests empty. One subadult in area.
Pinal	1154	A	One adult incubating in nest #3.
Redmond	1158	A	Two adults at nest #5, one brooding small young.
Dupont	1214	A	One adult incubating in nest #2.
Sheep	1221	O	All known nests empty. No new nests observed. Two adults in area.
Cliff	1241	O	All known nests empty. No new nests or adults observed.
Table Mountain	1250	A	Two adults in area, one brooding a 2-week old nestling in nest #4.
East Verde	1304	F	All known nests empty.
R.R. Tunnel nest site	1325	---	All known nests empty. No new nests observed. Three subadults and one near-adult in area.
Perkinsville	1339	O	New nest #3 found. Two adults perched in tree.
Alamo	1553	F	All known nests empty. Two adults in area.
Ive's Wash	1559	A	One adult in nest. One egg observed.

<sup>1</sup> 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 March 20, 1997, ORA flight.			
Location	Time	Status <sup>1</sup>	Comments
Orme	0814	A	Two adults in area, at least one 2.5-week old nestling in nest #1.
Sycamore	0821	F	All known nests empty. No new nests observed. Two adults near Ft. McDowell nest #6.
Box Bar	0830	F	All known nests empty. One adult and one subadult in area.
Cliff	0835	O	All known nests empty. No new nests or adults observed.
Verde River, Horseshoe to Table Mountain	0902	---	No new nests or adults observed.
Table Mountain	0909	A	Two adults in area, one 10 day old nestling in nest #4.
Verde River, Table Mountain to East Verde	0910	---	No new nests or adults observed.
East Verde	0913	F	All known nests empty. One adult in area.
LF historical BA	0919	---	No new nests or adults observed.
Coldwater historical BA	0925	---	All known nests empty. No new nests or adults observed.
Camp Verde	0951	U	No new nests or adults observed.
Wet Beaver Creek	0953	---	No new nests or adults observed.
Dry Beaver Creek	1000	---	No new nests or adults observed.
Lower Lake Mary historical BA	1056	---	All known nests empty. No new nests observed. One adult near Upper Lake Mary Dam.
Upper Lake Mary nest site	1103	---	Osprey nests empty.
Upper Lake Mary historical BA	1104	---	All known nests empty. No new nests observed. Two adults near historical nest #1. One adult and five subadults at upstream end of lake.
Mormon Lake nest site	1123	---	Osprey nest empty. No new nests observed. One adult on north end.
Stoneman historical BA	1137	---	No new nests or adults observed.
Verde River, I-17 bridge to Clarkdale	1206	---	No new nests or adults observed.
Oak Creek	1215	---	No new nests or adults observed.
R.R. Tunnel nest site	1228	---	All known nests empty. No new nests observed. One adult and one subadult in area.
Perkinsville	1236	O	All known nests empty. No new nests observed. One subadult in area.

<sup>1</sup> 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 (continued).			
Location	Time	Status <sup>1</sup>	Comments
Hell Canyon nest site	1245	---	All known nests empty. No new nests or adults observed.
Hell Point historical BA	1248	---	One adult golden eagle incubating in nest #2. One adult bald eagle in area.
Muldoon historical BA	1253	---	All known nests empty. No new nests observed. One subadult in area.
Granite nest site	1254	---	All known nests empty. No new nests or adults observed. Two golden eagles in area.
Sullivan Lake nest site	1259	---	All known nests empty. No new nests or adults observed.
Sullivan historical BA	1300	---	No new nests or adults observed.
Devil's Post	1502	U	All known nests empty. No new nests or adults observed.
Havasu historical BA	1541	---	All known nests empty. No new nests or adults observed.
Gene Wash nest site	1605	---	All known nests empty. No new nests or adults observed.
Ive's Wash	1709	F	All known nests empty. No new nests or adults observed.

<sup>1</sup> 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 March 21, 1997, ORA flight.			
Location	Time	Status <sup>1</sup>	Comments
Granite Reef Dam nest site	0804	---	One osprey incubating in nest.
Salt River, Granite Reef Dam to Bulldog cliffs	0805	---	No new nests observed. One subadult flying near SRR cliffs.
Salt River, Mormon Flat Dam to Horse Mesa	0816	---	No new nests or adults observed.
Horse Mesa	0828	A	One adult shading one 2-week old nestling in nest #4.
Sheep	0840	O	All known nests empty. No new nests or adults observed.
Dupont	0858	A	One adult incubating in nest #2.
Pinto	0908	F	All known nests empty. No new nests observed. Two adults in area.
Pinal	0915	A	One adult incubating in nest #3.
Redmond	0921	F	All known nests empty. One adult in area.
Salt River, Redmond to Canyon	0926	---	No new nests or adults observed.
Canyon	0936	O	All known nests empty. Nest #6 had new construction. No new nests or adults observed.
Cibecue	1100	O	Found three new large nests (#6, #7, #8). One adult and one subadult in area.
Mule Hoof	1132	U	All known nests empty. No new nests or adults observed.
Salt River, Mule Hoof to Cedar Basin	1133	---	No new nests or adults observed.
Cedar Basin	1148	A	One adult incubating in nest #3.
Lone Pine	1152	A	One adult incubating in nest #2.
Lost Mule nest site	1154	---	All known nests empty. Found new probable golden eagle nest.
Black River, Lone Pine to George's Basin	1155	---	No new nests or adults observed.
Bronco historical BA	1156	---	Historical nest not found. No new nests or adults observed.
Natanes historical BA	1206	---	Historical nest not found. No new nests or adults observed.
George's Basin	1214	---	No new nests or adults observed.
Nash Creek Reservoir	1219	---	No new nests observed. One subadult in area.

<sup>1</sup> 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 (continued).			
Location	Time	Status <sup>1</sup>	Comments
Ash historical BA	1346	---	All known nests empty. No new nests or adults observed. One osprey at nearby tanks.
Talkalai	1430	O	All known nests empty. No new nests observed. One adult and one subadult in area.
San Carlos	1449	A	Two adults in area, one incubating in new nest #2.
Coolidge	1458	A	Unable to see into nest due to weather. Two adults in area.
Gila River, Coolidge to Winkelman	1500	---	No new nests observed. One adult in area.
Winkelman	1513	F	All known nests empty. No new nests observed. One adult in

<sup>1</sup> 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 17, 1997, ORA flight.			
Location	Time	Status <sup>1</sup>	Comments
Granite Reef Dam nest site	0746	---	One osprey incubating in nest.
Orme	0748	A	Two adults in area, two 6-week old nestlings in nest #1.
Sycamore	0752	F	All known nests empty. Two adults near nest #1, one adult perched near Ft. McDowell nest #6, and one adult perched near Ft. McDowell nest #9.
Box Bar	0759	F	All known nests empty. No new nests observed. One subadult in area.
Cliff	0806	O	All known nests empty. No new nests observed. One adult, near-adult and one subadult in area.
Verde River, Horseshoe to Table Mountain	0830	---	No new nests observed. One subadult upstream of Tangle Creek.
Table Mountain	0836	A	One 4-week old nestling in nest #4. Two adults in area.
Verde River, Table Mountain to East Verde	0829	---	No new nests or adults observed.
East Verde	0846	F	Two adults in nest #6.
LF historical BA	0851	---	No new nests observed. One subadult in area.
Coldwater historical BA	0900	---	All known nests empty. No new nests or adults observed.
Ladders	0910	F	All known nests empty. No new nests observed. One adult in
Camp Verde	0913	U	No new nests observed. One subadult in area.
Verde River, I-17 bridge to Cottonwood	0930	---	No new nests or adults observed. One osprey observed near I-17 bridge.
Lower Lake Mary historical BA	1000	---	All known nests empty. No new nests or adults observed.
Upper Lake Mary nest site	1014	---	All known nests empty. Three ospreys in area.
Upper Lake Mary historical BA	1015	---	No new nests or adults observed.
Mormon Lake nest site	1030	---	No new nests or adults observed. One osprey incubating in nest.
R.R. Tunnel nest site	1209	---	All known nests empty. No new nests observed. Two subadults in area.
Perkinsville	1213	O	All known nests empty. No new nests observed. One subadult in area.
Hell Point historical BA	1224	---	One golden eagle incubating in nest #2.

<sup>1</sup> 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 (continued).			
Location	Time	Status <sup>1</sup>	Comments
Muldoon historical BA	1230	---	All known nests empty. No new nests observed. One near-adult in area.
Granite nest site	1233	---	All known nests empty. No new nests or adults observed.
Sullivan Lake nest site	1237	---	All known nests empty. No new nests or adults observed.
Sullivan historical BA	1239	---	One red-tailed hawk and a new nest near historical nest location.
Watson Lake nest site	1254	---	One golden eagle brooding small young.
Lynx Lake nest site	1259	---	All known nests empty. No new nests or adults observed.
Devil's Post	1326	U	All known nests empty. No new nests or adults observed.
Burro Creek, Devil's Post to Six Mile Crossing	1334	---	No new nests or adults observed.
Chino	1352	U	No new nests or adults observed.
Alamo	1403	F	Nest #6 had new construction. Two adults in nest #5.
Ive's Wash	1409	F	All known nests empty. One adult in area.
Gene Wash nest site	1426	---	All known nests empty. No new nests or adults observed.

<sup>1</sup> 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 17. Results of April 18, 1997, ORA flight.			
Location	Time	Status <sup>1</sup>	Comments
Salt River, Granite Reef Dam to Bulldog cliffs	0804	---	No new nests observed. Two adults near Salt/Verde River confluence.
Blue Point	0822	A	Three 7-week old nestlings in nest #7.
Horse Mesa	0834	A	One 5.5-week old nestling in nest #4.
Sheep	0843	O	All known nests empty. No new nests. Two adults in area.
Dupont	0906	F	All known nests empty. No adults observed.
Pinto	0925	F	All known nests empty. Nest #3 had new construction. No adults observed.
Pinal	0932	F	All known nests empty. No adults observed.
Redmond	0938	F	All known nests empty. No adults observed.
Canyon	0950	O	All known nests empty. No new nests or adults observed.
Cibecue	1105	O	All known nests empty. No new nests or adults observed.
Mule Hoof	1132	U	All known nests empty. No adults observed.
Cedar Basin	1140	F	All known nests empty. No adults observed.
Lone Pine	1157	A	One adult incubating in nest #2.
George's Basin	1210	---	No new nests or adults observed.
Nash Creek Reservoir	1214	---	No new nests or adults observed.
Ash historical BA	1359	---	All known nests empty. No new nests or adults observed.
Talkalai	1430	O	All known nests empty. No new nests observed. One subadult in
San Carlos	1444	A	One 3-week old nestling in nest #2.
Coolidge	1452	A	Two 6-week old nestlings in nest #2.

<sup>1</sup> 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 18. Results of May 14, 1997, ORA flight.			
Location	Time	Status <sup>1</sup>	Comments
Granite Reef Dam nest site	0752	---	Two ospreys in area, one incubating in nest.
Orme	0754	A	Two 9-week old nestlings in nest #1.
Salt River, Granite Reef Dam to Bulldog cliffs	0757	---	No new nests or adults observed.
Blue Point	0804	S	Two 10.5-week old nestlings in nest #7, one juvenile nearby.
Salt River, Mormon Flat Dam to Horse Mesa Dam	0807	---	No new nests or adults observed.
Horse Mesa	0817	A	One 9-week old nestling in nest #4.
Sheep	0824	O	All known nests empty. No new nests or adults observed.
76	0845	A	Two 9-week old nestlings in nest #3. Two adults in area.
Verde River, Horseshoe-Table Mountain	0900	---	No new nests or adults observed.
Table Mountain	0904	A	One 8-week old nestling in nest #4. Two adults in area.
Camp Verde	0915	U	Small nest near the location of old nest #1. No adults observed.
Wet Beaver Creek	0926	---	No new nests or adults observed.
Stoneman historical BA	0957	---	No new nests or adults observed.
Mormon Lake nest site	1003	---	No new nests or adults observed. Osprey incubating in nest.
Upper Lake Mary historical BA	1013	---	No new nests or adults observed. One osprey incubating at both nest sites.
Lower Lake Mary historical BA	1019	---	All known nests empty. No new nests or adults observed.
Oak Creek	1139	---	Found one probable golden eagle nest south of airport. No adults observed.
R.R. Tunnel nest site	1154	---	All known nests empty. No new nests or adults observed. One golden eagle in area.
Perkinsville	1205	O	All known nests empty. No new nests or adults observed.
Hell Point historical BA	1212	---	One golden eagle nestling in nest #2. One adult in area.
Muldoon historical BA	1226	---	All known nests empty. No new nests or adults observed.
Watson Lake nest site	1250	---	One golden eagle shading young.
Lynx Lake nest site	1255	---	All known nests empty. No new nests or adults observed.
Gene Wash nest site	1451	---	All known nests empty. No new nests observed. One adult in

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Table 19. Results of May 15, 1997, ORA flight.			
Location	Time	Status <sup>1</sup>	Comments
Gila River, Price to Winkelman	0750	---	No adults observed. Found one probable golden eagle nest on South Butte.
Winkelman	0838	F	All known nests empty. No new nests or adults observed.
Gila River, Winkelman to Coolidge	0840	---	No new nests observed. Found one golden eagle nest and one small nest at Granite Basin. One adult and one near-adult in area.
Cibecue	1106	O	All known nests empty. No new nests observed. One adult in area.
Mule Hoof	1120	U	All known nests empty. No new nests or adults observed.
Salt River, Mule Hoof to Cedar Basin	1123	---	No new nests or observed. One subadult in area.
Lone Pine	1155	F	All known nests empty. No adults observed. Found small nest upstream of nest #2.
White River	1158	---	No new nests or adults observed.
North Fork White River	1211	---	No adults observed. Found 17 active and six empty osprey nests.
Black River, White River to Conklin Creek	1355	---	No adults observed. Found two new nests in drainage.
Bronco historical BA	1405	---	Historical nest not found. No adults observed. Two new nests found in area.
Lost Mule nest site	1408	---	No new nests or adults observed.
Natanes historical BA	1418	---	Historical nest not found. No new nests or adults observed.

<sup>1</sup> 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 20. Results of June 9, 1997, ORA flight.			
Location	Time	Status <sup>1</sup>	Comments
Sullivan historical BA	0845	---	No new nests or adults observed. Red-tailed hawks with one nestling in nest.
Sullivan Lake nest site	0847	---	All known nests empty. No new nests or adults observed.
Granite nest site	0855	---	All known nests empty. No new nests or adults observed.
Muldoon historical BA	0858	---	All known nests empty. No new nests or adults observed.
Hell Point historical BA	0905	---	No adults observed. One 5-week old golden eagle nestling in nest #2.
Perkinsville	0914	O	All known nests empty. No new nests or adults observed. One
R.R. Tunnel nest site	0919	---	All known nests empty. No new nests or adults observed.
Tower	0925	S	Nest #8 empty. One adult in area.
Oak Creek nest site	0933	---	All known nests empty.
Camp Verde	0938	U	No new nests or adults observed.
Table Mountain	1000	S	One adult and one 12-week old juvenile near nest #4.
76	1018	S	Two juveniles in area.
Dupont	1030	F	All known nests empty. No adults observed.
San Carlos	1149	S	All known nests empty. No adults or juveniles observed.
San Carlos Reservoir, Perimeter	1200	---	No new nests or adults observed. One near-adult and one subadult on lake.
Horse Mesa	1305	S	Nest #4 empty.
Salt River, Horse Mesa Dam to Mormon Flat Dam	1315	---	No new nests or adults observed.
Blue Point	1321	S	Nest #7 empty.
Granite Reef Dam nest site	1325	---	Three osprey eggs in abandoned nest.

<sup>1</sup> 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.