ARIZONA BALD EAGLE NESTWATCH PROGRAM: 1995 SUMMARY REPORT

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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INTRODUCTION

The bald eagle (*Haliaeetus leucocephalus*) was classified by the U.S. Fish and Wildlife Service (USFWS) in 1978 as endangered in 43 states (including Arizona) and threatened in 5 others. In August 1995, the bird was downlisted by the USFWS (1995) to threatened in all recovery regions of the lower 48 states. It is not endangered or threatened in Alaska and does not occur in Hawaii. Yet, the bald eagle still retains protection under the Endangered Species Act, and is protected by the Migratory Bird Treaty Act and by the Bald and Golden Eagle Protection Act. A recovery plan (USFWS 1982) guides management of the southwestern population, which includes Arizona's breeding bald eagles.

Many Arizona bald eagle breeding areas (BAs) are subjected to human activities that might affect breeding success. Consequently, as the breeding population became better known, the demand for progressive management increased. Strong protective efforts began in 1978, when the U.S. Forest Service (USFS) and two Maricopa Audubon Society volunteers monitored a nest. Soon the monitoring effort expanded into the Arizona Bald Eagle Nestwatch Program (ABENWP).

As more breeding areas were discovered, interagency coordination became more important. To provide oversight, the Southwestern Bald Eagle Management Committee (SWBEMC) was formed in 1984. The SWBEMC is a cooperative effort among federal and state agencies, private groups, and Native American Tribes committed to bald eagle conservation. In 1986, on behalf of the SWBEMC, the USFWS assumed coordination responsibility for the ABENWP and expanded its scope. The coordination lead was passed to the Arizona Game and Fish Department (AGFD) in 1991.

The ABENWP has three principal goals: conservation, data collection, and education. Because of high recreation along central Arizona rivers, seasonal closures surround many nest areas. Nestwatchers interact with people who enter these closures, educate them about bald eagle ecology, distribute pamphlets, and tactfully direct them out of the area. To help agencies make better management decisions, nestwatchers also collect information on eagle ecology, productivity and behavior in response to human activity. Even so, the most direct or tangible benefit of the ABENWP is observation of problems at nest sites. Every year, nests fail and/or nestlings are found in precarious situations. Constant monitoring by nestwatchers often makes it possible to rescue birds in life threatening situations.

This report summarizes the most significant discoveries at each bald eagle area monitored in 1995. Among the topics discussed are length of observation, timing of breeding events,

human activity in the breeding area, food habits, wildlife interactions, and management activities completed by managing agencies.

STUDY AREA

In 1995, ABENWP personnel monitored bald eagle breeding areas along selected river and stream drainages, and around reservoirs throughout Arizona (Fig. 1). With the exception of the Luna Breeding Area, in eastern Arizona, all monitored BAs were in the central part of the state. The most northerly BA was Tower, along the Verde River. The most southerly BA was Coolidge, along the Gila River. The most westerly BA was Alamo Lake, northwest of Wickenburg. The most easterly BA was Luna Lake, near Alpine, Arizona. Elevations of the areas monitored ranged from approximately 1080 ft at Alamo Lake to 8000 ft at Luna Lake.

Most Arizona bald eagles breed in the central part of the state, at elevations of 1080 to 5640 ft. This band is within the Upper and Lower Sonoran Life Zones (Merriam 1898), and includes riparian habitats and transition areas of both zones. Brown (1982) describes the representative vegetation of these zones as including blue palo verde (*Cercidium floridum*), mesquite (*Prosopis* spp.), ironwood (*Olneya tesota*), saguaro (*Carnegiea gigantea*), cholla (*Opuntia* spp.), Fremont cottonwood (*Populus fremontii*), Goodding willow (*Salix gooddingii*), Arizona sycamore (*Platanus wrightii*), and tamarisk or salt cedar (*Tamarix pentandra*; this is a non-native species), with juniper (*Juniperus* spp.) and pinyon (*Pinus* spp.) in the transition areas.

The bald eagle BA at Luna Lake is the only one in the Southwest known from Montane-Conifer Forest, and the Transition Life Zone. According to Brown (1982), Montane-Conifer Forest in Arizona is characterized by blue spruce (*Picea pungens*), Engelmann spruce (*Picea engelmannii*), white fir (*Abies concolor*), Douglas fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), quaking aspen (*Populus tremuloides*), gambel oak (*Quercus gambelii*), and common juniper (*Juniperus communis*). Riparian vegetation in the Luna Lake BA includes narrowleaf cottonwood (*Populus angustifolia*), thinleaf alder (*Alnus tenuifolia*), Bebb willow (*Salix bebbiana*), and coyote willow (*Salix exigua*).

METHODS

Beginning in late summer and early fall, AGFD advertised through the American Ornithologists' Union's Newsletter, and job placement services at colleges and universities nationwide for potential nestwatchers. Public discussions, word-of-mouth from previous nestwatchers, and the distribution of ABENWP brochures also contributed to the pool of applicants. Nestwatchers were hired as private consultants to the state.

After selection of personnel, meetings were held the first week in February to orient and educate nestwatchers. On 8 February 1995, we car-pooled to the Bartlett BA to prepare nestwatchers for the field and to explain data forms. We also addressed protocol for nest

failures and bald eagle "emergencies" such as eaglets falling out of the nest, and birds getting tangled in monofilament. The following day, a formal orientation meeting hosted by agency contributors discussed Arizona bald eagle history, ecology, and the role nestwatchers play in management of the species. At the end of the meeting, nestwatch partners were selected. After the first ten days in the field, we reconvened to review problems or questions with data forms and the writing of final reports. Additional problems were discussed on an individual basis in the field or at the office.

BAs were selected for monitoring based upon the level of human activity near nest sites. The sites monitored included: all territories that were active in 1995 with legal closures (Bartlett, Cliff, Ladders, Lake Pleasant, 76, and Tower); sites with high levels of human activity, but which had no closures (Fort McDowell and Luna); sites that are fairly accessible and/or have a history of problems such as heat stress, nest parasites, and/or persistent presence of monofilament (Hunt et al. 1992) (Alamo, Ive's Wash--below Alamo Dam, and Tonto); and BAs of particular interest to agencies (Pinto and Coolidge).

Most field work began in the first week of February immediately after orientation and continued until the eaglets fledged in May and June. Two person teams maintained a ten-day on, four-day off schedule. Each work period included weekends and Fridays, when heavy recreation may impact eagles. Half of each ten-day period (weekends and every other Friday) was devoted to data collection where nests were monitored from dawn to dusk. The other half of each ten-day period was spent collecting supplemental eagle data. The four-day off period occurred every other Monday through Thursday.

All data were recorded by observation, opportunistically, throughout the study period. Territories with constant recreational pressure and special eagle concerns (Tonto and Bartlett) were monitored every day either throughout the season or during peaks of human activity. Due to early nesting habits of the Alamo eagles, nestwatchers began monitoring in January. The Audubon Society assisted in observing the Ladders and Tower BAs on nestwatchers' days-off.

Bald eagle data were recorded from distant observation points in the nest areas. Spotting scopes (15-45x, supplied by ABENWP contributors) and binoculars were used to view eagles. Each observation point was selected to provide optimal viewing with the least impact to breeding bald eagles. All observations were recorded in a notebook on field forms. Forms were developed to document human activity in the breeding area, wildlife interactions, prey deliveries, forage events, and wildlife sightings. Nest behavior was recorded each field day and entered on daily summary forms.

Human activity and the associated eagle behavior were recorded within a 1 km radius of an eagle or eagle's nest. In addition, all aircraft below the 600 m (2000 ft) Federal Aviation

Administration (FAA) recommended ceiling within 1 km of an eagle/nest were also documented. We classified the behavior of bald eagles in response to human activity into seven categories: none, watched, restless, flushed, left area, unknown, and bird not in area. If eagles performed their normal activities without acknowledging a nearby human activity, a "no response" was recorded. If an eagle looked at an activity without displaying any other observable reaction, "watched" was marked. If an eagle vocalized, moved noticeably on its perch, or displayed any overt reaction to an activity without leaving its perch, "restless" was recorded. If an eagle left its perch quickly, in response to a human activity, we recorded a "flush." A "left area" response refers to an eagle that became intolerant of an activity and left the immediate area in less hurried manner than a "flush." We recorded an "unknown" response if we were unable to view an eagle's response and marked "bird not in area" if an eagle was not present at the nest when an activity occurred.

At Alamo Lake, we described the eagle's behavior to boats within the buoyed nest closure and separately, recorded only the "restless," "flushed," and "left area" responses to human activity while perched outside of the buoyed closure. When a boat entered the buoyed nest closure, the eagle's behavior was recorded. Due to the constant presence of boats in close proximity to eagles perched outside of the closure, we recorded only the instances and activity that caused an eagle to behave with a significant response (restless, flush, left area).

At the southern end of the Lake Pleasant closure, we described the amount and type of watercraft activity. Although the southern buoy line was within 1 km of the eagle's nest, we did not record an eagle's behavior for all watercraft activity. Because we could not see the eagles from the buoy line, it was redundant to fill in line after line of information where the bird's response was unknown. Instead, we tried to describe watercraft compliance at the buoy line, and then only recorded the eagle's response to boats that passed beyond the contact point. To document the abundance of watercraft and compliance at the southern closure boundary, we simply recorded all boats or jet-skis that approached the buoy line and whether they it entered the closure or not. If the boats entered the closure and were able to get past the nestwatchers, their activity and the associated eagle behavior were recorded.

At the Luna BA, we described human activity with 30 minute counts of recreation. We determined in 1994 that the three main recreation types were: "cars in parking lot," "people on shore," and "boats on lake." These activity types were tallied every thirty minutes on dawn-to-dusk observation days. We then averaged the results to describe each activity for a ten-day observation period. Additionally, we recorded any activity which caused the eagles to respond with a "restless,""flushed," or "left area" behavior.

We also recorded bald eagle interactions with other wildlife and tried to identify frequency, type and species of prey delivered to the nest. In addition, all observed forage

events were recorded. Nest maps with river kilometer designations, nest numbers, and a guide to prey species of fish commonly used by Arizona bald eagles were used (Hunt et al. 1992).

Nestwatchers provided their own transportation, gas, supplies, binoculars, and food. Nestwatchers also provided their own housing on days off. A total of 21 people participated in the ABENWP in 1995.

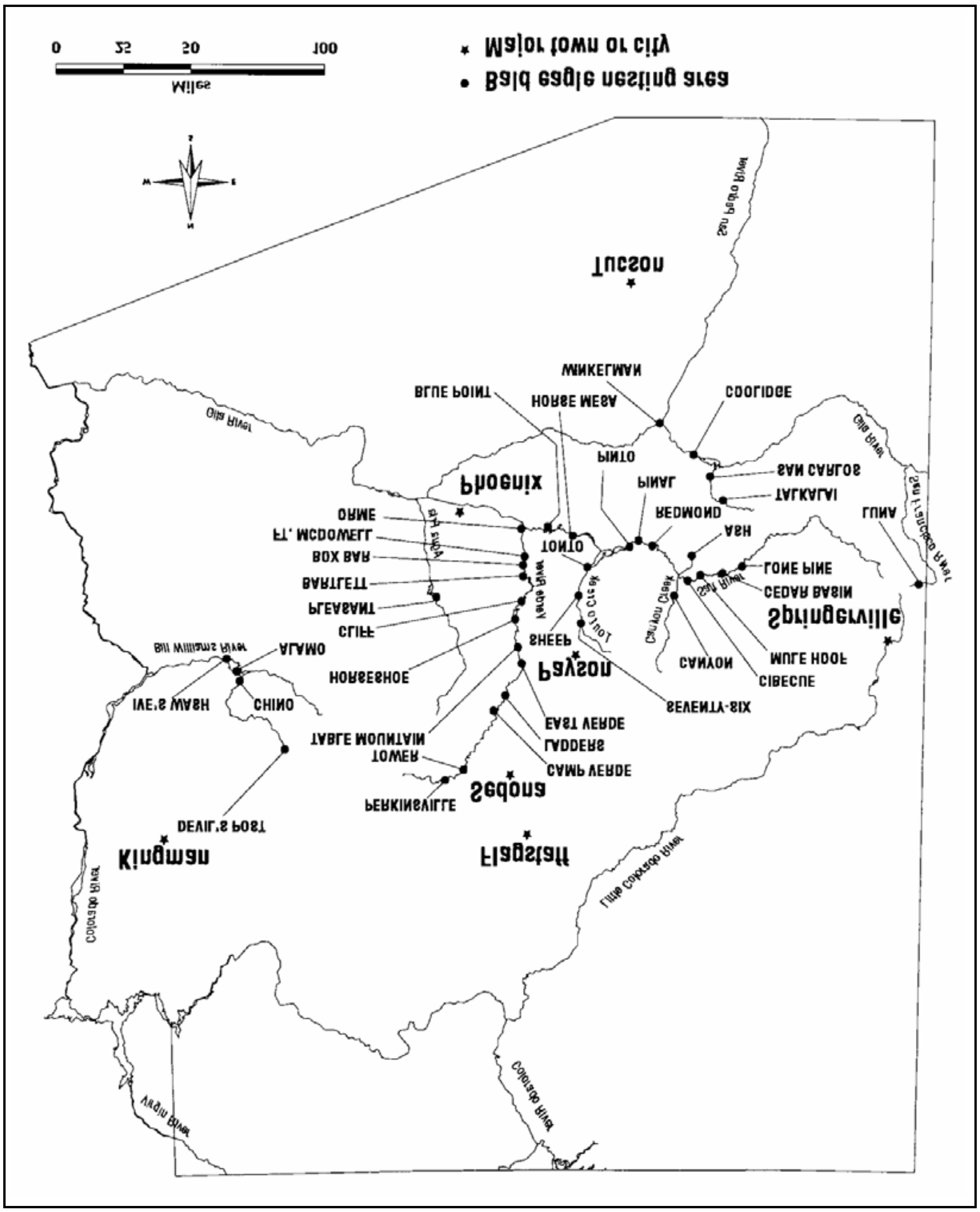
Major town or city
Bald eagle nesting area
0
25
50
100
Miles
Tucson
San Pedro River
WINKELMAN
COOLIDGE
HORSE MESA
BLUE POINT
Phoenix
Gila River
PINTO
PINAL
SAN CARLOS
TALKALAI
LUNA
REDMOND
ASH
TONTO
ORME
FT. MCDOWELL
BOX BAR
BARTLETT
PLEASANT
CLIFF
HORSESHOE
LONE PINE
CEDAR BASIN
Salt River
Springerville
MULE HOOF
CIBECUE
CANYON
Canyon Creek
SEVENTY-SIX
SHEEP
Tonto Creek
Verde River
Payson
Bill Williams River
ALAMO
IVE'S WASH
CHINO
EAST VERDE
LADDERS
CAMP VERDE
TABLE MOUNTAIN
TOWER
PERKINSVILLE
Sedona
DEVIL'S POST
Kingman
Flagstaff
Little Colorado River
Colorado River
Virgin River

Figure 1. Locations of Arizona bald eagle breeding areas known as of 1995.

RESULTS AND DISCUSSION

PROGRAM

Since ABENWP monitoring is concentrated in nest areas, this bias must be considered in extrapolating conclusions about forage locations or habitat use over an entire eagle pair's range. Nevertheless, the information gathered by this focused approach helps inform land and wildlife agencies about essential management activities in the nest area. Further, since eagles are most often found perching and roosting near the nest during incubation and the early nestling stage, it is logical to concentrate management most heavily in this location. Certainly though, important eagle foraging areas, perches and roosts away from the nest should not be ignored.

INTERVENTION

Intervention resulted in rescue of five eaglets in 1995 (20% of the young fledged in 1995). Telephone pagers allowed nestwatchers to contact emergency personnel at all times.

Alamo Breeding Area

Hard rains on 14 February caused heavy runoff into Alamo Lake. On 15 February, nestwatchers informed AGFD that the lake level was rapidly approaching the base of nest #2. The Army Corp of Engineers projected that the nest would be inundated. We removed the two eaglets (about 10 days old) on 15 February when the lake level was approximately five feet from the base of the nest. The eaglets were taken to The Phoenix Zoo.

In case the nest was not inundated, we placed two chicken eggs in the nest to keep the adults attentive. Both eagles remained near nest #2 on 16 and 17 February. But beginning on 17 and 18 February, the eagles began to work on cliff nest #4. Fortunately, the water did not inundate the nest, peaking six inches up the base of the nest before receding.

Several factors contributed to our decision to return the eaglets to the nest on 18 February. First, both adult eagles were beginning to ignore nest #2 and starting to build on nest #4. Second, the weather was mild, so the eaglets would not be endangered by high daily temperatures (although if the adults did not return before dusk, the eaglets might not be able to withstand the cold). Third, dam releases of 40,000 cubic feet per second (cfs) had caused the lake to recede to about five feet below the nest. Our ability to manage boating activity improved when AGFD Nav-Aid personnel quickly reset closure buoys that had become scattered from the heavy water inflow. Finally, nestwatchers were on site with a boat to protect the eaglets.

After placing the eaglets and some dead fish in the nest, we remained in a boat about 100 m (300 ft) away. We stayed close enough to ward off potential predators (non-resident bald eagle, golden eagle, common raven, gull, etc.), but far enough away not to disturb the adults. The adult male eagle returned to the nest about 2.5 hours after the eaglets were returned. The male initially fed itself, but soon began to feed the eaglets. Near dusk, the female returned to the nest to feed and brood the eaglets. Both eaglets fledged on 22 and 23 April.

Coolidge Breeding Area

The Coolidge male was last seen on 16 April. Soon afterwards, we concluded that it was most likely dead. The female, compensating for the male's absence, was spending considerable time (sometimes the entire day) away from the nest area to capture food for the two eaglets (approximately 3 weeks old). Thus, we decided to supplement the diet of the Coolidge eagles.

Our objectives in supplemental feeding were to provide a consistent source of food for the eagles, and to give the female more time in the nest area to protect the nestlings. Beginning on 28 April, we placed fish (trout or channel catfish) daily on a rock island in full view of the nest. We placed at least two to three fish out every morning. Any extra fish at the end of the ten day observation period were set out the first morning of the nestwatcher's days off. About 92 fish were offered to the eagles for a total of 33 days between initiation of the feeding program and the end of monitoring on 11 June. We observed the female retrieve 16 percent (n=15) of the supplemental fish, representing 25 percent of all (n=59) observed prey deliveries. The AGFD Urban Fish Stocking Program supplied the channel catfish for 14 days of feeding.

The supplemental feeding program accomplished our objectives of providing food and keeping the adult female in the nest area. Clearly, without any contribution by the male eagle, the female had to not only work harder to provide the eaglets with food, but withstand any natural changes in food availability. Although the adult female continued to forage away from the nest area, the supplemental fish provided a buffer against a food deficit. Both eaglets fledged and were observed flying in the nest area on 7 and 11 July (R. Bettaso pers. comm.).

Tonto Breeding Area

On 8 May, the lone Tonto eaglet (about 70 days old) was discovered on the ground below tree nest #2. Nestwatchers informed AGFD through telephone conversations that the bird was not being fed and had hardly moved from a short tree stump perch. We traveled to the area by helicopter on 9 May to assess the situation. The bird appeared to be in good health,

although it had a slightly droopy left wing. We captured it by hand and more closely examined its physical condition. The bird was thin (determined from inspecting the breast muscle) and had stress marks on the tail feathers. There were no signs of blood or other obvious injuries.

We placed the eaglet back into the nest. Within two hours of being returned to the nest, the eaglet was hop-flapping and holding its wings normally. The bird eventually fledged between 2 and 7 June, approximately 100 days after hatching.

BREEDING AREA SUMMARIES

Breeding Area Productivity Overview

The 1995 Arizona bald eagle breeding season was a record year for reproduction. There were more young fledged (n=25) and more occupied BAs (n=30) than have ever been recorded (Tables 1, 2). Previous highs for young fledged occurred in 1988 with 24 (Hunt et al. 1992). Before 1995, the most occupied BAs (n=27) recorded was in 1994 (Beatty et. al. 1995).

Table 1. Arizona bald eagle productivity, by breeding area, for the 1995 season.

Breeding area	Status[1]	Nest number[2]	Incubation date	Number of eggs	Hatch date	Number of young	Number fledged	Fledge date
Alamo*	S	2	<1/8	2+	2/3-5	2	2	4/22 & 4/23
Ash	U							
Bartlett*	S	2	1/10-17	2+	2/13-17	2	2	5/11 & 5/15-22
Blue Point	S	7	<1/20	2+	<3/10	2	2	4/20-5/8 & 5/10-15
Box Bar*	O							
Camp Verde	U							
Canyon	O							
Cedar Basin	O							
Chino	U							
Cibecue	S	1	<3/10	2	3/16-4/10	1	1	>6/9
Cliff*	O							
Coolidge*	S	2	2/2-28	2+	<3/30	2	2	6/12-7/2
Devil's Post	?							
East Verde	S	6	1/10-2/2	2	<3/10	1	1	5/10-6/9
Ft. McDowell*	F	12	1/17-24	1+	2/24-25	1+	Flooding on 3/6 toppled nest tree into river	
Horse Mesa	S	4	2/3-3/10	1+	3/10-21	1	1	5/10-6/9
Horseshoe	F	10	2/2-3/10	1+	3/13-24?	?	Nest <3/24, young hatched?	
Ive's Wash*	S	3	2/16-20	1+	3/24-28	1	1	5/2-6/5
Ladders*	O							
Lone Pine	O							
Luna*	S	1	2/27-3/9	1+	4/1-2	1	1	6/26
Mule Hoof	U							
Orme*	S	1	1/25-2/3	2+	<3/10	2	2	5/10-26

Table 1. Arizona bald eagle productivity, by breeding area, for the 1995 season.

Breeding area	Status[1]	Nest number[2]	Incubation date	Number of eggs	Hatch date	Number of young	Number fledged	Fledge date
Perkinsville	U							
Pinal	F	3	3/10-4/10	1	New female, abandoned incubation 5/10-25			
Pinto*	S	3	1/20-2/3	2+	2/27-3/3	2	2	5/10-6/1
Pleasant*	S	2	1/10-18	2+	2/15-16	2	2	5/10 & 5/15-24
Redmond	S	5	2/3-10	2+	3/10-14	2	1	>6/9
San Carlos*	S	1	<1/20	2	<2/27	2	2	5/4-6
76*	F	2	2/3-10	2	One egg found cracked and one broken on 4/13			
Sheep*	O							
Table Mountain	S	4	2/2-3/10	2+	<4/10	2	2	5/17-6/9
Talkalai	F	5	1/20-2/3	1+	-<3/2	1	Nest found empty 3/29.	
Tonto*	S	2	1/20-25	1+	2/24-3/1	1+	1	5/8 fell out, fledged 6/1-7
Tower*	F	7	1/26-2/2	2	Adults incubated 62-67 days, two addle eggs collected 4/5			
Winkelman	O							

[1]Breeding area status codes (Postupalsky 1974), U=unoccupied, O=occupied, A=active (eggs or young present), S=successful, F=failed, ?=unknown.

[2]Nest numbers are from Ecology of Bald Eagle in Arizona (Hunt et al. 1992) and SRP's bald eagle nesting areas in Arizona.

*= Sites monitored by 1995 Arizona Bald Eagle Nestwatch Program.

Table 2. Arizona bald eagle productivity summary, for the 1995 season.

Number of Breeding Areas	36	Number of Active Nests	22
Number of Occupied Breeding Areas	30	Number of Failed Nests	6
Number of Eggs	36+	Number of Successful Nests	16
Nest Success = 16 /30 = 0.53		Number of Young Hatched	28+
Mean Brood Size = 25/16 = 1.563		Number of Young Fledged	25
		Productivity = 0.53 x 1.563 = 0.83	

Alamo Breeding Area

Observation period
The Alamo BA was monitored from 21 January to 29 April for 75 days. A total of 695 hours were spent watching the eagles. Thirty-seven days were spent watching from dawn to dusk, totaling 416 hours.

Eagle activity
Eggs were laid in Alamo snag nest #2 prior to 9 January and hatched between 3 and 5 February. Both eaglets were removed on 15 February due to floodwaters projected to inundate the nest. The eaglets were removed when the water was about five feet from the base of the nest and immediately taken to the Phoenix Zoo. The lake level eventually peaked six inches up the base of the nest. The eaglets were returned to the nest on 18 February and the adult male began to care for them about two and a half hours later. Both eaglets fledged, on 22 and 23 April.

Both Alamo eagles were in adult plumage and wore silver USFWS bands on their right tarsi.

Human activity
We recorded human activity around the nesting Alamo eagles in two ways. The bird's response to all boats that entered the buoyed closure was one type of information recorded (Table 3). We also documented all activity that caused an eagle to behave with a "restless," "flushed," or "left area" response while it was perched outside of the eagle closure (Table 4).

Nestwatchers recorded 79 boats that entered the 130 m (450 ft) buoyed closure around Alamo nest snag #2 (Table 3). Eagles were "restless" on 38 occasions, "flushed" 5 times, "left the area" 9 times, did not respond 13 times, and were not present during 27 violations. Eagles always responded when boats approached within 50 m (150 ft).

Nestwatchers contacted 77 of the 79 boats that entered the closed area. Most people responded favorably and left the area immediately. Not surprisingly, some were irritated that portions of the lake were closed. The most common excuse for entering the closure was failure to see the buoys. Tournament anglers however, were cognizant of the buoys, because if found in the area, they could be disqualified from the competition. Weekend non-tournament anglers trying to escape the crowds seemed to represent the group with the greatest number of violations.

The 130 m (450 ft) closure around the nest was effective. Anglers anchored at the buoy line or boaters that just barely entered the closure (n=13) did not cause the eagles to change their behavior (Table 3).

Eagles perched outside the buoyed eagle closure were rarely recorded responding to human activity (Table 4). Eagles "left the area" four times in response to boats, and "flushed" or "left the area" three times in response to rescue and banding activities. However, the bird's time outside of the closure was often spent free of human activity. Due to higher lake levels, eagles often foraged upriver from the nest in the shallow waters not accessible by boat.

Military jets were observed flying over Alamo Lake below the recommended 600 m (2000 ft) ceiling on 17 occasions. However, this information is not included in our human activity table because the eagles did not respond. More regularly, flights traveled east to west just south of Alamo Lake, crossing over Alamo Dam.

Food habits

The Alamo eagles were observed attempting to forage 24 times (Table 5). Seventeen of the 24 attempts were successful. The male caught 12 items in 19 attempts and the female was successful in all 5 forage attempts. Observed prey items were fish (n=18), birds (n=5), and unknowns (n=1) (Table 6). Twenty-one forage attempts occurred along the southeastern end of the lake between Woody's Cove and the Bill Williams River inflow.

Fewer forage attempts were observed in 1995 than in previous years because eagles often flew upriver to the shallow foliated section of the lake, out-of-view to observers. Eagles were frequently seen returning with fish from this area.

Twenty-three prey deliveries to the Alamo nest were observed in 1995 (Table 7). The male delivered 19 prey items, the female 2, and an unidentified Alamo adult delivered 1. Prey species delivered to the nest were largemouth bass (n=2), channel catfish (n=2), unknown fish (n=13), American coots (n=1), unknown birds (n=2), baby javelina (n=1), and unknowns (n=2).

Wildlife interactions

Alamo bald eagles were observed interacting with bald eagles, great blue herons, osprey, red-tailed hawks, peregrine falcons, common ravens, merlins, turkey vultures, and an unidentified eagle.

The Alamo and Ive's Wash eagles were observed defending a common territorial boundary line with aerial confrontations. The north-south boundary, previously dividing the lake at Woody's Cove (Beatty 1993), was extended further west toward mid-lake. This increase in the Alamo territory was most likely a response to the two new eagles occupying the Ive's Wash territory.

A peregrine falcon and a merlin were observed interacting with the Alamo eagles. On 25 January, a merlin pursued the Alamo female after the eagle left a snag perch. On 4 February, a peregrine attacked the male eagle flying across the lake.

Management activities
Buoys were set around the Alamo nest snag #2 on 1 February. Nestwatchers informed the Department that the lake level had increased to where boats could float to the base of the nest.

Nestwatchers were given a boat on 3 February to contact boaters entering the closure and protect the eagles from boating disturbance.

On 3 February nestwatchers distributed and posted closure fliers (see Appendix) around the lake, at the State Park office, tackle and food store, bathrooms, and Wayside Inn.

The two Alamo eaglets were removed from the nest on 15 February when the lake was within five feet of the nest and projected to inundate it. The eaglets were taken to The Phoenix Zoo. In case the structure was not inundated, chicken eggs were placed in the nest to keep the eagles attentive it. The eaglets were returned to the nest on 18 February after the lake had receded to a manageable level. Buoys scattered by the heavy inflow were reset on 18 February.

The BLM Kingman Resource Area supplied nestwatchers with a spotting scope, radio and sun tarp. Additionally, AGFD Region IV supplied nestwatchers with a AGFD radio to assist in emergencies requiring law enforcement.

Table 3. Observed bald eagle response to boats within a breeding area closure, Alamo Lake Breeding Area, Arizona, 1995.

Type	R	F	L	B	Total
Boats	38 (41%)	5 (5%)	9 (10%)	27 (29%)	92 (100%)

[1]Eagle behavior toward human activity, R=restless, F=flushed, L=left area, B=bird not in area.

Table 4. Observed significant responses to human activity by bald eagles located outside a closed nest area, Alamo Lake Breeding Area, Arizona, 1995.

	Eagle response toward human activity[1,2]				
Type	R	F	L	?	Total

Boats	-	-	4	-	4 (40.0%)
Small planes	-	-	-	2	2 (20.0%)
Military jets	-	-	-	1	1 (10.0%)
Researcher	-	2	1	-	3 (30.0%)
Total	-	2	5	3	10 (100%)

[1]Eagle response toward human activity, R=restless, F=flushed, L=left area, ?=unknown.
[2]"None" and "watched" behavior not recorded due to constant human activity surrounding Alamo eagles.

Table 5. Observed forage events and success by bald eagles, Alamo Lake Breeding Area, Arizona, 1995.

	Prey Items							
	Fish		Birds		Unknown		Total	
Sex	E[1]	S-U[2]	E	S-U	E	S	E	S-U
Male	13	10-3	5	2-3	1	0-1	19	12-7
Female	5	5-0	-	-	-	-	5	5-0
Total	18	15-3	5	2-3	1	0-1	24	17-7

[1]E = Forage events observed; each number represents a forage event for an item not the number of strikes to capture it.
[2]S-U = Successful captures of prey - unsuccessful capture of prey.

Table 6. Observed prey items (by class) delivered to nest by bald eagles, Alamo Lake Breeding Area, Arizona, 1995.

	Prey Items				
Sex	Fish	Birds	Mammals	Unknown	Total
Male	15	3	0	1	19 (82.6%)
Female	2	0	1	1	4 (17.4%)
Total	17 (73.9%)	3 (13.0%)	1 (4.3%)	2 (8.7%)	23 (100%)

Table 7. Observed prey items (by species) delivered to nest by bald eagles, Alamo Lake Breeding Area, Arizona, 1995.

	Prey Items[1]							
	Fish			Mammals	Birds		Unknown	Total
Sex	LB	CC	UF	JA	AC	UB	?	
Male	2	2	11	-	1	2	1	19
Female	-	-	2	1	0	0	1	4
Total	2	2	13	1	1	2	2	23

[1]Prey items: LB=largemouth bass, CC=channel catfish, UF=unknown fish, JA=javelina, AC=American coot, UB=unknown bird, ?=unknown.

Bartlett Breeding Area

Observation period
The Bartlett BA was monitored between 10 February and 14 May for a total of 768 hours over 82 days. Dawn-to-dusk observations occurred over 35 days totaling 415 hours. The site was monitored every day by two teams of nestwatchers beginning on 1 April.

Eagle activity
Eagles laid eggs in cliff nest #2 between 10 and 17 January. Two eaglets hatched between 13 and 17 February and fledged on 11 May and between 15 and 22 May.

Both adult eagles were unbanded birds in adult plumage.

Human activity
A total of 107 human activities were recorded at the Bartlett BA in 1995 (Table 8). The most common types of activities were helicopters (n=35), small planes (n=27), and canoe/kayaks (n=23). Five significant responses to the following activities were observed: helicopters (n=2), canoes/kayaks (n=1), a television crew (n=1), and an unknown activity (n=1).

Helicopters were the most common activity observed throughout 1995 (n=35). Many of the helicopters observed were in response to flood conditions associated with dam releases exceeding 60,000 cfs on 15 February and 40,000 cfs on 6 March. Agency and utility company helicopters were used to monitor the river and inform recreationists of upcoming releases. Eagles were flushed by a helicopter flying less than 60 m (200 ft) above the Verde River on 13 February.

On the nestwatchers' first day monitoring from the observation point closest to nest #2 (150 m), the eagles responded in a restless behavior. To avoid disturbing the eagles during incubation, this observation point is no longer used until the eaglets are about three weeks old.

During the first trip, a television crew (3 people) filmed a short segment for public television. The male adult eagle responded by flying from the top of the nest pinnacle before circling back to perch. While perched, he vocalized quietly. The female remained at the nest with the nestlings and responded by watching. Soon, however, the eagles returned to their normal behavior.

There was less human activity in the nest area in comparison to previous years (see Beatty 1993, Beatty and Driscoll 1994, Beatty et al. 1995). Riverside Campground, between the dam and the nest area, was closed on weekdays due to construction at Bartlett Dam. Access to the nest area was further reduced by two locked gates (for construction and for

the USGS station). Poor weather, flooding, and high river flows also helped reduce traffic entering the closure.

Food habits

Nestwatchers observed 26 forage attempts by the Bartlett eagles in 1995. The female was successful in 11 of 13 attempts and the male in 12 of 13 attempts. All observed forage attempts were for fish or fish carrion in a 3 km section of river along the nest cliff. Eagles were observed frequently capturing suckers at this location in previous years (Hunt et al. 1992). Suckers were observed spawning here in 1995. The Bartlett eagles were also observed returning with food after traveling out-of-view upriver and downriver from the nest.

A total of 184 prey items were observed being delivered to the nest (Table 9). The male delivered 127 items and the female 57. Prey items delivered were (by class) fish (n=142), mammals (n=4), birds (n=4) and unknowns (n=34). Prey items identified in the nest (by species) were suckers (n=18), largemouth bass (n=3), crappie (n=2), channel catfish (n=4), carp (n=3), bluegill (n=1), unknown fish (n=111), jackrabbit (n=1), unknown mammals (n=3), eared grebe (n=1), white-winged dove (n=1), merganser sp. (n=1), and an unknown bird (n=1) (Table 10).

Wildlife interactions

The Bartlett eagles were observed interacting with other bald eagles, osprey, peregrine falcons, red-tailed hawks, turkey vultures, common ravens, great blue herons, and green backed herons.

Management activities

A USFS closure restricted all entry to the Bartlett BA, other than watercraft, which could not stop in the area due to potential disturbance to foraging or nesting activities. Due to the increased level of human activity near the end of the nesting season, additional nestwatchers were assigned to the site to contact as many recreationists as possible. Closure of Riverside Campground during dam construction, helped reduce human traffic in the nest area.

Table 8. Observed human activity and bald eagle behavior, Bartlett Breeding Area, Arizona, 1995.

	Eagle behavior toward human activity[1]					
Type	N	W	R	F	?	Total
Helicopter	30	3	1	1	-	35 (32.7%)
Small planes	24	2	-	-	1	27 (25.2%)
Canoe/Kayak	2	20	-	1	-	23 (21.5%)
Jets	-	1	-			1 (0.9%)
Agency personnel	3	3	-	-	-	6 (5.6%)
Rafter	-	5	-	-	-	5 (4.7%)
Hiker	2	1	-		1	4 (3.7%))
Driver	-	1	-	-	-	1 (0.9%)
Dynamite	-	1	-	-	-	1 (0.9%)
Cyclists	1	-	-	-	1	2 (1.9%)
T.V. crew	-	-	1	-	-	1 (0.9%)
Unknown	-	-	1	-	-	1 (0.9%)
Total	62	37	3	2	3	107 (100%)

[1]Eagle behavior toward human activity, N=none, W=watched, L=left area, B=bird not in area, ?=unknown.

Table 9. Observed prey items (by class) delivered to nest by bald eagles, Bartlett Breeding Area, Arizona, 1995.

	Prey Items				
Sex	Fish	Mammals	Birds	Unknown	Total
Male	100	-	-	24	124 (67.4%)
Female	42	-	-	10	52 (28.3%)
Unknown	-	4	4	-	8 (4.3%)
Total	142 (77.2%)	4 (2.2%)	4 (2.2%)	34 (18.5%)	184 (100%)

Table 10. Observed prey items (by species) delivered to nest by bald eagles, Bartlett Breeding Area, Arizona, 1995.

	Prey Items[1]														
	Fish							Mammals		Birds				?	Total
Sex	B	C	CC	R	L	S	?	JR	?	G	D	M	?	?	
Male	1	2	4	2	3	7	81	-	-	-	-	-	-	24	124
Female	-	1	-	-	-	11	30	-	-	-	-	-	-	10	52
?	-	-	-	-	-	-	-	1	3	1	1	1	1	-	8
Total	1	3	4	2	3	18	111	1	3	1	1	1	1	34	184

[1]Prey items: B=bluegill, C=carp, CC=channel catfish, R=crappie, L=largemouth bass, S=suckers, ?=unknown fish, JR=jackrabbit, ?=unknown mammal, G=eared-grebe, D=white-winged dove, M=merganser species, ?=unknown bird, ?=unknown.

Cliff Breeding Area

Observation period
The Cliff BA was monitored from 10 February to 5 March for 148 hours over 20 days. Ten dawn-to-dusk days were spent at the site, for about 120 hours of monitoring.

Eagle activity
Eagles were not frequently observed at the Cliff BA in 1995. Two adults were observed in the nest area only once during our observation period. Later in the season, on 10 April, a three year old bald eagle was observed at the nest and on 10 May, two eagles were observed perched together downriver from the nest.

The breeding adults identities were unclear throughout the 1995 season. On our initial trip into the BA, on 27 January, we observed a pair of adult eagles (one wore a telemetry backpack). However, throughout the nestwatch observation period only one adult was regularly observed. This adult eagle appeared to have a silver USFWS band on the right leg and a dark (black?) VID band on the left leg. This could have been the same male that has occupied the area since 1981, yet no telemetry backpack was observed. Neither of the two adult eagles observed together in May wore a telemetry backpack. Perhaps a replacement of the adult eagles identified in 1994 took place in 1995.

Human activity
Little human activity (n=23) was observed throughout the observation period because of poor weather, high river flooding, and muddy road conditions. Activity types recorded were helicopters (n=9), small planes (n=8), shooter (n=1), jet (n=1), horseback rider (n=1), birder (n=1), driver (n=1), and researcher (n=1) (Table 11).

Because eagles were rarely present at the nest, responses to the human activities recorded were largely unobserved (n=15) or unknown (n=4). Eagles were, however, recorded leaving the area in response to one birder and our attempt to identify bands on the eagle's legs.

Food habits
One forage attempt by the resident eagle was observed on 18 February. The eagle flew down to the river and retrieved what was believed to be carrion fish.

On 25 February we observed a congregation of five subadult bald eagles and an adult bald eagle feeding on fish or mammal carrion below nest pinnacle #4. River flooding and the subsequent drop in river flows left this carrion along the river. A lone eagle (assumed to be a resident bird) was observed perched at the nest pinnacle, but was not observed foraging on the carrion or defending the area.

Wildlife interactions
The lone eagle observed at the Cliff BA was observed interacting with other bald eagles, common ravens, and red-tailed hawks.

Management activities
The USFS closure in the Cliff BA was marked with a fence and sign at the northern boundary. Both the fence and sign were washed away during high water releases from Horseshoe Dam in February.

Table 11. Observed human activity and bald eagle behavior, Cliff Breeding Area, Arizona, 1995.

	Eagle behavior toward human activity[1]					
Type	N	W	L	B	?	Total
Helicopter	1	-	-	8	-	9 (39.1%)
Small planes	-	1	-	4	3	8 (34.8%)
Shooter	-	-	-	1	-	1 (4.3%)
Jets	-	-	-	1	-	1 (4.3%)
Birder	-	-	1	-	-	1 (4.3%)
Researcher	-	-	1	-	-	1 (4.3%)
Horseback rider	-	-	-	1	-	1 (4.3%)
Driver	-	-	-	-	1	1 (4.3%)
Total	1	1	2	15	4	23 (100%)

[1]Eagle behavior toward human activity, N=none, W=watched, L=left area, B=bird not in area, ?=unknown.

Coolidge Breeding Area

Observation period
The Coolidge BA was monitored from 7 April to June 11 by a one to three person team. A total of 477 hours were spent watching the site over 49 observation days. A total of 15 dawn-to-dusk observations were made watching the nest, for 205 hours. Dawn-to-dusk observations were not conducted between 19 May and 11 June because the site was monitored by only one person.

Eagle activity
Eagles laid eggs in cottonwood tree nest #2 between 2 and 28 February. Two eaglets less than two weeks old were discovered on 30 March. The Coolidge adult male was last observed on 16 April and was presumed dead. Supplemental feeding began on 28 April. Fish (fresh whole channel catfish or rainbow trout) were placed on a river island in plain view of the nest on every remaining day of observation. Both eaglets successfully fledged between 11 June and 2 July.

The Coolidge adult male disappeared and was presumed dead when the eaglets were about 3 weeks old. The adult male was last observed on 16 April chasing a three-year old bald eagle from the nest area. Prior to the male's disappearance, the bird was not performing normal nesting behavior. After spending just over 3 hours at the nest on 9 April, the male was not observed at the nest on 13 or 16 April. The male was delivering fewer prey items to the nest, ate from prey remains, and food begged from the adult female. These observations indicate the male likely died from illness or injury.

Following the Coolidge male's disappearance, a male eagle in near-adult plumage (dark band across the bottom of its tail) was seen in the breeding area on two days. On 12 May, this male perched on a hillside above the nest tree about 10 m away from the female. Later in the day, the near-adult male perched on a branch less than 3 m from the nest while the female foraged and delivered prey to the eaglets. At 1024, the Coolidge female knocked the male off its perch and fought with it on the ground for about 20 seconds. The near-adult male then left the breeding area. On 23 May, the same near-adult was perched for an hour in the grove of cottonwood trees surrounding the nest. On both occasions a silver USFWS band was observed on the near-adult bird's right tarsus. On May 23, a blue band on the left tarsus was also believed to have been observed. This bird may become the new male at the Coolidge BA for the 1996 season.

Since 1991, both the Coolidge eagles have been unbanded adult plumaged birds with no noticeable plumage changes.

Human activity

A total of 59 human activities were observed throughout the 1995 season at the Coolidge BA (Table 12). The most often recorded activity was our supplemental feeding effort of placing fish within 100 m of the nest tree (n=38). Other types of activities observed were small planes (n=3), helicopters (n=5), jets (n=1), hikers (n=2), drivers (n=7), and kayaks (n=3). The female eagle flushed when we searched for a supplemental feeding location and to a passing kayaker.

Most (n=27) of the female's response to the nestwatchers placing fish near the nest went unobserved. Low-light conditions in the early morning hours, the quickness with which the task was completed, and/or the presence of only one monitor on site often prevented nestwatchers from observing a response.

Although the Bureau of Land Management closed the river to boating, three boats were recorded floating through the nest area. On 15 April a single kayaker flushed the female from a hillside perch overlooking the river and nest. Another single kayaker on 28 March floated past the nest without a response from the eagle. Finally, on 3 June, three kayakers went past the nest, but the nestwatchers were unable to view the female eagle's behavior. All three groups of boaters were informed of the eagles and instructed not to stop near the nest.

Nestwatchers contacted nine groups of people driving (n=7) or hiking (n=2) into the Coolidge BA. A local rancher in the area was contacted twice during the season. He voiced approval of the eagle program. Five other groups (3 sightseers, 1 Tribal Game Ranger, and 1 group of anglers) of people in vehicles entered the nest area. San Carlos Recreation and Wildlife Rangers entered camp on 7 June to check-up on the status of our monitors and the eagles. All groups passed through a signed gate with information about sensitive eagle habitat and the presence of nestwatchers.

Food habits

Fifteen of the 16 observed forage attempts were for supplemental fish (channel catfish and rainbow trout). The lone forage attempt not for a supplemental fish was a jackrabbit carcass the female pirated from a common raven.

Each morning, the nestwatchers placed two to three fish on a rock island about 100 m upriver from the nest. Any extra fish at the end of the observation period were set out the first morning of their days off. Over 33 days, approximately 92 fish were set out. Nestwatchers observed the female take 15 of these fish (16%). These 15 fish represented 26 percent of all (n=58) prey deliveries observed. The female may have retrieved more of the fish without us noticing due to limited observations by only one nestwatcher, early morning or evening captures, or food captured on days off. Thirty fish set out for the eagles were eaten by common ravens, great blue herons, turkey vultures, and common

black-hawks.

The female continued to forage for live prey in addition to retrieving supplemental fish (Table 13). A total of 51 prey deliveries by the female were observed. The male delivered 7 items prior to its disappearance. Species observed delivered to the nest were: supplemental channel catfish (n=7), supplemental trout (n=8), unknown fish (n=29), ringtail cat (n=1), jackrabbit (n=1), rock squirrel (n=1), unknown mammals (n=2), unknown birds (possibly an American coot and a duck, n=3), and unknowns (n=6) (Table 14).

Management activities

"Sensitive eagle habitat" signs indicating the nestwatcher's presence were placed on the fence dividing BLM and San Carlos Tribal Land. Signs were also placed at the nestwatch camp where the road ends at the Gila River.

BLM closed the Gila River below Coolidge Dam to boating for the 1995 breeding season.

The Central Arizona Paddlers Club was contacted to inform them that the Gila River below Coolidge Dam would be closed for the 1995 eagle breeding season. Their newsletter published an article on floating this section of river after it was already closed in 1994.

Following the disappearance of the adult male, we supplemented the eagles diet over 33 observation days with about 92 fish. Some fish were provided by the Arizona Game and Fish Urban Fish Stocking Program.

Table 12. Observed human activity and bald eagle behavior, Coolidge Breeding Area, Arizona, 1995.

	Eagle Behavior Toward Human Activity[1]						
Type	N	W	F	B	?	D-D total[2]	Total
Agency worker	3	3	1	4	27	7 (63.6%)	38 (64.4%)
Small plane	-	1	-	-	2	2 (18.2%)	3 (5.1%)
Helicopter	2	1	-	-	2	1 (9.1%)	5 (8.5%)
Jet	-	1	-	-	-	0	1 (1.7%)
Hiker	2	-	-	-	-	0	2 (3.4%)
Driver	7	-	-	-	-	0	7 (11.9%)
Kayak	1	-	1	-	1	1 (9.1%)	3 (5.1%)
Total	15	6	2	4	32	11 (100%)	59 (100%)

[1]Eagle behavior, N=none, W=watched, F=flushed,B=bird not in area,?=unknown.
[2]D-D total = Observations on dawn-to-dusk days.

Table 13. Observed prey items (by class) delivered to nest by bald eagles, Coolidge Breeding Area, Arizona, 1995.

	Prey Items				
Sex	Fish	Mammals	Birds	Unknown	Total
Male	4	1	2	-	7 (12.1%)
Female	40	4	1	6	51 (87.9%)
Total	44 (75.9%)	5 (8.6%)	3 (5.2%)	6 (10.3%)	58 (100%)

Table 14. Observed prey items (by species) delivered to nest by bald eagles, Coolidge Breeding Area, Arizona, 1995.

	Prey Items[1]									
	Fish			Mammals				Birds	Unknown	Total
Sex	T[2]	CC[2]	UF	RC	JR	SQ	UM	UB	?	
Male	-	-	4	-	-	-	1	2	-	7 (12.1%)
Female	8	7	25	1	1	1	1	1	6	51 (87.9%)
Total	8	7	29	1	1	1	2	3	6	58 (100%)

[1]Prey items: T=trout, CC=channel catfish, UF=unknown fish, RC=ringtail cat, JR=jackrabbit, SQ=rock squirrel, UM=unknown mammal, UB=unknown bird, ?=unknown.
[2]Trout and channel catfish were supplemental fish provided to eagles after the male died.

Fort McDowell Breeding Area

Observation period
The Fort McDowell Breeding Area was observed for 11 days totaling 103 hours between 10 February and 9 March. Notes taken by nestwatchers were destroyed by the Verde River floods.

Eagle activity
Incubation began in cottonwood tree nest #12 between 17 and 24 January. An unknown number of eaglets (possibly two) hatched on 25 or 26 February. Releases from Bartlett Dam exceeding 60,000 cfs undercut nest tree #12, causing it to fall into the Verde River between 6 and 9 March. The eaglets and nest were washed away downstream.

Both adult eagles were unbanded birds in adult plumage.

Human activity
Human activity was regularly observed in the nest area throughout our short observation period. Nest #12 was located at the northern most Verde River access road on the Fort McDowell Indian Community. Planes, helicopters, and drivers were the most common activities recorded. Additionally, picnickers, anglers, and gunshots were commonly recorded on weekends.

The nestwatcher's presence was critical in directing ground activities away from the nest area. Groups of at least 20 picnickers were recorded on a few occasions on the beach area across the river from the nest. Anglers, approaching in smaller groups of three to four, were also commonly found in the nest area. Other types of groups contacted in the nest area were horseback riders, hikers, swimmers, boaters, and birders. All of these groups were contacted, advised of the incubating eagles, and asked to recreate either upriver or downriver from the nest.
On one occasion, anglers ignored our advice and crossed the Verde River, exiting under the nest. Eagles flushed from the eggs and circled the nest. Fort McDowell law enforcement was contacted to remove the anglers from the nest area.

Intoxicated individuals and shooters were present in the nest area on a number of occasions. Gunshots were heard ricocheting through the observation point and camp in the daytime and evening. On one occasion intoxicated individuals were target and rabbit shooting from camp in the middle of the night. Another group of intoxicated people camped within 20 m (65 ft) of the nestwatcher's and yelled profanities in Spanish at the nestwatchers.

Food habits

Seven forage attempts were observed occurring in the Verde River in the nest area. Four attempts for fish were successful, two were unsuccessful and the outcome of one attempt was unknown. Eight prey deliveries were observed. The male delivered six items and the female two.

Wildlife interactions
On 20 March, the Fort McDowell eagles were observed interacting with the new Box Bar eagles. The Box Bar eagles were attempting to establish a territory between the Fort McDowell and Bartlett BAs.

Management activities
The Fort McDowell Indian Community provided nestwatchers with a cellular telephone to contact Tribal law enforcement.

Ive's Wash Breeding Area

Observation period
The Ive's Wash eagles were sporadically monitored between 21 January and 29 April by the Alamo nestwatchers. About 20 hours over 14 days were spent determining the eagle's nesting status.

Eagle activity
Two new eagles occupied the Ive's Wash BA in 1995. Eggs were laid in cliff nest #3 between 16 and 20 February. Ive's Wash eagles have usually laid eggs in early January. The late egg-laying date in 1995 was likely due to the two new eagles. One eaglet hatched between 24 and 28 March and fledged between 2 May and 5 June.

The new Ive's Wash eagles were both banded eagles that hatched from an Arizona BA. A four-year old female in near-adult plumage was observed in the territory on Thanksgiving Day 1994. It wore a blue VID band on its left leg and a USFWS band was on its right leg. It hatched from the Blue Point BA in 1991 and was spotted along the Little Colorado River near Springerville during the 1992 winter count (Beatty 1992). The new adult male was first observed in February wearing a green VID band on its left leg and a silver USFWS band on its right leg. It hatched from the Ive's Wash territory in 1988. The 1995 Ive's Wash male is the first bird documented in Arizona breeding in its natal area.

Human activity
No human activity was recorded in the short amount of time the site was monitored. However, military jets were seen performing aerial maneuvers over the Alamo Dam area and entering the Bill Williams Canyon as they continued flying to the west. Boats also floated near the Ive's Wash eagles perched on the lake.

Food habits
On 1 March, a successful forage attempt by the Ive's Wash male occurred in the middle of Alamo Lake. The bird ate most of the fish while perched on a snag along the southern shoreline. It then flew toward its nest area. No prey deliveries were observed.

Management activities
A sign was placed at the Alamo Dam gate instructing people not to discharge weapons in Bill Williams Canyon.

Ladders Breeding Area

Observation period
The Ladders eagles were monitored for a total of 355 hours over 30 days between 10 February and 19 March. Over 18 dawn to dusk days, the site was watched for 206 hours.

Eagle activity
No eggs were laid at the Ladders BA in 1995, however both eagles were present and displayed normal pre-egg laying behavior. Copulation was observed ten times. The male did most of the eagles' nest building at cliff nest #5. The eagles spent a lesser amount of time building on cliff nest #4.

Both of the Ladders bald eagles were unbanded birds in adult plumage.

Human activity
A total of 131 human activities were recorded at the Ladders BA in 1995 (Table 15). Compared to previous years, in which a diverse amount of activities were observed within the nest area, only six types were recorded this season. Watercraft were observed most frequently. No activities cause the eagles to respond with a behavior greater than a "watched" response.

Heavy rainfall during the observation period caused river conditions to be well suited for boating. As a result, groups of rafts (n=65) and canoes/kayaks (n=52) represented about 90 percent of the activity recorded. The 117 groups recorded included 264 individual boats (146 rafts, 118 canoes/kayaks).

Food habits
Because no eggs were laid in 1995, little information was observed regarding the eagles' diet or foraging habits. Two prey items were observed being brought to the nest the eagles were maintaining. One fish was identified as a sucker, the other unknown. No forage attempts were observed.

Wildlife interactions
The Ladders eagles were observed interacting with golden eagles, red-tailed hawks, and prairie falcons. All three species were believed to be nesting nearby.

The Ladders eagles were found chasing a pair of golden eagles south of the nest area on six occasions in early February and mid-March. On one instance, the bald eagles made contact and drove the golden eagle to the ground.

Management activities
A Prescott and Coconino National Forest closure existed at the Ladders BA restricting all entry to the nest area. Boats were allowed to float through the nest area, but could not stop or disembark.

Signs posted by the USFS at "The Falls" upstream of the nest area described the approaching bald eagle nest area and instructed boaters to be quiet and not disembark.

Table 15. Observed human activity and bald eagle behavior, Ladders Breeding Area, Arizona, 1995.

	Eagle Behavior Toward Human Activity[1]						
Type	N	W	R	F	?	D-D total	Total
Hiker	2	-	-	-	-	2 (1.8%)	2 (1.5%)
Agency personnel	2	-	-	-	-	2 (1.8%)	2 (1.5%)
Rafter	55	10	-	-	-	51 (45.9%)	65 (49.6%)
Helicopter	1	-	-	-	3	4 (3.6%)	4 (3.1%)
Small plane	5	-	-	-	1	6 (5.4%)	6 (4.6%)
Canoe/kayak	43	9	-	-	-	46 (41.4%)	52 (39.7%)
Total	108	19	0	0	4	111 (100%)	131 (100%)

[1]Eagle behavior, N=none, W=watched, R=restless, F=flushed, ?=unknown
[2]D-D total = Observations on dawn to-dusk observation days.

Luna Breeding Area

Observation period
The Luna eagles were monitored from 25 March to 25 June. A total of 775 hours over 71 days were spent watching the eagles. Forty-one dawn to dusk days were spent observing for 540 hours.

Eagle activity
The Luna eagles laid eggs in ponderosa pine tree nest #1 prior to 13 March. One eaglet hatched on 1 or 2 April and fledged on 26 June.

Both adult eagles wore black VID bands (right tarsus) and silver USFWS bands (left tarsus). The VID bands were placed on the bird's legs in 1994 after they were both captured by AGFD. Additionally, the male wore a blue patagial wing marker on the left wing. The marker was placed on as a nestling at its natal area near Houston, Texas in 1988. The origin of the female eagle is unknown. This is the eagle's second year breeding at Luna Lake.

Human activity
Constant human activity occurred around the Luna Lake eagles. The lake is within 300 m (1000 ft) of Highway 180 and within 3 mi (5 km) of the town of Alpine. Recreational opportunities at the lake center on fishing (stocked with rainbow trout by AGFD) and camping (a developed USFS campground).

We tallied the most common activities (cars in parking lot, people along the shoreline, boats on the lake) every half hour on dawn-to-dusk days. We then averaged the activities to record median numbers for the ten-day observation period. Additionally, we recorded any activity that caused the eagles to respond with a "restless,""flushed," or "left area" behavior (Table 16).

Closed campgrounds, cold weather and no trout stocking contributed to the small numbers of human activity recorded between 24 March and 14 May. During this time period, no more than an average of five "people along the shore" were observed at one time. Additionally, "boats on the lake" and "cars in the parking lot" averaged less than four every half-hour.

Once the campgrounds opened for Memorial Day weekend, human activity increased at Luna Lake. "People along the shore" and "cars in parking lot" averaged between 5 and 20 from 0800 hours until 1800 hours from 18 May until 26 June. The average number of boats on the lake were between 2 and 6 throughout the day. The maximum number of "people along the shore" recorded was 35, "cars in parking lot" 20, and "boats on the lake" 12.

Despite constant levels of recreation, only three observed activities caused the eagles to respond significantly. On two occasions hikers caused the eagles to be "restless" and "flush." Our banding procedure made the eagles "leave the area."

Monofilament fishing line was observed in the Luna eagle nest for the second consecutive year. More than 3 m (10 ft) of monofilament was discovered during the first day of observation on 24 March. The fishing line was removed from the nest when we banded the eaglet on 5 May.

Our public education campaign helped minimize human disruption of the eagles. Prior to Memorial Day, fliers (see Appendix) were posted on all campground bathrooms, passed out by campground hosts, and distributed by the lake's boat rental operators. These fliers instructed people to avoid the nest area, but encouraged them to view the birds from the boat ramp.

Nestwatchers talked to about 40 people per day on weekends and 12 people per day on weekdays from Memorial Day until the end of observation. On a couple of occasions, they talked to school groups visiting the lake. Not once did the nestwatchers encounter a negative reaction to the eagles, nor did anyone harass the birds.

Food habits

Nestwatchers observed 125 forage attempts by the Luna eagles in 1995 (Table 17). The male was successful on 72 of 109 forage attempts and the female on 13 of 16 attempts. The eagles foraged for birds 72 times, fish 52 times, and a carrion mammal (roadkill) once.

Between 25 March and 14 May, American coots (n=31) and fish (n=3) were the only prey observed captured. All but one of these prey captures occurred between the mid-lake area (in front of the boat ramp) and the western shore of the lake.

Once fishing activity and fish stocking (23 and 24 May) began at Luna Lake, the eagles began to capture fish. Between 19 May and 25 June, 46 of 51 prey captures were fish. In contrast to the location where American coots were captured, 40 captures occurred on the far western end of the lake in the wildlife closure.

The eagles' change in prey items and locations may be attributed to a combination of prey availability and human activity. With the increase in fishing and fish stocking, the presence of fish, alive, dead, and injured increased. Additionally, the western end of the lake, behind the closure, provided a disturbance free environment from boats and a shallow lake area to forage.

The nestwatchers observed 91 prey deliveries to the nest (Table 18). The male delivered 66

items (72.5%) and the female 25 (27.5%). Prey species were American coots (n=31), pied-billed grebes (n=1), unknown birds (n=5), trout species (n=38), rabbit species (n=1), unknown mammals (n=2), unknown carrion (n=1) and unknowns (n=12) (Table 19).

Wildlife interactions
The Luna eagles were observed interacting with American crows, Canada geese, red-tailed hawks, osprey, common ravens, Brewer's blackbirds, peregrine falcons, bald eagles, rough-legged hawks, American kestrels, and Stellar's jays.

Canada geese were an interesting species to see interacting with the Luna eagles. We observed geese lunging at or pursuing an eagle when an eagle perched or flew nearby. On one occasion, the adult male was chased off a prey item by a goose. Neither of the eagles recovered the prey item while the geese defended the area. Most of the goose-eagle interactions occurred during the geese's mating season (March-April).

Management activities
We developed and nestwatchers distributed informational fliers about the Luna Lake eagles. The fliers were posted on campground bathrooms, and given to campground hosts and boat rental operators to distribute. The Alpine Ranger District and AGFD Region I were also given fliers.

Monofilament was identified in the Luna nest on the first day of observation. The monofilament
was watched closely throughout the nesting season and removed when we banded the eaglet.

"Sensitive Bald Eagle Habitat" signs provided by AGFD were posted along the barbed wire fence east of the nest area by the Alpine Ranger District.

Group Site A, the closest campground to the Luna Lake nest, was closed until the middle of June. The rest of the Luna Lake campground was opened the middle of May.

Table 16. Observed human activity and bald eagle behavior, Luna Breeding Area, Arizona, 1995.

	Eagle Behavior Toward Human Activity[1]					
Type	R	F	L	B	?	Total
Hiker	1	1	-	-	1	3 (30.0%)
Driver	-	-	-	-	1	1 (10.0%)
Agency worker	-	-	1	-	1	2 (20.0%)

Jet	-	-	-	2	2	4 (40.0%)
Total	1	1	1	2	5	10 (100%)

[1]Eagle behavior, R=restless, F=flushed,L=left area, B=bird not in area, ?=unknown
[2]D-D total = Observations on dawn to-dusk observation days.

Table 17. Observed forage events and success by bald eagles, Luna Breeding Area, Arizona, 1995.

	Prey Items							
	Fish		Birds		Mammals		Total	
Sex	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	41	39-2	67	32-35	1	1-0	109	72-37
Female	11	10-1	5	3-2	-	-	16	13-3
Total	52	49-3	72	35-37	1	1-0	125	85-40

[1]E = Forage events observed., each number represents a forage event for an item not the number of strikes to capture it.
[2]S-U = Successful captures of prey - unsuccessful capture of prey.

Table 18. Observed prey items (by class) delivered to nest by bald eagles, Luna Breeding Area, Arizona, 1995.

	Prey Items				
Sex	Fish	Birds	Mammals	Unknown	Total
Male	28	32	3	3	66 (72.5%)
Female	10	5	1	9	25 (27.5%)
Total	38 (41.8%)	37 (40.7%)	4 (4.3%)	12 (13.2%)	91 (100%)

Table 19. Observed prey items (by species) delivered to nest by bald eagles, Luna Breeding Area, Arizona, 1995.

	Prey Items[1]				
	Fish	Birds	Mammals	Unknown	

							Total
Sex	T	AC	PG	UB	RS	UM	?	
Male	28	28	-	4	1	2	3	66 (72.5%)
Female	10	3	1	1	-	1	9	25 (27.5%)
Total	38	31	1	5	1	3	12	91 (100%)

[1]Prey items: T=trout species, AC=American coot, PG=pied-billed grebe, UB=unknown bird, RS=rabbit species, UM=unknown mammal, ?=unknown.

Pinto Breeding Area

Observation period
Observation occurred from 18 February to 26 April. On the Tonto nestwatchers' days off, Pinto nestwatchers monitored Tonto BA. After the Pinto nestwatchers were moved to the Tonto BA on 31 March, they checked Pinto periodically until 1 June. Observation days at Pinto BA totalled 25 (204 hours), including 14 dawn-to-dusk observation days (153 hours).

Eagle activity
Incubation began between 20 January and 3 February in cottonwood tree nest #3. Two eaglets hatched between 27 February and 3 March. The eaglets fledged between 10 May and 1 June.

Both Pinto eagles wore VID bands, USFWS bands, and still carried telemetry backpacks from a previous research project; the transmitters no longer work). The female hatched at Bartlett BA in 1981, and has occupied Pinto since at least 1987. The male, new to Pinto in 1995, hatched from Orme BA in 1988. The adults are banded as follows: female--black VID band on left tarsus, silver USFWS band on right tarsus; male--green VID band on left tarsus, silver USFWS band on right tarsus.

Human activity
A total of 164 human activities were recorded at Pinto BA (Table 20). The most common activities were small planes (n=86, 52.4%), boats (n=45), jets (n=10), gunshots (n=8), anglers (n=4), and ORVs (n=3). Eagles were restless in response to three activities (small plane, gunshots, helicopter) and flushed twice (boater, agency personnel). Dense salt cedar and mesquite prevented humans from approaching within 100 m (320 ft) of the nest tree.

Due to higher than normal lake levels at Roosevelt Reservoir, boaters were recorded near the eagles on 45 occasions. Eagles commonly perched in the lake shallows southwest of the nest tree (Campaign Bay). The male was flushed by a boat while eating a fish along the shore. The boat moved within 15 m (49 ft) of the eagle before the male took off and left the prey behind.

Food habits
Five foraging attempts were observed (Table 21). All were successful and all occurred in the Salt River between river kilometer 100 and 102 or in the lake shallows southwest of the nest. Prey items (by class) captured were fish (n=2), mammals (n=2), and unknown (n=1). The eagles were commonly seen flying out-of-view toward Roosevelt Reservoir, presumably to forage.

Twenty-seven prey deliveries were observed, including reptiles (n=1), mammals (n=2), and unknowns (n=24) (Table 22). The observation point's distance from the nest prevented precise identification of prey type and species.

Wildlife interactions

The Pinto eagles were observed interacting with common ravens, red-tailed hawks, great blue herons, other bald eagles and unknown birds.

Table 20. Observed human activity and bald eagle behavior, Pinto Breeding Area, Arizona, 1995.

	Eagle Behavior Toward Human Activity[1]						
Type	N	W	R	F	?	D-D total[2]	Total
Small plane	72	2	1	-	11	78 (54.1%)	86 (52.4%)
Boater	32	-	-	1	12	37 (25.6%)	45 (27.5%)
Gunshots	3	3	1	-	1	8 (5.6%)	8 (4.9%)
Jet	8	-	-	-	2	7 (4.9%)	10 (6.1%)
Angler	3	-	-	-	1	4 (2.8%)	4 (2.5%)
ORV	2	1	-	-	-	3 (2.1%)	3 (1.8%)
Helicopter	1	-	1	-	-	2 (1.4%)	2 (1.2%)
Agency personnel	-	-	-	1	-	0	1 (0.6%)
Driver	1	1	-	-	-	2 (1.4%)	2 (1.2%)
Jet ski	2	-	-	-	-	2 (1.4%)	2 (1.2%)
Canoe	1	-	-	-	-	1 (0.7%)	1 (0.6%)
Total	125	7	3	2	27	144 (100%)	164 (100%)

[1]Eagle behavior, N=none, W=watched, R=restless, F=flushed,?=unknown
[2]D-D total = Observations on dawn to-dusk observation days.

Table 21. Observed forage events and success by bald eagles, Pinto Breeding Area, Arizona, 1995.

	Prey Items							
	Fish		Mammals		Unknown		Total	
Sex	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	2	2-0	-	-	1	1-0	3	3-0
Female	-	-	1	1-0	-	-	2	2-0
Total	2	2-0	1	1-0	1	1-0	5	5-0

[1]E = Forage events observed., each number represents a forage event for an item not the number of strikes to capture it.
[2]S-U = Successful captures of prey - unsuccessful capture of prey.

Table 22. Observed prey items (by class) delivered to nest by bald eagles, Pinto Breeding Area, Arizona, 1995.

	Prey Items			
Sex	Reptiles	Mammals	Unknown	Total
Male	-	-	11	11 (40.7%)
Female	1	2	12	15 (55.6%)
Unknown	-	-	1	1 (3.7%)
Total	1 (3.7%)	2 (7.4%)	24 (88.9%)	27 (100%)

Pleasant Breeding Area

Observation period
Observation of the Pleasant BA began on 10 February and ended on 14 May. A total of 70 days were spent monitoring the eagles for 745 hours. Over 35 dawn-to-dusk days, the site was watched for 442 hours.

Eagle activity
Eagles laid eggs in cliff nest #2 between 10 and 18 January. Two eaglets hatched between 15 and 17 February. One eaglet fledged on 10 May and the other between 15 and 24 May.

Both resident eagles were in adult plumage. The adult male was marked with a blue VID band (left tarsus) and a USFWS band (right tarsus). It hatched from Horse Mesa BA in 1987 and has occupied the site since 1991. The adult female was unmarked.

Human activity
Throughout the 1995 breeding season at Lake Pleasant, human activity was recorded in two different manners: the number and compliance of watercraft approaching the buoy line marking the southern closure boundary, and human activity inside the closed area with the eagle's corresponding response.

A total of 5240 watercraft (5003 boats, 217 jet skis) were recorded approaching the buoyed closure (Table 23). Few (4.1%) of these watercraft entered the closure (209 boats - 3.9%, 8 jet-skis - 0.2%). The percentage of non-compliance, does not however, reflect the large number of observed watercraft actually entering the closure (n=217). Enforcement or agency boats were recorded entering the wildlife closure 90 times.

Watercraft numbers at the closure (tallied for each ten-day observation period) ranged from 258 to 1051 (Table 23). The numbers nearly doubled in each of the first two observation periods until peaking between 24 March and 2 April. Watercraft remained consistently high throughout the remaining ten-day periods with 977, 967, and 841 watercraft counted respectively.

Nestwatchers contacted and educated boaters by anchoring their boat near the southern buoy line during the busiest days. People who had passed into the closure explained that they thought the buoys meant "no wake" or "shallow water." Other people claimed they did not see the buoys. Most people were cooperative once contacted. Some boaters even helped enforce the closure by informing other boaters that the area was closed.

Nestwatchers recorded 442 human activities in the Pleasant BA in 1995 (Table 24). Boats (n=146), small planes (n=125), agency boats (n=90), helicopters (n=21), and jets (n=40) were

the most common activity types. Eagles were responded with a "restless," "flushed," or "left area" response on seven occasions. The behavior of the eagles often went unrecorded because the nestwatchers tried to contact boaters or read identification numbers on small planes.

More recreational boats, agency boats, and jet-skis (n=241) were recorded inside the closure (Table 24) than entering the closure (n=217; Table 23). This difference can mostly be attributed to double counting patrol boats that passed through the closure twice on the same trip. Often patrol boats traveled out-of-view upriver of the nest area for an extended time. When the boat traveled back through the closure it was counted a second time.

Boats caused eagles to respond on three occasions. A single boat approaching within 300 m of the nest caused the female to flush from its perch. Another boat entered the closure and began to fish below the nest. The female stayed at the nest but was restless. On two other occasions boats approaching the nest cliff caused eagles to "leave the area."

Helicopters and jets caused the Pleasant eagles to flush on two occasions. On 28 February, two jets flying 100-175 m (300-600 ft) above water and 100-300 m (300-1000 ft) from the nest flushed the male from its perch and caused the female to be restless at the nest. A loud noise, created by six low flying helicopters at the southern buoy line, caused an eagle to flush from its perch below the nest.

Food Habits

Pleasant eagles were observed foraging 22 times (Table 25). The male was successful in 5 of 13 attempts, the female in 4 of 8 attempts, and an unidentified adult was successful once. Prey items (by class) observed being captured were fish (n=8), birds (n=1), and unknowns (n=1).

All observed forage attempts occurred in the immediate nest area. Eagles were observed capturing prey from a rock near the water's surface at the west end of the nest cliff. Foraging also occurred from high perches on the nest cliff and a cliff just east of the nest. More frequently, eagles flew out of view up the Agua Fria River and down toward the lake. Eagles returned to the nest from both of these directions with food.

We observed the eagles return to the nest with 68 prey items (Table 26). The female delivered 18 items, the male 46, and an unknown Pleasant adult came to the nest with 4 items. Prey items identified were fish (n=46), birds (n=4), and unknowns (n=18). Prey species identified were channel catfish (n=4), bass species (n=1), carp (n=1), sunfish (n=3), unidentified fish (n=37), unidentified birds (n=4), and unknowns (n=18).

Wildlife interactions
The Pleasant bald eagles were observed interacting with other bald eagles, golden eagles, osprey, prairie falcons, red-tailed hawks, turkey vultures, common ravens, great blue herons, ringbill gulls, double-crested cormorants, raccoons, and unknown species.

At 0547, four minutes after the first eaglet fledged, the adult female interacted with a raccoon at the base of the nest cliff. She dove at the raccoon three times and made contact once. The raccoon then ran into a hole. The female remained perched near the hole, watching intently, for 22 minutes.

Management activities
A closure restricting all entry to the nest area was enacted on 15 December and removed on 15 June. The Agua Fria drainage was blocked off north and south of the nest area by buoys. The buoys were marked with the international symbol for no entry and had the words "no entry" posted on each buoy. One large buoy was marked with the words, "eagle closure."

Maricopa County Parks included the dates of the eagle closure on a small map of the lake available at the Ranger Station and at the park entrance.

Nestwatchers were asked to stay at the southern buoy line on busy days to contact the public and pass out bald eagle fliers.

Nongame Branch submitted a Heritage Proposal for Lake Pleasant Bald Eagle Management. We received an award for the 1996 field season, to pay for nestwatcher contracts, signs for the boat ramps, and brochures to place at the signs in special boxes.

Table 23. Watercraft activity and compliance at the southern buoy closure boundary, Pleasant Breeding Area, Arizona, 1995.

Date	BAB[1]	JAB	BIC	JIC	Total
February 10-19	240	9	9	-	258
February 24 - March 5	404	8	15	-	427
March 11-19	657	28	29	5	719
March 24 - April 2	980	35	36	-	1051
April 7-16	902	26	49	-	977
April 21-30	904	34	29	-	967

May 5-14	772	24	42	3	841
Total	4859	164	209	8	5240

[1]BAB=boats at buoys, JAB=jet-skis at buoys, BIC=boats inside closure, JIC=jet-skis inside closure

Table 24. Observed human activity and bald eagle behavior, Pleasant Breeding Area, Arizona, 1995.

	Eagle Behavior Toward Human Activity[1]							
Type	N	W	R	F	L	?	D-D total[2]	Total
Boater	25	51	1	1	1	67	107 (37.5%)	146 (33.0%)
Agency boats	13	40	-	-	1	36	49 (17.2%)	90 (20.4%)
Planes	21	33	-	-	-	71	90 (31.6%)	125 (28.2%)
Agency workers	-	-	-	-	1	-	0	1 (0.2%)
Helicopter	1	5	-	1	-	14	13 (4.6%)	21 (4.8%)
Jet	2	21	-	1	-	16	13 (4.6%)	40 (9.0%)
Army transport plane	1	-	-	-	-	-	1 (0.4%)	1 (0.2%)
Ultralight	1	1	-	-	-	-	1 (0.4%)	2 (0.5%)
Jet-ski	1	2	-	-	-	2	2 (0.7%)	5 (1.1%)
ORV	-	1	-	-	-	1	2 (0.7%)	2 (0.5%)
Driver	1	2	-	-	-	4	6 (2.1%)	7 (1.6%)
Hiker	1	-	-	-	-	-	0	1 (0.2%)
Angler	-	-	-	-	-	1	1 (0.4%)	1 (0.2%)
Total	67	156	1	3	3	212	285 (100%)	442 (100%)

[1]Eagle behavior, N=none, W=watched, R=restless, F=flushed,?=unknown
[2]D-D total = Observations on dawn to-dusk observation days.

Table 25. Observed forage events and success by bald eagles, Pleasant Breeding Area, Arizona, 1995.

	Prey Items							
	Fish		Birds		Unknown		Total	
Sex	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	9	4-5	1	1-0	3	0-3	13	5-8
Female	6	4-2	1	0-1	1	0-1	8	4-4
Unknown	-	-	-	-	1	1-0	1	1-0
Total	15	8-7	2	1-1	5	1-4	22	10-12

[1]E = Forage events observed., each number represents a forage event for an item not the number of strikes to capture it.
[2]S-U = Successful captures of prey - unsuccessful capture of prey.

Table 26. Observed prey items (by species) delivered to nest by bald eagles, Pleasant Breeding Area, Arizona, 1995.

	Prey Items[1]							
	Fish					Birds	Unknown	Total
Sex	CCT	BAS	CRP	SUN	UF	UB	?	
Male	3	1	-	3	26	4	9	46 (67.6%)
Female	1	-	1	-	10	-	6	18 (26.5%)
Unknown	-	-	-	-	1	-	3	4 (5.9%)
Total	4	1	1	3	37	4	18	68 (100%)

[1]Prey items: CCT=channel catfish, BAS=bass species, CRP=carp, UF=unknown fish, UM=unknown bird, ?=unknown.

76 Breeding Area

Observation period
The 76 BA was observed for 39 days totaling 393 hours between 10 February and 2 April. A total of 20 dawn to dusk days were spent watching the nest for 249 hours.

Eagle activity
The 76 eagles laid eggs in cottonwood tree nest #2 between 3 and 10 February. No eggs were known to hatch by the end of the 35 day incubation period. On 13 April, 62-69 days into incubation, we collected one whole egg (cracked) and fragments of another egg.

It is unknown why the breeding attempt failed during incubation. Possible explanations could range from a human activity that caused the eagles to flush from the nest and break the eggs to the eagles accidently breaking their own eggs. It could have been that an eaglet hatched without surviving and an infertile egg continued to be incubated. No unusual behavior or disturbance was recorded. Yet, we did receive a report about a kayaker traveling down the creek on days-off to "check on the eagles." The eagle's behavior to this reported event was unknown.

The adult male wore a silver USFWS band on its left leg and has occupied this territory since 1988. The female was in adult plumage and wore no bands. An adult female with no bands has been identified at this site since 1988.

Human activity
A total of 18 human activities were observed at the 76 BA in 1995 (Table 27). On 17 occasions, eagles either "watched" or had "no response" to gunshots (n=7), ranchers (n=2), cattle (n=2), small planes (n=1), helicopters (n=1), jets (n=1), drivers (n=1), canoe/kayaks (n=1), and agency workers (n=1). Eagles were "restless" in response to one hunter.

People inside the 76 BA closure were contacted on three occasions. Javelina hunters were discovered on 20 February in Bee Canyon after stray bullets ricocheted close to the observation point. They left the area after being informed of the closure. On 13 March, after two gunshots were heard, a vehicle entered camp with four intoxicated individuals. They claimed to be lost and were eventually escorted from the area through the southern closure gate. Soon after they left, we found that the pin for the gate's lock had been shot off. We also contacted a man on horseback from the 76 Ranch retrieving stray cattle on 17 March. He had passed within 50 m of nest #2, believing that the birds were using nest #3.

Food habits
Although the eagles failed during incubation, seven prey deliveries were observed entering the nest between 11 and 15 February and on 5 March. Six were delivered by the

male and one by the female. Prey items identified (by class) were fish (n=4), mammals (n=1), birds (n=1), and one unknown. No forage attempts were observed.

Wildlife interactions
The 76 bald eagle were observed interacting with common ravens, bald eagles, osprey, turkey vultures, red-tailed hawks, and an unknown bird.

The 76 bald eagles were observed interacting with intruding bald eagles on four occasions. One interaction occurred on 27 February with a first year juvenile. It was believed that the 76 female pirated a mammalian prey item from this bird. On 17 March, the male soared with two second year bald eagles. Later on 30 March, both the 76 male and female pursued a first year bird from the nest area. The 76 female was observed aggressively interacting with an adult bald eagle on 31 March. This interaction was highlighted by the birds locking talons five times.

Management activities
A USFS closure restricted all entry (including boating) to the nest area.

Table 27. Observed human activity and bald eagle behavior, 76 Breeding Area, Arizona, 1995.

	Eagle Behavior Toward Human Activity[1]					
Type	N	W	R	?	D-D total[2]	Total
Gunshots	2	5	-	-	7 (41.2%)	7 (38.9%)
Rancher	-	2	-	-	2 (11.8%)	2 (11.1%)
Cattle (rancher)	1	1	-	-	2 (11.8%)	2 (11.1%)
Helicopter	-	1	-	-	1 (5.9%)	1 (5.6%)
Small plane	-	1	-	-	1 (5.9%)	1 (5.6%)
Jet	-	1	-	-	1 (5.9%)	1 (5.6%)
Kayak	-	-	-	1	1 (5.9%)	1 (5.6%)
Hunter	-	-	1	-	1 (5.9%)	1 (5.6%)
Agency worker	-	1	-	-	1 (5.9%)	1 (5.6%)
Driver	-	1	-	-	0	1 (5.6%)
Total	3	13	1	1	17 (100%)	18 (100%)

[1]Eagle behavior, N=none, W=watched, R=restless, ?=unknown.
[2]D-D total = Observations on dawn-to-dusk days.

Tonto Breeding Area

Observation period
A total of 90 days consisting of 785 hours were spent observing the Tonto BA from 11 February to 28 May. There were 39 dawn to dusk days totaling 477 hours of observation. Throughout the incubation and early nestling stage, the site was monitored every day. Tonto and Pinto nestwatchers maintained a staggered schedule. The Pinto monitors watched the Tonto site on the Tonto nestwatchers' days-off.

Eagle activity
The Tonto eagles laid eggs in cottonwood nest tree #2 between 20 and 25 January. One eaglet hatched between 24 February and 1 March and fledged between 1 and 7 June.

The eaglet (69-74 days old) fell out of the nest on 8 May. It was found at the base of the nest tree perched on a log. When nestwatchers approached, it did not fly away. The adults did not feed the eaglet that day. At nightfall, the eaglet had climbed onto a higher part of the log.

We approached the eaglet on 9 May and noticed that the left wing drooped a bit. We captured the eaglet by hand, but could not detect any injuries to the wing. The young bird was noticeably thin with stress marks along the tail feathers. The bird was placed back into the nest. By the end of the day, the eaglet was hop-flapping and using both wings evenly and normally. The eaglet fledged one month later during the first week of June.

The adult male wore a blue VID band on the left leg and a silver USFWS band on the right leg. It hatched from the Horseshoe BA in 1987 and has occupied the site since 1992. The female also wore a blue VID band on the left tarsus and a silver USFWS band on the right. It hatched from the Pinal BA in 1987 and was first identified in the Tonto pair in 1993.

Human activity
The Tonto BA is located near the Roosevelt Lake/Tonto Creek confluence and is surrounded by camping, boating, hiking, hunting, and vehicular activities. A total of 347 activities were recorded throughout the 1995 breeding season representing 23 different recreation types (Table 28). The most common activities observed were: vehicles (n=123), small planes (n=82), helicopters (n=41), gunshots (n=19), ORVs (n=15) and hikers (n=10). A total of 16 activities (5%) caused the eagles to respond with either a "restless," "flushed," or "left area" behavior.

Vehicles represented just over 35 percent (n=123) of all activities recorded at the Tonto BA in 1995. Most (n=117) of these vehicles traveled along FS Road 661 toward Indian Point Campground and did not cause the eagles to respond. FS Road 661 is located out of the

eagle's view from the nest and approximately 500 m (1600 ft) away from nest #2. However, we did record eight instances of vehicles driving in the floodplain along Tonto Creek within 200 m (650 ft) of the eagle nest. The eagles responded by "watching" three of these vehicles.

One particular vehicle created a domino effect of activity after being stuck in the sand about 1 km (0.5 mi) away from the nest. After getting stranded, the owners of the vehicle were informed about the eagles in the area. Nestwatchers then used the USFS radio to contact assistance from the Gila County Sheriffs office. While waiting for help, the owner proceeded to discharge his firearms. Later that evening, another vehicle drove down the floodplain to pull-out the first. The second vehicle also got stuck. The next morning, five people were able to free the second vehicle. The following day, the first vehicle was also removed.

Small planes (n=82) and helicopters (n=41) below the 600 m (2000 ft) FAA advisory were commonly recorded in the nest area without an alarmed response by the eagles. However, the presence of an ultralight flying in the nest area caused eagles to flush and leave the nest area on 15 April. While the ultralight landed in and took-off from the corral area across the creek from the eagle nest, the birds circled and vocalized in the nest area.

Nestwatchers, determining the status of the fallen eaglet, caused the eagles to respond the most significantly. Because the eaglet could not be seen from the observation point, it was necessary for the monitors to walk directly below the nest on four occasions to check its status. Of course, capturing the eaglet and placing it back into the nest also created an extreme response by the eagles. On all of these instances the adult birds would vocalize, flush, and circle the nest area.

Eagles were also flushed once by hikers and were prevented from being flushed by photographers. On 12 February, during incubation, the eagles were observed circling the nest tree and vocalizing when two hikers were observed underneath the nest tree. When contacted, the hikers acknowledged they were aware of the nesting eagles, but were reluctant to change their activities. The hikers stayed in the area, but out of view from the eagles. On 20 May, the nestwatchers intercepted an eagle photographer and his family before they approached the nest tree. After being contacted, the group left the area without disturbing the birds.

Food habits

The Tonto eagles were observed foraging a total of 15 times between river kilometer 16.2 and 17.0 on Tonto Creek (Table 29). Nine forage attempts (7 successful) were observed by the male, 5 (4 successful) by the female, and 1 unsuccessful attempt by an unknown Tonto adult. Thirteen forage attempts were for fish, one for a bird, and one for and an unknown

item. Species identified being captured were a channel catfish and a killdeer.

The Tonto eagles were observed delivering 55 prey items to the nest (Table 30). The male delivered 30 items (54.%), the female 19 (34.%), and an unknown resident delivered 6 (10.9%). Prey items (by class) included 19 fish (34.5%), 2 mammals (3.6%), 1 reptile (1.8%), and 33 unknowns (60%). Prey species identified in the nest were largemouth bass, sucker, channel catfish, carp, spiny softshell turtle, unidentified snake, and northern flicker. After leaves grew on the nest tree, the nest was partially blocked from view, causing difficulty in identifying prey class and species.

Wildlife interactions
Tonto bald eagles were observed interacting with common ravens, bald eagles, osprey, red-tailed hawks, turkey vultures, western kingbirds, unknown birds and coyotes.

On 11 April, the Tonto eagles interacted with an osprey 4 times in 4 hours. A Tonto eagle was first observed chasing an osprey from the nest area. Soon afterwards, the osprey was spotted in Tonto Creek near the eagle nest. The male pursued the osprey, making contact with its talons. One hour later, the male was observed circling the nest tree and vocalizing. The osprey flew from out of the nest tree and was chased by the male from the nest area.

Management activities
Due to the high amount of human activity and easy accessibility to the Tonto nest, the Tonto BA was monitored every day throughout the incubation and early nestling stage. The staggered schedules of the Pinto and Tonto nestwatchers allowed us to use the Pinto monitors at the Tonto BA on the Tonto nestwatcher's days-off.

Table 28. Observed human activity and bald eagle behavior, Tonto Breeding Area, Arizona, 1995.

	Eagle behavior toward human activity[1]							
Type	N	W	R	F	L	?	D-D total	Total
Driver	110	3	-	-	-	10	78 (38.8%)	123 (35.5%)
Small planes	69	9	-	-	-	4	47 (23.4%)	82 (23.6%)
Helicopter	34	5	-	-	-	2	14 (7.0%)	41 (11.8%)
Gunshots	15	1	1	-	-	2	14 (7.0%)	19 (5.5%)
ORVs	14	1	-	-	-	-	13 (6.5%)	15 (4.3%)
Hiker	2	3	1	1	-	3	6 (3.0%)	10 (2.9%)
Boater	8	-	-	-	-	-	7 (3.5%)	8 (2.3%)
Dog (rancher)	4	2	-	-	-	1	3 (1.5%)	7 (2.0%)
Jet	5	-	-	-	-	-	0	5 (1.4%)
Angler	2	1	1	-	1	-	4 (2.0%)	5 (1.4%)
Researcher	-	-	1	2	1	-	0	4 (1.2%)
Swimmer	2	-	-	1	-	1	3 (1.5%)	4 (1.2%)
Shooter	3	-	-	-	-	1	3 (1.5%)	4 (1.2%)
Agency worker	-	-	1	2	-	-	0	3 (0.9%)
Cattle	1	2	-	-	-	-	2 (1.0%)	3 (0.9%)
Horseback rider	3	-	-	-	-	-	1 (0.5%)	3 (0.9%)
Ultralight	-	-	-	1	1	-	2 (1.0%)	2 (0.6%)
Construction	2	-	-	-	-	-	0	2 (0.6%)
Jet skier	2	-	-	-	-	-	2 (1.0%)	2 (0.6%)
Photographer	-	1	-	-	-	-	1 (0.5%)	1 (0.3%)
Tuber	-	1	-	-	-	-	1 (.5%)	1 (0.3%)
Canoe/Kayak	1	-	-	-	-	-	0	1 (0.3%)
Rancher	1	-	-	-	-	-	0	1 (0.3%)
Total	278	29	6	7	3	24	201 (100%)	347 (100%)

[1]Eagle behavior toward human activity, N=none, W=watched, R=restless, F=flush, L=left area, ?=unknown.

Table 29. Observed forage events and success by bald eagles, Tonto Breeding Area, Arizona, 1995.

	Prey Items							
	Fish		Birds		Unknown		Total	
Sex	E[1]	S-U[2]	E	S-U	E	S-U	E	S-U
Male	8	6-2	-	-	1	1-0	9	7-2
Female	4	3-1	1	1-0	-	-	5	4-1
Unknown	1	0-1	-	-	-	-	1	0-1
Total	13	9-4	1	1-0	1	1-0	15	11-4

[1]E=Forage events observed; [2]S-U=successful forage - unsuccessful attempt

Table 30. Observed prey items (by class) delivered to nest by bald eagles, Tonto Breeding Area, Arizona, 1995.

	Prey Items				
Sex	Fish	Mammals	Reptiles	Unknown	Total
Male	12	2	1	15	30 (54.5%)
Female	5	-	-	14	19 (34.5%)
Unknown	2	-	-	4	6 (10.9%)
Total	19 (34.5%)	2 (3.6%)	1 (1.8%)	33 (60.0%)	55 (100%)

Tower Breeding Area

Observation period
The Tower BA was monitored from 10 February until 2 April, for 365 observation hours over 39 days. This included 19 dawn-to-dusk days (219 hours) spent watching the nest.

Eagle activity
The eagles laid eggs in new cottonwood tree nest #7 between 26 January and 2 February. They continued to incubate past the 35-day incubation period until two infertile eggs were retrieved on 5 April. A minimum of 61 days were spent incubating the eggs.

Two eggs analyzed from a previous failed breeding attempt (1994) had implicated toxic levels of mercury (2.2 and 2.3 parts per million dry weight) as the cause for failure of this nest (Driscoll et al. in prep.). The 1995 eggs will also be examined for contaminants.

The Tower male was the same bird which has occupied the site since its reoccupancy in 1993. It hatched from the Ladders BA in 1989 and wears a purple VID band on its left leg and silver USFWS on the right. The female was an unbanded bird in adult plumage.

Human activity
Nestwatchers recorded 716 human activities in just two months of observation at Tower BA (Table 31). Yet, only 1 percent (n=8) of the activities caused an eagle to react stronger than "watched." Almost 90 percent of all activities were cars parked at Sycamore Creek trailhead parking lot (n=267), small planes (n=162), vehicles (local residents) traveling to the river (n=76), railroad trains (n=72), and rail cars on the railroad tracks (n=55). Nearly 57 percent (n=407) of all recorded activities occurred on weekends.

Although 267 vehicles were counted at the Sycamore Creek trailhead parking lot, none caused an eagle to respond. This lot is nearly 1 km from the nest, out of view from the river, and rarely audible from the nest area. However, nestwatchers made note of the vehicles to document visitation to the eagle area. Many people using these vehicles were probably recorded engaging in other activities near the eagles, such as hiking, canoeing, and camping. We also recorded 76 instances of local residents driving the road down to their ranches along the river. These moving vehicles caused the eagles respond with a "watched" behavior on three occasions.

The Verde River Canyon Train (n=72) and its rail cars (n=55) were present throughout the observation period. Although the train travels along the opposite side of the river from the nest tree, it does travel next to a frequent tree perch. When perched on this tree, eagles responded twice in a "restless" manner as the train passed by. More commonly though, eagles simply "watched" railroad activity. The watched behavior was recorded 46 times

when railroad trains and rail cars traveled through the breeding area.

One group of hikers typified the lack of knowledge some people have about wildlife. On the first day of observation, we contacted a group of people entering the eagle area holding a camera. They described how they were in the area earlier in the week and the eagles flew over, "talking to them." They then decided to come back to the area to take pictures. Clearly, they were unaware that the eagles were distressed and vocalizing in defense of the nest. This interaction is a classic example of the why the Nestwatch Program exists and its necessity in high use areas.
A total of 48 groups of hikers were recorded in 1995 at the Tower BA. Our observation point was placed so we could intercept all people walking toward the nest area. We brought 86 people from 38 groups to see the eagles through the spotting scope and inform them about the birds and eagle ecology. The response by most people was favorable.

Food Habits
Because the breeding attempt failed during the incubation period only one prey delivery was observed. During the sixth week of incubation, the male delivered a smallmouth bass to the nest.

The Tower eagles were only observed capturing prey on one occasion. The adult male flew to a shallow rocky section of the river below the nest and ate what appeared to be a fish. The eagles commonly flew out-of-view downriver from the nest area and twice were found at Peck's Lake. It is likely that foraging occurred near these locations.

Wildlife interactions
The Tower eagles were observed interacting with wildlife on two occasions. On 19 March, the male soared with a near-adult and adult bald eagle over the Sycamore Creek area and on 1 April the male eagle drove a great blue heron to the ground.

Management activities
The Sedona Ranger District of the Prescott National Forest renewed the closure order for the Tower BA restricting all access to the nest area for the 1995 breeding season.

The Sedona Ranger District provided a trailer for the nestwatchers to live in at the breeding area. This trailer was parked along the road which travels along the cliff above the eagle nest. The trailer helped restrict access to people that ignored posted signs.

The Sedona Ranger District posted a large wooden sign along the east bank upriver of the eagle nest about the eagle closure.

Nestwatchers posted smaller "Sensitive Eagle Habitat" signs provided by AGFD at

strategic places along trails near the nest area.

Table 31. Observed human activity and bald eagle behavior, Tower Breeding Area, Arizona, 1995.

	Eagle behavior toward human activity[1]						
Type	N	W	R	F	?	D-D total	Total
Vehicles at Sycamore Creek parking lot	267	-	-	-	-	170 (41.9%)	267 (37.3%)
Small planes	90	14	1	-	57	93 (22.9%)	162 (22.6%)
Vehicles on road to river	52	3	-	-	21	45 (11.1%)	76 (10.6%)
Train	23	25	3	-	21	39 (9.6%)	72 (10.1%)
RR vehicles on tracks	21	21	-	-	13	17 (4.3%)	55 (7.8%)
Hikers	39	1	-	1	7	22 (5.4%)	48 (6.7%)
Canoes/Kayaks	3	6	-	1	1	8 (2.0%)	11 (1.5%)
Agency workers	5	-	-	-	3	3 (0.7%)	8 (1.1%)
Helicopters	2	5	1	-	-	4 (1.0%)	8 (1.1%)
Horseback riders	1	1	-	-	1	3 (0.7%)	3 (0.4%)
Researchers	-	2	-	1	-	1 (0.2%)	3 (0.4%)
ORVs	1	-	-	-	1	0	2 (0.3%)
Campers	0	-	-	-	1	1 (0.2%)	1 (0.1%)
Total	504	78	5	3	126	406 (100%)	716 (100%)

[1]Eagle behavior toward human activity, N=none, W=watched, R=restless, F=flush, ?=unknown.

LITERATURE CITED

Beatty, G.L. 1992. 1992 Arizona bald eagle winter count. Nongame and Endangered Wildlife Program Technical Report. Arizona Game and Fish Department, Phoenix, Arizona.

Beatty, G.L. 1993. Arizona Bald Eagle Nestwatch Program Summary Report 1991-1992. Nongame and Endangered Wildlife Program Technical Report. Arizona Game and Fish Department, Phoenix, Arizona.

Beatty, G.L. and J.T. Driscoll. 1994. Arizona Bald Eagle Nestwatch Program Summary Report. Nongame and Endangered Wildlife Program Technical Report 30. Arizona Game and Fish Department, Phoenix, Arizona.

Beatty, G.L., J.T. Driscoll, and M.C. Siemens. 1995. Arizona Bald Eagle Nestwatch: 1994 Program Summary Report. Nongame and Endangered Wildlife Program Technical Report Number 72. Arizona Game and Fish Department, Phoenix, Arizona.

Brown D.E. (ed.). 1982. Biotic communities of the American Southwest - United States and Mexico. University of Arizona. Desert Plants 4:1-342.

Driscoll, J.T. and G.L. Beatty. in prep. Discoveries from bald eagle nest climbs 1993-1995. Nongame and Endangered Wildlife Program Technical Report. Arizona Game and Fish Department.

Hunt, W.G., D.E. Driscoll, E.W. Bianchi, and R.E. Jackman. 1992. Ecology of Bald Eagles in Arizona. Volumes A-F. Report to U.S. Bureau of Reclamation, Contract 6-CS-30-04470. Biosystems Analysis, Inc., Santa Cruz, CA.

Merriam, C.H. 1898. Life-zones and crop-zones of the United States. USDA, Division of Biological Survey.

Postupalsky, S. 1974. Raptor reproductive success: some problems with methods, criteria and terminology. *in* F.N. Hammerstrom, B.E. Harrell and R.R. Olendorff, eds. Management of Raptors. Proceedings of the Conference on Raptor Conservation techniques. Raptor Research Report 2:21-31.

U.S. Fish and Wildlife Service. 1982. Bald eagle recovery plan (southwestern population). U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

U.S. Fish and Wildlife Service. 1995. Endangered and Threatened Species: Bald Eagle

Reclassification; Final Rule. Federal Register. Volume 60, No. 133. Department of the Interior, Washington, D.C.

APPENDIX: EDUCATIONAL MATERIAL DISTRIBUTED BY NESTWATCHERS

posting activity on the lake.
Protection Act). Arizona Bald Eagle Nestwatchers are on site monitoring the eagles and
Endangered Species Act, The Migratory Bird Treaty Act and the Bald and Golden Eagle
to adhere to this closure and disturbing the eagles is in violation of Federal Law (The
A map is on the opposite end of this flier to assist you with avoiding this area. Failure

SHAPE OF A "U." PLEASE PAY ATTENTION.
VEGETATION. THE BUOY LINE IS FORMED IN THE
OBSERVE DUE TO FLOATING LOGS OR DROWNED
THE LAKE. SOME BUOYS MAY BE DIFFICULT TO
LAKE NEAR WHERE THE BILL WILLIAMS RIVER ENTERS
AT THE UPPER OR "NORTHEASTERN END" OF THE
BALD EAGLES BY OBSERVING THE "NO ENTRY" BUOYS
PLEASE CONTRIBUTE TO THE SUCCESS OF ARIZONA

BALD EAGLES

ENTRY TO PROTECT NESTING
OF ALAMO LAKE IS CLOSED TO ALL
A SMALL PORTION OF THE UPPER END

Effective 1/92 to 6/30/92

INFORMATION

LAKE CLOSURE

Figure 2. Lake Pleasant bald eagle information.

ATTENTION

LUNA LAKE BALD EAGLES

NEED YOUR HELP !!

The U.S. Forest Service and The Arizona Game and Fish Department and the other contributing members of the Coconino-Tonto Bald Eagle Management Committee (U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, Bureau of Indian Affairs, Salt River Project, Bureau of Land Management, Fort McDowell and Salt River Indian Communities and the White Mountain and San Carlos Apache Tribes) are seeking the assistance of the public to help with our bald eagle management efforts at Luna Lake.

The following describes the significance of this breeding pair and how you can help **the first known pair of bald eagles breeding in the White Mountains!**

HOW CAN YOU HELP?

1. **Keep your distance from the nest! A 600 foot radius "No entry zone" around the nest** should be observed at all times. Signs along the paved wire fence west of "Group Site A" campground will help you keep from disrupting the pair. If you do approach too close, eagles will circle and vocalize. By keeping your distance you will allow the adults to deliver food and give the young the untimely if needs to grow and eventually fly. You will also keep the adult eagles from spending additional energy by having to pay attention to intruders. A map on the opposite side of this flier will help you plan your activities so not to impact the eagles. Arizona Bald Eagle Nestwatchers are on site to help protect the eagles and educate the public.

2. Because the eagles do almost all their hunting on Luna Lake they are very easy to see. But because Luna Lake is so small, the eagles need all the opportunities available to them to capture prey. **Avoid approaching within 500 feet of eagles perched away from the nest.** If you use binoculars and watch from the post ramp, the eagles will often but on a pretty good show! Coots are a favorite prey item.

3. **Anglers - beware of discarded monofilament along the shore and use the proper test fishing line.** Two eagles have died in Arizona from being tangled in monofilament and 17 Arizona bald eagle territories have had fishing tackle and\or monofilament in the nest. Already we have removed dozens monofilament from the Luna Lake nest. Monofilament and fishing tackle can entet the nest from an eagle taking a hooked fish that has broken the line and died or by picking up discarded fishing line as nest material.

THE FIRST KNOWN BREEDING PAIR

Wintering bald eagles are frequently observed throughout the White Mountains from late fall to early spring, but these eagles are the first known breeding pair seen from the central Arizona uplands. Nesting osprey, a similar looking bird that also eats fish and nests in conspicuous cavity site often mistaken for bald eagles. In fact, Luna Lake eagles took over a nest used previously by osprey. There are only 30 known pairs of eagles in Arizona in 1995. From these pairs, only 25 nestlings have been produced. We hope all will live to take their first flight.

SIGNIFICANCE OF THIS PAIR

Nest tree nest, eagles are often sensitive to the presence of human activity which may lead to reduced success of the breeding effort or failure. Along the Salt and Verde rivers near Phoenix, high levels of recreation and impacts from development threaten the success of nesting eagles. Eagles exploiting the lakes and rivers of the White Mountains may add genetic diversity to Arizona's small population of eagles. Continued success of the Luna Lake eagles, their offspring and other bald eagles in the White Mountains will help lead to the downlisting of the bird in the Southwest. The eagle's continued success will hinge largely on the public's help.

Figure 3. Luna Lake bald eagle information.