ARIZONA BALD EAGLE NESTWATCH PROGRAM: 1994-1995 MANAGEMENT RECOMMENDATIONS

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INTRODUCTION

Many Arizona bald eagle breeding areas (BAs) are subject to human activities that might affect breeding success. Consequently, as the breeding population becomes better known, the demand for progressive management increases. 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 BAs were discovered, interagency coordination also 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. The primary participants include: Arizona Game and Fish Department (AGFD), Arizona State Parks (ASP), Army Corps of Engineers (ACOE), Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), Bureau of Reclamation (USBR), Fort McDowell Indian Community (FMIC), Maricopa County Parks (MCP), Salt River Pima Indian Community (SRPIC), Salt River Project (SRP), San Carlos Apache Indian Tribe (SCAT), U.S. Fish and Wildlife Service (USFWS), USFS, and White Mountain Apache Tribe (WMAT).

In 1986, the USFWS assumed coordination responsibility for the SWBEMC's ABENWP and expanded its scope. The coordination lead was passed to AGFD in 1991. The ABENWP now 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 gain valuable information and/or rescue birds from life threatening situations.

This report describes specific management recommendations for bald eagle breeding sites monitored in 1994 and 1995. Following each recommendation are the lead agency and its primary cooperators for that issue. Listing these agencies is intended to promote discussion and appropriate action of these agencies. Individual site reports

(on file at AGFD) completed by nestwatchers were used to help compile these recommendations. Summary reports for AGFD's bald eagle management activities during the 1994 and 1995 breeding seasons were compiled by Beatty et al. (1995a, 1995b).

STUDY AREA

In 1994 and 1995, ABENWP personnel monitored bald eagle BAs along selected river and stream drainages, and around reservoirs throughout Arizona (Fig. 1). With the exception of the Luna BA, 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 paloverde (*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*).

BREEDING AREAS

The following bald eagle BAs were monitored through the ABENWP in 1994 and 1995. Recommendations were developed from individual site reports written by nestwatchers at the end of the season (AGFD files) and our knowledge and experience of these sites. These recommendations are by no means an exhaustive list of items which could benefit breeding bald eagles and bald eagle habitat. However, they are the most obvious and realistic goals that primarily center on habitat improvement,

management, and education.


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

Figure 1. Arizona 1995 bald eagle breeding areas.

Alamo Breeding Area

1.Continue early nestwatch activities (AGFD - ACOE, BLM, ASP).

2.Place the Arizona bald eagle display and brochures at the Alamo State Park Visitors Center to educate park visitors (AGFD - ASP).

3.Place signs at strategic locations to inform boaters and hikers of nesting bald eagles should they be able to gain access to a nest (AGFD - ASP, ACOE).

4.Manage for regeneration of cottonwoods and willows from the north end of the lake to the confluence of the Santa Maria and Big Sandy rivers. Consider a cottonwood / willow pole planting project and / or a strategy to promote growth of existing young trees. Control or eradication of salt cedar should be considered, although these non-native plants protect the nest snags from some terrestrial disturbances.

The question of whether limited or diminishing available nest trees close to the lake justifies construction of artificial nest structures may now be moot. Because the eagles built cliff nest #4, there is a nest in a relatively permanent location free of many human activities. However, this nest does not reduce the need to improve riparian health at the north end and upriver of Alamo Lake (AGFD - BLM, ACOE, ASP).

5.Develop a plan to close an area surrounding any Alamo Lake nest tree that becomes accessible by boat. At higher lake levels, nest #2 can easily be approached by boat (AGFD - ASP, ACOE).

6.Develop funding from the ACOE for monitoring of Alamo Lake to fulfill Section 7 obligations for potential inundation of future nests (ACOE - USFWS, AGFD).

7.Continue working with Luke Air Force Base to redirect low-level military jet flights away from Alamo Lake (AGFD - LAFB, BLM, ASP).

8.As inundated snags begin to fall, a lack of hunting perches may limit eagle success on Alamo Lake. At regularly maintained lake levels, the Ive's Wash and the Alamo eagles use the small northeastern (upper) section of the lake for foraging. As the cottonwood snags fall, the upper end of the lake may become too small for two eagle pairs to partition the resource. Because these perches have proven to be a integral component of the eagles' success at normal lake levels, artificial perches in or around the lake should benefit the eagles. It may be prudent to place a few poles at a time to determine their effectiveness (AGFD - ACOE, BLM, ASP).

9.Coordinate agency efforts through committees and management plans to maintain Alamo Lake at a water level which maximizes foraging area for the eagles, yet does not threaten the success of the Alamo eagles with nest inundation (ACOE - AGFD - USFWS, ASP, BLM).

Bartlett Breeding Area

1.Re-sign the boundaries of the closure along the river. The 1993 floods destroyed signs informing the public about the closure (USFS - AGFD).

a.Sign the southern boundary at Needle Rock to discourage vehicles from traveling upriver.

b.Sign along the river near nests #1 and #2 to discourage people from stopping in boats or in cars below the nest.

c.Sign the northern boundary of the closure along the river. The previous sign was lost in the 1993 floods.

d.Erect a box at closure boundaries with brochures about bald eagles.

2.Due to increased recreation later in the breeding season, have everyday nestwatch monitoring begin in April (AGFD - USFS).

Cibecue Breeding Area

1.Should eagles nest in cliff nest #3, the site should be monitored and the road (leading to the Salt Banks) closure established by the White Mountain Apache Game and Fish Department (WMAGFD) should be re-established (WMAGFD).

2.Eagles using nest #2 (low on the cliff and directly above the main dirt road through the canyon) are more susceptible to disturbance from human activity. Access to this section of road is blocked during times of high river flows by Cibecue Creek. However, access can normally be gained in March, which coincides with the beginning of boating season. Restricting this road to official or tribal use would lessen the impact to the eagles' breeding attempt (WMAGFD).

3.Continue nestwatch activities (AGFD - WMAGFD).

Cliff Breeding Area

1.The Cliff eagles seem to suffer from either an inability to acquire food or a depleted accessible food source within the territory. The following list presents justification for our conclusions.

a.The eagles have only fledged young in two years (since 1984).

b.Eaglets were produced in three other seasons, but died soon after hatching.

c.Water releases from Horseshoe Dam are erratic during the breeding season, possibly affecting the eagles' ability to effectively forage due to increased flows, water depth, and turbidity.

d.In 1994, the male was observed attempting to steal food from the nest and ate the dead nestling.

e.Recreation below Horseshoe Dam is fairly constant throughout the breeding season, potentially affecting the bird's ability to forage successfully.

Attempt to discover why this territory does not produce young and follow-up with appropriate management procedures to maximize productivity from this BA (AGFD - USFS, SRP, USBR, USFWS).

2.Resign the northern boundary of the seasonal closure and erect a small box with bald eagle brochures (USFS - AGFD).

3.Rebuild the fence destroyed by the flooding of 1995. Not only did this fence help protect the nest area from disturbance, but it also provided protection for riparian habitat. Prior to the fence, ATVs commonly drove along the river destroying habitat (USFS - AGFD).

4.Continue nestwatch activities (AGFD - USFS).

Coolidge Breeding Area

1.Continue the boating closure along the Agua Fria River until a permit system and biological consultation with the USFWS can be completed (BLM-SCAT-USFWS-AGFD).

2.Close road access at the BLM - SCAT boundary fence to non-tribal members (BLM-SCAT).

3.Sign the gate dividing BLM - SCAT boundary with "Sensitive Bald Eagle Habitat" signs (BLM-SCAT).

4.Inform the Central Arizona Paddlers Club of the boating closure (BLM-AGFD-SCAT).

5.Develop funding for nest monitoring from the SCAT (AGFD-SCAT).

6.Continue nestwatch activities at the Coolidge BA as a secondary site (AGFD - SCAT - BLM).

Fort McDowell Breeding Area

1. Nesting activities are most threatened by terrestrial activities. The grove of cottonwood trees where nest #12 (toppled in 1995) was located is a favorite place to camp, picnic and fish by non-tribal members. Should eagles rebuild a nest in this location, non-tribal members should be restricted from this area (FMIC).

a. Non-tribal recreationists have ignored nestwatchers instructions to prevent disturbing the eagles. In some instances, this dilemma was compounded because of a language barrier with Spanish speaking individuals. These disturbances have resulted, in some cases, with the eagles flushing from the eggs.
b. Gunfire and intoxicated individuals have threatened the safety of the eagles and nestwatchers.

2. Should a nest be built in the area of nest #12, the narrow road leading to the river near nest #12 should be blocked off. Signs, printed in English and Spanish, should be placed at the barrier blocking the river access (FMIC).

3. Riparian vegetation is being lost without regeneration. Cottonwood trees are dying and mesquite is being cut. Cattle grazing is restricting the growth of new plants. Existing plants were hurt further in 1995 when water releases from Bartlett Dam, in excess of 60,000 cubic feet per second, toppled trees and drowned vegetation. A plan to protect and enhance the health of the riparian habitat along the Verde River should be established and implemented (FMIC - USBR, USFWS, AGFD).

4. An elevated mercury level was found in the addled egg collected in 1994. Continue to investigate the heavy metal and organochlorine content of failed eggs and the source of mercury (AGFD - USFWS, FMIC, USBR).

5. Continue nestwatch activities (AGFD - FMIC).

Ive's Wash Breeding Area

1. Should eagles rebuild a nest in the Woody's Cove tree snag, install a buoyed closure. If a nest in the snag is rebuilt and eagles use a nest other than the Woody's Cove snag, retain the buoyed closure until the eaglets have hatched or until the nest has failed and there is no possibility for a second clutch (AGFD - ASP, ACOE).

2. If eagles continue to use nest #3 below Alamo Dam and the river remains a natural barrier, periodic monitoring by nestwatchers will be sufficient to determine the eagles' progress. However, problems at the nest requiring intervention would most likely go undetected (AGFD - ASP, BLM, ACOE).

3.Continue to restrict the discharge of firearms in the Bill Williams Canyon below Alamo Dam (AGFD - ASP, BLM).

Ladders Breeding Area

1.In 1994 nearly 40 percent of all boat groups entering the Ladders BA disembarked within the closure boundaries. Contacted boaters claimed ignorance of the length or timing of the closure. Although a closure order with this information has been posted at "the Falls," it may be prudent to (USFS - AGFD):

a.Display a larger sign with closure dates.

b.Indicate that a sign will inform boaters when the "no-stop" zone has passed.

c.Post a map with the sign showing obvious landmarks: Chasm Creek, Sycamore Canyon.

d.Post signs at regular disembarking areas such as the Chasm Creek / Verde River.

2.Continue nestwatch activities (AGFD - USFS).

3.Continue Audubon monitoring on nestwatchers' days-off. Prior to their assistance, a meeting with the USFS, nestwatchers, and Audubon volunteers should describe important guidelines such as number of monitors and observation points to use (USFS - AGFD).

Luna Breeding Area

1.The Luna BA is in an odd location (for Arizona), with a seemingly unpredictable and limited food source. However, since the birds produced young in 1994 and 1995, agencies need to discuss and implement management measures addressing lake levels, educational displays, fish stocking schedules, closure boundaries, recreational use, and campground use (USFS - AGFD - USFWS).

2.Continue to restrict access to campgrounds for the bulk of the breeding season. Keep Group Site A closed through fledging and the remaining campgrounds closed into May. The campsite closure of Group A creates an effective "buffer zone" beneficial to the bird's success at ponderosa pine tree nest #1 (USFS).

3.Continue nestwatch activities. Monitoring and education are paramount because of the large amount of recreation that this lake receives and the accessible location of the nest. A permanent educational display near the campgrounds and / or near the parking is necessary (AGFD - USFS).

4.Develop funding from Apache-Sitgreaves National Forest for nest monitors (USFS - AGFD).

5.Post an educational display describing the effects of discarded monofilament on eagles. In 1994 and 1995 monofilament was found in the nest. Because the lake receives heavy fishing pressure and the eagles forage primarily on the lake, angler education is important. In the interim, this issue should continue to be presented in educational fliers (USFS - AGFD).

6.Continue fish stocking and waterfowl management activities. These prey items (especially American coots and rainbow trout) are crucial to the eagles' breeding success. Early in the breeding season, eagles forage on waterfowl, particularly American coots. In May, when fish were stocked and caught by anglers, eagles were regularly observed capturing carrion and live fish (AGFD - USFS).

7.Because of Luna Lake's small size (154 acres and a mean of 8 feet deep) and its high recreational use by shoreline and boating anglers, the lake should be maintained for maximum storage capacity to provide a sufficient and consistent food base for the eagles. Water rights are held in the town of Luna, New Mexico for agricultural purposes. This has resulted in the lake being drawn down in late spring and early summer to 50 to 75 percent of its maximum capacity (J. Copeland pers. comm.).

New Mexico Game and Fish Department (NMGFD), USFS-Alpine Ranger District, AGFD Region II, and USFWS-Ecological Services (in Phoenix) should discuss strategies for maintaining a maximum lake level for Luna Lake. Water levels for 1994 and 1995 have been sufficient for the eagles to succeed, but precipitation was above normal during that period. During droughts, the lake could be drawn down to a level that would impact the quality of forage available and the birds' ability to capture it.

Drawing the lake down to a small size may be detrimental to breeding and possibly to existence of the territory. Eagles will not have a large enough food base in a reduced lake size. This, in conjunction with an increase in recreation on the lake in late spring and summer, may surpass the eagle's tolerance for human activity.

Eagles have been found to forage on Luna Lake almost exclusively during the breeding season. Early season captures have been focused almost entirely on American coots. Soon after the lake is stocked with trout, the birds switch to a steady diet of fish. Forage locations for fish have been primarily restricted to the wildlife closure on the west side of the lake (where no boats or hikers are permitted).

Lake draw-downs will impact the eagle's foraging time for waterfowl. A higher level of human activity in a smaller lake will not allow eagles to spend the 10 to 30 minutes required to catch an American coot. Because adult eagles do not migrate

from their BAs in Arizona, the need for food year-round (not only during the breeding season) is an important part of the bird's ecology. It may be necessary to set a maximum number for boats on Luna Lake. This number may change, depending on the size of the lake (USFS - AGFD - USFWS - NMGFD).

8.Overgrowth of aquatic plants is detrimental to water chemistry and can result in massive fish die-offs. AGFD removed plants in early summer at the west end of the lake with a large weed-removing boat. This event should not occur at sensitive times of the breeding season. Should the job require more than two consecutive days, we suggest a break of at least one week, so the eagles are not disturbed for an extended time and thus prevented from capturing food and/or feeding young (AGFD - USFS).

9.Logging has not previously been an issue with nesting Arizona bald eagles. However, timber along the north end of Luna Lake is important for perching, roosting, hunting, and nesting. It would be prudent to consult experienced personnel and documents that provide timber management guidelines for bald eagles. Clearly though, any timber harvest must be evaluated and allow for maximum presence of large trees and snags for perching, hunting, and nesting. Any harvest that does occur, should happen outside the bald eagle breeding season (USFS - USFWS, AGFD).

Pinal Breeding Area

1.If eagles are found using nest #1, as they were in 1994, the best tool for management may be monitoring by nestwatchers. However, this site is a low priority for monitoring and should be used as a secondary site of importance (AGFD - USFS).

2.To educate anglers about the hazards of monofilament to eagles and wildlife, it would be beneficial to sign the diversion dam at the Salt River inflow to Roosevelt Lake. The consistent presence of monofilament and fishing tackle in the Pinal nests and frequent use of the diversion dam area by anglers and foraging eagles would make this a prime location for educational material (USFS - AGFD, USBR).

Pinto Breeding Area

1.Until Roosevelt Lake rises, the Pinto BA's only management needs are (USFS - AGFD):
a.Restrict access to roads leading to the nest area.
b.Continue nestwatch activities.

2.Once the lake rises, more extensive monitoring and management will be needed

(USFS -USBR, AGFD).

a.Buoys or a floating berm will be needed to restrict boat access to the nest area. Depending on the water level, surrounding vegetation may provide a natural barrier.

b.Nestwatchers will need a boat to contact boaters near the nest area.

c.Campgrounds have become more developed near areas of the Salt River inflow to Roosevelt. Education and signs near these areas will be needed to inform and educate recreationists.

d.The increased lake level will eventually kill the Pinto nest trees. Because eagles in Arizona do nest in snags, should these trees / snags remain standing, eagles will probably continue to use them for nesting. With the exception of a few trees that may survive future inundations, there are no immediate alternative nest trees for these birds to use once the existing trees / snags fall.

1.It may be prudent to plant cottonwood trees in a future conservation area set aside from recreation areas.

2.Although artificial nest structures are discouraged because they do not solve the bigger problem of habitat degradation, the Pinto BA may be one site where there are few alternatives.

3.Similar to the Tonto BA, plans for the future management of the Pinto nest area and the responsibilities and duties of the managing agencies needs to be defined prior to operation of Roosevelt Lake at the higher lake level (USFS - AGFD - USBR - USFWS - SRP).

Pleasant Breeding Area

1.Continue to place a buoyed closure across the Agua Fria arm at northern and southern ends of the nest area. The high amount of recreation that Lake Pleasant receives due to its proximity to Phoenix threatens the success of this nest. More than 10,000 watercraft were recorded approaching the buoyed closure in 1994 and 1995 (AGFD - MCP, USBR).

a.A new cliff nest (#3) upriver of the current nest was found in 1995. Should eagles use a nest in this location, buoys should be moved upriver and placed 0.25 to 0.5 mile north of the nest at the narrowest location in the channel.

2.Aggressively educate the public about the closure and bald eagles at Pleasant BA (AGFD - MCP, USBR).

a.Sign all boat ramps with eagle closure signs.

a.Distribute pamphlets.

b.Distribute information through radio, television and print media.

3.Managing agencies have expressed interest in extending the closure dates to either earlier (December 1) or later (after the July 4 holiday) in the breeding season. The

current closure lasts annually from December 15 to June 15.

After monitoring the timing of incubation, fledging and the level of human activity over the past two seasons, we have better knowledge to set more accurate and effective closure dates. Fledging has occurred from the last week in May to the first week in June.

Because the newly fledged young are completely dependent on the adult birds for food, disruption of feeding events by boats may be deleterious to the eaglets. Fledglings spend approximately one month in their natal area prior to migration (Hunt et al. 1992). The potential of continued disturbance is likely, due to the abundance of boats on the lake and the lack of nestwatchers after fledging.

USBR personnel have observed boats below the nest during the initiation of courtship early in the nesting season prior to the closure being enacted. Continued disruption during this period may cause eagles not to nest at all.

Clearly, extending the closure earlier and later favors the eagles. However concern for the boating and recreating public does not favor extending the closure at both ends of the season. Which is most prudent? Closures throughout the state have occurred from December 15 to June 15 without any noticeable detriment to the eagles. Eagles have been successful at Pleasant BA the last two seasons. Keeping the closure in place for the existing dates should continue to protect the nesting attempt and newly fledged young (AGFD - MCP, USBR).

4.Vehicles may become more of a management difficulty in the future as more park roads are paved and the public begins to explore the north end of the lake (AGFD -MCP, USBR).

a.Sign the road closed entering the nest area.

b.If vehicles become a problem, enhance the closure with a fence or blockade to emphasize that the road is closed to the public during the breeding season.

5.Monitor the site with nestwatchers and supply them with radios to communicate with park enforcement. Contact with the public at the buoy line will be essential to habituate recreationists to the annual nature of the closure (AGFD - USBR, MCP).

Redmond Breeding Area

1.Ten years of monitoring by AGFD's Native Fish Program (K. Young pers. comm.) indicate there is a lack of large native fish on the upper Salt River. Future fish management activities focusing on the diversity of native species and size class will be beneficial to eagles. In fact, the inability of eagles to acquire fish at critical times of the nesting cycle may be a limiting factor for success at the Redmond

BA and other territories on the upper Salt River (AGFD - USFS).

2.Transplant native suckers from the Salt River Project (SRP) canals into the upper Salt River above the Diversion Dam to increase the diversity of fish and to provide potential forage for bald eagles (AGFD - USBR, SRP, USFS).

3.Continue nestwatch activities. However, due to the relative remoteness of the site and limited funding, we should monitor BAs in more accessible locations first and watch Redmond only if other sites fail (AGFD - USFS).

76 Breeding Area

1.The road entering the closure is slowly becoming less passable each season. Only a four-wheel drive vehicle with high clearance can climb the hill leading into the nest area. Wet weather leaves this road impassable to some four-wheel drive vehicles. It may be best not to improve this road and let it only all-terrain vehicles have access (USFS).

2.The 76 BA is situated between Gisela and Jake's Corner. Although access to the site is difficult, visitors have entered at unmarked areas of the closure. Annually, javelina season brings wandering hunters into the nest area. Signs should be placed along barbed wire fences near the closure boundaries, on less used roads and at other advantageous locations (USFS - AGFD).

3.Jake's Corner and Punkin Center are stopping points for many residents and recreationists along Tonto Creek. Arizona bald eagle and ABENWP brochures displayed at these locations will help to educate the public (AGFD - USFS).

4.Similar to the two other BAs (Sheep, Tonto) on Tonto Creek, cottonwood trees appear to be the only location to place nests in the presently known nest areas. As a result, the health of the riparian system along this drainage is vital for the continued existence of bald eagles. The grazing of cattle appears to represent the greatest threat. When public lands grazing permits are renewed, the condition of the riparian habitat and timing of livestock round-up activities near nests during sensitive times of the birds breeding cycle must be considered (USFS - USBR, AGFD).

5.Continue nestwatch activities. Compared to other, more accessible BAs, the 76 site is more remote and difficult to access easily by the common recreationist. But once the BA is entered, eagles are disturbed easily by human activity near the tree nest. At a minimum, these birds should be monitored through the incubation and early nestling period (AGFD - USFS).

Sheep Breeding Area

1.The widening of Highway 188 and the increased water storage and facilities planned for Roosevelt Lake will bring more vehicles, recreation, and possibly residences and businesses near the Sheep BA (USFS - AGFD).

a.Planning around the eagles and potential alternate nests in the area would be prudent (similar to the Bureau of Reclamation (USBR) land purchase along Tonto Creek).

b.Consider restricting access to USFS road 270 during the breeding season for protection of the eagles and nestwatchers. Intoxicated individuals with weapons were frequently observed in this area.

c.A closure similar to what is in place at the Bartlett and Cliff BAs would be best for these eagles. Unfortunately, the topography does not have any confined access points into the nest area to construct an effective barrier. Continued monitoring through the ABENWP may be the best way to protect eagles at Sheep.

2.Habitat improvement along Tonto Creek will benefit all animal species and local residents (USFS - AGFD, USBR).

a.The Tonto Creek Riparian Unit has increased the restrictions on cattle grazing along the river. In turn this will hopefully result in more riparian vegetation.

b.Increased riparian vegetation will stabilize the creek banks, causing less widespread flooding and a healthier river ecosystem.

c.The number of potential nest trees in the Sheep BA seems to be few and those that do remain appear in poor condition. A cottonwood tree pole planting project would help speed up the process of raising large trees.

Tonto Breeding Area

1.Managing agencies need to decide what is going to be done and when regarding recreational facilities, closure boundaries, and barriers. Resolving these issues will only result in better planning toward managing the eagles. A management plan, with responsibilities clearly defined, needs to be completed well before Roosevelt Dam is ready to store more water (USFS - USBR, AGFD, USFWS, SRP).

2.If the proposed developments and campgrounds are built, strict management procedures should be enacted (USFS - AGFD, USBR).

a.Indian Point Campground and Cline Terrace Archaeological Site should be closed throughout the breeding season as long as breeding occurs.

b.Tonto Creek, between A+ Road and Roosevelt Lake should be closed to all boating activity when the water is high enough for boats to approach the nest. A solid floating berm would be the best choice of obstacles.

c.If these recreational facilities are constructed, a public viewing station may be a beneficial management tool.

1.The viewing station should be heavily promoted and signed to show people the

benefits of the eagles and the closure.
2.The station should be able to operate without the presence of agency personnel.
3.Special programs could be given at the station educating the public on bald eagles and other wildlife or culture values at Roosevelt.
4."Pay-per-view" scopes could be placed on site with the money distributed to the ABENWP and other wildlife programs.

3.Continue nestwatch activities and everyday monitoring of the Tonto BA. (AGFD - USFS, USBR)

Tower Breeding Area

1.Because the USFS two-track road above nest #1 is within 150 feet from the edge of the cliff, cars using this road will disturb eagles using this nest. It is necessary to install a barrier at the road's entrance near the Sycamore Creek parking lot and strategically post signs for vehicles and pedestrians.

With nestwatchers present, the ability exists to contact every individual attempting to enter the closure exists. However, on the monitors' days-off, little deters people from traveling this road and thus disturbing the eagles. Should this occur during incubation or when small young are in nest #1, adult eagles may leave the eggs/eaglets uncovered causing them to die or be susceptible to predators. If near fledging eagles are disturbed, they may be scared from the nest prematurely and die (USFS - AGFD).

2.The land around nest #6 should be included in an alternate closure plan or in the existing closure boundaries for nest #1. The two-track road traveling above nest #1 ends at the river bottom below nest #6. This road is the source for most activity affecting these nests. Any alternate plan should include closing access to this road during the breeding season (USFS - AGFD).

3.Toxic levels (2.2 and 2.3 parts per million) of mercury were found in the unhatched eggs collected from this site in 1994 (Driscoll and Beatty in prep.). Unhatched eggs collected in 1995 will also be examined for heavy-metals and organochlorines. Further investigations into the trace element content of fish needs to occur throughout the breeding range of the bald eagle in Arizona.

Specifically for the Tower BA, fish need to be examined in the Verde River and from Peck's Lake (AGFD - USFS, USBR, USFWS).

4.Continue nestwatch activities (AGFD-USFS).

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The nestwatcher reports referenced herein are unpublished materials submitted to the Arizona Game and Fish Department. They available to cooperating agencies (ACOE, ASP, BIA, BLM, SRP, USBR, USFS, USFWS, and Tribal authorities) inspection as desired.