

**Anderson Mesa Pronghorn Plan
Implementation Plan
Accomplishments and planned activities
January 31, 2004**
(Numbering from that of Implementation Plan)

Strategy 1: Improve forage diversity and health, and fawn hiding cover in pronghorn habitat.

Task 1.1: Test, and evaluate grassland burning on 1000 acres

ACCOMPLISHMENTS

2002: Coconino National Forest completed NEPA for a grassland burning project on the Bar T Bar allotment. Burn plans will be completed prior to burning and evaluation will occur post-burn to assess burning feasibility and success on Anderson Mesa grasslands.

2003: Coconino National Forest attempted three test burns totaling 700 acres on Anderson Mesa in 2003. The following summary is from Jeff Thumm, Fuels Specialist, Mogollon Rim Ranger District.

1. The first attempt to burn was near Chavez Pass on the -T- allotment. This burn was conducted on June 4, 2003 and was approximately 500 acres in size. There were about 25 people who walked over the 500 acres about 30-50 feet apart and basically covered the whole 500 acres. The grass cover was very light, probably less than 50 lbs per acre and thus there was basically no fire that involved any grass. The exception was brome (*spp.*). If there were a good cover of brome the fire would carry. The junipers had extremely low live foliar moistures so some were killed through crown consumption. Each juniper had to have an individual pour burn fuel directly around the tree to induce fire in the crown. Many live junipers were almost 100% consumed (stumps, roots and all). Most of the junipers that burned were older trees with dead branch wood accumulation or young trees with adjacent dead and down juniper skeletons that provided the required fire intensity to involve their crowns. We estimated 10% of the 500 acres had ground char and about a 10% loss of junipers. Livestock grazed this area during the fall of 2002.
2. The second attempt was near Long Lake, on the -T- allotment, and was scrubbed because the grass had not cured. This attempt took place on October 22, 2003. Livestock had not grazed this area for the last 4 years. Although the grass was too green to carry fire, it was also too sparse to have carried fire, even if cured, in most areas. Grass cover was composed primarily of blue grama. As with the burn near Chavez pass, large old junipers with underlying accumulations of branch wood and/or rat nests did torch if directly ignited. Some trees with this type of fuel were ignited in order to determine if the radiant and convective heat generated by the torching would facilitate the carriage of adjacent surface fire in

grass fuels. The attempts proved unsuccessful due to inadequate herbaceous fuel loading and continuity.

3. The third attempt took place on November 20, 2003 near Snake Tank #2, east of Hutch Mountain on the Apache Maid allotment. This burn was approximately 200 acres in size and was conducted with 5 people riding ATVs using drip torches over the area. It soon became apparent what would and would not burn, so not every square inch of the 200 acres was covered. Areas that had receptive fuels were burned. Those receptive fuels were pine needles. We estimated that approximately 10% of the area burned, primarily due to needle cast under young ponderosa pine. Excluding the areas with a continuous needle cast, only 1-3% of the area burned. Only areas that had some mixture of different grass species or needle cast carried fire, the largest continuous area being about 1 acre. Areas of blue grama did not carry fire effectively. Juniper fuel moisture was too high to cause mortality and there were not a large number of junipers on this site. Livestock did not graze this area in 2003.

Analysis: Applying prescribed fire on Anderson Mesa will not be successful with the current vegetative conditions. This does not mean however that fire should be absent from Anderson Mesa. The current herbaceous fuel loading on Anderson Mesa within the pinyon-juniper and grassland vegetation types does not appear to have the capacity to carry fire. Inadequate herbaceous fuel loading are likely due to a combination of many factors including (but not limited to) drought, ungulate grazing, and encroachment of woody species. Comparison of the 1912 vegetation maps and existing vegetation gives reason to believe that species composition within the herbaceous community on Anderson Mesa may have become simplified over time, further reducing the ability of fire to carry across the landscape.

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As a result of the test burning conducted in 2003, it is recommended that fire not be considered a primary tool for grassland or savanna restoration. Fire will not be capable of achieving the objectives of improving forage diversity, health, and nutrient content or reducing woody encroachment until a level of herbaceous fuel loading and continuity is achieved that is conducive to continuous fire spread. Fire historically was a disturbance that maintained grasslands and savannas in an early seral or sub-climax state through relatively frequent low intensity burning. Only rarely would fire have created grasslands or savannas on this landscape. With this in mind, mechanically reducing or removing existing woody cover to promote herbaceous production may best achieve restoration of grasslands and savannas on Anderson Mesa. Restored areas can then be maintained through the periodic application of natural and/or prescribed fire.

Task 1.2: Conduct 60,000 acres pronghorn habitat treatment

ACCOMPLISHMENTS

2001 and 2002: About 400 acres of vegetation treatments on the Young's Canyon allotment were implemented by the Coconino National Forest. Treatments included meadow maintenance, maintenance of old juniper pushes and thinning dense juniper. AGFD conducted 30 acres of the treatment with Grand Canyon Trust/Tuba City High School crew.

2002: Approximately 200 acres of small juniper were removed on the Pickett Lake allotment connecting existing openings and wetlands. This was a cost share project with the Coconino National Forest and the AGFD called Pickett Agra Axe.

2002: Coconino National Forest completed NEPA for 1,982 acre South Boot/North Yeager juniper maintenance cut on the Anderson Springs allotment. By December about 20 acres were treated with a Diablo Trust organized volunteer project.

2003: Coconino National Forest conducted the 325 acre Ashurst Agra Axe project. This grassland maintenance was funded by Rocky Mountain Elk Foundation through the Flagstaff Habitat Partnership Committee on the Pickett Arizona Game and Fish Department received \$4,000 from the Arizona Antelope Foundation to purchase four wing saltbush seed. This seed along with \$130,000 for the Mormon and Lizard Fire's Burned Area Emergency Rehabilitation (BAER) was used to purchase seed consisting of: blue grama, sideoats grama, Indian ricegrass, sand dropseed, galleta and ReGreen. Forest Service crews hand-raked and/or harrowed approximately 25 acres. Seeding was completed a month after the fire was confined. Forest Service crews established 12 monitoring sites within the burns to determine the effectiveness of their seeding efforts. The seed was spread by hand and aircraft across approximately 2,353 acres of the burned area. Contact person: Rick Miller AGFD and Jeff Hink, Mormon Lake R.D.

Slash was lopped and scattered on about 325 acres on the 2002 Ashurst Agra-Axe project using Coconino Rural Environmental Corps (CREC) crews paid for with an Arizona Antelope Foundation special tag funds grant (approximately \$3,200 went to this project). This grassland maintenance was funded by Rocky Mountain Elk Foundation (RMEF) through the Flagstaff Habitat Partnership Committee; Arizona Antelope Foundation (AAF) funds paid for slash treatment: Contact person: Rick Miller AGFD.

Cutting was completed on approximately 1,500 acres of the 1,982-acre South Boot/North Yeager juniper maintenance cut on the Anderson Springs Allotment, using \$46,162 of AGFD State Wildlife Grant (SWG), 1,244 hours of volunteer and CREC labor. Contact person: Rick Miller AGFD.

NEPA and Archeology was completed on 4,528 acres of hand crew grassland maintenance on the Apache Maid Allotment west of Tremaine Lake. Contact Person: Jerry Bradley, Sedona Ranger District.

Bar T Bar and Anderson Springs Draft Environmental Impact Statement was completed. This DEIS includes proposals for approximately 50,000 acres of pinyon juniper

treatment, meadow and opening maintenance, and wildlife corridor creation and enhancement. Slash treatments and burn plans are included as part of vegetative treatments as appropriate. Contact person: Jerry Gonzales, Mogollon Rim R.D.

PLANNED 2004.

Cutting of juniper and pinyon on the Apache Maid Allotment using CREC crews and funding from AAF and SWG (probable). Contact person Rick Miller AGFD and Jerry Bradley, Sedona Ranger District

Forest Service will complete NEPA and AGFD will arrange for cutting Juniper and Pinyon on Ashurst Lake projects using agra axe, volunteers and CREC crews (approximately 1,200 to 1,500 acres). Contact person Rick Miller AGFD and Mike Hannemann, Peaks, R. D.

AGFD will complete the South Boot/North Yeager juniper maintenance cut (approximately 400 acres) on the Anderson Springs Allotment using volunteers, CREC crews and funding from AAF. Contact person: Rick Miller AGFD, and Mike Hannemann, Peaks R.D.

Cut approximately 300 acres of Pinyon juniper in the Wilkins Project using AGFD Habitat Partnership Committee (HPC) funds. Contact person Dick Fleishman, Mogollon, R. D.

In summary, to date here's what has been accomplished:

- 2001-2002
 - 1,545, acres of pinyon-juniper cut
- 2003
 - 325 acres of slash from 2002 cut treated
 - 1,945 acres of pinyon-juniper cut
 - 2,853 acres of burned area seeded
 - 700 acres partially burned
 - Total of 4,998 acres improved
- Total acres improved: 6,543 or approximately 10% of goal

Task 1.3 and Task 1.4: Burn 5000 acres of grassland and savannah

The extent and timing of future burns are dependent on the results from the test burning described in 1.1.

Task 1.5: Conduct 20,000 acres of treatment on State Land Department, Hopi and private lands

ACCOMPLISHMENTS

2002: Diablo Trust completed the first phase of a 940-acre grassland restoration project (removed marketable dead and down wood – around 600 cords to date) and began second phase of cutting juniper invasion.

2003. The Flying M ranch is waiting on a decision on the DEIS before completing any additional work. They have a proposal to do agra axe work on 600 acres. They are awaiting a decision on funding for a road to access this work. The Bar T Bar ranch did 2002 acres of pretreatment work on Deep Well and have a 4800 acre chaining proposal pending.

2003: Flying M: completed 600 of 940 acres of pinyon juniper treatment in ongoing project.

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AGFD Region Two applied for a Landowner Incentive Program (LIP) Grant for \$285,000 to treat 7,500 acres on private land over two years. A decision on whether or not this grant is awarded is expected in mid-February.

Bar T Bar and Flying M Ranches have applied for the Natural Resources Conservation Service (NRCS) Wildlife Habitat Improvement Program (WHIP) funds that could be used on checker boarded State Trust Lands, with LIP funds from AGFD used on private land.

We hope to start implementing the work in March

Bar T Bar: 200 acres of pretreatment windrow and burn on Deep Well pasture
Waiting for archeological clearance for 4,800 of pinyon juniper chaining on Jeff, King and Wolfolk pastures

Flying M: 100 acres of winter browse release pinyon juniper control

Task 1.6: Conduct 2000 acres of treatment on Raymond Ranch Wildlife Area

ACCOMPLISHMENTS

2003: AGFD Region II completed planning for burning and pinyon juniper treatment projects on Raymond Wildlife Area. State Land Department is awaiting good burning conditions to complete burn.

PLANNED 2004

AGFD Region II applied for and received an internal grant for PJ, grassland and slash treatments on Raymond Wildlife Area for \$87,000. Pinyon-juniper removal work will be conducted in the grassland areas and for widening a movement corridor. Funds need to be committed and spent by June 30, 2004.

Treatments will begin in February and March

Task 1.7: Continue use of hunt design established in 2001 season for reducing summer elk use of winter range

ACCOMPLISHMENTS

Specialized hunts for elk living in yearlong in winter range have been designed and conducted and elk numbers have been reduced. AGFD will continue to offer hunts designed to maintain a low population.

Additionally, throughout the area of GMUs 5A, 5B and 6A the overall elk numbers have been significantly reduced over the past decade.

AGFD uses a population simulation model for determining trends in elk numbers. This is not the same as a population estimation model. As a result the Department is confident about trends in elk populations but does not provide population numbers. A chart of modeling trend information was presented at the meeting.

PLANNED 2004

In 2002, due to drought conditions many elk migrated from the northern portion of Anderson Mesa to the southern portion. While some moved back in 2003, surveys indicate that some remained in the southern area. Planning is being done to propose an additional hunt in the fall of 2004 in GMU 5B South to try and address this population increase.

Task 1.8: Support research and monitoring on grassland and savanna communities, grazing and fire effects

ACCOMPLISHMENTS

2001 & 2003: The Coconino National Forest contract with Northern Arizona University (NAU) for a pronghorn fawn observability study on Anderson Mesa.

2002: Coconino National Forest continued work with NAU to establish elk exclosures at the Reed Lake study site.

2002: The Mormon Lake Ranger District wrote a letter of support for a grassland ecology research proposal submitted by NAU. The proposal requested funds to maintain the Reed Lake study site and to purchase equipment to assist in landscape-level assessment of the effects of grazing on carbon, water and nitrogen cycles.

2003: Coconino National Forest contracted with NAU to monitor elk exclosures at the Reed Lake study site on Anderson Mesa.

2003: Sharon Mezulis, under a Personal Services Contract with the Coconino National Forest, prepared the a document titled “Landscape Scale Assessment of Pronghorn Fawn Hiding Cover on Anderson Mesa, Arizona.” Paper copies of this document were provided at the meeting.

Under permit by the Coconino National Forest, Matthew R. Loeser prepared a document titled “Baseline Data for Ungulate Exclosures on Anderson Mesa, Arizona, A Summary Report of Plant Community and Soil Nutrient Data for Three Ungulate Exclosures.” Paper copies of this document were provided at the meeting.

Forest Service personnel are continuing livestock utilization monitoring in every grazed pasture. Wildlife personnel conduct informal monitoring of wetlands, springs, and grasslands.

PLANNED 2004

Forest Service personnel will continue livestock utilization monitoring in every grazed pasture. Wildlife personnel will also conduct informal monitoring of wetlands, springs, and grasslands

Task 1.9: Alter grazing as needed to implement recommendations for improving nutrition and fawn hiding cover

ACCOMPLISHMENTS

2002: Coconino National Forest rested 63,896 acres from cattle grazing: Anderson Springs allotment 10,855, Walnut Canyon allotment 11,200 acres, Pickett Lake allotment 18,530, Apache Maid allotment 13,359 acres and Bar T Bar allotment 9,952 acres. These acres include Boot Pasture on the Pickett Lake allotment, South Grapevine, West Melatone and Diane’s, West Boundary pastures on the Bar T Bar allotment, and North Boot and Northeast Pine Hill on the Anderson Springs allotment. On the Apache Maid allotment, the Pine Mountain east and Hutch east pastures were rested. In 2002, 19,286 acres were deferred from grazing from August 15th to June 15th: Anderson Springs allotment 8,070, and Pickett Lake allotment 11,216 acres. These acres included Ducknest pasture on the Pickett Lake allotment and Southeast Pine Hill pasture on the Anderson Springs allotment. On the Bar T Bar allotment, the East Boundary and West Boundary pastures were rested.

By implementing the above rest and deferral, forage availability was improved in the following wetlands/closed basins: Boot Lake, Replacement Tank, East Tank, McDermott Tank, East McDermott Tank, Ducknest Lake, Breezy Lake, Long Lake, Dry Lake, Little Boot Tank, Young’s Lake, Judy Tank, Daze Lake, Corner Lake, Tony’s Tank, and Coconino Dam Reservoir.

Diablo Trust voluntarily sent livestock to Oklahoma in order to rest pastures during the drought. More pastures were deferred than indicated, as only those proposed were reported on.

A suggestion was made to not allow livestock to come onto areas where pronghorn might be fawning until after June 5th each year. This suggestion will be evaluated. The Draft EIS states “No seasonal or semi-permanent wetlands will be grazed from May 15 to July 15.”

2003: Many pastures were deferred or rested during 2003: over 172,000 acres were rested year-long, and over 9,000 acres were deferred from August 15 to June 15. A document indicating the allotments and pastures rested or deferred during 2002 and 2003 is available. Contact person: Mike Hannemann, Peaks R.D. A paper copy of the rest and deferrals was provided at the meeting.

Overall, there was a 70% reduction from permitted number and a 60% reduction from 10-year average numbers.

PLANNED 2004

See Bar T Bar and Anderson Springs Allotment Management Plan DEIS.

Review need for further rest on these pastures:

Pasture	Last Used	Years of Rest
East Boundary	1999	4
West Boundary	1998	5
South Grapevine	2001	2
Diane's	2001	2
West Melatone	1999	4

Task 1.10a: Investigate the possibility of using range fertilization

ACCOMPLISHMENTS

2002: Coconino National Forest investigated the feasibility of range fertilization and concluded that this is not a viable option. The potential for introduction of exotic species, the possibility of chemical contamination and the prohibitive cost are all factors that led to this conclusion.

2003: A trial of the pronghorn **irrigated forage plot** was attempted in the eastern pasture of Raymond Wildlife Area during the 2003-growing season. This trial was attempted without the preferred materials and was installed without adequate time or personnel. As a result, the difference between irrigated and non-irrigated rangeland was subtle.

The forage plot was installed using recycled PVC pipe and drip tube and the system was supplied by gravity flow from the recently installed water storage tank at Breese Well. The late installation enabled irrigation for only 4 weeks and the use of recycled material resulted in clogged filters, which also limited water application.

The result was an obvious growth response during late June and early July by forbs, grasses, and shrubs already established in the ½ acre plot. However, the difference between irrigated and non-irrigated vegetation was obscured after July 15, because of the onset of monsoon rain.

The trial emphasized the importance of using new pipe and drip tube for a fair trial of this technique:

- Recycled pipe and tube was clogged with algae, which clogged filters in the drip tube array. This restricted water flow significantly. New materials will be used in future trials.
- The array must be installed by April to provide the highest potential benefit.
- Gravity flow will NOT achieve adequate pressure to distribute water throughout a 2-3 acre array. The requested solar pump must be installed for the system to function.

The original proposal was not funded with big game special tag proceeds but is under consideration by two other funding sources. These sources are scheduled to rule on approved projects by April 2004. If funding is secured, another more extensive array will be tested during the upcoming growing season.

Task 1.10b.: Investigate the possible use of nutritional supplements for pronghorn

2002: AGFD has made inquiries with knowledgeable people at the Phoenix Zoo and the University of Arizona and has explored options for testing the use of nutrient supplements in water on the Babbitt Ranches in Game Management Unit 7,

2003: No accomplishments in this area.

Task 1.10c: Investigate the use of forage seeding and other techniques

2002/2003: This option has not been explored to date due to issues associated with archeological clearances whenever ground disturbance, such as use of seed drill is considered.

PLANNED 2004

Range Fertilization is one of the treatments that are planned for Raymond Ranch Wildlife Area for the coming year. We are actively working toward aerial fertilization of around 400 acres this spring.

Task 1.11: Conduct nutrition and disease investigations on pronghorn in this area

ACCOMPLISHMENTS

Overview of data collected thus far (1-26-04) for pronghorn recruitment study:

Overview: In addition to the 6 study areas selected for the original State Wildlife Trust Grant project that were reported in the last year's update, 2 more study areas were added through another funding mechanism within the State Wildlife Trust Grant program. Both high and low fawn recruitment sites, using the same 10-year average protocol used for the original 6 sites, were selected in Game Management Unit 19A. The high (>25 fawns per 100 does) site was the Fain Ranch area of 19A, south of State Route (SR) 89A and north of SR 69, whereas the low site (<15 fawns per 100 does) was the Lonesome Valley area north of SR 89A to approximately the Perkinsville Road. A Texas Tech graduate student is investigating these 2 sites. Thus, we currently are monitoring 4 high sites and 4 low sites using the same methodologies and protocols.

Secondly, 8 pronghorn (7 female, 1 male) were captured and radio marked in November on Anderson Mesa. These 8 animals carry a new technology GPS collar that allows the location data to be uplinked and uploaded to a receiver in an airplane. These animals will provide assistance in locating enough animals to ensure that sample sizes for pellets and plants are obtained at Anderson Mesa, the most difficult site to obtain data in the first 2 years of effort.

One of the co-principal investigators of this research study, Dr. Shelli Dubay, accepted a new job in Michigan and has left the project. She continues to cooperate in the completion of the study by working on manuscripts. An announcement to hire a new biologist has been circulated in professional arenas, but the position had not been filled by January 26, 2004.

Component 1: **Nutrition.** To describe the diet composition of pronghorn and evaluate the nutritional quality of their diets, Arizona Game and Fish Department Research Branch staff have collected recently deposited pellets from pronghorn at the 6 sites for 2002 and the 8 sites for 2003 field seasons. Plants were also collected during both field seasons to assess the nutritional quality of available forage. All plant samples, except a few unidentified samples, have been prepared in the lab at Arizona State University-East or Texas Tech University for analyses. Most pronghorn pellets have also been prepared for analyses, and that work is scheduled for completion by March. Two graduate students are in the process of "reading" the diets and plant samples for GMUs 5B (Anderson Mesa) and 8 (Garland Prairie) as part of their Masters of Science program at ASU-East. The Texas Tech student has also prepared all of the samples for GMU 19A. The ASU-East students have also started reading the samples from the 4 remaining areas. Efforts are underway to correctly identify the remaining unknown samples for the first 2 years of data. Planning for the 2004 field season is underway. To assist on locating pronghorn on Anderson Mesa, 8 animals were captured in November 2003 and fitted with GPS-

equipped radio collars to track their movements. These animals will help field personnel locate animals to collect fresh pellets.

Component 2: Disease Surveillance. Blood samples were collected from hunter-harvested pronghorn during the 2003 fall season to add to the samples collected during seasons in 2001 and 2002. There are no plans to collect additional data from the 2004 hunting season. Results on tests for antibodies against various diseases that can cause epizootics in pronghorn have been received from the University of Arizona Vet Lab for the first 2 years, but the Research Branch is awaiting the results from the 2003 season. A database has been compiled for the first 2 years of data, and preliminary analyses have been completed. A draft manuscript has been initiated outlining results of this component, but completion awaits receipt of the 3rd year of data.

Component 3: Water Quality and Quantity. For the 2002 and 2003 field seasons, available water sources in the 6-8 study areas were located and assessed as to whether water was available to pronghorn. Water quality measurements of total dissolved solids, salinity, and pH were measured throughout the spring and summer. All data for the first 2 seasons have been entered into a database. Preliminary analyses have been completed. Nothing outside the range of values suitable for consumption by domestic animals has been found in the data for the first 2 years of data.

Component 4: Predator Densities. To estimate predator densities on the 6-8 study areas, walking transects were laid out in 2002 for the original 6 sites and in 2003 for the 2 new sites in GMU 19A. These transects were cleared of any scats in 2002 and in 2003 at the beginning of the sample period, then rerun at the end of the sample period. All data for 2002 and 2003 have been entered into a database, and preliminary analyses run after the data were thoroughly checked for errors.

Component 5: Fawn-Hiding Cover. To estimate whether or not adequate residual cover exists around available water sources for a doe to hide her fawns from predators, randomly selected points within 1 km of available water are visited and vegetative measurements are taken. Preliminary analyses of the 2002 field season data suggested that differences in hiding cover exist among the 6 original study areas. The data for the 2003 field season have been entered, but preliminary analyses have not been completed yet. Discussions on appropriate methods of analysis are underway, so well as planning for the 2004 field season to collect the 3rd year of data.

Component 6: Recreational Use. During 2003, sampling devices called HOBOS[®] were placed in the 8 study areas to measure the amount of vehicle traffic that occurs during the field season (before, during, and after fawning periods). Data were entered into a database and preliminary analyses have been run to test the validity of the method. Preliminary scans of the data suggest that vehicle crossings/per hour may be more valid than crossings/day. Planning is underway for the third year of data collection.

Component 7: Shrub and Tree Densities. To estimate the relative density of different height classes of trees and tall shrubs, a quick and simple method to count the number of

woody plants in randomly selected plots was tested. Random points within sections (1 sq mile) of moderate or better mapped pronghorn habitat (taken from the previous statewide assessment of pronghorn habitat completed in 1996) were visited, then using a rangefinder researchers counted the number of shrubs and trees within a radius of 55m of the plot center. Within this radius, 1-ha of habitat occurs. Several of the study areas have been assessed so far, with ongoing work on the remaining areas. Anderson Mesa (GMU 5B) is one of the sites in which the fieldwork has been completed. The GMU 19A and GMUs 34B and 36B need to be completed and the data error-checked before preliminary analyses are attempted. Field efforts to complete the remaining study areas are planned.

Component 8: Fence Structure. To date, this component has not been scheduled for fieldwork. During the upcoming fall-winter 2004, the amount and structure of fences in the 8 study areas will be measured to determine if either the amount of fences or the structure of existing fences are significantly affecting fawn recruitment in the 8 study areas.

Component 9: Soil Health. During August 2003, soil samples were collected at 4 random locations within each of the 8 study areas. The samples were mailed off to a certified soil laboratory for analyses of trace and common minerals to determine the relative soil health of each study area. The lab has returned the results of the tests and the data have been entered into a database. Preliminary analyses have not been completed at this time. No additional sampling is scheduled at this time.

PLANNED 2004

All aspects of this research will be continued through 2004 with the addition of 8 pronghorn with GPS collars providing many thousands of locations.

Task 1.12: Upgrade, repair, or replace as needed, fences on Ducks Unlimited Projects on the Mesa

ACCOMPLISHMENTS

2002: The Morman Lake Ranger District worked with the AGFD in the fall to authorize replacement of the cattle exclosure around Long Lake.

AGFD interns maintained fences and installed goat bars at Vail Lake, Horse Lake and Fisher Fry lake.

2003: An AGFD contractor rebuilt the Long Lake (north) fence using \$46,200 in State Duck Stamp and Hunter Contribution Funds. The new fencing built around Long Lake employed a 3/8" cable in place of the top wire and H-braces were set in concrete in order to improve the durability of the fence. This fence was constructed in July 2003 and so far it seems to be working well.

AGFD interns maintained fences at Vail and Horse Lake. Contact: Rick Miller AGFD
Mike Hannemann, Peaks R.D.

PLANNED 2004.

Major repair of the Horse Lake Fence is pending (\$10,000 allocated from State Wildlife Grant Funds). The AGFD issued a fence contract for Horse Lake in June of 2003; unfortunately setbacks with the contractor have delayed the construction until March-June 2004.

Task 1.13: Modify fences as needed to permit passage by pronghorn and to improve durability

ACCOMPLISHMENTS

2001: Arizona Game and Fish Department and U.S. Forest Service put 'goat bars' on 40+ miles of fence on the Anderson Springs and Pickett Lake Allotments. Note: It is standard operating procedure for the Anderson Springs Allotment to only charge electric fences when the cattle are in the pasture.

2002: Coconino National Forest Bottom wire modification occurred on 10 miles of fence on Anderson Springs/Pickett Lake Allotments, bringing the fence to the smooth bottom wire 18" minimum height standard. Goat bars were installed where needed.

Coconino National Forest Fence inventory was conducted on 28 miles of fence to assess durability and suitability for wildlife passage. 'Goat bars' were installed on 46 miles of fence. One mile of sheep fence was removed and replaced. Bottom wire modification occurred on 5.5 miles of fence on the Bar T Bar Allotment.

Coconino National Forest on the Apache Maid Allotment, 8 miles of fence was contracted and built to Forest Land Management Plan fence standard.

During the summer of 2002, AGFD interns modified approximately 25 miles of fence. Volunteers and Boy Scout projects modified approximately four miles of fence.

2003: Crews from the Coconino National Forest, Arizona Game and Fish Department and private contractors built or modified approximately 40 miles of fence on Anderson Mesa. If the fence had a barbed bottom wire it was replaced with a barbless wire at 18" above the ground. If the existing fence has a barbless bottom wire, it was raised to 18" above the ground.

PLANNED 2004

AGFD interns and Forest Crews will continue inventory and improvement. Fencing around 4 ephemeral lakes is planned on the Pickett Lake allotment, especially in wetlands with a bulrush component.

Task 1.14: AGFD (primarily WMs) and Forest Staff record use of ephemeral wetlands by pronghorn when incidentally observed to provide information about the timing of use

ACCOMPLISHMENTS

2003: A monitoring flight was completed. Does were well distributed and showed no major changes in distribution from previous years.

PLANNED 2004

To supplement the incidental observations of AZGFD and USFS employees of pronghorn around ephemeral wetlands, Arizona Game and Fish Department captured 8 pronghorn (7 female, 1 male) in November 2003. These 8 animals were equipped with GPS units to provide very accurate locations of pronghorn either once or twice a day, based on month. The data can be uploaded to an aircraft equipped with a special receiver bi-weekly or monthly. Accumulated locations can be overlaid with a GIS map of wetlands to better understand use of the wetlands.

Task 1.15: Monitor vegetation change in ephemeral wetlands

ACCOMPLISHMENTS

2002 and early 2003: Coconino National Forest completed field inventory of wetlands on Anderson Mesa, using the Coconino Land Management Plan, the Forest Service Manual, the USDA Forest Service Publication titled “ Management of Wetlands at High Altitudes in the Southwest”, National Wetlands Inventory, field observations and research. Using precipitation, hydric soils and hydrophytic vegetation, wetlands were categorized into one of the following seven groups: permanent wetland (reservoir), semi-permanent wetland, seasonal wetland, temporary wetland, ephemeral wetland, closed basin and stock tank wetland.

Coconino National Forest The Forest established seven elk monitoring exclosures on the Anderson Springs and Pickett Lake Allotments. Six of these are on the edge of Anderson Mesa wetlands and one of these in an upland associated with a wetland. Contact person is Mike Hannemann, Peaks R.D.

2003: The Forest Service has established twenty-eight wetland-monitoring sites on Anderson Mesa wetlands. Additionally, seven cattle/elk exclosures have been built in these wetlands in 2002 and 2003. Methods used for monitoring include: canopy cover plots, frequency transects, ground cover transects, plant inventories and photo points. This data will be used as baseline data for future year trend information.

AGFD, with volunteers, transplanted 120 square foot pieces of vegetation from Morman Lake to Tremaine Lake. Twenty 10 ft. square cages were placed around these plugs to protect them from grazing.

PLANNED 2004

Coconino National Forest: Monitoring is scheduled to continue in these areas in 2004.

Strategy 2. Improve distribution of pronghorn, access to migration routes and access to forage by improving fences

Task 2.1: Complete inventory of fences on Forest Service and private (with permission) land on Anderson Mesa and bring fences into compliance with standard of 18-inch smooth bottom wire.

ACCOMPLISHMENTS

2001: With the AGFD, the Forest completed 200 miles of fence inventory on Anderson Mesa.

2002: AGFD inventoried and improved approximately 25 miles of fences around perennial waters.

2003: Arizona Game and Fish Department and the Coconino National Forest inventoried approximately 118 miles of fence on Anderson Mesa.

This should bring the total miles of inventoried fence to 343 miles.

PLANNED 2004

Arizona Wildlife Federation has volunteered to work on this effort. AGFD and FS will provide AWF with survey protocols so that all data collected will be consistent.

Task 2.2: Bring fences on the Forest in compliance with Forest Service standard of having bottom wire 18 inches high

ACCOMPLISHMENTS

See Tasks 1.12 and 1.13.

Task 2.3: Meet or exceed eighteen inch bottom wire standard on all fences on Raymond Ranch Wildlife area

Summer 2002: AGFD and volunteers removed all interior fences except horse pasture fences, from Raymond Ranch Wildlife Area. All boundary fences are substantially in

compliance however some portions still have a barbed bottom wire. Replaced approximately 3 miles of boundary fence.

2003: All boundary fences are up to standard. All interior fences have been removed except for the horse pasture fence, and fences around the airstrip and headquarters.

Task 2.4: With permission and cooperation, inventory fences on State Land Department, Hopi Tribe and private lands. Prioritize areas of pronghorn seasonal movements

2002: Diablo Trust raised the bottom wire on approximately 4 miles of winter country fence.

2003: Working with Hopi Three Canyon Ranch, AGFD staff has been modifying fences around Gorton Dam.

Task 2.5: Investigate the potential for removing or modifying fences (such as let down panels) in movement corridors

2002: Whenever livestock is not in a pasture, gates are left open to allow easier pronghorn movement.

Task 2.6: Monitor pronghorn use of pastures with or adjacent to electric fence

2002: A promised research report on effects of fencing was received from Wyoming Game and Fish. Copies were distributed at the meeting.

PLANNED 2004

Using GIS maps of electric and other types of fences in the research area, locations of the 8 pronghorn that were captured and fitted with GPS-equipped collars can be analyzed to determine if electric fences impact pronghorn movements or pasture use. These animals were captured by Arizona Game and Fish Department in November 2003 as part of another study, but will provide valuable information to this task.

Strategy 3. In conjunction with other strategies, use predator management when appropriate to reduce predation with the emphasis on predation on pronghorn fawns

Task 3.1: Implement predator management when surveyed does drop below 200 for three out of five years, or if fawns per 100 does drops below 25 for more than two years out of any five years in GMU 5A and 5B combined

ACCOMPLISHMENTS

2002: USDA Wildlife Services flew coyote control on Anderson mesa south of Jaycox Mountain, Red Hill area, and Bar T Bar State and private land. Flights occurred on April 22-May 1 and May 13 –May 18. Results were 56 coyotes were killed in 43 hours of flying. During standard surveys, the fawn to doe ratios in coyote control area was 14 per hundred and in surrounding area without coyote control was 9 per hundred.

At least one predator caller group organized a hunt on Anderson Mesa in late April and early May 2002 to aid in coyote removal.

2003: In spring 2003, Wildlife Services flew 37.3 hours in selected portions of Units 5A and 5B which removed 37 coyotes. They did not provide a detailed breakdown by GMU of exactly how many hours were flown and how many coyotes were removed. We believe 5B received more effort than 5A.

Pronghorn surveys showed:

Unit	Fawn:Doe with coyote control	Fawn:Doe without coyote control
5A	28:100	23:100
5B	41:100	26:100

PLANNED 2004

The 3rd year of this three-year effort is planned for April-May 2004.

Task 3.2: Investigate using predator swamping strategies to reduce coyote predation on pronghorn fawns as an alternative to coyote control

Due to concerns with this technique concentrating coyotes in the are, a decision was made during the January 31, 2003 Adaptive Management meeting to drop this proposal from further consideration.

Task 3.3: Monitor pronghorn fawn recruitment on predator management areas

Strategy 4. Evaluate and reduce as needed, disturbance of pronghorn during breeding and fawning

Task 4.1: monitor pronghorn fawn recruitment inside and outside motorized vehicle closure areas

ACCOMPLISHMENTS

No progress to date.

PLANNED 2004

Data from the 8 radio collared pronghorn should provide some information regarding use of the closure areas.

Task 4.2: Locate breeding areas by recording observations of pronghorn bucks during the breeding season.

ACCOMPLISHMENTS

No activity in this area to date.

PLANNED 2004

To assist on this task, Arizona Game and Fish Department captured 8 pronghorn (7 females, 1 male) in November 2003 and radio marked with GPS-equipped collars. Locations of these animals will help in identifying use areas during the breeding season. Locations are taken either once or twice daily, based on the month, and can be retrieved by uploading to a airplane mounted receiver bi-weekly or monthly, based on aircraft availability

Task 4.3: Monitor human use of pronghorn breeding areas after they are identified

No activity to date.

Planned 2004

The 8 pronghorn with GPS collars may provide data on breeding areas in future years.

Task 4.4a: Initiate a fawning season motorized vehicle closure on the Pine Hill Closure Area

ACCOMPLISHMENTS

The existing motorized vehicle closures continued in the Pine Hill and Hay Lake Closure areas.

PLANNED 2004

The existing motorized vehicle closures will continue in the Pine Hill and Hay Lake Closure areas.

Task 4.4b: Initiate additional fawning season survey to identify sites selected by does

2002: Additional Pronghorn Surveys flown in Units 5A and 5B.

Date	Bucks seen	Does seen	Fawns Seen	Total seen
May 1, 2, 3	43	161	1	205

May 20,22,23,24	53	132	6	191
June 11,12,14,21	Not completed due mechanical problems with aircraft and smoke from wild fire			

Standard Survey was flown July 12,13,20,21,23. We observed 65 bucks, 181 does, and 20 fawns 266 total.

Due to the low number of pronghorn seen during the traditional summer survey, a winter survey (January 24, 27, 28, 2003) was flown to try and determine if there was significant summer mortality. During these flights 586 pronghorn were observed.

A suggestion was made to incorporate volunteer observers on the ground during aerial survey flights to see if this would improve fawn location and counting. This will be evaluated for the 2003 survey flights.

PLANNED 2004:

The 8 pronghorn with GPS collars may assist in determining fawning areas in future years.

Task 4.5: Consider water distribution system for Pine Hill, which may minimize water-hauling efforts.

After much discussion, this project was determined to not be an immediate priority and is not being considered at this time.

Task 4.6: Determine location, quality and reliability of waters in pronghorn fawning habitat

ACCOMPLISHMENTS

2002/2003: Reliability and quality of waters within the research study area were determined.

2002: AGFD monitored availability of water by recording which tanks still had water on pronghorn survey flights in May and June.

Task 4.7: Develop and/or improve waters in areas where needed, in cooperation with Forest Service, Hopi Tribe, ranchers and stakeholders.

ACCOMPLISHMENTS

2002: The Mogollon Rim Ranger District hauled water to water troughs and trick tanks in the East and West Boundary Pastures, and the Trick Tank Pastures on the Bar T Bar Allotment during the drought (for wildlife

The Forest authorized road maintenance on the Anderson Springs Allotment to facilitate permittee water hauling efforts during the drought (for livestock and wildlife).

Diablo Trust hauled approximately 6 million gallons of water during the spring, summer and fall of 1996 and 2002 to aid pronghorn. This included hauling water to some dirt tanks to keep water available in the tanks and prevent wildlife bogging.

Bar T Bar sacrificed their sod farming operation to run the ditch system to service about 15 dirt tanks in the winter country.

Diablo Trust maintained water in pipelines all summer in both the summer and the winter country.

Diablo trust set up a “Bog Patrol System” to monitor drying water areas for stuck wildlife and livestock. They fenced 20+ bogs to keep animals from getting stuck and provided alternative water sources.

PLANNED 2004

AGFD hopes to fund a LIP proposal for solar powered pump on Hopi Three Canyons Ranch. This pump will provide water for pronghorn during those periods when livestock are not in the pasture.

AGFD and the Peaks Ranger District are working on constructing a new stock tank on the Pickett allotment as part of the decision to fence livestock out of Ashurst Lake.

AGFD and the Coconino National Forest will be applying for HPC funds for two additional stock tanks or catchments near Duck Nest Lake, as mitigation for fencing livestock out of three natural lakes.

Task 4.8: Improve access to waters by modifying water lot fences in pronghorn habitat in cooperation with ranchers

The Coconino National Forest knows of no water lots on Anderson Mesa without a barbless bottom wire 18” off the ground.

See Task2.4

Strategy 5: Error in original plan number, no tasks listed in the Pronghorn Plans

Strategy 6: Improve the ability of pronghorn to travel between habitat areas

Task 6.1: Open passages through pinyon-juniper and ponderosa pine stands between adjacent grassland and shrub habitats

ACCOMPLISHMENTS

See accomplishments in Task 1.2

2003: Two corridors were opened to Hay Lake. The first runs from Daze Lake to Hay Lake. Coconino National Forest completed NEPA and archeology and then CREC crews cut juniper and lop and scatter the slash. Bob Prosser suggested this corridor get cleared. The second corridor is between Tremaine Lake Basin and Hay Lake and relied on NRCS NEPA and Archeology because it is within their easement. The two corridors total about 400 acres and were funded by the Arizona Antelope Foundation Special Tag funds (\$6,545.32) as part of an Anderson Mesa PJ project.

The 8 pronghorn captured and fitted with GPS-equipped radio collars by Arizona Game and Fish Department will provide substantial information on movements among the various openings and between summer and winter range. Locations are acquired either once or twice daily, based on month, then uploaded bi-weekly or monthly from an aircraft. Corridors may be identified from these locations that assist in determining the best areas to open up with treatments.

Strategy 7: Consider increasing guidelines for Buck:Doe ratio in 5A and 5B

Task 7.1a: Consider raising buck/doe ratio guidelines in other GMUs where it may be possible to detect the effect

2002/2003: Anderson Mesa pronghorn are now being managed with an objective of 40+/bucks per 100 does.

This approach has not been approved for other GMUs.

Task 7.1b: Consider delaying pronghorn archery season until later in the year

2003: This suggestion was considered during the 2003 season setting process, but was not included in the final regulations package.

Strategy 8: Supplement population

Task 8.1: If does on surveys drop to below 200 animals for two years and if fawn doe ratio is below 25 for the same two years, supplement the population with pronghorn from other areas

2002: Consideration was given to transplanting pronghorn from the Fain Ranch to Anderson Mesa. This transplant did not take place due to drought stresses on the pronghorn. Additionally, there are concerns with moving disease from one area to another through transplants. Also, without habitat improvements, moving animals may not be successful.

2003: We have not met the critical threshold for a transplant. Fall surveys in 2002 were very low, however, under the drought conditions Regional biologists felt we could be missing pronghorn on July surveys, where the very limited water and forage might have moved antelope into the Pine habitat. A winter survey confirmed this idea when we found over six hundred pronghorn on 5A and 5B winter range.

**Anderson Mesa Pronghorn Operational Plan
Adaptive Management Meeting, Notes on Action Items
1/31/03**

Thanks to everyone who participated in the last year's Anderson Mesa Pronghorn Operational Plan Adaptive Management Meeting. It was a good opportunity to review the work done over the past 2 years with specific emphasis on accomplishments and planned activities. The working document entitled "Anderson Mesa Pronghorn Plan Accomplishments and Planned Activities" has been revised to reflect discussions during the meeting and this revised copy is attached.

During the meeting, in addition to general discussion, the following issues/concerns were raised.

Issues/Suggestions:

1. Study nutritional supplementation of pronghorn

- This is being evaluated with personnel from the Phoenix Zoo and the University of Arizona. If considered, it would be conducted by adding nutrients to waters on the Babbitt Ranches in Game Management Unit 7. This is due to the fact that Babbitt's are already testing this for livestock and the Department has baseline pronghorn data for the area.
 - Additional information was added to the Task 1.10b Accomplishments.

ACCOMPLISHMENTS

No accomplishments in this area to date.

2. Core Sample Wetlands

- During 2002 the Forest Service completed an inventory of wetlands on Anderson Mesa, including soils information. Should additional sampling be done, this core sampling will be evaluated. Forest Service on Anderson Mesa wetlands has prepared a report for the Landscape Scale Assessment.

ACCOMPLISHMENTS

2003: During wetland inventories during the past year, core samples were taken. This data is being developed as part of the Anderson Mesa Landscape Scale Assessment process.

3. GPS Transmitters

ACCOMPLISHMENTS

In November 2003, the Research Branch of Arizona Game and Fish Department captured and fitted 8 pronghorn (7 females, 1 male) with new technology GPS-equipped radio collars. The GPS-acquired locations are stored on the collar and are retrieved from an aircraft equipped with a special receiver and laptop computer. AZGFD modified 1 of their aircraft with a special antenna to receive the data broadcast from the collar. The collars are programmed to upload bi-weekly. AZGFD must fly the pronghorn and upload the data within a short window on the days pre-programmed into the unit's microcomputer. Within the first month, a flight was completed to check survival rates and all animals were alive and moving. The aircraft was modified and the necessary software was loaded onto a laptop. A test flight was conducted in conjunction with Telonics, Inc., the collar vendor in Mesa, Arizona. Two biologists were trained to operate the system. A flight was conducted in January to retrieve the first 2 months of data. The data were successfully uploaded, checked for errors, and transferred into the GIS system. To test the data, locations were plotted by animal and by month. The GPS collars are pre-programmed to locate the animals twice a day in selected months, then only once per day the other months to conserve battery power. This effort will assist on numerous other tasks on Anderson Mesa.

- This project cost approximately \$5,000 for each collar with another \$5,000 in expenses for flight time, GIS mapping, hardware and software and biologist time for analysis.

4. Amount of non-inventoried fence

- A suggestion was made that the inventoried fences on Anderson Mesa be compiled on a map so that areas without inventories can be easily identified.
 - This was added as a planned activity in Task 2.1

ACCOMPLISHMENTS

A map will be at the 2004 meeting.

PLANNED 2004

Arizona Wildlife Federation volunteered to work toward completion of this effort. AGFD and FS will work with them to provide the data forms so that data is collected in a consistent manner.

5. Use white PVC pipe on electric fences

- A suggestion was made to use white PVC pipe on the bottom wire of some electric fences to see if this would aid pronghorn movement.
 - Additional information was added to the planned activity for Task 2.6.

ACCOMPLISHMENTS

2003: A decision was made to continue to use gray PVC because it is ultraviolet light resistant.

6. Delete Predator swamping from consideration

- Due to concerns, it was suggested that the Predator Swamping task be eliminated from consideration
 - This was noted in Task 3.2.

7. Delay pronghorn archery season until latter in the year.

- A suggestion was made to delay pronghorn archery season until later in the year
 - Additional information was added to Task 4.2 and this suggestion will be considered when designing the fall 2003 hunting seasons.
 - This idea was submitted in the hunt design process but was not approved.

ACCOMPLISHMENTS

This suggestion was considered during the 2003 season setting process but was not included in the final regulations package.

8. Delay livestock entry to pastures where pronghorn may be fawning until after June 5th.

- A suggestion was made that some literature shows that livestock grazing should be delayed until after June 5th so it doesn't interfere with pronghorn fawning
 - Don Farmer agreed to provide copies of this literature.
 - Additional language was added to Task 4.4 to consider this suggestion.

ACCOMPLISHMENTS

Bar T Bar/Anderson Springs DEIS proposal (page 60) states "No seasonal or semi permanent wetlands will be grazed from May15 to July 15."

9. Add pilot stock tank removal from ephemeral wetlands project to list.

- This project was added at Task 5.5.

ACCOMPLISHMENTS

No activity in this area to date.

PLANNED 2004

Plans are being developed to fill in Little Boot stock tank. Flying M ranch would like to do this work so that bog conditions don't result.

10. Transplants

- Some concerns were raised over use of transplants as they might bring in disease or cause more habitat conflicts.
 - Additional information was added to Task 8.1.

ACCOMPLISHMENTS

2003: There was discussion during the year regarding opportunity to transplant pronghorn to Anderson Mesa. However, after the discussion a decision was made to not attempt the transplant due to concerns over habitat suitability and the possibility of disease transmission.

11. Research on State and Private Lands

- A suggestion was made that in addition to research on the Forest Service land on Anderson Mesa, a comparable amount of research should be done on adjacent state and private lands
 - A \$5,645 HPC grant was awarded using AAF Special Tag Funds for the first year of a pronghorn research project on Diablo Trust lands.

12. This plan does not have a signature page showing all groups have endorsed it

- As stated in the 7/12/02 e-mail that accompanied the "final" plan distribution, this plan is a Game and Fish Department Operational Plan. This means that the Department has taken input from all participants and used this input to develop a plan for Department use in managing the Anderson Mesa pronghorn herd. There was no intent to formally obtain signatures nor has there been any suggestion that all parties in the discussion agreed with the plan. The Forest Service has concurred with the content of the plan.

Additionally, it was decided at the meeting that as volunteer opportunities arise, we would use e-mail to communicate these opportunities to the group to see if anyone can assist.

**Anderson Mesa Pronghorn Operational Plan
Adaptive Management Meeting, Notes on Action Items
1/31/04**

Thanks to everyone who participated in the Anderson Mesa Pronghorn Operational Plan Adaptive Management Meeting. It was a good opportunity to review the work done over the past 3 years with specific emphasis on accomplishments and planned activities. The working document entitled “Anderson Mesa Pronghorn Plan Accomplishments and Planned Activities” has been revised to reflect discussions during the meeting and this revised copy is attached.

During the meeting, in addition to general discussion, the following issues/concerns were raised.

Issues/Suggestions:

1. Hold a meeting with representatives from AGFD, Coconino National Forest and Diablo Trust to discuss options for what to do with excessive woody debris from treatment projects in very heavy pinyon-juniper areas.
2. Let the Forest Service know when AGFD plans to burn on Raymond Ranch.
3. Evaluate previously rested pastures proposed for rest in 2004 to see if they still need to be rested. Factor this decision into AOI discussions in spring 2004.
4. Coconino National Forest will work with their GIS staff to try and identify all fences on Anderson Mesa and categorize them as inventoried or needing inventory. They will produce maps of these categories to aid prioritization of future inventory efforts. AGFD Research Branch has a program in place for another project where they use GPS equipment to record fence locations and enter details about the fence into the database at the same time.

AWF has offered to assist the Forest Service with fence inventory in 2004. AGFD and FS will work to make sure they have the appropriate data sheets so that data is collected in a consistent manner.

5. Consider modification of decision to remove all bottom wire attachments to fence stays. There have been some problems with animals getting caught in the bottom two wires when they are separated and also with the fences sagging. A suggestion was made the at least the middle stay should be attached.
6. Provide costs of coyote control efforts for the past 2 years along with the fawn survival information.
 - This information will require a review of past fiscal year records which will take some time. Results will be reported latter.

7. As discussions on waters takes place as part of the Anderson Mesa Landscape Scale Assessment process, consider road infrastructure needs for water hauling and provide for some long term planning on improvements.
8. Evaluate using Christmas tree permits for removing trees from some areas on Anderson Mesa or a free firewood use area. The DEIS allows removal of trees, but doesn't specify the methods, so the Forest Service will factor these suggestions and the option of commercial removal into future decisions.
9. Consolidate redundant tasks in future updates so there isn't reference to seeing another task for an update.