Anderson Mesa Pronghorn Plan
Implementation Plan
Accomplishments and planned activities
January 29, 2005

(Numbering follows the 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 - Have we completed this objective by attempting to burn more than 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. 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. Pronghorn used this area intensively in the winter of 2003-2004.

2. The second attempt was near Long Lake, on the Bar T Bar allotment. This attempt took place on October 22, 2003. Livestock had not grazed this area for the last 4 years. . 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. 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. Livestock did not graze this area in 2003.

As a result of the test burning conducted in 2003, it was recommended by the Forest 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.

2004: No prescribed burning was conducted; however the Mormon fire burned 2,719 acres of the Padre Canyon Allotment in 2003. The Lizard Fire burned 5,127 acres of the Angell Allotment, just adjacent to the Padre Canyon Allotment to the north, in 2003. And, the Jacket Fire burned 17,219 acres of the Padre Canyon

Planned 2005: No prescribed burning planned.

Task 1.2: Conduct 60,000 acres pronghorn habitat treatment

ACCOMPLISHMENTS

2001 and 2002: The Coconino National Forest implemented About 400 acres of vegetation treatments on the Young's Canyon allotment. 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 Lake Allotment.

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.

CREC crews cut juniper on a 100 acre corridor between Hay Lake and Daze Lake.

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.

2004: Forest Service completed NEPA on approximately 1,339 acres, and AGFD arranged for cutting juniper and pinyon on Ashurst Lake projects using agra axe, volunteers and CREC crews (approximately 400 acres cut and slash treated). Contact person Rick Miller AGFD and Henry Provencio, Mike Hannemann, Peaks, R. D.Peaks, Mogollon and Mormon Lake Ranger Districts.

The Forest Service responded to radio tracking data on wintering pronghorn and a request from AGFD by completing NEPA and other requirements on a 2,038 project near Chavez Pass very quickly. CREC crews and volunteers cut and treated slash on approximately 550 acres where radio tracking indicated heavy pronghorn use on Forest Service Lands near Chavez Pass.

We cut trees, and lopped and scattered slash on approximately 400 acres of the South Boot/North Yeager juniper maintenance cut on the Anderson Springs Allotment using volunteers, CREC crews with funding from AAF and a State Wildlife Grant. We also revisited approximately 1200 acres of this project cutting juniper resprouts, seedlings and branches that were missed. There is still about 200 to 300 acres remaining to be cut. Contact person: Rick Miller AGFD, and Mike Hannemann, Peaks R.D.

AGFD contractors cut approximately 300 acres of Pinyon juniper in the Wilkins Project using AGFD Habitat Partnership Committee (HPC) funds. CREC crews also cut 98 acres on the rim of Anderson Canyon in heavy juniper and browse. The primary wildlife habitat benefit of these two projects will be to mule deer and are not counted toward pronghorn objectives. Contact person Dick Fleishman, Mogollon, R. D. and Rick Miller of AGFD.

Fire restrictions and a delay in State Wildlife Grant funding kept us from completing the Yeager Lake project and from beginning the Apache Maid Project as planned. The crews were redirected to private lands.

In summary, to date here's what has been accomplished toward the objective on Forest Service Lands:

- 2001-2002
  - 1,545, acres of pinyon-juniper cut
- 2003
  - 325 acres of slash from 2002 cut treated
  - 2045 acres of pinyon-juniper cut
  - 2,853 acres of burned area seeded
  - 700 acres partially burned
  - Total of 4,998 acres improved
- **2004**
  - **1,350 acres of pinyon and juniper cut.**
  - NEPA clearance for 3,377 acres of pinyon and juniper thinning.
- **Total acres improved: 7,893 or approximately 13% of objective**
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<u>2005 Plans</u> – We intend to complete the Yeager Lake and Ashurst Lake projects. We will begin cutting on the Apache Maid project if funding is available. We will concentrate volunteer work near Cow Lake if the NEPA is complete.
The Forest Service will complete NEPA to cut junipers in the Cow Lake area.

The Forest Service expects to sign a Record of Decision on the Final EIS for the Bar T Bar and Anderson Springs Range Allotments in January/February of 2005. This project includes nearly 50,000 acres of vegetation treatments that will improve pronghorn habitat.

The Forest Service will sign a Decision Memo for the Long Lake Habitat Improvement Project in February of 2005. This project proposes to thin encroaching junipers approximately 5,184 acres of pronghorn habitat near Long Lake on the Mormon Lake Ranger District.

The Forest Service expects to sign a Record of Decision on the Final EIS for the Pickett Lake and Padre Canyon Allotments in 2005. Although vegetation treatments are not proposed the Proposed Action would implement a single herd rest rotation grazing strategy and wetland exclosures that will reduce competition between pronghorn and livestock.

The Forest Service will begin assessing the needs for pronghorn habitat improvement in the Upper Beaver Creek Fuels Reduction project. A decision is expected for this project in 2006.

<u>Task 1.3 and Task 1.4: Burn 5000 acres of grassland and savannah</u> – Completed?

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

2003- 2004 Wild fires Northeast of Anderson Mesa burned approximately 25,000 acres in 2003 and 2004. With the reduction of pinyon and juniper trees, the grass and forb cover in the fires in 2003 has responded well and is re-establishing throughout the burned areas. The area burned in the Jacket fire in 2004 is expected to improve asThe fires were well placed for pronghorn habitat improvement. Some habitat within the fires is unusable by pronghorn because of high density dead trees, but most is useable. In the winter of 2003-2004 adequate moisture is received for plants to re-establish.

These fires adjoin areas used by radio collared pronghorn. These burned areas are already benefiting pronghorn and will continue to do so as more forbs and shrubs are established or re-established.

In August 2003 the Lizard and Mormon Fires were broadcast aerial and direct hand seeded with 19,000 lbs of seed. The work was completed on 1,880 acres (1,000 acres of the Mormon Fire and 880 acres of the Lizard); approximately 24 percent of the Lizard and Mormon Fires combined.

The seed mixture consisted of: Regreen (a sterile, hybrid wheat) 45%, Blue grama 4%, Sideoats grama 14%, Indian ricegrass 18%, Sand dropseed 2%, and Big Galletta 10%. The remaining 7% of the mixture was inert materials.

The Arizona Antelope Foundation donated an additional 500 lbs of Fourwing saltbush seed. This seed and was added to the main seed mix and spread by hand in areas with soils that would support Fourwing saltbush.

Immediately following the seeding, eight permanent monitoring sites were established and data collected on the Lizard & Mormon fires. Four were placed in treatment (seeded) sites and four in control (unseeded) sites. Of these plots, two of the seeded and two of the unseeded plots were raked. These paired plots are on various soil types within the burned areas. Added to the initial data collection was a measurement of seeds per square foot on the treated sites. These sites were revisited last fall, and they will be remeasured at least once each year, through the fall 2008.

The sites were located within a mixture of moderate to high severity burned areas. Both the control and treated sites were matched based on site characteristics including: slope, aspect, soil and vegetation. The sites are marked with fence posts and angle iron marking the boundaries. Photo stations were also established at each site, and repeat photos will be taken during each monitoring visit.

At each site, data is collected for a 0.10 acre canopy cover plot, frequency and ground cover. Canopy cover plots are typically used to compare existing conditions with potential and desired vegetative community conditions. Over time, measurements on these plots should adequately quantify canopy cover changes.

Frequency (200 points) and ground cover data (600 points) are also collected using the widely accepted plant frequency method (University of Arizona, Extension Report 9043, 1997). These data will provide information on trends in plant species abundance, plant species distribution and ground cover.

Data collected from the Lizard fire in August 2003 showed the primary vegetation was comprised of One seed Juniper (*juniperus monosperma)*, Winterfat (*Eurotia Lanata*), Broom snakeweed (*Gutierrezia sarothrae*), and **B**lue gramma (*Bouteloua gracilis*).

Data collected in September 2004 varied from site to site but comprised primarily of One Seed Juniper (*Juniperus monosperma*), Broom Snake weed (*Guitierriezia sarothrae*) for the overstory, primary understory for the forbs included annuals, but not limited to the following: Tree tobacco (*Nicotiana glauca*), Russian thistle (*Salsola iberica*), Common purslane (*Portulaca oleracea*),

Rattlesnake weed (Euphorbia albomarginata). Perrenials included: Globe mallow *(Sphaeralcea ambigua* + spp.), Bahia (*Bahia spp*.), Rubberweed, pingue (*Hymenoxys richardsonii*), and Astragalus (*Astragalus* spp.). The graminoids that thrived remarkably well included: Blue Gramma (*Bouteloua gracilis*), Sand dropseed (*Sporobolus cryptandrus*) and Poa (*Poa* spp.)

Monitoring plots were also established in the 2004 Jacket Fire. These consist of 4 paired plots (seeded vs. unseeded) to study the results and recovery of this fire on seeded and unseeded sites.radio collared pronghorn wintered adjacent to the where the Jacket Fire burned. Radio data from this winter may show if they use the burn.

Planned 2005: No burning planned.

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 Bar T Bar ranch did 2002 acres of pretreatment work on Deep Well.
Flying M completed 600 of 940 acres of pinyon juniper treatment in ongoing project. And 100 acres of winter browse release pinyon juniper control

2004: Flying M used an Agra axe to cut approximately 585 Acres of juniper north of Chavez Pass. They were ready to do more but were delayed by archaeology.

AGFD Contract archaeologists completed surveys and reports on and received clearance needed for Agra axe and slash treatment on 2300 acres.

AGFD Landowner Incentive Program (LIP) Grant for $285,000 to treat private land over two years was awarded to Diablo Trust in May.

Bar T Bar and Flying M Ranches have applied and received for the Natural Resources Conservation Service (NRCS) Wildlife Habitat Improvement Program (WHIP) funds that could be used on 2567 acres of checker boarded State Trust Lands.

NRCS AGFD completed archaeological surveys and then Bar T Bar began a 3800 chaining project then was delayed by rain and snow and a glitch in administration paid for by the ranch NRCS and LIP.

CREC crews cut junipers then lopped and scatted the slash on 539 acres near Chavez Pass on private land belong to the Bar T Bar and Flying M ranches.

Summary of Progress toward 20,000 acre target:

- **2002 and 2003- 1040 acres**
- **2004 – 1114 acres**

<u>Planned 2005:</u> A 3800-acre chaining followed by windrowing slash is planned on the Bar T Bar. 1000 to 2000 acres of agra axe work is planned on Bar T Bar and Flaying M. We also plan to do 500 to 1500 acres of hand crew cutting and slash treatment.

<u>Task 1.6: Conduct 2000 acres of treatment on Raymond Ranch Wildlife Area</u>

<u>ACCOMPLISHMENTS</u>

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.

2004: AGFD Region Two conducted over 600 acres of juniper treatment and slash treatment.

AGFD Region Two contracted out aerial fertilizer application on a total of 500 acres. Fertilizer was applied on three plots at rates of 10, 20 and 38 pounds per acres. Vegetative monitoring showed vegetation and wildlife use response at 38 pounds per acre.

<u>Planned 2005:</u> We still plan to burn 1,000 to 1,600 acres this year. We are also hope to treat old slash on 500 to 1000 acres.

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

<u>ACCOMPLISHMENTS</u>

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.

2003: 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 was done to propose an additional hunt in the fall of 2004 in GMU 5B South to try and address this population increase.

2004: Antlerless elk permits were increased in 5B South.

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 Morman 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.

2004: Forest Service personnel continued livestock utilization monitoring in every grazed pasture. Wildlife personnel also conducted informal monitoring of wetlands, springs, and grasslands

Forest Service personnel monitored livestock utilization in every grazed pasture. Long term monitoring data was also collected from plots established in 2002 at Kinnikinick Lake.

Additionally the Forest Service conducts end of the season inspections of each allotment. The following is information from those inspections:

Walnut Canyon
In general, forage growth on the allotment throughout the year was average. The fall moisture was average and there was below average winter moisture. The allotment received average spring and summer moisture as well. This moisture aided plant growth and allowed production of a viable seed crop.

Rangeland management status in the majority of the allotment continues to be satisfactory with static to upward trends. Areas of any significant size that are rated in unsatisfactory condition are due to dense stands of pinyon/juniper in the lower portions of the allotment. However, a significant amount of pinyon/juniper tree mortality was observed due to drought and insect kill.

Deep Lake
In general, forage growth on the allotment throughout the year was average. The fall moisture was average and there was below average winter moisture. The area received average spring and high summer moisture. The summer moisture was measured to be approximately 5.5 inches at the permittee's headquarters. This large amount of moisture stimulated plant growth later in the season. This moisture maintained plants through the grazing season and produced a viable seed crop at the end of the growing season.

Rangeland management status in the majority of the allotment continues to be satisfactory with static to upward trends. Areas that are rated in unsatisfactory condition are a result of stands of mature pinyon/juniper that cover a significant portion of the allotment.

Pickett Lake and Padre Canyon
In general, forage growth on the allotments throughout the year was average. The fall and winter moisture were average. The area received average spring and summer moisture. This moisture sustained plant growth through the grazing season and produced a viable seed crop at the end of the growing season.

Rangeland management status in the majority of these allotments continues to be satisfactory with static to upward trends. Areas of any significant size that are rated in unsatisfactory condition are in the pinyon/juniper zone.

Anderson Springs
In general, forage growth on the allotment throughout the year was average. The fall moisture was average and there was below average winter moisture.

The areas received average spring and summer moisture. Spring and summer moisture was recorded to be 4 and 90/100 inches from January to mid September and 5 and 35/100 inches in the fall at the Flying M Ranch headquarters. Ashurst Run recorded precipitation of 3.5 inches for the summer and 6 inches for the fall. This well needed moisture sustained plant growth through the grazing season and produced a viable seed crop at the end of the growing season.

Rangeland management status in the majority of the allotment continues to be satisfactory with static to upward trends. Areas of significant size are rated unsatisfactory due to pinyon/juniper invasion.

The Forest Service established seven new sites in 2002 to monitor condition and trend in upland pronghorn habitat. These seven sites have been monitored annually since establishment. A cattle exclosure was constructed this spring in the North Boot pasture on theSee Bar T Bar and Anderson Springs Allotment for monitoring condition and trend Management Plan DEIS.
in upland pronghorn habitat.

Wildlife personnel will also conduct informal monitoring of wetlands, springs, and grasslands.

Wildlife personnel from the Mogollon District would like to pursue grant/research on the effects of PJ and grassland treatments on birds, and potentially small mammals.

Planned 2005: Forest Service will continue to monitor.

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.

2004: The Coconino National Forest deferred or rested many pastures during the 2004 grazing season. Approximately 131,000 acres were rested yearlong and over 43,000 acres were deferred from August 15th to June 15. The attachment titled 'rested/deferred pastures 2002-2004' includes this information.
Review need for further rest on these pastures:

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 _ 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.

2004: AGFD Region Two contracted out aerial fertilizer application on a total of 500 acres. Fertilizer was applied on three plots at rates of 10, 20 and 38 pounds per acres. Vegetative monitoring showed vegetation and wildlife use response at 38 pounds per acre.

<u>Planned 2005:</u> We will continue to monitor the vegetation and grazing response to the 2004 fertilization. If the response continues to be good we may propose another treatment at a larger scale by the end of this year.

<u>Task 1.10b.: Investigate the possible use of nutritional supplements for pronghorn</u>

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.

2004: Salt blocks were set out on Raymond Ranch Wildlife Area and monitored using motion sensitive cameras.

<u>Planned 2005:</u> We will continue monitoring the salt blocks on Raymond.

<u>Task 1.10c: Investigate the use of forage seeding and other techniques</u>

2002/2003/2004: 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.

There has been a reseeding effort on the areas burneding in the 2003 Lizard and Mormon fires and the 2004 Jacket Fire. See tasks 1.3 and 1.4 for info.2003: The Arizona Antelope

Foundation paid for seed, which the Coconino National Forest used on the area burned in the Mormon and Lizard Fires.

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 that 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.

In relation to fawn-hiding cover, Matt Loser published his research related to livestock grazing and above ground productivity. The reference is: Loeser, Matt. R., T. E. Crews,

and T. D. Sisk. 2004. Defoliation increased above-ground productivity in a semi-arid grassland. Journal of Range Management, 57(5): 442-447.

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.

2004: Major repair of the Horse Lake Fence was completed.

A State Wildlife Grant was obtained to buy 30 miles of _ inch cable to replace the top wire on lake fences hopefully reducing breakage, elk damage and fence cutting. Fencing has been delivered in January 2005 and installation will begin next summer.

Planned 2005: Forest Service crews will install some of the cable in place of the top wire on fences around riparian areas.

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.

2004: Forest Service range crews rebuilt 10 miles of fence with a smooth, bottom wire 18" off the ground.

AGFD interns have been monitoring fences as they mapped slash on state and private land

Planned 2005: The Forest will continue fence modification and replacement and AZGFD will continue fence monitoring.

Task 1.14: AGFD (primarily WMs) and Forest Staff record use of ephmeral 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.

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.

2004: AGFD recovered 3 collars from pronghorn, which died and Forest Service refurbished the three collars and purchased four more collars. All these were put on pronghorn in December bringing the total back up to twelve. 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 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.

2004: Volunteers and Forest Service and AGFD transplanted hardstem and other riparian vegetation into Hay Lake and Long Lake (Mogollon Rim Ranger District) in October of 2004.

Forest Service Monitoring plots consisting of photos, canopy cover, frequency and a species' lists were established at the following wetlands: see attachments titled '2003 and 2004 wetland monitoring.'

In 2005 the expected Record of Decisions for the Bar T Bar / Anderson Springs and Pickett Lake / Padre Canyon Allotments will call for the exclusion seasonal and semi-permanent wetlands and annual monitoring to assess changes in vegetation and wetland function.

Planned 2005:One of the AZGFD interns plans to begin a master study of the affects of grazing by cattle and wildlife on the ephemeral lake riparian. She is currently seeking funding for the work.

AZGFD interns will monitor success of plantings in Hay, Long and Tremaine Lakes.

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.

2004: AGFD interns have continued fence inventory in conjunction with slash mapping.

Forest Service and Arizona Wildlife Federation have completed an agreement on fence inventory. FS and AGFD will provide AWF with survey protocols so that all data collected will be consistent.

Planned for 2005: We will continue fence inventories.

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 - *COMPLETED in 2003*

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.

2004: AGFD Interns are continuing fence inventory.

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.

2004: Thanks to radio tracking data we have definitely located two migration routes from summer range to winter range.

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.

2004: Using GIS maps of electric and other types of fences in the research area, locations of the pronghorn that fitted with GPS-equipped collars movements can be analyzed to determine if electric fences impact pronghorn movements or pasture use. Movements so far have suggested that electric fences with a hot bottom wire can inhibit pronghorn movements.

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

2004:

The 3rd year and last currently planned year of this three-year effort was completed in April-May 2004.

2004 Survey data:

Unit	Bucks	Does	Fawns	Total	
5A	**36**	**79**	**27**	**142**	**46:100:34**
5B	**63**	**170**	**75**	**308**	**37:100:44**
5B gunned	**19**	**47**	**27**	**93**	**40:100:57**
5B ungunned	**44**	**123**	**48**	**215**	**36:100:39**

2005 Planned: No Coyote control is planned.

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

See 3.1

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 2005:

Data from the 12 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.

2004: See previous information on radio collars.

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

No activity to date.

2004: The 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 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.

2005: The pronghorn with GPS collars should assist in determining fawning areas.

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

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.

2004: AZGFD and Forest are working on repair of catchments damaged in the wild fire.
Planned 2005: **Repairs to three catchments are planned in 2005**.

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.

2004: Forest Service is constructing a new stock tank on the Pickett allotment as part of the decision to fence livestock out of Ashurst Lake.

Planned 2005: **Repairs to three catchments are planned in 2005**.

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

Planned 2005: **AZGFD will repair/ rebuild the Ashurst Lake Fence in 2005**

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.

2004: Passages were opened on Forest Service and private lands near Chavez Pass and near Yeager Lake on those projects.

Pronghorn captured and fitted with GPS-equipped radio collars by Arizona Game and Fish Department have already provided substantial information on movements among the various openings and between summer and winter range. Two Corridors from Anderson Mesa to the winter range have been identified from these locations.

Planned 2005: We will continue to create openings and connections on each juniper removal project as fits the conditions on the ground.

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 - Completed

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 - Completed

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.

2004: Decent fawn crops for the last two years are moving us away from the need for emergency measures.

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 additional 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.

2004: See salt block notes item 1.10b

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.
  -

- **2004 Coconino National Forest paid to refurbish three collars, which AZGFD picked up of pronghorn, which had died. The Coconino National Forest also purchased four new radio collars. All the collars were put out on pronghorn in late November bring the total of active collars to 12.**

4. Amount of non-inventoried fence

- A suggestion was made that the inventoried fences on Anderson Mesa be complied 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

Little Boot stock tank was filled in the third week of December 2004. A species list was establish in 2004, and monitoring plots consisting of photos, canopy cover, species list, and frequency data will be collected starting in 2005.

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 additional 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.

2004: A running discussion has been held through the year. We are continuing to work with Jack Metzger on possible solutions. AZGFD Research Branch is now participating in the discussions. We have begun mapping slash areas

2. Let the Forest Service know when AGFD plans to burn on Raymond Ranch.

2004: It has continued to be difficult to burn AZGFD has explored options with burning with the State Land Department, burning ourselves, contractors and working with the Nature Conservancy. No solution yet been found.

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.

2004: See Range Report for this year

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.

We have had a problem getting these costs. Apparently all the control efforts in by AZGFD in Arizona use the same accounting codes.

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.