PRONGHORN

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ARIZONA ANTELOPE FOUNDATION, INC.

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In This Issue

AAF Mission Statement:
The Arizona Antelope Foundation is an organization dedicated to the welfare of pronghorn antelope. The Foundation's Mission is to actively seek to increase pronghorn populations in Arizona through habitat improvements, habitat acquisition, the translocation of animals to historic range, and public comment on activities affecting pronghorn and their habitat.

Our cover photo comes to us from AAF Director and retired AZ Game & Fish Department Biologist Richard Ockenfels

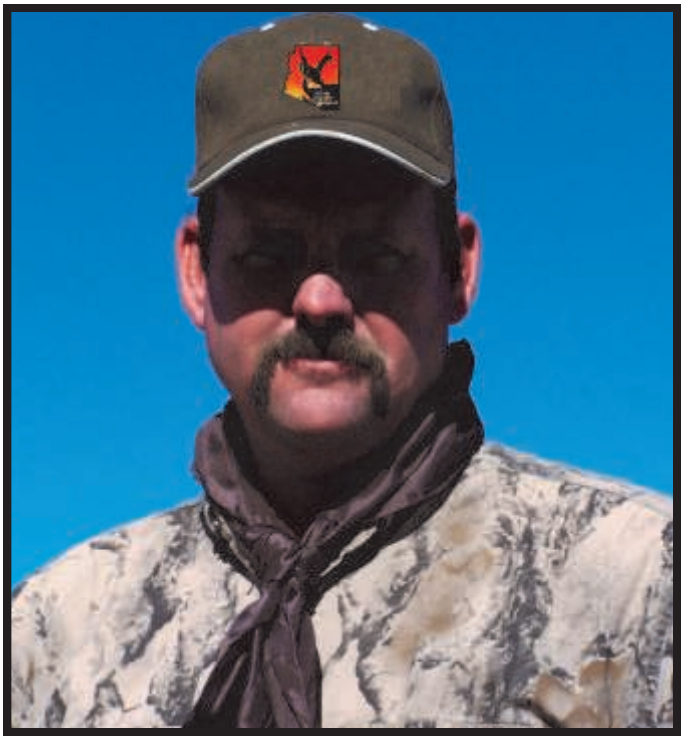
***Pronghorn* is a quarterly newsletter for the members of AAF. Letters, comments, news items, articles, pictures and stories are all welcome and will be considered for publication.** **Address all such items to:**
Pronghorn Editor, PO Box 12590, Glendale, AZ 85318, or by email at info@azantelope.org.

President's Message

Fall is in the air, and I hope this message finds you enjoying the many outdoor activities that make Arizona truly great. This is the time of year that reminds the dwellers of the lowland areas of the state why we live here, and for the folks in the higher elevations it only solidifies why they live there.

Being that this is an election year, I would like to remind everyone to do their homework on the slate of potential candidates to ensure you are voting for the candidates that align with your personal viewpoints. I would encourage you to look at proposition 109. Prop 109 is a proposed constitutional amendment that protects the citizen's hunting heritage from attacks by well funded, anti-hunting activists who have assailed sportsmen throughout the country in recent years. In addition, it specifies that wildlife management decisions will be based in sound science, not the emotion inspired by radical animal "rights" groups. I feel strongly about this due to recent statements such as those made by Wayne Pacelle, President of the Humane Society of the United States: "**If we could shut down all sport hunting in a moment, we would"** (Associated Press). Take a look and judge for yourself if you feel strongly about your hunting heritage.

Whenever talk of hunting heritage comes up I immediately think of my kids (Cade 12 and Maci 10). The youth are truly our hunting heritage, and it is our duty to **"train our replacements".** The more youth we introduce to hunting and the outdoors the more adults



we will have in the future fighting to save the animals and the way of life we hold so dearly. As the number of adult hunters declines, fewer youth are taking their place. According to a report from the U.S. Fish and Wildlife Service, while the U.S. population rose significantly in the past decade, the number of adult hunters

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Mark your calendar

Annual Membership Meeting
November 8th 6:30 PM
El Zaribah Shrine
552 N. 40th St. Phoenix
Election of Officers and Directors
Visit our website to see the nominations

Upcoming AAF Projects

October 9 - Rose Tree & Babocomari Ranches
Spring 2011 - Unit 21 TBA

Other Events

October 22-24 Double Circle Ranch Erosion Control Workshop
October 30 AAF Volunteer Awards Banquet
November 9-11 Antelope Capture & Collar

Board Meeting Schedule

October 11
November 8
All meetings are at 6:30pm at El Zaribah Shrine in Phoenix

WCC Meeting Schedule

October 26
November 23

Unit 4A Project July 2010

By Dave Cagle, AZGFD Wildlife Program Manager Pinetop Region

On July 17 a good turn out of AAF volunteers met along Highway 99 on the AJA Ranch of the Hopi 3 Canyon Ranches in the heart of Unit 4A's pronghorn country. Wildlife Manager, Ken Clay organized the volunteers to remove the bottom strand of barbed wire and a solid wall of tumble weeds along almost two miles of fence line. Removing the wire and brush will provide the resident pronghorn with numerous crossings along what was previously a two mile long barrier.

In the afternoon the volunteers followed Ken to the western portion of the O'Haco Ranch where they installed about 15 "goat bars" along a five wire fence. These new PVC crossings will increase the habitat quality for pronghorn by increasing their access west of Chevelon Butte.

Unit 4A has recently undergone a major habitat renovation that will benefit the pronghorn population for years to come. Over 20,000 acres were treated north of the Forest boundary to reduce juniper tree densities, and restore Plains grasslands communities. Pronghorn have been regularly seen in the newly treated areas where they were absent for decades. In addition, extensive coyote control efforts were conducted during the last few springs, and the preliminary 2010 fawn recruitment rate looks encouraging. These fence projects only add to increase the habitat quality for this isolated population, and help to insure their long-term viability.

The Arizona Game and Fish Department sincerely appreciates the dedication provided by the AAF membership. These types of projects would not be possible without the continued dedication of your hard working volunteers who spend their free time to benefit Arizona's wildlife resources.

Thanks to our volunteers:

Al & Kris Baizel
Ken & Kody Clay
David Cruce
Bob & Marilyn Hanlin
Bill & Mary Keebler
Jim McCasland
David McCasland
Mike McCasland
Richard Ockenfels
Dory Raddatz
Cecil Schmitz
Al Sue
Connie Taylor
Brian Taylor
Missy Tirpak
John Wintersteen
Elaine Wintersteen

Protein (Nitrogen) Content of Pronghorn Forage Plants and Its Role in Dietary Water

By Melanie Tluczek, AAF Scholarship Recipient
Prepared for the Friends of the Agua Fria National Monument July, 2010

Pronghorn near South Campbell tank, Perry Mesa. Summer, 2009.

Background

In October of 2009 the Friends of the Agua Fria National Monument granted funding to supplement an ongoing graduate project entitled "The role of preformed water in the diets of American pronghorn antelope (Antilocapra americana) in a semi desert grassland of Arizona" (The AAF awarded Melanie a $500 scholarship in 2007 for the graduate project). $1,901.92 was provided by FAFNM to analyze forage samples for nitrogen content at the Barry Goldwater lab at Arizona State University. Use of this facility provided the most expedient and accurate results available. The data collected will be used in combination with data on preformed water (plant moisture content) in order to model pronghorn free water needs (water imbibed from free-standing sources). It can also provide an index of forage quality, and provide an index of metabolic water production (water produced within the body).

The nitrogen analysis was completed in November of 2009, yielding nitrogen, carbon, and hydrogen data for a total of 154 sample plants. The nitrogen data is the focus of this report. Plant nitrogen content can easily be converted to protein, where it can be used both as an index of forage quality and metabolic water potential. Therefore we will refer to percent protein for the duration of the report.

The importance of understanding pronghorn water needs has been repeatedly stated by wildlife managers. Currently very little is known about how much water is available through food and how much free water they need during biological stress periods. Modeling pronghorn water needs will provide a way to estimate water available in pronghorn forage, the metabolic water that is produced by breaking down protein, carbohydrates, and lipids in forage, and the remaining amount of free water pronghorn would need to survive at different times of year.

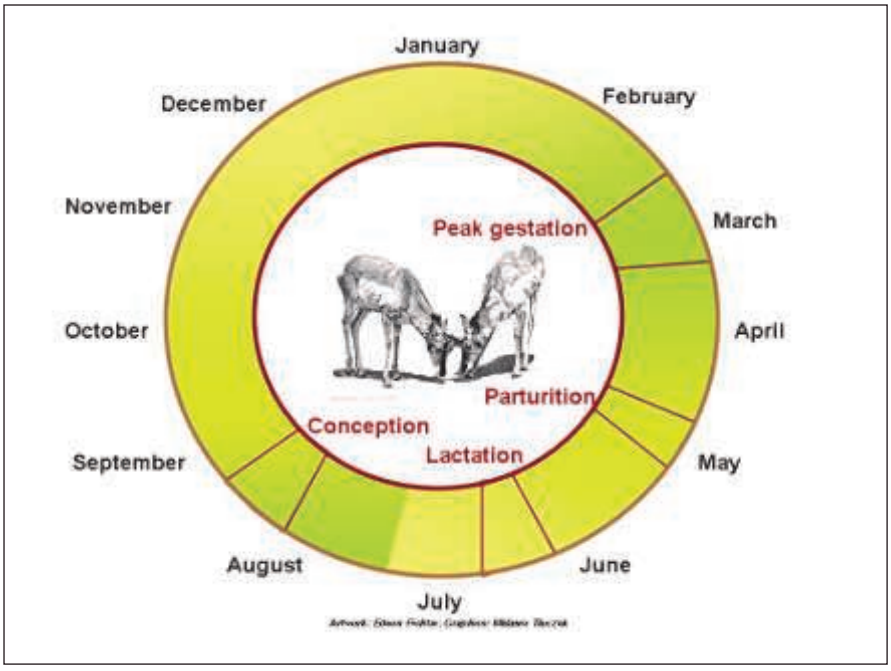

Figure 1: Biological stress periods for female pronghorn. Green and yellow symbolize approximate moisture content of forage plants throughout the year.

Methods

Forage was collected 4 times per year in 2008 and 2009, corresponding to the periods within which pronghorn does are under the most reproductive stress. These are late gestation (mid-March), parturition (early May), peak lactation (mid-June), and conception (mid-August). Forage plants were collected from locations where pronghorn were observed feeding. This was done for 4 consecutive days within each bioperiod. At least 100 grams of each live plant species present was collected in paper bags and weighed. Samples were then taken back to the lab, dried, and ground through a 1mm screen to prepare them for analysis.

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Sonoran Pronghorn Update

The Cabeza Prieta National Wildlife Refuge (CPNWR), in cooperation with the Arizona Game and Fish Department, proposes to develop a targeted predator control plan for the Sonoran pronghorn captive rearing facility. In accordance with the National Environmental Policy Act of 1969 (NEPA), the USFWS intends to analyze the effects of the proposed alternatives on the environment.

A predator control plan is necessary as Sonoran pronghorn have been lost to predation within and adjacent to the captive rearing facility. Two pronghorn predation events have been documented within the pen in the fall of 2009. Also documented were seven incidents where coyotes preyed upon pronghorn released immediately adjacent to the captive rearing facility. Approximately 80 Sonoran pronghorn survive in the wild within the Arizona portion of their current range. An additional 70 Sonoran pronghorn reside within a captive breeding facility in the Child's Valley. The facility serves as a source for augmenting the existing wild population and establishing additional populations. The predation of seven released pronghorn is a significant loss to the recovery effort.

PROJECT DESCRIPTION

Background:

Numerous emergency recovery actions were implemented following the decline of the U.S. pronghorn population during the severe drought of 2002. Chief among these emergency actions was the development of a captive-breeding pen at CPNWR. A 640-acre captive-breeding pen was constructed during the winter of 2003. The external walls of the pen are constructed with woven wire game fence 5.5-foot high with one foot of the fence buried underground to deter predators. The interior of the fence is lined with shade cloth to obstruct predators from viewing pronghorn inside the pen. Two electric fences were also constructed around the outside of the pen to deter predators. Field crews patrol and inspect the electric fences daily and repair as necessary.

The pen was initially stocked with two female and a male pronghorn in early 2004. Four more does were captured and moved into the pen in December, 2004. In 2005, three females from the U.S. population were captured and transported to the pen. In early 2006, one male and three female Sonoran pronghorn in Mexico were captured and transported to the pen. These 14 pronghorn served as the initial brood stock for captive rearing and subsequent release of pronghorn back into the U.S. population.

Pronghorn within the captive-breeding facility have since produced 87 fawns. There have been 11 pronghorn mortalities within the pen. One was confirmed epizootic hemorrhagic disease (EHD)/Blue Tongue Virus (BRV), two were associated with capturing operations, two were the result of bobcat predation, and one was from accidental entanglement in the fence. Cause of 5 of the mortalities could not be determined. Given there were no signs of predation, disease is the suspected cause of death.

44 pronghorn have been released from the pen. Of these 44 animals, there are 20 known mortalities: three from drowning in an irrigation canal; seven from confirmed coyote predation; two from suspected predation; five from capture myopathy; and three from unknown causes. Thus, the captive-breeding pen has served to augment the wild population of Sonoran pronghorn by 24 animals to date. The majority of these animals were released within the Child's Valley over the last two years.

There are three main sources of Sonoran pronghorn loss related to the captive population: capture stress, disease, and predation. The Recovery team is working to reduce capture related stress by revising our capture protocol for Sonoran pronghorn. They are working on procedures to vaccinate captive pronghorn against the EHD and BTV complex. There is also the vital need to develop a predator control program for predators gaining entry to the capture pen and preying on recently released pronghorn.

Of particular concern is the level of predation of pronghorn released adjacent to the captive rearing facility. It appears coyotes have learned to exploit re-

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*(**Sonoran Pronghorn Update** continued from page 6)*
cently released pronghorn. Since released pronghorn are fitted with radio collars, dead pronghorn have been located and information collected that is necessary to determine the source of mortality. Based on information collected from pronghorn killed adjacent to the pen, it appears that coyotes kill and feed on pronghorn during the night, leaving little or no recoverable remains by the next day. The lack of recoverable remains and the copious amounts of footprints around the kill site suggest coyotes hunting in packs are attacking pronghorn. Pronghorn habitually slow down while crossing washes, enhancing their vulnerability during pursuit. Coyotes have generally preyed upon pronghorn during the first few days following release. Solitary pronghorn seem particularly vulnerable.

Consequently, as the lead agency responsible for the management and recovery of federally listed endangered species pursuant to the Endangered Species Act of 1973, as amended, USFWS seeks the opportunity to develop a predator control plan to provide strategies for dealing with depredation within and adjacent to the pen. Implementing these strategies would assist in achieving the goal of augmenting and recovering the pronghorn population within the current range and eventually recovering the U.S. population from the threat of extinction as specified in the Sonoran Pronghorn Recovery Plan, with the ultimate goal of delisting the species.

Proposed Action

The proposed action is the development and implementation of a predator control plan defining specific control procedures for predators entering the captive rearing pen and coyotes adjacent to the pen during planned pronghorn release activities.

Several alternatives have been identified to minimize predation of pronghorn within and immediately adjacent to the pen during pronghorn releases, including:

- No Action: No predator plan will be implemented
- Lethal humane removal of predators observed within the pen and implementation of coyote control methods within the vicinity of the captive rearing facility to prevent coyote predations of recently released pronghorn
- Implement aversion training such as use of lithium chloride in a pronghorn-based bait to adversely condition coyotes against the desire to feed on pronghorn
- Live trap and temporarily hold coyotes in a captive facility prior to, during and following scheduled pronghorn capture and release operations at the pen. Release on site one month following the last pronghorn release within Child's Valley.

Through this scoping process, the Refuge sought public input (which closed on September 20) on the alternatives to facilitate the identification of issues, concerns, or other alternatives. A draft document analyzing the impact of the various alternative will be developed and provide to the public for review and comment following the scoping period.

In response to the above information provided by Refuge Manager Curt McCasland, the AAF Board of Directors at its September meeting directed President Shane Stewart to provide input to the Refuge. The AAF is in full agreement with any and all measures deemed necessary to control the predation issue to a point where predators no longer have an adverse affect on the Sonoran pronghorn population.

Arizona Game & Fish Special Tag Program

The results are in: despite a shaky economy, the special tag program was given a pretty good boost again this year. A total of $91,300 was raised at 3 different venues:

- Arizona Elk Society Banquet in March auctioned for $32,000
- AZ Antelope Foundation & AZ Deer Association combined banquet in June auctioned for $30,000
- Arizona Big Game Super Raffle in July raffle raised $29,300

One of the most successful habitat improvement programs has been those financed by raising money through the issuing of these special pronghorn tags. After an intense lobbying effort by the Arizona Desert Bighorn Sheep Society, in 1983 the Arizona legislature passed A. R. S. 17:346 by which two big game tags would be issued for each big game species at a special auction and/or drawing. The proviso was that all of the monies obtained would be used solely for the management of the species for which the tag was issued. This statute was supported by Arizona Game and Fish Commission Rule R12-4-120, and in 1985 the first special tags were issued for pronghorn. In 2006, the legislature and Commission expanded the number of special permits for each species from two to three, with the third permit going to the Arizona Big Game Super Raffle. Over the years this program has generated over 18 million dollars for wildlife conservation in Arizona, over 1.5 million for antelope alone. These monies are available to open up significant areas of junipers and other brush, remove and modify fences, develop water sources and food plots in critical pronghorn habitat, and conduct studies that will benefit pronghorn. Hopefully too, key pronghorn habitats will also be acquired with tag funds. The AAF takes part in the Habitat Partnership Committee which selects the specific activities and projects that are paid for each year with these funds.

Auction Tag Antelope tied for the B&C World Record

A TALE OF TWO PRAIRIES: Comparisons between Anderson Mesa and Garland Prairie

By Dr. David Brown, AAF Life Member and Past President

A while back, I took time out from my turkey hunt in Unit 8 to check on the welfare of Garland Prairie and the antelope that summer there. I wanted to compare the Prairie with Anderson Mesa, an area with which I was familiar and which I had last visited a month earlier. It was no secret that Anderson Mesa's pronghorn, despite having a history of abundance there, had fared poorly of late. Indeed, Arizona Game and Fish Department surveys had shown that the density of pronghorn in Game Management Unit-8 was three times than in GMU-5—the game management area containing the fabled Anderson Mesa. More importantly, fawn recruitment, that is the number of fawns per 100 does, was consistently higher on Garland Prairie than on Anderson Mesa. I wanted to know, *how's come*?

I had a pretty good idea. Intensive management had resulted in Anderson Mesa's range resources having been hard hit by heavy cattle grazing and too many elk. A diet study by Dr. W. H. Miller and Melissa Drake with Arizona State University's Applied Biological Sciences Department had showed that Garland Prairie's

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*(**President's Message** continued from page 3)*

declined by 7 percent, to 13 million nationwide. This number will continue to decline if this generation of hunters doesn't do something about it. There are many ways to do this, and each kid will have a different "formula" that gets them excited. The key is to make it fun! Before they're old enough to hunt, you can teach them about the trees and the local wildlife. Sit in the back yard and watch the birds. There are steps you can take while your child is very young to peak their curiosity about the outdoors. The more they learn, the more they'll want to know. Do what you can to get them away from the concrete and steel. If you teach them to appreciate all that the land has to offer an early age, they'll never stray too far. The time you invest today will pay dividends in the future. I have always said "kids only go wrong if they don't ingest enough campfire smoke". **Continue the legacy!!**

Although the number of hunters overall has dropped, the number of female hunters has actually risen thanks to programs like the National Wild Turkey Federation's Women in the Outdoors and the international Becoming an Outdoors Woman (BOW) program, which introduce women to outdoor activities such as hunting and fishing. Since many children are growing up in single-family homes, it's often left up to the mothers to teach their children about the outdoors. For this reason, it's more important now than ever to get women involved in outdoor activities. The key to introducing women to the outdoors is to make their first experience fun and pleasant. Don't expect women to fall madly in love with hunting after the first experience. Developing an interest in a sport often takes time. Expose your wife or girlfriend to the outdoors when the weather is pleasant. Don't take her out in bitterly cold weather or in other foul conditions. The weather can be the determining factor of whether or not she has a good time. Take her somewhere where she'll see a lot of wildlife. If she doesn't want take a shot during her first hunt, don't push her. Just remember, this experience is for her, not for you. If a nice buck walks right in front of your stand, and she doesn't want to shoot it, just let it pass. You can easily ruin the hunting experience for her by putting too much pressure on her to perform. Let her take it at her pace. The most important thing is that she enjoys the experience because a positive first hunt can help build a good base of interest. Again, this is part of good stewardship, by increasing the numbers of those who believe in conservation.

If you have read my other columns this year you will have noticed one common thread "involvement". As General George S. Patton once said "You can't fight a war without an army"! Nor can conservationists win a war to save the wildlife and the habitat we love without our own army. Never sit idly by

hoping someone is looking out for your interests. Although someone may be, there may be two that are looking to destroy it. The greater our numbers, the greater our strength and our voice. This is why I constantly encourage increased involvement, I feel it is imperative to allow us to properly fulfill our vision.

May your fall be pleasant and bountiful, and may you hear the call of conservation.

"LIBERTAS AD VAGOR"... FREEDOM TO ROAM"

Shane Stewart
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Unit 4A Proj


ADOPT-A-RANCH
PROGRAM
Conserving wildlife and the environment
Improving relations with landowners
Maintaining public access
recreation

*(**A Tale of Two Prairies** continued from page 8)*
pronghorn enjoyed a much greater variety of forbs in their diet than those on Anderson Mesa. Moreover, the nutritional content of the vegetation on Garland Prairie was significantly greater than that on Anderson Mesa. But there was something else. Anderson Mesa had become infested by junipers and other conifers (Fig. 1). I wanted to see if that was true of Garland Prairie as well.

There are a lot of similarities between Garland Prairie and Anderson Mesa. Both of these grasslands are between 6500 and 7200 feet elevation and reside on volcanic basalt composed of *malpai* or badland rocks. Both prairies support stands of western wheat grass and clumps of blue grama along with Gunnison prairie dogs and pronghorn antelope. Both are managed by the U. S. Forest Service, Anderson Mesa being on the Coconino National Forest, Garland Prairie being part of the Kaibab National Forest. Both are grazed by livestock, with both cattle and sheep being present on Garland Prairie. I also learned that the latter site also contained some tightly fenced pastures and several private in-holdings—a bad omen for the future of GMU-8's pronghorn.

Figure 1. Former prairie at the head of Grapevine Canyon being heavily invaded by "cedars" (*Juniperus* spp.).

Figure 2. Garland Prairie as viewed in May 2007.

It soon became obvious that there were a number of differences between the two areas. As reported, Garland Prairie appeared in better shape with more forbs and a greater variety of plants. Garland Prairie was also less homogeneous, some pastures, such as those around some of the old homesteads, showing evidence of heavy use while others appeared lightly grazed. I saw about the same number of antelope in both areas, even though elk sign was more abundant on Anderson Mesa. Probably for this reason, the condition of the cliff-rose and other browse plants on Garland Prairie was superior to those on Anderson Mesa. The most discernable difference, however, was the relative lack of encroaching junipers, pinions, and other woody plants on Garland Prairie (Fig. 2)—a phenomenon plaguing many Southwest grasslands and one that has stimulated the expenditures of several millions of dollars in restoration efforts.

That many of Arizona's grasslands are being converted to woodlands and bush lands is undeniable. Time lapse photos in a recent publication, ***The Changing Mile Revisited*** by Ray Turner, Jan Bowers, and Robert Webb, clearly shows a progression since the turn of the century from open grasslands toward wooded landscapes. Indeed, brush encroachment has been the most persistent problem facing pronghorn antelope on Arizona's rangelands. The reasons for these invasions are discussed at length in the above book and are mostly attributed to past livestock grazing, the resulting loss of fine fuels, and a reduction in the incidence of fire. Cattle

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Figure 3. Government Prairie showing lack of invasive trees and shrubs in May 2007.

***(A Tale of Two Prairies** continued from page 12)*
spread the seeds of woody plants, which because of fewer grasses, take root and invade the former grassland. Without periodic fires, woody plants eventually take over the range.

But why is it that junipers and pines appear less invasive on Garland Prairie than on Anderson Mesa? Fires on both mesas are now infrequent; at least there is no evidence otherwise. Could land managers be doing something other than permitting the grazing of livestock to encourage brush encroachment? To try and get some insights into an answer to this question I took another side trip to Government Prairie in GMU-7. Government Prairie has remained relatively intact and brush-free since I first hunted antelope there in 1965.

I was not disappointed. Government Prairie looked much as I had remembered, with only a few ponderosas extending out into the grassland (Fig. 3). Moreover, the clumps of grass appeared relatively thrifty and shrub-free without any snake-weed or other invading plants. The intensity of grazing and other disturbances had apparently been such that the composition of neither the grassland nor the adjacent forest had been greatly altered. So, "how's come?" Had the meadows recently burned, or had the grassland remained intact for other reasons?

An obscure publication referenced in a book on California vegetation suggested an answer. In a study in the Sierra Nevada, R. D. Rutliff observed that high elevation meadows tended to retain their herbaceous character provided that the root structure of the grasses was retained along with the grassland's original fine soils. Heavy grazing, especially in proximity to water sources, disturbed the root structure of the grasses and altered the natural wetting and drying cycle of the subsurface soils. This in turn led to the establishment of trees and other deep-rooted plants. In other words, ***intense*** grazing and/or other disruptive practices such as "*short-duration grazing*" tended to favor the encroachment of trees and shrubs at the expense of the grasses.

Could grazing intensity also explain the phenomenon of tree encroachment along with fire suppression? And if so, could heavy grazing also explain some of the massive shrub invasions that had taken place in semi-desert grasslands in southern Arizona?

Time lapse photography appears to say so. Photographs from a 1934 U. S. Geological Survey Water-Supply paper, and recently matched by Dr. Ray Turner, show a heavy invasion of mesquites in a semi-desert grassland area formerly heavily grazed on a ranch in Altar Valley (Figs 4a, 4b). A similar match taken of a slightly higher site on the historically less heavily grazed Buenos Aires Ranch in the same valley show significantly less mesquites than on the former ranch (Figs. 5a, 5b).

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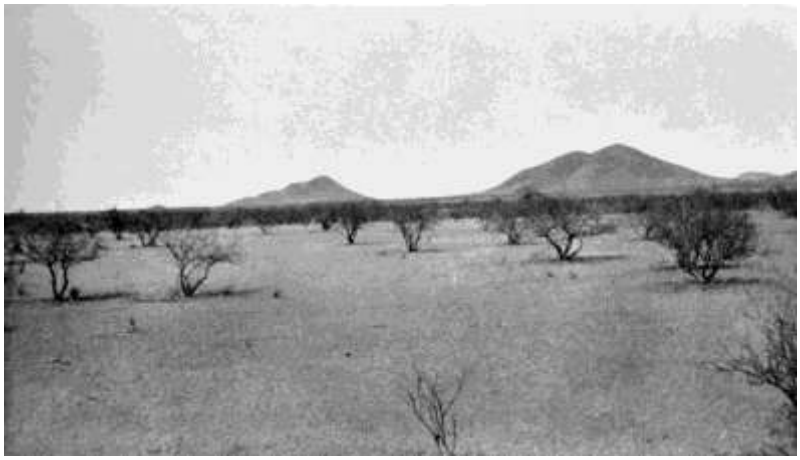
*(**A Tale of Two Prairies** continued from page 13)*



Figures 4a(l) and 4b(r). The sparse vegetation in this semi desert grassland west of the Sierrita Mountains in GMU-36 in 1934 has been replaced by a dense population of mesquites in a matching photo taken by R.M. Turner in 2003. Pronghorn antelope, introduced in to this historic area in the 1940s' did not persist and are now absent from this range, which was formerly heavily used by cattle.

Figures 5a(l) and 5b(r). Open plains in Altar Valley east of Baboquavari Peak in 1934 (5a) compared with the same view in 2007 (5b). This locality, the former Buenos Aires Ranch was never as heavily grazed as some other sites in Altar Valley. Pronghorn, reintroduced to Buenos Aires National Wildlife Refuge in the 1990s, persist on the refuge but in low numbers due to the gradual but persistent invasion of mesquites and other shrubs.

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Hunting Tales
By Tyler Dotson, AAF Member

I was hunting in Unit 10 when I shot this buck. I spotted him at 1,000 yards with 6 does. Another smaller buck was very persistent trying to take the does. Because my buck was preoccupied, I knew that I would have a good chance of getting this antelope. I slowly began my stalk. I did not realize it would consist of a 2 ½ mile agility test and I was not as prepared for this hunt as anticipated. It seemed that I would never close the gap between me and these antelope. Every time they went over a rise I would sprint as fast as I could to get within shooting range. Finally when I got within 300 yards I slowly crawled over the crest of the hill where the antelope were. The next thing I knew I ran into a herd of over 80 head of elk including 3 dominant bulls that were bugling like crazy. Fortunately for me the elk didn't pay much attention to me so I was finally able to pull off the shot that I will remember for a lifetime. I have never been so exhausted and drenched with sweat, but at 95° I survived an Arizona antelope hunt and the results speak for themselves. This buck was not as tall as I had anticipated at only 13 ½ inches, but the mass of his horns helped to score this buck at 72 ½ B&C.

AAF Conservation Awards Banquet
October 30, 2010

All too often, the efforts of many dedicated conservationists seem to go unappreciated and unnoticed. Countless hours are spent every year by many volunteers working on a variety of projects that benefit the various wildlife in our state. Indeed, the collective efforts of wildlife conservation organizations in Arizona are responsible for conserving, preserving, and expanding wildlife populations from Yuma to Springerville and from Winslow to Kingman.

It is time that the tireless efforts of these dedicated volunteers are honored. And, in the spirit of honoring these local heroes the Arizona Antelope Foundation is hosting its First Annual Arizona Conservation Awards Dinner and Reception. The event will be held October 30, 2010 at El Zaribah Shrine in Phoenix and promises to be an exceptional night dedicated to showcasing the efforts of our fine volunteers from around the state The purpose of the event is to allow each organization to determine their award recipients but to present the awards in a public event with other like-minded individuals so that their achievements can be recognized by many.

The cost of the event will be $30.00 per person and will include admission, dinner, desert and the awards. A silent auction and raffle will also be available for those wishing to participate. The proceeds from the Silent auction will be used to defer the cost of the banquet.

Visit our website for more information. Hope to see you there!

www.azantelope.org

*(**Protein Content of Pronghorn Forage** continued from page 5)*

Nitrogen, carbon, and hydrogen were determined for 154 plants with 2 replications each using the Perkin-Elmer 2400 Series II CHNS/O nitrogen analyzer in the Barry Goldwater lab at Arizona State University. Replications were averaged and the nitrogen values converted to protein by multiplying by 6.25. In addition, protein content was analyzed using a 3 way ANOVA for differences between years, biological periods, forage types, and their interactions. A Turkey's HSD test was conducted to determine which levels within each factor were significantly different.

Results

Table 1 shows the mean protein values for the forage species, organized by bio-period and year. These will be used to calculate metabolic water production in the following model (figure 2). The completed model will be used to determine at which times of year it is necessary for pronghorn to consume free water.

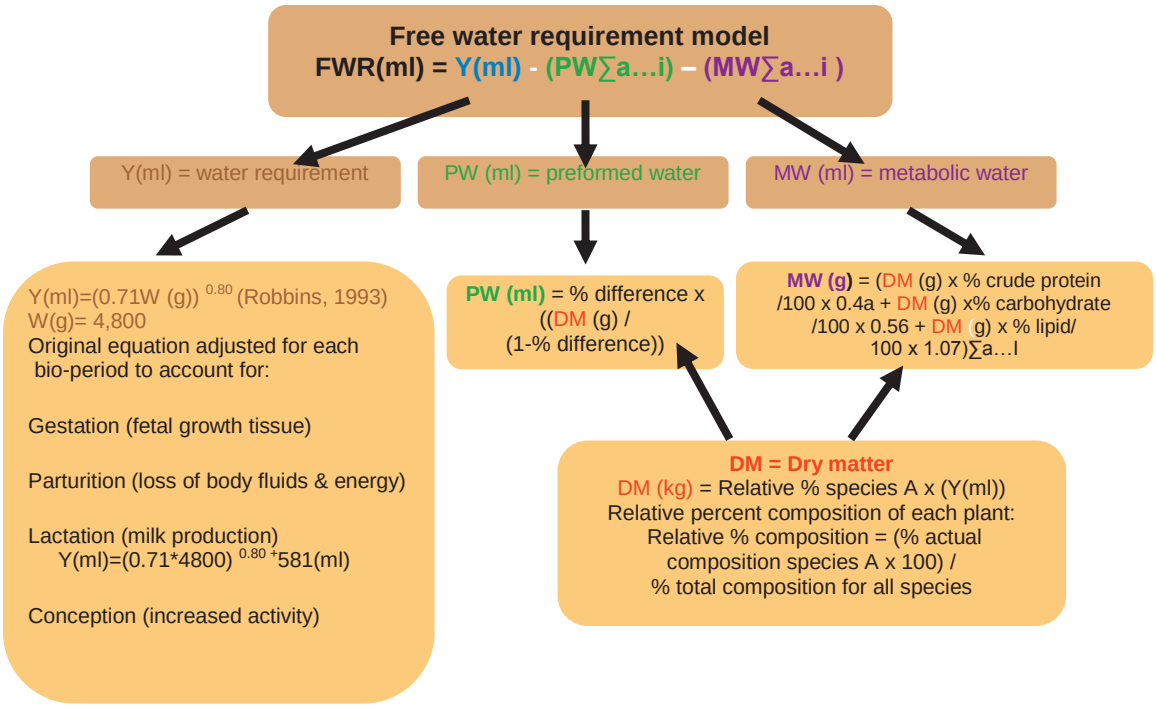
The results of the ANOVA test show significant differences between years, forage types, and some biological periods. Interactions between years and forage types, and bio-periods and forage types are also significant but will not be addressed in this report. Most notable are the differences between the protein levels during the bio-periods. Protein levels during gestation were significantly higher than dur-

(Continued on page 17)

Table 1: Mean percent protein for pronghorn forage species. N/a indicates that no specimens were available for collection during that season.

Year	Bio-period	Forage class	Mean % Protein
2008	Gestation	Forbs	28.49
		Shrubs	10.22
		Grasses	27.44
	Parturition	Forbs	17.24
		Shrubs	14.03
		Grasses	11.27
	Lactation	Forbs	12.00
		Shrubs	12.98
		Grasses	n/a
	Conception	Forbs	17.08
		Shrubs	11.28
		Grasses	9.48
2009	Gestation	Forbs	17.71
		Shrubs	7.89
		Grasses	n/a
	Parturition	Forbs	11.88
		Shrubs	10.91
		Grasses	6.72
	Lactation	Forbs	11.41
		Shrubs	11.43
		Grasses	n/a
	Conception	Forbs	9.92
		Shrubs	11.09
		Grasses	4.00

Figure 2. Schematic of model for free water requirement. Nitrogen is converted to percent crude protein and used to calculate metabolic water. Calculations adapted from Fox et al, 2000.



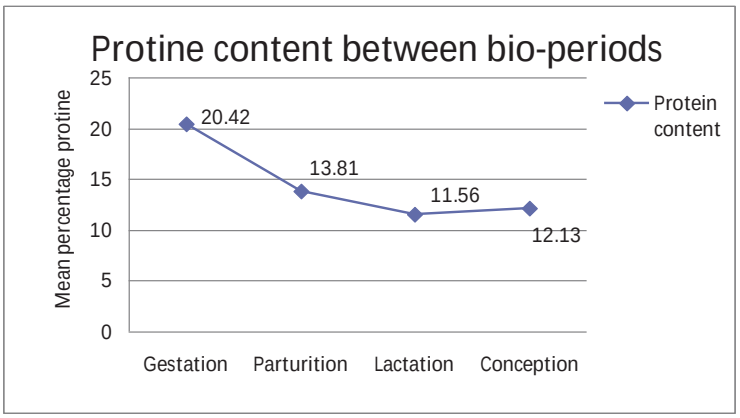
	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Year	1	594.34	594.34	32.7	1.418e-07 ***
Bio-period	3	899.74	299.91	16.5	1.313e-08 ***
Forage	2	186.82	93.41	5.14	0.0077225 **
year:period	3	132.75	44.25	2.43	0.0700473 .
year:forage	2	168.45	84.22	4.63	0.0121766 *
period:forage	5	452.67	90.53	4.98	0.0004552 ***
year:period:forage	3	27.42	9.14	0.5	0.6812635
Residuals	89	1617.61	18.18		

Table 2: ANOVA for mean percent protein content of pronghorn forage species. * Significant difference between factors.

*(**Protein Content of Pronghorn Forage** continued from page 16)*

ing parturition, lactation or conception. Differences between the later three bio-periods are not significant. Figure 3 shows the means for the bio-periods, with years and forage types combined. Protein levels are highest during late gestation and lowest during lactation.

Figure 3: Mean percent protein for all forage species during pronghorn bio-periods. Data for 2008 and 2009 are combined.



Conclusions

Final results of the model will be available once data collection is completed for lipids, carbohydrates, and percent species composition. Separate models will be run for each bio-period of 2008 and 2009. The results will show either a surplus or deficit of dietary water (preformed water plus metabolic water), and indicate whether there is a need for pronghorn to drink freestanding water. This will show which biological stress periods in which pronghorn are the most vulnerable, and which times they may be able to meet water requirements without the use of freestanding water. This model can then be used in other locations and with some modifications, for different ruminant species. It is intended to aid wildlife managers in deciding when providing anthropogenic waters may or may not be appropriate.

The protein content data clearly shows a decrease during one of the most physiologically stressful periods for pronghorn does; peak lactation. During this time fawns are at their largest while still nursing, and does require an estimated 581 ml more water than any other time of the year (Murray et al., 2008)*. At this point protein content in the forage dips, bringing with it a decreased ability to produce metabolic water. This, along with the decrease in preformed water and rise in ambient temperature, makes it difficult for pronghorn does to meet water requirements through dietary water alone. It is reasonable to assume that during peak lactation, it is necessary for pronghorn to consume more free water. The completed model will test this hypothesis.

*****Information on pronghorn milk production is currently unavailable, therefore milk production from sheep, a ruminant of similar weight, was used as an approximation. We hope to obtain information specific to pronghorn in the future.

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Robbins, C. T. 1993. Wildlife feeding and Nutrition. Academic Press, Inc. Orlando, Florida.

Melanie Tluczek is a graduate student at Arizona State University Polytechnic campus in the Wildlife and Restoration Program. Originally intending to study Anthropology, she was converted to Wildlife Biology through a wildlife techniques course in which she fell in love with fieldwork. Since then she has spent the last 3 years crawling after a herd of pronghorn antelope on Perry Mesa as part of her thesis project. In between working on her thesis and spending time with her new daughter, Melanie enjoys hiking, hunting and stargazing.

Short Shots

Pronghorn Capture

AZ Game & Fish is scheduled to place 15 GPS collars on Unit 3A pronghorn to monitor their movements in and around wind towers. They are seeking AAF members who want to assist on the capture portion of this project. Volunteers would primarily act as spotters to help locate herds within the study area.

The capture is scheduled to occur November 9 - 11. There will be a November 8th briefing to finalize jobs for all participants. Those interested should contact Dave Cagle (928) 367-4281 DCagle@azgfd.gov

Double Circle Ranch Erosion Control Workshop October 22-24

While this is not an AAF sponsored project, the ranch is a model for conservation and environmental stewardship, and is "host" to area pronghorn. Participants will learn hands-on techniques for building effective erosion control structures. The workshop is free and all meals are provided. The ranch is located near Eagle Creek in SE Arizona. Contact the ranch for more information at info@doublecircleranch.com

NOVEMBER 2ND

Among the many candidates and issues you will be voting on, of particular interest is Proposition 109. The AZ Game & Fish Commission voted 4-1 in favor of Prop 109. The AZ Antelope Foundation Board also voted in favor of supporting the proposition. If you have any questions, you can learn more about it at the AZ Secretary of State Office website.

www.azsos.gov

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