

WAFWA Wild Sheep Working Group
Reno, NV
January 21-22, 2014
(Scribe: Elise Goldstein)

January 21, 2014

Wild Sheep Foundation Update

- 3 years ago, WSF was asked to track expenditures for money raised from auction and raffle license sales. They recently started publishing this information in a ½ page summary in the Wild Sheep magazine to show membership how funds are utilized. So far, they have reported on 10 jurisdictions. This shows accountability to the membership.
- A spreadsheet depicting population numbers, license numbers, and harvest success rate by species, by decade, for each state and province has been created. It is posted on the website and is being used by state Directors. Please keep it updated!
- Disease brochure – the last one was updated in ~2005, and an updated version has just been released. The first printing was 20,000 copies, and the second printing was 8,000. WSF asked the states and other organizations who requested them to pay for them, and so far about half of them have. The next step is to reformat it so that it can be posted on a website or printed as a poster.
- Kevin and Clay gave a presentation regarding transplants, and every jurisdiction trapped sheep last year. There has been a lot of good media coverage including a story in the New York Times, multiple You Tube videos, etc.
- Thinhorn Summit – Scheduled for April 9-10, 2014 in Vancouver, Canada. They are reaching out to outfitters, sportsmen, and wildlife biologists to attend the Summit. The goals are to identify what data exist and what are lacking, challenges to management, resident versus non-resident license allocations, hunting management, opportunity, etc. There is a 4 page draft outline for the meeting. In the past, WSF hasn't put a lot of resources into thinhorns, so this is an opportunity to ramp up involvement. WSF views their role as a catalyst to bring various organizations together.

Update - Mid-Winter WAFWA Meeting, Corpus Christi, TX (Brewer)

- Clay is the WAFWA Conference Planning Chair for both winter and summer meetings
- A report was given to the Directors concerning WSWG activities and it was well received
- Approval was received to move forward on printing the WSWG publication, "Bighorn Sheep: Conservation Challenges and Management Strategies for the 21st Century"

Legislative Update

- Congressional Activity – Language in a proposed bill from the Subcommittee on Natural Resources stated the USFS and BLM needed to step aside on risk of contact modelling and let Agricultural Research Service (ARS) be the lead agency. It focuses on weaknesses of Payette model and claims the methods are not defensible. There was also permit renewal language stating domestic sheep can be grazed if a permittee requests it, regardless of NEPA, and the USFS or BLM would have to grant it. Ken Calvert (CA) replaced Mike Simpson (ID) on the Natural Resources Committee. There was a lot of work to change the language and the version in the omnibus spending bill that came out on Jan 13th says USFS and BLM are urged to collaborate with ARS on risk of contact issues. This partnership has been encouraged elsewhere so this would essentially leave everything as it currently is. It is unknown what happened to the language regarding permits for domestic sheep grazing. There is some thought that there is verbiage in the beginning of the omnibus bill stating

that any of the original draft language that wasn't specifically addressed in the omnibus budget bill remains as it was in the original, even if it does not appear in the omnibus version. However, that is only the House version, not the Senate version. So, we are still unsure of what is in the final version and we are awaiting an update.

Domestic Sheep versus Wild Sheep Conflicts

- US Sheep Experimental Research Station on the MT-ID border is still a problem. They were mandated to do an EIS but 7 years later nothing has been done.
- Woolgrower's lawsuit in ID against the USSF over the Payette Forest Plan which reduces grazing by 70% in deference to bighorn continues. There are 3 or 4 plaintiffs, and they are currently on the 3rd or 4th iteration of declarations. A lot of vets and biologists have written letters in response. The main attack comes against the modeling efforts.
- Some folks (Don Knowles – head of ARS at WSU) are pushing for a comingling experiment on the Payette, although that has subsided for now.
- WSF is trying to get \$\$ approved congressionally to fast track risk of contact modeling in the budget bill to push it forward.
- In CO, the Montrose BLM decided to create their own risk of contact model for a land use plan. They stated that they don't have to use the USFS model because it is not theirs. Kevin Hurley and Tom Rinke sent comments into the DC BLM office pointing out a lot of flaws in the new model and stating that the Payette model is a joint BLM and USFS one. CDOW was listed as a cooperating agency for the land use plan, but much of their input has not been incorporated. CDOW Director met with the acting state BLM director to resolve this, and now both models will be run and evaluated together.
- The Payette Model is out and available for everyone to use. Although it is not sanctioned for used by DC USFS office, it is required to be used.
- In ID there is an analysis that has been done but it hasn't been released. This is frustrating for the people who worked on the model. There are some region-wide decisions that have not yet come out and once they are announced in a few weeks they should be able to release the model results.
- Changes are proposed for 3 allotments in CO where domestic sheep are in close proximity to bighorns. One allotment is vacant, so instead of rotating domestics between 3 allotments they are now alternating between 2. San Juan National Forest had 16 vacant domestic sheep allotments, and they decided to permanently close 14 of them. Plans are underway for addressing Table Mesa, where there is close proximity do domestics, but there isn't anywhere else to put the domestics. CO has been putting a lot of money into GPS collars for bighorn herds that have close proximity to domestics. They have also increased ground and aerial surveys, and are collaborating with the USFS to monitor and gather data.

Development of a Standardized Disease Response Plan

- The WAFWA Wild Sheep Working Group discussed the importance of a standardized testing protocol for respiratory disease. There are a variety of tests and different labs use different methods, leading to confusion in interpreting results. The first goal was to bring all the current veterinary science data together in the same place. Eight Western states and 2 Canadian provinces attended the meeting. Prior to the meeting, they sent out a survey to the WAFWA bighorn working group to be sure that the vets and biologists were on the same page. The CO meeting occurred right after the summer floods, creating logistical problems. However, with last minute changes it was pulled off. A facilitator was hired for the meeting, and WSF and WSWG provided travel support where necessary.

- A review of various pasteurized species and techniques to identify different kinds was conducted. Phenotypic culture is often used for identification but it may not tell the entire story; however more in depth tests require more money. PI3 and BRSV were discussed, and a few instances were identified where there has been morbidity and even a little mortality but they are not major contributors to dieoffs. *Mycoplasma ovipneumiae* (Movi) was also discussed. Multiple pathogens can work together and give different mortality results and patterns depending on the combination of pathogens. They focused on what info we can get from the specific laboratory tests. In general, labs are not set up to run large sample sizes, and often it is difficult to find someone to run them. They also tried to identify what tests are needed for each herd in different circumstances.
- It is possible to determine what killed the animal without culturing everything. Some bacteria cause production of oat cells, other cause lymphocytes, etc., so we can tell what bacteria were there based on what they leave behind. There is a need for standardized necropsy protocols for both lab and field. Pathologists need to work together to standardize the descriptive language so that it is easier to interpret results. Veterinarians/wildlife biologists need to develop a relationship with 1 or 2 pathologists and use them consistently. There was a proposal for pathologists handling bighorn samples to look at samples together to standardize their descriptions.
- Which tests do you use when? We are best able to assess herd health when we have done a disease assessment prior to a die-off (such as during trapping) so we can compare the herd before and during a die-off. Health status is not static so having data over time is helpful.
- Research needs – develop culture independent methods such as anti-leukotoxin and leukotoxin neutralizing antibodies, and speciation and strain typing methods that are cheaper and commercially available.
- Goals – implement new protocols during the 2014 capture season, provide guidance interpreting the amount of risk associated with various test results, update the 2009 sampling guide from WAFWA/WHC, define terms, present follow-up reports at bighorn meetings, implement training for managers, bring managers and health specialists together to see effectiveness of various protocols.

Upcoming Disease Research

- There have been inconsistencies in results from Movi samples processed at different labs. In order to find out why different results were obtained, a proficiency test involving several labs was proposed and agreed upon. There is a proposal to do this with pasteurized too but Movi will be the first step. Several of the main labs are going to participate, and USGS is going to moderate. This will provide insight into what tests are working well at which labs as not all use the same techniques, and how well samples are being collected in the field. There is a scientifically rigorous design and methodology protocol. Known samples are currently banked, and they will be looked at on a quantitative PCR (considered the best technique) to see how strongly positive a sample is. This will help show if certain techniques are not as sensitive. Some of the PCR tests run slightly different primer sets so different parts of the genome are getting amplified, and different enrichment broths are being used. The experiment will help show if the different techniques will get the same results.
- Tom Besser (WASU) has obtained funds to try and identify individual chronic pneumonia carriers to remove them from the population and see if that has an impact on reducing mortality. He is also going to conduct domestic goat/wild sheep comingling trials.
- Mike Miller (CSU) is taking lamb samples and using a new technique that looks for base pairs of all bacteria that could exist. This can be compared with histology results.

- The Group was queried if they want a session at the NWSGC meeting where a representative from each state that has had recent outbreaks presents management actions they took and bighorn population response? Alternatively, 1 person could summarize all the results? It was decided to have a panel discussion on the topic.
- Discussed writing a protocol for responding to a disease die-off. This would include detailed field necropsy protocols, phone trees, supply list, labs, differences in various tests, costs, benefits, health assessment, pre-sampling for baseline, differences between handling disease for live vs. dead sheep etc. The idea was well received.

January 22, 2014

Mapping Project

- The domestic/bighorn location maps now live on the Wild Sheep Working Group website. Shape files and pdfs will be posted. They need to be updated and reviewed for accuracy **so send in any updates!!** The WAFWA site is a private site so we all need to set up passwords. A copy of the risk assessment model will also be posted here. The pdfs of the maps also live on the USFS and the Wild Sheep Foundation websites. If there are errors in the Domestic sheep allotment locations, let Melanie know but work with the local Federal person to get it changed. Copy Sally Butts for BLM. All updates need to get done prior to the WSWG phone conference in about 6 weeks.

Incentives to Discontinue Domestic Sheep and Goat Grazing on Private Lands in Bighorn Habitat

- Brewer presented information about the Tax Valuation for Wildlife (Agricultural Tax Appraisal based on wildlife management) in Texas. Under the Texas Tax Code, wildlife management is a qualifying agricultural practice that if done to the required degree of intensity, as defined by the statutes, regulations and guidelines, qualifies land to be appraised as open-spaced land based on the land's productive value rather than its market value. When a landowner elects to convert the primary use of their land from farming or ranching to wildlife management there is no change in the amount of property taxes assessed against the property, only a change in the qualifying agricultural practice, therefore, appraisal based on wildlife management use is revenue neutral. The program may have implications for land use in other jurisdictions, particularly as it relates to domestic sheep and goats. There was a suggestion to get the word about the TX model out so that other states can work towards getting something like this in their states.
- Easements – Concern was expressed about some who purposely get domestic sheep or goats in wild sheep country so they can get an easement or a payout to sell the domestics.
 - NE - tried to trade cattle for sheep, and have tried buyouts but neither worked.
 - BC - tried to pass a local ordinance that requiring a minimum of 25 domestic sheep per flock to try and limit the mom and pop flocks.
- There was a suggestion to have NGOs approach landowners about buyouts because landowners are often more receptive. This is how it is typically done because most states don't have the ability to orchestrate or pay for a buyout. However, there was a divergent opinion that state biologists should take the time to develop relationships with landowners and conduct all negotiations.
- There are incentives under the Farm Bill for private land but it is difficult to use the Farm Bill in new ways right now.
- In ID they are working to get a supplement added to 4H training that addresses domestic/wild sheep separation and also brucellosis issues so gets them thinking about keeping wildlife healthy

while raising livestock. WSU is going to have post-doc working on this who will be trying to find out what various landowner attitudes are and what they are willing to do.

- Idea to put a question and answer section on various topics on the WSWG on the website as an informal way to share ideas.

Horn-plugging Regulations

- In approximately 10 jurisdictions, a person cannot pick up a head and possess it. In other areas, you can possess it but you have to bring it in to have it sealed. In WA it is unclear if they are going to agree to seal it or not.
- CO and AZ - you can possess them but they will not be sealed and therefore you cannot sell them.
- WY - if you pick up a head you have 15 days to bring it in to get it plugged. However, technically while you are transporting it, it is not plugged and that is not legal. There are 2 different color plugs – silver for harvested, red for pickup, and a different code for the old heads that are being brought in.
- AK started plugging rams in 2006 so there is a big backlog. They are not concerned about poaching because there is a lot of opportunity for hunters.
- BC plugs anything that comes in, legally taken or not, as a way to track what comes in.
- There is concern how can you confirm that a pickup is really a pickup and not a poach? There was a MT investigation where they found folks were poaching and then bringing them in later to get sealed, so they changed the law. There was a concern about making criminals out of folks who pick up skulls and don't know that they are not allowed to possess them. In NM the LE folks don't go after people who come to the office with a pickup and ask to keep them, they just take the skull but no citations and usually no warnings are issued.
- Perhaps the Law Enforcement Committee under WAFWA could be brought in on this topic?
- WA will send out a questionnaire to document what states and provinces do, and we will provide exact language from our regulations, so that he may summarize it.

Miscellaneous

- Clay would like photos for the thinhorn publication.
- Transplant table – Please update and send to Clay asap. The 3/16/13 version is the most recent one so use this one for review.

Jurisdiction Report

Alaska – Thinhorns occupy 6 major mountain ranges. The populations are dynamic and conditions vary among herds. Lamb production is generally good statewide and there aren't any disease issues. Some areas have had heavy snow in the past few years so numbers are down, and in places the snows were late there has been high lamb mortality. Harvest peaked in 1995 with 1,100 bighorn harvested. Total harvest dropped and then stabilized but has dropped again this year to 700 bighorn. Two reasons for this are that one area went from open season to a draw, and the ewe harvest has dropped a lot. Board of Game has not changed licenses much in the last 5 or so years. They spent \$350K on research, which is more than in any other year.

Arizona – Populations are stable. Two transplants were conducted last year: 30 desert bighorn were moved south to Peoples Canyon to augment the herd. The herd had a lot of lion predation, although the transplant seems to be doing well. The second transplant was from the Trigo Mountains to the Catalina Mountains outside of Tucson. All 30 transplanted animals were collared and there were 7 mortalities from predation in the first month following release. There was a lot of press and politics

about the mortalities and lion control. A capture-collar-release occurred in the Virgin River Gorge and they only saw 1 lamb. Two mortalities occurred during capture but the animals were in very poor condition and they tested positive for pasteuria and Movi. They would like to move Rocky Mountain bighorn from the Morenci Mine area and are trying to bait them into a corral. If it doesn't work they might try another method in early winter. Of all animals captured in past year 50% have Movi and 75% have some form of pasteuria.

California – There was a disease event in the desert bighorn herds starting in late spring. A group of dead bighorn were found near water sources and they tested positive for respiratory disease. CA has not had a contract for helicopters work since Jan 2010 and reduced monitoring lead to reduced information about the disease. It was initially detected in the Mojave Nat'l Preserve so CA Fish and Wildlife did a joint capture and radiocollar event with the National Preserve. Seventy-two bighorns were marked in 8 populations. 2 populations were known to have clinical disease in the summer but during the Nov capture none had clinical signs; however they all were positive for the same strain of movi. Lambing season is starting so we will see if there is any recruitment.

There has been a big decline in the Old Dad population, and they are still trying to get good population estimates for other areas. There was a domestic goat shot in the Old Dad Mountains in Dec 2012, and there were domestic sheep carcasses found alongside the interstate. They don't know if any of those events are causative. Interestingly, the disease was on both sides of Interstate 15 which is fairly impermeable to bighorn. There could be connectivity into NV so the disease could be moving through there. Alfalfa stubble is grazed by domestic sheep on the NV side so the disease could have come from there. They don't know when the disease started since the bighorn have not been closely followed lately due to lack of a helicopter contract.

CO – The population estimate for Rocky Mountain bighorn is 7,000 and that number has been stable for about 25 years. 7 herds increased last year and 10 herds decreased. All licenses are limited to a 10% nonresident quota. For next year, they plan to have 200 licenses for rams and 60 for ewes. They have been slowly increasing ewe licenses to get it accepted by the public so that if they need to use it as a population management tool then they will be able to. A few herds are hunted enough to keep numbers stable, one is in a pop that they want to keep stable to help minimize domestic contact risk. 2-3% of the population estimate is what they take in those areas but it is a new program so numbers may increase. Woolgrowers oppose the harvest because they claim those bighorn ewes have immunity to pneumonia so they shouldn't kill them. There is a high demand for ram licenses with 14,000 applications for 200 licenses. License numbers are declining based on a more conservative hunt and a higher expectation for the hunt. Success rates are increasing and age of harvested rams is going up, so the total number of animals harvested is approximately the same. One population had no recruitment for years and only had 12 animals remaining. They captured 8 of these animals and sent them elsewhere and then did a transplant into it from high elevation. A lot of the animals returned to the high elevation. There are approximately 515 desert bighorn in the state and in general the populations are doing well. There are 15 licenses available. They recently amended the statewide management plan to increase emphasis of desert bighorn importance to the state.

ID – Hollie Miyasaki is the new bighorn sheep biologist. 40 GPS collars have been deployed in the Beaverhead and Lemhi herds to look at movement and habitat use. There have been 8 mortalities so far, and the project will go through 2017. Frances Cassirer is still investigating if it is effective to remove infected bighorn to improve lamb survival. She is also working on developing a pneumonia vaccine. Domestic goats were found in the Owyhee Mountains. They were escapees and tested positive for movi

and pasturella. BLM has been involved in a lawsuit that started in 1999 regarding domestic sheep removal. BLM was required to have all permits processed by last year. BLM had to conduct an analysis on at least 1 allotment using the Payette model. The risk of contact was very high, and as a result domestic sheep use was denied in Dec 2013. Based on model result, the BLM decided not to do an analysis for the other 2 allotments and denied the permits. They suspect they are going to be sued. There is a new situation in central ID where low lamb numbers have been indicated but they do not yet know the cause. Helicopter surveys will require about 77 hrs of flight time and they are looking at developing sightability models in some areas. Hunter harvest success has been at 83% for California herds and 53% in desert herds. The Hells Canyon ram taken by the auction hunter scored 191. The genetics study done by a graduate student has recently been completed and will be distributed soon.

MT – There is a new research project with Bob Garott and MT State to better understand the role of disease in limiting bighorn populations in the state. GPS and VHF radiocollars will be deployed in 6 herds around the state. This is anticipated to be a 6 year project and will cost \$1.1 million. There is a new transplant strategy involving transplants into 5 different places but they have not been able to implement it in the past few years. The Bridger transplant was pushed politically but there are 12 hobby domestic sheep herds in the area so they didn't go through with it. Transplants off of Wild Horse Island are becoming frequent. Health wise herds are doing ok and hobby domestic sheep and goat farms continue to be an issue in some areas.

NE – Things going well, the statewide population is up to almost 400 which is the highest in many years. The most recent transplant, funded by WSF, from Alberta is going well. They have had some USFS Wilderness issues for the transplants but they have worked through it. They implemented the 1st mountain lion season in NE although there hasn't been a lot of lion predation on bighorn. Legislation to prevent lion hunting and limit landowner ability to hunt lions on their property has been proposed.

NV – In 2009-10 there was a die-off in Ruby and E. Humboldt Mountains, followed by low lamb recruitment. In 2012 they removed all of the E. Humboldt bighorn and transplanted them to the Ruby Mountains. In Feb. 2013 they imported in 20 bighorn from Alberta and put them in the E. Humboldts. Four were marked with satellite collars and the rest were marked with VHF collars. They were intensively monitored along with 15 mountain goats. An additional 13 mountain goats have been collared. The Alberta bighorn are doing well with high lamb recruitment so far. Mountain goats are still suffering from very low recruitment. In the Rubies the goats are doing better now with 15-20 kids per 100 nannies. Bighorn have a lamb to ewe ratio of around 30:100. They recaptured 7 mountain goats for disease testing and marked 8 more.

They are currently working to define population objectives and sustainable levels for some herds that are growing. They are also still trying to convince the Commission to implement ewe hunts in certain areas for population management. In December 2013 the Commission passed the ewe hunt regulation which is the regulatory framework for eligibility, definitions, check-ins, etc. There is pressure to use ewe hunts only as a last ditch resort. They are now planning to recommend ewe hunts in 4 herds.

Desert bighorn – They harvested about 300 bighorn last year: 250 Californians; 50 deserts; and 7 Rockies. Their disease surveillance includes working with area personnel to evaluate why herds are performing poorly, lamb recruitment rates, prevalence of movi titers (which appear to be increasing). There have been reports of lamb coughing and increased numbers of dead animals in the River Mountains, particularly increased hunter reports of finding dead rams in the field. There are connectivity issues between the River and El Dorado Mountains, and the mountain ranges in the Mojave

Desert in California. They found mopi positive sick lambs. They are taking a cautious stance because the River herd has provided source stock for about 750 transplanted animals. Now they are not using it as a transplant herd, and they can't harvest it because of proximity to urban and Park Service lands.

Genetics work revealed there are hybrid Rocky Mountain-California bighorn, and this combination was previously unknown. In addition, although Rocky Mountain-desert hybrids have been found before, this hybrid was recently identified in an area where the 2 subspecies are nowhere near each other.

NM – There are approximately 1,000 Rockies and 800 desert bighorn. Desert bighorn are slowly increasing and Rockies are stable. They implemented the 2nd statewide desert bighorn hunt with a 100% success rate and an average score of over 170 B&C. They tried to trap a low-elevation herd of Rockies this winter by baiting with apple pulp, alfalfa, sweet feed, and salt, but the bighorn remain uninterested so there has been no trapping. There have been some catastrophic fires with huge areas burning. This has created bighorn habitat in the Gila and in Jemez Forests, blowing out entire canyons that used to be p-j and ponderosa. NM receives Federal Aid funds for most projects, but historically lion control to benefit bighorn was not reimbursed. Recently the USFWS agreed to reimburse the lion control program and it has made a big difference in the budget. They did the first desert bighorn transplant from one wild herd to another in 2011. The source herd was on a Turner property, and although the population returned to the original size and is the largest herd in the state, Turner is preventing NMDGF from transplanting out of it again. There are 2 Master's students finishing up their theses: 1 student studying causes of desert bighorn lamb mortality by using VITs to find and collar neonatal lambs; the other studying influence of cattle grazing on desert bighorn forage behavior.

SD – The statewide population is approximately 300, - 200 are in huntable populations (4 populations in the Black Hills) and the rest are in Badlands National Park. There are both GPS and VHF collars for management purposes, and also studies looking at survival and movement in conjunction with SDSU. A graduate student finishing a mortality study found 0-5% survival on lambs with most mortality from pneumonia. There was a dieoff in Custer State Park in 2004 and the lamb recruitment still has not recovered. The Elk Mountain herd has good survival and recruitment and there is also a graduate student finishing up. They translocated 20 bighorn from MT to Hell Canyon in the central Black Hills and so far the herd is doing well. It is possible that they will eventually mix with the Elk Mountain herd. The next transplant effort will be to the Deadwood/Lead area in the northern Black Hills. There are about 1,500 applicants for the 2 draw licenses, and there is 1 auction tag.

UT – a new bighorn management plan was approved in June. They updated the transplant priority list and are setting new objectives and updating their disease response plan. They Transplanted California bighorn from Antelope Island to start new herds. The Rocky Mountain bighorn populations are stable. They removed 16 bighorn that wandered onto domestic sheep allotments. The Zion desert bighorn have been growing, and Park is going to start their own management plan to include allowing removal for translocations.

WA – Disease is the primary issue. A die-off has occurred in the Tieton herd and it is in close proximity to the Clemons herd that has provided a lot of source stock for transplants. The pneumonia strain was quite virulent and caused a high mortality rate, so they decided to depopulate the herd by removing 58 bighorn. It was difficult to get final few, but it appears that the Clemons herd is still Mopi free. Although it was an extreme action they believe that in this case it was the right decision. Animals in the Umtanum herd have been collared. Good recruitment in year 1, but low recruitment in years 2 and 3. However, on other side of river there was high recruitment in year 3. There were antibody titers in about 40% of

adults but none had active disease. They did find active Movi in the lambs. In the Sinlahekin herd near the Canadian border there has been a long-term scabies infection. There has recently been a sharp decline from 90-30 animals but they don't know why.

WY – Three transplants are planned for next year. Samples were taken from 66 bighorn last year for disease testing, and their goal is to do 150 this year. They want to modify the captive unit to ramp up disease research.

Upcoming Meetings (All)

- Thinhorn Summit: April 8-11, 2014 Vancouver, BC

- NWSGC: June 2-5, 2014 Fort Collins, CO
 - April 1st is the deadline for paper submissions.
 - Please send abstracts to Andy Holland.
 - Registration will be opening soon

- **2014 Summer WAFWA Meeting:** July 17-23, 2014 (San Antonio, TX - Westin Riverwalk Hotel)

- **WSWG Meeting:** July 20, 2014 (San Antonio, TX - Westin Riverwalk Hotel)