



**WAFWA Wild Sheep Working Group Winter Meeting NOTES
@ Wild Sheep Foundation Convention
February 5, 1 pm – 5 pm & February 6, 8 am – noon
Reno Sparks Convention Center, Room A-8
Reno, Nevada**



Tuesday, Feb. 5, 1 pm – 5 pm

Welcome, Announcements, Introductions, Roster Update, Attendance Sign-in Sheet

Welcome from Kevin Hurley on behalf of Wild Sheep Foundation

Welcome from wild sheep herder Mike – have added phone line thanks to WSF for those unable to be in here in person: Emily Almberg, Frances Cassirer, and Anne Hubbs called in.

WSWG Members in attendance: Brad Wendling (AK) for Darren Bruning, Amber Munig (AZ), Bill Jex & Helen Schwantje (BC), Tom Stephenson (CA), Andy Holland (CO), Hollie Miayasaki (ID), Bruce Sterling (MT), Todd Nordeen (NE), Mike Cox (NV), Eric Rominger (NM), Don Whittaker (OR), Froylan Hernandez (TX), Jace Taylor (UT), Rich Harris (WA), Doug McWhirter & Daryl Lutz (WY), Melanie Woolever Kevin Hurley and Clay Brewer (WSF), Frank Quamen (BLM), Brian Logan (USFS),

Members not in attendance: Brett Wiedmann, Chad Lehman, Colin Gillin, Heather Sayine-Crawford and Jenny Powers. Still no new member for Yukon. A total of 67 people signed in including special delegation from Tajikistan led by Kurt Alt (WSF)

Rocky Crate Chair search update

Tom Besser gave brief update to the search for the next Rocky Crate chair position. Interviews held with 3 great candidates. Negotiations are occurring with one applicant.

Disease Management Venture

- Jurisdictional DMV progress reports – highlights of recent pathogen surveillance, research, or management actions (All)

Arizona – Anne Justice-Allen D.V.M. – Powerpoint Presentation (available on webpage)

- 3 separate incidents of domestics in bighorn habitat
- 1st in Muggin Mtns/Red Bluff Area near Yuma; initial report in Sept 2018;
 - Oct – 53 dead domestic sheep in canal and many at large; 77 more lethally removed and also 3 bighorns in the vicinity;
 - nasal/tracheal swabs 20 domestics; all had leukotoxin A + bacteria; 12 of 20 M. ovi positive very different from strains in bighorn in the area
 - 17 bighorn sampled; 9 of 17 M. ovi ELISA positive; 4 PCR positive; Pasteurella spp. only detected in 1 animal
- 2nd event – Vekol Valley/Maricopa Mtns – Dec 2018 – domestic goats “lost”; 42 lethally removed after unsuccessful capture attempt by owner, some were in bighorn habitat but no bighorns observed during removal; 22 of 24 goats M. ovi positive by PCR; Pasteurella spp. detected in only 2 of 24.
- 12/1/18 – goat observed by bighorn hunter in Saddle Mountain but search from ground and air unsuccessful

Q&A - Froy – Was it on public land and were producers compensated? Anne – Domestic sheep escaped from private to unauthorized public land. Owner not being compensated and caused damage around the area so she may be fined. Never a case where domestic sheep owner was compensated.

Mike – was this a perfect storm with so many events in short time? Anne – Yes, on the landscape 30 days

Alaska - Brad Wendling – No mortality events due to pneumonia. 2016 started *M. ovi.* sampling/detection. Previously sampled hunter harvested sheep. Agreements with 2 labs to conduct testing - USDA and WADDL; 375 samples submitted shared between USDA and WADDL. Multiple detections of *M. ovi.* in hunter harvested animals including moose and caribou; Now considering next steps

Q&A - Andy – do you have domestics in that area?

Brad – No, did test domestics in other areas but not found

Alberta - Anne Hubbs – No known outbreak since 2000. Sampled and tested hunter harvest and research animals last two seasons. In 2017 92 samples collected, of which 52 from high risk domestic sheep areas. Have domestics in hunt areas, 80% of samples from rams (all negative for *M. ovi.* and *Pasteurella* spp.) 15 years ago started sheep separation strategy. Working on a Phase 1 separation policy and testing of domestics on Crown land and working with several private landowners with education and looking at risk with those.

British Columbia - Helen

- No active die-offs,
- Still suffering from previous die-offs, test and cull going on
- Comprehensive Fraser River metapopulation surveillance
- Other projects – PHD student - Adaptive Management
- Helen and PHD student conducting comprehensive Stone sheep health assessment; Bill overseeing Stone Sheep capture operation. Full suite of testing; thus far no *M. ovi.* detected.
- Enable actions on Crown land for prohibition of domestics, pack goats and llamas in Skeena Region
- Provincial committee with sub-committee to help enable better practices
- Also testing moose and caribou – all *M. ovi.* negative thus far.

Q&A - Mike – what about collaboration with tribes; Bill – working with 3 nations, exploring funding for other regions too for wildlife health

Kevin – What is GRA? – Government Regulation Action

Bill – developed buffers around mountain goat herds restricting llamas and pack goats (50 km buffer)

Tim – Pack goat restrictions, how difficult were those to get? Bill – Camelids were biggest, first precautionary restriction listed, will continue to test and repeal.

California - Tom

- Sierra bighorn still doing good
- Ongoing outbreak in Mojave Desert herds (NPS and BLM lands) that started 2013; about 55 small mountain ranges with most having a desert bighorn herd; continue pathogen testing in more populations; impacts vary by herd but seeing typical poor lamb recruitment in many herds; CDFW continue to collaborate with Clint Epps, John Wehausen and National Park Service units and support staff in in Fort Collins; continue to monitor demographics in key herds
- Oregon State connectivity project
- New outbreak in the San Geronio Mtn area (highest peak in mtn range) desert bighorn herd, part of the San Bernardino population – not a lot of connectivity with rest of the population but confirmed pneumonia outbreak. Not sure how wide spread, still monitoring and testing animals and mortality level

Colorado - Andy

- One die-off near Ft Collins right now
- Tarryall Kenosha bighorn herd – capture and sample
- San Juan bighorn herd was captured and sampled; no results yet

Idaho – Hollie

- Continue live capture and testing key herds and hunter harvest testing in Lost River Range, East Fork Salmon River, and South Beaverhead herds
- Still interested in Bruneau/Jarbidge population that is experienced 50% decline
- Francis Cassirer – continuing to monitor Hells Canyon herds; conducting - 3rd test and removal effort

Montana – Bruce and Emily

- Continue herd health monitoring of their 26 herds; 63% of Montana’s herds have been sampled to date
- Also, hunter harvest collection continues in most herds
- 73% of herds are positive for *M. ovi*.
- 1st detected Psoroptes mite outbreak
- Tendoy Mountains bighorn restoration effort is still on hold; still testing remaining few animals
- Lots of projects going on – Internal working group to decide on health management program
- Still looking for good candidate herd to conduct Test and Removal project
- Also capturing and testing mountain goats

Q&A - Andy – did you get all the sheep from Tendoy's?

Emily – close but not all

Rich – What is comfort level of resolving initial risk issue with Tendoy's

Emily – Not good, still domestics in the valley

Bruce – may never get rid of risk to the Tendoy's; MFWP has pressure from Wildlife Commission to pressure to establish 5 more herds.

Rich – did you strain type domestics?

Bruce - No

Nebraska – Todd

- 1st year or research project involving South Dakota State Univ. (monitoring disease/pathogens) and Univ. Nebraska, Lincoln (monitoring habitat component) in Northern Panhandle; SDSU is involved in sampling domestic sheep from private flocks; finish research project in 2021
- Continue to implant VITs
- Conducting test and removal of shedders on Southern Panhandle herd 13 years post spillover
- See handout

Q&A - Hollie – how many times tested before removal; Todd – twice over 2 years; Jace – how many were positive then negative; Todd – small number

Nevada - Mike

- See Powerpoint – “Summary of Nevada Department of Wildlife Bighorn Sheep Mycoplasma ovipneumoniae Sampling and Test Results since 2007”
- Experienced 1 pneumonia disease event last year in Clan Alpine Mountains desert bighorn herd; lost 30% of adults in herd estimated at 450 and all 2018 lambs died except for isolated subherd. Majority of deaths occurred in November. Sampled several rams and ewes; *M. ovi*. strain confirmed to be identical to 2007 disease event in Fairview/Slate Mtn bighorn herd strain directly to south

Q&A - Andy – can you show some temporal changes in the *M. ovi* strain typing? Mike – yes; Tom – have you had experience with adult die offs in these herds? Mike – No, not really; Snowstorm Mtn CBS herd – removed all carriers; same strain in Bruneau/Jarbidge Idaho herd as in Nevada Badlands herd

New Mexico - Eric

- *M. ovi*. strains identical to two herds
- Movement of sheep found by disease testing rather than movement
- Outside of Taos, herd rapidly expanding
- Culled some sheep to reduce numbers and perhaps expansion
- 2003 was first year of the Rio Grande herd disease event

Q&A - Tom – In Rio Grande disease event how could you stop movement North and South
Eric – narrow corridor was focus

North Dakota -

- See WSWG North Dakota Disease Update (2014-2018) by Brett

Northwest Territories – Kevin

- Harvest 200 rams a year
- Sampling hunter harvest rams
- 19 samples all negative for *M. ovi*.
- Strive for no domestics west of McKenzie River

South Dakota – Trent

- 2016 tested and confident they removed all *M. ovi*. shedders from Custer State Park (CSP) herd; last year translocated Badlands bighorn sheep to CSP and are doing well.
- Saw increase in lamb recruitment
- Attempting to remove carriers in Rapid Creek herd

Oregon – Don

- Captured, collared, and pathogen sampled 70 sheep from 4 populations along Nevada border
- May consider Test and Removal effort on one of the herds; demographic stats on 1 herd was 90% ewe survival, 43% survival of lambs first 120 days but only 5% annual survival
- Rob Spaan (OSU Ph.D. student) – wrapping up his field research; some of his originally captured animals were recaptured to assess pathogen changes over time. See improved lamb recruitment in Rattlesnakes.
- Several herds testing PCR positive for *M. ovi*.

Texas – Froy

- See handout – “WSWG – TX Disease Monitoring/Surveillance Update”
- Sampled 200 animals (6 populations)
- Have not detected much for pathogens
- Have sampled 47 aoudad along Rio Grande River, detected *M. ovi*. in 4; first time testing for *M. ovi*. in aoudad
- Started testing in Van Horn Mts too, no test results yet.

Q&A Do you remove aoudads from mountain ranges with bighorn?; Froy – yes on public land but lots of them, too many to remove all; surveys in just 3 or so mtn ranges estimated 5,000 aoudads!

Utah – Jace

- Finished 5 years of statewide bighorn herd disease surveillance this year
- Have had disease events this summer and winter

- July – Zion NP disease event – 65 animals sampled? No major adult losses detected; *M. ovi.* strain type in Zion herd same as in Kaiparowits Plateau herd
- Feel there is some spill over from two herds
- Some bighorn herds have grown even though positive for *M. ovi.*
- Working with Dr. Kezia Manlove at Utah State Univ. inserting VITs and monitoring lambs
- Antelope Island herd spillover/dieoff event
 - Half of the currently collared animals died
 - In 2017 43 sampled on Antelope Island and all negative for *M. ovi.*
 - *M. ovi.* detected in several animals
 - Depopulating Antelope Island herd

Q&A - Kevin – talk about land bridges to island for disease transmission and other wildlife species; Jace – low water levels allowed ingress and egress to the island; many bison and mule deer on island, sampling those; Not sure how transmission occurred; may fence low areas; Helen – have you strain typed? Jace – Yes but waiting for results

Washington – Rich

- See handout : “Strategy to Hasten the Recovery of Bighorn Sheep in Yakima Canyon”
 - Herd experienced 2009 die-off with low recruitments
 - Used Emily Almborg’s disease risk model to assess Yakima Canyon herd
 - Do hybrid of test and cull with ewe harvest and geographically
 - Hunters must have animal tested
 - Large herd to test and cull with about 200 animals
- Work continues with the WA State Prison and the Suffolk domestic sheep – *M. ovi.* free
- Outreach program near Asotin with Conservation Districts

Wyoming – Doug

- Completed several years of statewide pathogen surveillance
- Whiskey Mountain bighorn herd – concerted effort by WGFD and community outreach program to determine cause of lamb mortality - long standing issues with poor herd performance
 - Now some habitat displacement with wolf packs
 - Seen a shift from winter ranges
 - Working with Monteith looking at lamb captures and survival
 - Starting a public involvement campaign.
 - Shoshone NF credit for dealing with pack goat situation
 - Developed agreement which prohibited pack goats in bighorn range
 - Good cooperation with all.
 - Thanks to Tom B. and Peri. as well

Yukon – Kevin Hurley

- Troy H moved on, Yukon government trying to fill his position
- Radio collaring sheep this year, 45 animals. 3 study areas
- Will do disease surveillance
- Read 2018 Yukon Sheep Control Order – Jan 1 of 2020, everything must be identified and tested for domestics with compensation for those to be removed. Look at fencing to reduce contact

Wild Sheep Genomics Working Group

- California Bighorn Taxonomy project strategy, collaboration, and funding update – (Clint Epps, Josh Jahner, Rich, and Mike)

Clint Epps (by Phone) – See handout

Q&A - Don – Has other priorities but is interested and could contribute samples. Field staff have other priorities as well.

Clint – important not to look at this project as only a subspecies taxonomy question. With current dataset can look at many questions. Hope to get genotype specific locations and signatures. Still open to defining goals.

Don – will be a part but not sure to what level

Important to continue to collect for future years

Don – Fitness measures, consider data to put that link together

Clint – overall goal is to generate dataset of genetic samples westwide and it will fulfill not only this California subspp questions but can look at a host of other real management questions that you all have regarding genetics

Clay – archive tissue samples that could save some money

Tricia – Probably have 800 samples or so. Need to recheck DNA levels. Checking with PR match with faculty dollars

Helen – email from Beckman going around that Alaska has archived samples

Mike – Managers who are interested should get on conference call and engage with genomics members.

Clint – conference call next week but no set date yet, Do Doodle pro.

- Other wild sheep genomics projects updates (All)
 - Bill - Explored thinhorn lineage in past
 - Helen – Collecting DNA in this year’s captures in the Fraser River area

Back to DMV Topics

- Nevada Disease Ecology Projects:
 - Statewide bighorn sheep disease ecology analyses and modelling - (Dr. Kezia Manlove, Utah State Univ.) See presentation slide
Research with PhD and MS student for Nevada statewide; Objectives: build mechanistic bighorn movement model, mechanistic demographic response model, and forecast aggregate disease risk (both contract *M. ovi.* and suffer long-term demographic consequences) across all Nevada herds. Tactics to meet objectives: assess patterns from use of hierarchical demo response model (maybe IPM), movement data, and hierarchical step selection function with long list of covariates
 - Snowstorm Mountains Test and Removal - Disease ecology at individual and subherd level (Kezia, Mike, and Peri) (see presentation)

Major take-home messages:

- summer lamb survival improved substantially from 1st nonselective removal to 2nd selective removal; density reduction along didn’t help much
- measuring responses at local scale of ewe-mixing may be important. In the Snowstorms, lamb survival improved significantly as *M. ovi.* prevalence declined in local ewes which was only visible with data collected at subherd level. You can learn a lot through intensive monitoring at the appropriate scale!

- “Decisive” or herd ewes may have strong influence on long-term impacts from spillover events; different social and seasonal social structures btwn Rocky Mtn and Desert bighorn have influence severity of spillovers.
- *Mycoplasma ovipneumoniae* west-wide strain map – (Mike and Tom Besser; **Action** – proceed to develop an agreement by agencies for Tom to share strain data). See map of all southwest states desert bighorn *M. ovi.* strains that was made and shown at the DBC symposium April 2019.

Q&A Mike – can we get support for sharing strain-types?

Don – Does Tom already have that info from everyone

Tom – yes, has all of it. Can be done, is working to consolidate that now.

Don - Do we need a data sharing agreement to do that

Tom – yes, keeping track of a lot of different variables

Don – what about domestic side

Tom – domestic side is so immense it will be hard to find all, focus on areas of locality or known interactions

Don – Oregon would likely sign a data sharing agreement

Mike – Is there a jurisdiction that would not want to share strain-type data?

Hollie – Willing to share but the timing is important

Mike – needs to be a time for when to provide

Kevin – what would the stewardship consist of for handing off to somebody

Tom – not sure but thinks it is routine

Kevin – does WAFWA have the infrastructure for this

Mike – Yes, working on how to house the west wide database

Rich – Treat with caution

Mike – don’t need to decide today

- West-wide Disease Event dataset

- (Mike; **Action** – decide to continue and add new attributes to data set;

Mike and Tom Carlson developed initial dataset in 2012. Important to know how many events have happened and how many losses. Is there a desire to keep this dataset updated? Are there other attributes to add to it?

Mike went through attributes on screen, could add sinus tumors,

Q&A Bruce – could you include strain type?

Mike – could pull that in eventually

Eric – is there an *M. ovi.* column

Mike - just speaks to respiratory disease, last updated 2015,

Eric – Could you go back and check herds pre-*M. ovi.*, add *M. ovi.* column

Helen – Add labs

Kezia – when was population last counted, is there a definition of poor lamb recruitment

Mike – up to Managers, could ask for raw numbers

Rich – could have many more fields, consistency could be a problem

Mike – will summarize and send out for more input

Melanie – thinks it valuable but have states all bought in?

Mike – everyone is busy, but everyone has contributed

Helen – Who is the audience? Maybe need a sub-committee to work on this

Mike – have been taking small steps, if others want to do more or want something more that is fine.

Helen – could have who the main person to contact is, small group could be better

Mike –will put an email out for small group, Foss may be interested

- **Action** – pursue venues, outlets, podcasts, and other opportunities for education and outreach on wild sheep die-offs and lethal removal actions)

Updates/Changes/Questions to consider: who to house the data? add column(s) for *M. ovi.* and possibly other key pathogens; last time a formal demo survey was completed on herd; ask for actual lamb ratios pre and post event.

Helen suggested we set up subcommittee to work on revising the disease event dataset. Melanie and Ann Justice Allen volunteered; Mike will send email out

- Show PBS Short Film, “*Running with the Herd*” - Watched film

Q&A Kurt – Sampled domestic herds in film, assumptions people are coming to – no smoking gun or found it in domestic sheep. Can you share any information on cause of the National Bison herd dieoff in Montana?

Tom – Not interested in pointing a finger, wants to keep confidential but did learn about the outbreak in that area. Will eventually be published, No timeline on this

Wednesday Feb. 6, 8 am – noon

Wildlife Health

- *Herd Sampling Guidelines (WAFWA Wildlife Health Committee) and Wild Sheep Capture Guidelines (Craig Foster, ODFW 2005)* - Progress on updates (Peri and Helen; **Action** – accept health related edits/additions); Mike; **Action** – review management topics and establish committee members to complete review and edits)

Helen, Peri, - see slide show and handout. Peri, Helen, Lisa Wolfe, and Karen Fox went through and made some modifications. Still a work in progress document.

- Changed title; Cross reference documents; Methods – left all old methods in; Marking
- Capture Considerations: Biosecurity, security, communications, safety, People Management
- Equipment; Transport; Release; Post Release monitoring; Literature Cited
- List of Appendices; List of Figures; List of Tables

Next Steps – Input from others through Mike or a small sub-committee, Wildlife Health Committee Guidelines have been modified too and linked to this document

Q&A Kevin – what is timeline?

Mike – sooner rather than later. No need to re-invent the wheel; Identify a committee

Kevin – possibly have done by DS meeting

Mike – shoot for NWSGC to be finished; Kevin – need a deadline

Helen – people submit what they have to Mike

Bill – lessons learned would be good to add (VITs)

Peri – draft form sent out to others and discuss at DBC

Melanie – a co-lead to help Mike

Mike – Can we try to identify what are recommended methods/procedures (guidelines) and what we collectively consider to be standards?

Tom – can be a valuable document, methods vary amongst states, what are the standards with drugs, pros and cons of both but maybe not hard standards

Helen – Helpful hints, be careful of standards, one size doesn’t fit all, need flexibility

Don – Do not want to hardwire in, often have to adapt at the moment. Has value beyond sheep.

Eric – document is really valuable and will volunteer to be a part of this

Don – will help but can’t lead

Tom – Need to be sure and read the document and apply it. So much variation with things such as collars.

Mike – develop game plan, divide up by topics, vets and groups get together

Peri – Lay out what is available. What might be helpful but not prescriptive. Items like collaring/eartags may need to be more standardized.

Helen – see final product going to a group and deliver at NWSGC and DBC, will take time.

Somebody assigned to final version

Tom – volunteer one of his staff to help, could help facilitate

Mike – yes, also Foss, a lot of biologists outside of working group that may participate

Don – working group members can talk with respective biologists to see if they can assist

Eric – What is your mortality rate? Look at from technique side based on mortality rates.

Mike – 9-10 different sections so do we task different groups. How is everyone thinking?

Helen – take Don's advice/approach and first have WSWG reps talk to their respective biologists and develop new committee: Eric, Tom, Don, Helen, Peri, Mike

Mike – Do not have anything in writing. What is reasonable deadline, spring is busy, maybe send protocols to Google Drive by end of February, then hold a meeting after the DBC. Also let me if you or other staff can assist with the revisions.

Peri – can choose a specific area if preferred

Mike – others can volunteer at later date; let Mike know

- Mycoplasma ovipneumoniae FAQ document - considering recent claims of M. ovi. detection in non-Caprinae species discuss the need for a short FAQ document on M. ovipneumoniae that reviews testing protocols, interpretation of diagnostic results and what the research actually says. (Helen and Peri; **Action** – identify committee to develop FAQ document)

Q&A - Mike – Brad has discussed this topic some as has Helen, many unknowns and interpretation on results. Could we have a group work with Besser and others that explains what has all happened in the last year or so.

Helen – Not familiar with diagnostics and genomics, need better explanation of what it means before announcing results. Would this be a useful document? What results mean, etc....?

Mike – been in Woolgrower meetings where other species were brought up so would help to have better explanation

Kevin – handout that Tom put together, good springboard to the document

Tom – Pressure to go public with information has generated confusion. Alaska made a big jump with their labs and information

Hollie – working with producers would be helpful to provide them a handout

Melanie – Interpretation of the significance of results

Helen – Short, common message in the document

Kezia – what facts do we agree on? Indicate what we and rest of scientific community don't know

Mike – What about other species

Helen – could say *Mycoplasma* is in many species including people

Rich – is it possible to have one document to fit all, can be very technical. May need two different documents, one technical and another simpler version

Brad – More research to come in Alaska, be good to involve Kimberlee Beckman

Helen – evolving document

Brad – get more questions with more results

Mike – Who has time and willing to contribute to a one-page fact sheet? Anne, Frances? Tom B.

Mike – what are the 4-5 main questions to answer in document?

Helen – keep basic

Rich – should it address domestics and transmission?

Helen – that is too complex for this document

Hollie – will volunteer to help

Don – also needs to be applicable for small and large flocks

Eric – behavior attraction of sheep vs cattle

Andy – a lot of species have *Mycoplasma* so suggest behavior component. What does it mean for Transmission to bighorns?

Bill – geographic prohibition with camelids, they portrayed as likelihood of contact

Mike – Weave into fact sheet scientific articles of transmission.

Helen – never turn our back on peer-reviewed papers, we can talk about risk but maybe risk with other species. May be things we have not found but be clear about what we have found in this document.

Mike – Alaska using multiple labs

Helen – spillover of information, new protocol to test caribou. Test other animals if you can

Peri – done additional sampling with other species, have lab differences – be careful and confident who send to

Jace – make sure sending to right place and could use some guidelines on that

Tom – Take swabs and put in freezer if not able to test right away

Mike – Should we test right away before we freeze? Could flood labs with other species.

Tom - Need a credited lab,

Kezia – is there an option of retest

Tom – a formal retest takes a lot. Sending samples to two labs can be useful but not a formal labs study

Helen – send around to the group, make an ongoing process

Folks interested/volunteer to work on Movi FAQ committee - Hollie, Tom, Anne, Kezia, Kimberlee, Helen will lead; will send out a straw dog document

Working Group Member Briefs on Wild Sheep Management and Outreach Activities

Kevin – announcements

Mike – announcement – WSWG Shirt Swag sales went well, more sales this winter, added hoody, will send out new WSWG apparel catalog; ball cap not available but may consider those for future.

States and Provinces (All)

- Wyoming – Capturing Devils Canyon herd (mixture of CBS and RMBS subspp.) and will collect DNA samples for California Taxonomy project; Grand Tetons, no *M. ovi*. in sheep yet, transplant being considered, buy-outs being discussed with allotments
- Washington – 2018 Olympic NP mountain goat live helicopter capture summary– mtn goats are *M. ovi*. negative. 116 total captured and 98 translocated to Washington’s core mtn goat habitat areas. Lethal removal will be up to park and could be by skilled volunteers.
- Utah – new herd unit (Mineral Mountains) approved for desert bighorn transplant. Looking at private land transplants; They are scheduled to conduct a translocation to Stansbury Mountains (gone through recent die-off and culled remaining survivors) this winter from Washington source herd. Ongoing coordination with Deep Creek Mtns bighorn translocation.
- Texas – relocated bighorn this past fall; 7 yr old ram moved 130 miles over 4 months into Mexico and now back in Texas but not quite back to release site. Will initiate project to assess interactions between aoudad, bighorn and mule deer. Aoudad positive for *M. ovi* from recent captures and sampling; can now aerial gun aoudads in Big Bend National Park.
- Oregon – captures focused on health monitoring, give Utah sheep next year. Allow exemption for ewe harvest for once in a lifetime permits
- South Dakota – Pine Ridge reservation bighorn capture past weekend

- North Dakota – The Mandan, Hidatsa, and Arikara Consolidated tribal Nation and other management groups with NDGFD working on a bighorn transplant along Missouri River
- New Mexico – now have 62 ram permits and a few ewe permits. Been 23 yrs since starting a new herd. Conducted reintroduction of desert bighorn this past fall into Sacramento Mountains. Two captures this year. Would consider out of state transplant if anyone interested?
- Nevada – Statewide bighorn population estimate - 12,200; Harvested 344 rams & 85 ewes in 2018. Augmented 1 CBS herd and reintroduced- CBS into another just last week; dealt with 5 or so domestic sheep stray events last year; conducted 2 bighorn captures in USFS wilderness; took 2 years to get MRDG approved – USFS staffing capacity limited but very cooperative in the process; state SHPO office created challenges; primary issue is SHPO believes helo rotor wash has major “unnatural” impact on cultural resources.
- Nebraska – addressing disease main issue. Continue with outreach activities
- Montana – no active die-offs. Surveyed biologists for populations. 6,200 total statewide estimate. Now have more ewe tags (160 in 2018) than ram tags. Other captures coming up.
- Idaho – plans for surveillance efforts, work with small flock owners. Responding to many data requests. Survey of lower Salmon area, new mtn goat plan on line; Neil Thagard with Nez Perce Tribe – conducting bighorns surveys in the lower Salmon River area
- Colorado – Lots of changes, new Governor, new Director. Had some domestic strays. Commission instituted a preference point fee. No longer starting new populations, filled all locations at this time.
- California – Tom left
- BC – Genetics work on thinhorns, recrafted subspecies boundaries, home range lamb survival study, mapping genomes for Dall and Stone sheep populations.
- Arizona – Black Mountains that experienced die off in 2014 has now stabilized, Unit 22 near Canon City has been best producers but had EHD/Blue Tongue die-off. Herd dropped from 230 to 130; never seen that high of losses. Two translocations this year. Looking at other translocations in the future. NEPA process with landing helicopters in Tonto Wilderness areas – now year 5 with this process. A letter of decision should come out by October 2019. Use other jurisdictions successes to help with this process. Wilderness area discussions ensued with various restrictions amongst jurisdictions.

Q&A Mike – does anyone have policy about source herds and testing before using as transplants?
 Andy – Yes, cautious approach; Don – more reservations about *M. ovi*. negative status and animals with unknown risks
- Alaska – Changes in Administration, Governor – 2231 hunters this year, harvest 789 rams. Interact with lots of hunters. Hunters been cooperative with sampling. Research looking at horn length and age. Working group with folks representing wild and domestic sheep. Monitoring and research ongoing, led by Tom Lohuis testing and strain typing and sending to various labs; will recapture Dall Sheep from Talkitna Mountains where 1st *M. ovi*. detected.
- WSF (Kevin Hurley, Clay Brewer) - 20% increase in funding; Professionals meeting in afternoon; Wild Horse and burro film; Nellis Air Force (Nevada Test and Training Range) military land withdrawal; Salt Lake City work shop on migrations; World Mtn Ungulate Conference Sept 10-13, 2019, 7th one, first time in North America; opportunity for international managers to present. Mostly Caprinae talks; Grant in Aid – online in July
- NPS (Melanie Woolever for Jenny Powers) - Working on State of the State Wild Sheep report in all national parks; Grand Teton NP – NEPA open for proposed action to remove mtn goats; Zion – working with USU to investigate pneumonia outbreak; Mojave National Preserve – working on relationships with state agencies, looking at disease, habitat use, water.

- USFS (Brian Logan) - Forest planning efforts in Blue Mountains in OR and WA involving both Nez Perce and Umatilla tribes; Long list of forest revisions, ongoing considerations of WAFWA guidelines for maintaining separation; Species of Conservation Concern discussed
- BLM (Frank Quamen) Focus on 3 areas; wild horse and burro has a funding issue; Diseases – face challenges with following Manual 1730; Manual now under review by DOI leadership; Risk of Contact – updated model to run with ESRI, have difficulties with staff utilizing it and a capacity issue; transferring occupied habitat data over and into hands of state agencies

Wild Sheep Occupied Habitat GIS Maps –

- **Attribute Tables** – (Mike; **Action** - identify short list of attributes for agencies to provide to assist with WSWG mission: herd names, hunt/mgmt unit, subspecies, origin, population size)
See slides
What is average size of herds, could we put an estimate to a polygon
Kevin – build attribute table and those who have data can fill in
Andy – define herd
Mike – Have had people ask what a viable herd size is.
Vern – Look at probable range size.
Mike – are there population estimates for regions for each member, Mike will email request
- **Overview of BLM/USFS wild and domestic sheep mapping update** – (Frank, Brian, and Mike; **Action** – identify future need, process, storage, and website access)

Review of WSWG guidelines, statements, and data to limit domestic sheep and goats, pack goats, and camelids – discuss recent meetings and concerns by pack goat and camelid owners; (Mike; **Action** – revise/clarify WSWG current guidelines or develop position statement(s) through a committee)

Q&A - Mike - Can we consider revising guidelines to address camelids?

Andy – Do we have the ability or authority?

Kevin – needs to be refreshed

Helen – Risk is one-sided, lamas have not been sampled much

Bill – under British Columbia recreation provision for wild sheep herd occupied habitat polygon with 50 km buffer, camelids are now restricted. Not just *M. ovi.* with these animals

Don – Is there enough evidence to warrant?

Mike – refresh guidelines this spring and identify new things and talk about summer meeting. Put behind Foss document revision

Review updated values and added records to License/Tags, Harvest, Demand, Population

Estimates, and Translocations (Mike; **Action** – clarify when data and information is available, timing of updates, and missing information)

Update on Google Drive, See spreadsheet. Please fill in as best you can.

Rich – can you allow for details, many differences between states?

Mike – have comment field to add to

Brainstorm on WSWG educational, scientific, and/or management products, apps, etc. (All; **Action** – identify products, timelines, and if necessary committees for development that will promote wild sheep conservation and herd health and further Director’s support of WSWG)

Will send out an email regarding products, apps, etc....

Upcoming Wild Sheep related events and meetings:

- Desert Bighorn Council, April 16-19, 2019, Mesquite, NV;
- World Mountain Ungulate Conference, Sept. 10-13, Bozeman, MT

Frances asking for who took photo of bighorn and domestic sheep that was shown on screen; thought it was from Colorado; Andy sending out a request through CPW staff to see if they know

Adjourn