

California Wild Sheep

Fall 2019



IN THIS ISSUE

From the Editor	3
President's Message	5
The Mountains Are Calling Me	6
A Two Mile High Desert Bighorn Ram	8
2020 Annual Banquet.....	9
Hunt Report – Altai Argali, Mongolia, 2019.....	10
Hunting Stone Sheep in BC – Keep Both Eyes Wide Open	12
Harvest Strategies, Records Books, And Mountain Sheep: Results Of Recent Research	14
SAAM™ For My Ladies	18
Evaluation Of Gene Flow Among Desert Bighorn Sheep	22
Summer Field Work	26
San Geronio Bighorn Sheep Disease Update.....	28
Governmental Affairs Update ..	29

Jodi Hanggi
White Mountains
Dry Creek Outfitters
August 2019



ULTIMA THULE LODGE

CONTACT: DONALD C. MARTIN 310-766-3921



From the Editor's Desk

Glorious Fall and the start of hunting season (at least for the Northern Hemisphere) has arrived. I feel more alive with the cooling air and the anticipation of hunting plans (some have already started, as you'll see). This issue includes some great and very current hunting stories, interesting and valuable science, info on new directors, election of officers 2019-2021, fun humor, a teaser about our 2020 Banquet and Fundraiser, interesting desert insights from Carlos, CDFW update AND MORE!

Your feedback, ideas, articles, pictures & requests are always welcome. Best way to reach me is email: mike.borel@contextnet.com. Due date for input to the 4Q19 issue is November 20.

Wishing you great success in your hunting this fall!



CA WSF SUPPORTS TAXIDERMISTRY ASSOCIATION AWARDS

This year CA WSF once again supported the CA Association of Taxidermists (C.A.T.) by sponsoring an award. We developed a new award category, the "Best Horned Game Mammal," which was well received.

President Gary McDaniel sent us this message following the awards:

With your help in developing this special award, it brought back a strong drive of enthusiasm in a friendly (but serious) competition for specific species!

On behalf of the entire Board of Directors, and membership of California Association of Taxidermist's,

THANK YOU TO CA WILD SHEEP FOUNDATION!

VENISON PASTRAMI

Tammy Scott sends us this recipe for venison pastrami. Use with 2-4 pounds of whole muscle.

Cure:

1/4 c curing salt (Morton's Tender Quick)

2 tbsp brown sugar

1 tbsp each: black pepper, onion powder, garlic powder

1 tsp each: paprika, allspice (may sub cinnamon and nutmeg 1/2 tsp each)

Rub:

3 tbsp black pepper

1 tsp coriander (optional)

1 tsp garlic powder

Mix the cure and coat meat thoroughly. Place in gallon zip lock bag and refrigerate. Turn bag 1-2 times a day (I do one) for at least 5 days. Remove from bag and rinse off cure, then soak in water for a few hours or overnight (I usually do just 1 hour).

Remove from water and pat dry. Coat with rub and then smoke until internal temperature reaches 140-150. Let rest and cool, then slice for sandwiches. It slices much better cold.

You will notice a lot of liquid in the bag after 1-2 days, but it nearly all is soaked back up. I have made it without soaking in water but it tends to be salty. I have found 1-2 hours is enough at least for my tastes. For the smoker I prefer a lighter wood and use English walnut shells. Hickory is good too as well as apple.



Board of Directors

Officers

President

Donald C Martin (2020)

Northern California Vice President

Ken Crother (2021)

Southern California Vice President

Glen Pyne (2021)

Vice President, Operations

Mike J. Borel (2020)

Secretary

Don Priest (2020)

Treasurer

Adam Casagrande (2021)

Board of Directors

Jim Fitzgerald (2020)	Paul Schultheis (2020)
Ben Gordon (2020)	Renee Snider (2021)
Robert Keagy (2021)	Mike Torres (2021)
George Kerr (2021)	Darryl Williams (2020)
Dwight Ortmann (2020)	Shawn Wood (2020)

California Wild Sheep is published quarterly.

Please email all articles and photos to

mike.borel@contextnet.com

Photos should be high resolution and in color.

It is recommended that digital photos be sent by email.

Please include photo credits and captions.

Humorous outtakes provided by Tammy Scott

Published by Beverly Valdez, Gaiatec Services

Events

2019

September TBD	Wild Sheep Foundation Fly-In and Walk on Capitol Hill (Washington DC)
September 10-13	Seventh World Mountain Ungulate Conference, Bozema, Mt
November 20	Due date for articles for 4Q2019 CAWSF Newsletter
December 6	Sheep Summit XXVI, Ontario, CA

2020

January 16-18	WSF International Sheep Show Reno, NV
January 29-1	GSCO Convention, Las Vegas, NV (Westgate Resort)
February 20	Due date for articles for 1Q2020 CAWSF Newsletter
April TBD	Desert Bighorn Council Meeting
May 1	Sheep Summit XXVII, Sacramento, CA (DoubleTree)
May 2	CA WSF 18th Annual Fundraiser Sacramento, CA (DoubleTree)
May TBD	WSF Chapter and Affiliates Meeting XIII
May 20	Due date for articles for 2Q2020 CAWSF Newsletter

President's Letter

Opening day of sheep season is nearly upon us here in Alaska. By the time you read this, it will have come and gone and the first rams of the season will be in the skinning shed here at Ultima Thule Outfitters. For now, every minute of every day is about the final preparations that will hopefully result in success for our hunters. We have a full season ahead of us and as Alexander Pope originally remarked, "Hope springs eternal." In this time of great hope for so many of us embarking on our first hunts of the season across North America, I wish all of you a safe and successful season as the newly appointed President of the California chapter of the Wild Sheep Foundation.



First and foremost, I wish to thank outgoing President Darryl Williams for his excellent term as President. His leadership was absolutely exemplary and no less could ever be expected of a career Navy man. Thank you for your service and thank you Darryl for your unwavering dedication to North American wild sheep.

In addition, I wish to thank outgoing Directors Craig Van Arsdale and Andrew O'Hanesian for their hard work on the behalf of California's wild sheep. Craig's work as Silent Auction Chair of the fundraiser committee will be hard to top. He took our event to new levels and we thank him for all of his hard work and dedication. Additionally, we thank Andrew for all his hard work as part of the Communications Committee to help grow our annual fundraiser. Thank you gentleman, good luck on your hunts this Fall.

It is my great pleasure to welcome to the Board of Directors our newest members, Renee Snider and Mike Torres. Both are die hard sheep hunters and more importantly die hard conservationists. We welcome their support and their willingness to carry the flag forward for CA WSF at this critical time for California's desert bighorns and the GALAD program. Thank you Renee and Mike and welcome to the Board.

Now is a great time to be a part of CA WSF. Dynamic changes have occurred in the last 3 years and there is a new energy about the chapter and the State. Years ago, I used to comment that, "we're a chapter with a lot of money and no projects." ...And now, "We are a chapter with unlimited projects if we only had the money." There is no greater time to reinvest with CA WSF and be a part of the greatest desert bighorn expansion in our state's history. Through the GALAD program, we can double the number of desert bighorns in our state. Our relationship with CA F&W has never been better and the future of California's desert bighorns has never been brighter. I look forward to working with each and every member of our chapter to safeguard this precious resource and provide increased opportunity to all of us that yearn to appreciate the desert sheep to their fullest.

With great thanks,
Donald C. Martin

THE MOUNTAINS ARE CALLING ME

By Jody Hanggi

The early morning hours of June 12, 2019, the California Department of Fish and Wildlife email, read “big game draw results available, find out if you drew that tag of a lifetime.” So tapping the “see results now” and entering all the necessary GO ID numbers and so on I continued on down to the results list. Knowing I had maximum points for Elk and Sheep I figured I had the best chance at the Elk tag but always optimistic that my number would someday come up for the California Desert Bighorn. So, the first results that came up on the list was Bighorn Sheep and beside the “did I win” column was the “Y” and I just about went through the ceiling when that came over. I had to have my wife double check the “Y” to make sure that it was for real, she said yep to the “Y”. I had applied for Zone 507, White Mountains. With the extra 3 tags available this year for a total of 6 for the zone I thought I would have better odds of drawing the Whites. The other reason for the 507 Zone application is that it is in August and is easier to get away than in December or January as I am a Citrus Grower in Tulare County and constantly monitoring nighttime temperatures throughout the winter months. During the next few hours I started to text my hunting buddies and calling family members about the great news. One of those texts went to my cousin and long-time friend and hunting partner, Kirk Stiltz. Kirk is one of the Guides/Sheep spotters for Dry Creek Outfitters which is based out of our hometown of Three Rivers, California.

My next call would be to Cliff St.Martin to get a list of options for the hunt. We went over several things including, backpack hunt versus the use of pack stock. After consideration of all options I opted to hunt with Dry Creek stock to get us up to where we needed to be. Matt then called longtime friend and World Champion Bishop Mule Days Packer, Nick Knutson, to provide the horses and mules.

In early August we made a scouting trip to the Whites, at which time we decided where we would place our spike camp. On the morning of August 14th, 4 days prior the opening day of my hunt we put a few things in our pack for the long and steep hike up the mountain. Nick would pack the heavier gear on the mules. We finally arrived at the spike camp at an elevation 12,800’ at 3:00 pm. Nick had already unloaded the stock and was heading back to base camp because the Operating Plan/Permit for the Whites does not allow Outfitter’s stock to be held overnight in the Wilderness.

The next day we began scouting for sheep in different directions. Matt and Shawn would head



First ram harvested in the 2019-20 season by Jodi Hanggi with Dry Creek Outfitters in the White Mountains

north about 4-5 miles, while Kirk, Brooks and myself would stay closer to spike camp. Matt and Shawn decided to stay higher up on the mountain Friday night to keep closer tabs on the rams they had located. We knew that the 5-mile walk Saturday morning would take over 2 hours, so alarms went off at 2:30 am. We coffee’d up and hit the trail at 3:30 am and eventually caught up with Matt and Shawn by 6:30. Matt, Brooks, and I made the way up to the vantage point while Kirk and Shawn covered our blind spots. After glassing for a few hours, Matt motioned for Shawn to move forward to the south to investigate the next basin. Within a few minutes, Shawn reappeared and signaled for us to join him ASAP. Matt, Brooks and I gathered our gear and made tracks up to Shawn’s rockpile. Shawn had spotted 5 rams 1,800 yards out. Brooks repositioned and located another group of rams with one that required a closer look. We worked our way around the back side of a long ridge that we had walked up earlier and relocated the rams. Matt positioned me at a spot where I could take a good look at the larger ram. At that point Brooks ranged the ram at 440 yds. but the ram was bedded along side three other rams. Now the waiting game was on. Finally, they stood but began walking straight away. And then finally, the old ram turned broadside and Matt said, “there it is” and I sent the bullet of the Kimber .300 W.S.M. right over his back! The ram ran out to 485

yards then stopped, giving me the broadside shot. The second shot hit perfectly behind the shoulder. Shawn yelled down to us "you got him he's down"! After high fives, hugs, and handshakes, we headed down to my first ever Big Horn Ram! Shawn motioned for Kirk to come up and join us. After admiring this tremendous ram, we followed with pictures and the caping and quartering of the meat. Once we got all packed up, we began the 6-mile hike back to spike camp. Nick was to bring the stock in Sunday morning so that worked out perfectly for us.

As I lay there that evening absolutely exhausted from the day's events, I had the chance to reflect on all the preparation that went into this hunt. All

the workouts at home on the treadmill, bike, rower, etc. etc. and then the 4-5 high country hikes out of Mineral King at over 10,000' each time. Many thanks to my wife Esther for pushing me and helping to convince me that I could accomplish this amazing adventure. A big thank you to my cousins Kirk and Brooks Stiltz for being there for me and for the scouting trips. Also, for Cliff and Matt St. Martin for doing the groundwork for this hunt. Shawn and Nick my appreciation goes out to you as well for all your help. I would like to thank Dry Creek Outfitters for this once in a lifetime hunt!

CA WSF PROJECT REPORT FROM OREGON STATE UNIVERSITY IS NOW AVAILABLE

Following the 2013 die-off of bighorn sheep in the Mojave desert at Old Dad Peak, CA WSF along with many other organizations were concerned. Bighorn sheep in this region were believed to be insulated from the pneumonia threat due to their reduced interactions with other domestic and wild sheep systems.

Working with Oregon State University, we funded an investigation of the post-outbreak survivorship of adult female bighorn (> 2 years old) across 9 populations for ~3.5 years (November 2013 to March 2017) in the Mojave and evaluated the effect of *M. ovi* exposure and infection on seasonal survival, while testing effects of range-specific factors that could potentially drive differences in adult survival and the effect of age.

The results of this long term study are presented in a report now available at the following web address:

[HTTP://BIT.LY/CAWSF-OR MOJAVE2019](http://bit.ly/cawsf-or_mojave2019)

Key findings include:

- *M. ovi* infection was associated with a substantial reduction in survival of adult female bighorn following a pneumonia outbreak in 2013 in the Mojave Desert, which is consistent with many studies that have linked *M. ovi* to pneumonia epizootics and acute mortality in bighorn sheep populations.
- Environmental variables also appeared to influence survival, and in particular, forage quality in summer and autumn (as approximated by NDVI), and May to August precipitation, were strongly correlated with adult and neonate survival respectively, and likely mediated effects of *M. ovi* in infected populations.
- Intermountain movements may have been influenced by *M. ovi* infection, as the probability of an intermountain movement for a male > 5 years old was 25% less if the individual was PCR-positive at capture based on our top model, although infected males > 5 years old were still more likely to transmit disease across populations via intermountain movements compared to infected individuals in other sex and age classes.
- There is an indication that many adult females exposed to *M. ovi* may have remained chronically infected, given that previous exposure to *M. ovi* (as per cELISA testing and demonstration of *M. ovi* specific antibodies), barring infection status at capture, did not appear to affect adult female survival, while positive infection status at capture had a negative effect.
- Surviving adults that remain chronically infected can continue to spread the pathogen to other animals, promoting disease persistence in the system. Prevalence may therefore be largely controlled by the number of chronically infected individuals that remain in the population year after year, which would ultimately influence exposure rates and transmission risk among adults and neonates within and between populations.

A major finding of the study proposes that one way to achieve a broader spatial distribution of populations during summer and autumn might be to reconfigure placement of artificial water features, and perhaps add new structures, in a way that would give animals greater access to good quality forage and allow for greater use of forage throughout the range.

READ THE ENTIRE STUDY REPORT AT [HTTP://BIT.LY/CAWSF-OR MOJAVE2019](http://bit.ly/cawsf-or_mojave2019).

A TWO MILE HIGH DESERT BIGHORN RAM

by Kyle Meintzer

One of the great things about technology is how easy it's become to see your draw results. California is no exception, as when I opened my Outlook account very early one morning in mid-June, there was an email from CA DFW notifying me I'd drawn a sheep tag in the White Mountain unit after twenty years of applying for CA sheep!

I quickly contacted Jake Franklin, whom I immediately hired to guide me. Jake and I have hunted on three sheep hunts now and he's First Class from start to finish. Ethical, hardworking, great to be with and, man, does he ever do his research!

If you ever consider applying for a White Mountain tag, be in the best shape of your life BEFORE you apply! Because if you draw, you'll be hunting tough terrain at ridiculously high elevations. If you do draw, contact your personal physician immediately for advice.

Our crew packed into our spike camp the day before the season opened. Not long after, Jake got kicked HARD by a mule. How hard? His first thought was that the mule had killed him! Seriously! Fortunately, despite significant soreness and a day of nausea, he was able to continue on our quest.

Late on Day One, we bedded four rams near the top of a box canyon, one of which was clearly a book ram.

Right after dawn the next day we found them and they began to move within range. I cleared out a bunch of rocks and gravel so I could get comfortable shooting in a prone position while using my backpack as a rest. Fortunately, within a few minutes the big guy turned and offered me a quartering away shot at 381 yards at a 25 degree downhill angle. When I shot, he tipped over immediately without taking a step and the hunt was over! We were at 12,800' when I pulled the trigger.

At that point, all we had to do was figure out the best way to get to him, then how to get him back out.

After we celebrated, we headed down to him and took dozens of pictures before boning him out, loading him up, then climbing back up.

Much of the climb back up involved taking 20" steps up, then sliding 18" back down. Then repeat, repeat, repeat!

When we got back to camp, everyone was freaking out when they saw how cool the ram was. Same thing when I took him to the taxidermist the next day.

The rams in the Whites tend to flair out, but also



Kyle Meintzer with White Mountains Ram

tend not to hold their mass. This ram flaired out AND held his mass! At check in, Mike Morrison of DFW scored him at 172 5/8" gross, the exact same score I got when I measured him the next day.

This was not only a once-in-a-lifetime tag, it was also a once-in-a-lifetime experience!



Kyle Meintzer and the Kika International / Jake Franklin team

Editor's Note:

The White Mountains were the first new hunting unit established, and was the direct result of CA WSF funded surveying and encouragement. There are 6 tags there this season and Kyle, who played a key role in CA WSF's early years and the addition of the White's, was one of the lucky tag recipients! PUTTING AND KEEPING SHEEP ON THE MOUNTAINS PAYS OFF!

2020 ANNUAL CAWSF BANQUET

MARK YOUR CALENDAR FOR MAY 2, 2020!

YOU DO NOT WANT TO MISS THIS!

*by Ken Crother
Fundraiser Co-Chair*

Late summer and fall finds us all excited for the hunts we are on as well as those that are planned in the next few months. We look forward to hearing from our members and attendees that either bought or won hunts at our banquet last spring. We can only thank all of you that showed your support at a great banquet and fundraiser that helped us not only raise the funds to keep our California sheep on the mountain but also to support our Give a Lamb a Drink (GALAD) program. Through a final donation from GSCO helped us pass the \$500,000 mark to help us in building the much needed drinkers in our deserts. Incredible to see everyone stand up to make a difference. The more sheep we can raise and keep healthy, the better our chances of increasing our tags.

As you well know, these events don't happen without the support of the CAWSF board but also our membership, our outfitters, many great manufacturers of fine outdoor clothing, gear, guns and all the necessary items one might need in the field to help complete our dream hunts. You are all very appreciated and we could not do it without you.

I bring up last years event to remind you of this years event, MAY 2nd, 2020, at the same location in Sacramento — the Doubletree by Hilton. We are anxiously awaiting notices from various states in which we have applied for tags so we can alert our membership of what will be available at the event. As well, you read in our last article that we are proud to announce the grand prize for next year as a random drawing for a 15 day 1x1 Stone Sheep hunt with Aaron Florian's YUKON STONE OUTFITTERS. This hunt is planned for August 2021 and information is available on page 16 to order your tickets. You do not have to be present to win this hunt and it is definitely as my wife would put most of my hunts "once in a lifetime" — she apparently is tired of hearing that.

This year we will also be offering a 10 day Dall Sheep hunt in Alaska with ULTIMA THULE OUTFITTERS to a lucky LIFE MEMBER who must be present to win. It's a great time to upgrade your membership to LIFE member for one chance to win or DISTINGUISHED LIFE member for 3 chances to win. Youth are not forgotten either — our young Life Members are eligible as well so lets get the kids signed up.



Ken Crother corrals youth at the 2019 Banquet

It is early in our process but we are working on another custom rifle as well as many other high end manufacturers of guns, optics, tents, bags, clothing etc. for both our raffles and silent auctions. We will plan on surpassing our quality and quantity to make sure that everyone has a great opportunity to win.

Please continue to bring youth and families to our event. We thank all of you that brought your own kids but also invited others to come along. In 2017 and 2018 our Youth Chair, Glen Pyne, and WSF's Dr. Ryan Brock did a great job in providing super entertainment and we had more youth raffles and prizes than ever. We will continue to grow that this year. Please remember to pass along to anyone attending that we would love to have the whole family at our event. Every youth will leave with something to remember the event by.

We look forward to seeing you, please set MAY 2, 2020 aside and please make sure to pass along the great opportunities and fun at this event to your hunting buddies, friends, family and bring them along. We would like to grow our event a bit more and would be able to not only offer more hunts and items but would also look to raise more money for conservation and for our sheep. Mark that calendar and pass along the news about our event, more info to come in the next issue about great hunts and gear for our event.

HUNT REPORT – ALTAI ARGALI, MONGOLIA, 2019

by Mike Borel

Outfitter / Booking Agent – Caprinae

Guide / Local Operator – Seggi & Oggi, Riza
Gozluk accompanied

Hunt Highlights -

The Altai Argali has been my “dream sheep” for over 30 years, and acutely so since I achieved a half-Slam® in 1999.

On this trip the toughest job was getting there WITH my rifle and ammo.



Mike Borel with his Altai Argali

Friday June 28 – Unhappy day spent at SFO, only to return home with a need to either get a transit permit from Beijing (previously not identified) during their weekend or reroute my flight. I rerouted, but earliest possible was Monday July 1.

Monday, July 1 – Still took an over an hour to check in, despite 2 long reviews over the weekend and “assurances of all is in order”. My firearm was initially denied, but later following my protest and knowledge of the steps and situation, accepted.

After a 4:00 AM arrival to hunting camp, we took a nap and got going at 7:00. We saw many sheep, most, but not all, were rams. Nothing I was particularly interested in. We did have a team of 5 guides and they had been scouting for over a week. Mid afternoon on July 4 we saw one on the opposite mountain that merited a closer look. We made the circle and began a stalk to get a good look. The stalk was with Oggi, Mo (interpreter) and Riza. This ram looked nice but I wasn’t sure. Oggi and Mo said they felt this was the best they had seen after extensive scouting. I decided to take the shot at 239 yards and hit solidly – but as it turns out a bit behind the lungs (I think I clipped some grass). The ram kept moving and I reluctantly did a Texas heart shot to end the chase.

He’s handsome and over 12 years old. Not the mega monster I hoped for, but MINE!

Here is what I learned – and decisions I made (that may also be useful for you):

1. Use a professional service for booking travel with firearms. I will use Travel with Guns next trip.
2. Assure crystal clear understanding with your main guide(s) about what is minimum size to be of interest and what I need to know when considering a shot (a) size estimate, b) probability we can do better, c) distance).
3. Have your outfitter accompany you whenever possible, Riza’s company was much appreciated. I should have asked for him to be talking into my ear when we were evaluating rams.

Seggi and Oggi were outstanding skimmers/capers and we enjoyed grilled sheep steaks! Which is far superior to the boiled ones I had on my Hangai hunt 13 years ago.

ROAST LEG OF WILD SHEEP (OR VENISON, OR ANTELOPE)

from Bob Keagy

(This highly-adaptable and very good recipe is largely based upon the 1965 "Adventures in Wine Cookery, California Wine Advisory Board," appearing on page 53, under the name "Blossom Hill Lamb With Wine", submitted by Mrs. E. Jeff Barnette, of Martini and Pratt winery. James Beard's Theory and Practice of Good Cooking "Roast Haunch of Venison," which is hereby acknowledged as copyrighted, was also consulted.)

This recipe is intended for a dinner group of eight to ten, and requires some advanced preparation. This for the hind leg, minus the shanks, often called the "haunch".



Firstly, pull the leg out of the freezer 7 days before cooking. Defrost in refrigerator for three days. On the fourth morning, open up the freezer packaging, wash the leg, removing any hairs, etc. still adhering to the meat. The roast must be very clean, and I wash under cool running water. After cleaning, pat dry. Use a sharp knife to trim off the fat, being careful not to damage the underlying muscle. Unless it is a very young animal, discard the fat. (If you want to use the fat, cut off a little piece and fry it, to see what its flavor is like. If its sweet and fresh, use it.)

Now examine the leg for any "freezer burn" and cut-off any such damaged tissue. If the leg has been in the freezer for over six months, put it in a roaster pan and bathe with milk. Keep the leg at least two hours on a side in milk to freshen it, then again wash it thoroughly under cold running water and pat dry.

For a 8 to 12 pound leg of game (Sheep, Venison or Pronghorn):

2-3 cloves of garlic (crushed) or equivalent prepared chopped garlic

4-5 tablespoons of (preferably) fresh lemon juice (frozen or canned are o.k.)

1/2-3/4 teaspoon EACH of curry powder, ground ginger, dry mustard and salt. (1/4 teaspoon ground black pepper is optional)

1 stick of butter, softened (if you are cooking venison, instead use beef fat from a fresh prime rib trim from your butcher to provide the moisture and flavor to the roast).

Rub the meat with the crushed garlic, working it wherever possible into the meat, and between muscle groups. Spread with the lemon juice on all sides. If you feel additional garlic or lemon juice would be helpful on your particular roast, or a larger roast, use a little extra. Mix together the curry powder, ginger, dry mustard, salt and (optional) black pepper, and rub vigorously into the meat, covering on all sides.

Cover the roast in a large baking pan, with a wire rack in the bottom. "Tent" foil slightly to avoid squishing the spice covering and crimp the edges of the foil tightly around the pan to retain moisture. Refrigerate overnight. Next morning, rotate roast 180 degrees, and check that spice mixture appears intact. You may cook the roast one to two days after being rubbed with the spice mixture, turning the roast once a day, to ensure that the spice mixture remains even, to allow the roast to evenly absorb some of the spice flavors.

Two hours before you begin roasting, take it out of the refrigerator, and visually check that spice coating is reasonably intact. Spread the roast with 2 to three tablespoons of softened butter.

You will need a good digital meat thermometer to monitor progress in the oven, and when to remove the roast. Roast at 450 degrees for 30 minutes, Baste with the rest of the butter. Reduce heat to 350 and roast for 1 to 1 1/2 hour for an eight pound roast, or proportionately more for a larger roast. Figure on roughly 12-15 minutes per pound. After an hour or so, check the meat temperature with a thermometer in the thickest part of the meat, avoiding the bone. When the roast hits 125 for venison or 135 for sheep, mix together and glaze the roast at least twice with a baste mixture of :

3 tablespoons red currant jelly

1 cup pf good California burgundy (heat in a small pan to melt the jelly and wine together)

Take the roast out when it hits 130-135 for venison or 145 for sheep. It will be medium rare. It should rest for 5 to 8 minutes. Serve immediately on a hot platter!

Root vegetables are a traditional accompaniment. Potatoes, carrots, small white onions, and parsnips are all good. Rub them with butter and roast about 1 to 1.5 hours. Good luck!!!!

IF YOU WANT TO HUNT STONE SHEEP IN BRITISH COLUMBIA – KEEP BOTH EYES WIDE OPEN

by Douglas A. Sayer, CA WSF - Distinguished Life Member and
Roger L. McCosker CA WSF - Life Member

North American sheep hunting is an exciting, exhilarating sport, which requires a number of sacrifices, including that the hunter to be in top physical shape. But success rates vary tremendously in sheep hunting, depending on the species you choose to hunt, i.e., Dall, Stone, Desert, or Rocky. We're speaking of your probability of success, of which Stone sheep hunting has a lower probability. When you're at the sheep show, talking to an enthusiastic outfitter, booking agent/consultants, they can make it sound simply a matter of paying the freight, finding a date and signing up. It is not!

Typically, a hunter goes on his first sheep hunt, and he enjoys the experience tremendously, and then wants more. When a hunter decides they want to pursue all four North American sheep species, they have made a life changing decision. This goal for an individual will cost them more than they know, and not just monetarily. It's a passion! Ten to 20 years ago, the most difficult, expensive sheep hunt was a Desert sheep. This has changed with the expansion/growth of Desert sheep in Mexico, as well as population growth in several key western states, i.e., Nevada. The Stone Sheep of British Columbia has quickly become the most expensive and most difficult to succeed.

We are writing this article to caution "new" sheep hunters, that they need to be realistic and cautious about hunting Stone sheep in British Columbia. Besides costing \$50,000 (and increasing) for a US citizen to hunt, your odds of success on a single hunt may be less than you think. **"It is not uncommon for a hunter to take several very expensive Stone sheep hunts in BC before taking his ram."**

The above quote is from an interesting and comprehensive article about Stone sheep hunting was written by *Mike Bodenchuk, Editor-at-Large, of The Hunting Report, in the May 2016 edition, titled "Hunting Stone Sheep: Finding Success in a Changing World."* It is an honest article about the changing demographics, and factors that might contribute to your not being successful on a Stone sheep hunt. Bodenchuk continues

"The largest Stone sheep population is located in British Columbia..." and "For



Doug Sayer, WSF/GSCO/SCI Life Member

practical purposes, Stone sheep hunting is limited to BC residents, and all **non-BC / Americans** must be guided. According to Bodenchuk,

"BC created an outfitter concession program in 1949, which restricts the number of rams an outfitter can take (harvest)." "Outfitter areas are restricted and only the registered outfitter may take paying clients into an area, EXCEPT this exclusivity **does not apply to British Columbia residents**, who can hunt on the same land and much of the current situation is the result of increased resident hunting." Additionally, "Many hunters report the presence of unguided hunters... Indeed, you may ride horses into the wilderness for several days to get to your sheep camp. But, that doesn't mean that a resident didn't hire a float plane...and beat you to the mountain."

The demand and supply is an interesting aspect of Stone sheep hunting. There is a significant pressure in many areas from resident hunters because they have the incredible opportunity to hunt them with easily accessible



Roger McCosker, WSF/GSCO/SCI Life Member

tags and at a cost that we in the lower 48 would consider equal to your home states' deer license. Who would blame them for hunting them every year? The balance of the tags are allocated to the outfitters for non-resident/US hunters, in a very strict system that gives each outfitter a finite number of tags. Resident hunters, with open access, harvest well over half the Stone sheep in BC. [Reference: *Hunter Harvest Data/ Results for Stone Sheep, 2015 to 2017 (2018 data not yet complete)*. Received March 21, 2019; Wildlife and Habitat Branch, Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Victoria BC]

Stone Sheep has been going through a transition, which is causing some interesting dynamics that you should be paying attention to. First of all, there aren't as many of them compared to the other species, and, they are only located in a relatively small region. If you are serious about only harvesting a Stone sheep and would not take a Fannin sheep instead, you have painted yourself into a limited number of options. You must book with an outfitter, who provides hunting opportunities for them or you could move to British Columbia and become a resident! Moving there and becoming a citizen may be your cheapest option! **[NOTE:** A realistic alternative to hunting Stone sheep in BC would be hunting Fannin in BC or Stone sheep in the Yukon. Fannin currently qualifies for a Stone sheep, by those who keep records. The population is smaller, although the opportunity to be successful on a single hunt is much greater, and the prices are usually significantly less. Yukon residents can hunt yearly, but there is only a population of 33,422 residents verses 4.4 million in BC, both with similar land masses.]

Believe it or not, it is "legal" in British Columbia, for an outfitter to sell more hunts than his BC government allocation. The government allows the outfitters, to allocate more non-resident hunters than

their allocation. Their reasoning for this is because, statistically, many hunters don't fill their tags. For example, if an outfitter is allocated eight tags and they have four hunt periods during the season it's logical that they would divide them up according to their resources, history and knowledge of the area. If they historically have 60-70% success ratio, they often bring in 12 ± Stone hunters. Those of you who paid attention to the last sentence might be wondering, but what if I'm on the last hunt and the tags are already filled? We don't have first-hand knowledge that this ever happens, but the market is ripe for this to be an issue. (One of the co-authors experienced a Stone hunt in BC, where the outfitter later admitted to having only 7-8 allocated tags, yet he had signed up 15 Stone hunters for the same season! While in the base camp, the hunter observed multiple resident hunters, spike camping and hunting directly on the mountain range he was about to hunt!)

In summary, Stone sheep are gorgeous trophies, and today they are probably the most difficult sheep to harvest (on a single hunt), as well as the most expensive of the four North American sheep to hunt. "If you still want to hunt Stone sheep, keep your eyes wide open." according to Mike Bodenchuk. Do your own research: don't trust an outfitter, agent, or consultant; talk to all recent past hunters, particularly the unsuccessful ones. Also, with the challenges of easily accessible tags for resident hunters in BC, and the strictly limited supply of tags allocated to outfitters, the cost of Stone sheep hunting is almost guaranteed to rise in the future. Good luck!

Footnote: Hunting Rocky Mountain bighorn sheep in BC and Alberta can be another challenging low risk probability hunt. For example, in the Summer 2018 edition of Wild Sheep magazine, Hobson Reynolds reported final success in getting a California Bighorn in BC, acknowledging that this was a seventh attempt for a Rocky or CA Bighorn in both British Columbia and Alberta. Both Provinces areas allow unguided resident hunting! (Buying one of the five governor's tags in Wyoming has become a realistic alternative, with its high success rate.)

Editor's note:

Possibly one of the best ways to get a Stone Sheep hunt is by trying to win one — this year's special drawing to be held at the annual fundraiser is a Stone Sheep hunt with Yukon Stone Outfitters! Don't miss this chance at a hunt that is bound to get more rare, and more expensive, with time.

HARVEST STRATEGIES, RECORDS BOOKS, AND MOUNTAIN SHEEP: RESULTS OF RECENT RESEARCH

contributed by Vernon C. Bleich, Ph.D.

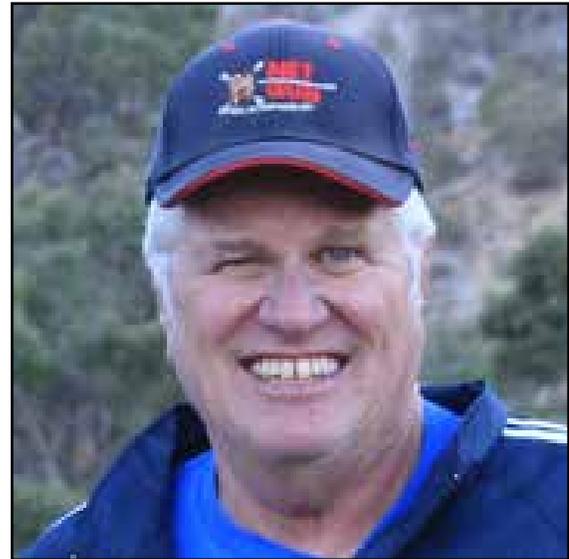
The California Wild Sheep Foundation (CA WSF) provided generous financial support for Tayler LaSharr's research on bighorn sheep. In 2018 Tayler completed her M.S. degree at the University of Wyoming under the guidance of Dr. Kevin Monteith, whose previous research has questioned the potential for harvest to impact horn or antler size of large mammals (Monteith et al. 2013, 2018). A primary stimulus for Tayler's work has been the ongoing and almost relentless criticism of the effects of harvest on the structure of large mammal populations and its evolutionary implications.

Until her contributions appear in total, Tayler wishes to share the results of her work in abbreviated form, and offers her appreciation for the financial support provided by CA WSF. Tayler's thesis consisted of two chapters, each of which has been accepted for publication in a prestigious international journal (*Evolutionary Applications and Journal of Mammalogy*), and the abstracts of which appear below. Members of CA WSF can be very proud of their support for Tayler's research, and it is with gratitude that Tayler shares these abstracts. Both papers are "in press" and formal publication is anticipated in the immediate future; when these papers become available, a link to each of them in its entirety will be shared with CA WSF members.

BIOLOGICAL RELEVANCE OF ANTLER, HORN, AND PRONGHORN SIZE IN RECORDS PROGRAMS

LaSharr, T. N., R. A. Long, J. R. Heffelfinger, V. C. Bleich, P. R. Krausman, R. T. Bowyer, J. M. Shannon, E. M. Rominger, C. P. Lehman, M. Cox, and K. L. Monteith. In press. *Journal of Mammalogy*.

Long-term datasets are becoming increasingly important for assessing population- and species-level responses to a changing environment. Programs that record morphological measurements of horns, antlers, and pronghorns were established in the early to mid-20th century to collect biological information about animals that possess large horns, antlers, and pronghorns, which could be used to assess the effectiveness of conservation efforts for large mammals in North America. The general relevance of record books has been questioned because of the minimum size requirements for inclusion in a record book, which may mask trends when changes in the population occur. We compared trends in size of antlers, horns, and pronghorns through time using records from three records programs with different minimum size requirements to evaluate the influence of entry requirements on temporal trends. We also



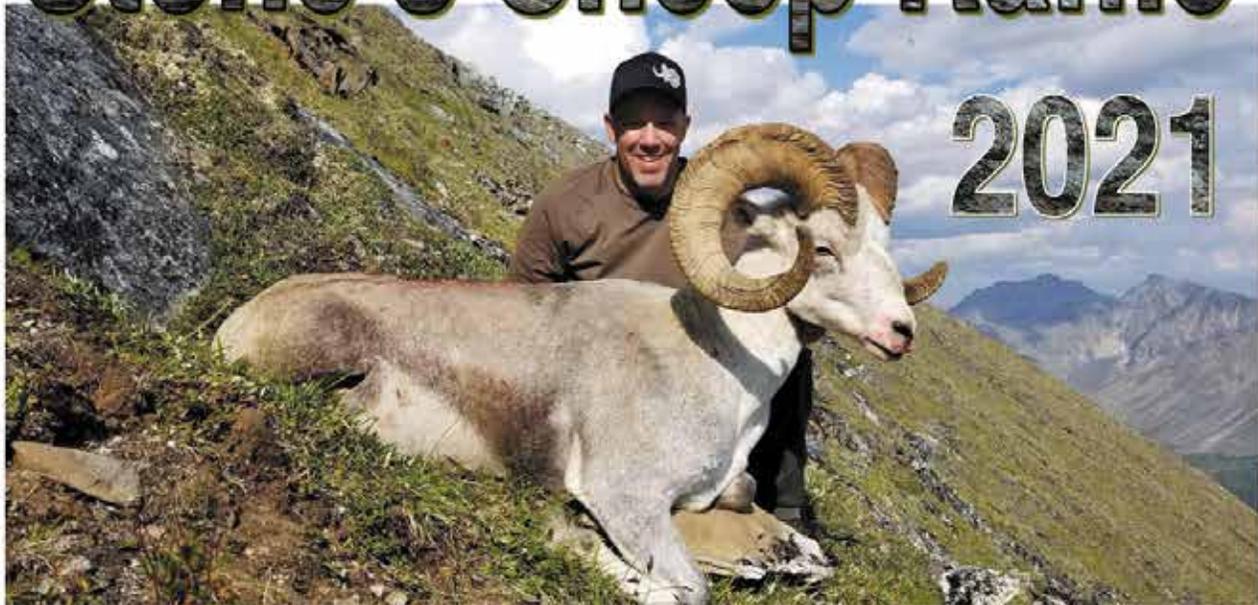
investigated whether horn, antler, or pronghorn size affected the probability of specimens being submitted to a records program. Only two of 17 categories exhibited less-pronounced trends in the record book with the highest size requirements for entry, and in two categories trends were more pronounced. Although societal interest in submitting eligible specimens increased slightly over time in one of six categories, the probability of voluntary entry was largely random and not affected by year of harvest or size of specimen. In contrast to previous criticisms, trends in record books should not be expected to represent the size of all males within a population. Instead, our evaluation indicates that the records programs we examined can provide a useful resource for assessing long-term changes in phenotypic characteristics of ungulates, but importantly, they represent the respective range of sizes within which each program collects data.

Literature Cited

- Monteith, K. L., R. A. Long, V. C. Bleich, J. R. Heffelfinger, P. R. Krausman, and R. T. Bowyer. 2013. Size of horn-like structures in trophy ungulates: effects of climate, culture, or harvest? *Wildlife Monographs* 183:1–28.
- Monteith, K. L., R. A. Long, T. R. Stephenson, V. C. Bleich, R. T. Bowyer, and T. N. LaSharr. 2018. Horn size and nutrition in mountain sheep: can ewe handle the truth? *Journal of Wildlife Management* 82:67–84.

Vern can be contacted at vcbleich@gmail.com.

Stone's Sheep Raffle



Enter to win a 15-day Stone Sheep Hunt with Yukon Stone Outfitters August 12-26, 2021 in the renown Pelly Mountains of Canada's Yukon Territory. Located in the heart of the Pelly Mountains, Yukon Stone Outfitters operates in one of the largest, most scenic and remote areas of Canada's Yukon Territory. Horseback or Backpack. Accommodations during the hunt are included. Value of the hunt is \$44,500.

Winner will be drawn at the California WSF Banquet May 2, 2020. Winner will be notified by email or phone.

Additional costs to be paid by winner:

Bush flights: \$1,400

Hunt Package 5% GST tax: \$2,107.50

Hunt Preservation Fund, License and tags (includes all species): \$500

Government Harvest Fee (Sheep only): \$250

Transportation to and from Whitehorse, Yukon Territory Canada

NOT INCLUDED IN YOUR HUNT

Hotel before and after the hunt

Tips/Gratuities

Crate and Freight charges for shipping trophies

Additional hunters or non hunters if arranged with outfitter

Additional trophy fees if arranged with outfitter

Additional flights required to take out extra meat

Unscheduled charter flights (leaving early or arriving late, etc.) are in addition to charter included in hunt price



Species you may add to your hunt include:

Trophy grizzly - \$10,500

Management grizzly - \$5,500

Caribou - \$7,500

Black bear - \$2,500

Wolf/wolverine - \$500

Prices may vary and will be at the current rate at time of your hunt.

**YUKON
STONE**



OUTFITTERS

2021 STONE SHEEP HUNT Special Drawing



ONLY 500 TICKETS AVAILABLE

\$100 PER TICKET



Yukon Stone Outfitters

Hunt Information

15 day 1x1 hunt with Yukon Stone Outfitters
Dates: August 12 - August 26, 2021
Location: Pelly Mountains of Yukon
Territory, Canada

Get Tickets by Mail, Fax, or ON LINE

Mail order form to:

CA WSF
1314 B Center Drive #267
Medford, OR 97501

FAX order form to:

650-472-3889

ONLINE ORDERS:

www.cawsf.org/store

Name

Address

City State Post Code

Day Phone

Email

Payment Methods

Check

Make check payable to:
CA Wild Sheep Foundation

MasterCard

Visa

Credit Card Number

Expire Date

CCV Code

Billing Postal Code

Signature

Orders must be received by April 25, 2020. Drawing held May 2, 2020.
Do not need to be present to win.



Are YOU a CA Wild Sheep Foundation Life Member? NOW is the time to join or upgrade!

SHOW YOUR TRUE COMMITMENT TO THE WILD SHEEP OF CALIFORNIA AND THE WORLD! JOIN OR UPGRADE YOUR MEMBERSHIP TODAY.

You will be joining a hard working, and hard hunting, group of CA WSF Distinguished Life members when you join or upgrade. Meet our Distinguished Life Members:

Mike Borel
Ben Gordon
Ernest Holloway
Bob Keagy
Jeremy Pectchel
Donald Priest
Thomas Rea
John Ware
Darryl Williams

Adam Casagrande
Tina Gordon
Patricia Holloway
Donald C Martin
Jeff Peracchi
Caroline Pyne
William Tittle
Jim Warner
Shawn Wood

Scott Finley
Gary Hill
Brett Jefferson
Kyle M. Meintzer
John M. Pestorich
Glen Pyne
Zack Walton
Shaina Warner

Join as a Life Member (\$500)

Make a commitment now to continue PUTTING AND KEEPING WILD SHEEP ON THE MOUNTAINS of California! Join CA WSF as a Life Member and receive ONE chance to WIN the special Life Members hunt in 2020.

Upgrade your CA WSF Life Membership (\$1,000)

Upgrade your CA WSF Life Membership to DISTINGUISHED Life Membership (\$1,000) to receive THREE chances to WIN the special Life Members hunt in 2021.

You may also join at the Distinguished Life Member level for \$1,500.

All Distinguished Life Members receive a PELOTON 240 VEST from Kuiu emblazoned with the CA WSF logo.

SAAM™ FOR MY LADIES — WON AT ANNUAL BANQUET AUCTION 2019

by Glen Pyne

The Marine sniper instructor had just finished the morning lesson and I had questions. I was a bit embarrassed to ask him in front of my wife and daughter. We drove to the FTW Ranch in Barksdale, Texas from our home in California and for 1200 miles I was boasting about my experience and preparing them for how much they were going to learn. After all, this was my fifth trip to “the ranch.”

The FTW Ranch is home to the Sportsman’s All-weather All-terrain Marksmanship (SAAM™) school. Situated on over 12,000 acres of Texas hill country the FTW Ranch has been hosting the SAAM course for over 10 years. They also offer advanced wind-calling SAAM 2 and SAAM Safari courses. Having taken the SAAM 1, SAAM 2 and each of my two sons on the SAAM Precision / Hunt combo, this trip was for the ladies in my life — neither of which had expressed a desire to hunt.

Bags packed and ear to ear smiles were on order as we arrived at the gate of the FTW. The stress of the drive quickly faded as we were greeted by Tim Fallon and his staff and a thousand-plus miles of road was no longer visible in the rearview mirror. With rooms arranged and rifles prepped we settled in for 4 days of adventure.

Gene, our instructor, travelled from Camp Pendleton ready to teach some civilians what he has taught to many Marine HOGS; how to shoot. Period. There went my “Sniper’ fantasy. Gene started with the basics; sights, parallax, bullet drop and drift. My wife Caroline and daughter Madison took notes proficiently and I tried to act like I knew it all. Well, I should, but learning it once does not make you an expert forever. So, at lunch, I mustered the courage to ask Gene to go over Altitude Density one more time and with that embarrassment behind me I was able to transform from dad the “I know it all big game hunter” into just another student willing to learn something new!

Hunting is part of the SAAM Hunt Combo. It’s a great way to get a first-time hunter to a proficient skill level so they are ready for “hair in the scope” whether it’s a guided or DIY hunt. Each morning and evening Caroline and Madison loaded their gear into open topped jeeps and headed out on the ranch in search of game. An Axis deer for Caroline and Whitetail for Madison. I enjoyed the “Blackbuck” beer in the lodge. Well, in the evening as they have a 12 hour jigger to trigger rule. Safety first!



Madison Pyne at the SAAM range

When the radio crackled, letting the lodge know Madison had spotted a nice buck, my heart skipped a beat. What if she missed? How would she feel? Worse, what if she wounded him? I simply reminded myself of the training she received and how well she had done out on the range. Not just paper at 100 yards, but 6” and 9” steel targets out to 600yds. The drills were intense, shoot the 6” target at 350 yards, then reposition for a follow up shot at 450 yards. She had done just fine.

Perhaps it was only a few minutes, but it seemed like an eternity. The radio crackled again and her guide Dean, a PH from Zimbabwe, reported the good



Madison Pyne — first whitetail



Proud Glen with daughter Madison (left) and wife Caroline

news. A 170 class Texas whitetail was going to find a new home in California.

I knew it would be an arduous and humiliating trip back home if mom wasn't successful. Must have been something we drilled into our children about honor, ethics, and competitive spirit, because now as adults they knew just how to give it back.

Caroline hunted hard for 3 days and had not seen an Axis buck. She was resigned to take a whitetail. The last evening seemed to fade quicker than those before. It was filled with an urgency palpable throughout the lodge if not across the FTW's 12000 acres. This time there were no reports. Despite radio repeaters Caroline and her guide Efron were in some thick bush. From the ridgeline they had spotted an Axis buck. Hard horn just like she wanted.

The shadows were getting long and daylight would soon pass. Efron knew a road that could place Caroline within range, but they would still have to make a stalk. Efron was perhaps 20 yards in front of Caroline. He was

running, she was "stalking." A good student she is, but recalling my stories on how to sneak up on an animal was not the lesson for the day. She still had 150 yards to cover just to make the next ridgeline.

Efron convinced her to move out faster and soon they found a clearing from where to take a shot. SAAM's motto is "Because You Only Have ONE First Shot" and now Caroline could possibly add "and you only get one shot!"

With the sun preparing to take a nap, Caroline built her house; another lesson from SAAM where they focus on setting yourself up for the shot. Caroline found a decent enough place to lie, albeit without the comfort of a range mat, and set up her gear. Efron called out the range; 210 yards. Caroline checked her range card; 2 minutes up. Adjust parallax. Trigger hold. Breathe. Now wait. The buck was behind a tree. Sometimes he would turn, but not the correct direction. Sometimes he teased by sticking his head out. Sometimes he was just obnoxious and presented his butt.

Patience is a virtue, or was it motherhood that provided it, but when the FTW Ruger Hawkeye discharged a 6.5 Creedmoor Hornaday bullet the timing was perfect. Typical of a male to tease the ladies, but this lady had been to SAAM.



Caroline Pyne — axis deer



*Editor's Note:
FTW/SAAM™ is a frequent contributor to the CA WSF Fundraiser — if you have a chance to win this great trip at auction, you won't be disappointed!*

PHOTOS FROM THE FIELD



Zack Walton
Yukon Territory, 2019
Fannin
“Last day 9-year-old ram #2!”



Doug Sayer
British Columbia, 2019
Stone Sheep
The “Waterfall” Ram



Anonymous Hunter
White Mountains Desert Bighorn
August 2019
Guided by Kika Outfitters



Andrew Moeckel
White Mountains Desert Bighorn
August 2019
Guided by Kika Outfitters

PHOTOS FROM THE FIELD



Jim and Susan Fitzgerald's
New Zealand tour de force!
Above: Susan, red stag
Above Right: Jim, tahr
Right: Some fishing never a bad thing
Below: Susan, fallow
Below Right: Jim, fallow



EVALUATION OF GENE FLOW AMONG DESERT BIGHORN SHEEP POPULATIONS IN THE NEWBERRY, BULLION, AND SHEEPHOLE MOUNTAINS, CALIFORNIA, C. 2000-2003 AND 2014-2018

by Clinton W. Epps, Ph.D. & Rachel Crowhurst
Oregon State University

Editor's Note: This report was submitted to 29 Palms Marine Corps Base recently. It is based on work by the authors and others on the changes in and establishment of gene flow between the Sheephole, Bullion, and Newberry herds.

Introduction:

This memo is intended to serve as a brief report of our investigations of gene flow among desert bighorn sheep (DBS) in the Newberry/Ord/Rodman, Bullion, and Sheephole Mountains of California. The purpose of this analysis was to determine whether DBS in the Newberry Mountains/Ord/Rodman Mountains population have recently begun interacting with DBS in the Bullion Mountains and the Sheephole Mountains. Here, we use the name "Bullion Mountains" population to describe potential and occupied bighorn habitat on the 29 Palms Marine Corps Base. Recent development of artificial water catchments on the 29 Palms Marine Corps Base may have helped establish such links between the Newberry/Ord/Rodman population and bighorn sheep in the Sheephole Mountains and the eastern end of the Bullion Mountains. Bighorn sheep were reintroduced into the Sheephole and Bullion mountains decades ago from a source population at Old Dad Peak, located north of Interstate 40, and thus the bighorn sheep currently occupying the Sheephole Mountains are quite genetically distinct from other bighorn in the area. Thus, this situation created the potential for an unusually high-resolution analysis of genetic origins of individual bighorn sheep throughout this system.

Methods:

For this analysis, we genotyped samples collected at two time points: 2000-2003 and 2014-2018 (Table 1). Samples collected in 2000-2003 were collected by Clint Epps and Carlos Gallinger in the Sheephole Mountains and Newberry and Ord Mountains (Figure 1). Newberry/Ord samples were genotyped in 2004 at 14 microsatellite loci (Epps et al. 2005); those samples were genotyped at 6 additional loci and aligned to more recent data during 2015-2018 to create a 16-locus dataset (4 of the original loci are no longer used) for comparison to later data. Sheephole Mountain samples collected 2000-2003 were stored

and not genotyped until 2016. During 2014-2018, we collected bighorn fecal samples, blood samples from captured animals, and snips of tissue from carcasses from the Newberry Mountains and the Sheephole Mountains. Pellet samples from several locations in the Bullion Mountains were provided by 29 Palms Marine Corps Base and the Society for Conservation of Desert Bighorn Sheep (Figure 1, Table 1). These samples likewise were genotyped at the same 16 variable microsatellite loci (Epps et al. 2018).

We conducted three types of analyses on these data. First, we evaluated population-level genetic structure between the Newberry and Sheephole, using GENEPOP to estimate pairwise F_{ST} (a metric of genetic structure that varies from 0, indicating no difference between two sets of samples, and a maximum value that likely approaches 0.4 in this system for two populations with no recent history of gene flow). Second, we used STRUCTURE to evaluate genetic assignment of individuals to one population or another at both time periods (50,000 burn-in, 100,000 run, admixture and correlated allele frequencies, no prior based on sampling location). This approach allows identification of individual migrants or offspring of migrants. Third, we evaluated genetic diversity (expected heterozygosity, H_e) in each population at each time period using FSTAT.

Results:

Gene flow and genetic structure in 2003: Estimates of genetic structure at 2003 showed very strong genetic differentiation between the Newberry and Sheephole populations (Table 2). Assignment tests supported earlier conclusions (Epps et al. 2005) that the Newberry population was completely isolated during the 2000-2003 sampling. However, we found one instance of a Newberry-type bighorn sheep sampled in the Sheephole Mountains population (Figures 1 & 2). We cannot conclude that the Newberry-lineage animal sampled in the Sheephole Mountains traveled all the way from the Newberry Mountains, as a small number of bighorn sheep of that lineage could have persisted in the western portions of the Bullion Mountains, but this analysis demonstrates that the Sheephole Mountains had received at least one migrant from that lineage at that time.

Gene flow and genetic structure in 2014-2018: Estimates of genetic structure in 2014-2018 showed the Newberry and Sheephole populations are still strongly differentiated (Table 2). However, the Bullion Mountains shows an intermediate relationship, indicating that stepwise gene flow at least is occurring (Table 2).

Individual assignment tests were much more revealing, and demonstrate that two-way gene flow between the Sheephole and Newberry Mountains has now been established (Figures 1 & 2). Multiple individuals in the Newberry Mountains population showed complete ($n = 1$) or partial ($n = 5$) genetic affiliation with the Sheephole Mountains population (Figure 1). In the Sheephole Mountains, likewise, 5 individuals showed at least partial genetic affiliation with the Newberry Mountains population.

Genetic assignment of samples collected within the Bullion Mountains population (i.e., on the Marine Corps Base) showed at least two subpopulations: a western population of Newberry lineage, and eastern population of Sheephole lineage, and then an area of contact in the middle. The contact area is the location to which two GPS-collared ewes have made repeated seasonal movements from the Newberry/Ord Mountains. Interestingly, both of those GPS-collared ewes were of Newberry Mountains ancestry.

Genetic diversity: In 2000-2003, the Newberry/Ord/Rodman population had the lowest genetic diversity ($He = 0.50$) of 27 populations sampled across the Mojave Desert (Epps et al. 2005). In fact, this population showed no genetic variation at one locus analyzed here: BL4, known to be linked to an immune system gene (Table 3). In a recent study of a single population of a different bighorn sheep subspecies (Plowright et al. 2017), lack of genetic variation at the BL4 locus was correlated with carrier status for Movi, a key respiratory pathogen that affects bighorn sheep, and other recent analysis in the Mojave Desert populations suggests correlation with more variation at that locus and improved immune phenotype and disease status (Dugovich, Epps, Crowhurst, Gonzales, Beechler, Jolles, In prep). In 2014-2018 sampling, average genetic diversity of the Newberry/Ord/Rodman population had increased only slightly ($He = 0.51$). However, that population has now gained two new alleles at the BL4 locus, suggesting that the gene flow link established with the Bullion and Sheephole Mountains populations has increased genetic diversity at this potentially important locus linked to immune function. The Bullion Mountains population shows relatively high genetic diversity, although that may not reflect high genetic diversity of individuals given that two lineages are present in that “population.” The Sheephole Mountains population appears to have gained significant genetic diversity since 2000-2003, perhaps in part due to gene flow from the Newberry and Bullion populations (Table 3).

Implications for disease: Respiratory disease has been detected in locations around the Mojave Desert in California; in particular, *Mycoplasma ovipneumoniae* (Movi), which has been associated with fatal pneumonia in bighorn sheep around western North America (Besser et al. 2008). This pathogen can be spread by bighorn sheep to other bighorn sheep by direct or close contact, causing strains to spread widely among populations via occasional intermountain movements. One strain (hereafter, the Mojave strain) has been detected in the South Bristol, Marble, and Clipper Mountains (north of the Sheephole and Bullion populations). A separate strain has been detected in Joshua Tree National Park (hereafter, the Joshua Tree strain). Sampling of bighorn sheep in the Newberry/Ord area in 2014, 2016, and 2018 detected no evidence of Movi infection or exposure. Although one of the least genetically diverse populations in the Mojave (Epps et al. 2006), the Newberry population may also have been partially protected from disease spread by its isolation as a result of human-made barriers and distance to other occupied habitats. Novel exposure could result from bighorn sheep contacting domestic sheep that are occasionally grazed on irrigated lands near Newberry Spring, or bighorn sheep in the Sheephole Mountains may eventually come into contact with the Joshua Tree strain of Movi due to previously document gene flow between the Sheephole and Coxcomb Mountains (Epps et al. 2010), which in turn is linked by high gene flow to other Joshua Tree National Park populations now affected by respiratory disease. The current disease status of bighorn sheep in the Sheephole and Bullion mountains is unknown. But, we recommend staying alert for any sign of respiratory disease in bighorn sheep in the region and notifying California Department of Fish and Wildlife if disease is suspected so that the pathogens involved could be confirmed and characterized. Given the frequent opportunity for disease spillover from domestic sheep or goats even in arid systems such as this, the increase in genetic diversity observed in these populations may help preserve their ability to persist and recover from such an outbreak.

Conclusions:

We conclude that gene flow between the Sheephole and Newberry/Ord populations has increased significantly between 2003 and 2014-2018, perhaps in part because of water developments on the 29 Palms Marine Corps Base and an expanding population of bighorn sheep in the Newberry/Ord mountains as observed by recent surveys (CDFW, unpublished). Bighorn sheep samples provided from the 29 Palms Marine Corps Base showed that multiple subpopulations exist in the “Bullion Mountains” population, and originated from Newberry-lineage bighorn sheep in the west and Sheephole-lineage in the east. However, mixing among those subpopulations is occurring (note mixed individuals in the central portion of the range, Figure 2). Genetic diversity of

both the Sheephole and Newberry/Ord populations has increased, on average, during this time period, and the Newberry/Ord population now exhibits new alleles (genetic variants) at a locus potentially linked to immune function.

Acknowledgements

We thank the 29 Palms Marine Corps Base, Glen Sudmeier and Steve Marshke of the Society for Conservation of Bighorn Sheep, and Paige Prentice, Regina Abella, and desert bighorn project technicians of California Department of Fish and Wildlife for assistance in collecting samples. Funding for these analyses was provided by Oregon State University and California Department of Fish and Wildlife.

References

Besser, T. E., E. F. Cassirer, K. A. Potter, J. VanderSchalie, A. Fischer, D. P. Knowles, D. R. Herndon, F. R. Rurangirwa, G. C. Weiser, and S. Srikumaran. 2008. Association of *Mycoplasma ovipneumoniae* infection with population-limiting respiratory disease in free-ranging rocky mountain bighorn sheep (*Ovis canadensis canadensis*).

Journal of Clinical Microbiology 46:423-430.

Epps, C. W., R. S. Crowhurst, and B. S. Nickerson. 2018. Assessing changes in functional connectivity in a desert bighorn sheep metapopulation after two generations. *Molecular Ecology* 27:2334-2346.

Epps, C. W., P. J. Palsboll, J. D. Wehausen, G. K. Roderick, and D. R. McCullough. 2006. Elevation and connectivity define genetic refugia for mountain sheep as climate warms. *Molecular Ecology* 15:4295-4302.

Epps, C. W., P. J. Palsboll, J. D. Wehausen, G. K. Roderick, R. R. Ramey II, and D. R. McCullough. 2005. Highways block gene flow and cause a rapid decline in genetic diversity of desert bighorn sheep. *Ecology Letters* 8:1029-1038.

Epps, C. W., J. D. Wehausen, P. J. Palsboll, and D. R. McCullough. 2010. Using genetic tools to track desert bighorn sheep colonizations. *Journal of Wildlife Management* 74:522-531.

Plowright, R. K., K. R. Manlove, T. E. Besser, D. J. Paez, K. R. Andrews, P. E. Matthews, L. P. Waits, P. J. Hudson, and E. F. Cassirer. 2017. Age-specific infectious period shapes dynamics of pneumonia in bighorn sheep. *Ecology Letters* 20:1325-1336.

Table 1. Sample sizes and types of samples used for DNA analysis of desert bighorn sheep sampled in the Sheephole, Newberry/Ord, and Bullion Mountains of southeastern California at two time points.

Population or Mountain Range	Time period of sample collection	Sample size	Sample type
Bullion	2015-16	12	Fecal pellets
Sheephole	2003	12	Fecal pellets
Sheephole	2014-18	18	Tissue from carcasses at Suds Hole (n = 6, 2014) and fecal pellets (n=12, 2018)
Newberry/Ord	2003	15	Fecal pellets
Newberry/Ord	2014-16	27	Fecal pellets (n = 21) and blood samples from CDFW captures (n = 6)

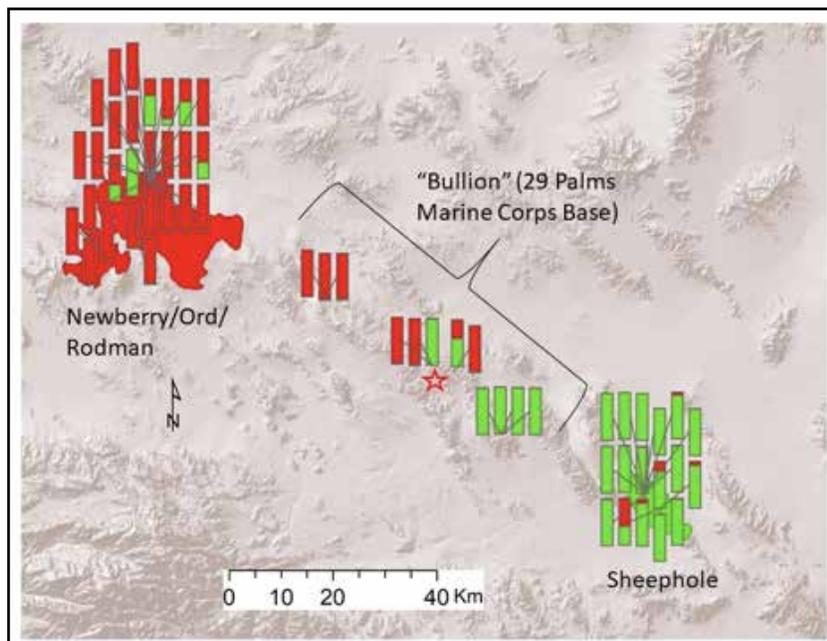
Table 2. Estimates of genetic structure among groups of desert bighorn sheep sampled in the Sheephole, Newberry/Ord, and Bullion Mountains of southeastern California at two time points.

Population Comparison	Genetic structure (FST) c. 2003	Genetic structure (FST) c. 2014-2018
Sheephole-Newberry/Ord	0.208	0.205
Sheephole-Bullion	NA	0.064
Newberry/Ord-Bullion	NA	0.087

Table 3. Estimates of genetic diversity (expected heterozygosity, H_e) based on 16 microsatellite loci for populations of desert bighorn sheep sampled in the Sheephole, Newberry/Ord, and Bullion Mountains of southeastern California at two time points (2000-03 and 2014-18).

Locus	Newberry/Ord		Sheephole		Bullion (29 Palms Marine Corps Base)	
	2000-03	2014-18	2000-03	2014-18	2000-03	2014-18
AE129	0.67	0.71	0.74	0.84	-	0.73
AE16	0.67	0.58	0.52	0.71	-	0.73
BL4	0.00	0.21	0.69	0.69	-	0.56
FCB11	0.51	0.51	0.30	0.47	-	0.42
FCB193	0.31	0.32	0.57	0.69	-	0.66
FCB266	0.49	0.50	0.00	0.47	-	0.46
FCB304	0.48	0.59	0.36	0.60	-	0.61
HH62	0.71	0.66	0.77	0.86	-	0.89
JMP29	0.56	0.62	0.53	0.55	-	0.77
MAF209	0.68	0.59	0.66	0.80	-	0.75
MAF33	0.20	0.24	0.65	0.68	-	0.59
MAF36	0.64	0.63	0.42	0.68	-	0.64
MAF48	0.35	0.34	0.70	0.74	-	0.72
MAF65	0.68	0.65	0.71	0.62	-	0.46
TCRBV62	0.59	0.57	0.60	0.68	-	0.61
TGLA387	0.45	0.43	0.72	0.67	-	0.80
Average	0.50	0.51	0.56	0.67	-	0.65

Figure 1. Map of the study area, including established populations of bighorn sheep used in the 2014-2015 analysis of genetic structure among bighorn sheep in the Newberry/Ord Mountains (red polygon), Bullion Mountains (bracket), and Sheephole Mountains (green polygon). Red star denotes location east-most extent of movements from two ewes collared in the Newberry/Ord Mountains. Individual genetic samples are indicated by vertical bars, in some cases linked by grey lines to sampling locations when multiple samples occurred in close proximity. Proportional genetic assignment to lineage (Sheephole or Newberry) is indicated for each individual by red or green coloring; two colors in an individual indicate ancestry from both lineages.



SUMMER FIELD WORK

California Department of Fish & Wildlife, Region 6

*by Page Prentice
Wildlife Biologist*

The summer field season is always a busy one for the CDFW Desert Bighorn Crew and this year is no different. This summer our field work has consisted of setting-up and servicing trail cameras on water sources across ten ranges, collecting pellets for a fecal DNA capture-recapture survey in the South Bristol Mountains, and conducting ground surveys in the Marble, South Soda and White Mountains. Table 1 below includes the minimum counts of what we saw on each survey. Table 2 gives the lamb, yearling, and ram to ewe ratios for the animals seen during the survey as well as mark-resight estimates for adult ewes and rams.



The highlight for our crew was the White Mountain survey at the end of July. We traversed from White Mountain Peak in the south through Boundary Peak to the north. The weather was perfect, the temperatures a welcome relief from the Mojave Desert heat, and the bighorn were plentiful. As shown in the tables below, we were happy to see so many lambs.

However, we did see a few that were coughing and we expect the lamb to ewe ratio to lower as the summer moves on. Overall, we were delighted to count 289 individuals over the 4 day survey.

Table 1: Minimum count data from the 2019 Marble, South Soda and White Mountain ground surveys.

Range	Start Date	End Date	Yrlg Ewe	Adult Ewe	Total Ewe	Yrlg Ram	Adult Ram	Total Ram	Lamb	Unclass	Total Bighorn
Marble	20190618		4	69	73	1	24	25	22	0	120
S. Soda	20190619		2	23	25	3	9	12	7	2	46
White	20190730	20190802	10	128	138	11	56	67	82	2	289

Table 2: Lamb, yearling and ram to ewe (per 100) ratios and mark-resight estimates with 95% confidence intervals (CI) from the 2019 Marble, South Soda, and White Mountain ground surveys. * There are proportionately few ram collars, resulting in wide CI for ram estimates.

Range	Lamb to Ewe Ratio	Yrlg to Ewe Ratio	Ram to Ewe Ratio	Ewe Est	Ewe CI Low	Ewe CI High	Ram Est	Ram CI Low	Ram CI High
Marble	39:100	07:100	35:100	107	77	137	86*	16*	167*
S. Soda	44:100	22:100	39:100	48	23	77	24*	7*	41*
White	70:100	16:100	63:100	230	129	321	144*	56*	237*

SUCCESSFUL BEARCLAWS WATER HAUL

*by Steve Marschke
Society for Conservation of Bighorn Sheep*

Eleven hardy volunteers braved the heat. We had 8 vehicles with 4 persons carpooling. Special thanks to Jeff and Jenny for going out of their way to pick up Big Red and for bringing their own pump and hoses. Thanks to Scott Gibson for arranging access to the 29 Palms water district tank filling station. I heard that it cost only 1 cent per gallon. We hauled 2300 gallons so \$23 is pretty cheap. Too bad we can't get fuel for anywhere near that price! Dino, Joe and I were a bit late as we stopped at Terry Anderson's house to pick up a tank for Dino's truck (and maybe because I set my alarm for 4 am?)

We were off in a caravan with full tank just before 8 am. We passed by the monument to Rod Nystrum. I am sorry I don't quite remember the details, if anyone knows write a few sentences for the next newsletter. It was about 9:45 when we arrived at the temporary tank and found Andrew Pontius's truck but no Andrew in sight. We figured he was off scouting or headed up to the original system to check it out.

The temporary tank was nearly dry — just enough to grow algae sludge on the bottom but not enough to keep the drinker box wet. We pumped all we had and it just filled up the tank — Dino and Joe burped it and squeezed a few extra gallons in and that also straightened up the sagging top. Joe used his parasol to protect his fair Victorian complexion. He swears by it and it was a lot easier to manage than an Easy-up (proven as we actually has 2 easy-ups along and neither got set up.)

Frank provided an ice cold watermelon that he sliced for us all. We were ready to leave and getting a bit worried that Andrew had not arrived back at the trucks. Nobody wanted to leave him behind in the heat but no one was worried enough to go looking either. We weren't quite sure exactly what time he arrived or where he was headed. Fortunately before we had to make a tough decision he showed up. He



Icy watermelon



Rod Nystrum monument



Parasol is the way to go

and his girlfriend had been up to the original system and were checking it out as much as possible to ascertain if there had been any mechanical trouble. He thought that there was quite a bit of sign and maybe the sheep just drank all of the water quickly. (The satellite system showed a 2 foot drop since the end of May.) It was a bit tough to diagnose thoroughly as it was dry. Hiking was difficult in the heat.

As it was, we filled the temporary tank right to the very top and we had the small tank in Andrew Pontius's truck untouched. He, Scott, and John Maley headed off behind the Sheephole pass radio tower to dump it into a quail guzzler. Last we saw they were making a Keystone cops U turn on the highway - I hope they found it.



Pumping — Fill 'er up!

SAN GORGONIO BIGHORN SHEEP DISEASE UPDATE

AUGUST 2019

*by Jeff Villepique, Ph.D.
CA Department of Fish & Wildlife*

The California Department of Fish and Wildlife (CDFW) continues investigation of a respiratory disease outbreak in the San Gorgonio population of desert bighorn sheep (Zone 5). Hunting guides, visitors and employees of the Whitewater Preserve, and CDFW personnel observed coughing bighorn sheep and reported multiple carcasses in November and December of 2018. A severely ill ram was euthanized in early December and submitted for pathologic examination, bacterial and viral testing. A second whole carcass, and samples from ten additional bighorn sheep were also submitted for viral and bacterial evaluation. Examination of whole carcasses verified the presence of pneumonia, consistent with field observations of coughing sheep.

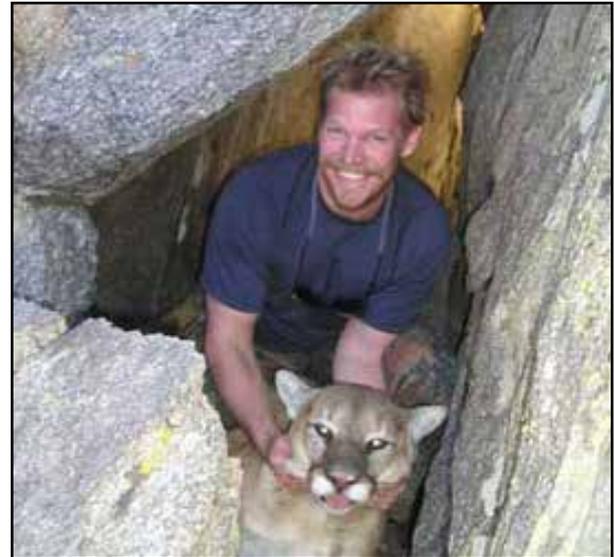
Helicopter surveys March 4–5, 2019 yielded only 32 bighorn sheep, with an additional 28 animals viewed by ground observers, far fewer than the 173 counted from the last aerial survey in March 2016. That smaller number was consistent with a severe die-off caused by pneumonia. Respiratory disease in bighorn sheep is considered a polymicrobial disease. Multiple bacterial pathogens, including *Mycoplasma ovipneumoniae* (*M.ovi.*), *Bibersteinia trehalosi*, *Pasteurella multocida*, and *Truiperella pyogenes*, have been variously detected from some, but not all, heads or whole carcasses associated with this mortality. A specific cause or suite of causes remains undetermined and the disease investigation is ongoing

Current efforts

Efforts to identify sick animals and collect samples in and around the San Gorgonio population continue. In early July, a three-year-old ram was found to have died from pneumonia northeast of Indio. As with the mortalities at San Gorgonio earlier in the year, the specific pathogen could not be identified, despite pathological and microbial examination of the relatively fresh carcass.

On August 15, a ground survey was conducted by hiking a standard route where scores of bighorn sheep are normally year-round residents. That effort, started before dawn to mitigate triple-digit daytime temperatures, yielding a single five-year-old ram.

Plans are underway to conduct capture and collaring of bighorn sheep this autumn in the San Gorgonio and adjacent Little San Bernardino Mountains. That helicopter capture effort, cooperatively conducted by CDFW's Wildlife Investigations Lab and Regional staff, will enable



sampling of live animals and subsequent monitoring of survival and reproductive success, to help us understand the extent and impact of this disease event.

Impact

The disease outbreak will affect herd management actions for multiple years, including bighorn sheep tag allocation for Zone 5, which has been reduced to zero for the 2019–2020 season. Information gathered from investigation of this disease event will help in understanding the nature of disease risks and identifying management actions that mitigate risk to other herds.

Southern California is the home to approximately four thousand bighorn sheep in seventy two herd units. To date, there have been no reports of sheep in nearby herds being affected by the disease.

CDFW is one of several entities involved in managing bighorn sheep in California, and participates in the Western Association of Fish and Wildlife Agencies Wild Sheep Working Group. The Group has declared respiratory disease to be “the biggest impediment to restoring and sustaining bighorn sheep populations.”

Editor's Note: one of CA WSF's longest running projects is cooperation with and funding for many universities and conservation organizations to learn the causes of this deadly disease and how to stop it.

GOVERNMENTAL AFFAIRS UPDATE

by Don Priest

Mojave National Preserve Water Management Plan

The Mojave National Preserve's (MNP) Water Management Plan (WMP) has finally been approved by the National Park Service (NPS). Todd Suess, Superintendent of the MNP, released the following News Release on August 22nd:

"The NPS selected the preferred alternative of the Plan, which will maintain essential wildlife water developments in wilderness and install new water developments outside of wilderness to improve regional habitat connectivity. The number of water developments for desert bighorn sheep will increase from six to eleven during a multi-year transition period. Based on the results of water use analysis, some of these water developments could be consolidated.

Key points include:

- The NPS will work collaboratively with the California Department of Fish & Wildlife (CDFW) and stakeholders to ensure all decisions regarding water developments are consistent, to the extent possible, with the CDFW Bighorn Sheep Management Plan.
- Selected water developments for birds and small game outside of wilderness will be evaluated and maintained according to their ecological importance.
- Developed springs will be evaluated and maintained based on feasibility and importance.

The selected alternative utilizes water developments for supporting native wildlife and habitat connectivity while protecting wilderness values. Relocating water developments for bighorn sheep to areas with easier access will facilitate their maintenance."

CA WSF has been working with our partners in Washington DC to help enhance the final WMP language, allowing for coordination of water development decisions with the California Department of Fish and Wildlife and other interested outside organizations such as CA WSF along with other organizations, including the Society for the Conservation of Bighorn Sheep. We are pleased to see the language included in the final WMP as outlined above in Superintendent Suess' announcement.

We would like to thank Greg Schildwachter and William Kelleher of Watershed Results in Washington DC for all their efforts in working with the Department of Interior and the NPS to have



our and the Wild Sheep Foundations concerns and recommended changes to the WMP incorporated into the plan.

Cadiz Water Project

On July 31, 2019 Governor Gavin Newsom signed Senate Bill 307 (S 307), "Water conveyance: use of facility with unused capacity.", introduced by Senator Richard Roth (D-31st District). CA WSF has been a strong proponent of S 307, working with the National Park Conservation Association and Gaines of Associates to bring our support of this bill to Senate and Assembly leadership.

This bill will require that Cadiz Water Project (Cadiz), or any future company whom may look to extract water from our California Desert aquifers, to meet the requirements that use of any conveyance for water pumped from a desert source will require first the submission of an application to the State Lands Commission (Commission). The Commission, in cooperation with the Department of Fish and Wildlife, will determine if the water conveyance "...will not adversely affect the natural or cultural resources, including groundwater resources or habitat, of the federal or state lands...".

We anticipate that given the scientific proven fact that this water source will be detrimental to springs in the nearby mountain ranges near the aquifer from which the Cadiz Water Project will be mining water. One spring specifically, the Bonanza Spring in the Clipper Mountains, would be harshly impacted by this Project. This spring is used by Desert Bighorn Sheep and many other wildlife species, including quail and toads, along with providing water to this riparian area which includes willow and cottonwoods, in the desert!

We will continue to work to halt this Project from implementation and keep you abreast of any further changes.

America's Transportation Infrastructure Act of 2019

US Senator John Barasso (R-WY) introduced on July 29, 2019 Senate Bill 2309 (S 2309) America's Transportation Infrastructure Act of 2019, where it now sits in the Senate Committee on Environment and Public Works (Committee).

CA WSF and WSF first learned details of this bill during our visit to Washington DC in early May 2019. During our conversations with the Committee staff for both the majority and minority parties we were informed that a Section within the bill would include a pilot block grant fund program for the development of wildlife crossings. This Section is simply called "1125. Wildlife Crossings Safety".

The program will both provide for a "...reduction in the number of wildlife-vehicle collisions; and ... improved habitat connectivity for terrestrial and aquatic species.". Both of these are indeed critical issues for our Desert Bighorn Sheep (DBS), the risk of sheep-vehicle collision and the need for connectivity between herd units allowing for DBS gene flow. We also know in our discussions with the California Department of Fish and Wildlife (CA DFW) that other species are also very vulnerable, specifically deer and elk

S 2309 will allow for state Departments of Transportations (for California that would be Cal-Trans) to apply for funds on a project by project basis. The bill also allows for Partnerships in the implementation of project funds, which includes nongovernmental organizations, such as CA WSF. We are aware of current studies being conducted in the desert monitoring DBS crossing of highways either over the highway or by use of underpasses. We will look to assist with any project applications for wildlife crossings for DBS, assisting Cal-Trans, the CA DFW and other nongovernmental biologists and others. Should a project be funded, we will also look to be included with the implementation process.

As this bill was just introduced less than a month ago, the fact that this is a pilot program, and the current political environment in Washington DC, there is most likely a long way to go prior to passage of this bill that would indeed include this program. The bill could very likely have to be moved into the next Congress given that 2020 is a Presidential election year. We will keep you up to date with future developments. *peritio quod quiaectium si doluptatia*

NEVADA'S NEW REGULATION ON BRINGING ANIMALS BACK FROM OUT-OF-STATE HUNTS

During the 2019 legislative session, Nevada adopted statutory restrictions on importing portions of harvest animals. These new regulations are to limit the spread of chronic wasting disease (CWD). 40 states and seven Canadian provinces have implemented restrictions on the importation of portions of harvested deer, elk and moose that can be brought into their states. According to the Nevada Department of Wildlife, currently CWD is found in 25 states and provinces, but not in Nevada.

On April 17, Senate Bill No. 85 passed the Senate with 21-0 votes. Then it went to the assembly on May 9 and passed 29-11, it was finally approved by the Governor on May 16, 2019.

It is now unlawful for you, your agent, or employee to knowingly bring into Nevada or possess the carcass or any part of the carcass of certain animals including, without limitation, of any elk, mule deer, white-tailed deer, moose, reindeer, caribou, or fallow deer which were obtained in another state, territory or country. Or any alternative livestock or any other animal which the State Quarantine Officer has, by regulation, declared to be susceptible to chronic wasting disease and prohibited from importation into Nevada. A person who violates that prohibition is guilty of a misdemeanor and is subject to the payment of certain civil penalties for the violation.

In summary, any carcass or part of the carcass of an elk, deer, moose, alternative livestock or other animals knowingly brought into or knowingly possessed in Nevada in violation of this section may be seized, destroyed or sent out of the state by a game warden or any other law enforcement officer within 48 hours. The expense of seizing, destroying or removing the carcass or part of the carcass must be paid by the person or his or her agent or employee who knowingly brought the carcass or part of the carcass into Nevada.

As a preventative measure in Nevada, NDOW recommends that if the deer or elk carcass is brought out of the field, the best practice to dispose of the carcass is to bury the head and spinal cord, or dispose of it an approved landfill closest to your location. Please see a list of approved landfills in your area. If you take an animal in another state, you should follow that state's CWD disposal guidelines.

CA WSF — WORKING TO KEEP YOU IN THE FIELD

by *Bill Gaines*
Gaines and Associates

As of mid-August, with the dropping of the final gavel on the 2019 Legislative Session less than four weeks away, the final push to get good bills to the Governor's desk – and to kill bad ones – is fully underway. Below is a summary and update on the status of just three of the many bills CA WSF is currently actively working in the State Legislature this year on behalf of our members. The status of the bills provided below is as of August 21, 2019. Bills appear in numerical order, not in order of priority to CA WSF.

2019 State Legislative Session

- AB 1254 (Kamlager-Dove) – Bobcats: Take Prohibition

As amended July 11th, AB 1254 – legislation by Assembly Member Sydney Kamlager-Dove (D/54-Culver City) – would fully prohibit the hunting of bobcats statewide until July 1, 2025.

Commencing January 1, 2025, AB 1254 would authorize the Fish and Game Commission to open a bobcat hunting season in any area determined by the Commission to “require” a hunt.

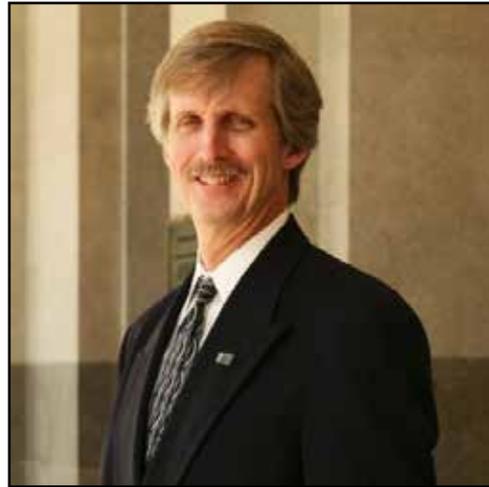
Before the possible future re-opening of a bobcat season, the bill would require DFW to complete a bobcat management plan to be submitted to the Commission and the Legislature to inform and coordinate management decisions regarding bobcat populations.

AB 1254 would also require the Commission to set hunting license and bobcat hunting tags fees for any subsequent seasons in which bobcat hunting is allowed at the levels necessary to fully recover all the reasonable administrative and implementation costs to DFW and the Commission associated with the hunting of bobcats.

CA WSF is actively opposing this anti-hunting measure due to the fact it is not based on science or sound wildlife management principles – fully aware of the dangerous precedent it would set for other game species, should it pass and be signed into law.

AB 1254 was first heard in the Assembly Water, Parks and Wildlife Committee in early April, passing out and to the Assembly Appropriations Committee on a party-line vote – despite testimony provided by the President of the California Fish and Game Commission which pointed out that wildlife management policy decisions, including whether or not bobcats are legally hunted, should be addressed by the Fish and Game Commission rather than in the State Legislature.

Once in the Assembly Appropriations Committee,



AB 1254 was placed in the suspense file due to the committee's estimated cost of “up to \$2.5 million” for the Department of Fish and Wildlife (DFW) to develop and implement a bobcat management plan, \$30,000 to review and update regulations, and the annual loss of \$35,000 from the sales of bobcat tags. But, regardless of the bill's unreasonable price-tag, AB 1254 was pulled off suspense and heard in the Assembly Appropriations Committee in mid-May, passing out on a party-line vote. The bill was then brought up for vote on the Assembly Floor in late May, passing out and over to the Senate on a 48 to 18 vote.

On the Senate side, AB 1254 was heard in Senate Natural Resources and Water Committee in early July with WSF contributing to lead testimony in opposition to the bill. The bill narrowly passed out of committee by a single vote. AB 1254 was then briefly heard in Senate Appropriations Committee in early August and promptly placed on the suspense file due to that committee's estimated cost to DFW to implement the bill of \$2.7 million in FY 2020/21, \$2.4 million in FY 2021/22, and \$566,000 in FY 2022/23 and 2023/24.

As of August 21st, the bill remains on suspense. AB 1254 has until August 30th to be pulled from suspense, heard and passed out of Senate Appropriations Committee to the Senate Floor to meet legislative deadline and remain viable in the 2019 Legislative Session.

- SB 307 (Roth) – Water Conveyance: Use of Facility with Unused Capacity – SIGNED

Existing law prohibits the state or a regional or local public agency from denying a bona fide transferor of water from using a water conveyance facility that has unused capacity for the period

of time for which that capacity is available, if fair compensation is paid for that use and other requirements are met.

As amended April 30th, SB 307 – legislation by Senator Richard D. Roth (D/31-Riverside) – would prohibit a transferor of water from using a water conveyance facility that has unused capacity to transfer water from a groundwater basin underlying desert lands that are in the vicinity of specified federal lands or state lands to outside of the groundwater basin unless the State Lands Commission (SLC), in consultation with DFW, finds that the transfer of the water will not adversely affect the natural or cultural resources of those federal and state lands. The bill would also require a transferor of water to submit an application to the SLC before using a water conveyance facility. Should the SLC find that the transfer of the water would not adversely affect the natural or cultural resources of those lands, the transferor of water must annually report to the SLC on the condition of the groundwater basin.

CA WSF is actively supporting SB 307 due to our concerns over the impact that the transfer of groundwater from basins underlying desert or other lands would have on the availability of water for wild sheep and other wildlife in these areas.

SB 307 was heard in the Senate Natural Resources and Water Committee in early April, passing out and to the Senate Appropriations Committee. SB 307 was then heard in Senate Appropriations Committee in early May, passing out and to the Senate Floor, despite its projected costs which include: a) ongoing annual costs of roughly \$500,000 for DFW to review water transfers and conduct analyses; and b) costs likely in the “low hundreds of thousands” for the SLC to review applications. However, these costs to the SLC would be reimbursed by the project proponent. SB 307 was then bought up for a vote on the Senate Floor in mid-May, passing out on a 21 – 11 vote.

Once in the Assembly, SB 307 was heard in Assembly Natural Resources Committee in early June, passing out on a 7 to 2 vote. The bill was then heard in Assembly Appropriations Committee on July 10th, passing out and to the Assembly Floor on a 12 to 4 vote. SB 307 passed off the Assembly Floor and to the Governor’s desk for his consideration on July 11th by a 50 to 24 vote. The Governor signed SB 307 into law on July 31st.

- **SB 395 (Archuleta) – “Wildlife Traffic Safety Act”**

As amended July 3rd, SB 395 – legislation by Senator Bob Archuleta (D/32-Cerritos) – would improve public safety and help protect our wildlife resources by reducing the frequency of vehicle-wildlife collisions on California’s roadways. Coined the “Wildlife Traffic Safety Act”, SB 395 would also help clean California’s roadways, while reducing the needless waste of a healthy, free-range wild food source.

Specifically, SB 395 would require the Fish and Game Commission to establish a pilot program by no

later than January 1, 2022 for the issuance of wildlife salvage permits through a user/cell-phone-friendly portal developed by DFW to persons desiring to salvage for human consumption deer, elk, pronghorn antelope, or wild pig accidentally killed by their vehicle or another vehicle. The bill would also require the Commission to prescribe the requirements for applying for and receiving the wildlife salvage permit. Motorists who do not choose to salvage animals, although not required, can still report them to facilitate their removal and possible use. SB 395 would also authorize the Commission to restrict the roadways where wildlife salvage may be conducted and the species subject to salvage.

SB 395 would require DFW to collect and compile data on wildlife-vehicle collisions to support wildlife road crossings and other conservation efforts. The bill would also require DFW to develop uniform standards for data collection and dissemination for vehicle-wildlife collisions and require state agencies and authorize local agencies to also report to DFW information regarding dead wildlife that they remove from a roadway.

The bill would require DFW to implement the pilot program no later than 6 months after the Commission establishes the pilot program and “sunset” the pilot program on January 1, 2029.

Although the “meat salvage” aspect of the bill continues to garner all the headlines, the reporting aspect is a key component of the proposal. SB 395 would facilitate critically needed reporting of where vehicle/wildlife collisions occur so Caltrans, DFW, CHP and other state agencies can better assess where future wildlife highway crossings would provide the greatest benefits for both wildlife and motorists.

SB 395 was heard in the Senate Natural Resources and Water Committee in early April, passing out and to the Senate Appropriations Committee on a unanimous vote. The bill then also passed out of the Senate Appropriations Committee on a unanimous vote in mid-May, despite a Committee analysis that surprisingly projected its cost to the state at “in the low millions” for DFW to issue permits, develop a website and phone application, conduct poaching law enforcement, conduct public outreach, and collect and make certain information available on its website to the public. SB 395 passed off the Senate Floor on the special consent calendar in late May.

Once in the Assembly, SB 395 was first heard in the Assembly Water, Parks and Wildlife Committee on July 2nd, passing out on an 8 to 0 vote, with 7 members not voting.

SB 395 was heard briefly in the Assembly Appropriations Committee in mid-August and placed in the suspense file. The bill has until August 30th to be heard in Assembly Appropriations Committee to meet legislative deadline.

SOME THOUGHTS AND IDEAS ON THE NEW STYLE GUZZLER “THE RAIN CATCHER”

by Carlos Gallinger, thewayofthings.org

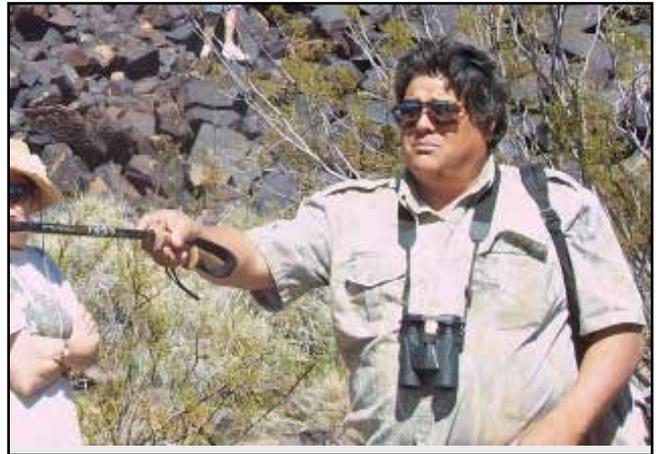
By design there are significant differences from the old style guzzler and the new one. The new design is a purpose-built wildlife water source as opposed to the old-style which is essentially an agricultural design. The rain catcher system is designed to fit properly on a flatbed truck or airlifted by helicopter in a proper manner. It is also by intent a low maintenance system that will not suffer freeze damage during the winter. All in all it's been a great success with many examples installed throughout the Southwest. While there is a long list of successful design elements in the rain catcher system in this discussion I want to focus on its overall integration into the environment. This, of course, encompasses a wide range of topics. One could cover the placement in the habitat, soil conditions necessary for installation, orientation to the sun and so on. The focus of these thoughts will be on the microscopic environment and other health benefits and differences between the old and new system. This discussion will be largely speculative and descriptive with many unanswered questions.

Like so many things in the natural environment, it's hard to know where to start. In this case we will start at the water collection system. The old agricultural system that consists of a tank and float valve systems usually relied on a small dam to backup water in a canyon or ravine then it directed that water by a pipe to a series of tanks.



An old style guzzler with above ground tank and water pipes

The new system has what is referred to as a rain mat. This rain mat consists of a heavy gauge rubber that is approximately 30' x 100'. The difference between these two systems are significant. The old system would only collect water when there was



sufficient rain to have run off. Due to the absorbent quality of most terrain this required a large amount of rain in a short period of time. It also meant that the tanks were filled relatively quickly when they were filled. With water that was from a turbulent flow, thus this water was somewhat opaque when first collected. The new system will put water into the newer tanks even with slightest amount of rain or in a rapid manner depending on the type of rain. So one of the differences that one could consider between the old and new system is that the old system may have provided some useful minerals derived from the strata that the rain has run off from.

Now let's take a look at the two different types of holding tanks and their effect on the overall type of water these systems system deliver. The old tanks collected water that was somewhat opaque and held this water in almost complete darkness. From years of experience I can tell you that little if any algae grew in these tanks and after the water had settled it was clear enough to see the bottom of the tank. The old tanks of course were above ground and this meant they were subject to variation in temperature. These are most notably seasonal temperature changes. These above-ground tanks would get very cold during the winter and during the summer would probably reach temperatures above 90°F. No doubt this has some affect on the microbiology in these tanks.

The environment of the newer tanks is quite different as the runoff they collect has no contact with rocks, soil, or sand. The runoff they collect is relatively pure water with the exception that it contains some sheep droppings from sheep walking on the rain mat. No doubt most of the sheep droppings are sterile from their exposure to sunlight and dry air. Without

a doubt their are times when fresh droppings are washed into the tank by rainwater. With these fresh droppings there is a representative population of the intestinal microenvironment of the sheep that produced them. What portion of these microscopic life forms can live in the new style tank, I believe, is currently unknown. Another thing to consider: the sterile dry pellets on the rain mat will break down and eventually add some of their biomass of half digested vegetable matter to the underground tank environment. Here they will find an environment that is dark but not completely dark and is temperature stable. The portion of the water that is exposed to sunlight rarely if ever has direct sunlight on it due to the artificial rock designed to provide shade and thus reduce algae growth and evaporation. However this allows enough sunlight for a small amount of algae to grow sometimes along the water's edge. The fact that these tanks are buried underground allows them to have a very stable thermal environment. Just what the temperature is and whether or not there is a thermocline I don't know, but I think it is worth investigating. All these things make for two very different microbial environments in these two tank systems.



A new rain catcher with mat in front of two access points; two tanks are buried beneath

Let's now consider the way the animals access or drink the water and the effect of this in the two different microbial environments of these tank systems and ultimately the type and quality of water they deliver.

First let's consider the end results of the old agricultural style guzzler. When the sheep would drink from what is known as the drinker box it would add it's saliva to what could best be described as a "dead bee soup." As far as I know all of these drinker boxes ended up with hundreds if not thousands of dead bees rotting away in this small volume of water. (Of course the new drinker system also attracts bees but far fewer die in that water.) When the sheep would

take a drink from the drinker box it would lower the water level enough that the float valve would allow the water under pressure from the tanks to enter and refill the drinker box with water filled with whatever mineral nutrients came off the land. Depending on the season this water may be very cold or very warm. So it is that these drinker boxes had their own very active microscopic environment that is separate from the tanks, "the water storage." The effects of this is unknown except to say that I have never heard of any negative or catastrophic situation derived from this source. Just what effect it had in the internal biology of the bighorn sheep that drink from it is also unknown. Though it could affect fertility, the choice of plants used for food, or perhaps quality of winter coat, and so on. All of these could swing 10 or 20% to the positive or negative and we would never know it, given the state of our understanding.

Now let's discuss the access situation with the new style guzzler, "the rain catcher". Of course, like the old agricultural system, when the sheep drinks the water it delivers a certain amount of it's saliva to that water. In the new rain catcher system however whatever microorganisms that are delivered to the drinking water from this saliva can access the entire water storage system. The water in this system is different in that it doesn't have any the minerals that the old agricultural system might have had but it does have the biomass from the few sheep pellets that wash into it from the rain mat. In effect it has a micro biological exposure from both ends of the sheep. Delivered into a temperature stable environment with a limited exposure to sunlight all this in a way that can affect the entire water storage.

While there are many questions that need to be answered about the rain catcher system it is vastly superior to the old agricultural system such that nobody that knows these two systems would ever think of going back to the tank and float valve system. Indeed I believe that the rain catcher system has attributes that are yet to be recognized utilized and explored. At first I thought the introduction of fecal matter into the drinking water would have been categorically a bad thing, however modern science is showing otherwise. Indeed there are medical procedures even done on humans where fecal matter is transferred from one person to another to cure diseases.

The microscopic population in the intestinal system is complex with thousands of different microbes that can determine the overall health of the person or animal that they live in. In the rain catcher system we have something that we can conduct experiments with and gain knowledge.

Here are a few ideas that might be considered. One of the unique elements of the rain catcher design is it is usually installed in pairs. This allows a very unique situation where you can have a side-by-side

comparison of the drinking habits and preferences of the desert bighorn sheep. For instance if we divided the rain mat and fenced off one of them so that the sheep could stand on one and not the other, one tank would be free of fecal matter and the other would have it. In all likelihood the sheep would be able to smell and taste the difference between these two different water sources. The use of trail cameras and satellite telemetry would leave no guesswork as to their preference if they had one. We can also test the water and see what was the difference, if any, in the microscopic environment.

Another possible side-by-side experiment that could be done is to have one side unfenced allowing for fecal matter to enter the system. Then fence in the other rain catcher and add commercially available minerals formulated for sheep and goats which usually has selenium and copper in them.

Another possible experiment to consider is that many swimming pools these days use salt to stop algae growth as opposed to chlorine. So it may be possible to come up with a recipe of salts and minerals that will sterilize or mitigate the fecal matter issue all the while providing valuable minerals to that sheep population. There are places where sheep are all already drinking from swimming pools; the effects of this type of water should be looked into.

Even with a fenced rain mat some fecal matter may still get into the system because the animals drink their water on a ramp that will allow from time to time some fecal matter to get into the water. With such experiments we can see the effects the water — with or without minerals and with or without fecal matter — have on the desert bighorn sheep's preferences and well-being. This would give us greater insight into the preferences and benefits of natural water sources. And perhaps shed some light on the survival and distribution of various meta-populations.

One of the possible outcomes of these experiments is utilizing the rain catcher system in places that seem to have plenty of water but not the kind of water the rain catcher system can provide. Sheep populations that live in habitat that have clean cold running streams and crystal-clear springs may lack the minerals and microbiology that the rain catcher system can provide. Another thing to consider is the fact that the rain catcher has a growing popularity and is installed to benefit other species so the knowledge acquired about the microscopic environment that the rain catcher provides to desert bighorn sheep could be of enormous benefit to other species. *While much of this is speculative and unknown at this time, we have the ability to acquire this knowledge, and knowledge is power.*

CA WSF BOARD 2019 - 2020

The 2019 election is completed and the new Board officers have been named. Thank you to all who participated in the election. The new officers are:

President – Donald C. Martin

VP of Northern California – Ken Crother

Secretary – Don Priest

VP of Operations – Mike Borel

VP of Southern California – Glen Pyne

Treasurer – Adam Casagrande

Joining the Board officers to lead the organization this coming year will be returning Board members Jim Fitzgerald, Ben Gordon, Bob Keagy, George Kerr, Dwight Ortmann, Paul Schultheis, Darryl Williams, and Shawn Wood along with two new Board members: Renee Snider and Mike Torres.

Renee is a legend in the hunting community and has a special place in her heart for wild sheep. Mike Torres brings a lot of knowledge and experience around conservation organizations to the Board. We are lucky to have both Renee and Mike join us on the Board!

Thank you all for your continued dedication to California's desert bighorns.

A special thank you to our outgoing Board members, Craig Van Arsdale and Andrew O'Hanesian. Craig has been the mastermind behind the Silent Auction at our most recent Annual Banquets and he has set an impressive standard! Andrew led the Communications Committee to explore and ultimately advertise in several magazines which have paid huge dividends in our membership outreach and also promoting our fundraising efforts. Thank you Craig and Andrew!

GREAT GADGETS AND GEAR I RECOMMEND

by Paul Brisso

(excerpted and updated from an earlier article)

Part of the magic of sheep hunting is being in remote wilderness. When you leave the trailhead or climb into a floatplane, you better have all the gear you need, or be prepared to do without, unless you can borrow from your guide or a fellow hunter.

I still make a comprehensive list of everything I need to take (including the obvious, such as rifle, ammunition and sleeping bag), gather all my gear together and spread it out before I start packing, and physically check items off my list as I pack.

Volumes have been written about basic gear such as clothing, rifles and boots. I won't try to duplicate that here.

I do have one specific tip on basic gear.

For many years my one weak spot in clothing was a warm parka. On an Alaska sheep hunt in recent years, the first cold morning the guide and packer both pulled out parkas with hoods from incredibly small stuff sacks. I experienced instant gear lust! The Brooks Range Parka, made specifically as Frontier Gear for Barney's Sports Chalet in Anchorage, is a synthetic that is virtually as warm as down and packs into a stuff sack that itself is ultralight. (The stuff sack comes in a plastic container about the size of four stacked quarters and is sold separately.) [Editor's note – I completely vouch for this item, it has saved my life more than once!]

The remainder of the items I would like to share are a few of the small things that I have found make life in sheep camp a bit easier and more enjoyable.

Clear Plastic Box

This might be the one thing I came up with on my own. I have been using it many years. A clear plastic box with adjustable interior dividers, sold in hardware stores for organizing screws, nuts, washers, etc. is perfect for keeping miscellaneous small items easy to find. The one I use is about 6" x 10" x 2".

Extra batteries, bug repellent, medications, a small bottle of foot powder, bootlaces and the like are all together in one convenient and easy to find location. No more pawing through the bottom of duffel bags or trying to remember which pocket contains a particular item.

Baby Wipes (unscented)

This was actually an evolution. On an early hunt, a fellow hunter used individually wrapped moist towelettes for personal hygiene assistance. I thought



it was a great idea and began using them. Several years later, I had a guide who went him one better, packing a slim plastic box of baby wipes. They are not as nice as the propane-fired hot shower at base camp, but they make life in the spike camp more pleasant.

Trek Pole

I never thought about using a walking stick in my early sheep hunts, although looking back now I realize one would have been very useful.

A few years ago, as my guide was going through my gear to make sure I had what I needed for a backpack hunt, and wasn't taking stuff I didn't need, he asked if I had a walking stick. I said, "No, do I need one?" My guide, who was about 20 years younger than me, said, "I use one. I have an extra one you can borrow if you want."

That was good enough for me. It was super, especially for going down steep places when carrying a load. Now, a trek pole is my sheep hunt equivalent of the American Express Card—I won't leave home without it!

Good quality, collapsible trek poles are usually sold in pairs, but you only need one. Find a buddy and split a set. Most have spike tips, which are fine for sheep hunting, but you can also get optional rubber tips that slip over the spikes for a couple bucks. Although designed for using the poles on smoother surfaces, the rubber tips are great for protecting your luggage and other gear during transit. For ease in transit and for carrying in your daypack when you don't really need it, get a pole that has three sections, not just two.

LED Headlamp

A small flashlight is in everyone's basic gear. A headlamp is more versatile if you need to help cape after nightfall, on hikes back to camp in the dark when you want to keep your hands free, or just to read while in the sleeping bag. You can always hand-hold the headlamp, but it is tough to stick a flashlight on your head. The LED technology eliminates the potential for burned out bulbs and the need to carry (and be able to find) a spare, and prolongs battery life.

Micro-Fleece Dome Hat

Made for mountain climbers to wear under helmets, these hats are much lighter, less bulky, and warmer than a stocking cap.

Final Note

Pack the essentials but pack light. And when you get to sheep camp, keep your eyes open for gear ideas. Your fellow hunters—and particularly your guide—may have something you'll want to incorporate into a future hunt.

CA WSF COMMITTEES 2019 - 2020

Fundraiser Committee

Co-Chairs - Ken Crother, Donald C. Martin
Live Auction - Co-Chairs - Ben Gordon, Dwight Ortmann
Silent Auction - Jim Fitzgerald
General Raffle Chair - Paul Schultheis
Special Raffle Chair - Shawn Wood
Desert Raffle Co-Chairs - Roger McCosker, Beverly Valdez
Fundraiser Underwriting and Cash Gifts Chair - Bob Keagy

Communications/Publicity Committee Chair

Beverly Valdez

GALAD and Water Projects Chair

Mike Borel

Projects (Beyond-Water) Chair

Don Priest

Legislative and CDFW Affairs Chair

Don Priest

Membership Committee Chair

Shawn Wood

Youth Outreach Committee Chair

Glen Pyne

Newsletter Editor

Mike Borel

GET INVOLVED!

*CONTACT ANY BOARD OR COMMITTEE MEMBER,
OR EMAIL FORTHESHEEP@GMAIL.COM AS
YOUR FIRST STEP TOWARDS BEING A POSITIVE
INFLUENCE ON*

***PUTTING AND KEEPING
WILD SHEEP ON THE MOUNTAINS
IN CALIFORNIA!***

**How do you milk
sheep?**

**Bring out a new
iPhone and charge
\$1000 for it.**

**If you answer
the phone with
"Hello, you're on the air!"
most telemarketers
will quickly hang up...**

**Sheep produce most
of the world's wool
and half of the
world's dirty jokes.**





A CASE OF WIN SOME / LOSE SOME

News from Safari Club International

Huge Victory Keeps Hunters' Identities Confidential

A D.C. federal district court has ruled in favor of Safari Club International and the U.S. Fish and Wildlife Service that Humane Society International was not entitled to force the disclosure of hunters' personal identifying information from the federal government. The ruling was issued on Thursday, August 15.

Safari Club International CEO W. Laird Hamberlin commented on the ruling, saying "today's court ruling is an enormous victory for SCI and the hunters we represent, whose right to privacy should never be violated simply because of the role they choose to play in preserving our hunting heritage. SCI's tireless advocacy for hunters' rights in the courtroom has helped produce this important legal precedent, and we look forward to continuing our fight to protect hunters' rights in courts across the country."

Supreme Court Ruling Threatens Wildlife And Hunting

The Supreme Court recently ruled that an 1868 treaty between the U.S. and the Crow Tribe could give members of that tribe the right to ignore state hunting regulations and engage in the unregulated take of game beyond the borders of reservation land.

The case of *Herrera v. Wyoming* was brought to the Supreme Court by Clayvin Herrera, a member of the Crow Tribe and former tribe game warden. Herrera followed a group of elk past the Crow reservation's boundary and ended up taking several bull elk in the Bighorn National Forest in Wyoming.

Herrera asserted his treaty rights as a defense to criminal charges of illegally taking elk out of season. After he lost in state court, Herrera successfully petitioned the U.S. Supreme Court to consider his case. Supreme Court Justices Sotomayor, Ginsburg, Breyer, Kagan and Gorsuch agreed with Herrera. They held that the Bighorn National Forest and other federal lands may fall within the scope of an 1868 treaty that permits members of the Crow Tribe to hunt on "unoccupied lands of the United States."

SCI assisted the Wyoming Game and Fish Department in this case, opposing the position of Herrera. SCI filed a "friend of the court" brief to defend the importance of state management authority over game on federal lands. This same principle could apply to 19 other treaties with similar language, spreading the impact to other Tribes and well beyond Wyoming.

In effect, the ruling could give Tribal members the ability to ignore the state hunting regulations. This could threaten wildlife populations. It could also lead to restrictions on non-Native hunters in order to keep harvests within biologically acceptable limits. The glimmer of hope for state wildlife managers is that the ruling still allows Wyoming to make its case to the Wyoming state court that the state's hunting regulations should override treaty rights for reasons of "conservation necessity."

MOA EXTREME CARBON SUMMIT 6.5 PRC
IN STOCK & READY TO SHIP TODAY

MOA EXTREME CARBON SUMMIT 6.5 PRC
CALL TO DISCUSS SCOPE OPTIONS
MCMILLAN HUNTER STOCK
BENCHMARK CARBON BARREL W/SIDE PORT BRAKE
SHOOTING THE EOL ELITE HUNTER 156 BERGER BULLET
LOAD DEVELOPMENT COMPLETED. READY TO SHIP
FOR MORE INFO OR TO PURCHASE PLEASE CALL (541) 524-1820

1/2 MOA
GUARANTEED

**THANK YOU TO OUR 2019
FIREARM DONOR!**

**PUTTING AND KEEPING
WILD SHEEP ON THE MOUNTAINS
IN CALIFORNIA!**

Special Drawing for CA WSF Life Members 2021 Dall's Sheep hunt Value \$23,000

MUST ATTEND MAY 2, 2020 FUNDRAISER TO WIN!



**10 day 1x1
fully guided hunt
Hosted by Ultima Thule Outfitters
Guided by Donald C Martin**



CA WSF
1314 Center Drive B#267
Medford, OR 97501

www.cawsf.org

CALIFORNIA CHAPTER WILD SHEEP FOUNDATION

**18TH ANNUAL FUNDRAISER AND BANQUET
MAY 2, 2020
SACRAMENTO DOUBLETREE HOTEL**

**2021 DALL SHEEP HUNT
with Ultima Thule Outfitters
Special Drawing**

LIFE MEMBERS ONLY

**Any level of Life Member — Youth, Life, Distinguished
Life will be automatically entered! BUT**

YOU MUST BE PRESENT TO WIN.

**2021 STONE SHEEP HUNT
Special Drawing**

**ONLY 500 TICKETS AVAILABLE
\$100 PER TICKET**

DO NOT NEED TO BE PRESENT TO WIN.