

News

Message from the President

Kristina Boyd



Ever wondered how the annual conference comes together?

Ever wanted a new event or to improve upon an existing one?

Contact

mttws.preselect@gmail.com

And join our conference committee!

I have a confession to make.

You will know who you are.

It was only my second winter job, tooling around northwest Montana on antique snowmobiles trying to radio collar a certain elusive forest carnivore. I had a need for speed and exactly one day of training. My hand hit the throttle and I left everyone in

spindrift. But riding the trail was like following Edward Abbey down a well-used desert track: jaw-jarring and strewn with beer cans. The corner came too fast and unwieldy for my untrained brain. My sled careened onto its side, sliding to a stop just before the road edge. Seven tomahawk traps, which had been bungeed to the back like a cubist fusion of the Eiffel Tower and Tower of Pisa, lay on the snow in a tangled pile. I wrestled the sled upright in a panic, piled the traps back in place, and sat down to “take in the view” just as you rounded the curve. You had some fun chiding my lead thumb, and warned me about the dangers of a snowmobile out of control. Yes, I nodded innocently, I would be sure to rein it in. Later, we were setting a trap taken from my sled. You had diligently spent time before we left for the field making sure the traps had been adjusted properly, but this one... for some reason... was... not... behaving. I took a breath of sharp wintergreen air, shrugged, and deepened my concentration on finding that perfect last fir bough for camouflaging – oblivious to the fact that my shrug was just a readjustment of the burden of guilt that I would carry for years; or, well... at least until the slicing wind ripped it off my back during the ride out.

This story was an assignment. I did not want to write it. I’m busy. I’m tired. I spend too much time already sitting and staring at a screen. But I’m also dutiful, and usually do what I’m told – even when it’s me telling me what to do. I am now a professional storyteller, something I’ve wanted to be since learning to read. I don’t write best-selling novels. Rather, I write to fund my passion - wildlife and habitat conservation. This is what I bring to you in my year of presidency.

The ability to convey a story that speaks to an audience’s mind and heart is vital for connecting with them in a meaningful way. But it takes preparation and practice if you want to entertain as well remain pertinent to your message and goal – whether that is winning a grant, explaining a management action, or building a general base of support. So, this was my newsletter assignment to the board: storytelling practice. No goal, no overarching message, just good old-fashioned yarns.

You’ve read my story. Now read on for the rest of the board’s submissions. And while you’re reading, think about this – How did we do? Why do you think so? Could you do better? If so...

Submit your 300 – 800 word story to mttws.president@gmail.com for the fall newsletter

Board Stories

President Elect

Every spring, several current and retired colleagues and I head into the upper Sun River area for bighorn sheep surveys. During this 4-day horseback, we collect information on post-winter bighorn sheep survival and gather anecdotal observations. It is also a time for me to reconnect with some of the reasons I got into this occupation. Working with or just observing wildlife in the places they inhabit has always intrigued me. Too often I find myself getting overly caught up in the non-field related duties of my work and although these obligations are important and necessary, there is no replacement for on-the-ground experience. Whether it's relating my experiences and observations to the constituents I work with or to my own kids, this type of real world knowledge goes along way.

Brent Lonner



These trips are also a chance to gain historical perspective from those that have already lived many of the same experiences that I sometimes underestimate as unique to today. Like the old saying goes, we need to know and understand where we've been to get to where we're going. Good examples of this are current decisions effecting deer management in Montana. And as I, in turn, mentor new or future biologists, I have the opportunity to relay the importance of these concepts to them. Whether it's obtaining or providing mentorship, I encourage folks to seek out these opportunities no matter what stage of their career they are in.

Past President

Not long ago, I had all the time the world to focus on one thing, my research. I remember thinking that the amount of time I spent on one species made life kind of boring. I watched all those professional biologists out in the world with envy. WOW! They get to do so much cool stuff. Someday that would be me. Someday I would get to do all the cool stuff.

Chris Hammond



Fast-forward a few years and I was finally doing that cool stuff. I had also gone from having one thing on my to-do list, to having several things on my to-do list, to... why in the world am I even making a list? Remember though, lists are designed to keep you organized and remember crucial things. Right about the time I was giving up on lists, I was snowmobiling into remote areas well beyond smooth groomed trails to monitor furbearer bait stations. And had I made a list, I would have probably remembered the gas.

Sixteen hours into my workday, it was about 9 pm when my machine sputtered once, twice, and then died. Fortunately, the other machine had enough gas to get us back to the truck, where we had reserves. At the truck, after a team-building tandem ride on the one-man rig, we discovered my memory proved me wrong! I didn't even remember to bring the gas cans. So it was down the mountain to find some gas, more team building exercise to fuel my machine, and back down with both machines in tow. My bed was particularly warm and cozy when I fell into it at 2 am.

Take home messages: 1) sometimes having only one thing to do is OK, 2) lists are OK and still helpful, and 3) don't forget the gas!

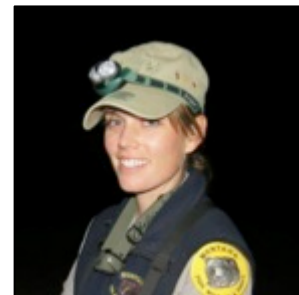
Treasurer

Since I began my career with Montana Fish, Wildlife & Parks two and a half years ago, I've experienced a bombardment of new, important encounters, and experiences that continue to shape and develop my career. My first feelings upon being “handed the pickup keys” were an overwhelming fear of not being able to meet the public's needs or fill my predecessor's shoes. He held the position for approximately 20 diligent years, his eons of good work evident from the dozens of file boxes left behind and legendary biologist tales floating around the office.

There is an excitement that comes from facing new challenges - from hunting access and landowner issues to season setting to sage grouse management. While daunting at first, it didn't take long to recognize the unbelievable amount of support coming from fellow biologists who face similar challenges and have been conquering them a lot longer than I.

I have so many memories from the job so far, at least as many as the spring-time sunrises I've seen while heading to grouse leks at first light: Flying over the Breaks, advising an ecstatic permit holder about an upcoming hunt, witnessing sharp-tails dance at dawn, getting a jet boat “on-step”, and enjoying the satisfaction of finishing a Conservation Easement. All these provide a dynamic balance for the days when there simply isn't enough time to tackle it all. Thanks to the hard-working people of central Montana, and an unparalleled natural resource, I look forward to facing new challenges and establishing new relationships in a truly amazing landscape.

Sonja Smith



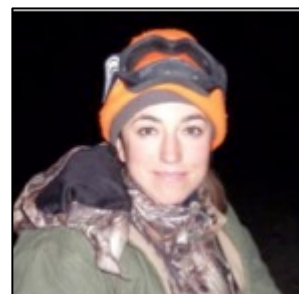
Secretary

If you don't know Dean Waltee, I suggest you introduce yourself at the next TWS meeting. He's among the most dedicated, smart, and determined biologists I've known. Last fall I helped him put together a really interesting piece of work that I felt was worth sharing. The story began more than thirty years ago when biologists in southeast Montana made changes to mule deer management. They did away with tiny hunting districts, reasoning that the law of diminishing returns would cause hunters to naturally focus on areas with higher densities. They made general licenses either-sex, reducing buck harvest and boosting buck-to-doe ratios. They dampened oscillations in harvest by increasing antlerless quotas soon after natural population declines.

Eastern Montana's largest chunk of contiguous public land, the Ashland Ranger District (ARD) of the Custer National Forest, attracts large numbers of hunters. Some sportsmen have lobbied for restrictions on harvest, citing a decline in quality bucks. Dean decided to compare check station data from mule deer bucks harvested on and off of the ARD over the last 25 years to evaluate that perception and determine if more restrictive management is warranted.

His findings indicated that proportionally more yearling bucks have been harvested on the ARD than off, but also that antler characteristics were similar for bucks harvested on and off of the ARD and the quality of adult mule deer bucks harvested on the ARD has remained stable through time. Dean says, “There is opportunity to harvest trophy bucks, but there is also opportunity for folks to just get out and hunt. That's what's important to most sportsmen—spending time with friends and family, enjoying nature, and bringing home venison for the table.” For more information or a copy of the report contact Dean Waltee at dwaltee@mt.gov.

Melissa Foster



Board Reports

President

If you missed the 2014 MT TWS Annual Conference, one of the significant Society results to come out of discussions is the potential formation of a Conservation Affairs Committee. This committee is intended to coordinate the development and dissemination of information required to inform managers, policy makers, and the public concerning wildlife conservation. Shawn Cleveland, 2012 MT TWS President, is putting together a proposal, and the committee formation will be voted on at the 2015 MT TWS Annual Conference business meeting. For more information see the national TWS document, [Creating a Conservation Affairs Network](#), and Michael Nelson and John Vucetich's paper, [On Advocacy by Environmental Scientists](#).

The Teaming with Wildlife Coalition is gearing up to rally for State Wildlife Grants once again, and MT TWS is on the steering committee. I attended the first meeting of the new campaign, where we explored the history and context of the State Wildlife Grant program and the function of the Montana coalition. Stay tuned for more news from the Teaming with Wildlife Coalition. For more information see the [Montana Teaming with Wildlife website](#).

President Elect

The 2015 MT TWS Annual Conference is scheduled for the week of February 23 at the Red Lion Colonial Inn in Helena. The theme for the conference is yet to be defined...stay tuned. We are planning to send out a short survey in the near future to obtain comments and feedback related to the Annual Conference. **If you have silent auction items to donate, please contact our Past President at mttws.pastpres@gmail.com.**

Treasurer

The 2014 MT TWS Annual Conference was attended by 220 people. Profits from the silent auction and raffle lead to a \$2,311.90 deposit into the Wynn Freeman Account for student scholarships. TWS Members should note the new **dues increase from \$12 to \$24** voted forward by chapter members during the conference. This dues increase originated from the March 2013 Finance Committee meeting, and will better facilitate the chapter's ability to finance current operations, provide technical guidance and input, and further TWS's mission. Reduced rates for retired and student members were not affected. MT TWS currently has 372 dues-paying members.

Education Committee

During this year's business meeting, the education committee was approved to have a booth at the 2014 MEA/MFT Educators' Conference in Missoula on October 16 and 17. The Chapter had a booth at the 2012 conference in Billings with Terry Lonner, Steve Gniadek, and John Weigand representing. At least 2,500 educators are expected to attend this year. The University of Montana TWS student chapter TWS volunteered to assist us with our booth. Any help from chapter members in the Missoula area would be appreciated. Contact Terry Lonner at tlonner@lonnerimages.com or Steve Gniadek at grayjaybro@yahoo.com

The primary purpose of our presence at this conference will be:

- Provide information to educators about the MT TWS.
- Explain and promote Montana's Wildlife Legacy and encourage educators to incorporate information about Montana's Wildlife Legacy into their appropriate curriculums.
- Promote and demonstrate the Intermountain Journal of Sciences' new and optimized website and its search engine and open access features.

Awards and Recognition

Annual Conference Awards

Distinguished Service **Michael Thompson**

For lifetime achievements in wildlife conservation



Biologist of the Year **Pat Basting**

For recent achievements in wildlife conservation



Bob Watts Communication **Christine Paige and Joe Weigand**

For significant communication in media that has a relatively wide audience



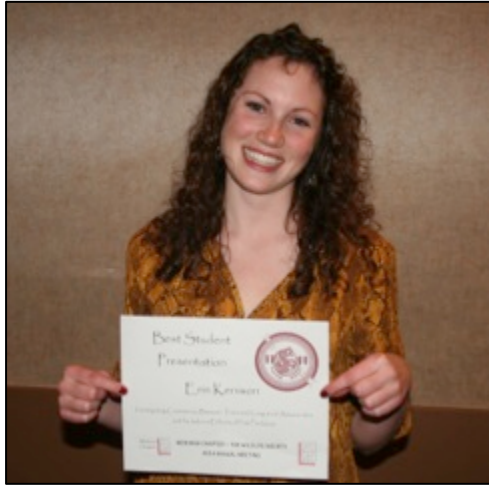
Wynn Freeman Scholarship **Erin Kenison, MSU and Jason Hanlon, UMT**

For exemplary participation in and commitment to the wildlife profession and academics



Best Student Paper Erin Kenison

Investigating Coexistence Between Trout and
Long-toed Salamanders and the Indirect Effects
of Fish Predators



Best Student Poster Adam Kehoe

Landscape Heterogeneity at White-
Headed Woodpecker Nest Sites in
West-Central Idaho



MT TWS Grant Lewis Young for the Flathead Audubon Society

For the creation of a Montana owl education trunk



TWS National Leadership Institute Scholarship

Our very own treasurer, **Sonja Smith**, has been selected for the 2014 Leadership Institute. Sonja received her Master's Degree from the University of Montana in 2011 and is currently the Lewistown game biologist for Montana Fish, Wildlife & Parks. A committee of TWS members and staff selected her based on her academic record, demonstrated leadership capability, and proven excellence in her current professional position.

Sonja will receive leadership training that begins with several distance-learning projects over the coming summer. The program culminates in October with intensive hands-on mentoring activities and leadership workshops during the 2014 TWS Annual Conference in Pittsburgh, Pennsylvania.

Career Paths

New Hires for Montana Fish, Wildlife and Parks Nongame Program

Lauri Hanauska-Brown, Nongame Wildlife Management Bureau Chief for Montana Department of Fish, Wildlife and Parks would like to announce that the agency has bolstered its existing capacity for nongame conservation and habitat work by hiring **Brandi Skone** to work in Miles City, **Heather Harris** in Glasgow, **Meghan O'Reilly** in Billings, and **Kristina Smucker** in Great Falls. With the hiring of these four positions all MFWP Regional offices now have some staff dedicated to nongame issues of concern. These staff will also work on some game and furbearer issues of concern to ensure each region puts forth an integrated approach to conservation and management. MFWP is striving for balanced management and conservation of all species by all MFWP biologists but knows that having staff with some nongame expertise and dedicated time to work on nongame species pays dividends to all Montanans. The existing MFWP staff with region nongame responsibilities include **Chris Hammond** in Kalispell, **Kristi DuBois** in Missoula, and **Claire Gower** in Bozeman.

From Wildlife Professional to Law Guru

After three long years, **Carolyn Sime** reports that she will graduate from the University of Montana School of Law in May, 2014. She says that she has never spent so much time inside on a laptop computer and hopes never to have to do it again! Between classes, she submitted a declaration to the 9th Circuit Court in support of Northern Rockies wolf delisting and state management during the final appeal to Congressional delisting. She also wrote an article that will be published in the Montana Law Review (a peer reviewed scholarly law journal) regarding a controversial groundwater well topic. She is currently writing an article about the Montana Environmental Quality Council's unique oversight authority over three key state agencies: Montana Fish, Wildlife & Parks, Montana Department of Natural Resources and Conservation, and Montana Department of Environmental Quality. She plans to publish it as well. First up, however, is the Bar Exam in July. Wish her luck!

Montana Veterinarian in Nepal

Dr. Deborah McCauley is a contract wildlife veterinarian that has worked in Montana and Asia. In Montana she helped with projects at WCS, MFWP and Zoo Montana. She is currently helping to develop a wildlife health program in Nepal with partners at the DNPWC (Department of National Parks Wildlife Conservation) and a local NGO NTNC (National Trust for Nature Conservation) with an emphasis on endangered wildlife. You can see her work on Facebook: Veterinary Initiative for Endangered Wildlife (VIEW) or viewwildlife.org. Please also read her story submission that follows!

Member Stories

Wildlife Conservation Medicine in Nepal: Asian One Horned Orphaned Baby Rhino, A success story

by **Dr. Deborah McCauley**

Attacked by a Bengal tiger in the jungle of Chitwan National Park, Nepal, a lone baby rhino struggles to stay alive, unable to walk, fearful of further attacks by the tiger and abandoned by his mother. His forelimb is mangled from penetrating canine tiger teeth crushing his bones, and tearing his flesh. Four months old and one of the last remaining Asian One-Horned rhinos left free in the wild in Asia, he has met his end to freedom forever, but hopefully not his life. Chitwan NP game scouts responded and rescued this little guy, no larger than a Rottweiler, from the jungle and transported him to the research station where veterinarians will treat him, despite limited accommodations and resources to do so.

Below the glaciers of Mount Everest and the Himalayan mountain region, lies the Teri Arc Landscape of Nepal. A sliver of fertile ground, this area is plush with bird life, wetlands, leopards, sloth bears, Asian elephants, crocodiles and endangered Bengal tigers and Asian One-horned rhinos. The Park shares protected forest with neighboring India, but pressure from growing populations (30 million people in Nepal but a 1/3 of the size of Montana & 1.2 billion in India) increases exponentially every year, along with domestic animal numbers, leaving the fragile populations of tigers and rhinos with less habitat to roam, increased risk of poaching and increased risk to diseases from livestock and pets. I am a wildlife veterinarian working with VIEW (Veterinary Initiative for Endangered Wildlife) in Nepal with partners in Department of National Parks and Wildlife Conservation (DNPWC) and research NGO National Trust for Nature Conservation (NTNC) to address the critical problem endangered species face from wildlife diseases that affect populations, as well as individual clinical cases like this one. With rhinos and tigers nearly extinct, efforts to save endangered wildlife must have a three-pronged approach; from limiting habitat encroachment; reducing poaching; and protecting wildlife health.

Baby Rhino

The baby rhino arrived to the research station with abrasions all over his body, unable to bear weight on his right knee, in shock, traumatized, and with the possibility of a systemic infection imminent.

However, despite these devastating wounds, our armored patient still put up a fight when treating him. We know that cat bites are very serious, but a tiger nearly biting off a limb is potentially a death sentence. Sedation helps, but daily treatment and bandage change would become a challenge.

Luckily, in Nepal there are many hands to help.

Wildlife technicians and I worked quickly and I regularly on cleaning copious amounts of pus oozing from his wound, flushing his joint and bandaging his limb. Treating him is also a valuable time for me to train the dedicated wildlife technicians and vet students on wound care management, bandage dressing and changing, administering injectable medications, writing medical protocols, keeping medical records and answering questions. The ultimate training goal is for the wildlife team to gain the skills, practical experience and confidence that comes with it so that they can treat him and other wildlife like him, on their own.



Orphaned baby asian one horned rhino being bottle fed

I was very concerned about the damage to the baby rhino's limb and desperately wanted an x-ray. I called government and private vets throughout Nepal to try to find a portable x-ray machine. Since he was non-weight bearing, I feared he had serious short and long-term damage to the bone and joint. Despite my efforts, not one portable x-ray machine could be found throughout the country. I was very nervous that he would never be able to bear weight on that limb. It may be fine at 150 pounds but not fine when he is fully grown at two tons. I wondered, would death by a tiger have been a better fate than what we could offer: a life in captivity fraught with chronic pain and disability? I checked on him many times daily and throughout the nights, watching for his limb to become weight bearing, hoping his appetite would improve, his temperature would stabilize and his attitude would brighten. However, throughout most of my visits he lay in the straw, on his side, resting quietly... I feared, too quietly. Over the next few weeks, his wound continued to remain infected, so I only could only hope that our efforts would help him heal. Luckily, over that time he began to suckle his milk more vigorously, look forward to his banana snacks and his temperature normalized. We had overcome losing him to a systemic infection, now only his wounds and bones needed to heal.



Baby Asian one horned rhino recovering after a Begal tiger attack

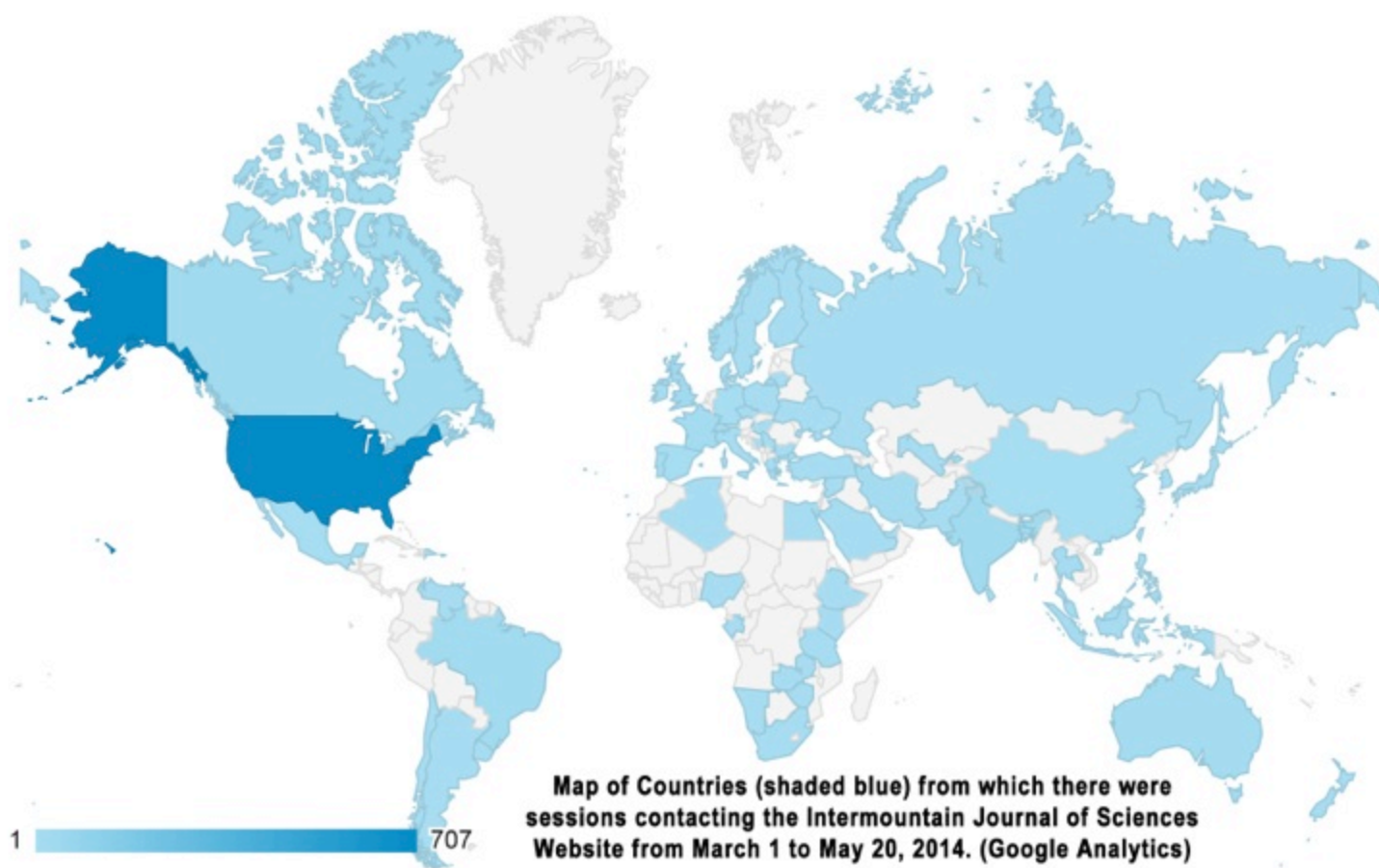
I returned to the Park after a few weeks, having left the veterinary technicians to carry out the medical treatment protocols. Upon my arrival, I was hesitant to see him, fearing his limb would still not be weight bearing. At first glance his limb was abducting awkwardly and my stomach sank. I knew he had been eating well and becoming feistier, but the limb was the real indicator for his future success. I found a banana and poked it through the enclosure... he noticed

my offering and walked, not on three legs and not stiffly, but walked on all four legs, with all four joints! The wound was healing beautifully, and his joint was working. I nearly burst into tears (ok, I did but no one was looking) when I fed him his banana, he suckled my fingers and searched for more with his soft nose, curious muzzle and wet tongue... I was thrilled! This is a success story: we saved one endangered Asian One Horned rhino, one more battling his position against extinction... Good thing, because I just heard another rhino was lost due to poaching.

IJS is now digitally accessible through its own website and the library at Montana State University through its ScholarWorks website.

MSU's library has agreed to also serve as the archivist for IJS. Because of IJS's new and optimized website presence, all of the contents of each issue will eventually be available worldwide on the Internet via major search engines such as Google, Bing and Yahoo.

Recent analytics from Google have shown that the IJS website have had almost 1,000 sessions from at least 43 States and 65 countries since it went on line last March.



Check out IJS's new website at
www.intermountainjournal.org

Or the ScholarWorks website at
<http://scholarworks.montana.edu/xmlui/>
under journals and then partner publications.

We would appreciate any feedback from your experience in using the website(s).
Contact Terry Lonner, Managing Editor of IJS at tlonner@lonnerimages.com

Purpose of the Website Optimization Project:

- Unarchive & Digitize ALL IJS publications (1995 - current) so they can be searched on the internet to improve the educational outreach of the sponsoring organizations. Manuscripts or abstracts once found can then be downloaded as a PDF.
- Improve the ease of access to information published in IJS relevant to various scientific disciplines and sponsors.
- Create an Internet presence that will help to increase & maintain a base of subscribers & contributors.
- Establish a digital archive of all **IJS Volumes to reside in perpetuity with MSU Library's ScholarWorks**. Both the IJS website and ScholarWorks will use the "Open Access" approach, ensuring maximum exposure and availability for journal abstracts & manuscripts by offering them without obstacles or costs.

Overview of work accomplished as of May 20, 2014:

- Established a memorandum of understanding with the MSU Library's ScholarWorks to archive and sustain the contents of IJS and to ensure its longevity on the internet as well as establishing an "Open Access" approach.
- Completed 80% of the reprogramming of the IJS Website.
- Initiated Phase I of unarchiving Vol. 10, 2004 through Vol. 19, 2013 starting with the most current & working backwards for ease of refreshing digital files using current computer operating systems and programs.
- Volumes completed or in progress:
 - Volume 16 No. 4, 2010
 - Volume 17 No. 1-4, 2011
 - Volume 18 No. 1-4, 2012
 - Volume 19 No. 1-4, 2013 (in progress)
- These Volumes include:
 - Manuscripts (16)
 - Presentation Abstracts MCAFS (36) MCTWS (182)
 - Poster Abstracts MCAFS (8) MCTWS (31)
- **Contents of abstracts & manuscripts are now searchable on the Internet.** This includes the title, abstract text, manuscript text, author name(s), year, scientific discipline(s) keywords of every abstract & manuscript, & shows results by order of relevance.
- When Abstracts & Manuscripts are entered, a Content Analysis System automatically analyzes the title & complete text for all abstracts and manuscripts against 3 major Search Engine databases - Google, Yahoo, and OpenCalais.
- A consensus is then formed and a suggested list of the top 50 relevant keywords is generated that will help the abstracts and manuscripts rank highly on Search Engines. Media Works Publishing is working with representatives from the sponsoring organizations to identify and assign keywords to each manuscript or abstract, Society Meeting, Theme, Date & Location.

Screen Shot of Home Page www.intermountainjournal.org



The screenshot shows the IJS website home page with the following elements and annotations:

- Search Bar:** A search bar with the placeholder text "Keywords, Subjects, etc..." is highlighted with a yellow arrow pointing to it from the annotation: "Prominent Key Word Search Bar on all pages for immediate access for searching all volumes of IJS."
- Disciplines List:** A vertical list of scientific disciplines is shown on the left side of the page. A yellow arrow points to it from the annotation: "Photos change as they rotate continuously through the 10 Disciplines that are featured in IJS."
- Top 3 Manuscripts:** A section titled "Links to Top 3 Most Recent Manuscripts or Annual Meeting Abstracts" is shown. A yellow arrow points to it from the annotation: "Links to the top 3 most recent manuscripts or annual meeting abstracts for each discipline."
- Link to All Manuscripts:** A link titled "Link to ALL manuscripts or annual meeting abstracts for each discipline" is shown. A yellow arrow points to it from the annotation: "Link to ALL manuscripts or annual meeting abstracts for each discipline."
- Link to Sponsoring Organizations:** A link titled "Link to the websites of the sponsoring organizations (MAS, MCAFS & MCTWS) & to MSU Library ScholarWorks" is shown. A yellow arrow points to it from the annotation: "Link to the websites of the sponsoring organizations (MAS, MCAFS & MCTWS) & to MSU Library ScholarWorks."
- Journal Description:** A section titled "Intermountain Journal of Sciences (IJS)" provides a description of the journal and its sponsors. A yellow arrow points to it from the annotation: "Link to the websites of the sponsoring organizations (MAS, MCAFS & MCTWS) & to MSU Library ScholarWorks."
- Footer:** The footer contains contact information, a list of sponsors, and a list of recent issues. A yellow arrow points to it from the annotation: "Link to the websites of the sponsoring organizations (MAS, MCAFS & MCTWS) & to MSU Library ScholarWorks."

This page features "Search Journal" with partial screen shots illustrating a "Key Word" search in 3 steps. This is just one of many ways to Search the Journal.

1

Search the Journal

Keywords, Subjects, etc....

► Browse by Keyword/Topic
► Browse by Scientific Discipline
► Browse by Author
► Browse by Volume/Issue
► Browse by Year
► Browse by Publication Types
► Abstract-Only Article

Search or Browse Journal Articles

To get started, type in some words related to what you're looking for, or click a tab below to find articles by keyword, topic, author and more.

Word Search Keyword/Topic Scientific Discipline Author Volume/Issue Year Publication Type

Add Filter

Search Journal

"deer mice" and pika

- Navigation Bar has 8 Main Pages and several pages have 3-6 additional sub-pages.
- Search Journal navigation button was selected.
- Key Words entered: "deer mice" and pika
- Search results displayed in Screen Shot 2

- Add Filter allows visitors to add multiple criteria, narrowing down currently-displayed information.
- Links are underlined & will change to **rust** when hovered over.
- SIDE BAR displayed on ALL pages after the HOME Page.
- These Sub-Buttons ► offer additional options for Searching the Journal.
- Current Volume Manuscripts will display the most currently published manuscript & will auto update.
- The Key Word Search resulted in: 2
- 5 listings found, 3 are displayed (2 Abstracts & 1 Manuscript)
- Each Listing Displays:
 - Title & Partial Abstract Text
 - Volume, Issue, Year
 - Author(S.)
 - Manuscript or
 - Abstract (Presentation or Poster)
- All of these listings link to Sub-Pages with additional information.
- The Presentation or Poster Abstracts link to the specific Society Meeting, Theme of Meeting, Date & Location.

2

Search results for "deer mice" and pika

5 items found, displayed in order of relevance.

Factors Influencing Pika Foraging Behavior in the North Cascades National Park Service Complex, Washington

The American pika (*Ochotona princeps*) is a small lagomorph restricted to talus slopes at higher elevations or latitudes throughout mountainous regions in western North America. Pikas respond to seasonal fluctuations in food availability by haying, i.e., st...

- Volume 17, Issue Number 1-4, 2011
- Part of Biological Sciences - Terrestrial
- Authored by Richardson, Rachel M., Bruggeman, Jason E.
- Abstract - Presentation Abstract - Montana Chapter of the Wildlife Society (MCTWS)

Hoary Marmot, White-Tailed Ptarmigan And Pika Surveys In Northwest Montana

Montana Fish, Wildlife and Parks has long done survey and inventory of game species and largely within the past few decades has expanded the staff and program necessary to monitor non-game species, too. However, to date there has been little work done on t...

- Volume 17, Issue Number 1-4, 2011
- Part of Biological Sciences - Terrestrial
- Authored by Vore, John, Hammond, Chris
- Abstract - Presentation Abstract - Montana Chapter of the Wildlife Society (MCTWS)

Effect of Rock Cover on Small Mammal Abundance in a Montana Grassland

We examined the influence of rock cover, as an indicator of presumable retreat site availability on the abundance of deer mice (*Peromyscus maniculatus*) and prevalence of Sin Nombre virus (SNV) using long-term live trapping and habitat data from three live ...

- Volume 17, Issue Number 1-4, 2011
- Part of Biological Sciences - Terrestrial
- Authored by Richardson, Amy, Kuenzl, Douglas, Carver, Scott, Richard, Kyle
- Manuscript

- Clicking on the third Title which is identified as a manuscript displays in Screen Shot 3
- Scrolling window image of Press Ready PDF of entire Manuscript as published in the Journal.
- Users will have the option to:
 - Read the Abstract on-line
 - Download PDF,
 - View in MSU ScholarWorks
 - View as HTML. HTML view for search engine optimization.

3

Search the Journal

Keywords, Subjects, etc....

► Browse by Keyword/Topic
► Browse by Scientific Discipline
► Browse by Author
► Browse by Volume/Issue

► Browse by Publication Types
► Abstract-Only Articles
► Complete Manuscripts

Current Volume Manuscripts

Bat Species Presence in Southwestern Montana

Effect of Rock Cover on Small Mammal Abundance in a Montana Grassland

Grazing Effects on Deer Mice with Implications for Human Exposure to Sin Nombre Virus

Survival and Movement of Adult Rainbow Trout During Winter and Spring in the Henrys Fork of the Snake River

Next Volume

IJS Volume 20

Submit your manuscript

Effect of Rock Cover on Small Mammal Abundance in a Montana Grassland

Volume 17, Number 1-4 - 2011 • Complete Manuscript

1 / 10 < > Q

EFFECT OF ROCK COVER ON SMALL MAMMAL ABUNDANCE IN A MONTANA GRASSLAND

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Jason E. Bruggeman, Department of Biology, Montana Tech of the University of Montana, Butte, Montana 59717
Douglas A. Kuenzl, Department of Biology, Montana Tech of the University of Montana, Butte, Montana 59717
Scott R. Carver, Department of Biology, Montana Tech of the University of Montana, Butte, Montana 59717
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ABSTRACT

We examined the influence of rock cover, as an indicator of presumable retreat site availability on the abundance of deer mice (*Peromyscus maniculatus*) and prevalence of Sin Nombre virus (SNV) using long-term live trapping and habitat data from three live trapping grids and a short-term three-month, spatially replicated study across three sites in Cascade County, Montana. In our long-term study, we found that deer mice were more abundant at a live trapping grid with greater rock cover than live grids with low rock cover. There was a non-significant trend ($P = 0.051$) for deer mice to be more abundant in rocky sites in the short-term study. In the long-term study, average SNV antibody prevalence among deer mice was slightly greater (0.9 vs. 0.5%) on average at the live trapping grid with more rock cover than the grid with low rock cover. We were unable to demonstrate differences in SNV antibody prevalence among treatments in the short-term study. Further studies are needed to elucidate the multiple dimensions of deer mouse abundance and SNV prevalence in grassland ecosystems and other habitat types.

Key words: deer mouse, *Peromyscus maniculatus*, Sin Nombre virus, natural sites

INTRODUCTION

The abundance of small mammals varies temporally and spatially among and within habitat types (e.g., Smith, 1995). In many cases, however, the underlying determinants of variability in small mammal abundance are unknown. Variation in abundance can have consequences for wildlife management because small mammal abundance can influence contact and transmission among individuals and among species.

Here we present preliminary data on the abundance of deer mice (*Peromyscus maniculatus*) and prevalence of Sin Nombre virus (SNV) in a variety of habitat types across North America (Richardson and Ligon 1999, Douglas et al. 2001). These studies have been ideal experiments for studies of habitat relationships for many decades (e.g., Smith 1995, Douglas 1999, Marking et al. 2001, Anderson and Anderson 2001) and in

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