



**Peri Wolff, President**

2013 has been another busy year!

At the Wildlife Disease Association meeting in Knoxville, AAWV sponsored the Al Franzmann Memorial Lecturer as a cutting edge speaker. Dr. Dave Stallknecht from University of Georgia/SCWDS, provided a thorough and fascinating review of Epizootic Hemorrhagic Disease and the *Culicoides* vector. AAWV and the WDA - Wildlife Veterinary Section co-chaired a well-received session entitled "Raising the Bar for Animal Care in Wildlife Capture and Field Anesthesia." And AAWV member Michelle Verant won the WDA Graduate student Scholarship Award competition with her presentation on "Assessment of Physiological Effects of White-Nose Syndrome in Bats Using Doubly Labeled Water and Clinical Chemistry." This annual award recognizes outstanding academic and research accomplishment, productivity, and future potential in pursuit of new knowledge in wildlife health or disease. Congratulations Michelle! AAWV again provided continuing education credits for the WDA (40 CE credits) and Ranavirus conference (20 CE credits) which was held as a pre-conference symposium. And finally, at the annual members meeting the new officers were instated. Sonia Hernandez steps in as Vice President, Kevin Castle as Secretary and Megin Nichols as Treasurer. I would like to thank the outgoing officers Jonathan Sleeman, Colin Gillin, Margaret Wild and Mark Drew for their four years of dedicated service to the AAWV. Colin Gillin will continue on as the Chair of the Board of Governors in the, slightly less busy, position of immediate Past President.

AAWV also met jointly with The Wildlife Society at their annual meeting in Milwaukee, WI, in October. We hosted another members meeting and provided 30 ACZM-approved continuing education credits. The quality of presentations was outstanding with session topics including the application of molecular techniques to wildlife epidemiology, impacts of lead ammunition, the current science of chronic wasting disease and wildlife diseases and toxicology. Colin and I attended the Wildlife Disease Working Group meeting where we discussed the potential of co-hosting a workshop or session at the 2014 annual meeting. We also rolled out our newest item of logo wear; stylish ball caps in khaki green with a light tan bill and the logo in teal and cobalt.

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## AAWV NEWSLETTER

IS PUBLISHED BY THE  
**AMERICAN ASSOCIATION OF WILD-  
LIFE VETERINARIANS**

Founded in 1979, the AAWV is a national, non-profit organization of veterinarians interested in all aspects of wildlife health.

### President

**Peri Wolff**  
[pwolff@ndow.org](mailto:pwolff@ndow.org)

### Vice-President

**Sonia Hernandez**  
[shernz@uga.edu](mailto:shernz@uga.edu)

### Secretary

**Kevin Castle**  
[castlekt@gmail.com](mailto:castlekt@gmail.com)

### Treasurer

**Megin Nichols**  
[megin.nichols@gmail.com](mailto:megin.nichols@gmail.com)

### Editor

**Anne Justice-Allen**  
[ajjustice-allen@azgfd.gov](mailto:ajjustice-allen@azgfd.gov)

## Advisory Council

**Colin Gillin (Chair)**  
**Mark Cunningham**  
**John Fischer**  
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**Tom Deliberto**  
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[WWW.AAWV.NET](http://WWW.AAWV.NET)

[Facebook](#)

This great AAWV logo-wear item is Cabella's brand, fully adjustable strap to accommodate those of us with pony tails. Thanks to Sonia for getting these great \$10 hats. One woman stopped by the AAWV booth and bought a hat for each of her three daughters hoping to inspire them to pursue veterinary medicine as a career. Another was purchased by a young guy for his friend's girlfriend who wants to be a wildlife vet. Two priorities for this year are to evaluate what AAWV can do for students and young professionals and to review our past position states. Previously, we used Student Chapters to engage students however; interest tends to be driven by the current Chapter president and wanes once that person has graduated. An ad-hoc committee will be formed to look at options for reaching out to students and young professionals.

AAWV's current position statements include Feral Cats, Use of Foot Hold Traps and One Health. These three position statements will be reviewed as part of a 5 year planned evaluation and updated as appropriate. We will also develop a statement on the effects of lead in hunting ammunition and fishing tackle on wildlife. If you are interested in working on any of these topics please email me. And, if you have other ideas about how AAWV can better serve the membership please contact either myself, Sonia, Kevin, Megin or Colin.

As you enjoy the last of the fall colors and the winds of winter start to blow, grab a cup of hot cider and head to the computer to renew your membership ([www.aawv.net/membership](http://www.aawv.net/membership)).



## Members provide input to Science Advisory Committee

Several members took part in a July workshop on high consequence (HCD) and foreign animal diseases (FAD) co-sponsored by USGS and the Department of Homeland Security. This workshop focused on assessing and addressing the role of terrestrial and aquatic wildlife as reservoirs and hosts for HCDs, including foreign animal diseases. Invited participants had specialized expertise in the fields of animal health, disease ecology, homeland security, GIS, and public health.

Livestock industry and wildlife management leaders delivered presentations on recent developments in disease outbreak detection, management, and control including the recent outbreak of porcine epidemic diarrhea virus (PEDV). The presentations reviewed the current methods of disease control and epidemiology and highlighted differences between disease events in livestock and wildlife. These were meant to serve as stimuli for initiation of discussion on 4 management topics: la-

*Continued on page 7*

## Bighorn Sheep and disease in the Old Dad Peak System and Marble Mountains of California

(Excerpted from a report compiled by Vern Bleich, Regina Abella, and Ben Gonzales)

Desert bighorn sheep (*Ovis canadensis nelsoni*) populations in the Mojave Desert in southeastern California are currently experiencing the worst outbreak of pneumonia-related mortality in recent California history. The disease situation among bighorn in the Old Dad System and in the Marble Mountains of San Bernardino County is rapidly evolving and complex. Wildlife biologists and veterinarians with the California Department of Fish and Wildlife (CDFW), the National Park Service (NPS), academia, and non-governmental conservation organizations are working together to understand the source, causes, severity, and distribution of the disease and to develop management recommendations. Information provided herein has been compiled to provide insight into the current status of bighorn sheep in the affected areas, and to provide information on the results of the aerial survey conducted during July 2013. This information is current through 16 September 2013.

Approximately 250 bighorn sheep inhabit Old Dad Peak and its immediate environs in San Bernardino County and represent a portion of the Central Mojave Metapopulation fragment. In mid-May 2013, a NPS technician visited the Old Dad Peak Wildlife Water Development (Old Dad WWD) in Mojave National Preserve (MNP). The technician reported the presence of several carcasses of mature male bighorn sheep near that water source. Subsequently, additional carcasses of both sexes were discovered near the C. J. Kerr WWD, and an additional carcass was found at the Vermin WWD north of the Old Dad WWD. Subsequent ground surveys indicated the presence of what appeared to be healthy individuals, as well as other animals with clinical symptoms of respiratory disease. Sick animals were subsequently confirmed in the Marl Mountains, Kelso Mountains, and the Cindercone Area east of Old Dad Peak.

As a result of these observations, NPS staff completed compliance documents for the collection of live animals for laboratory examination. Two compromised individuals subsequently were collected near the Kerr WWD, and both tested positive for *Mycoplasma ovipneumoniae*, a bacterium that occurs commonly in healthy domestic sheep and goats, and that is thought to predispose or cause pneumonia in bighorn sheep. *Mycoplasma ovipneumoniae* was also confirmed in one of the bighorn carcasses located earlier.

With financial support from the California Chapter of the Wild Sheep Foundation, the National Wild Sheep Foundation in Cody, Wyoming, and the Iowa Chapter of the Foundation for North American Wild Sheep, a radial survey flight was conducted to determine the presence of healthy or compromised bighorn sheep, and to gain information on the distribution of compromised animals, search for and remove any domestic goats, domestic sheep, or feral exotic bovids encountered, and collect additional compromised bighorn sheep for examination. A total 126 live bighorn sheep were observed during 17.1 hours of helicopter time; the conditions and timing of these flights do not allow us to compare observed numbers to those from previous surveys (Table).

Observers confirmed the presence of additional live, but debilitated, animals near the Old Dad, Kerr, and Vermin WWDs, areas in which compromised or dead individuals previously had been detected. Moreover, compromised animals were observed in the Kelso Mountains, where debilitated individuals had not been previously detected during ground observations <1 week prior to the aerial survey. A compromised animal was also observed in the Cindercone Area, and a female was collected near Cane Spring. A mature male exhibiting respiratory distress was also collected in the Kelso Mountains. No domestic sheep

or goats were observed during the surveys.

Laboratory examination revealed that the female from Cane Spring did not have pneumonia, and was negative for *M. ovipneumoniae*; her debilitated condition was the result of a uterine infection, and peritonitis. Necropsy of the male from Kelso found lesions consistent with pneumonia, and infection with *M. ovipneumoniae* was confirmed by DNA techniques. Available evidence thus far suggests a recent, point-source of infection in that (1) 26 serum samples collected from the Old Dad System during 2005–2006 were negative for evidence of exposure to *M. ovipneumoniae*, and (2) *M. ovipneumoniae* strains from the first three Old Dad Peak outbreak mortalities were identical. It is perhaps not coincidental that a domestic goat was observed in, and then removed from, the Marl Mountains in December 2012. Examination indicated the carcass of the goat was unremarkable. Unfortunately, neither serology nor genetic techniques were used to examine the carcass for evidence of *M. ovipneumoniae*. Although suspect, the goat has not been conclusively determined to be the original source of the infection. Perhaps of even greater concern, was the discovery on 15 August of the carcasses of 4 domestic sheep near Halloran Summit, immediately north of Club Peak, and evidence that live domestic sheep had been present in that area.

In a separate development on 8 August, a CDFW officer was passing through the Marble Mountains, an area that supports a population of about 175 desert bighorn sheep. The Marble Mountains are located in the Southern Mojave Metapopulation fragment and are separated from the Central Mojave Metapopulation fragment by Interstate 40, which is considered to be a significant barrier to bighorn movement. He observed a mature male bighorn sheep that exhibited signs of respiratory distress. Five sheep, all with signs of respiratory disease, were collected from the area. The carcasses were each delivered to the California Animal Health and Food Safety Laboratory in San Bernardino the day of collection and subjected to a full diagnostic workup. All were positive for bronchopneumonia on gross necropsy. As of this writing it has been determined that all 5 animals were positive for *M. ovipneumoniae* by DNA techniques, and that the strain of *M. ovipneumoniae* present among three of the five was determined by genetic methods to be identical to that detected among animals inhabiting the Old Dad System.

CDFW staff are continuing to work with the National Park Service and the Bureau of Land Management. CDFW will continue to provide updates on this complex and evolving situation.

Table: Bighorn sheep helicopter survey results from 9 geographic areas flown in the Old Dad System 16–18 July 2013, Mojave National Preserve, San Bernardino County, California.

Location	Live Animals Observed			Compromised* Animals			% Compromised		
	ewes	lamb	rams	ewes	lamb	rams	ewes	lamb	rams
Henry Spring/ Granite Spring	0	0	0	0	0	0	0	0	0
Indian Spring/Cane Spring	19	7	14	0	0	0	0	0	0
Sheep Spring/Marl Spring	8	6	2	0	0	0	0	0	0
Kelso WWD	2	0	6	0	0	2	0	0	33.3
Cowhole/Little Cowhole	0	0	0	0	0	0	0	0	0
Old Dad WWD/Vermin WWD	18	0	5	9	0	4	50	0	80
Kerr WWD	32	4	2	13	1	2	40.6	25	100
Petroglyph Spring	0	0	1	0	0	1	0	0	100
<b>Total</b>	<b>79</b>	<b>17</b>	<b>30</b>	<b>22</b>	<b>1</b>	<b>9</b>	<b>27.8</b>	<b>5.8</b>	<b>30</b>

\* Compromised as determined by high resolution photography observation of clinical signs.

## AAWV AND AAZV COLLABORATE ON WORKSHOP AND JOINT MEETING

The Annual Meeting of AAZV was attended by about 300 people from numerous countries and institutions and was held in Salt Lake City, Utah in October. Sessions ranged from successful conservation programs to case reports, aquatic and terrestrial species highlights and student papers. The Hogel Zoo was the host for Zoo Day and the auction. Various social events and committee meetings were held in the evenings. The AAWV participated in the AAZV Executive Board Meeting on Sunday and gave a short report on the status of the organization and the need to continue to work together on issues involving free-ranging wildlife.

The Wildlife Health and Conservation Committee, a joint AAWV/AAZV committee, sponsored a Wildlife Capture Wet Lab. A crew from the Utah Division of Wildlife, including Leslie and Scott McFarlane, John Shivik, Rod Nielson, and Troy Davis, along with Mark Drew from Idaho Fish and Game provided a lecture overview of traps and trapping techniques for fur bearers, waterfowl, passerines and bats, and ungulates to a group of 15 people that included zoo veterinarians, veterinarians interested in wildlife medicine and students. Netguns, net launchers, cannon nets and goat wrestling and spooning were highlights but the snares and leghold traps generated the most discussion and interest. The lab was well received and helped some veterinarians that were unfamiliar with wildlife physical capture and restraint techniques understand their usefulness in free-ranging wildlife.

The next meeting of the AAZV will be at Disney in Florida in 2014.

## ADVANCED CERTIFICATION AVAILABLE FOR WILDLIFE VETERINARIANS

The American College of Zoological Medicine is now accepting applications for the board certification examination. Applications can be found on-line at the ACZM website, [www.aczm.org](http://www.aczm.org). **Deadline for submission of application materials is March 31, 2014.**

Established in 1983, the American College of Zoological Medicine (ACZM) is an international specialty organization recognized by the American Veterinary Medical Association (AVMA) for certification of veterinarians with special expertise in zoological medicine. ACZM is responsible for establishing training requirements, evaluating and accrediting training programs, and examining and certifying veterinarians in the veterinary specialty of zoological medicine. ACZM Diplomates serve in responsible positions as zoo and wildlife veterinarians, teachers, researchers, government officials, and administrators of other relevant programs fostering high quality medical care for non-domestic animals and are actively involved in the discovery of new knowledge in the discipline and the dissemination of this knowledge to the veterinary profession and public.

White mountains, Arizona  
Anne Justice-Allen



## National Wildlife Health Center Update Dr. Jonathan Sleeman

Compiled from bulletins released on August 29 and September 19, 2013

**National Wildlife Health Center Investigations** Wildlife diseases and associated mortality events can be highly visible, garner significant public attention, and have substantial impacts on wildlife populations. Some of these diseases can also potentially affect the health of domestic animals and humans. Investigation of wildlife morbidity and mortality events provides science-based determination of the cause of death and is critical for discovery and characterization of new, emerging threats to wildlife health. Diagnostic investigations are also critical for the development of assays to detect these new pathogens and the assessment of the risks.

The USGS National Wildlife Health Center (NWHC) provides diagnostic services to federal, state and tribal natural resource partners, free of charge, to help investigate, understand and manage unusual morbidity and mortality events. A summary of the diagnostic services we provide is available on our [website](#). The ultimate goal is to assist natural resource agencies in identifying management actions to lessen potential impacts on wildlife populations.

To submit diagnostic samples to the NWHC, please first contact the appropriate person for your geographic region listed below. The NWHC only accepts submissions from state, federal and Tribal natural resource and governmental agencies. Submissions from the public, rehabilitation facilities, universities, laboratories or other entities are not accepted without prior consultation with appropriate federal, state or Tribal agency. In general, the NWHC only accepts free-living wildlife for examination and generally does not accept rehabilitated or captive wildlife. If you have any questions please consult with the appropriate contact person, and if the NWHC cannot assist with the investigation, we will refer you to another diagnostic laboratory that may be able to assist.

**White-nose syndrome** (WNS) was confirmed in cave-hibernating bats in three new states: South Carolina, Georgia, and Illinois; and one new Canadian province, Prince Edward Island, during the 2012/2013 winter season. In addition, Arkansas and Minnesota recently reported detection of the genetic signature of *Pseudogymnoascus* (*Geomyces*) *destructans*, the causative agent of WNS, from research surveillance samples collected from hibernacula during the previous winter. This represents a continued geographic expansion of *P. destructans*; thus far, no evidence exists of barriers to prevent its continued spread.

White-nose syndrome has now been confirmed in 22 states and 5 Canadian provinces since it was first recognized near Albany, New York in 2007. Numerous additional counties throughout Tennessee and Kentucky had confirmed cases of WNS this winter, indicating that within two years of its initial detection in these areas, the disease is now endemic in these states. Sites in several northeastern states—where WNS has been present the longest—continue to be occupied by bats although in much lower numbers than before the disease was detected. Several states within the endemic area have reported an increase in bat populations at some sites during winter bat counts. However, these increases may represent

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*Continued from page 6* immigration from other sites and/or shifts in roosting locations of the local bat population from un-surveyed portions of the hibernaculum. Winter hibernacula survey data are being reviewed by state and federal management agencies to better understand the on-going impacts of WNS on bat populations in affected regions.

Also of note, *P. destructans* genetic signature has been detected on endangered Virginia big-eared bats (*Corynorhinus townsendii virginianus*) hibernating in at least one known contaminated site; however, no mortality or visible signs of disease are reported in this species at this time.

NWHC bat submission guidelines are available at: [http://www.nwhc.usgs.gov/disease\\_information/white-nose\\_syndrome/USGS\\_NWHC\\_Bat\\_WNS\\_submission\\_protocol.pdf](http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/USGS_NWHC_Bat_WNS_submission_protocol.pdf)

### **Research Update**

Recent phylogenetic analyses by U.S. Forest Service scientists have demonstrated the WNS fungus should be placed in the genus *Pseudogymnoascus* rather than *Geomyces*. Thus, the fungus has been reclassified as *P. destructans*. This reclassification allows scientists to more easily determine how this fungus is related to other fungi and determine what its closest relatives are. In doing this, it may also help scientists to determine why this particular fungus is pathogenic whereas its close relatives are not.

Citation: Minnis, A.M., and Linder, D.L., 2013, Phylogenetic evaluation of *Geomyces* and allies reveals no close relatives of *Pseudogymnoascus destructans*, comb. nov., in bat hibernacula of eastern North America: *Fungal Biology*, In press.

An updated list of WNS-related publications from the USGS is available at: [http://www.nwhc.usgs.gov/disease\\_information/white-nose\\_syndrome/wns\\_publications\\_list.jsp](http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/wns_publications_list.jsp)

**Contact Information** ([see map of states by region](#))

*Contd from page 2*

laboratory diagnostic methods; surveillance and monitoring; risk analysis and disease modeling; prevention and counter measures. Participants were then distributed to the 4 groups so that each group had representation from each of the several types of agencies represented. Each group was tasked with identifying key gaps in knowledge, technology, human resources, or infrastructure which would interfere with optimal management of HCD in free-ranging fish or wildlife populations. The groups were advised to keep their discussion broadly based and disease neutral. The groups met over the 3 days of the workshop and on the fourth day presented their findings to all of the participants and the invited guests. The groups identified several gaps in resources and coordination including planning and mitigation efforts to prevent rather than react to events, Insufficient coordination between wildlife agencies and the agricultural agencies, and agricultural industries, and a need for centralized data sharing and modeling resources. Information compiled during the workshop will be used to inform discussions by the DHS and the White House Advisory Council on Science and Technology regarding the development of national framework to prevent, prepare for, and respond to the introduction of HCDs into free-ranging fish and wildlife populations in the United States.

## Master in Applied Ecology

With the Conservation Medicine Group at Campus Evenstad  
Hedmark University College, Norway

**2014-2015 Application Deadline:** December 1<sup>st</sup>

**Fees:** \$70 US per semester, housing cost depends on standard (contact us early about funding possibilities)

### **Description:**

Our group of wildlife veterinarians and ecologists focuses on anesthesia, physiology, infectious diseases and clinical pathology of Scandinavian wildlife. We have an intensive period of wildlife captures from January through June. Students have the opportunities to design and carry out their own research project and to participate in a number projects. A research project resulting in a publication is expected.

### **Qualifications:**

- ◆ Veterinary graduates should have at least one year of clinical experience (by August 2014).
- ◆ Non-veterinarians should have a bachelor's degree in a related field with a strong science background including statistics.
- ◆ Strong communication skills (writing experience is highly desired) and ability to work as part of a field team.
- ◆ English proficiency requirements vary depending on nationality, see website.

***We also have a PhD program in Applied Ecology/Conservation Medicine!***

Contact Dr Jon Arnemo – [jon.arnemo@hihm.no](mailto:jon.arnemo@hihm.no)

**More information:** <http://www.hihm.no/English/Campus-Evenstad/Study-programmes>

## AAWV Officer Recognized by Centers for Disease Control and Prevention



Dr. Megin Nichols received the 2013 James H. Steele Veterinary Public Health Award from the Centers for Disease Control and Prevention in April at the 62nd annual Epidemic Intelligence Service Conference. The agency gives the award to current and recent EIS officers.

Dr. Nichols is a veterinary epidemiologist for the New Mexico Department of Health, and she was honored for contributions to veterinary public health and public outreach on zoonoses such as plague and rabies.

Dr. Steele, known as the father of veterinary public health, is among the 12 veterinarians profiled in the 2013 *JAVMA* series Legends in U.S. Veterinary Medicine.



# IMAGES FROM WDA 2014 KNOXVILLE



David Stallknecht receives Al Franzman award



Colin Gillin thanked for 4 years of service as President



**AUCTION!**



**OPENING RECEPTION!**



**FIELD TRIP—KNOXVILLE ZOO**





## UPCOMING MEETINGS

Nov. 11	to	Nov. 15	Human Wildlife Conflict Workshop, Whiterock Conservancy, Coon Rapids, IA, USA
Jan. 2	to	Jan. 5	Western Assoc. of Fish and Wildlife Agencies, Corpus Christi, TX, USA
Feb. 5	to	Feb. 7	Raptors of the Northwest Symposium, Washington TWS, Burrowing Owl Symposium, Pasco, WA, USA
Feb. 7	to	Feb. 16	Wildlife Capture Course, Malilangwe Wildlife Reserve, Zimbabwe
Feb. 13	to	Feb. 15	Emerging Diseases Symposium, Houston Zoo, Houston, TX, USA
Jun. 2	to	Jun. 5	Northern Wild Sheep and Goat Council, Fort Collins, Colorado, USA
Jul. 7	to	Jul. 11	International Conference on Island Evolution, Ecology, and Conservation, Honolulu, HI, USA
Jul. 13	to	Jul. 16	North America Congress for Conservation Biology, Missoula, MT, USA
Jul. 17	to	Jul. 23	Western Assoc. of Fish and Wildlife Agencies, San Antonio, TX, USA
Jul. 27	to	Aug. 1	International Congress Bacteriology and Applied Microbiology, Mycology, and Virology, Montreal, Canada
Jul. 27	to	Aug.	Wildlife Disease Association, Bernalillo, New Mexico, USA

### Student Externship Opportunities

[Clinic for the Rehabilitation of Wildlife \(CROW\), Sanibel, Florida](#)

[International Crane Foundation in Baraboo, Wisconsin](#)

[Oregon Department of Fish and Wildlife](#)

[Tufts Wildlife Clinic, Cummings School of Veterinary Medicine](#)

[Wildlifevets.com](#)

[Southeastern Cooperative Wildlife Disease Study Extern program](#)

Knoxville zoo  
Anne Justice-Allen



*Please submit items for the next newsletter to the editor at [ajjustice-allen@azgfd.gov](mailto:ajjustice-allen@azgfd.gov) by December 15th*