



AMERICAN ASSOCIATION OF WILDLIFE VETERINARIANS

FALL 2008

MESSAGE FROM THE PRESIDENT



Jonathan Sleeman

Time to Go International!

One of the main outcomes of our membership survey conducted several years ago was that “members felt they would be better served by more communication opportunities among members and outside the organization, and more *international* and student membership” (emphasis mine). Consequently, the following objective was included in our strategic plan under the goal of “creating a more powerful organization by connecting members through new and improved avenues of communication.”

- * Promoting international membership in the AAWV by inviting members of overseas wildlife veterinary organizations, particularly in Canada and Mexico, to join the AAWV; this shall include the consideration of incentives for international membership.

As the recent global economic meltdown has illustrated there is no doubt that we live in an increasingly connected world. Globalization can be defined as increasing global connectivity, integration and interdependence in the economic, social, technological, cultural, political, and ecological spheres. While globalization can increase economic prosperity as well as opportunity, especially among developing nations, enhance civil liberties and lead to a more efficient allocation of resources,

...it has become clear from recent epidemiological, political, and economic events that we cannot ignore the new realities of connectedness that govern our planet.

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AAWV NEWSLETTER
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WILDLIFE VETERINARIANS

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

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it can also result in unsustainable harm to the biosphere. Globalization and the associated human activities can create a global environmental situation that favors environmental degradation and disease emergence.

The AAWV has historically focused on national or domestic issues, and appropriately so; however, it has become clear from recent epidemiological, political, and economic events that we cannot ignore the new realities of connectedness that govern our planet. Thus, we must look beyond our borders and connect with our neighbors. In this context it is noteworthy that for the first time in our history we met jointly with the Canadian Association of Zoo and Wildlife Veterinarians (CAZWV) as well as the Wildlife Disease Association in Edmonton, Alberta during August 2008. The CAZWV is a national wildlife health organization that has a very similar mission to the AAWV with a very active and dynamic membership.

A few weeks later I had the privilege of attending the First International Conference on Ecology of Infectious Diseases and Conservation Medicine organized by the Mexican Association for Conservation Medicine (Kaalankab) in Mexico City. This nascent organization, again, has a similar mission to the AAWV, and a very talented and energetic leadership. (See the article on page 4 by Kaalankab President Dr. Gerardo Suzan for more information about the organization and recent conference.)

This confluence of meetings sparked the idea of developing a trilateral memorandum of understanding among these three North American wildlife health non-profit organizations. There is an ever-increasing array of transboundary issues we must face together such that increased linkage, cooperation and collaboration among our three organizations can only be to our mutual benefit. We are also planning to hold a Canadian-Mexican-American trilateral meeting in conjunction with the American Association of Zoo Veterinarians Annual Conference at South Padre Island, Texas in 2010. I believe these are very exciting and timely initiatives and the officers of all three organizations will be working hard over the next year or so to make these ideas happen.

If you are interested in helping, or have any ideas concerning how the AAWV can increase its international profile, please do not hesitate to contact me.

Read on for more AAWV news—As you can see it has been a busy few months!

Best wishes, a bientôt, hasta la vista!

AAWV PARTICIPATES IN THE USAHA CONFERENCE AND THE AAZV/AAWV COMMITTEE ON WILDLIFE HEALTH AND CONSERVATION

Mark Cunningham, AAWV Vice-President

The United States Animal Health Association held its annual conference in Greensboro, NC in October of this year; AAWV President Jonathan Sleeman, Vice-President Mark Cunningham, and Secretary Colin Gillin represented AAWV on the Board of Directors. The USAHA Committee on Wildlife Diseases was well attended and included a presentation by Dr. Mike Miller entitled “CAST [Council on Agricultural Science and Technology] Commentary on Pasteurellosis Transmission Risks Between Domestic and Wild Sheep.” Updates on avian influenza surveillance and research, brucellosis, tuberculosis, and other issues were also presented.

There was a strong wildlife component to many of the committee meetings: in the Committee on Captive Health and Alternative Livestock, Dr. Mike Dunbar presented information on the use of infrared thermography to detect signs of foot-and-mouth-disease in wild and domestic ungulates, and other presentations covered the possible role of crows in dissemination of CWD and a rectal biopsy technique for CWD diagnosis. Committee resolutions of interest to AAWV included a resolution to expedite research on the efficacy of the GnRH immunocontraception vaccine GonaCon® in free-ranging wildlife. Members voted to table this resolution until next year pending the preparation and presentation of more detailed information regarding the product. A complete list of resolutions can be found at <http://www.usaha.org/committees/resolutions/>.

In addition to AAWV participation in USAHA conference activities, the joint Committee on Wildlife Health and Conservation (CWHC) of the AAWV and AAZV met at the 2008 AAZV Conference in Los Angeles, CA, co-chaired by Drs. Scott Larsen and Chris Fiorello. Dr. Sharon Deem presented an update on the preparation of “Guidelines for veterinarians interested in *in situ* conservation and free-ranging wildlife health projects.” This effort brings together practical information

A PANEL DISCUSSION

THE EVOLVING IMPORTANCE OF VETERINARY MEDICINE IN AQUATIC ANIMAL HEALTH MANAGEMENT

In July 2008, the annual meeting of the American Fisheries Society’s Fish Health Section was held at the Atlantic Veterinary College in Prince Edward Island, Canada. Among the many presentations and workshops offered was a panel discussion featuring several active players in the field of aquatic medicine, and concerning the rapidly evolving roles and challenges facing the veterinary profession in the field of aquatic animal health.

A summary of the panel discussion has been made available online at <http://ocs.vre.upei.ca/index.php/FHS/FHS2008/paper/viewFile/324/56>.

Have a look—it’s enlightening to see the problems and opportunities shared by our colleagues on the other side of the air-water interface.

and resources to assist veterinarians beginning work with free-ranging wildlife projects. The Guidelines are still in draft form but will ultimately be available on the AAWV and AAZV websites; a final version also may be submitted for publication in a peer-reviewed journal. Dr. Larsen presented the annual report from the American Veterinary Medical Association’s Committee on Environmental Issues, and suggestions for featuring member and project spotlights on the AAWV and AAZV websites were entertained.

KALAANKAB: THE MEXICAN ASSOCIATION FOR CONSERVATION MEDICINE

*Dr. Gerardo Suzán,
National University of Mexico*

The Mexican Association for Conservation Medicine, KALAANKAB, is a new non-profit non-governmental organization that promotes trans-disciplinary scientific collaboration on disease ecology and conservation medicine. It was founded in May 2008, with the intention of becoming a leading group on conservation medicine in Mexico. Its creation was in response to global environmental crises, including global warming, habitat loss and fragmentation, species diversity loss, habitat degradation and pollution and other environmental issues caused by human-induced change. It is a trans-disciplinary group focusing on the identification of factors favoring the emergence and persistence of infectious and non-infectious diseases that are affecting biodiversity and threatening the ecosystem functions that sustain life on earth.

The central goal of the association is to promote the preservation of biodiversity and ecosystem function through research and education with and for professionals, students and the general public. Toward this goal, Kalaankab organized its First International Conference on Ecology of Infectious Diseases and Conservation Medicine, held in August of 2008 in Mexico City in collaboration with Wildlife Trust and the Continuing Education Department and Department of Ethology and Wildlife of the National University of Mexico (UNAM) School of Veterinary Medicine.

There was a great response from the scientific community to this event, both from within Mexico and internationally. Outstanding international guest lecturers included Dr. A. Alonso Aguirre, Vice President for Conservation Medicine at the Wildlife Trust and Chair of the World Association of Wildlife Veterinarians; Dr. Peter Daszak, Executive Director, Consortium for Conservation Medicine

at Wildlife Trust; and Dr. Jonathan Sleeman, Wildlife Veterinarian for the Virginia Department of Game and Inland Fisheries and President of the American Association of Wildlife Veterinarians. We were also honored with the participation and excellent presentations of renowned Mexican scientists including Dr. Omar Arellano, Dr. Coro Arizmendi, Dr. Dulce Maria Brousset, Dr. Gerardo Ceballos, Dr. Andrés García, Dr. Gary García, Dr. Rodrigo Medellín, Dr. Enrique Martínez-Meyer, Rene Rosiles MSc., Georgina Santos and Dr. Gerardo Suzán from UNAM, Dr. Jorge Ortega and Dra. Ana Lilia Sandoval Sanchez from the Polytechnic National Institute, and Domingo Canales MSc. from the University of Veracruz.

The conference core focused on biodiversity and conservation medicine both in Mexico and the rest of the world, particularly on subjects related to vertebrate ecology and conservation, epidemiological threats to wildlife, diagnostic techniques, computer science in biology, spatial modeling for the study of infectious diseases, conservation genetics, and ecotoxicology. In addition, roundtable sessions were held to bring career-oriented students and professionals together to discuss problems in conservation medicine including brucellosis and tuberculosis in natural protected areas, the pros and cons of wildlife rehabilitation, chitridiomycosis and worldwide amphibian decimation, and other topics. Many thanks to all who contributed and for all you have done to make our meeting a very successful one.

Kalaankab is now planning the scientific agenda for its first International Congress on Veterinary Medicine and Conservation, to be held in Veracruz, Mexico from August 19-21, 2009. For information please visit our website at www.kalaankab.org. We hope you will join us.

▶ The name **KALAANKAB** emerges from the union of two Mayan words: **KALAAAN**, meaning “taking care of” or “medicine” and **KAB**, which means “house” or “world”.

*2008 Tom Thorne and Beth Williams Memorial Award
Recipient Expresses His Gratitude*



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September 29, 2008

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Dear Charles and Jonathan:

I feel that I have been tardy in thanking you, and through you the members of both organizations, for the honour you bestowed by making me a recipient of the Tom Thorne and Beth Williams Memorial Award. I knew Tom and Beth very well over many years and seeing the beautiful sculpture everyday brings back both fond memories and sadness, particularly this week as I get ready for a pathologist's meeting at which in the past I had looked forward to seeing Beth.

I have been extremely fortunate to be able to be where I wanted to be, and to be able to do essentially what I wanted to do during my career. I have been blessed by having the opportunity to interact with students, who are among the brightest of the bright, to work with biologists and ecologists who are a voice of reason in a rapidly changing world, and to have experienced the collegiality and family atmosphere of the Wildlife Disease Association. It seems a bit strange to be awarded for being so lucky!

I have a special fondness for mustelids, as my first job as a wildlife student was working on otter, and my MSc was on ecology of long-tailed weasels, so I thank you again for the honour and for bringing the beautiful ferrets into our home.

Respectfully yours;

A handwritten signature in blue ink that reads "Gary Wobeser".

Gary Wobeser

AAWV PARTICIPATES IN 2008 AAZV CONFERENCE

Kirsten Gilardi, AAWV Immediate Past President

The AAWV and the American Association of Zoo Veterinarians continue to partner on issues and efforts of mutual importance and value to both organizations and their shared membership, as evidenced by the AAWV's strong presence at the AAZV annual conference, held Oct. 11-17, 2008 in Los Angeles, CA:

- The AAWV (represented by Kirsten Gilardi) was invited to attend the AAZV Executive Board meeting on Saturday October 10; among many agenda items were discussion and confirmation of the AAZV and AAWV's interest in acquiring a joint seat on the AVMA House of Delegates Advisory Council, as well as planning for the 2009 joint AAZV/AAWV conference.
- On Monday October 13, the joint AAZV/AAWV Committee on Wildlife Health and Conservation held its annual meeting: Scott Larsen (AAZV chair) and Christine Fiorello (incoming AAZV chair) updated committee members on the year's activities, including the drafting of the Guidelines for Veterinarians in the Field document, which is out for member comment.
- The AAWV held a Members Meeting on Wednesday evening, October 15: Past President Kirsten Gilardi presented President Jonathan Sleeman's Annual Report (delivered at the business meeting in August in Edmonton) to a dozen members. There was good discussion on how we might increase the number of recognized AAWV student chapters, some brainstorming on AAWV sponsorship of wetlabs at the 2009 conference, and great support expressed for the potential for a trilateral Canada-United States-Mexico wildlife veterinarians conference, to be held in conjunction with the 2010 AAZV meeting on South Padre Island, Texas.
- The AAZV provided us with space in the Exhibit Hall where the new AAWV display and informational brochure made their inaugural debuts.

And don't forget to attend the AAZV/AAWV 2009 Joint Conference, October 24-30, 2009 in Tulsa, OK!

2008 NATIONAL WILDLIFE SERVICES ADVISORY COMMITTEE MEETING MINUTES

Steve Schmitt, AAWV representative to the NWSAC

The advisory committee to USDA-APHIS-Wildlife Services (NWSAC) held its inaugural annual meeting in Riverdale, Maryland on August 5-7 2008. The committee is composed of 20 individuals representing a broad array of interests, including ranching and various other agricultural industries; state livestock bureaus; the Navajo Nation; the Humane Society of the United States and other animal welfare organizations; the timber industry; aquaculture; and the aviation industry. The purpose of the committee is to represent a variety of stakeholders in providing advice and input to the USDA on the activities and policies of the Wildlife Services (WS) program. AAWV representative Steve Schmitt attended this meeting and submitted the following minutes:

[Editor's note: the following report is an edited version of the minutes. The full report is available on our website, www.aawv.net]

WS Deputy Administrator Bill Clay called the meeting to order at 8:00 a.m. Five committee members were unable to attend, but a quorum was present. After a series of opening remarks and updates, committee Chair Clait Braun asked the membership to provide issues for discussion as a precursor to developing recommendations for consideration by the Secretary of Agriculture. A total of 38 issues were presented and discussed, and of those, the following 19 Recommendations were voted on:

The National Wildlife Services Advisory Committee recommends

Recommendation 1: that the Secretary of Agriculture confer with the Secretary of the Interior to obtain any proposed plans for revised National Environmental Policy Act (NEPA) documents on the management of double-crested cormorants, the issuance of new depredation orders or extensions of existing orders, the endorsement of international management of double-crested cormorants and Wildlife Services (WS) role in these plans. (Approved)

Recommendation 2: that Highly Pathogenic Avian Influenza (HPAI) H5N1 wild bird surveillance funding remain sufficient to maintain the early detection activities and capabilities of WS and State, Tribal cooperators. (Approved)

Recommendation 3: that WS unique expertise in international capacity building in behalf of the United States Department of Agriculture continue to be considered a critical outreach responsibility of WS. (Approved)

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Recommendation 4: that the Secretary of Agriculture continue to expedite WS investigation, research and field trials of oral rabies vaccines (ORVs) that are currently approved by Canada and/or the European Union. NWSAC further recommends the Secretary assist making these ORV options available in a timely manner to the WS Rabies Management Program to enhance and improve rabies management and emergency response. (Approved)

Recommendation 5: that WS make their expertise available to First Nations, Alaskan and other Native communities for the protection of traditional cultural and subsistence agriculture, livestock and wildlife food resources, including wolf management. (Approved)

Recommendation 6: that the Secretary of Agriculture place in the President's budget funding at current levels to sustain research directed toward methodologies of disease control and population reduction of feral swine. (Approved)

Recommendation 7: that the Secretary of Agriculture seek new Federal funding for additional coordinators for airport safety. (Approved)

Recommendation 8: that the Secretary of Agriculture reaffirm support for sustained funding for research and management efforts to prevent establishment of, reduce, and where possible, to eliminate injurious, vertebrate invasive species that negatively impact wildlife, aquaculture, agriculture, forestry and human health. (Approved)

Recommendation 9: that the Secretary of Agriculture seek new funds to continue and enhance WS research program to develop new tools and methodologies to limit adverse effects of increasing populations of depredating wildlife species on aquaculture, agriculture, forestry and human health. (Approved)

Recommendation 10: that the Secretary of Agriculture seek new funding to support the replacement of 25% of all traps not meeting the BMP standards each of the next four years to expeditiously achieve the goals of the BMP: animal welfare, efficiency, selectivity, practicality, and safety. (Approved)

Recommendation 11: that the Secretary of Agriculture clearly define the missions of the United States Department of Agriculture's WS and Veterinary Services (VS) regarding wildlife, domestic animal, human conflict and disease protocol. NWSAC recommends the Secretary of Agriculture adopt realistic divisions of budgetary line items and eliminate shared budgetary line items for WS and VS. (Defeated)

Recommendation 12: that WS identify new initiatives and continue current initiatives to increase the proportion of women and minorities in Operations, and develop a time line for this effort. (Defeated)

Recommendation 13: that the Secretary of Agriculture request WS to conduct a comprehensive evaluation of the extent to which research results from the National Wildlife Research Center that are implemented by field personnel in both the delivery of technical assistance and direct control services. (Defeated)

Recommendation 14: that State Directors require their field staff to check all traps and trapping devices as frequently as possible, and no less frequently than required by law, with live-capture devices being checked within a 24-hour period whenever practical. (Defeated)

Recommendation 15: that the Secretary of Agriculture direct WS to prioritize goals and operations used to control wildlife depredation of aquaculture, agriculture, forestry and safeguarding public health and safety. NWSAC further recommends the Secretary support future budget initiatives and mandates for WS without redirection of existing resources and vigorously resist any attempts to reduce the agency's budget recommendations or force redirections which do not contain new funding. (Approved)

Recommendation 16: that the Secretary of Agriculture support WS initiative to secure the planning and construction of an approximate 25,000 sq ft BSL 3 laboratory and diagnostics facility at the National Wildlife Research Center. Additional needs after construction include adequate increases in research staff to develop sampling and diagnostic research methods for wildlife disease surveillance that will allow WS to better address disease risks and implement control measures at the wildlife, agriculture and human health interface, and support emergency diagnostic and surge capacity needs. (Approved)

Recommendation 17: that the Secretary of Agriculture requests WS create educational materials regarding impact on wildlife disease and rabies management programs posed by intentional importation and human translocation of wildlife, feral dogs and cats. (Approved)

Recommendation 18: that WS seek new funding from Congress to add new positions within the Agency charged with being a resource on the use of livestock guarding animals as a non-lethal method of livestock protection. (Approved)

Recommendation 19: that the Secretary of Agriculture continue to support the use of approved toxicants for predator control which are used by the WS program. (Approved)

STANDARDS OF CARE FOR ANESTHESIA, ANALGESIA, AND SURGERY ON FREE-RANGING ANIMALS

The AAWV recently developed the following draft position statement concerning standards of care for anesthesia, analgesia, and surgery on free-ranging animals. The statement (below) will be presented at the Association of Fish and Wildlife Agencies' Wildlife Health Committee meeting in March 2009 for discussion and possible endorsement. This position statement will be a prelude to the development of a formal "Standards of Care" document.

As with all our position statements, the AAWV is a non-profit professional organization and has no legal authority, and as such, no agency, institution

or individual will be legally obliged to follow any standards we publish. However, it is important that we, as a profession and organization, publish our best science-based opinion on what we believe are the standards of care for this type of activity. Hopefully, the collective wisdom of the authors, the reputation of the organization, and the quality of the document will convince stakeholders to adopt our standards of care over other documents. Please send any and all comments on this draft position statement to AAWV President Jonathan Sleeman (Jonathan.Sleeman@dgif.virginia.gov).

There are an increasing number of research projects and wildlife management activities that involve anesthesia or surgical manipulation of wild animals. Wildlife managers, researchers, and veterinarians are increasing their participation in projects that involve anesthesia and surgery of free-ranging animals (invertebrates, amphibians, reptiles, fish, birds, and mammals). Many of these projects require that procedures be conducted in the field, usually under conditions that would otherwise be considered inadequate for the same procedures conducted in an animal hospital or laboratory. Institutional Animal Care and Use Committees (IACUC) considering projects involving anesthesia and surgery on free-ranging animals may lack the expertise, experience, or guidance to judge the appropriateness of the procedures being proposed. While some wildlife veterinarians and biologists have training and expertise in anesthesia and understand the risks of medical and surgical techniques used on free-ranging wildlife, we lack specific Standards of Care for anesthesia and surgery performed on free-ranging animals. This hampers the ability of agencies, researchers, and veterinarians to improve the well-being and care of free-ranging animals that are the subject of wildlife management and research projects, and could adversely affect the quality of the research or management effort. Wildlife veterinarians are a potentially untapped resource who can assist in such projects, and provide insight into the medical and surgical techniques used in the field. The following statements present the American Association of Wildlife Veterinarians (AAWV) position on anesthesia, analgesia, and surgery on free-ranging animals.

The American Association of Wildlife Veterinarians recognizes that the lack of specific Standards of Care for anesthesia and surgery on free-ranging animals:

- Could hamper the ability of agencies, researchers and veterinarians to justify the use of appropriate procedures, and obtain the necessary permits and institutional approval.
- Could have serious implications for the well-being of the animals involved.
- Could affect the quality and validity of the data gathered during such procedures.
- Could be construed by the public as agency endorsement of the use of inappropriate procedures.

The American Association of Wildlife Veterinarians supports:

- The development of detailed Standards of Care for the use of anesthesia, analgesia, and surgery in free-ranging animals of all taxa in consultation and with input from relevant stakeholders, wildlife management agencies, and other interested groups.
- The use of the developed Standards of Care by government agencies, non-governmental organizations, universities, and the Institutional Animal Care and Use Committees involved in management or research activities on free-ranging animals.

The American Association of Wildlife Veterinarians urges:

- That wildlife management agencies, wildlife professionals and other stakeholders work with the AAWV to develop, disseminate and adopt the developed Standards of Care for wildlife anesthesia, analgesia, and surgery.

AAWV Supports AVMA Efforts for the Competitive Federal Recruitment and Retention Program for Veterinarians

In 2008 the House of Delegates of the American Veterinary Medical Association (AVMA) passed resolutions in support of increasing the numbers of federal veterinarians and improving pay for individuals serving in federal positions. In response, the AVMA, in cooperation with the National Association of Federal Veterinarians, has begun an advocacy campaign to improve pay and other incentives to recruit and retain federal veterinarians, asking Congress to address

the barriers faced by federal agencies in attracting and retaining veterinarians by improving the total compensation and incentive package.

A broad group of strategic partners, including the AAWV and all other member organizations of the AVMA House of Delegates, were invited to join the following letter to congress. As of October 2008, the AAWV and 35 other groups have formally expressed their support of this effort.

Dear Senator/Representative:

The undersigned organizations urge Congress to act now to help bolster recruitment and retention incentives for veterinarians in service to the federal government. More than 2,900 veterinarians presently serve on the front lines of the nation's food safety, public health, animal health and homeland security efforts. Veterinarians hold essential positions at a number of agencies, including the Departments of Agriculture, Commerce, Defense, Health and Human Services, Homeland Security, Interior, and the Environmental Protection Agency.

Federal veterinarians perform a variety of essential functions and hold a wide range of important jobs in federal agencies ranging from epidemiologists, pathologists, food safety inspectors and public health officials. They help ensure that we have safe and effective drugs for humans and animals, fight diseases that affect both humans and animals, as well as perform cutting-edge research that helps lead to ground-breaking discoveries benefiting both human and animal health.

Congress must take proactive steps now to avert a catastrophe and ameliorate problems created by an inadequate federal compensation and incentive package. There is a projected shortage in public health veterinarians of up to 4 percent per year for the next 10 years. This shortage, when combined with the facts that more than a 100 veterinarians are needed to fill current positions and hundreds of veterinarians are on the cusp of retirement, makes it abundantly clear that federal agencies need to enhance recruitment and retention incentives if they are to fill present and future vacancies.

Competition for new graduates has become increasingly intense with the private sector winning out. Veterinarians have a multitude of choices on where and what kind of veterinary medicine to practice. Student loan debt exceeding \$100,000 often makes private practice the only feasible option for the nation's 2,700 new graduates each year. If federal agencies are to attract new veterinarians they will have to become more financially attractive.

Congress can correct inequities in the compensation packages for federal veterinarians. As a group, their compensation lags behind other similarly trained federal health professionals. **The answer lies in modifying the U.S. Code of Federal Regulations to give veterinarians similar pay categories available to their physician and dentist colleagues.**

CANE TOADS AND CROCS: BIOLOGICAL CONTROL OUT OF CONTROL

From ProMED (edited)

Since 2005, locals in Australia's Northern Territory have witnessed mass die-offs of freshwater crocodiles (*Crocodylus johnstoni*). Researchers now say the toxic and invasive cane toad *Bufo marinus* is to blame.

Cane toads were introduced to Queensland (in northeast Australia) in 1935 to combat the cane beetle, a sugar cane pest, and have been steadily marching westward across the continent since that time. The toads secrete a cardiac and neurotoxin from glands behind their eyes and on their backs, which is lethal to many predators. They are now considered invasive pests in their own right: they have decimated populations of Australian monitor lizards and certain species of snakes.

Surveys in 2005 and 2007 suggested that the crocodile die-offs have progressively moved inland from the mouth of Victoria River at a pace that matches that of the cane toad invasion. Mike Letnic and his team from the University of Sydney say that up to 77% of some populations of freshwater crocodiles, or "freshies," have died since 2005. The numbers are particularly worrying because removing top predators like freshwater crocodiles can boost the number of their prey and trigger a cascade of ecosystem changes that are difficult to predict.

Proving a causal link between cane toads and crocodile deaths is problematic, in part because crocodiles rapidly digest amphibians so traces of frog are rarely found in dead crocodiles. But Letnic says the "wave of death" has moved upstream with the toads, strongly suggesting the toads are the cause of the dropping crocodile numbers. Letnic and his colleagues surveyed crocodiles in 4 regions of the Victoria River in the Northern Territory. They found that crocodile sightings in the Victoria River Gorge region, where the invasion began, dropped from 156 to 49 between 2005 and 2007. The toads moved upriver from the gorge, reaching the Longreach Lagoon region in 2007. There, sightings in 2007 dropped by 15% compared to 2005.

"We expected this. We first heard reports of dead freshies from helicopter pilots flying over rivers in the Gulf of Carpentaria [east of the Victoria River] where cane toad had invaded," said Grahame Webb, director of Wildlife Management International in Darwin, Australia.

Letnic's team is continuing the surveys. They have found that the freshies and cane toads are often seen in close proximity to each other; this is even more likely to be the case in dryer regions such as the semi-arid upper reaches of the Victoria River, where the two species would be forced to share water holes. As such, cane toads could pose an even

greater threat to more native species as they move south into the dry interior of Australia, and the need for water brings them into close proximity with each other.

The toxin appears more lethal to younger crocodiles, suggesting that the reproductive rate of the populations could take a big plunge. Ultimately, the researchers conjecture, the high death rate may select for crocodiles that have a higher tolerance to the toad toxin, and may result in a decreased mortality rate. This has been seen to happen in some blacksnake populations that have also been hit hard by the cane toads.

PLASMODIUM IN GALAPAGOS PENGUINS

Multiple on-line sources (edited)

Scientists have detected the presence of *Plasmodium* sp., the genus of protozoa causing malaria in affect humans, birds, reptiles and rodents, in several Galapagos penguins. The discovery came as part of a long-term study to monitor diseases in Galapagos birds, conducted by researchers from the University of Missouri, the St. Louis Zoo, Galapagos National Park, and the Charles Darwin Foundation. It is not yet known which species of Plasmodium is present in the penguins tested, and in fact may represent a new species. A follow-up research expedition is planned to test a greater number of individuals, identify the parasite, check for its presence in other bird species, and determine the mosquito responsible for its transmission.

Avian malaria is considered a potential threat to Galapagos Penguins, in light of the fact that *Culex quinquefasciatus*, a known mosquito vector of Plasmodium, has been recovered in the Galapagos Islands and because other species of penguin are considered to be highly susceptible to the disease. Researchers do not yet know if this recently detected Plasmodium species is a threat. The birds generally appear healthy, and census studies over the last few years have indicated stable populations of the species. This may suggest that this Plasmodium species does not cause clinical disease or that it may only become pathogenic during periods of stress such as food shortages, outbreaks of other disease, or El Niño years that can result in exploding populations of vector insects.

The Galapagos Penguin *Spheniscus mendiculus* is one of the smallest penguins in the world and the only one found north of the equator. Its current population is estimated to be less than 2000 individuals and it is listed as endangered on the IUCN Red Book of endangered species. Unlike Hawaii and other remote island archipelagos, the Galapagos, about 1,000 kilometers off the coast of Ecuador, retains 95 percent of its original species and all of its birds. "It's about the best record that exists on Earth," said Patty Parker, a professor of

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zoological studies at the University of Missouri, St. Louis, who discovered the parasite in the penguins. According to Dr. Parker, the parasite was probably introduced by human activity. Tourism in the Galapagos Islands has increased from 40,000 visitors in 1990 to 140,000 in 2006. In addition to visitor traffic, the increased activity has drawn immigrants from mainland Ecuador to work in the tourist industry, driving the population to an estimated 30,000 from about 8,000 in 1990. The number of invasive insects arriving on the islands, presumably with the influx of people, has increased “exponentially,” Parker said. Recently introduced control strategies such as fumigation of incoming passenger planes and research supplies headed for uninhabited islands are encouraging to experts, but are not comprehensive. For example, there is no control over private boats, and cargo ships are not treated the same as commercial tour ships.

Researchers are trying to determine which species of mosquito is transmitting the parasite to penguins with a goal to eradication. In Hawaii, the culprit was *Culex quinquefasciatus*, a species of mosquito that arrived in the Galapagos in the mid-1980s. Another possibility is *Ochlerotatus taeniorhynchus*, a mosquito that may be native to the archipelago and can also carry Plasmodium. Eradication of the vector mosquito species may be possible



Galapagos penguin (photo Cokie Lepinski 2008)

with *Culex* because it needs fresh water to breed, a limited resource during the dry season however, *Ochlerotatus* breeds in brackish water, which is found all over the islands, so eradication of this species would be difficult. Additionally, if the mosquito is native, it would be protected, said Dr. Virna Cedeño, director of the Fabricio Valverde Laboratory in the Galapagos. “It may not be as nice as a penguin,” Cedeño said. “But it would be a species to protect nevertheless.”

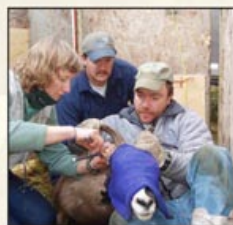
SPREADING THE WORD: A NEW AAWV RETRACTOR DISPLAY

Pictured is the new AAWV tabletop retractor board, to be proudly displayed at wildlife and veterinary meetings around the country and around the world! The display will help disseminate information about, and generate interest in, the AAWV. Many thanks go to Hightech Signs of Charlottesville, Virginia for design and production, and to all the members who kindly shared images to go on the display.

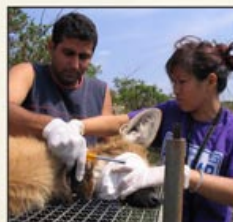


AMERICAN ASSOCIATION OF WILDLIFE VETERINARIANS

Founded in 1979, the AAWV is a professional organization for veterinarians working to promote wildlife and ecosystem health.



www.AAWV.net



PUBLICATIONS OF INTEREST

Editor's note: Pieces appearing in this section of the newsletter are publicly available abstracts or edited synopses of journal publications considered to be of special interest to AAWV members. All synopses have been approved by the authors and/or publishers for use in the AAWV newsletter. For full text, please refer to the cited source material.

DIVERSITY AND DISEASE: COMMUNITY STRUCTURE DRIVES PARASITE TRANSMISSION AND HOST FITNESS

Johnson P. et al. Ecology Letters. 2008. 11:10, pp. 1017-1026

Changes in host diversity and community structure have been linked to disease, but the mechanisms underlying such relationships and their applicability to non-vector-borne disease systems remain conjectural. Here we experimentally investigated how changes in host community structure affected the transmission and pathology of the multi-host parasite *Ribeiroia ondatrae*, which is a widespread cause of amphibian limb deformities. We exposed larval amphibians to parasites in monospecific or heterospecific communities, and varied host number to differentiate between density- and diversity-mediated effects on transmission. In monospecific communities, exposure to *Ribeiroia* significantly increased mortality (15%), malformations (40%) and time-to-metamorphosis in toads. However, the presence of tree frogs significantly reduced infection in toads, leading to fewer malformations and higher survival than observed in monospecific communities, providing evidence of parasite-mediated facilitation. Our results suggest that interspecific variation in parasite resistance can inhibit parasite transmission in multi-species communities, reducing infection and pathology in sensitive hosts.

INCREASED AVIAN DIVERSITY IS ASSOCIATED WITH LOWER INCIDENCE OF HUMAN WEST NILE INFECTION: OBSERVATION OF THE DILUTION EFFECT

*Swaddle JP and Calos SE. PLoS ONE 3(6): e2488. 2008.
(On-line publication)*

Recent infectious disease models illustrate a suite of mechanisms that can result in lower incidence of disease in areas of higher disease host diversity—the ‘dilution effect’. These models are particularly applicable to human zoonoses, which are infectious diseases of wildlife that spill over into human populations. As many recent emerging infectious diseases are zoonoses, the mechanisms that underlie the ‘dilution effect’ are potentially widely applicable and could contribute greatly to our understanding of a suite of diseases. The dilution effect has largely been observed in the context of Lyme disease and the predictions of the underlying models have rarely been examined for other infectious diseases on a broad geographic scale. Here, we explored whether the dilution effect can be observed in the relationship between the incidence of human West Nile virus (WNV) infection and bird (host) diversity in the eastern US. We constructed a novel geospatial contrasts analysis that compares the small differences in avian diversity of neighboring US counties (where one county reported human cases of WNV and the other reported no cases) with associated between-county differences in human disease. We also controlled for confounding factors of climate, regional variation in mosquito vector type, urbanization, and human socioeconomic factors that are all likely to affect human disease incidence. We found there is lower incidence of human WNV in eastern US counties that have greater avian (viral host) diversity. This pattern exists when examining diversity-disease relationships both before WNV reached the US (in 1998) and once the epidemic was underway (in 2002). The robust disease-diversity relationships confirm that the dilution effect can be observed in another emerging infectious disease and illustrate an important ecosystem service provided by biodiversity, further supporting the growing view that protecting biodiversity should be considered in public health and safety plans.

OPPORTUNITIES

2009 ACZM BOARD EXAM

The 2009 ACZM board certification examination is scheduled for September 18–20, 2009 at the University of Tennessee, College of Veterinary Medicine, Knoxville, TN. Download applications from <http://www.aczm.org>. Applicants must submit a completed application to the ACZM Secretary postmarked no later than March 31, 2009. For additional information, contact Dr. Mark L. Drew, ACZM Secretary, Wildlife Health Laboratory, 16569 South 10th Avenue, Caldwell, ID 83607, mdrew@agri.idaho.gov.

AQUAVET I AND II: INTENSIVE TRAINING IN AQUATIC ANIMAL MEDICINE

The 2009 Aquavet Programs, presented by the University of Pennsylvania School of Veterinary Medicine and the Cornell University College of Veterinary Medicine, are scheduled to begin on May 17th at the Marine Biological Laboratory in Wood's Hole, MA. The four-week Aquavet I course, *Introduction to Aquatic Veterinary Medicine*, is a comprehensive educational experience incorporating many topics relating to aquatic organisms, their environment, and the application of traditional veterinary disciplines to aquatic animals. Faculty members are enlisted from a variety of backgrounds and fields of interest, and a broad range of learning situations are used. In addition to lectures, laboratories, student seminars and discussions, there are field trips, practicums and films.

Aquavet II is a natural extension of the basic course. While similar in organization to the introductory course, the focus of Aquavet II is narrower, allowing a more detailed look at specific areas of aquatic animal medicine for students and veterinarians interested in continuing in the field. Aquavet II is presented as a two-week course on the pathology and histopathology of selected aquatic invertebrate and vertebrate species of importance as biomedical research models. The courses are expected to continue evolving in response to the need for focused educational opportunities in aquatic animal medicine, and may include such topics as mariculture, histopathology of marine and fresh water fish, tumor biology of aquatic animals, and husbandry and diseases of ornamental fish. Completion of the Aquavet I course or adequate equivalent preparatory work is a prerequisite for admission to Aquavet II.

More information can be found at www.aquavet.info

EKO TRACKS: A VETERINARY STUDENT OPPORTUNITY IN SOUTH AFRICA

Eko Tracks offers a special-interest course designed for veterinary medical students, where you will meet and interact first-hand with South African wildlife veterinarians. Learn about the crucial role of veterinarians in the growing wildlife industry by participating in game capture operations, field work, and lab work. This course focuses on wildlife veterinary science, wildlife diseases and medicine, capture and care of wild animals, breeding of rare species, wildlife rehabilitation, and ecosystems and biodiversity conservation.

The program includes visits to various wildlife rehabilitation centers, local community veterinary services, and South Africa's Onderstepoort Veterinary School. In addition, students will have ample opportunity to learn practical bush skills and tracking skills, hands-on game capture techniques, and a chance to study wildlife behavior in its natural environment. Much of the field work will take place in the spectacular Drakensberg Escarpment and in Kruger National Park.

For more information go to www.ekotracks.com.

**DON'T FORGET TO
PAY
YOUR 2009 DUES!**

Watch for renewal notices in the mail which contain information about payment options.

**YOUR MEMBERSHIP KEEPS
AAWV VITAL AND
STRONG!**

UPCOMING MEETINGS



January 17-21

North American Veterinary Conference.
Orlando, Florida.
For more info, www.tnavc.org/mynavc/.

February 13-16

International Meeting on Emerging Diseases and Surveillance.
Vienna, Austria.
Go to <http://imed.isid.org> for more info.

May 2-6

40th Annual Conference of the International Association of Aquatic Animal Medicine.
San Antonio, Texas. Click [here](#) for more info.

July 11-14

146th Annual Conference of the American Veterinary Medical Association.
Seattle, WA.
See <http://avmaconvention.org/> for more info.

July 11-16

23rd Annual Meeting of the Society for Conservation Biology.
Beijing, China.
Click [here](#) for more information.

July 22-24

Third International Chronic Wasting Disease Symposium.
Park City, Utah.
For more info contact Mary Conner, Utah State University, at mary.conner@usu.edu.

August 2-6

WDA Annual Conference.
Blaine, WA.
More info: www.wildlivedisease.org/meetings.htm

September 20-24

The Wildlife Society 16th Annual Conference.
Monterey, CA.
Click [here](#) for more info.

October 7-14

United States Animal Health Association Annual Meeting.
San Diego, CA.
For more info, www.usaha.org/meetings.

October 24-30

AAWV/AAZV Joint Conference.
Tulsa, OK.
For more info, www.aawv.net.