



# ***SUPPLEMENT TO THE JOURNAL OF WILDLIFE DISEASES***

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***NEW ADDRESS!! Visit the WDA website at: <http://www.wildlifedisease.org>***

## **President's Corner.**

Although the stunning view of the Grand Tetons and Jackson Lake on this sunny morning is distracting me from my task, I have quite a lot to report on this last day of the 49<sup>th</sup> annual WDA conference in the Grand Teton National Park, Wyoming. First and foremost, the meeting has been an outstanding success, and Terry Kreeger, Walt Cook, Becky and Jessica Russell deserve much kudos for putting together an excellent scientific program at such a beautiful and exciting venue.

Despite the great weather and all the outdoor attractions, the Association accomplished quite a lot at this year's editorial board, council and annual business meetings. For example, Council decided to make a few changes to our web page (if you haven't already browsed our web site, check it out!). Members and others will soon be able to access and search the table of contents from the current issue of the Journal of Wildlife Diseases (JWD); and in the future, all issues will be available. In addition, a password protection feature will be added that will allow access for WDA members only. This password-protected site will include the full text of the Supplement to JWD and the titles and abstracts of our annual meetings. Taking advantage of this new feature, Council also created a new membership category -Associate Member -with annual dues equivalent to 1/3 that of a Regular Member; an Associate Member will be able to access the password-protected web page, but will not receive JWD.

With considerable input from the membership via a web page ballot, the WDA Council also voted to adopt a new logo for our Association. The new logo contains many of the visual themes of our old logo, but in a modernized context, and will be phased in over the next year. In addition, the Editorial Board decided to update the cover of JWD, so look for that next year as well, in conjunction with the new logo. Another issue Council addressed this year was how to reduce our extensive collection of back issues of JWD, and thus reduce our storage costs. WDA members can purchase pre-1999 issues at \$5/issue until September 1 of this year (for more details, read on in the Supplement). After that, the remaining back issues (except for a small reserve stock) will be donated to libraries in developing countries. With our increasing student participation in annual conferences, committees, etc., Council also proposed a change to our Constitution to add a student member of WDA to Council, selected in a general election, like all other council members, for a 2-year term; this recommendation will be brought up for membership vote on the next ballot. Those are just a few of the highlights of our meetings, and it is generally believed that these actions – the new membership category, expanded web page, new logo and journal cover design, and increased student involvement – will further promote our Association and attract new members.

Unfortunately, the high exchange rates for US dollars in many parts of the world preclude membership in scientific associations like the WDA for a lot of talented scientists. However, the good news is the Field Veterinary Program of the Wildlife Conservation Society (WCS) recently received a grant from the

The Wildlife Disease Association does not regard the Supplement to the Journal of Wildlife Diseases (Wildlife Diseases Newsletter) as a citable publication and, therefore, it should not be referenced in the scientific literature.

New York Community Trust to assist and promote career development of wildlife health professionals in developing countries. I am very pleased to announce that the WCS has decided to set aside part of these funds to support about 100 memberships in the WDA each year for 3 years (new members only and 100 different members each year). This very generous action not only provides our Association with new members and potentially new long-term members, it may also have a very lasting impact on the careers of individual scientists and the wildlife health profession in general in countries that encompass a lot of the world's natural resources. On behalf of the WDA, I would like to thank and commend all those involved at WCS for their efforts in this regard. I would also like to challenge all WDA members - as I am certainly feeling very challenged by this action - to think similarly about ways that we can promote both our profession and our Association. One suggestion is for WDA members to "adopt a member" and sponsor membership for an individual or colleague that can't afford our annual dues. In the future, renewal notices for WDA membership will include a check-off box, whereby members can choose to submit additional annual dues to sponsor another member. Details of this program will be worked out over the next few months.

In closing, I just want to remind everyone of our next meetings in South Africa, July 22-27, 2001 and at Humboldt State University, Arcata, California, July 28 -August 2, 2002; both will be excellent venues for our Association. Also, I personally want to thank all WDA officers, council, and committee members, JWD and supplement editors, and assistant editors, conference organizers, and other volunteers for their good work this year. The WDA greatly benefits from your unflinching dedication and commitment. As we approach our 50<sup>th</sup> year of existence as an Association, I am very encouraged and optimistic about the future of the WDA in the next 50 years. *Tonie Rocke, WDA President.*

## WDA ACTIVITIES

**2000 WDA Conference.** The 49<sup>th</sup> Annual Conference of the WDA was held from June 4-8, 2000 at the Jackson Lake Lodge in Grand Teton National Park, Wyoming, USA. Over 200 individuals registered for the meeting. The Jackson Lake Lodge is a spectacular resort overlooking Jackson Lake and the Teton Mountain Range located in the middle of Jackson Hole. The resort is just south of America's premier national park, Yellowstone (which proved to be a strong diversion for many conference attendees!). The Wyoming Game and Fish Department sponsored the meeting, and our local hosts could usually be found in full western attire. In fact, Conference presenters were threatened at gunpoint if presentations ran over the 15 minutes allotted. Needless to say, the meeting stayed on schedule!! Tom Thorne, long-time WDA member and Wyoming's first wildlife veterinarian, insisted he was responsible only for the weather, which remained beautiful throughout the entire meeting.

The American Association of Wildlife Veterinarians and the WDA co-sponsored Dr. Roy Bengis from Kruger National Park in South Africa to give the AAWV's "Cutting Edge" talk. Dr. Bengis' presentation, "Bovine tuberculosis in the Kruger National Park," provided an excellent lead-in to a symposium on bovine tuberculosis. Later in the week, Dr. Bengis mesmerized the audience again with an excellent presentation on anthrax in Africa.

The western flavor, which carried throughout the meeting, continued at the picnic, where attendees dined on buffalo roast and pan-fried trout. That evening's annual auction was the usual success, bringing in over \$6000. No events were scheduled Tuesday evening, so conference attendees took advantage of local attractions, both natural and man-made. It is reported that a good number rode "saddles" (stools. . .) at Jackson's famed Cowboy Bar.

The banquet and awards ceremony was held on Wednesday evening. Dr. Dave Jessup, California Fish and Game, received the Distinguished Service Award in recognition of his many years of involvement with wildlife and wildlife issues, students, and the Wildlife Disease Association. Our Student Activities Committee Chairman, Dr. Ellis Greiner, was the highly deserving winner of the Duck Award for cutting our Student Recognition Research Award winner's presentation from the scheduled 20 minutes to 15 minutes! Luckily, Catherine Soos took it very graciously!

## WDA Student Activities

WDA Student Activities Committee consisted of Ellis Greiner, (Chair), Thierry Work, Cindy Driscoll, and Ted Leighton. This year, there were four applications for the Student Research Recognition Award, and the winner was Dr. Catherine Soos of the University of Saskatchewan. The title of her presentation was "Investigation of Franklin's gull (*Larus pipixcan*) mortality in relation to the initiation of avian botulism among waterfowl at Eyebrow Lake, Saskatchewan". Catherine received a plaque and monies to cover travel, housing, and registration to attend the Conference in Jackson.

This year was the 4<sup>th</sup> year for the WDA Scholarship, and there were seven applicants for the award. Dr. Mark Cunningham of the University of Florida was this year's recipient. His project was entitled

“Genetic and biomedical assessment of the black bear population in Florida”. Mark, who is enrolled in a masters program, was awarded a \$2,000 (US) scholarship and a plaque at the banquet. Of the seven applicants, five were enrolled in Ph.D. programs and two in M.S. programs. Three applicants had completed Masters degrees and four possessed their DVMs.

There were 8 entries for the Terry Amundson Student Presentation Award, and the winner was Dr. Lauren Richey of the University of Florida. Lauren received a plaque and \$250.00 at the banquet. Her talk was entitled “Host susceptibility to experimental Mycoplasma infection in hatchling American alligators (*Alligator Mississippiensis*) exposed to endocrine disrupting contaminants.” Additionally, Damien Joly, Felicia Nutter, and Christina Sigurdson received Honorable Mention plaques.

The Wildlife Disease Association offers a scholarship and two awards to encourage student participation in the Association and our annual conference, and to recognize outstanding student research. Students are defined as undergraduate or graduate students in the basic or veterinary sciences, and veterinary interns or residents. Potential recipients must be members of the Wildlife Disease Association or must apply for membership at the time of application for the award. Student supervisors are encouraged to bring these awards to the attention of their students well in advance of deadlines.

*Editor's Note: The following guidelines were for this year's competition and are listed for reference only. Next year's guidelines may change somewhat.*

- 1) **Wildlife Disease Association Scholarship.** This scholarship acknowledges outstanding academic and research accomplishment, commitment, and potential in pursuit of new knowledge in wildlife disease (or “health”). The scholarship has a value of \$2,000 US and is awarded annually to an outstanding student who is pursuing a master's or doctoral degree specializing in research on wildlife disease.

To be considered, the candidate should:

- Possess an undergraduate degree that is equivalent to a four-year baccalaureate degree. Applicants with first-class standing (i.e., grade point average above 3.5 in 4.0 system, 80% in percentage system, with B+ or better) will receive priority;
- Be committed to leadership, scholarship, and service in the wildlife disease profession.

Applicants should submit:

- One copy of all relevant transcripts. Transcripts can be official (i.e. with the imprint of the official seal of the institution and the signature of the responsible university officer) or copies signed by the student's faculty advisor;
- Up to three letters of support, including a letter from the student's faculty advisor, that address the following specific abilities of the applicant: academic achievement, scholarly promise, research ability, verbal and writing skills, industriousness, leadership abilities, judgement and potential for contributions to the field of wildlife disease;
- Evidence of superior scholastic achievement (course work, scholarships);
- Evidence of potential or achievement in research (publications, publication awards, invitations to present);
- Other evidence of distinction OR commendation (letters, accomplishments).

- 2) **Student Research Recognition Award.** This award is given to the student judged to have the best research project in the field of wildlife disease, based on written communication and scientific achievement. This year, since the conference is in South Africa, the winner will receive a plaque and up to \$2,000 US to cover travel, housing, registration, etc. related to the annual conference, where his or her work will be presented.

Applicants should submit a summary (6–10 pages, double-spaced, 12 font) of their project, which must include an abstract (maximum 200 words), rationale for the study, objectives and hypotheses, experimental design, methods, results, and conclusions. Also required is a short statement indicating how the research relates to WDA objectives (see inside back cover of the Journal of Wildlife Diseases) and a letter of support from the faculty advisor indicating the degree of student involvement in the planning and execution of the research project.

These awards are non-renewable and can be received only once by a given candidate. The deadline for Awards for 2001 has not been determined yet. Questions should be directed to: Dr. Thierry Work at the address listed below.

- 3) **Terry Amundson Student Presentation Award.** This award recognizes the best student paper presented at the Annual Conference. The award is based on the scientific content of the research and the quality of the presentation. The winner receives a plaque and \$250. In addition, up to three students receive Honorable Mention, which includes a plaque and a smaller monetary award. Students wishing to be considered for the award in 2001 should plan now to attend the meeting in South Africa and present a paper. Watch for the Call for Abstracts, which will be out later in the year.

For more information regarding any of these awards or other student information, please contact Dr. Thierry Work, USGS-Biological Resources Division, National Wildlife Health Center, P.O. Box 50167, Honolulu, HI 96850 USA. Telephone: (808) 541-3445; FAX: (808) 541-3472. Email: Thierry.Work@usgs.gov

## Past Journal Issues to be Purged!

Due to cost of storing past issues of the Journal of Wildlife Diseases, most of the past issues will be purged this fall. A reduced cost (\$5.00 per issue) is being offered to members for a short period of time. If you are interested in obtaining past issues, contact Tracy Jones at Allen Press for a list of available issues. The deadline for orders is September 1, 2000. Email: [tjones@allenpress.com](mailto:tjones@allenpress.com). Telephone: (785) 843-1235 or (800) 627-0629. FAX: (785) 843-1274.

## HAPPENINGS IN THE FIELD

**Calicivirus Hits Iowa Rabbitry.** Rabbit calicivirus disease (RCD), also known as viral hemorrhagic disease of rabbits, was recognized for the first time in the United States in early March 2000 when this highly contagious disease killed 25 of 27 domestic rabbits at a farm in rural Iowa. The remaining two rabbits were quarantined, but RCD has not been detected elsewhere in the United States. Rabbit owners and veterinarians throughout the country have been encouraged to report all incidents of excess acute mortality of unknown cause to animal health authorities.

Rabbit calicivirus affects only the European rabbit, *Oryctolagus cuniculus*, the species to which all pet and commercial rabbits in the United States belong. Rabbits native to North America, such as cottontails (*Sylvilagus* sp.) and jackrabbits (*Lepus* sp.), are not considered susceptible to the virus, nor is the virus pathogenic to human beings or other mammals. European rabbits with RCD die with hemorrhagic and necrotic lesions in the liver, intestine, and lymphoid tissues within 6–24 hours of the onset of fever.

Rabbit calicivirus was first recognized as a cause of rabbit mortality in 1984 in the People's Republic of China. Since 1984, RCD has been diagnosed in several countries in Asia and Europe. RCD made its first appearance in the Western Hemisphere in Mexico City in 1988; it was subsequently eradicated from Mexico. RCD also has occurred in New Zealand and Australia, where it spread rapidly through free-ranging European rabbits.

The source of the virus in the Iowa rabbitry remains unknown. There had been no new rabbits brought onto the farm for two years, and rabbits had not been taken off-site and returned since August of 1999. Results of test conducted on samples from the Iowa rabbits indicated that the virus was most similar to the viral subtypes isolated from rabbits in Europe, and it was unlike rabbit caliciviruses found in Australia and New Zealand. The Iowa Department of Agriculture and Land Stewardship and the U.S. Department of Agriculture are continuing their investigations into this outbreak. For more information, check the USDA website: [www.aphis.usda.gov](http://www.aphis.usda.gov) under "Animal Emergency Information" and "Hot Issues." *John Fischer. Extracted from SCWDS Briefs 16(1):3–4; April 2000.*

**Painful Fish.** A recent publication by the Australian and New Zealand Council for the Care of Animals in Research and Teaching (ANCCART) News Vol. 12 No. 4 discusses the perception of pain by fish. The paper is a review of a variety of studies. The results of these studies can be summarized as:

1. Fish require a functional telencephalon to learn to avoid pain stimuli (i.e. this part of the brain registers pain);
2. Certain studied species of fish possess neurotransmitters in the met-enkephalin in similar ratio to mammalian dorsal horn cells. Although this has not been proved to be associated with transmitting a nociceptive signal their presence is suggestive of such a role.
3. Fish show many physical responses to noxious stimuli, which involve conscious perception and learned experience. These responses were blocked, in different experiments, by the use of an anterograde memory blocker and by the pre-treatment with morphine.

This paper also mentions that the effects of morphine in goldfish can be reversed with the use of naloxone. This paper concludes "The appropriate question appears not to be *do fish feel pain?* but rather, *what types of pain do fish experience?*" (their italics). If you require a copy of this article or want further information regarding ANZCCART please visit <http://www.adelaide.edu.au/ANZCCART/>. *Rupert Baker, Healesville Sanctuary. Extracted from the WDA Australasian Section Newsletter, March 2000.*

**MCF Plot Thickens.** Researchers with USDA-ARS, Washington State University, and North Dakota State University authored an article in the April 2000 issue of the *Journal of Clinical Microbiology* (Vol. 38(4):1313–1318) reporting that a newly recognized herpesvirus was the cause of malignant catarrhal fever (MCF) in white-tailed deer in a small zoo in the northcentral United States. Five of six whitetails housed at the zoo died during January and February of 1999. Clinical signs and histologic lesions were

compatible with MCF, which has been diagnosed previously among captive white-tailed deer on several occasions. Sophisticated laboratory procedures confirmed that the deer were infected with a newly recognized herpesvirus belonging to the MCF group of gammaherpesviruses.

Wildebeest and sheep are reservoir hosts for the two previously known pathogenic gammaherpesviruses that cause MCF. The wildebeest and sheep viruses are designated alcephaline herpesvirus 1 (AHV-1) and ovine herpesvirus 2 (OHV-2), respectively. These viruses usually cause asymptomatic infections in the reservoir hosts; however, they may cause serious disease in other species of domestic and wild ruminants, including at least 13 species of deer. The zoo where the whitetails died housed about 200 animals including mule deer, Reeve's muntjac deer, white-lipped deer, white-tailed deer, pygmy goats, an unspecified species of antelope, and several species of nonruminant animals. The reservoir for the virus that killed the whitetails was not determined.

The authors point out that there is mounting evidence that strains of MCF viruses vary in virulence, but at least some of these viruses, including AHV-1, OHV-2, and the strain that killed deer in this outbreak, can be highly pathogenic. Furthermore, the authors note that at least four other gammaherpesviruses currently considered to be MCF viruses are known to infect exotic ruminants (hartebeest, topi, roan antelope) and domestic goats, but currently these viruses have not been associated with any clinical illness. Finally, they note that it is unknown whether or not the virus involved in this outbreak is pathogenic for cattle, bison, or other ruminants.

This event illustrates two important points relative to health issues that should be considered when wild animals are maintained in captivity or translocated. These are: (1) mixing of reservoir and susceptible species is a prescription for epizootics among susceptible hosts, and (2) the existence of unknown pathogens, such as the MCF virus that killed the deer in this case, confounds assessment of health risks during animal relocation. *Randy Davidson. Extracted from SCWDS Briefs 16(1):3-4; April 2000.*

**The Canadian Cooperative Wildlife Health Centre Website!** The Canadian Cooperative Wildlife Health Centre recently established a **website:** <http://wildlife.usask.ca>

This site has English and French sections and will be expanded to include a small section in Spanish in the next few months. The site provides basic information about the organization, the CCWHC Newsletter (English and French) and a variety of other information. There also is a section called Wildlife Health Topics, which provides information on a variety of topics related to wildlife health and disease in Canada. A section on the year 2000 surveillance program for West Nile virus in wild birds will be added as soon as that program is fully underway.

## DIAGNOSTIC RIDDLE

### What is your diagnosis?

An adult Virginia opossum (*Didelphis virginiana*) was presented to the Southeastern Cooperative Wildlife Disease Study as part of a control group for an ongoing study. Upon gross examination, the above abnormality of the right forelimb was discovered. The animal was in good physical condition and no other abnormalities were noted. What is your diagnosis?



FIGURE 1. Photograph of the forefeet of a Virginia opossum (*Didelphis virginiana*).

## NATIONAL WILDLIFE HEALTH CENTER'S QUARTERLY MORTALITY REPORT

During rush hour on March 30, 2000 in Bowie, Maryland, traffic was snarled and motorists startled along Route 50 when 200–250 starlings “rained” down on traffic. Carcasses examined at the National Wildlife Health Center and the Maryland Department of Agriculture had extensive traumatic lesions and have tested negative for a variety of toxins. An airport is nearby and it is possible the birds were caught in a down draft. Of interest, when the event was reported to authorities, several motorists misidentified the birds as “chickens.”

Over the past year, at least seven Stellar's jays with swollen feet have been observed on the campus of Humboldt State University in Humboldt, California. Mite fragments were observed microscopically in sections of foot lesions of the one bird was submitted to NWHC. This podoknemidokoptiasis was most likely due to the scaly-leg mite.

In March, several diagnostic laboratories and private citizens in the states of Illinois, Georgia, Michigan, New York, North Carolina, Vermont, Virginia, and West Virginia reported epizootics of salmonellosis in songbirds at bird feeders. Pine siskins and redpolls were the primary species affected. Salmonellosis was diagnosed in birds submitted to NWHC, Southeastern Cooperative Wildlife Disease Study, Rose Lake Wildlife Research Center in Michigan, and New York Dept of Conservation Wildlife Pathology Unit. Serotyping is in progress on isolates obtained at NWHC; however, the Rose Lake Center has previously confirmed *S. typhimurium*. Salmonellosis is a common cause of songbird mortality in the US and generally occurs as small, localized sporadic events. The last large-scale distribution of mortality occurred in the winter of 1998, when salmonellosis was confirmed in goldfinches, redpolls, and pine siskins in 16 states located primarily in the eastern and Midwestern United States.

Avian cholera was confirmed in double-crested cormorants in February on a nesting island in the Salton Sea, California. This disease was last reported in cormorants in 1979 (Montgomery et al. 1979). The epornitic of avian cholera on the Chesapeake Bay. *Avian Diseases* 23: 966–978).

The USGS Alaska Biological Science Center has reported observations of grossly deformed bills in a minimum of 194 birds of 12 species. The greatest number of affected birds are black-capped chickadees. The earliest report was in 1991 but the majority of the reports have been during the past two winters. The etiology of these deformities remains unknown and tests for common contaminants have been inconclusive. Currently, the Center is examining DNA of deformed chickadees to detect any links between birds. More information is available at <http://www.absc.usgs.gov/research/bpif/requests.html>.

In November 1999, hundreds of Northern leopard frogs were found dead and dying in a creek near Butte, North Dakota. The sick frogs were lethargic and had skin ulcers. The mortality was confirmed to be due to a newly described and highly lethal chytrid fungus (*Batrachochytrium dendrobatidis*). This epizootic marked the first known case of chytridiomycosis to occur in frogs in North Dakota or adjacent states or provinces. Major population declines in amphibians in other locations are thought to be due to infections of this fungus.

### QUARTERLY WILDLIFE MORTALITY REPORT

January 2000 to March 2000

State	Location	Dates	Species	Mortality	Diagnosis	Reported by
AK	Anchorage area	11/01/99–ongoing	Black-capped Chickadee Black-billed Magpie Downy Woodpecker Steller's Jay Red-breasted Nuthatch	229*	Bill deformities: etiology unknown	AK
CA	Alameda Co., Hayward Regional Shoreline	12/03/99–01/18/00	Ruddy Duck American Wigeon Northern Shoveler American Coot Gadwall	585	Avian cholera	CA
CA	Klamath Basin NWR Tule Lake NWR	03/02/00–05/01/00	Ross' Goose Tundra Swan White-fronted Goose Snow Goose American Coot	643	Avian cholera Aspergillosis	NW

**QUARTERLY WILDLIFE MORTALITY REPORT**

January 2000 to March 2000

Continued

State	Location	Dates	Species	Mortality	Diagnosis	Reported by
CA	Riverside Co., Lake Elsinore	03/06/00–04/30/00	Western Grebe Clark's Grebe	200(e)	Open	NW
CA	Sacramento Co.; Twitchell Island	12/31/99–01/05/00	Unidentified Waterfowl Canada Goose (Aleutian)	109	Avian cholera suspect	CA
CA	Sonny Bono Salton Sea NWR	02/01/00–03/31/00	Double-crested Cormorant	23	Avian cholera	NW
FL	Citrus Co., Floral City	01/21/00–02/17/00	Northern Cardinal	7	Salmonellosis	NW
FL	SW FL to Marco	12/01/99–03/05/00	Manatee	5	Red Tide suspect	FL
GA	Clayton Co., Rex	02/16/00–02/16/00	Common Grackle	29	Toxicosis: diazinon	SC
GA	Decatur	01/12/00–01/12/00	Brown-headed Cowbird	100(e)	Salmonellosis	SC
GA	Decatur	01/10/00–01/11/00	Red-winged Blackbird	100(e)	Open	SC
GA	Houston Co., Perry	10/14/99–01/14/00	Northern Cardinal	5	Salmonellosis	SC
GA	Liberty Co., Midway	01/18/00–01/18/00	Boat-tailed Grackle	30(e)	Toxicosis: diazinon	SC
GA	Sardis Park, Gainesville	01/14/00–01/14/00	American Crow	4	Toxicosis: Famphur	SC
IL	Lee Co., Franklin Grove	02/29/00–03/15/00	American Goldfinch	12	Salmonellosis	NW
IL	Chicago	01/01/00–03/01/00	Mute Swan	13	Open	IL
KS	Reno Co., Hutchinson	02/15/00–02/18/00	European Starling Red-winged Blackbird	300(e)	Open	NW
MD	Blackwater NWR, Cambridge	02/29/00–02/29/00	Canada Goose Tundra Swan Snow Goose American Coot	14	Toxicosis: suspect lead poisoning	MF
MD	Northern Chesapeake Bay	01/20/00–03/01/00	Ruddy Duck Canvasback Unidentified Scaup	300(e)	Emaciation, Starvation suspect	MD, NW
MD	Anne Arundel Co., Route 50	03/30/00–03/30/00	European Starling	250(e)	Trauma	MD, NW
MS	St. Catherine Creek NWR	01/15/00–02/15/00	Mallard Wood Duck Killdeer Great Egret	200(e)	Avian Cholera suspect	NW
NC	Northampton Co.	02/15/00–03/03/00	Tundra Swan	30(e)	Open	NW
NE	Lake Helen, Gothenburg	01/31/00–01/31/00	Canada Goose	35(e)	Open	NW
NE	Rainwater Basin NWR	03/04/00–03/22/00	Snow Goose White-fronted Goose Ross' Goose Northern Pintail Redhead	1,974	Avian cholera suspect	FW
NY	Wayne Co.	02/02/00–02/02/00	Turkey	9	Toxicosis: zinc phosphide	NY
PA	Allegheny Co. Monroeville	01/30/00–01/31/00	Mallard	11	Open, suspect Toxicosis	NW
SC	Anderson Co.	01/05/00–01/05/00	Common Grackle	50(e)	Toxicosis: diazinon	SC
TN	Macon Co.	01/15/00–01/15/00	Black Vulture Opossum Dog	6	Toxicosis: carbofuran	SC
TX	Brazoria NWR	01/06/00–01/29/00	Snow Goose Sandhill Crane	13	Open	NW
TX	Laguna Atascosa Lake	01/10/00–02/10/00	Snow Goose Green-winged Teal American Avocet Sandhill Crane	200(e)	Open	NW

## QUARTERLY WILDLIFE MORTALITY REPORT

January 2000 to March 2000

Continued

State	Location	Dates	Species	Mortality	Diagnosis	Reported by
TX	Laguna Madre	02/09/00–02/09/00	Redhead Duck	4	Trauma suspect	NW
TX	Waller	01/09/00–01/31/00	Wood Duck American Coot Mottled Duck Green-winged Teal Gadwall	291	Avian cholera	NW
VA	Amherst Co., Buena Vista	03/15/00–03/21/00	Pine Siskin	11	Salmonellosis	NW
WA	Boundary Lake	01/03/00–02/18/00	Trumpeter Swan	100(e)	Lead poisoning	NW
WV	Fairmont	05/25/99–06/08/99	Cedar Waxwing American Robin	70(e)	Toxicosis: chlorpyrifos	SC
WV	Randolf Co., Monteverlie	10/05/99–10/06/99	Swainson's Thrush Black-throated Blue Warbler Gray Catbird Cape May Warbler	40	Trauma	PA, SC
<i>UpDates:</i>						
AR	Lakes Ouachita & Greeson	10/04/99–03/01/00	Bald Eagle	5	Avian Vacuolar Myelinopathy	NW
SC	Strom Thrumon Lake	12/03/99–03/01/00	Bald Eagle	2	Avian Vacuolar Myelinopathy	SC
GA	Lake Juliette	10/25/99–01/01/00	American Coot	25(e)	Avian Vacuolar Myelinopathy	SC
NC	Woodlake	10/15/99–02/15/00	American Coot	50(e)	Avian Vacuolar Myelinopathy	NW
CA	Imperial Co.; Sonny Bono Salton Sea NWR	12/09/99–04/30/00	Ruddy Duck Northern Shoveler Ring Billed Gull	6344	Avian cholera	NW
CA	Imperial Co.; Sonny Bono Salton Sea NWR	12/16/99–04/30/00	Eared Grebe	2000(e)	Open	NW
CA	Sacramento Complex	10/01/99–02/07/00	American Wigeon Ross' Goose American Coot Northern Pintail Snow Goose	5,255	Avian cholera	NW
CA	Stanislaus Co.; San Joaquin River NWR	10/01/99–02/10/00	Canada (Aleutian) Goose Snow Goose Ross' Goose Canada (Cackling) Goose	500(e)	Avian cholera Tracheal obstruction	NW
FL	Hillsborough Co., Egmont Key NWR	08/31/99–08/31/99	Ruddy Turnstone Pied-billed Grebe	3	Botulism type C	NW
ND	McLean Co.	11/08/99–11/12/99	Leopard Frog	500(e)	Fungal Infection Chytridiomycosis	NW
NM	Socorro Co.; Bosque del Apache NWR	11/01/99–02/18/00	Snow Goose Ross's Goose	2,795(e)	Avian cholera	NW
NY	NY City area	08/11/99–11/18/99	American Crow	5000(e)	Viral Infection: West Nile	NW, CDC, NY, NJ, CT
CT	Southwest		Fish Crow			
NJ	Statewide					
TX	Colorado, Frio, Matagorda, Waller Co's	11/25/99–02/01/00	Snow Goose White-fronted Goose	3189	Avian cholera	NW

e = estimate

\* Deformities only, no mortality

Alaska Biological Science Center (AK); California Dept. of Fish & Game-Wildlife Invest. Lab (CA); Florida Marine Research Institute (FL); U.S. Fish and Wildlife Service (FW); Illinois Dept. of Nat. Res. (IL); Maryland Department of



FIGURE 2. Radiograph of the forefeet of a Virginia opossum (*Didelphus virginiana*) (Left fore-foot on left side of radiograph).

## DIAGNOSTIC RIDDLE—ANSWER:

*Answer: Congenital unilateral hypoplasia of digits II and III.*

*Comment:* Radiographic examination of the affected limb confirmed the gross diagnosis. Hypoplasia of metacarpal bones as well as the proximal, middle and distal phalanges was observed in digits II and III. The claws of the digits were of normal size. Closer examination revealed post-mortem fractures of metacarpals II and III and degenerative joint disease of the proximal interphalangeal joint of digit III of the unaffected limb. The closure of the physes of the distal limb, which is normally delayed in *D. virginiana*, reflected the animal's maturity. It was not possible to accurately evaluate the residual function of the affected digits.

*D. virginiana* is regarded as exceptionally omnivorous with a relatively slow gait and climbing movements, thus it is not surprising that this animal survived to maturity with loss or impaired function of two digits. In addition, *D. virginiana* is reported to seek refuge in holes and rocks in lieu of climbing as its primary means of escape.

Congenital disease of free-ranging mammals has been sporadically reported in the literature, where the incidence of congenital defects in offspring is estimated to be one percent or less. Undoubtedly, negative selection against most congenital defects prevents the observation of many naturally occurring anomalies in wildlife. To date, cervids comprise the majority of case reports of such conditions, which is probably a reflection of the popularity of farmed specimens and the relatively large sample size presented to wildlife professionals. For a compilation of congenital defects reported in free-ranging and captive wildlife, see: Leipold. "Congenital defects of zoo and wild mammals: a review." *In: Montali and Migaki* (eds.) *Pathology of Zoo Animals*. Smithsonian Institution Press, Washington D.C., 1980. *Prepared by Brian Stacy, Southeastern Cooperative Wildlife Disease Study, College of Veterinary Medicine, University of Georgia, Athens, GA 30602 USA.*

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Agriculture (MD); Maryland Fish & Wildlife Health Program, Cooperative Oxford Lab (MF); Nat'l Wildlife Health Center (NW); New York State Dept. of Env. Cons. (NY); University of Pennsylvania, School of Veterinary Medicine (PA); Southeastern Cooperative Wildlife Disease Study (SC).

Written and compiled by Kathryn Converse, Kimberli Miller, Linda Glaser, Terry Creekmore, and Audra Schrader, NWHC. This report is also available at <http://www.umesc.usgs.gov/nwhchome.html>. To report mortality or if you would like specific information on these mortalities, contact Kathryn Converse or Kimberli Miller; West Nile Virus—Linda Glaser; Hawaiian Islands—Thierry Work. Phone (608) 270-2400, FAX (608) 270-2415 or E-mail [kathy.converse@usgs.gov](mailto:kathy.converse@usgs.gov). National Wildlife Health Center, 6006 Schroeder Road, Madison, WI 53711.

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## WDA SECTION NEWS

### NEWS FROM EUROPE

**Seal Die-Off in Caspian Sea.** More than 3000 Caspian seals (*Phoca caspica*) are believed to have died since April 2000 in the Caspian Sea. Many dead seals have been found along the Mangyshlak peninsula of Kazakhstan as well as in other regions. An international team of scientists, working under the Caspian ECOTOX program, has recently collected samples for laboratory analysis. As we go to press there is no indication as to the cause of the mortality.

**EWDA Congress 2000—Final Call!** This meeting will be held in Zaragoza, Spain from 20–23 September 2000. It will include sessions on diseases and management of game species, and predators, prey and disease. Each session will include invited presentations and short communications. There will also be sufficient time for free presentations on other wildlife disease topics. The EWDA prize will be awarded for the best student presentation. The social program will include an informal “auction” in order to raise money for forthcoming student awards. Conference participants are kindly requested to contribute any item (pathology slides, books or collections of papers, drawings or pictures as soon as possible) to the auction. Other social activities include the conference dinner to be held on Friday 22 September and a trip to the Pyrenees/Monegros desert on Saturday 23 September.

For further details, please contact Daniel Fernández de Luco, Departamento de Patología Animal, Facultad de Veterinaria, Universidad de Zaragoza, Miguel Servet 177, E-50.013 Zaragoza, Spain. Telephone: (+34) 976 761609; fax: (+34) 976 761608; e-mail: luco@posta.unizar.es

**Third International Conference on *Mycobacterium bovis*:** This meeting will be held in Cambridge, UK from 14 to 16 August 2000. It will comprise papers by invited speakers, and selected oral and poster presentations. There will be seminars on disease control, epidemiology, modeling disease in domestic animals and wildlife, molecular typing, pathogenesis, immunology, diagnosis, mycobacterial genetics, and vaccinology.

It is also intended to run several workshops after the end of the official conference on 17 August (places will be limited). Topics will include molecular fingerprinting techniques, immunodiagnosis, comparative pathology, and vaccine development.

For further information, contact Sarah Stewart, *M. bovis* 2000, VLA Weybridge, Addlestone, Surrey, KT15 3NB, United Kingdom. Tel: +44 (0) 1932 357680; Fax: +44 (0)1932 357701; E-mail: s.stewart@vla.maff.gov.uk.

**European Section.** Material suitable for publication in the Newsletter includes news of recent wildlife disease outbreaks in Europe, short case reports, announcements and reports of relevant meetings in Europe, and job and scholarship announcements. Submissions should be in English, but members for whom English is a second language and who send material in basic English or in their own language, will be accommodated as far as possible. Deadline for submission of articles for the next issue (October 2000) is 21 August 2000. Please mail (floppy disk preferred), fax or e-mail submissions to Seamus Kennedy, Veterinary Sciences Division, Department of Agriculture and Rural Development, Stony Road, Stormont, Belfast BT4 3SD, Northern Ireland; telephone +44 (028) 90525701, fax: +44 (028) 90525767, e-mail: seamus.kennedy@dardni.gov.uk

## WDA SECTION CHAIRS AND CONTACT INFORMATION

**Australasian Section.** For information regarding the Australasian Section, contact Lee Skerratt, School of Veterinary Science, University of Melbourne, Princes Hwy, Werribee, Victoria 3030 Australia. Telephone: 61 3 9742 8330; fax: 61 3 9741 0401; email: skerratt@pgrad.unimelb.edu.au

**European Section.** For information regarding the European Section, contact Torsten Morner, The National Veterinary Institute, Department of Wildlife, Box 7073, S750 07, Uppsala, Sweden. Telephone: +46-1867-4214; fax: +46-1830-9162; email: Torsten.Morner@SVA.SE

**Latin American Section.** For information regarding the Latin American Section, contact Alonso Aguirre, TUSVM Wildlife Clinic, 200 Westboro Road, North Grafton, MA 01536, USA. Telephone: (508) 839-7918; fax: (508) 839-7930; email: aguirre@wpti.org

**Nordic Section.** For information regarding the Nordic Section, contact Hans-Henrik Dietz, Danish Veterinary Laboratory, Department of Fur Animal and Wildlife Diseases, 2 Hangovej, DK-8200 Aarhus N, Denmark. Telephone: 45-89-37-24-17; fax: 45-89-37-24-70; email: hhd@svs.dk

**Wildlife Veterinarian Section.** For information regarding the Wildlife Veterinarian Section, contact Dr. Terry Kreeger, Wyoming Game and Fish Department, 2362 Highway 34, Wheatland, Wyoming 82201 USA. Telephone: 307-322-2571; FAX 307-766-5630; email: tekreege@wyoming.com

## AVAILABLE PUBLICATIONS

**New Version Available!** The USGS-National Wildlife Health Center is pleased to announce that the "Field Manual of Wildlife Diseases: General Field Procedures and Disease of Birds" has been completed. This field manual is a revision and expansion of the 1988 "Volume 1: Field Guide to Wildlife Disease" and is funded by an Administrative Grant from the U.S. Fish and Wildlife Service, Division of Federal Aid. The Table of Contents and an order form can be found at: [http://www.emtc.nws.gov/http\\_data/nwhc/metapubs.html](http://www.emtc.nws.gov/http_data/nwhc/metapubs.html)

## JOB OPPORTUNITIES

### **Branch Chief, Laboratory Investigations; National Wildlife Health Center, Madison, Wisconsin.**

Preliminary notification of a full-time permanent position to be filled at the U. S. Geological Survey (USGS) National Wildlife Health Center in Madison, Wisconsin. This permanent full-time multidisciplinary position could be filled from one of the following disciplines: Supervisory Microbiologist GS-0403-13/14; Supervisory Wildlife Biologist GS-0486-13/14; Supervisory Veterinary Medical Officer GS-0701-13/14. The mission of the USGS-NWHC is to: (1) determine the impact of disease on wildlife resources under Department of Interior (DOI) stewardship; (2) identify the role various pathogens have in contributing to these losses; (3) develop effective means for disease prevention; and (4) reduce wildlife losses to disease. There are four major areas of activity: (1) field response to and investigation of wildlife disease problems, (2) disease diagnosis and control, (3) research, and (4) training in disease identification and control. These activities are integrated into an interdisciplinary program that combines the expertise of specialists with training in epidemiology, wildlife biology, microbiology, virology, pathology, parasitology, chemistry, and veterinary medicine.

The USGS-NWHC provides consultations and technological leadership to federal and state government agencies and non-profit organizations in disease of wildlife as well as supplying the general public authoritative information on disease problems. The geographic area of coverage includes all states and territorial possessions of the United States as well as any special assignments in foreign nations. United States citizenship is required for eligibility. Equal opportunity through affirmative action. Information about the NWHC can be obtained from the web page at: [www.emtc.usgs.gov/nwhc/home.html](http://www.emtc.usgs.gov/nwhc/home.html)

Questions regarding the position can be directed to Dr. Robert G. McLean, Director; or Joan Schneider, Administrative Officer at (608) 270-2400; National Wildlife Health Center.

## TRAINING/EDUCATIONAL OPPORTUNITIES

**Veterinary Externship In Fish Health And Laboratory Methods.** The Olympia Fish Health Center is one of nine Fish Health Centers within the U.S. Fish and Wildlife Service and is located in Olympia, Washington. We provide diagnostic laboratory and field examination services to six National Fish Hatcheries on the Olympic Peninsula and mid-Columbia River Basin, collect and process samples for the National Wild Fish Health Survey, and cooperate in the National Aquaculture Drug Registration Project. We also work in cooperation with the Tribal and State Fish Health Laboratories that are located in Olympia.

The Olympia Fish Health Center routinely uses bacteriology (biochemical, ELISA, and PCR methods), virology (cell culture, serological, and PCR methods), parasitology (microscopic and PCR methods), histology, and clinical chemistry testing to aid the hatcheries in producing quality fish that will contribute to the enhancement and restoration of fish stocks and other aquatic species. We collect most of the samples ourselves during field examinations of adult and juvenile fish and then return to our laboratory in Olympia to run the assays. Our busiest time of the year is September through November when multiple species of Pacific salmon are spawning at our hatcheries. We collect various tissue samples from these returning adults to monitor for some common and regulated fish pathogens. This information is used to prepare Broodstock Inspection Reports and may be beneficial in designing disease prevention and control methods for the eggs and offspring of these adults.

Student externs will visit several National Fish Hatcheries, perform field examinations on juvenile fish, take samples for Broodstock Inspections, process samples for bacterial culture, virus culture, ELISA and PCR assays. Independent study projects are encouraged and we will provide technical assistance and guidance wherever possible. All opportunities will be taken to expose the Extern to as many fish

culture facilities and fish disease situations as possible, and, time will be provided for discussions with other fish health professionals.

Students that are interested in gaining experience working in Aquaculture and/or diagnostic laboratory methods are encouraged to apply. Duration of the Externship and times of year other than September, October, and November may be arranged to accommodate the student's schedule. For more information and application forms please contact Joy Evered, DVM at Olympia Fish Health Center, 3704 Griffin Lane SE, Suite 101, Olympia, WA 98501. Telephone: 360-753-9046; Fax: 360-753-9403; or email at joy\_evered@fws.gov

**Post-Doctoral Fellowship in Marine Mammal Research.** An 18 month postdoctoral fellowship commencing January 1, 2001 will be offered by the Division of Marine Mammal Research and Conservation, Harbor Branch Oceanographic Institution (HBOI), Ft. Pierce, Florida. The Division of Marine Mammal Research and Conservation has multifaceted programs involving marine mammal strandings, manatee rescue and rehabilitation, free-ranging bottlenose dolphin photo identification and broad research investigating the pathologic basis of disease in marine mammals. The HBOI Marine Mammal Stranding Center provides temporary or long-term care for various marine mammal species. Animals which can be treated successfully are rehabilitated, released and typically monitored post-release via telemetry devices. Collaborative programs in medicine exist with the Miami Seaquarium and marine mammal facilities in Mexico, Belize, Argentina, and Brazil. Pathologic studies involve the gross and histopathologic characterization of diseases in marine mammals with special emphasis on the effects of biotoxins in these species. Collaborative programs in pathology exist with the Wildlife and Avian Laboratory, Division of Comparative Pathology, Department of Pathology, University of Miami School of Medicine, Miami, Florida. An opportunity is also available for the postdoctoral fellow to interact with the Division of Aquaculture at HBOI, which has intensive programs in clam, shrimp and tropical fish aquaculture.

An original research project, the results of which will be written for publication in a peer-reviewed scientific journal, is required for successful completion of this program. In addition, the postdoctoral fellow will be responsible for coordinating marine mammal rescues, handling all aspects of clinical care for marine mammal patients, and completing necropsies with the supervision of the HBOI marine mammal staff. Follow-up histopathologic tissue evaluations will be done with the resident comparative pathologist or at the University of Miami School of Medicine.

Applicants must possess a D.V.M. or equivalent degree. Selection of the successful applicant will be based on a combination of academic, relevant interest and experience, and an assessment of the candidate's career goals and objectives. The stipend is currently \$27,072 annually, and the fellowship is non-renewable. Requests for further information and application procedures should be addressed to Gregory D. Bossart, V.M.D., Ph.D., *c/o personnel@hboi.edu*. Harbor Branch Oceanographic Institution, 5600 U.S. 1 North, Ft. Pierce, FL 34946. Telephone: (561) 465-2400, x604; FAX: (561) 595-3332. For information about Harbor Branch, please consult our website, <http://www.hboi.edu>

**Directory of Post-Graduate Educational Opportunities in Zoo and Wildlife Medicine.** The World Association of Wildlife Veterinarians has recently produced a Directory of Post-Graduate Educational Opportunities in Zoo and Wildlife Medicine. The Directory covers opportunities in over fifty countries and is a must for veterinary students or graduates interested in furthering their careers in the field of wildlife medicine. For further information, please contact the Secretary of the WAWV at: [F.Scullion@zoo.co.uk](mailto:F.Scullion@zoo.co.uk)

## MEETING ANNOUNCEMENTS

**International Conference on Emerging Infectious Diseases 2000. July 16–19, 2000; Atlanta, Georgia.** The International Conference on Emerging Infectious Diseases 2000 (ICEID 2000) will convene July 16–19, 2000 at the Atlanta Marriott Marquids Hotel, Atlanta, Georgia. For more information, please check the ICEID 2000 website at: <http://www.asmus.org/mtgsrc/iceid99main.htm>. Contact ICEID 2000 management by email ([ICEID@asmusa.org](mailto:ICEID@asmusa.org)), phone (202) 942-9257, or FAX (202) 942-9340. We welcome you questions and comments.

**American Association of Zoo Veterinarians and International Association of Aquatic Animal Medicine Joint Conference. September 17–21, 2000; New Orleans, Louisiana.** The AAZV will hold its' annual conference in conjunction with the IAAAM. Joint program sessions include Environmental Issues/Facilities Design, Conservation Medicine/Reports for the Field, Toxicology/Pharmacology/Therapeutics, What's New in Diagnostics?, Nutrition, and Reptiles/Amphibians. AAZV concurrent sessions will be Avian, Large Mammals/Ungulates, Small Mammals/Carnivores/Primates, Case Reports/Practice Tips, Innovations in Training at Home and Abroad, New and Improved Surgical Techniques, and Preventive Medicine/Group and Herd Health. IAAAM concurrent sessions will be Infectious Disease, Immunology/

Clinical Pathology, Case Reports, and Pathology. There will also be a poster session, veterinary student paper competitions, and workshops/wet labs.

For additional conference information, please contact Wilbur Amand VMD, Executive Director AAZV, 6 North Pennell Road, Media, PA 19063 USA. Telephone: (610) 892-4812; FAX: (610) 892-4813. Email: 75634.235@compuserve.com.

**Year 2000 Meeting of the European Division of the Wildlife Disease Association (EWDA). September 20–23, 2000; Zaragoza, Spain.** After the successful meetings of Paris (1994), Wrocław (1996), and Edinburgh (1998), the 4th meeting of the EWDA will take place at the Veterinary Facility in Zaragoza, Spain on September 20–23, 2000. The congress will include a session in diseases of game species and another session on carnivore diseases and conservation. Each session will include invited presentations and short communications. There will be enough time for free presentations of other wildlife diseases, too. For pre-registration and more information, please contact either Daniel Fernandez-de-Luco (luco@posta.unisar.es, SEDIFAS, Facultad de Veterinaria, c/Miguel Servet 177, E-50.013 Zaragoza) or Christian Gortazar (gortazar@irec.uclm.es, IREC, P.O. Box 535, E-13.080 Ciudad Real), preferentially via e-mail.

**International Roundtable to Develop A Protocol on Chelonian Relocation and Heritage Collections. September 26–28, 2000; Orlando, Florida, USA.** This meeting will be held at the Radisson Hotel Orlando Airport (Telephone: (407) 856-0100 or [www.radisson.com](http://www.radisson.com)).

Relocation and captive breeding programs for turtles and tortoises are critically lacking specific guidelines to help managers in their decision-making process. This working meeting will bring together freshwater turtle and tortoise experts, veterinary and chelonian researchers, managers, educators, breeders, students, regulatory and conservation agencies, and enthusiasts from around the world and will result in a published Protocol addressing these issues. Seven important areas have been identified and will be addressed by the Protocol: ethics, disease issues, genetic and systematic issues, environmental issues, socioeconomic considerations, intra-specific impacts, and heritage collection.

The Overall Meeting Co-Chairs, Ray E. Ashton and Dr. Ghislaine Guyot through the Ashton Biodiversity Research & Preservation Institute have convened this Roundtable. The purpose of the meeting is to produce a practical document that puts forth a Protocol for Chelonian Relocation and Heritage Collections based on the most up-to-date information and research. Each of the 7 major areas being addressed will be co-chaired by world experts. Time will be allotted to presentations of pertinent papers and a poster session will provide the Roundtable participants with additional information for discussion and final creation of the Protocol. Prior to the roundtable, two workshops, each lasting one and one-half days, will be held. The first workshop will cover chelonian education issues and successful interpretive methods, and the second workshop will feature tortoise field study and heritage collection methods.

For registration information contact Ray Ashton or Ghislaine Guyot of the Ashton Biodiversity Research & Preservation Institute at: 5745 SW 75<sup>th</sup> Street #331, Gainesville, FL 32608 E-Mail: [Tortfarm2@aol.com](mailto:Tortfarm2@aol.com) / Phone: (352) 495-7449 / FAX (352) 495-7433. Web site: <http://www.geocities.com/ashtonbiodiversity/Home.html>

**International Workshop on Arctic Parasitology (IWAP), October 1–4, 2000; Prince Albert National Park, Saskatchewan, Canada.** This workshop is designed for parasitologists, wildlife biologists, and others from Europe and North America working in arctic parasitology, especially related to arctic ruminants and parasites of public health concern for northern residents. Interested individuals are asked to contact Dr Lydden Polley, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Canada (E-mail: [LPOLLEY@EM.AGR.CA](mailto:LPOLLEY@EM.AGR.CA)).

**The 9<sup>th</sup> Annual Mid-Western Exotic Animal Medicine Conference. October 28–29, 2000; Manhattan, Kansas, USA.** Topics include the medicine and surgery of birds, reptiles, and exotic mammals (9.5 CE hours). Drs. Kathy Quesenberry and Terry Campbell are among the speakers. Optional wet-labs on exotic animal cytology and laser surgery will be offered (3.5 CE hours). For information, contact Dr. James W. Carpenter, College of Veterinary Medicine, Kansas State University, Manhattan, KS 66506, USA. Telephone: (785) 532-5690. Fax: (785) 532-4309. Email: [carpentr@vet.ksu.edu](mailto:carpentr@vet.ksu.edu)

**Australasian WDA Meeting. December 3–8, 2000; New Zealand.** The 2000 Australasian WDA meeting will be held in New Zealand from December 3–8. For more information contact Pdraig Duignan at the Department Veterinary Pathology & Public Health, Veterinary Science, Massey University, P.B. 11–222, Palmerston North, New Zealand. Email: [P.J.Duignan@massey.ac.nz](mailto:P.J.Duignan@massey.ac.nz). In 2001, a combined meeting of the Australasian WDA, Australian Association of Veterinary Conservation Biology, World Association of Wildlife Veterinarians, and the Wildlife Interest Group of the New Zealand Veterinary Association is planned to be held in Sydney. Further details to follow.

**Veterinary Conservation Biology: Wildlife Health and Management in Australasia. July 2–6 2001; Taronga Zoo, Sydney, Australia.** Call for Papers!! Expressions of interest are invited for presentation of papers or posters at the above conference organized jointly by the Australian Association of Veterinary Conservation Biologists (AAVCB), World Association of Wildlife Veterinarians (WAWV), Wildlife Society of the New Zealand Veterinary Association (WSNZVA) and the Wildlife Disease Association Australasian Section (WDA). The focus of the conference will be a range of issues crucial to wildlife health and management and the conservation of biodiversity in the Australasian region. The program is intended to be comprehensive and of interest to biologists, zoologists, veterinarians, other scientists and wildlife workers involved with the conservation and care of wildlife.

Presentations will be of 25 minutes duration followed by 5 minutes question time. Session topics and convenors for the five-day scientific program are as follows:

Day 1: Monday 2 July. Conservation Biology in Australasia (AAVCB). A range of issues crucial to the conservation of biodiversity in Australasia, including the impacts of wildlife health and welfare on biodiversity, human health and Australasia's agro-economy will be covered. Convenor: Dr Rupert Woods rwoods@auswide.net.au

Day 2: Tuesday 3 July. Wildlife Utilisation (WAWV). The intention of this day is to examine a range of issues related to this topic, including at least one session on utilization of wildlife by indigenous people. Both consumptive and non-consumptive use (ecotourism) will be dealt with. Convenor: Dr Tony English aeng5919@mail.usyd.edu.au

Day 3: Wednesday 4 July. Marine Wildlife and Birds (WSNZVA). This day will focus on marine wildlife and avian health, management and conservation issues. Convenor: Dr Jerry Pauli jmpauli@voyager.co.nz

Day 4: Thursday 5 July. Wildlife Recovery and Reintroduction Programs and Vertebrate Pests (AAVCB). Australasia has one of the worst species extinction records with many species critically endangered. Issues relating to reintroduction biology, recovery programs, wildlife rehabilitation and the management of vertebrate pests will be covered. Convenor: Dr Larry Vogelneest lvogelneest@zoo.nsw.gov.au

Day 5: Friday 6 July. Wildlife Health in Australasia (WDA-Australasian Section). This day will be devoted to wildlife health, covering both captive and free ranging species. Recent investigations into emerging diseases in Australasian wildlife and their significance in terms of ecological relationships, effects on species diversity and zoonotic potential will be covered. Convenor: Dr Michael Lynch vets@zoo.org.au

Posters. Posters will be displayed for the duration of the conference. Sessions will be allocated during which poster authors must be present to speak about their chosen topic and answer delegate's questions. The topic should be anything of relevance to the overall theme of the conference.

Convenor: Anne Martin anne\_m.martin@yahoo.co.uk

The deadline for notification to session convenor of interest in presenting a paper or poster is June 30, 2000. The deadline to submit abstracts to session convenor for review is August 30, 2000. Please send your expression of interest to the convenor of the session that most suits the topic of your paper. Upon receipt of this you will be sent a package of information including a style guide for abstracts, papers and/or posters. Please note that not all papers will necessarily be accepted and that, if accepted, your paper may be moved to a different session. For general conference information please contact the Program Convenor: Dr Larry Vogelneest, Taronga Zoo, PO Box 20, Mosman NSW 2088, Australia. E-mail: lvogelneest@zoo.nsw.gov.au, fax (61 2) 99784516.

**Wildlife Disease Association and the Society for Tropical Veterinary Medicine (STVM) Conference. July 22–27, 2001; Kwa Maritane, Pilansberg National Park, South Africa.** Plan now! The Wildlife Disease Association (WDA) and the Society for Tropical Veterinary Medicine (STVM) will hold a joint meeting with the theme "Wildlife and Livestock Disease and Sustainability: What Makes Sense?" from July 22–27, 2001 at Kwa Maritane, Pilansberg National Park, South Africa. The meeting will be the WDA's 50<sup>th</sup> annual and 8<sup>th</sup> international conference, and the 6<sup>th</sup> biennial conference of the STVM. The location and program will allow government scientists, university researchers, conservationists and policy/decision makers to consider various aspects of wildlife and livestock management and diseases, including those that devastate both wildlife and livestock, issues of sustainability, and what types of approaches and programs make sense in the new millenium.

The following is a Draft Proposed Program for 2001 Joint Meeting of WDA and STVM entitled "Wildlife and Livestock Disease and Sustainability: What Makes Sense?"

Day 1—AM: Joint Meeting—all delegates  
Welcome and business of the meeting  
Introductory talks, Invited speakers, Big concept talks

Day 1—PM: Joint Meeting all delegates  
Scourges of animal health: Rinderpest, Rabies, TB (invited or contributed talks)  
What types of animal enterprises are ecologically, economically, socially sustainable in the new millenium: Africa, Asia, Europe, Latin America, North America

Day 2—AM: and PM: Wildlife Disease Association program (student presentations in competition, special symposia yet to be decided)  
Society for Tropical Veterinary Medicine program

Day 3—AM: and PM: Wildlife Disease Association (contributed papers)  
Society for Tropical Veterinary Medicine (contributed papers)  
Day 4—AM: Wildlife Disease Association (contributed papers)  
Society for Tropical Veterinary Medicine  
Day 4—PM: Joint Meeting all delegates  
Special symposium on “What Makes Sense? Problem solving and cooperative approaches to problems  
Closing papers and remarks

Conference information, travel information, registration and the call for papers will be handled by Event Dynamics, P.O. Box 411177, Craighall 2024, South Africa. Telephone: 27 11 442 611; FAX: 27 11 442 5927. Email: [sandra@eventdynamcis.co.za](mailto:sandra@eventdynamcis.co.za)

Further information will be available on the WDA and STVM websites and upcoming newsletters. The venue will allow plenty of opportunity for world class game viewing, social events and local entertainment, African folk art and craft shopping, and extension tours and safaris within southern Africa.

**Note from the Editor:** Please send meeting announcements, diagnostic riddles, position and grant announcements, miscellaneous items, etc. for the Supplement to the Journal of Wildlife Diseases to Charlotte F. Quist, SCWDS/Athens Diagnostic Lab, College of Veterinary Medicine, University of Georgia, Athens, Georgia 30602; telephone: (706) 542-5349; fax: (706) 542-5977; e-mail: [CQUIST@CVM.VET.UGA.EDU](mailto:CQUIST@CVM.VET.UGA.EDU) **Double spaced typewritten or electronic mail files in WordPerfect 5.1 or Microsoft Word are preferred.** The deadline for submission of articles for the next issue (October 2000, JWD Vol. 36, No. 4) is August 25, 2000.

**2000 WILDLIFE DISEASE ASSOCIATION CONFERENCE PAPERS AND POSTERS.** Titles and authors of the papers and posters presented at the 49<sup>th</sup> Annual Conference of the Wildlife Disease Association are listed below. The name of the presenter is italicized.

**(1) BOVINE TUBERCULOSIS IN THE KRUGER NATIONAL PARK.** *Roy G. Bengis* and Dewald F. Keet. **Wildlife Disease Association and American Association of Wildlife Veterinarians: Cutting Edge Speaker**

**(2) BOVINE TUBERCULOSIS IN MICHIGAN—AN UPDATE.** *Stephen M. Schmitt*, Scott D. Fitzgerald, Colleen S. Bruning-Fannnathan, Nathan Zauel, and Dale E. Berry

**(3) DEER TO DEER TRANSMISSION OF MYCOBACTERIUM BOVIS.** *Mitchell V. Palmer* and Diana L. Whipple

**(4) SURVIVAL OF MYCOBACTERIUM BOVIS ON FEEDS USED FOR BAITING WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS) IN MICHIGAN.** Diana L. Whipple and *Mitchell V. Palmer*

**(5) TRANSMISSION OF MYCOBACTERIUM BOVIS FROM EXPERIMENTALLY INFECTED WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS) TO CATTLE THROUGH INDIRECT CONTACT.** Diana L. Whipple and *Mitchell V. Palmer*

**(6) BRUCELLOSIS IN ELK (CERVUS ELAPHUS) OF EASTERN IDAHO.** *Mark L. Drew*

**(7) ELK (CERVUS ELAPHUS NELSONI) BRUCELLOSIS SURVEILLANCE IN WESTERN WYOMING.** *Scott G. Smith*, E. Tom Thorne, Walter E. Cook, Hank Edwards, and Terry Kreeger

**(8) LESIONS AND TISSUE COLONIZATION SITES OF BRUCELLA ABORTUS IN ABORTED BISON FETUSES, BISON CALVES, AND ADULT FEMALE BISON FROM YELLOWSTONE NATIONAL PARK.** *Jack C. Rhyan*, Thomas Gidlewski, Thomas J. Roffe, Keith Aune, L. Michael Philo, and Darla R. Ewalt

**(9) EFFICACY OF BRUCELLA ABORTUS STRAIN RB51 VACCINE IN CAPTIVE ELK: A PRELIMINARY REPORT.** *Terry J. Kreeger*, William H. Edwards, Walter E. Cook, Steven C. Olsen, and Philip H. Elzer

**(10) IMMUNE RESPONSE AND EFFICACY OF BRUCELLA ABORTUS STRAIN RB51 VACCINE IN BISON (BISON BISON).** *Steven C. Olsen* and M.V. Palmer

**(11) BRUCELLOSIS IN DOMESTIC PIGS AND WILDBOARS DUE TO BRUCELLA SUI S BIVAR 2 IN FRANCE.** B. Garin-Bastuji, *J. Hars*, D. Calvez, M. Thiebaud, and M. Artois

- (12) PATHOGENESIS OF CHRONIC WASTING DISEASE IN ORALLY EXPOSED MULE DEER (*ODOCOILEUS HEMIONUS*): PRELIMINARY RESULTS.** *Elizabeth S. Williams and Michael W. Miller*
- (13) CHRONIC WASTING DISEASE IN ELK (*CERVUS ELAPHUS NELSONI*) HELD IN A CWD ENDEMIC FACILITY.** *Elizabeth S. Williams, Walter E. Cook, Hank Edwards, Terry Kreeger, and Scott Smith*
- (14) MECHANISMS FOR CHRONIC WASTING DISEASE TRANSMISSION: CLUES FROM INFORMATION-BASED COMPARISON OF COMPETING TRANSMISSION MODELS.** *Michael W. Miller*
- (15) PREVALENCE OF *TOXOPLASMA GONDII* ANTIBODIES IN CARIBOU (*RANGIFER TARANDUS*) AND MUSKOX (*OVIBOS MOSCHATUS*) SERA FROM NORTHERN CANADA.** *Brett Elkin, Susan Kutz, and J.P. Dubey*
- (16) ATTEMPTS TO TREAT VERMINOUS PNEUMONIA AND ASSOCIATED HAIR LOSS IN FREE RANGING BLACK TAIL DEER.** *P. Briggs Hall and Louis C. Bender*
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- (18) CHARACTERIZATION OF COPROANTIGENS OF *OSTERTAGIA* SP. INFECTIONS IN FARMED RED DEER.** *T. Qureshi, C. Santrich, R.E. Labes, M. Taylor, M.L. Cross, and C.G. Mackintosh*
- (19) A RETROSPECTIVE SURVEY OF THE OCCURRENCE OF NEOPLASIA IN DEER IN THE SOUTHEASTERN UNITED STATES.** *C.F. Quist and J.C. Lang*
- (20) GIANT LIVER FLUKE IN ELK ISLAND NATIONAL PARK (ALBERTA): A RECENT CHANGE IN STATUS.** *M.J. Pybus*
- (21) FATAL SYSTEMIC ADENOVIRUS INFECTION IN A CAPTIVE MOOSE CALF (*ALCES ALCES*).** *Elizabeth S. Williams, Howard Lehmkuhl, Terry Kreeger, Carol Hearne, Jaqueline Cavender, and Hana Van Campen*
- (22) INVESTIGATION OF FRANKLIN'S GULL (*LARUS PIPIXCAN*) MORTALITY IN RELATION TO THE INITIATION OF AVIAN BOTULISM AMONG WATERFOWL AT EYEBROW LAKE, SASKATCHEWAN.** *Catherine Soos and Gary Wobeser. Student Research Recognition Award.*
- (23) CROSS-PROTECTION BETWEEN EPIZOOTIC HEMORRHAGIC DISEASE SEROTYPES 1 AND 2 IN EXPERIMENTALLY INFECTED WHITE-TAILED DEER.** *Joseph K. Gaydos, Elizabeth W. Howerth, Victor F. Nettles, and David E. Stallknecht*
- (24) THE DISTRIBUTION OF *ECHINOCOCCUS GRANULOSUS* (CESTODA: TAENIIDAE) CYSTS IN MOOSE POPULATIONS: THE ROLE OF PREDATION BY WOLVES.** *Damien O. Joly and Francois Messier*
- (25) EFFECTS OF BACK-MOUNTED RADIO TRANSMITTERS WITH A SUBCUTANEOUS ANCHOR IN MALLARD DUCKLINGS.** *Karen L. Machin*
- (26) GENETIC VARIATION IN EPIZOOTIC HEMORRHAGIC DISEASE VIRUS ISOLATES COLLECTED FROM THE SOUTHEASTERN UNITED STATES: 1978–1998.** *M.D. Murphy, N.J. MacLachlan, E.W. Howerth, and D.E. Stallknecht*
- (27) PREVALENCE OF POTENTIAL ZOOSES IN FERAL AND PET DOMESTIC CATS FROM RANDOLPH COUNTY, NORTH CAROLINA.** *Felicia B. Nutter, Michael K. Stoskopf and Jay F. Levine*
- (28) HOST SUSCEPTIBILITY TO EXPERIMENTAL MYCOPLASMA INFECTION IN HATCHLING AMERICAN ALLIGATORS (*ALLIGATOR MISSISSIPPIENSIS*) EXPOSED TO ENDOCRINE DISRUPTING CONTAMINANTS.** *Lauren J. Richey, Trenton R. Schoeb, Mary B. Brown, Timothy S. Gross, and Paul A. Klein*

- (29) PRION PROTEIN IN THE VAGOSYMPATHETIC TRUNK AND PANCREAS OF MULE DEER NATURALLY INFECTED WITH CHRONIC WASTING DISEASE.** *Christina J. Sigurdson, Terry R. Spraker, Michael W. Miller, Bruno Oesch, Katherine I. O'Rourke, and Edward A. Hoover*
- (30) EXPERIMENTAL INOCULATION OF AMERICAN OPOSSUMS (*DIDELPHYS AZRAE*) WITH *MYCOBACTERIUM BOVIS*.** *Kelly L. Butler, Scott D. Fitzgerald, Dale Berry, Steven Church, Willie M. Reed, James Sikarskie, and John B. Kaneene*
- (31) REVERSIBLE IMMOBILIZATION OF FREE-RANGING SVALBARD REINDEER, NORWEGIAN REINDEER AND WOODLAND CARIBOU: A COMPARISON OF MEDETOMIDINE-KETAMINE AND ATIPAMEZOLE IN THREE SUBSPECIES OF *RANGIFER TARANDUS*.** *Jon M. Arnemo, Ronny Aanes, Nigel A. Caulkett, W. James Rettie, and Jerry C. Haigh*
- (32) SURVIVAL AND IMPROVED MOOSE (*ALCES ALCES*) IMMOBILIZATION WITH CARFENTANIL AND XYLAZINE.** *Thomas J. Roffe, Kenneth W. Coffin, and Joel Berger*
- (33) ANESTHESIA OF PRONGHORN USING A-3080 OR A-3080 PLUS XYLAZINE.** *Terry J. Kreeger, Walt Cook, Claude A. Piché and Thomas Smith*
- (34) EVALUATION OF THE EFFECTS OF TRANQUILIZATION AND OTHER FACTORS ON MORBIDITY AND MORTALITY IN WILD-CAUGHT PRONGHORN ANTELOPE (*ANTILOCAPRA AMERICANA*) DURING TRANSLOCATION.** *Julie A. Smith, Thomas J. Roffe, Donald S. Davis, and Philip H. Elzer*
- (35) MORTALITY IN CAPTIVE PRONGHORN ANTELOPE: A TEXAS EXPERIENCE.** *John F. Edwards, Donald S. Davis, Barbara C. Lewis, Fernando Ramiro-Ibanez, Lynne Chittenden, Thomas J. Roffe, Julie A. Smith, and Philip H. Elzer*
- (36) KEEPING ARABIAN TAHR (*HEMITRAGUS JAYAKARI*) IN CAPTIVITY-VETERINARY REVIEW.** *Jacob M. Mwanzia*
- (37) "MALADAPTATION SYNDROME" REVISITED.** *Peter Daszak and Andrew A. Cunningham*
- (38) EVALUATION OF CABERGOLINE AS A REPRODUCTIVE INHIBITOR IN COYOTES (*CANIS LATRANS*).** *Thomas J. Deliberto, Amy E. Seglund and Bruce Kimball*
- (39) EVIDENCE OF NATURALLY OCCURRING *EHRlichia CHAFFEENSIS* INFECTION IN COYOTES FROM OKLAHOMA.** *A. Alan Kocan, G. Crowder Levesque, L. Whitworth, G.L. Murphy, S.A. Ewing, and R.W. Barker*
- (40) SEROLOGIC SURVEY FOR CANINE CORONA VIRUS IN WOLVES (*CANIS LUPUS*) FROM INTERIOR ALASKA, 1994-1999.** *Randall L. Zarnke, Jim Evermann, Jay M. Ver Hoef, Mark E. McNay, Rodney D. Boertje, Craig L. Gardner, Layne G. Adams, Bruce W. Dale, and John Burch*
- (41) RETROSPECTIVE STUDY OF DYSPLASTIC AND NEOPLASTIC LESIONS OF THE BILIARY SYSTEM IN THE CAPTIVE POPULATION OF BLACK-FOOTED FERRETS (*MUSTELA NIGRIPES*).** *Stéphane Lair, Kay G. Mehren, Elizabeth S. Williams, and Ian K. Barker*
- (42) HEPATOCELLULAR CARCINOMA IN A POLAR BEAR (*URSUS MARITIMUS*) AND A GRIZZLY BEAR (*URSUS ARCTOS*).** *Howard Steinberg, Wayne I. Anderson, Kathryn Coyle, and Annette Gendron-Fitzpatrick*
- (43) MORBILLIVIRUS AND CALICIVIRUS ANTIBODIES IN POLAR BEARS (*URSUS MARITIMUS*) FROM SVALBARD.** *Morten Tryland, Anita Huovelamen, Hannele Tapiovaara, Andrew E. Derocher, Oystein Wug, and Albert D. M. E. Osterhaus*
- (44) EFFECT OF MORTALITY DUE TO VEHICULAR COLLISION ON FLORIDA'S BLACK BEAR POPULATIONS.** *Mark W. Cunningham, J. Walter Mccown, Thomas H. Eason, David S. Maehr, Terry Gilbert, and Donald J. Forrester*
- (45) INFECTION WITH *HELICOBACTER* SPP. IN FREE RANGING LYNX (*LYNX LYNX*) AND RED FOXES (*VULPES VULPES*) IN SWEDEN.** *Torsten Mörner, Caroline Bröjer, Marie-Pierre Degiorgis, Dolores Gavier-Widén, Hans-Olof Nilsson, and Torkel Wadström*

**(46) HEALTH EVALUATION OF MONGOLIAN GAZELLES (*PROCAPRA GUTTUROSA*) ON THE EASTERN STEPPES OF MONGOLIA.** *Sharon L. Deem, Michael J. Linn, George Schaller, Badamjavin Lhagvasuren, Hyamsuren, Kirk Olson, Ellen Dierenfeld, and William B. Karesh*

**(47) AN UPDATE ON ANTHRAX IN WILDLIFE IN THE KRUGER NATIONAL PARK.** *Roy G. Bengis*

**(48) COMPARISON OF HEALTH STATUS BETWEEN MUSKRATS (*ONDATRA ZIBETHICA*) FROM HABITATS CONTAMINATED VS. NONCONTAMINATED WITH HIGHWAY RUN-OFFS.** *J. D. Borucinska and J. Trettel Jr.*

**(49) DECLINE OF THE SOUTHERN SEA OTTER (*ENHYRDA LUTRIS NEREIS*): FURTHER EVIDENCE OF CONTAMINANTS AND DISEASES FROM NON-POINT SOURCES.** *David A. Jessup, Melissa Chechowitz, Jack Ames, Mike Harris, Karen Worcester, and David M. Paradies*

**(50) THE USE OF GELDANAMYCIN TO PREVENT THE TOXIC EFFECTS OF INTERNAL OIL EXPOSURE ON REPRODUCTION OF MINK (*MUSTELA VISON*) AS A MODEL FOR SEA OTTERS.** *Jonna A. K. Mazet, Kirsten V.K. Gilardi, Deana L. Fritcher, and Richard J. Aulerich*

**(51) OILED WILDLIFE REHABILITATION: SCIENTIFIC EVALUATION OF SURVIVAL AND BEHAVIOR.** *Scott H. Newman, Jonna A. K. Mazet, Rick T. Golightly, and Jay Holcomb*

**(52) SEIZURES CAUSED BY DIELDRIN TOXICITY IN A LITTER OF RED FOX (*VULPES VULPES*) KITS.** *Catherine M. Brown*

**(53) DOSE-TITRATION AND SAFETY OF LUFENURON FED TO CAPTIVE WHITE-TAILED PRAIRIE DOGS (*CYNOMYS LEUCURUS*).** *Kevin T. Castle, Margaret A. Wild, and S. Craig Parks*

**(54) DIAGNOSIS, MAGNITUDE, AND REMEDIATION OF LEAD EXPOSURE AMONG WILD BIRDS AND MAMMALS AT A FIREARMS TRAINING FACILITY.** *William R. Davidson, Lynn A. Lewis, John R. Fischer, Robert H. Poppenga, and Kathleen A. Morgan*

**(55) A CHARACTERIZATION OF BREVETOXIN IN TISSUES OF MANATEES (*TRICHECHUS MANATUS LATIROSTRIS*) IN FLORIDA.** *Scott D. Wright and Theresa Cody*

**(56) FACIAL CLEFTS IN NORTHERN LEOPARD FROG TADPOLES (*RANA PIPIENS*) FROM WISCONSIN.** *Carol U. Meteyer, D. Earl Green, and Kathryn A. Converse*

**(57) WEST NILE VIRUS, A NEW EMERGING DISEASE OF AMERICAN WILDLIFE.** *Robert G. Mclean, Sonya Renee Ubico, Nicholas Komar, Nicholas A. Panella, Linda C. Glaser, Douglas D. Docherty, Louis Sileo, Wallace R. Hansen, Michael D. Samuel, Ward B. Stone, and Douglas E. Roscoe*

**(58) WEST NILE VIRUS-ASSOCIATED MORTALITY IN BIRDS FROM NEW JERSEY.** *Douglas E. Roscoe, Robert Kent, Faye E. Sorhage, Wayne Crans, Robert Mclean, Linda Glaser, Douglas Docherty, Wallace Hansen, Nicholas Komar, and Robert S. Lanciotti*

**(59) AN AVIAN WEST NILE VIRUS EPORNITIC AT A ZOOLOGICAL PARK.** *Paul P. Calle, Tracey S. Mcnamara, Bonnie L. Raphael, Rosandra M. Manduca, Michael J. Linn, Tracy L. Clippinger, Elizabeth M. Rush, Robert A. Cook, George V. Ludwig, Keith E. Steele, Joe Mangiafico, Jonathan F. Smith, Michael J. Turell, Randal J. Schoepp, and Tom Larsen*

**(60) HEALTH RISK ASSESSMENT: A COMPONENT OF THE SITE SELECTION FOR A REINTRODUCED EASTERN MIGRATORY POPULATION OF WHOOPING CRANES (*GRUS AMERICANA*).** *Julie Langenberg*

**(61) DIAGNOSIS OF DISSEMINATED VISCERAL COCCIDIOSIS IN CRANES USING PCR.** *M. Johnson*

**(62) TOWERKILL MORTALITY OF MIGRATING PASSERIFORMS: AN "EMERGING DISEASE"?** *Donald J. Forrester, William R. Evans, and R. Todd Engstrom*

**(63) SPATIAL AND TEMPORAL DISTRIBUTION OF AVIAN VACUOLAR MYELINOPATHY IN AMERICAN COOTS (*FULICA AMERICANA*) IN THE SOUTHEASTERN UNITED STATES.**

*John Fischer, Robert Long, David Gregory, Karen Rowe, Mark Clark, Buddy Baker, Christopher Yee, James Ozier, Phillip Spivey, Thomas Augspurger, and Karen Gaines*

**(64) EARED GREBE MORTALITY AT THE SALTON SEA: REVIEW OF FINDINGS AND NEW STUDIES.** *J. Christian Franson, Lynn H. Creekmore, Carol U. Meteyer, Tonie E. Rocke, Mark J. Wolcott, and Tahni Johnson*

**(65) MORTALITY OF THE COMMON LOON (*GAVIA IMMER*) IN NEW ENGLAND, 1988 TO 1999.** *Inga F. Sidor, Mark A. Pokras, and Rose Miconi*

**(66) DISTRIBUTION OF DUCK VIRUS ENTERITIS VIRUS DURING ACUTE INFECTION IN NATURALLY INFECTED DUCKS.** *Elizabeth W. Howerth, Molly Murphy, Bradd C. Barr, Charlotte Quist, and Nancy J. Thomas*

**(67) *MYCOPLASMA GALLISEPTICUM* FROM EVENING GROSBEAKS (*COCCOTHAUSTES VESPERTINUS*) AND PINE GROSBEAKS (*PINICOLA ENUCLEATOR*) WITH CONJUNCTIVITIS IN QUEBEC, CANADA.** *Igor Mikaelian, David H. Ley, R. Claveau, and M. Lemieux*

**(68) SYSTEMIC *ISOSPORA*-LIKE COCCIDIOSIS IN A NORTHERN ORIOLE (*ICTERUS GALBULA*).** *Jean A. Paré and Sandra R. Black*

**(69) MODELING AVIAN POX IN HAWAII.** *Charles Van Riper, III, Sandra G. Van Riper, and Wallace R. Hansen*

**(70) RESPIRATORY DISTRESS IN AN ADULT SHORT-EARED OWL.** *Christine Fiorello and John Gliatto*

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**(71) CAUSES OF MORTALITY OF THE PUERTO RICAN PARROT (*AMAZONA VITATTA*).** *Laurie A. Baeten and F. Joshua Dein*

**(72) EXPERIMENTAL INFECTION OF MONTANA HOUSE FINCHES (*CARPODACUS MEXICANUS*) WITH THE HOUSE FINCH STRAIN OF *MYCOPLASMA GALLISEPTICUM*.** *Kristy R. Farmer, Sharon R. Roberts, and Geoffrey E. Hill*

**(73) EVALUATION OF *BRUCELLA ABORTUS* VACCINE STRAIN RB51 IN PREGNANT REINDEER, A SAFETY STUDY.** *Sue Hagius, John Blake, Julia Bevins-Duce, Gerhardt Schurig, Todd Fulton, and Philip Elzer*

**(74) PREVALENCE OF NEURONAL LIPIDOSIS (NEURONAL VACUOLATION) AND ANAL SAC CAPILLARIASIS IN RACCOONS (*PROCYON LOTOR*) FROM TWO GEOGRAPHICAL LOCATIONS IN THE USA.** *Amir N. Hamir and Judi Stasko*

**(75) THE FLUORESCENCE POLARIZATION ASSAY AND OTHER SEROLOGICAL ASSAYS FOR THE DETECTION OF ANTIBODIES TO *BRUCELLA ABORTUS* IN BISON IN SERUM AND WHOLE BLOOD.** *D. Gall, D.O. Joly, P. Smith, K. Nielsen, L. Forbes, P. Elzer, and S. Olsen*

**(76) SURVEY FOR *BORRELIA* SPECIES AMONG RESERVOIR ANIMALS CAPTURED IN FORESTED AREAS OF GREATER METROPOLITAN CHICAGO.** *M.M. Picken and R.N. Picken*

**(77) MECHANISMS OF SELENIUM-INDUCED TERATOGENESIS AND EMBRYOLETHALITY: OXIDATIVE STRESS.** *Kathy M. Orsted, M.F. Raisbeck, D.A. Sanchez and R.S. Siemion*

**(78) AN EPIZOOTIC HEMORRHAGIC DISEASE OUTBREAK IN NEW JERSEY.** *Douglas E. Roscoe, Daniel Ferrigno, Thomas R. Briggs, Jane E. Huffman, and David Stallknecht*

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**(79) DIVERSITY AND ECOLOGY OF *BARTONELLA* INFECTIONS IN RODENT COMMUNITIES.** *Michael Y. Kosoy, Kenneth L. Gage, and Mary Eggleston*

- (80) PRESUMPTIVE PULMONARY MYCOPLASMOSIS IN CAPTIVE VANCOUVER ISLAND MARMOTS (*MARMOTA VANCOUVERENSIS*).** *S.R. Black*
- (81) POPULATION HEALTH CONCERNS FOR LOWLAND GORILLAS: ADDRESSING THE KNOWLEDGE GAP.** *William B. Karesh and Sharon L. Deem*
- (82) PATHOLOGY AND MORTALITY IN THE SOUTHERN SEA OTTER (*ENHYDRA LUTRIS NEREIS*) POPULATION AS A RESULT OF PARASITIC INFECTIONS.** *Murray D. Dailey, Karl A. Mayer, and Melissa Chechowitz*
- (83) BASELINE HEALTH VALUES IN SEA OTTERS.** *Krista D. Hanni, Jonna K. Mazet, Frances M. D. Gulland, Jim Estes, Michelle Staedler, Michael J. Murray, and David A. Jessup*
- (84) LIFE CYCLE OF *OTOSTRONGYLUS CIRCUMLITUS* (META-STRONGYLOIDEA: CRENOSOMATIDAE) OF PHOCID SEALS.** *L. N. Measures*
- (85) *SARCOCYSTIS FALCATULA* DEVELOPMENT IN ITS NATURAL HOSTS.** *E.C. Greiner, S. Luznar, R. Porter, M.E. Hemenway, P.E. Ginn, and J.B. Dame*
- (86) GENERALIZED, PRURITIC DERMATITIS, POSSIBLY ASSOCIATED WITH A HYPERSENSITIVITY REACTION, IN HAND-RAISED JUVENILE OPOSSUMS (*DIDELPHUS VIRGINIANA*).** *Catherine M. Brown*
- (87) GENETICS OF NATURAL DISEASE RESISTANCE IN BIGHORN SHEEP.** *Karen M. Rudolph, Tricia L. Hosch, Joe W. Templeton, and David L. Hunter*
- (88) *PARELAPHOSTRONGYLUS ODOCOILEI* AND *PROTOSTRONGYLUS STILESI* IN DALL'S SHEEP: PREDISPOSING FACTORS FOR MORTALITY?** *Susan Kutz, Alasdair Veitch, Emily Jenkins, Brett Elkin, Eric Hoberg, Manuel Chirino-Trejo, Lydden Polley, and Trent Bollinger*
- (89) A MODEL FOR INVESTIGATING THE DEVELOPMENT, TRANSMISSION, AND RESPONSE TO CLIMATE CHANGE OF PROTOSTRONGYLID PARASITES ON THE ARCTIC TUNDRA.** *Susan Kutz, Lydden Polley, and Eric Hoberg*
- (90) NOTOEDRIC MANGE IN WESTERN GRAY SQUIRRELS FROM WASHINGTON.** *Todd E. Cornish, Mary J. Linders, Susan E. Little, and W. Matthew Vander Heagen*
- (91) PERSISTENCE AND SAFETY OF PARENTERALLY DELIVERED IOPHENOXIC ACID AS A SEROMARKER IN BISON (*BISON BISON*).** *Steven J. Sweeney, Thomas J. Roffe, Kenneth W. Coffin, Mark L. Drew, and Robert H. Poppenga*
- (92) SEROLOGY FOR SELECTED VIRUSES, BACTERIA, AND PROTOZOA IN FREE-RANGING ANACONDAS (*EUNECTES MURINUS*) IN VENEZUELA.** *Paul P. Calle, John Thorbjarnarson, William Holmstrom, William B. Karesh, Jesús Rivas, and María Muñoz*
- (93) DEVELOPMENT OF A FISH AND WILDLIFE HEALTH PROGRAM FOR THE MARYLAND DEPARTMENT OF NATURAL RESOURCES.** *Cindy P. Driscoll, Susan Knowles, Brenda Kibler, Brett Coakley, Kelly Greenhawk, and Tricia Litwiler*
- (94) NATURAL HISTORY STRATEGIES OF MICROORGANISMS CAUSING DISEASES OF WILDLIFE.** *Richard G. Botzler and Richard N. Brown*
- (95) WATEFOWL HEALTH AND MANAGEMENT: THE FIRST WILDPRO MODULE.** *F. Joshua Dein, Suzanne I. Boardman, and Debra Bourne*
- (96) WILDLIFE HEALTH CAPACITY BUILDING IN SOUTH AMERICA.** *Marcela M. Uhart, William B. Karesh, and Sharon L. Deem*
- (97) RADIOGRAPHS—AN ESSENTIAL TOOL FOR FORENSIC INVESTIGATIONS INVOLVING WILDLIFE MORTALITY INVESTIGATIONS.** *Richard K. Stroud and Rhoda Ralston*
- (98) ALBERTA'S DRAFT IMPORT PROTOCOLS FOR GAME FARM CERVIDS: A WORK IN PROGRESS.** *M.J. Pybus and D.K. Onderka*