

SUPPLEMENT TO THE JOURNAL OF WILDLIFE DISEASES

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Wildlife Diseases Newsletter
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PRESIDENT'S CORNER

Those of you fortunate enough to have attended WDA's 51st Annual Wildlife Disease Association Conference, held at Humboldt State University in Arcata, California, this past July/August, certainly experienced one of our most successful and enjoyable conferences in memory. More than 200 registrants enjoyed the wonderfully cool Northern California temperatures, as well as the unquestioned beauty of the "redwood country". Hosts Rick Botzler and Rick Brown, along with Program Chair Mike Ziccardi and Special Symposium Chairs Bob McLean, Ben Gonzales and Mike Miller assured the meeting's success by arranging for more than 120 outstanding scientific presentations, a great picnic, successful auction, wonderful Awards Banquet and exciting and enjoyable field trips. I, along with the entire WDA membership, offer sincerest thanks for an absolutely superb WDA experience!

During the course of each year the WDA Council members, both individually and as a collective body, work very hard to address issues essential to the continued success of the WDA as a scientific organization. Our Constitution and Bylaws, along with established Committee Guidelines, provide the basic framework for achieving Council's goal of meeting critical objectives and serving the membership.

For more than a dozen years Council has continued to formally recognize the need to hire a part time Executive Manager to assist in dealing with the increasing complexities and time required to effectively run our Association. During the past couple of years Council has looked closely at the financial and operational health of the Association, particularly with a view to advancing and improving the variety and quality of services provided to the membership. Over the years significant efforts were made to minimize the cost of annual membership dues. Unfortunately, Journal publication expenses, business and administrative costs, etc. have risen at rates markedly exceeding that of our previous dues increases. The result has been expenditures exceeding income.

In an effort to reverse this unhealthy trend, this year Council approved an increase in most membership categories at a rate exceeding that of recent years. WDA, having for years been one of the "best buys" within the scientific community, i.e. least expensive, must make changes if it is to continue to keep pace with member needs and expectations. It is felt that increased dues will be acceptable to the membership, while at the same time allowing WDA to address its financial challenges. Increases will impact students the least, regular members somewhat more, and institutional members at a proportionately higher rate. For most, the increases will represent the cost of a pizza or two over the course of a year. Associate membership fees remain unchanged.

As WDA looks toward improving membership and financial management, providing more effective assistance to Editors, enhancing on-line services, and reversing the realities of today's deficit spending, the anticipated increase in revenue should allow for these issues to be appropriately addressed. In conjunction with these initiatives, all of us need to continue to promote our Association, recruit new members, and give consideration to volunteering to serve on committees or run for elected office. With more than 50 successful years behind us, it is exciting to look forward to continued advancements and growth in our service to both members and the scientific community at large!

Another exciting and significant Council action of note was the creation of a new Web Page Editor position. Mike Ziccardi will be the first to serve in this position and will serve as the primary point of contact regarding website activities and will serve on Council. Full details regarding other Council and Business Meeting activities will be forthcoming with

publication of the associated minutes in a subsequent issue of the *Journal*.

The unqualified success of this year's meeting, makes it easy to get excited about next year's venue! That meeting will be held in Saskatoon, Saskatchewan, Canada, August 9-14, 2003. Please begin to make plans to join with Ted Leighton, conference chairman, and our Canadian hosts, for what will most assuredly be a superb academic, social and cultural time spent with WDA colleagues! I look forward to seeing as many of you as possible in Canada in 2003. Have a wonderful fall season!

- Paul L. Barrows, President, WDA

WDA ACTIVITIES

2002 WDA Conference. The 51st Annual Meeting of the Wildlife Disease Association was held on the campus of Humboldt State University (HSU) between 28 July and 1 August, 2002. The conference, sponsored by the College of Natural Resources and Sciences at HSU, the Wildlife Health Center at the University of California at Davis, the Institute for Wildlife Studies in Arcata, CA, brought together over 200 participants from 6 countries. The week's events began with the meetings of the Editorial Board and the Council on Sunday, 28 July. The evening included both a special student reception and a general reception sponsored by the UC Davis Wildlife Health Center; Greta Wengert, one of our local organizing committee members (and a recent graduate student from HSU) was gracious enough to provide background piano accompaniment for the many conversations and reunions that took place.

Co-host Rick Botzler, Dean Jim Howard, and HSU President Rollin Richmond welcomed the WDA members prior to the Symposium on Emerging Diseases of Wildlife held on Monday morning. This symposium included talks presented by Drs. Peter Daszak, Andy Dobson, Barry Hartup, Bob McLean, Jonna Mazet, Mike Kock, Mary Poss, Rick Rosatte, and Mark Abdy. Lunch was followed by sessions on Ecosystem Health and the American Association of Wildlife Veterinarians Cutting Edge Speaker, Dr. Joe Bielitzki. The annual picnic was held on Monday night at Camp Bauer along the Mad River.

Tuesday was the day for excellent student presentations including those given by Samantha Gibbs, this year's Student Research Recognition Award winner, and Michael Yabsley, the Terry Amundsen Student Competition Award winner, both from the University of Georgia; congratulations to you all with a special congratulations to the award winners. Tuesday night was followed by our annual WDA Auction. Dr. Dave Jessup and friends presided over another very successful auction. The event brought more than \$5600.00 to the WDA to help support the student awards.

The general sessions continued through Thursday and included special symposia on "Diseases of Wild Sheep," and "Chronic Wasting Disease." The annual Awards Banquet was held on Wednesday evening to honor those students mentioned previously, Dr. Anne Fairbrother who was this year's Distinguished Service Award recipient, and Dr. Tonie Rocke who was the first woman recipient of the prestigious Duck Award. Dr. Fairbrother's award was presented by Dr. Rocke and accepted in her absence by Dr. Tom Yuill.

As conference co-hosts, we are grateful to the many people who contributed to the organization of this year's meeting. We especially thank our local organizing committee, our sponsors, auction item donors (and bidders), the staff of HSU Extended Education, and the administration of Humboldt State University -- all of whom worked together to make the conference a success.

- Submitted by Rick Brown and Rick Botzler, Conference Co-Chairs, Department of Wildlife, Humboldt State University.

WDA Student Activities

2002 Student Award Winners. This year, we had a very successful student awards session. We had a total of 7 applications for the WDA Scholarship and 3 for the Student Research Award. Dr. Samantha Gibbs from the University of Georgia was the recipient of the Research Award. Her topic was the detection of West Nile virus in wild birds from the southeastern United States. Dr. Michael Yabsley from the University of Georgia was the recipient of the WDA Scholarship. His topic was the epizootiology of ehrlichiosis in white-tailed deer from the Southeastern United States. Dr. Catherine Soos from the University of Saskatchewan was the winner of the Terry Admundsen Student Presentations Award. Her talk was entitled "Factors affecting survival of juvenile Franklin's gulls (*Larus popixcan*): The role of

hatching asynchrony, immune function, and disease.” Student presentations were, on the whole, outstanding, and all the recipients of awards were well deserving of this honor. The Student Awards Committee wishes these recipients the very best for a successful career in wildlife health.

- Submitted by Thierry Work

The WDA Student Awards- 2003.

**-PLEASE READ CAREFULLY-
(You are required to follow instructions exactly)**

Wildlife Disease Graduate Student Research Recognition Award DEADLINE: April 15, 2003

The *Student Research Recognition 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. The winner receives a plaque and up to \$1000 US to cover travel, housing, registration, etc. related to the annual conference. The student will be the featured presenter during the Student Presentation Session at the conference.

Applicants should submit three items:

- 1) A summary of their research (10 pages double spaced written in type face font 10 or larger) structured as follows: Title, abstract, introduction, methods, results, discussion, references, tables and figures. The title page should be separate, and the 10-page limit applies only the Title, abstract, introduction, methods, results, and discussion.
PLEASE ENCLOSE 7 COPIES.
- 2) A cover letter stating how the research relates to WDA objectives (see inside back cover of WDA journal).
- 3) A letter of support from the faculty advisor indicating degree of student involvement in planning and execution of the research project.

Selection criteria: Each item (1-3) will receive a score and the sum of these scores will determine the rank of the candidate.

GROUNDINGS FOR DISQUALIFICATION INCLUDE:

- Items missing.
- Summary exceeds 10 pages (excluding tables, figures, and references).
- Submissions postmarked beyond deadline date.

Wildlife Disease Association Scholarship DEADLINE: April 15, 2002

The *Wildlife Disease Association 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 \$2000 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 must have completed a four-year baccalaureate degree. Candidates with an overall grade point average of 3.5 or above in 4.0 system or 80% or better in percentage system will receive priority. The candidate should be committed to leadership, scholarship, and service in the wildlife health profession. To be considered, you should submit the following items:

- 1) One *Original* and 6 photocopies of all relevant transcripts. *Original* transcripts means: Official transcripts (i.e. with the imprint or official seal of the institution and signature of the responsible university officer) or copies signed by the student's faculty advisor.

- 2) 7 copies of a single page giving cumulative grade point average for all undergraduate degrees, graduate degrees, and ongoing coursework.
- 3) Up to 3 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, judgment and potential for contribution to the field of wildlife diseases. For each letter, include *original* and 6 copies.
- 4) Evidence of superior scholastic achievement (course work, scholarships, awards, publications). Again, please enclose 7 copies.

GROUNDINGS FOR DISQUALIFICATION INCLUDE:

- Items missing.
- Submissions postmarked beyond deadline date.

Terry Amundsen Student Presentation Award

DEADLINE: WDA MEETING, 2002

(Abstracts must be submitted by the deadline set by the Program Chair.)

The Terry Amundsen Student Presentation Award acknowledges outstanding oral presentation of research findings. Winner receives \$250.00 and a plaque.

To be considered, the student must give an oral presentation (13-15 min) of their topic of choice to the WDA meeting participants in a special session. Upon completion of the presentations, evaluation forms will be handed out to the audience who will be asked to score the presentations for the following:

- Quality of science
- Quality of visual aids
- Delivery
- Relevance to management of wildlife health

The student with the highest score will receive the award. Members of the WDA Student Activities Committee will adjudicate tied scores.

These award are non-renewable and can be received only once by a given candidate. Applications must be submitted by April 15, 2003 to: Thierry M. Work, USGS-NWHC-HFS, PO Box 50167, Honolulu, HI 96850, USA. Email: thierry_work@usgs.gov

WDA ACTIVITIES

New WDA Council Members. As a result of the 2002 elections for new officers and Council members, the WDA has a new Secretary, Margaret Wild; a new Treasurer, Charlotte Quist; and two new Council Members at Large, Billy Karesh and Kathy Converse. We thank the outgoing members, Lynn Creekmore (Secretary), Les Uhazy (Treasurer), and Council members Ellis Greiner and Margo Pybus, for their years of service to the WDA. We have added two additional Council positions. The new student member of the WDA Council is Samantha Gibbs, and Mike Ziccardi as the new Web Editor is also a member of Council.

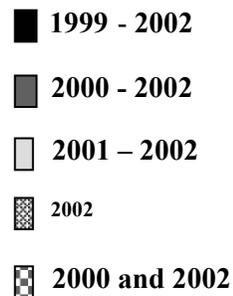
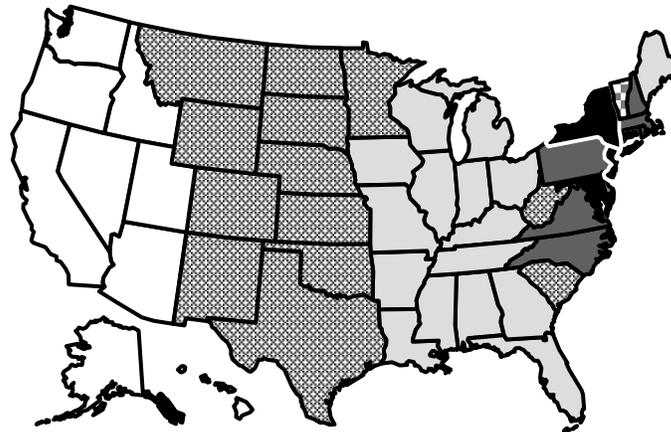
New Web Editor!! Stewardship of the WDA web site has changed hands. Dr. Jill Lang, who has been our webmaster for several years, has had to step down due to increased professional demands. We thank Jill for her many years of service to the WDA. Dr. Mike Ziccardi of the Wildlife Health Center at the University of California at Davis has graciously agreed to take on the task of managing the web site. At the summer WDA Council meeting, and with the recognition of the increasing importance of electronic communications, the position has been elevated to the title of Web Editor. As an Editor, Mike will be a member of the WDA Editorial Board and Council. Please check the web site (www.wildlifedisease.org) periodically to watch for upcoming changes! If you have comments or material for the web site, please contact Mike at mhziccardi@ucdavis.edu.

New Supplement Editor! Along that same vein, Dr. Charlotte Quist is stepping down as Editor of the *Supplement to the*

Journal of Wildlife Diseases after this issue is completed. Charlotte has been the Editor for 6 years now, and feels it is time for “new blood!” Dr. Pauline Nol of the National Wildlife Health Center has agreed to assume the job as the new *Supplement* Editor. Thanks Pauline! If you have materials for the January 2003 issue of the Supplement, please send them to Pauline at the National Wildlife Health Center, 6006 Schroeder Road, Madison, WI 53711. Telephone: 608-270-2453; FAX: 608-270-2415. Email: pauline_nol@usgs.gov

HAPPENINGS IN THE FIELD

West Nile Virus in the United States, 2002. The distribution of West Nile virus infections has extended to the western states of Montana, New Mexico and Wyoming in horses; Colorado in horses and birds; and birds in the Province of Saskatchewan, Canada. Dead bird surveillance continues throughout the United States and Canada with over 4,600 WNV positive birds confirmed in 39 states and four Canadian provinces. As of August 23, 2002, there are 367 confirmed human cases of West Nile virus in 19 of the United States and the District of Columbia with 16 mortalities in the states of LA (8), MS (3), GA (2), IL (1), KY (1) and TX (1). A review of state websites indicates there are over 500 reported infections in horses in 20 states (http://www.nwhc.usgs.gov/research/west_nile/west_nile.html, <http://www.cfe.cornell.edu/erap/WNV/WNV>, and http://www.cdc.gov/ncidod/dvbid/westnile/city_states.htm). See the below map for the progression of West Nile virus in the United States since 1999, and the below table for the distribution of WNV positive birds, humans, horses, mosquito pools and sentinel chickens.



Distribution of Positive West Nile Samples by State during 2002

State	Birds	Humans	Horses	Mosquitoes	Sentinel Chickens
LA	+	+	+	+	+
FL	+	+	+	+	+
MS	+	+	+	+	+
NY	+	+	+	+	+
AL	+	+	+	+	
IL	+	+	+	+	
TX	+	+	+	+	
OH	+	+	+	+	
SD	+	++	+	+	
GA	+	+	+	+	
KY	+	+	+	+	
IN	+	+	+	+	
AR	+	+	+		
MO	+	+	+		
TN	+	+	+		
WI	+	++	+		
OK	+		+		
NE	+		+	+	+
DC	+	+		+	
MA	+	+		+	
MD	+	+		+	
MI	+	++			
WA		+++			
MN	+		+		
ND	+		+		
KS	+		+		
CO	+		+		
IA	+		+		
WY			+		
NM			+		
MT			+		
PA	+			+	+
NJ	+			+	
CT	+			+	
VA	+			+	
DE	+				
ME	+				
NC	+				
NH	+				

RI	+				
SC	+				
VT	+				
WV	+				
Total	39	21	26	20	6

+ = Confirmed, ++ = Presumptive positive, +++ = Exposure in LA

- Submitted by Kathryn Converse, National Wildlife Health Center, Madison, Wisconsin.

Tularemia in Texas Rabbits. Tularemia, a contagious infection caused by the gram-negative bacteria, *Francisella tularensis*, was found in July in dead rabbits near Canadian, Texas. The discovery had doctors and city officials on alert to its possible appearance in humans and pets. The Texas Department of Health sent a warning to local hospitals that tularemia, otherwise known as "rabbit fever," was discovered in dead rabbits at the Gene Howe Wildlife Management Area. Wildlife officials found 16 dead rabbits and 5 dead squirrels at the refuge.

Tularemia is spread through the bite of infected ticks, contact of the skin with blood or tissue of infected animals, or handling or eating insufficiently cooked rabbit meat. Recommendations given to local residents by health officials are to avoid tick exposure, tick bites, and tick-infested areas to limit the risk of exposure as well as decreasing the risk of spreading tularemia. Pet owners were advised to minimize the contact their animals may have with ticks as well. Other recommendations given local residents included to wear rubber gloves when skinning or handling animals, and to cook wild rabbit and other game meat thoroughly. Dead or sick wild animals should not be handled.

In humans, symptoms of tularemia include: fever, painful swollen lymph glands (if from a tick bite); abdominal pain (if ingested); and pneumonia-like symptoms (if inhaled). Tularemia is one of many tick-borne diseases that can be treated successfully with antibiotics. However, if untreated (or the disease is undiagnosed), there's a 30-60 percent chance of fatality in humans.

Tularemia has gained more notoriety since its inclusion in the list of significant potential biowarfare pathogens. As such, it would likely present as a respiratory infection: either tularemia pneumonia or oropharyngeal infection. Generally, natural infection presents as the ulceroglandular form with prominent lymph node infection. The bacterium was originally described by Francis in Tulare County, California, USA.

- Adapted from ProMed, August 2002.

Probable TSE Case in an Asiatic Golden Cat from an Australian Zoo. An Asiatic Golden Cat that died of pancreatitis at Melbourne Zoo in March of 2002 also had lesions compatible with a transmissible spongiform encephalopathy or TSE. The cat was born in a zoo in Europe in 1992 and was imported to the Melbourne Zoo in 1998 as part of the zoo breeding programs for this endangered species.

After the cat's death from pancreatitis, routine pathological screening of tissues collected at autopsy revealed lesions suggestive of TSE. Histopathological findings in the case included spongiform changes in various parts of the brain. Referral of fixed and fresh frozen tissues to the Australian Animal Health Laboratory (AAHL) for further testing for TSE exclusion followed. AAHL obtained positive test results by immunohistochemistry, electron microscopy (for scrapie-associated fibrils), and by western blot. A presumptive diagnosis of TSE was made on the basis of these findings. Samples of brain tissue from the affected animal will be sent to the OIE world reference laboratory to confirm this diagnosis.

Transmissible spongiform encephalopathies include bovine spongiform encephalopathy (BSE) and scrapie of sheep and goats, neither of which occur in Australia. TSEs have previously been reported in a number of zoo species in other countries, including wild cats and antelopes. Australian authorities had previously diagnosed a TSE case in a cheetah imported from a British zoo, but that this was the first report of a TSE in an Asiatic Golden Cat.

The history of this male Asiatic Golden Cat at Melbourne zoo is one involving only short-duration contacts with an Australian-born female of the same species (which remains alive and healthy), and a dietary regime consisting exclusively

of whole rabbits, chickens, and rats, and kangaroo meat (all of Australian origin). As such, it is virtually certain that exposure to TSE infectivity occurred at a time before the animal was imported into Australia for zoo display. This diagnosis will, therefore, not affect Australia's TSE-free status for animals. There are no implications for public health or the livestock industries from this finding.

- Adapted from ProMed, August 2002.

National Wildlife Health Center's Quarterly Mortality Report

Continuing mortalities associated with Lake Erie. For the fourth consecutive year, there were a variety of mortality reports associated with Lake Erie. Starting in May 2002, approximately a dozen common map turtles died in a small area of Presque Isle Bay, Pennsylvania. Some turtles submitted to NWHC had severe, fibrinous, necrotizing enteritis; no etiologic agent was identified. In late June, there were reports of more than 10,000 dead mudpuppies (*Necturus* sp.) along the southern shore of Lake Erie in New York; 1-3 mudpuppies, up to 30 cm in length, found per meter of shoreline. Residents along the north shore of Lake Erie in Ontario, Canada, also reported hundreds of dead mudpuppies. About 32 km west of this mortality, the Canadian Wildlife Service observed a few gulls showing signs of botulism on a nesting island. Mudpuppy remains have been found in gull digestive tracts. Radiotelemetry studies support the possibility that gulls could have made foraging flights greater than the distance between these mudpuppy events and their nesting colony. Also in late June, up to 3000 dead ring-billed gulls were reported in a colony of 10,000 birds in New York. Botulism type E toxin was detected via mouse assay in gulls from this colony. Estimates ranging from 10 to the 100s of rock bass, small mouth bass, carp, suckers, perch, gobies, catfish, bullheads, and sheepshead were observed dead along the Lake Erie shore at locations in Pennsylvania and New York throughout this time period. There was also one report of dead sheepshead in the far western portion of Lake Erie, near Sandusky, Ohio. No cause of mortality has been determined for the mudpuppy and fish kills, some of which may be related to oxygen depleting conditions. Other possible intoxications include microcystins and type E botulism. Researchers, diagnosticians, biologists, and managers in Ontario, New York, Pennsylvania and Ohio are maintaining frequent contact regarding these mortalities.

California Brown Pelican Mortalities along the Southern California Coast. From mid-April until the end of June 2002, US Fish and Wildlife Service biologists and wildlife rehabilitators reported mortality of brown pelicans on the southern California coast. Personnel from Wild Rescue in Malibu, California, reported the recovery of 131 dead and 32 live brown pelicans and small numbers of other fish-eating seabirds along the coast from Santa Barbara to San Diego. This avian mortality event coincided with significant mortality in seals, sea otters and dolphins along the same stretch of coast. The suspected etiologic agent for marine mammal and fish-eating bird mortalities was domoic acid, a naturally occurring toxin produced by plankton that is ingested and concentrated by small marine fish and crustaceans. Four brown pelicans were submitted to the NWHC for diagnostic evaluation; two pelicans had no significant gross pathological lesions and two had fibrinous laryngitis and pulmonary hemorrhage or abscesses. Samples from two pelicans sent to the NOAA National Ocean Services Laboratory in Charleston, South Carolina were positive for domoic acid based on a receptor-binding assay. Receptor-binding assay results for the remaining two birds and quantitative results for domoic acid from liquid chromatography-mass spectrometry are pending.

Songbird Mortality in Utah: Wildlife biologists from the US Fish and Wildlife Service and Division of Wildlife Resources in Utah reported songbird mortality in May and early June near bird feeders at several widely scattered suburban and rural sites in eastern and southern Utah. NWHC received birds from three mortality events involving pine siskins, Cassin's finches, house finches, evening grosbeaks, and a yellow-breasted chat. Salmonellosis was diagnosed in birds from two locations based on gross pathological lesions and positive bacterial cultures. The specimens submitted from the third event were not suitable for examination.

Quarterly Wildlife Mortality Report

April 2002 to June 2002

State	Location	Dates	Species	Mortality	Diagnosis	Reported by
AK	Anchorage	06/07/02-06/19/02	Black-capped Chickadee	7	Open	NW
AR	Garland Co., Lake Ouachita	12/13/01-01/30/02	Bald Eagle	2	Vacuolar myelinopathy	NW
CA	Siskiyou Co., Lower Klameth NWR	02/15/02-04/15/02	American Coot Snow Goose Ross' Goose Tundra Swan	2000 (e)	Avian Cholera	NW
CA	Los Angeles Co., Zuma Beach	04/19/02-05/30/02	Brown Pelican Unidentified Loon Unidentified Grebe	136	Open	NW
GA	Floyd County, Almuchoe	03/11/02-03/11/02	Common Grackle	5	Toxicosis: Famphur	SC
GA	Banks County, Commerce	03/23/02-03/26/02	Purple Finch	2 (e)	Mycoplasma	SC
GA	Ft. Stewart	03/01/02-03/01/02	Bullfrog	10 (e)	Fungal Infection: chytrid	NW
GA	J Strom Thurmond Lake/Clarks Hill Lake	10/20/01-01/31/02	Canada Goose Bald Eagle American Coot	25 (e)	Vacuolar myelinopathy	SC
GA	Lowndes Co., Moody Air Force Base	05/20/02-05/20/02	Unidentified Sparrow	11	Open: toxicosis suspect	NW
GA	Camden County	01/09/02-03/09/02	Northern Cardinal	5	Salmonellosis	SC
GA	Monroe County	03/04/02-03/11/02	American Goldfinch	2 (e)	Salmonellosis	SC
GA	Walton County	03/21/02-04/04/02	White-throated Sparrow Pine Siskin Northern Cardinal American Goldfinch	4 (e)	Salmonellosis	SC
GA	Washington County	05/22/02-06/06/02	Brown-headed Cowbird	1	Salmonellosis	SC
LA	Avoyelles Parrish, Lake Ophelia NWR	05/15/02-05/15/02	Southern Leopard Frog	13	Open	NW
LA	Kenner	05/17/02-06/10/02	Muscovy Duck	30	Duck plague suspect	LSU
MD	Wicomico Co., Salisbury	10/01/01-04/15/02	Unidentified Gull	200 (e)	Toxicosis suspect	MD, NW
MS	Hinds County	05/21/02-06/15/02	Red-eared Slider Turtle	25	Fat depletion	NW
MT	Sheridan Co., Medicine Lake NWR	04/26/02-06/07/02	Western Grebe American White Pelican Unidentified Gull Double-crested Cormorant	22	Botulism type C	NW

NC	Onslow Co., Camp Lejeune MCB	03/01/02-03/01/02	Bullfrog	5 (e)	Fungal Infection: chytrid	NW
NY	Erie Co., Lackawanna, Bethlehem Steel	06/25/02-ongoing	Ring-billed Gull	3,000 (e)	Botulism type E	NW
NY	Lake Erie shore	06/10/02-ongoing	Mudpuppy salamander	20,000 (e)	Open	NW
NY	Oneida County, Utica	09/19/01-09/19/01	Rock Dove	1	Toxicosis: Avitrol	NY
OH	Hamilton Co., Cincinnati	04/19/02-04/19/02	Double-crested Cormorant	10	Electrocution: lightning strike	NW
OH	Mosquito Lake State Park	05/18/02-05/22/02	Purple Martin	60 (e)	Open: emaciation/starvation	NW
PA	Erie Co., Presque Isle Bay, Lake Erie	04/01/01-09/30/01	Unidentified Softshell Turtle	100 (e)	Pneumonia	NW
PA	Erie Co., Presque Isle State Park	05/10/02-06/01/02	Map Turtle Painted Turtle	15(e)	Enteritis	NW
RI	Washington Co., Cranberry and Opacum Ponds	06/15/02-07/15/02	Wood Frog	100's (e)	Viral Infection: Iridovirus	NW
SC	Aiken County	04/24/02-04/24/02	Canada Goose	2	Toxicosis: diazinon	SC
SD	Brown Co., Aberdeen	05/25/02-07/01/02	Cedar Waxwing Common Grackle Northern Flicker American Crow American Robin	100 (e)	Open	NW
UT	Bear River Migratory Bird Refuge	05/30/02-06/05/02	Western Grebe Clark's Grebe	30 (e)	Emaciation	NW
UT	Kane Co., Big Water	06/28/02-07/07/02	House Finch Yellow-breasted Chat	6	Open	NW
UT	Iron Co., Cedar City and Parowan	05/16/02-05/31/02	Pine Siskin Evening Grosbeak	51 (e)	Salmonellosis	NW
UT	Uintah Co., Roosevelt	05/22/02-06/10/02	Cassin's Finch Pine Siskin	36 (e)	Salmonellosis	NW
VT	Grand Isle Co., South Hero	03/25/02-04/10/02	Northern Leopard Frog	100 (e)	Exposure suspect	NW
WA	King Co., Seattle	05/02/02-05/02/02	American Crow	2	Toxicosis: organophosphorus compd. suspect	NW
WI	Upper Mississippi NWR, LaCrosse	06/26/02-07/01/02	Mallard Duck	5 (e)	Open: emaciation/Starvation	NW
Updates/Corrections:						
FL	Okaloosa Co., Destin Harbor	02/01/02-ongoing	Brown Pelican Common Loon	60 (e)	Open	NW

			Osprey	
			American White Pelican	
			Wood Duck	
FL	Everglades National Park	02/25/02-03/30/02	Cuban Tree Frog	15 (e) Viral Infection: NW Iridovirus
IL	Winnebago Co., Rockford	12/26/01-ongoing	House Sparrow	120 (e) Salmonellosis NW

(e) = estimate; * = morbidity, not mortality

New York State Dept. of Environmental Conservation (NY), Southeastern Cooperative Wildlife Disease Study (SC), USGS National Wildlife Health Center (NW), Louisiana State University (LSU), Maryland Department of Agriculture (MD). Written and compiled by Kathryn Converse/Rex Sohn - Western US, Grace McLaughlin - Eastern US and Christine Lemanski, NWHC. The Quarterly Wildlife Mortality Report is available at <http://www.nwhc.usgs.gov>. To report mortality or receive information about this report, contact the above NWHC staff, or for Hawaiian Islands contact Thierry Work. Phone: (608) 270-2400, FAX: (608) 270-2415 or e-mail: kathy_converse@usgs.gov. USGS National Wildlife Health Center, 6006 Schroeder Road, Madison, WI 53711.

WDA SECTION NEWS

NEWS FROM EUROPE

Infectious keratoconjunctivitis in Swiss Chamois. In western Switzerland, near Montreux, an outbreak of infectious keratoconjunctivitis (IKC) has killed more than 20 Alpine chamois since the beginning of July, 2002. Ongoing molecular and epidemiological investigations will show if this outbreak originated from the spill-over of *Mycoplasma conjunctivae* from domestic sheep sharing common pastures or if the animals became infected following contact with chamois affected with IKC from adjacent regions. In the neighboring cantons of Valais and Berne, dozens of chamois and ibexes have died of the consequences of IKC in the last 12 month.

- Marco Giacometti, Switzerland, Email marco.giacometti@wildvet-projects.ch.

The IUCN Caprinae Specialist Group. The IUCN Caprinae Specialist Group (Chairman: Marco Festa-Bianchet, Canada) has recently set up a Working Group on Diseases. The chair of this group is Marco Giacometti, Switzerland. The main objectives of the WGD are to create a network of veterinarians having expertise in diseases of Caprinae and to share information on diseases and outbreaks with biologists, conservationists, managers and hunters. The WGD will try to collaborate with other groups working on diseases of wildlife. Information about the activities of the WGD is available on www.wildvet-projects.ch/caprinae.htm.

- Marco Giacometti, Switzerland, Email marco.giacometti@wildvet-projects.ch.

Disease outbreaks in European wildlife, summer 2001. It has been an eventful summer for European wildlife, with an epidemic of phocine distemper virus (PDV) killing common seals (*Phoca vitulina*) along the North Sea coasts of Holland, Denmark, France and England, and the first isolation of Usutu virus (Flaviviridae) from dead passerines in Austria. Could workers in the field investigating these and other significant diseases such as West Nile Fever please send data to the European editor (below).

Blood parasites of birds of prey from Germany. Blood parasites in avian species attract increasing scientific attention in Europe and reference information from large surveys is important. We are grateful to Dr Oliver Krone, IZW, Berlin, for supplying a short summary of his recent paper, below.

Abstract. Oliver Krone, Jürgen Priemer, Paul Sömmer, Torsten Langgemach and Olaf Lessow.

A total of 1150 free-living birds of prey from Germany were examined for blood parasites. The prevalence of infection was 11% (adult birds 18%, immature birds 16%, and nestlings 4%). Among the Falconiformes, 11% of 978 birds were infected, and 13% of 172 Strigiformes. Out of 17 falconiform species the highest prevalence for haematozoa; i.e.

Leucocytozoon toddi (30%) was found in the Eurasian Buzzard. Eight species of owls were examined for blood parasites; the Tawny Owl had the highest prevalence with *Haemoproteus syrnii* (16%). In the one Pygmy Owl (*Glaucidium passerinum*) examined *Trypanosoma avium* and *Plasmodium (Giovannolaia) fallax* were detected. The White-tailed Sea Eagle (*Haliaeetus albicilla*) was found to be a host of *L. toddi* for the first time.

Table 1. Number of birds examined with blood parasite prevalences in different age classes

Birds	Pulli (n)	Pulli prevalence	Immature (n)	Immature prevalence	Adult (n)	Adult prevalence
Hawks	440	4%	175	16%	363	17%
Owls	63	3%	19	16%	90	20%
Total	503	4%	194	16%	453	18%

This work is published in: Acta Protozoologica (2001) 40: 281-289

- Submitted by Oliver Krone, Berlin. Email: krone@IZW-berlin.de

European Section. Material suitable for publication in News from Europe includes recent wildlife disease outbreaks and new diseases in Europe, short case and meeting reports; job and scholarship announcements. Members for whom English is a second language, will be accommodated as far as possible. The deadline for the next issue is November 2002. Please mail, fax or e-mail submissions to, Paul Duff, VLA Penrith, Merrythought, Calthwaite, PENRITH, Cumbria, CA11 9RR, United Kingdom, e-mail p.duff@vla.maff.gsi.gov.uk Fax ++44(0)-1768-885314.

Finally, we would like to express our gratitude to the retiring *Journal of Wildlife Disease Supplement* editor, Charlotte Quist, for her help and patience with *News from Europe*.

WDA SECTION CHAIRS AND CONTACT INFORMATION

African Section. For information regarding the African Section, contact Elizabeth Wamba, Kenya Wildlife Service, P.O. Box 40241, Nairobi, Kenya. Telephone: 254-2-504180; Fax: 254-2-505866; email: ewamba@yahoo.com

Australasian Section. For information regarding the Australasian Section, contact Peter Holz, Healesville Sanctuary, P.O. Box 248, Healesville, Victoria 3777 Australia. Telephone: 61 3 5957 2864; fax: 61 3 5957 2870; email: pholz@zoo.org.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

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

JOB ANNOUNCEMENTS

Field Research Interns (2 Positions) Needed from mid-June 2002 to mid-December 2002 to conduct field work on avian disease in Hawaii. Research interns will conduct field work at Kipahulu Valley and adjacent areas on the island of Maui to document prevalence and distribution of avian pox and malaria in native and non-native forest birds. Field sites are located in Kipahulu Valley and adjacent areas in Haleakala National Park. Field work will consist of: (1) mist netting and banding forest birds; (2) trapping mosquitoes; (3) collecting data on feral pig disturbance, and larval mosquito habitat.

Work schedule and duties will vary during the course of the internship. Applicants must be in excellent physical condition, able to walk long distances over, uneven, steep, slippery terrain, work in remote locations (camping 7-10 days at a time will be required) and live and work in close proximity with other interns. **QUALIFICATIONS:** Undergraduate coursework in ecology, ornithology, wildlife biology, microbiology and/or parasitology. Prior experience mist netting, handling, and identifying forest birds is desirable. Food and laundry stipend of \$400 per month, dormitory-style housing, field equipment, and field training are provided; interns must provide their own airfare to Hilo, Hawaii. Days are long and field work is demanding, but schedule provides ample time for relaxation and exploring Hawaii (snorkeling, swimming, surfing, diving, hiking, biking). Interns will live on a small rural community next to Haleakala National Park on the island of Maui. Please send cover letter, resume, and names and current telephone numbers of 3 references to: CARTER ATKINSON, P.O. BOX 218, HAWAII NATIONAL PARK, HI 96718, EMAIL: Carter_Atkinson@usgs.gov, FAX: 808-967-8545.

Assistant/Associate Professor, Infectious Diseases of Wildlife, Division of Biological Sciences and Fish and Wildlife Biology Program, The University of Montana. The Division of Biological Sciences at the University of Montana invites applications for a tenure-track Assistant/Associate Professor studying wildlife diseases, with primary responsibility in the interdisciplinary Fish and Wildlife Biology Program (a joint program between the School of Forestry, the Division of Biological Sciences, and the Montana Cooperative Wildlife Research Unit); tenure is in the Division of Biological Sciences. This is the fifth of five new positions created to support our growing doctoral program in Fish and Wildlife Biology. The successful applicant will hold a PhD or PhD/DVM and will be expected to develop an interactive, extramurally funded research program in the ecology or pathogenesis of infectious disease in wildlife populations and to participate in both undergraduate and graduate education in wildlife biology. Individuals with research interests that complement those of existing faculty are strongly encouraged to apply. For more information see <http://biology.dbs.umt.edu/> and www.forestry.umt.edu/academics/wildlife.

To apply, send a CV, a 1-2 page summary of research interests and future research plans, a statement of educational philosophy and experience and the names of 3 references to: Mary Poss, DVM, PhD, Search Committee Chair, HS104, Division of Biological Sciences, The University of Montana, Missoula, MT 59812; telephone: 406-243-5122; email: mposs@selway.umt.edu. Screening of applications will begin immediately and continue until the position is filled; starting date is negotiable but the position is available after January 1, 2003.

The University of Montana is an equal opportunity/affirmative action employer and encourages applications from minorities and women. Qualified applicants can request veterans' preference in accordance with State law. This position announcement can be made available in alternative formats upon request.

TRAINING/EDUCATIONAL OPPORTUNITIES

Training Available in Fish Diagnostics, Inspections, and Laboratory Methods. The US Fish and Wildlife Service Fish Health Centers provide laboratory and field examination services to the National Fish Hatcheries. Our main emphasis is to assist the hatcheries in producing quality fish that will contribute to the enhancement and restoration of aquatic ecosystems.

At the Olympia and Idaho Fish Health Centers, the work may involve travel to field sites to perform diagnostic examinations and collect samples that are then evaluated in our laboratories. Routine testing procedures include bacteriology (biochemical, ELISA, and PCR methods), virology (cell culture, serological, and PCR methods), parasitology (microscopic and PCR methods), histology, and clinical chemistry.

Training may be arranged for one day or several weeks at one or both of these laboratories depending on the interests and availability of the individual. In general, most broodstock inspections are performed from September through November, juvenile inspections are performed from January through April, and wild fish surveys are conducted from March through September. Routine diagnostic examinations are performed year round and special projects are conducted as time and necessity permit.

For more information, please contact Joy Evered DVM, at the Olympia Fish Health Center; email joy_evered@fws.gov or Marilyn Blair DVM, at the Idaho Fish Health Center; email marilyn_j_blair@fws.gov.

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

MEETING ANNOUNCEMENTS

American Association of Zoo Veterinarians Annual Conference. October 6-10, 2002; Milwaukee, Wisconsin. The American Association of Zoo Veterinarians will hold its' annual conference in Milwaukee, Wisconsin, October 6-10, 2002. Program sessions include Reptiles and Amphibians, Avian Medicine, Hoofstock, Carnivores, Primates, Case Reports, Aquatic Animals, Pathology, Conservation Medicine, Emerging Diseases, Reproduction and Contraception, Behavior, Enrichment and Conditioning, and Biomaterial Banking. There will also be a poster session, veterinary and graduate student paper competitions, and workshops/wetlabs. For additional conference information, visit our website www.aazv.org or contact Wilbur Amand, VMD, Executive Director/AAZV, 6 North Pennell Road, Media, PA 19063, USA. Phone (610) 892-4812. Fax (610) 892-4813. Email: AAZV@aol.com.

AAZV 9th Annual Zoo & Wildlife Pathology Workshop. Co-Sponsored by the Armed Forces Institute of Pathology & C.L. Davis, D.V.M. Foundation. October 6, 2002; Milwaukee, Wisconsin. This all day workshop will be held on Sunday, October 6, 2002 at the Hyatt Regency, Milwaukee, Wisconsin. Featured are case presentations of classic or new entities of zoo and wildlife species with emphasis on clinical/pathological correlation. It is open to zoo and wildlife clinicians, interns, residents and students – all are encouraged to attend. The format is interactive. Fifteen or more cases are presented (by participants submitting the cases) followed by questions and provocative discussion with the audience. This year will feature a part-day session on CNS diseases of zoo & wildlife species. The keynote speaker and facilitator for this special session will be Dr. Tom Van Winkle, Associate Professor of Pathology, University of Pennsylvania Veterinary School, and Philadelphia, Pennsylvania.

Cost: \$50.00 – full day includes case handouts and refreshments. All participants must register. If you are not a member of AAZV and wish to participate or attend this Workshop, please email Dr. Wilbur Amand, wbamand@aol.com for a meeting registration package. Remember, you are welcome to attend the Workshop even if you have not submitted a case. Histoslides mailed to presenters are at no additional cost. Histoslides can be purchased for \$25 at the meeting by representatives of educational and training facilities, and by individuals as sets remain available. Organizers, R. Montali (montalir@nzp.si.edu); L. Lowenstine (ljlownstine@vmth.ucdavis.edu)

For further information contact Z&WPW co-ordinators Dick Montali (montalir@nzp.si.edu) or Linda Lowenstine (ljlownstine@ucdavis.edu).

Association of Reptilian and Amphibian Veterinarians Annual Conference. October 9-13, 2002; Reno, Nevada, USA. For more information contact Wilbur Amand, 6 North Pennell Rd., Media, PA 19063-5520, USA. Telephone: (610) 892-4812, Fax: (610) 892-4813. Email: arav@aol.com.

First International Zoo Keepers Conference. October 2-10, 2003; Avifauna, Alphen, Rijn, Netherlands. For updates on this conference, please visit <http://es.geocities.com/jxarles20/>.

11th Annual Mid-Western Exotic Animal Medicine Conference. November 2-3, 2002, Manhattan, Kansas. Topics include the surgery, medicine, and diagnostic techniques used in companion birds, reptiles, and small exotic mammals (9.5 CE hours). Drs. Michael Taylor and Rob Coke are among the speakers. Optional wet-labs, including avian endoscopic techniques, will be offered (3.5 CE hours). For more 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: caarpentr@vet.ksu.edu

52nd Wildlife Disease Association Conference. August 10-14, 2003; Saskatoon, Saskatchewan, Canada. Plan now to attend! Details in the January 2003 issue of the *Supplement*.

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 Dr. Pauline Nol at the National Wildlife Health Center, 6006 Schroeder Road, Madison, WI 53711. Telephone: 608-270-2453; FAX: 608-270-2415. Email: pauline_nol@usgs.gov Double spaced typewritten or electronic mail files in WordPerfect or Microsoft Word are preferred. The deadline for submission of articles for the next issue (January 2003, JWD Vol. 39, No. 1) is November 25, 2002.

Papers and posters, 51st Conference of the Wildlife Disease Association held in Arcata, California, July 28 to August 2, 2002. The name of the presenter is italicized.

- (1) **Investigating Wildlife EIDs – Lessons from Chytridiomycosis and Nipah Virus**
Peter Daszak
- (2) **Estimating the Basic Reproductive Number, R₀, for a Recently Introduced or Emerging Pathogen**
Andy Dobson and Ottar Bjornstad
- (3) **Does Winter Climate Influence Prevalence of Mycoplasmal Conjunctivitis in Wisconsin House Finches?**
Barry K. Hartup, Sonia Altizer, Wesley M. Hochachka and Andre A. Dhondt
- (4) **West Nile Virus, an Emerging Disease of North American Birds**
Robert G. McLean
- (5) **Linking Emerging Disease and Degradation of Marine Ecosystems**
Jonna A.K. Mazet, Kirsten V.K. Gilardi, Christine Kreuder, Patricia A. Conrad, Michael H. Ziccardi, David A. Jessup, Melissa A. Miller, and M. Tim Tinker
- (6) **The Quicksand Surrounding So-Called Emerging and Re-Emerging Human and Animal Diseases in Africa: Political, Cultural, and Institutional Factors that Influence Disease Management, Ecosystem Health, and Human Livelihoods**
Michael D. Kock and Richard A. Kock
- (7) **Pathogens and Predators: Using Viruses to Track Wildlife Populations**
Mary Poss, Roman Biek and Chuck Anderson
- (8) **Use of Oral Vaccination, Trap-Vaccinate-Release and Population Reduction to Control Raccoon Rabies in Ontario, Canada**
Rick Rosatte
- (9) **Legislative Issues on Emergent Wildlife Diseases and Bioterrorism Threats**
Mark J. Abdy
- (10) **Protozoal Problems Emerging at the Human-Wildlife-Domestic Animal Interface**
Patricia A. Conrad, Melissa Miller, Anne Kjemtrup, Ian Gardner, Christine Kreuder, Woutrina Smith, Rob Atwill and Dave Jessup
- (11) **Pathobiological Changes in White Storks (*Ciconia ciconia*) After a Mine Tailings Disaster in Southwestern Spain**
Judit E. Smits, Gary R. Bortolotti, Raquel Baos, Julio Blas, Jose Tella and Fernando Hiraldo

- (12) **Low Prevalence of Chytridiomycosis in Larval Red-Legged Frogs (*Rana aurora aurora*) in Redwood National Park**
Nathan C. Nieto and John O. Reiss
- (13) **The Risk of Avian Botulism Outbreaks from Avicide DRC-1339 in North Dakota Wetlands**
Michael D. Samuel, Diana R. Goldberg, Tonie E. Rocke and Kevin M. Johnson
- (14) **Medical Survey of the Local Human Population to Determine Possible Health Risks to the Mountain Gorillas (*Gorilla gorilla beringei*) of Bwindi Impenetrable Forest National Park, Uganda**
Jonathan M. Sleeman, William Guerrero, Jasper B. Ssebide, Lonny B. Pace, Travers Y. Ichinose and John S. Reif
- (15) **Test of an Environmental Model: Northern Red-Legged Frogs (*Rana aurora aurora*) as Bioindicators of Endocrine-Disrupting Contaminants Along California's Northwest Coast**
James B. Bettaso, Hartwell H. Welsh and Brent D. Palmer
- (16) **Patterns of Illegal Wildlife Poisoning in the United States - A Review of Cases Submitted to the National Wildlife Forensic Laboratory (1990 - 2001)**
Richard K. Stroud, Rhoda R. Ralston, Mark Kirms, Pamela McClure and Shelly O'Connell
- (17) **Invasive Pathogens: Detections on National Wildlife Refuges and Potential Risks to Additional Refuges**
Grace S. McLaughlin and F. Joshua Dein
- (18) **Patagonia Seabirds as Indicators of Marine Ecosystem Health**
Marcela M. Uhart, Flavio Quintana, Esteban Frere, Patricia Gandini, William B. Karesh and Robert A. Cook
- (19) **Marine Ecosystem Health and Sentinel Species: Adding an Ecological Element to the Proverbial "Canary in the Mineshaft"**
A. Alonso Aguirre And Gary M. Tabor
- (20) **Will Technology Benefit Wildlife Disease Evaluations?**
Joe Bielitzki
- (21) **Bacteremia in Free-Ranging Hawaiian Green Turtles with Fibropapillomatosis**
Thierry Work, George Balazs, Mark Wolcott and Robert Morris
- (22) **Infection of Hatchling Alligators (*Alligator mississippiensis*) with *Mycoplasma alligatoris***
Lauren J. Richey, Trenton R. Schoeb and Mary B. Brown
- (23) **Gross and Histopathologic Features and Parasites of Migrating Wild Adult Fall Chum Salmon (*Oncorhynchus keta*) in the Yukon River, Alaska**
Kathy Burek and Tevis J. Underwood
- (24) **Spatial, Demographic and Environmental Risk Factors for *Toxoplasma gondii* Exposure in Southern Sea Otters**
Melissa Miller, Ian Gardner, Christine Kreuder, David Paradies, Karen Worcester, David Jessup, Erin Dodd, Mike Harris, Jack Ames, Andrea Packham and Patricia Conrad
- (25) **Population Ecology of Pinniped Herpesvirus Infections and Cancer in California Sea Lions**
Andy Dobson, Linda Lowenstine and Frances Gulland
- (26) **West Nile Virus Detection in the Organs of Naturally-Infected Blue Jays (*Cyanocitta cristata*)**
Samantha E. J. Gibbs, Daniel G. Mead, Angela E. Ellis, Andrew B. Allison, Elizabeth W. Howerth and David E. Stallknecht
- (27) **Immune Response in Black-Tailed Prairie Dogs (*Cynomys ludovicianus*) to Voluntary Consumption of RCN-F1 Plague Vaccine Incorporated into a Palatable Bait**
Jordan Mencher, Tonie Rocke and Susan Smith

- (28) **Evaluation of a Sentinel System for *Ehrlichia chaffeensis* and *E. ewingii* Using White-Tailed Deer as Indicators**
Michael J. Yabsley, Vivien G. Dugan, Cynthia M. Tate, David E. Stallknecht, Susan E. Little, Andrea S. Varela and William R. Davidson
- (29) **Evidence of *Ehrlichia* spp. in Raccoons (*Procyon lotor*) from Georgia**
Vivien G. Dugan, William R. Davidson, Joseph K. Gaydos, Michael J. Yabsley, Susan E. Little, Ashley D. Beall and Colin C. Hurd
- (30) **Morbidity and Mortality of Reptiles Admitted to the Wildlife Center of Virginia, 1991 to 2000**
Justin D. Brown and Jonathan M. Sleeman
- (31) **A Comparison of Immunohistochemistry and Virus Isolation in Diagnosis of West Nile Virus**
Angela E. Ellis, Daniel G. Mead, Andrew B. Allison, Samantha E.J. Gibbs, Nicole L. Gottdenker, David E. Stallknecht and Elizabeth W. Howerth
- (32) **Factors Affecting Survival of Juvenile Franklin's Gulls (*Larus pipixcan*): The Role of Hatching Asynchrony, Immune Function, and Disease**
Catherine Soos, Gary R. Bortolotti and Gary Wobeser
- (33) **Phocine Herpesvirus-1 Infections in North American Harbor Seals (*Phoca vitulina*)**
Tracey Goldstein, Frances M.D. Gulland, Brian M. Aldridge, James T. Harvey, Teri Rowles, Jeffery L. Stott and Jonna A.K. Mazet
- (34) **Recent Patterns of Mortality in Southern Sea Otters**
Christine Kreuder, Melissa A. Miller, David A. Jessup, Linda J. Lowenstine, Michael D. Harris, Jack A. Ames, Tim Carpenter, Patricia A. Conrad and Jonna A.K. Mazet
- (35) **Prevalence of Zoonotic Bacteria in Seabirds Undergoing Rehabilitation and Associated Risks to Rehabilitators in the Pacific Northwest, USA**
Christine M. Steele, Richard N. Brown and Richard G. Botzler
- (36) **Is Avian Influenza in Shorebirds Species and Location Specific?**
Britta A. Hanson, David E. Swayne, Dennis A. Senne, Joan Beck and David E. Stallknecht
- (37) **Coyotes (*Canis latrans*) as an Experimental Host for the Oklahoma Isolate of *Babesia gibsoni***
Holly V. Evers, A. Alan Kocan and James H. Meinkoth
- (38) **Evidence of Pathogen Pollution: Shellfish as Bioindicators of Fecal Borne Pathogenic Protozoa and Bacteria in the California Nearshore Marine Ecosystem**
Woutrina A. Smith, Melissa A. Miller, Ian A. Gardner, Edward R. Atwill, Spencer Jang, David A. Jessup, Christian M. Leutenegger, Ann Melli and Patricia A. Conrad
- (39) **Aggressive Anaplastic Sarcomas in Juvenile California Sea Lions (*Zalophus californianus*), an Immunohistochemical and PCR Analysis of Three Cases**
Elizabeth L. Buckles, Frances M.D. Gulland, Martin Haulena, Diane Naydan and Linda J. Lowenstine
- (40) **Experimental Transmission and Isolation of a Novel *Ehrlichia* sp. From White-Tailed Deer**
Cynthia Tate, Ulrike Munderloh, Page Luttrell, Daniel Mead, Elizabeth Howerth, Vivien Dugan, Michael Yabsley and William Davidson
- (41) **Sequence Variation of the Internal Transcribed Spacer 2 rRNA Gene of Two Spatially Distinct Populations of *Amblyomma americanum* (Acari: Ixodidae)**
Mason V. Reichard, A. Alan Kocan and Ron A. Van Den Bussche
- (42) **Risk Factors for Viral Infections in Spotted Hyenas (*Crocuta crocuta*) from the Masai Mara National Reserve, Kenya**
Tara M. Harrison, Jonna A.K. Mazet, Kay E. Holekamp, Edward Dubovi, Anne L. Engh, Keith Nelson, Russell C. Van Horn and Linda Munson

- (43) **Endoparasites of Island Foxes (*Urocyon littoralis*) and their Geographic Distribution among the Channel Islands, California**
Linda Munson, Sharon Patton, Charles Faulkner, Eileen Johnson, Elizabeth L. Buckles, Steven F. Timm, Grace Smith, David Garcelon, Mark Willett and Timothy Coonan
- (44) **Colonic Spirocercosis in Channel Island Foxes (*Urocyon littoralis*)**
Elizabeth L. Buckles, Linda Munson, Sharon Patton, Eileen Johnson, Grace Smith, David Garcelon and Timothy Coonan
- (45) **Spatial Epidemiology of *Bartonella vinsonii* subsp. *berkhoffii* and *Yersinia pestis* in California Coyotes**
B.R. Hoar, B.B. Chomel, C.C. Chang and T.E. Carpenter
- (46) **Immunization of Black-Footed Ferrets (*Mustela nigripes*) Against Sylvatic Plague (*Yersinia pestis*)**
Tonie E. Rocke, Jordan Mencher, Arthur Friedlander and Gerard P. Andrews
- (47) **The Epizootiology of Type C Botulism at the Salton Sea**
Pauline Nol, Judy L. Williamson, Douglas L. Berndt, Jodie A. Bayerl and Tonie E. Rocke
- (48) **Type E Botulism in Fish-Eating Birds On Lake Huron and Lake Erie, 1998-2001**
G. Douglas Campbell, Jeffrey Robinson, Tim Johnson, Brian Locke and Ian K. Barker
- (49) **The Effectiveness of Carcass Removal in Reducing Losses due to Avian Botulism**
Trent Bollinger and Dan Evelsizer
- (50) **The Role of Lesser Snow Geese as Carriers of Avian Cholera in the Playa Lakes Region**
Michael D. Samuel, William P. Johnson, Daniel J. Shaddock and Diana R. Goldberg
- (51) **Antibody Response of Four Bird Species After Vaccination with a Killed West Nile Virus Vaccine**
Danelle M. Okeson, Shirley Yeo Llizo, Chriss Miller and Amy L. Glaser
- (52) **What Lurks in Yonder Forest? - Miscellaneous Viruses Isolated From Wild Birds During West Nile Virus Surveillance in Georgia**
E. W. Howerth, A. Ellis, N. Gottdenker, D.G. Mead, S. Gibbs and D.E. Stallknecht
- (53) **Enhanced Passive Surveillance for West Nile Virus in Dead Wild Birds in Canada – 2001**
Ian K. Barker, Michael Drebot, Harvey Artsob, L. Robbin Lindsay, Paul Sockett, Peter Buck, Robert Meyers, Frederick Leighton, Ronald Templeman, André Dallaire, Pierre-Yves Daoust and Hugh Whitney
- (54) **Bighorn Pasteurellosis: Do We Understand its Epidemiology Well Enough to Prevent or Manage Epidemics?**
Michael W. Miller
- (55) **Diversity of Bacteria in the *Pasteurellaceae* Family and Factors Associated with Disease Potentials**
Alton C. S. Ward and Glen C. Weiser
- (56) **Ecology of Disease-Related Mortality of Bighorn Sheep in Hells Canyon, Idaho, Oregon, and Washington, USA**
E. Frances Cassirer, Wendy M. Lammers and A.R.E. Sinclair
- (57) **Long Term Monitoring of Bighorn Sheep (*Ovis canadensis*) that have been in Contact with Domestic Livestock**
Mark L. Drew
- (58) **Disease Risk Assessment for Bighorn Sheep Captive Breeding Programs**
Holly Ernest
- (59) **Low-Grade Fibrosarcomas in Green Turtles (*Chelonia mydas*) with Fibropapillomatosis**
A. Alonso Aguirre, Terry R. Spraker, Robert A. Morris, Barbara Powers and B. Zimmerman
- (60) **Investigation into the Etiology of “Hairless” (Alopecic) Ringed Seals (*Phoca hispida*) in the Bering Sea**
Kathy A. Burek, Kimberlee Beckmen, John Blake, Shannon Atkinson, Pamela Tuomi and Robert Small

- (61) **A Survey of Raptor Mortality in Georgia**
Angela E. Ellis, Elizabeth W. Howerth, David E. Stallknecht and Daniel G. Mead
- (62) **Tissue Distribution of Liver Enzymes in California Sea Lions and Harbor Seals**
Deborah A. Fauquier, Frances M. Gulland, Terry R. Spraker, Mary M. Christopher and Jonna A.K. Mazet
- (63) **The Yellowstone to Yukon Conservation Medicine Program: Measuring and Modeling Wildlife Disease**
Colin M. Gillin, Erik Lindquist, Jim Else, Peter Daszak, and Gary M. Tabor
- (64) **Oiling of Waterbirds Due to Exposure to Fish Oils**
Robert C. Hosea and David Jessup
- (65) **Characterization and Clinical Manifestations of *Arcanobacterium phocae* Infections in Marine Mammals Stranded along the Central California Coast**
Shawn Johnson, Frances Gulland, Judy Lawrence, Spencer Jang, Juliet Herrera, Melissa Miller and David Casper
- (66) **Acute West Nile Virus Infection of Reptiles and Amphibians**
Kaci Klenk and Nicholas Komar
- (67) ***Parelaphostrongylus odocoilei* in Thinhorn Sheep (*Ovis dalli*) - Distribution, Life Cycle, and Significance**
Emily J. Jenkins, Alasdair M. Veitch, Eric P. Hoberg, Susan J. Kutz, Brett T. Elkin and Lydden Polley
- (68) **Investigation of Heterophil to Lymphocyte Ratios and Granulocyte to Agranulocyte Ratios in Relation to Condition in Northern Saw-Whet Owls (*Aegolius acadicus*)**
Lynda L. Leppert, Alfred M. Dufty and Sarah L. Hamilton
- (69) **Hemoparasite Survey From Imperial Eagles (*Aquila heliaca*), Steppe Eagles (*Aquila nipalensis*), and White-Tailed Sea Eagles (*Haliaeetus albicilla*) in Kazakhstan**
Lynda L. Leppert, Todd Katzner, Evgeny A. Bragin and Seth Layman
- (70) **Characterization of *Campylobacter* Species Isolated from Northern Elephant Seals on the California Coast**
S. Joy Milan, Spencer S. Jang, Janet Foley, Judy Lawrence and Frances M.D. Gulland
- (71) **Immune Responses of Elk (*Cervus elaphus*) to *Brucella abortus* Strain 19 and RB51 Vaccines**
Steven C. Olsen, Mitch V. Palmer, W. Ray Waters, Sasha J. Fach and Randy E. Sacco
- (72) **Analysis of Interferon-G Production by *Mycobacterium bovis* Infected White-Tailed Deer (*Odocoileus virginianus*) using an In-Vitro Blood Based Assay**
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- (73) **Horsfall Bauer Units used for Pathogenicity Testing in Chickens**
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- (74) **Preliminary Investigation of Squirrels As a Possible Reservoir for Deer Adenovirus**
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