

Bob Hines, USFWS



WDA Updates

What is an 'Impact Factor' and why does it matter?

James N. Mills, Editor JWD;

Barbara Ellis, Assistant Editor, JWD

David A. Jessup, WDA Executive Manager

Impact factor (IF) may be one of several criteria used by authors to decide which journal they would like to send their manuscripts to. But, what is it, and what does it really mean? First, Thompson Reuters, the company that

developed and reports impact factors, warns that the IF is only useful for comparing among journals in the same journal category. For example, the IF of journals on geology should not be compared with those on geography, or genetics. Journal of Wildlife Diseases is one of 143 journals in the category Veterinary Sciences.

The IF for JWD in any one year (2011 as an example) is the number of citations during 2011, in all indexed journals, to

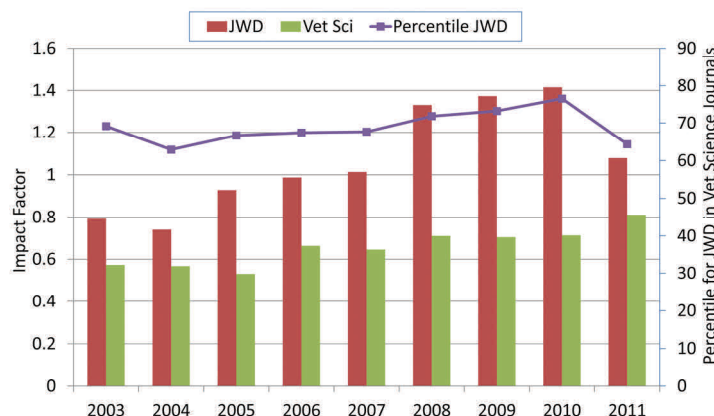
articles published in JWD during the two preceding years (2009 and 2010), divided by the number of articles published by JWD in those years (2009 and 2010). In other words, it is the average number of citations received (in a given year) for each paper published in the previous two years. As a ratio, it is subject to fluctuation if either the numerator or the denominator is changed. When the numerator (number of citations) goes up (assuming no change in the denominator), the IF goes up; and when the denominator goes up (assuming the numerator is unchanged) the IF goes down.

The JWD impact factor provides a good example. The number of citations to articles in

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JWD Impact Factor (IF) compared to median IF for the journal category (Veterinary Science); percentile of JWD IF in the journal category, 2003-2011

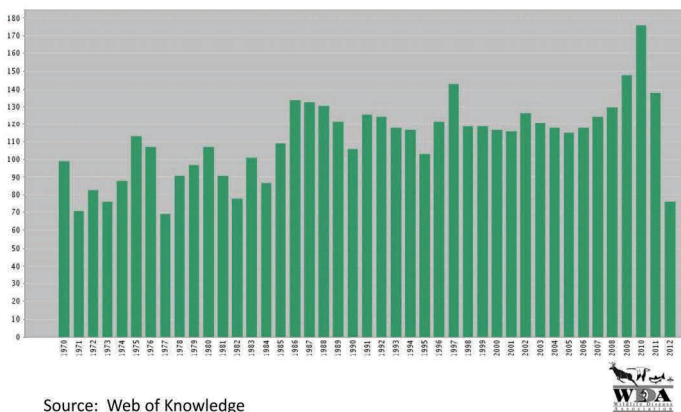


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JWD increased slightly in 2011, but the number of articles published in 2009 and 2010 increased dramatically (the highest for any two-year period in the Journal's history). Consequently, the denominator was unusually large and the IF declined. The number of articles has decreased in 2011 and 2012, so the IF will go back up in the next couple of years.

Even with the dip in our IF in 2011 due to increased pages published, the IF for JWD in 2011 (1.28) was 51st out of the 143 journals in the Veterinary Sciences category (that puts us in the 64th percentile). The 2010 IF for JWD was 1.48, putting it in the top 25% of Veterinary Science journals.

Number Publications, JWD, 1970-2012



There are other measures of the value and use of articles in a publication that are not as subject to temporary increases or decreases in articles published. One of these is the Eigenfactor and JWD ranks 25th of 143 Veterinary Science journals (83rd percentile!).

The JWD's Article Influence Score ranks 32nd (78th percentile). For Total Citations, JWD ranks 19th (87th percentile). And for Citation Half-life (a long term measure of the citation life span of articles published) JWD ranks at greater than 10 years, the highest category available.

The IF has become a bit of a synonym for quality, but if you look further you will find it has strengths and weaknesses as a measure. The JWD ranks very well in IF, and in other measures, in comparison to other Veterinary Science journals, even surpassing many larger, older, and better financed journals. We have every reason to be proud of our Journal. Further explanation of two of the other measures of journal quality that we cite above are included below.

Eigenfactor Score for a given year is based on the number of times articles from the journal published in the past five years have been cited in the given year, but it also considers which journals have contributed these citations so that highly cited journals will influence the network more than lesser cited journals. References from one article in a journal to another article from the same journal are removed, so that Eigenfactor Scores are not influenced by journal self-citation.

Article Influence Score is the average influence of a journal's articles over the first five years after publication. It is calculated by dividing a journal's Eigenfactor Score by the number of articles in the journal, normalized as a fraction of all articles in all

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publications. This measure is roughly analogous to the 5-Year Journal Impact Factor in that it is a ratio of a journal's citation influence to the size of the journal's article contribution over a period of five years. The mean Article Influence Score is 1.00. A score greater than 1.00 indicates that each article in the journal has above-average influence. A score less than 1.00 indicates that each article in the journal has below-average influence.

Don Forrester and the Journal of Wildlife Diseases

Ed Addison

Don Forrester has recently retired from his position on the Editorial Board of the Journal of Wildlife Diseases. Don retiring from the Editorial Board of the Journal of Wildlife Diseases is a special event because of both the duration and extent of his contributions to the Journal and indeed to the Association. Don served on the Editorial Board for more about 30 years, over sixty percent of the life of the Journal.

Don joined the Wildlife Disease Association in 1959 and, although he published in other journals earlier, published in the Journal of Wildlife Diseases at least as early as 1967. Don was Editor from 1981 to 1986. In 1983, he led the Association to Allen Press and a new modern design to the Journal. That we retain this format and association with Allen Press almost 30 years later attests to the wisdom of Don's leadership. Don also developed an extensive and engaged Editorial Board. From 1991 to 1995, Don was Book Review Editor for the Journal. This was far from the end of Don's very active contribu-

tions to the Journal of Wildlife Diseases. His contributions as a reviewer and advisor to subsequent Editors have continued through to the present.



Undated photo of a young Don (on the left) in the field.

This note is about Don's contributions to the success of the Journal of Wildlife Diseases. However, it would be an omission to not mention that, continually for every day of a decade of his life and that of our Association, Don served as either the Editor of the Journal, as Vice President, or as President of the Association!



A recent photo of Don (right) with colleague, Ellis Greiner, August, 2012

Don has been and remains a mentor and role model to many WDA members through his unassuming, effective, and fully committed efforts as a volunteer. Don and his wife, Gabe, continue with their volunteer work in other communities including assisting those less fortunate in Gainesville, Florida and in Haiti.

Thank you, Don, from us all.

Why Endowment, why now?

Dave Jessup, Thierry Work

As a WDA member, we need your help to extend the reach of the Journal of Wildlife Diseases (JWD) around the world. The Journal of Wildlife Diseases (JWD) is one of the premier sources of peer-reviewed papers for wildlife health and ranks in the top tier of veterinary science journals as evidenced by its impact factor and other measures of quality

and reach (see related article). In contrast to other comparable journals, however, the costs of publishing in JWD are relatively low, particularly for members of Wildlife Disease Association (WDA). The JWD is fairly unique in that it is funded in part by page charges, and by WDA membership dues, and institutional subscriptions. And, in the spirit of WDA's mission to disseminate information on wildlife health, all JWD articles are open access after 18 months, and free access is currently provided to colleagues in the 140 nations of the world with the lowest per capita income, many of which face the greatest biodiversity conservation challenges.

This model has been remarkably successful, but we need your help to make it sustainable in the long term. As libraries close due to changes in media access, our institutional subscribing membership, a major source of income supporting JWD, continues to decline. This and inflation would argue for steadily increasing membership dues. But we feel this is neither the wisest choice nor one that would be popular or sustainable for WDA members, particularly those in countries with lower incomes. Thus we have looked for new approaches that:

1. keep membership costs low and affordable (where it is now and not increasing with inflation)
2. assure we can continue to publish JWD essentially in perpetuity (keeping budget about current and not increasing author charges)
3. continue to provide JWD content at no costs to the developing world (which limits potential for growth).

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We feel the best way to do this is to endow the cost of JWD publication and distribution, WDA's greatest single expense, and a clear benefit to every member of WDA and other colleagues worldwide. In the near future, wildlife health will continue being a relatively small field, unlikely to grow in proportion to other areas of specialization. WDA members' incomes, even in the developed world, are unlikely to allow or justify membership fees higher than what WDA charges presently, and if WDA wants to eventually go to a complete "open access" model, we will have to support JWD with more than membership fees and page charges.



One of the costs of truly being a **'big tent'** open to all wildlife health professionals, of really being "One Health", is that WDA is not exclusive. People belong to WDA because they want to, not because it is a required credential in their area of specialization, or their only relevant scientific organization. Unlike other professional organizations such as those for pathologists, parasitologists, toxicologists, zoo vets, or wildlife managers, most of which have higher membership fees, WDA membership is not an institutional expectation.

When looking at other institutions that seek to provide a program or service they cannot afford based solely on operating budget, they turn to an endowment model, where sufficient funds are set aside and the interest and increase on those funds support the service or program. Examples are a university that has privately endowed a faculty position and support funds to explore respiratory disease in bighorn sheep, or a major US aquarium that is raising a \$3.5 million to endow free access for primary school students. If the program and the reason for endowment are compelling, the funds can be found.

It costs ca. \$125K annually to publish JWD. WDA's investment managers, Jacobson & Schmitt Advisors (who have done very, very well by WDA even in bad years) have been able to assure at least an increase on investment of 4-5% annually on our investments of \$1.25 million. Assuming such returns in the future, developing an investment base of \$3 million would provide enough funds to make JWD self-sustaining. To reach this goal, we are trying to raise about \$100-125,000 annually over the next 8 years and dedicate \$30-40K of current investment revenue toward endowment. If we succeed, by 2020, JWD and its worldwide distribution will be endowed, and membership costs, stabilized around \$100/yr will have declined in inflation-adjusted terms.

Yes, this endowment model is a little different for a scientific society, but it is one that we can succeed at (we already have about 1/3 of what we need), one that will keep from taxing the membership and authors

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any more, and allow WDA to provide excellent services to members and global outreach.

The JWD needs your help now. In an effort to match the first \$25,000 grant for endowment, since March 1st, 90 WDA members and organizations have donated a total \$21,350 toward endowment of JWD (see separate article). If 45 WDA members give \$100 each (the leadership level), along with other funds lined up, we will have achieved our goal for 2012.

Will you join your colleagues who have given? Credit card donations can be made at the WDA website by clicking on the prominent Donate button on the left hand side. Checks can be sent to Dr. Laurie Baeten, WDA Treasurer, 129 N. Frey Ave., Fort Collins, CO 80521 USA.

We would like to thank those who have already made donations to the Endowment:

1. *Tonie E. Roche*
2. *Thierry M. Work*
3. *Thijs Kuiken*
4. *Laurie A. Baeten*
5. *Carter T. Atkinson*
6. *Lynn H. Creekmore*
7. *Emi K. Saito*
8. *David M. Spratt*
9. *J. Jeffrey Root*
10. *Ignasi Marco*
11. *Richard Botzler*

12. *David Ley*
13. *Anne Fairbrother*
14. *Dolores Gavier-Widen*
15. *Charles Van Riper, III*
16. *International Wildlife Veterinary Services*
17. *James Norman Mills,*
18. *Colin Gillin*
19. *Thomas M. Yuill*
20. *Charles Rupprecht*
21. *Marcela Uhart*
22. *Peregrine Wolff*
23. *Kristin Mansfield*
24. *David Jessup*
25. *Edward M. Addison*
26. *Linda J. Lowenstine*
27. *Joe Gaydos*
28. *Robert Maclean*
29. *Holly Ernest*
30. *Carol U Meteyer*
31. *T.G. Ksiazek*
32. *Emi K. Saito*
33. *Christy Wyckoff*
34. *Sherman Wessel Jack*
35. *Craig Harms*
36. *Stephen Raverty,*
37. *Jessica Gillespie*
38. *Beth Pollock*
39. *Barbara Ann Wolfe*
40. *Christy Wyckoff*
41. *Erik Agren*
42. *Ray F. Wack*
43. *Rebecca A Bloch*

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44. *Kay G. Mehren*
45. *Helen Schwantje*
46. *Brett Elkin*
47. *Britta Wood*
48. *D.G. Constantine*
49. *Bruce D. Trindle*
50. *Ian K. Barker*
51. *Paul Barrows*
52. *Cathy Shilton*
53. *Julia Langenberg*
54. *Mary Poss*
55. *David Loney Mcruer*
56. *Pat Curry*
57. *Roy B. Burns III*
58. *Denise McAloose*
59. *Mark K. Campbell*
60. *Ursula Bechert*
61. *Sonia Maria Hernandez*
62. *Marc Cattet*
63. *Leslie S. Uhazy*
64. *Peter Belinsky*
65. *Michael K. Stoskopf*
66. *Trent Bollinger*
67. *Thomas J. DeLiberto*
68. *Pam Whiteley*
69. *F.A. Leighton*
70. *Jonna A. Mazet*
71. *Katherine Gailbreath*
72. *Shawn Schafer*
73. *Jeffrey Foster*
74. *American Association of Wildlife Veterinarians*
75. *Simon R. Robinson*

76. *Bonnie L. Raphael*
77. *Alison Peel*
78. *Thomas Besser*
79. *Susan Hemsley*
80. *Ian Barker and the Thorne & Williams Memorial Fund*
81. *Janelle Ward*
82. *Dean Goeldner*
83. *Victor Robert Simpson*
84. *Barry K. Hartup*
85. *William B. Karesh*
86. *Jasmin Hufschmid*
87. *Debra Bourne*
88. *Christine Miller*
89. *J.W. Carpenter*
90. *USDA-APHIS-Wildlife Services*

Call for Nominations for the 2013 WDA Council Election

Lynn Creekmore

The WDA Nominations Committee is **seeking nominees for President, Vice-president, and two Council Members-at-Large on the WDA Council**. The President and Vice-president positions are 2 year terms. Council Members-at-Large are 3 year terms. Newly elected members of Council assume office at the end of the next annual conference following the election. The 2013 Conference will be held 27 July to 2 August 2013 in Knoxville, Tennessee.

Ideally Officers and Council Members have a good understanding of the Association

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through their previous volunteer contributions. While experience gives Officers and Council Members valuable perspectives that they can bring to the Council, less experienced members have also been nominated and elected and have brought new and different ideas to Council.

If you have suggestions for WDA members as nominees for these positions, please submit your suggestions for consideration by the nominations committee to, Lynn Creekmore (lynn.h.creekmore@aphis.usda.gov) by **November 15, 2012** and include the following:

- Name of possible candidate.
- Name of sponsoring member.
- Name of second sponsoring member.
- Degrees earned; place and date
- Former professional positions held; place and date
- Present Position; title and location
- Member of WDA since...
- Previous WDA activities
- Affiliations with relevant professional and scientific societies
- Interests associated with the mission of the WDA

Additionally, please have the nominee submit a personal agenda statement with an outline of personal goals for the WDA if elected.

WDA Section News

Wildlife Disease Association, Wildlife Veterinary Section (WVS):

Kevin Castle

The overarching goal of the Wildlife Veterinary Section is to serve as a conduit of communication for those interested in promoting the application of veterinary science to the conservation and management of wildlife disease and health.

From the WVS Officers:

We are pleased to share with you the inaugural issue of the WDA-WVS Newsletter. The newsletter will be published quarterly and directly distributed electronically to section members, and will be available to all WDA members on the WDA-WVS website: [http://www.wildlivedisease.org/wildlife_veterinarian.shtml]. In this issue, we introduce the section officers whom you elected early this summer. As we make the transition into this new form of governance, we will be looking to our members to help guide the section, through participation in member surveys and webinars, as board members, and as contributors to the WVS webpage and newsletter. Please feel free to contact any of the officers with questions, concerns, or items you would like to see covered.

Why a new WDA wildlife veterinary section?

Previously, the president of the American Association of Wildlife Veterinarians (AAWV) served as the chair for the de facto WDA Wildlife Veterinary Section. Initially this arrangement was appropriate because

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all members of the AAWV were also members of WDA, and WDA bylaws stipulate that Sections need to be entirely made up of WDA members with a “common identity”, which is usually geographic in nature (e.g. Latin American Section). However, as membership of AAWV grew, there became less overlap between the groups; at present only about 60% of AAWV members are also members of WDA. To comply with WDA bylaws, the decision was made to create a new section whose common identity is “the application of veterinary science to the conservation and management of wildlife disease/health”. The officers of the WVS are committed to building upon the work started by the AAWV, and are grateful to the AAWV officers and members who got the ball rolling.

WVS Notes:

As of 2013, WVS will be asking section members to pay \$10 dues to help support section functions. Section dues can be paid by checking the appropriate box on your WDA membership renewal form. Please watch for an email with a link to a “Survey Monkey” questionnaire, which will help us better identify member interests and expertise. We will be soliciting section members to serve on our advisory board, which will have an active role in defining the bylaws and guiding the direction of the section.

WVS Objectives (slightly modified from AAWV Objectives)

- To promote and encourage the utilization of veterinarians in the field of wildlife resource management and research.

- To enhance the contribution of veterinary medicine to the welfare of the wildlife resource.
- To stress the importance of the connectedness of human, wildlife, domestic animal, and environmental health.



Jon Arnemo, Chairman of WVS

- To encourage cooperative efforts among resource management professionals and wildlife veterinarians.
- To encourage and promote a philosophy of animal management and preventative medicine as it relates to free-ranging species.
- To encourage an increased emphasis in colleges of veterinary medicine relative to management and preventative medicine of free-ranging species.
- To encourage the recognition of disease syndromes in their broadest sense as potentially influenced by habitat succession, alteration and pollution.
- To educate and gain rapport with government agencies and wildlife resource interest groups concerning the importance of wildlife preventative medicine and disease in relation to the wildlife resource and domestic species.
- To educate and inform governmental agencies and wildlife resource interest

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groups of support and educational services which may be provided by wildlife veterinarians.

- To help establish and work for continuing education programs for wildlife veterinarians.
- To provide mentorship to students interested in all aspects of wildlife health

Reorganization and reformation of the Africa Middle East Section of WDA

David Jessup

Then WDA President Tonie Rocke and other WDA Council members met with about a dozen and a half African members at the joint Wildlife Disease Association-Society for Tropical Veterinary Medicine Conference in Pilanesburg National Park, South Africa in 2001. Interim Africa Middle-east (AME) Section officers (Elizabeth Wambwa-Chair, Richard Kock-Treasurer) were selected and the Section forming process was begun. In 2002 WDA Council approved the AME Section, an election was held to affirm officers, and the AME Section held its first meeting in Arusha Park, Tanzania. Another AME meeting was held in South Africa in 2003, and in Abu Dahbi in 2004. What turned out to be a last meeting, with 25 participants from 12 countries, was held in 2006 in Nanyki, Kenya. At about that time Richard Kock returned to the UK, Elizabeth

moved to the UAE, and the Treasurer and Chair elect, died during an elephant immobilization. This sudden loss of leadership and other events resulted in the AME Section ceasing to function. WDA Council suspended Section status due to lack of compliance with WDA bylaws (elected leadership, -regular meetings and communications) in 2008.

Since 2010, WDA members in the Middle East, particularly Anne-Lise Chaber and An Pas have expressed interest in reviving the AME section. They retrieved minutes of past AME meetings and old mailing lists, and have encouraged communication among potentially interested parties, and encouraged a rebuilding of membership.



The winner of the 2010 Tom Thorne and Beth Williams Memorial Award, Jonna Mazet, asked that the money associated with that award go to the Mountain Gorilla Foundation and some of that was used to help with membership costs for some of their veterinarians. The recent WDA meeting in Lyon allowed

for a brief AME organizational meeting and 10 new members from African nations joined at that time.

On September 12, WDA President Dolores Gavier-Widen chaired another brief AME organizational meeting at Skukuza, Kruger National Park in South Africa following the International TB Conference. Twenty-seven persons attended the meeting.

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D. Gavier-Widén explained the mission of WDA, the benefits of being a member and belonging to a Section, and the requirements to become member. Roy Bengis presented the history of the AME section. IgnasiMarco explained the requirements to form a Section. Anne- Lise Chamber reported on efforts to determine how much interest there was in reviving the AME section; a Google group active since 2010 showed that many people were interested in being involved in a section, 64 persons participated of the Google group. There was an open discussion about the prospects of reviving the AME section. Several members described the friendly and open atmosphere of the WDA meetings and the good networking opportunities. One difficulty of the AME section would be having one chair from either Africa or Middle East representing the whole section, for a very vast and diverse geographical area. One possible solution would be to have 2 persons co-chairing, one from Africa and one from Middle East (but only one of them could sit in WDA Council).

A major difficulty is the payment of fees, which are high for many people (minimum fee is 30 USD, for associate membership), 25 persons indicated they were interested and 20 could pay/were willing to pay fees. Many African colleagues have problems making payments on line. The section would need to have a board /executive and would need to find candidates for leadership positions; the persons already interested (Google group) could be asked if they would like to be involved in the board. It was proposed to have more dissemination of the prospects of creating/reviving the

AME sections, specifically a Google discussion group with wildlife veterinarians, and making contact with a wildlife ranching group. A potential future meeting in person to organize efforts to revive the AME section might be made as part of a South Africa wildlife producers meeting and wildlife capture and anesthesia course in Zambia.

Current WDA has 25 members from AME countries and it appears we may have another 10-12 joining in the next month or so. Interest is strong and enthusiasm building, so 2013 may see the reformation and revival of the WDA AME Section.

Australasian Section Annual Conference

Dave Spratt

The annual meeting of the Australasian Section of the WDA was held Sept 23-28, 2012 on North Stradbroke Island off the eastern Australian Coast. North Stradbroke is accessible, but pleasantly detached by a 40 minute ferry journey, from Brisbane, the capital of Queensland. The meeting attracted delegates from Australia, New Zealand, Japan and Oman. Around eighty delegates joined in a packed pro-



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gram and evening activities; invited speakers and field trips meant long busy days. One field trip explored the island, and the second went north to Moreton Island for a dolphin encounter and our annual dinner.

Karrie Rose accepted the Barry L. Munday Recognition Award (shield) on behalf of Richard Jakob-Hoff, Senior veterinarian at Auckland Zoo, New Zealand, who was not able to attend the meeting. The Award was created in memory of Barry Laing Munday and recognises significant contributions by an individual to wildlife health in the past five years, including not only research or study of disease but also communication, education, training and mentoring, the composite of things at which Barry was so very skilled.

A diverse array of presentations included some marine topics in accordance with the island venue. For the second year in succession, the Anne Martin Student Presentation Award (\$400) went to Amber Gillett for her paper entitled, "The Sea Snake Rodeo: madness, mayhem and blood", establishing haematological and biochemical reference ranges for a number of sea snake species. Several delegates brought their families and a good time was had by all thanks to the playground within view of the venue and the beach about 80 metres away. The twenty-five year plus relationship with our caterer, Shirley, and her family continued and she received a standing ovation as the conference drew to an end. The AGM of the WDA-A saw Andrea Reiss replace Jenny McLelland as Chairperson for the period 2012-2014. We also hosted the AGM of the

Australian Wildlife Health Network. Next year's annual Conference and AGM will be held 29 Sept – 4 Oct, 2013 near Dunkeld, Victoria at the southern end of the Grampians National Park and about 3.5 hours drive west of Melbourne.

Latin America Section

Marcela Uhart and Ezequiel Hidalgo

The Latin America Section membership continues to increase and we are now at 53 members, from 12 countries.

We will hold elections for a student representative between October 15 and 20th, and wish to thank Ralph Vanstreels and Francesca Schiaffino for serving as interim-student representatives for the past four months.

We are planning on hosting our first Section meeting in Sao Paulo, Brazil in the second semester of 2013, so mark your calendars and start saving for what will likely be an unforgettable event.

News from the Field

Dolphin and Pelican Mortality in Perú

By Patricia Mendoza, Wildlife Conservation Society, Perú.

Dolphin mortality was reported along the Northern Peruvian coast, from Piura to La Libertad regions, since January 2012. Species affected were long-beaked common dolphin (*Delphinus capensis*) and black or Burmeister's porpoise (*Phocoena spinipinnis*). In April, the Peruvian Institute of the Sea (IMARPE) counted 877 dolphins car-

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casses along 178km of coast, 78% of which were in advanced decomposition, resulting in limited sample collection. The die-offs have sparked widespread speculation about the causes, but none have been scientifically confirmed. Post-mortem analysis of 42 animals showed no signs of starvation, respiratory, digestive or neurological disease. While dolphin morbillivirus was suggested as a potential cause, there was no evidence of lesions indicative of morbillivirus infection in carcasses examined during this mortality event. Laboratory analyses of samples obtained from two animals resulted negative to PCR for Morbillivirus, Leptospirosis and Brucellosis, as well as heavy metals (copper, lead and cadmium) and pesticides (carbamates and organochlorines) by thin-layer chromatography.

Later this year **avian die-offs** were also recorded along Peru's northern coast. Pelicans (*Pelecanus thagus*) were the most affected species, followed by the Peruvian booby (*Sula variegata*) and cormorants (*Phalacrocorax bouganvillii*). The National Animal Health Service (SENASA at the Ministry of Agriculture) collected and analyzed 4 pelican and 2 booby carcasses and reported the finding of *Pasteurella multocida*. All animals sampled were negative for Avian Influenza, Newcastle Disease and Avian Mycoplasma. A large pelican die-off event occurred in 1997 following El Niño which caused declines of anchovies, a primary food source for pelicans. Starvation is also suspected in this year's seabird die-offs, with air and sea temperature warming effects implicated this past year from El Niño.

As a result of these events, the Directorate of Biodiversity (Ministry of Environment) is currently working to establish a Peruvian Stranding Network which will include representatives of the Peruvian government, universities, and NGO's.

Bovine TB Research in Wild Possums

Dan Tompkins, Landcare Research; Nigel French, Massey University; Bryce Buddle, AgResearch

This year has seen the start of a three year project to identify the role that individual heterogeneity plays in bovine tuberculosis (TB) dynamics in wildlife populations. TB remains a key problem for livestock in many countries, particularly where spillover infection from wildlife reservoirs confounds



efforts to eradicate the disease by livestock control alone. This project, jointly funded by the Royal Society of New Zealand Marsden Fund and the New Zealand Animal Health Board, and comprising collaboration across Landcare Research, Massey University and AgResearch, aims to use TB in wild

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possums as a model system with which to advance our fundamental understanding of the disease.

With 20% of host individuals typically contributing at least 80% of the net transmission potential of infectious agents, the effects of heterogeneity on disease spread and persistence are key considerations in modern epidemiology and infectious disease management. Skewed distributions of contact rates are believed to be a key source of such heterogeneity, forming the basis of the high-profile 'superspreader' hypotheses. Our project aims to investigate the role that 'superspreading' possums play in the spread and persistence of TB. This will be achieved through field studies of eight possum subpopulations in New Zealand. To date, work on the first replicate of four subpopulations is well advanced. Cage trapping grids were initially set up in March, and the 40 'core' adult animals in each subpopulation fitted with contact-logging collars in April and May. Trapping range and collar data is being used to build 'social networks' for each grid.

Natural background disease appeared on the grids in September, and the infectious status of all possums resident on the grids is now being monitored on a monthly basis to record how the disease spreads through the subpopulations in relation to the social network structures uncovered. If successful, this work could potentially lead to more refined control of TB in possums. Fingers crossed, we'll be presenting the results from this first replicate at the 2013 WDA Australasian Section Annual Conference!

USGS National Wildlife Health Center Quarterly Mortality Report – April 2012 to June 2012

Written and compiled by the U.S. Geological Survey National Wildlife Health Center Field Investigations Team.

Mass mortality of Hieroglyphic River Cooters at rural Mississippi lake (Mississippi)

An estimated 600 river cooters (*Pseudemys concinna hieroglyphica*) were reported dead at a wooded lake in rural Mississippi in early May 2012. Several private residences with lakeshore access described finding dead turtles all around the lake. The total turtle population density for the location is not known and other turtle species were suspected to reside at the lake as well, however, only river cooters (predominantly adults) appeared to be involved in the die-off. Grass carp had recently been added to the lake to help control aquatic vegetation overgrowth. Common findings among the turtles included good nutritional condition and lack of significant gross or microscopic lesions in multiple tissues.

No underlying infectious diseases were detected from bacterial and viral cultures. A variety of parasites were identified but none were at loads considered likely to have a



National Geographic, Joel Sartori

significant impact on the animal's health. Toxicology screens were negative for heavy metals and over 40 common toxic compounds. Free microcystin and cylindrospermopsin were detected in the livers of two turtles; these toxins are produced by various cyanobacteria (blue-green algae) and may have been the source of mortality in this event. The relative sensitivity of river cooters to these toxins compared to other species is unknown; a higher sensitivity could explain why only cooters were affected.

River cooters are omnivorous, freshwater turtles native to the central and eastern US. They are generally found in rivers with a moderate current but can also be found in lakes and tidal marshes.

Increased Roseate Tern chick mortality observed at Great Gull Island (New York)

Greater than usual chick mortality (75 total) was observed in a well-studied Roseate Tern (*Sterna dougalli*) population this past spring on Great Gull Island (New York). In previous seasons, fluctuations in the prey base and starvation were suspected to be the cause of chick mortality. Fourteen 2 to 3 day-old chicks were submitted to the USGS National Wildlife Health Center for diagnostic evaluation this season; seven chicks were examined. All chicks were emaciated; some had evidence of hemorrhaging into the intestines which can be associated with simple starvation. No underlying bacterial or viral diseases were detected. Roseate Terns of the Northern Atlantic subpopulation are federally-listed as endangered. Threats to population recovery

include predation at nesting sites, habitat degradation from erosion and/or invasive plants, human disturbance, and contaminants. Great Gull Island supports the largest nesting colony (1300 pairs) of Roseate Terns in the Northeast US.

Muskrat mortality observed at two northeastern wildlife refuges (Massachusetts)

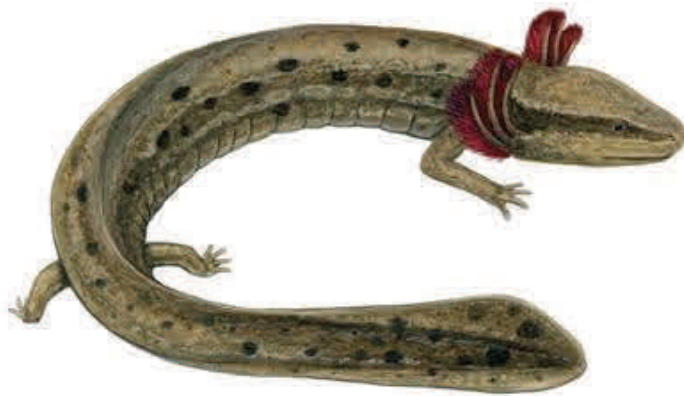
Approximately 11 adult muskrats (*Ondatra zibethicus*) were found sick or dead on the Assabet River NWR and Great Meadows NWR sporadically over a two month period beginning in mid-March 2012. These two refuges are separated by approximately 8 miles but share a common watershed. Clinical signs observed in affected muskrats included lethargy and lack of awareness of their surroundings. Animals submitted to NWHC for diagnostic evaluation were consistently found to be emaciated. Although tularemia was a concern, bacterial cultures were negative for all animals tested as were viral cultures. One specimen submitted from each of the two refuges had evidence of renal nephrosis and acute kidney failure. A small number of suspect calcium oxalate crystals were detected in one individual. Common sources of calcium oxalates are antifreeze (ethylene glycol) or various plants such as Philodendrons, Dieffenbachia, Jack-in-the-Pulpit, and skunk cabbage. The origin of suspect oxalate exposure could not be identified, and the number of crystals present was not sufficient to diagnose poisoning by antifreeze. Another finding among the muskrats examined was the apicomplexan protozoal parasite *Frenkelia* sp. encysted in brain tissues. No in-

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flammation or necrosis was associated with the presence of the parasite as can sometimes occur in this species so these infections were not thought to have directly contributed to their death.

Mudpuppy mortality Big Cormorant Lake (Minnesota)

In May 2012 biologists with the Minnesota Department of Natural Resources reported thousands of dead common mudpuppies (*Necturus maculosus*) at Big Cormorant Lake, Becker County, MN. The carcasses were observed on shore up to 10 feet from the water's edge. Since mudpuppies are fully-aquatic salamanders that never form air-breathing lungs, but rather rely on external gills behind their heads to breathe, this distance from the water suggested that sick animals crawled out of the water before dying. Seven animals were submitted to the



US Geological Survey's National Wildlife Health Center (NWHC) for examination. The primary finding for the examined animals was emaciation. No pathogenic bacteria or viruses were isolated from the tissues but most of the examined animals had saprolegniasis (watermold skin infections).

It could not be determined, however, whether the watermold growth occurred before or after death as only one mudpuppy arrived alive and watermold growth can occur post-mortem on dead chilled animals. NWHC has been involved with investigations of three other mudpuppy mortality events since 2000 in which a definitive cause of death could not be determined. Although botulism was associated with mortality of other animal species at one of the previous mudpuppy mortality events, botulism tests performed on samples from these mudpuppies were inconclusive. Severe autolysis (decomposition) in the other case interfered with histologic interpretation. Chytrid fungus and ranavirus have not yet been documented in this species.

Investigating alopecia in polar bears of South Beaufort Sea (Alaska)

During late March through May of 2012, the USGS Alaska Science Center Polar Bear Project field capture crew observed alopecia on 23 of 82 (28%) bears captured at the boundary of the Southern Beaufort Sea off the North Slope of Alaska. The USGS Polar Bear Project and the USGS NWHC are investigating the occurrence of the alopecia using various samples that were collected from anesthetized bears during the 2012 field season to attempt to determine the cause of these abnormalities and their potential implications for polar bear health. Similar cases of alopecia were previously observed in approximately 19% of the bears captured by the USGS Polar Bear Project in 1999. Histopathologic findings in biopsy samples from 2012 bears were consistent and characterized by epidermal and

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follicular hyperkeratosis with variable secondary bacterial folliculitis. These findings are most suggestive of hormonal or nutritional abnormalities, such as hypothyroidism or Vitamin A deficiency, as the cause of hair loss in affected bears. Vitamin A deficiency most often results from inadequate dietary intake, while hypothyroidism can occur as a secondary effect of a number of conditions. Documented conditions causing hypothyroidism in bears include exposure to organochlorine (OC) and/or polychlorinated biphenyl (PCB) compounds. Flame retardants (PBDEs) also may suppress thyroid hormone activity due to their chemical similarity to PCBs. Further investigations as to the underlying cause are underway.

For the full NWHC quarterly mortality report, please see http://www.nwhc.usgs.gov/publications/quarterly_reports/index.jsp

To report mortality or receive information about this report, please contact the USGS National Wildlife Health Center (NWHC), 6006 Schroeder Road, Madison, WI 53711

Eastern United States

Dr. Anne Ballmann, (608) 270-2445

Email: aballmann@usgs.gov

Central United States

Dr. LeAnn White (608) 270-2491

Email : clwhite@usgs.gov

Western United States

Barb Bodenstein (608) 270-2447

Email : bbodenstein@usgs.gov

Hawaiian Islands

Dr. Thierry Work (808) 792-9520

Email: thierry_work@usgs.gov

For single animal mortality, nationwide, please contact: Jennifer Buckner, USGS National Wildlife Health Center Biologist by phone: (608) 270-2443, fax: (608)-270-2415, or email: jbuckner@usgs.gov

To view new and ongoing wildlife mortality events nationwide visit http://www.nwhc.usgs.gov/mortality_events/ongoing.jsp

Student Opportunity

The 62nd International Conference of the Wildlife Disease Association will be in Knoxville, TN from Saturday, July 27th through Friday, August 2nd 2013. The Wildlife Disease Association (WDA) annually offers four student awards. Students are encouraged to compete for the following awards:

1. **WDA Graduate Student Research Recognition Award:** This award is given to the student judged to have the best research project in the field of wildlife health or disease. The winner receives up to \$5,000 US to cover travel, housing, registration, and similar expenses related to the conference. The student will be the keynote speaker during the student presentation session at the conference.
2. **WDA Graduate Student Scholarship Award:** This award acknowledges outstanding academic and research accomplishment, productivity, and future potential in pursuit of new knowledge in wildlife disease or health. The scholarship has a value of \$2,000 US.

Student Opportunity

3. **WDA Terry Amundson Student Presentation Award:** This award acknowledges outstanding oral presentation of research findings at the annual WDA conference. The winner receives \$250 US.
4. **WDA Student Poster Award:** This award goes to the best student poster detailing a wildlife disease or wildlife health research project presented at the annual WDA conference. The winner receives \$250 US.

Upcoming Conference



The Ninth Annual "One Medicine" Symposium *Bugs vs. Drugs A One Medicine approach to antimicrobial resistance*

The symposium will take place on December 5 - 6 at the Sheraton Imperial Hotel and Convention Center in Durham, NC.

The theme of the 2012 symposium focuses on the origins and impacts of antimicrobial resistance on human and animal health. This year's agenda encourages human, animal and environmental health professionals to come together to improve awareness and understanding of the issues in a One Medicine approach.

It is a conference for physicians, nurses, veterinarians, veterinary technicians, public health professionals, environmental health

specialists, agriculture professionals, wildlife professionals, and federal, military, state and local disaster responders.

For registration information and other details visit www.onemedicinenc.org or call 919-515-2261.

New publication

Royal Society Publishing has just published **Disease invasion: impacts on biodiversity and human health**, compiled and edited by Andrew A Cunningham, Andy P Dobson and Peter J Hudson.

See <http://bit.ly/soLSgs> for further details or you can go straight to the issue contents at <http://rstb.royalsocietypublishing.org/content/367/1604.toc>



Last but not least....watch for the new WDA website, which is set to roll out in mid-November!