



Aquatic Vet News

World Aquatic Veterinary Medical Association

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After the Tsunami

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On March 11th 2011, an 8.9 earthquake 177 km off the east coast of the Honshu island of Japan triggered extremely destructive tsunami waves of up to 40.5 metres, in some cases traveling up to 10 km inland. In addition to loss of life and destruction of infrastructure, the tsunami caused a number of nuclear accidents, primarily the ongoing level 7 meltdowns at three reactors in the Fukushima Nuclear Power Plant complex, where a 30 km radius evacuation zone was put in place.

One of the major economic activities of this area is related to the fishing sector. With more than 15488 vessels, 319 ports, 531 fish processing plants, 62 fish markets and 7 shipyards damaged, the lives of those that made a living from the sea was thrown into chaos. Access to the area was restricted for the first 3 months following the tragedy to facilitate the search and rescue operations, burial of corpses, the removal of debris and some aspects of reconstruction. Following this period I was fortunate to be a part of an international academic team from the faculty of Fisheries Sciences of Hokkaido University, Kagoshima University, Tokyo University and the University of British Columbia who visited the area of Hachinohe to do an analysis with the view of assisting in returning its fisheries sector to normalcy and economic stability. - **Continued on Page 2.**



Damaged boats that caught afire as a result of the tsunami.

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After the Tsunami—continued from page 1

We found that the relative financial support for the restoration and reconstruction was adequate and available, but there were problems in determining what those who were affected really wanted for themselves and as a result we recommended that more avenues be put in place for their voices and opinions to be heard. From an economical perspective, many fishermen cannot return to their job in the near future as they are gainfully employed in the cleanup, reconstruction and rehabilitation of their own communities as a short term means of income.

In an effort to restore and repopulate the ecosystem, mechanisms were put in place to have seedlings cultured in aquaculture facilities for restocking and that other debris that may have sunken to the sea bed, thus hampering the ecosystem there, be removed. From the perspective of veterinary medicine, we noted the damage to some coral reefs and the possibility of fishes being contaminated with radioactive substances, as a result, it was recommended that monitoring of fisheries products for Iodine and Cesium be conducted to alleviate the fears of consumers and that every effort be made to restore the health of the corals by improving and further cleaning of the ecosystem.



Photograph of the debris in the water against the land after the tsunami (top) and the same area after the clean-up efforts to remove the debris (bottom).

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Editor's Note

The weather is finally changing here in Phoenix. It is still over 100 degrees Fahrenheit (38 C) now during the day, but it is getting cool at night. That is a sure sign that summer is almost over here in the Northern Hemisphere, and that winter is nearing an end for those members in the upside-down half of our globe. If you are in a Tropical region, you may have warm weather year around, but deal with rainy season monsoons. We, as practitioners of Aquatic Veterinary Medicine can find fish to work on in any season, no matter what the weather is (unless, perhaps you are in Antarctica).

In the Fish Farming industry, especially in the north, activities may slow down during the winter season, but there is still work that can be done. In my field of ornamental fish, there is work throughout the year. Fish are raised in warm areas of the world, and in the USA, it is mostly in Florida. In the past few winters, we have had unseasonably cold winter frosts that have killed many ornamental tropical fish in Florida. This has led to changes in the Fish Farming industry there. Some farms have closed, some have added heating for warming the air or water temperature on the coldest winter nights. This is just an example of what we need to do in the Aquatic industry—adapt to changes, whether they are changes in climate, technology, regulations, or advances in disease treatment. We need to be always adapting and staying ahead. That is one of the best reasons to support WAVMA—to keep up with the latest developments in Aquatic Veterinary Medicine. See further details in this issue of *Aquatic Vet News*, such as in the President's and Secretary's Reports.

Now I have to get back to my job and find out why these angelfish (*Pterophyllum scalare*) died. That is just one of the things I do on a daily basis as an Aquatic Veterinarian. If you have any suggestions, send me an email!



Nick Saint-Erne, DVM
Aquatic Vet News Editor
Saint-Erne@Q.com

Executive Reports

President's Report

It has been a busy summer. The members of the Executive Board, along with their regular workload, have given their free time to our organization to help move many projects forward. We have been meeting regularly each month to discuss these new initiatives. As these projects move from the drawing board to the open discussion phase, we will be calling on the members to join us. Here is a sampling of what we have been doing:

WAVMA has applied for membership in the World Small Animal Veterinary Association (WSAVA). Board Member Devon Dublin will travel to South Korea this fall to answer questions before the WSAVA Board to complete the application process. On behalf of all our members involved with ornamentals, we anticipate this will be exciting news.

WAVMA has begun formulating guidelines towards establishing a Certified Aquatic Veterinary Practitioner (CertAqVP) Program. This program will identify core competencies needed to be certified by WAVMA. More in the coming months.

WAVMA has started discussion on a Fellowship Program. This is intended to honor those members who have distinguished themselves amongst their peers. We will keep you posted on progress.

As of this writing, WAVMA is about to finalize a contract with MatrixAMC to manage some of the needs of our organization, such as fundraising, increasing membership and organizing future meetings. More details as they are established.

Welcome to new Executive Board member Myron Kebus. I am pleased to welcome Myron to the Board, knowing him for many years. I know he will bring much experience to our committees and to the Board.

It's a great time to be a WAVMA member. It's a great time to be an aquatic veterinarian. In fact, it's a great time to be a veterinarian. We have often times complained about being overworked and underpaid. In these uncertain economic times, it's comforting to be fully employed and busy.

Julius Tepper, DVM
 2011 WAVMA President
cypcarpio@aol.com

Secretary's Report

There is one official duty which is to report the results of the WAVMA elections:

President: **Dusan Palic**

President Elect: **Mohamed Faisal**

Treasurer: **Nick Saint-Erne**

Secretary: **Chris Walster**

Directors at Large: **Devon Dublin,**
Myron Kebus

Julius Tepper automatically moves to the role of Past President

The new Board will start their term of office in January 2012.

Once more I will start with the website. I know a few of you have had some problems, but to my knowledge they have all been resolved. If not, please contact the website administrators (administrators@wavma.org) or myself directly.

If you have any suggestions or contributions to go up on the website, then let me or Dave Scarfe know. There is only so much time that can be spent thinking of and adding content to the website. As some of you will have noticed, there have been no updates over the summer. Whilst this is no one's fault but a lack of time due to family holidays and conference attendance, the website is the shop window for WAVMA to attract new members.

Having a supply of items to add to the Home page as news or other pages keeps the website looking fresh. Remember that the website is also the access point for WAVMA members and to date the site has been visited by people from over 58 countries. By contributing, you will be helping to improve WAVMA's member benefits whilst publicising yourself, your event or organisation to all in the aquatic veterinary community.

Several of you have altered your WAVMA preferences on the website of which there are three:

Mailing List - this is for a periodic newsletter containing a summary of news from the website and short articles of general interest.

Member-L listserve. As a WAVMA member you are automatically signed up to this.

Student-L listserv. All WAVMA members can sign up to this and the list is intended for distributing items and information of particular interest to students.

Each time you alter these options an email is sent to the administrators alerting them. The default is to sign up for the WAVMA list serve only. There was a bug that meant that your selected options were not "held" by the system and this has now been corrected. Please try to not keep changing your options - numerous emails from the same person can be hard to track and ensure you have the options you want, to put it mildly, it can get very confusing!

The summer has been fairly hectic with WAVMA activities. New members have been elected to the Board, the AGM was held during the AVMA convention and the second International Aquaculture Biosecurity Conference was held in Trondheim, Norway, which included a two day workshop to which around 80 people attended. WAVMA is a contributor to the IABC and the next biosecurity workshop will be held during the World Veterinary Congress in South Africa in October, under the auspices of WAVMA and there is still time to register.

Comments from participants in Norway were that the workshop was really good and the only issue was the amount of work participants had to get through during the table top exercises. The problem was that in trying to fit the conference and the workshop into the available days meant only a half day was allowed for these exercises, whereas in South Africa a full day has been set aside. There is still time to register for the next workshop and plans are already being made for further workshops next year. If you have a suitable venue then please let me know and I will pass the information on to the organisers.

See page 16 for a report on the International Aquaculture Biosecurity Conference in Trondheim, Norway.

Chris Walster BVMS M MPH MRCVS

WAVMA Secretary

chris.walster@onlinevets.co.uk



Discussion group from day 2 of the International Aquaculture Biosecurity Conference in Trondheim, Norway.

WAVMA Committee Reports

Communications Committee

Vet School Communications & Liaisons:

We will finalize the invitation letter to vet schools that seeks to identify a point-of-contact at each vet school, and distribute an English and/or Spanish version to the contacts already identified, and will keep an updated spreadsheet of those contacted and who has responded.

Social Media and the Student Committee

Recognizing Student Committee difficulties, the Communication Committee will incorporate Student Committee members into the Communications committee, to oversee social media (Facebook, LinkedIn, blogs, etc.) and student communications activities. **We** will send an invitation to current student committee members and put out a call for new students to be Communications Committee members and help focus on student issues.

We will look into revising the charge of the communications committee, and disbanding or putting the student committee on hold.

Website:

New website does not appear to be fully utilized by members. The membership database, and the member's applications and payment systems, need to be fully functional to be of use to members and WAVMA.

A. David Scarfe PhD, DVM, MRSSAf
Chair, Communications Committee
Off: (847) 285-6634
dscarfe@ameritech.net

WAVMA Student Mentoring Program

Purpose: To provide an opportunity for student members to be guided and advised by full members of the organization in their pursuit of a career as an Aquatic Veterinarian.

Are you interested in being a Mentor?

Would you like to apply to be a mentee?

Do you wish to receive additional information?

Contact us at:

WAVMA_Student_Cmte@mailhost.wavma.org

Student Committee—Meet Samara Parker



Samara Parker is a 4th year student at the Atlantic Veterinary College - University of Prince Edward Island, Canada. Prior to joining the class of 2012 at the AVC, Ms. Parker graduated from Simmons College in Boston, Massachusetts with a Bachelor of Science in Biology and completed two years of graduate course work in the Marine Biology Masters of Science program at Nova Southeastern University - Oceanographic Center in Ft. Lauderdale, Florida.

Throughout her academic career Ms. Parker has taken every opportunity to gain practical hands on experience in her particular field of interest of marine animal conservation, health, and rehabilitation. While at Simmons College she served as an intern in the Rescue and Rehabilitation Department at the New England Aquarium (NEAq) and returned as a summer volunteer for years following. At the NEAq Ms. Parker gained experience in husbandry, medicine, and necropsy of a variety of species of cetaceans, pinnipeds, and sea turtles. During her time in Florida, she worked as a sea turtle specialist on the Broward County Sea Turtle Conservation Project. Most recently Ms. Parker has served on the executive committee of the Aquatic Animal Health club at the AVC, organizing activities, lectures and field trips, and is currently working on a fish histology research project.

Since coming to vet school at the AVC, Ms. Parker has become interested in aquaculture, and is currently completing 4th year clinical rotations in Aquaculture health and diagnostics with UPEI and the government of Newfoundland aquaculture veterinarians. Outside of academia, Ms. Parker is an avid recreational SCUBA diver and a certified scientific diver. She enjoys traveling and studying abroad, and is completing clinical rotations in the Northwest Territories, Georgia, Guatemala and more.

Meetings Committee Report

IABC Meeting Report

Report and Photos By **Chris Walster**

The International Aquaculture Biosecurity Conference held in August 14-17, 2011 was a great event. I arrived in Trondheim a couple of days before the conference so as to get my bearings and to discuss the format of the workshop with the other facilitators. This meant I had a very busy, eventful and fulfilling week. Despite several conference calls, there is always some additional bits that need to be sorted, and coordinating the teaching by the five facilitators is actually quite complex, coupled with some of the topics being fairly advanced, there was a possibility, particularly as the terminology still needs to be pinned down, that we might end up apparently contradicting each other! As it was, everything only fell into place around 3.00 am of the night before the start of the conference, but the organisers and facilitators were confident they could deliver an excellent workshop. My thanks to all of those who made this event such a success.

The first day and a half consisted of lectures introducing the topics that were to be covered during the workshop. These included overviews of:

1. Integrating Components for Effective Veterinary Biosecurity in Aquaculture
A. David Scarfe - AVMA, U.S.A.
2. Determining/Mitigating Critical Control Points & Risks of Disease Introduction
Larry Hammell - CAHS, Canada
3. Surveillance, Monitoring & Determining Disease Status/Freedom
Lori Gustafson - USDA, U.S.A.
4. Diagnostic Testing, Veterinary & Farm Record Keeping
Chris Walster - IVA, U.K.
5. Contingency Plans for the Control & Eradication of Disease
Edgar Brun – NVI, Denmark
6. Immunoprophylaxis in Biosecurity Programs
Roar Gudding - NVI, Norway
7. National & International Biosecurity Strategies
Birgit Oidtmann - CEFAS, U.K.
8. Facility-specific Biosecurity Plans: Case Study in Bioexclusion and Biocontainment
Grace Karreman – Western Chemical
9. Australian AQUAPLAN and AQUAVETPLAN
Ingo Ernst- DAFF, Australia
10. Canadian National Aquatic Animal Health Program
Kim Klotins- CFIA, Canada

11. The Practical Implementation of Biosecurity on Fish and Shellfish Farms in England
Richard Gardiner, CEFAS, U.K.
12. Development of (AquaFRAM) Tool for Salmon Farms
Jan Mei Soon- RAC, U.K./FAINR, Malaysia
13. Practical Approach to Biosecurity in Atlantic Salmon Production
Atle Lillehaug, NVI, Norway

For further details of the presentations, including PDF's of the slides, visit www.IABC.org.



After an excellent lunch and a rearrangement of the conference room, the workshop started. Attendees were divided into teams of six or seven with at least one being a government regulator, one a veterinarian and one a producer. Further, two scenarios were adopted with half of the teams focusing on salmon smolt production and the other half focusing on salmon net pen production since the workshop was being held in Norway. Obviously the workshop can be adapted to local aquaculture species. After listening to a short introductory presentation explaining the purpose of the exercise the table top exercises were begun.

For example, the smolt farm participants had to decide what diseases affected salmon smolts and then rank them in order of importance. Having determined the three most important diseases to the operation they were then asked what mitigating steps were required to prevent entry, eradicate or control the diseases. This exercise needed knowledge of the running of the operation, of diseases and of mitigating procedures.

Further exercises introduced the use of epidemiological methods to determine the prevalence of the disease, surveillance and how to determine critical control points. There is a bit of an issue with critical control points as a definition/description applicable for use in HACCP, "A CCP is a point in a procedure or operational step that can be controlled to eliminate the hazard or minimize the likelihood of its occurrence. Critical limits (maximum and minimum) need to be set and a monitoring system established to ensure the control of CCPs", is actually hard to implement in terms of a biosecurity plan which illustrates the need to adopt terminology applicable to biosecurity and that determining a biosecurity plan, although based on HACCP principles, is not HACCP.

The above point was apparent during the exercises as there was some confusion amongst participants over the meaning of parts of the terminology and much discussion over what were the most important control measures to instigate. However a consensus was reached amongst the participants who found the workshop extremely useful with one stating they had an epiphany even though they have worked in this field for several years.

The only negative comment was that the participants found the speed at which they had to make decisions exhausting and there was a palpable drop in energy levels towards the end of the workshop. This helped demonstrate that building a biosecurity plan is not as simple as may at first be thought and that numerous decisions have to be made to ensure understanding by farm staff, quantification of the economic benefit and future compliance with the plan. What else was clear is that there is little point in being so pedantic that business is disrupted by the measures introduced.



Day 1 discussions at the IABC

On the second day participants were bussed to a local smolt production unit to put in to practice what they had learnt on the previous day. Whilst many minor breaches of best protocols were found, the operations current biosecurity plan covered the major points without being too onerous on staff.



Salmon Smolt Farm



Day 2 Visit to the Salmon Smolt Farm

After inspecting the operation and listening to two excellent presentations given by the company who owns the smolt farm and the veterinarian providing services, the participants retired to a local hotel for lunch and afterwards to further table top exercises to determine whether any of the potential biosecurity issues were of importance. The group was divided into four with one group looking at:

- Fish and fish health procedures
- Water source
- Equipment use and storage
- People

Having discussed the issues, the teams came back together to present their findings, ranking them in order of importance and voted on what remedial actions were necessary. Whilst the list of potential remedial actions was extensive, the groups actually came to the conclusion that no further actions were required since the benefits were far outweighed by the cost or business interruption necessary to implement them.

The conclusion was that the conference and workshop had been excellent, with all gaining in their knowledge and confidence in carrying out a biosecurity plan. Attendees are already looking forward to the next IABC in 2013.



Filtration system at Smolt Farm

ListServ Letters

Dear WAVMA members,

I have this case of an orange coloured comet goldfish that presented with multifocal, confluent areas of skin thickening and mild pallor. There was no particular bias to its distribution and it affected the flanks, fins (pectoral and caudal) and the eyes. The lesion developed over several weeks and the owner was worried for its welfare since it affected the eyes and so it was euthanized. This fish was in a pond with other goldfish and koi. No others were affected.

Histologically, it looks like a well-differentiated population of clavate (fright) cells and with an abundant scirrhous reaction.

Anyone seen this before or have anything to add?

Dr Richmond Loh

BSc BVMS MPhil (*Vet Path*) MANZCVSc (*Aquatics & Pathobiology*) DipPM CMAVA
 Veterinarian / Adjunct Lecturer Murdoch University
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If I recall correctly, clavate (club-like) cells are large vacuolated (presumably normal) epithelial cells, sometimes seen scattered around the head region, and have been reported in several species of finfish. I recall seeing speculation that they are associated with parasite infection (perhaps have a secretory protective function), and others that suggest they are incidental atypical cells with no secretory function.

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 American Veterinary Medical Association
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Check out "Anatomy & Histology of the Channel Catfish" by Grizzle and Rogers. Auburn University - Agricultural Experiment Station, 1976. Chapter 7, pg 40. There are two photomicrographs with a short description of epidermal "alarm" cells:

"Alarm substance or club cells are also present in all areas except the barbels, inner surface off the operculum and lips. The term alarm substance cell (*Schreckstoffzellen*) was proposed by Pfeiffer (1962) for the club cells of Ostariophysi because of morphological and functional differences between these cells and club cells of other superorders. The alarm substance cells of channel catfish are large (usually 50-60 μ) with a centrally located nucleus which is usually double. Shape is usually spherical or oblong but is sometimes distorted by folds in areas such as around fins. These cells never extend to the surface. The 'fright substance' which they contain is released only when the epidermis is injured."

Allen Riggs

Allen.C.Riggs@hawaii.gov

Probably there are at least two different classes of cells called club cells, but one group of cells seen in EM have formed organelles and are associated with 'schreckstoff' or fright substance, released to frighten the neighbours when one fish is bitten into by a predator.

Others are very large in fishes such as gadoids and form an entire layer of the epidermis and are believed to be inter alia associated with sonar reflection back at predators, but they also provide a shearing surface so that if you grip the fish they shear at that layer and the fish escapes. Hence harvested gadoids rarely appear to have an epidermis; it has gone in the process of catching. We had to catch them on rod and line and drop them from the hook into anaesthetic then into fixative to fix skin before touching when describing gadoid skin.

Ron Roberts

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Aquatic Veterinary Program

October 11-14, 2011



Aquatic Veterinary Sessions (Oct 11-12) & Aquatic Veterinary Biosecurity Program (Oct 13-14)

Cape Town, South Africa
Don't miss 4 days of high-quality

Aquatic Veterinary Continuing Education & Professional Development
(CEPD Certificates of Attendance will be provided)

Aquatic Veterinary Biosecurity Session & Workshop is open to Vets, Paraveterinary Professionals & Producers
– see attached daily program schedule for details–

TRAVEL-ASSISTANCE SCHOLARSHIPS MAY BE AVAILABLE – details to be announced

See <http://conference2011.wavma.org/> for additional information & to sign up for regular e-mail updates

PROGRAM OVERVIEW

- Tuesday, 11th October – general aquatic veterinary medicine
- Wednesday, 12th October – epidemiology & biosecurity for veterinarians
- Thursday, 13th October – practical & applied aquatic veterinary biosecurity for vets & producers
- Friday, 14th October – on-farm biosecurity workshop / wet-lab for vets & producers
(Requires participation in Thursday, 13th October session – limited to the first 80 registered participants)

VENUE

- Tuesday-Thursday Sessions (11-13 Oct) – Cape Town Convention Centre
- Friday Biosecurity Workshop / Wet-Lab (14 Oct) – Three Streams Trout Farm, Franschhoek
(Includes transportation to/from Convention Centre and lunch)


ONLINE REGISTRATION – www.worldvetcongress2011.com/RealInfo.html

Please Note:


- Congress Delegate Registration provides access to all Tues-Thursday sessions; On-farm Biosecurity Workshop (Friday) requires separate registration (ZAR 1,500 ~US\$ 200)
- Practical Biosecurity Session & On-farm Workshop ONLY (*Aquaculture Producers & others NOT registered for the Congress* – Thurs & Fri, 13-14 Oct (ZAR 2,500/~US \$350)
*******Register before August 31, 2011 to avoid late and on-site increase registration cost**

SPONSORS & SUPPORTERS


The following are recognized for their assistance in developing and supporting the Biosecurity Program





International Aquatic Veterinary Biosecurity Consortium




South African Veterinary Association
Suid-Afrikaanse Veterinêre Vereniging









WORLD AQUACULTURE Society




Department of Agriculture
Federal Government of South Africa



ZEIGLER
Water through Innovation



THREE STREAMS FARM
Franschhoek Valley



DEPARTMENT of AGRICULTURE
Federal Government of South Africa

Literature Reviews / Clinical Abstracts

Book Review – *The History of Aquaculture.*

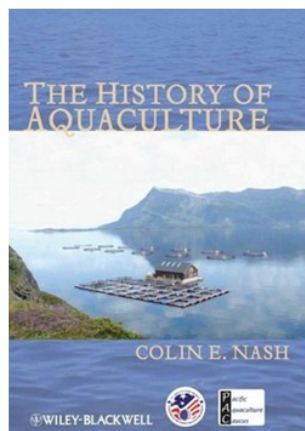
Colin E. Nash (2011)

Published by Wiley-Blackwell, Ames, Iowa, 227pp, hard-back, ISBN 978-0-81-38-2163-4.

Edited review by

Malcolm Jobling

(University of Toronto)



This is a compact, fact-filled volume in which Colin Nash traces the history of aquaculture from antiquity to the present day. The author draws on literature, drawings and photographic records that span the centuries. Aquaculture is traced from its Chinese origins, via the Roman and medieval practice of keeping fish in ponds, through the scientific developments of the Renaissance and the Industrial Revolution, and the journey culminates with a description of the global expansion that took place during the later years of the twentieth century and the opening decade of the twenty-first.

There is a distinct focus on the development of the culture of fish and shellfish, so the book does not provide a comprehensive history of all facets of aquaculture. For example, although there is some coverage of the cultivation of aquatic plants, amphibians and reptiles, these groups of farmed organisms are treated in a far more cursory fashion than are fish and shellfish. In addition, use of specialist terminology throughout the text means that readers who do not have a basic grounding in aquatic biology and aquaculture may not reap the full benefit of reading the book. Such readers may need to resort to making frequent forays into the glossary of terms that is included as an appendix, thereby disrupting their reading of the freely flowing text.

The book opens with a presentation of the important roles that fish and shellfish have had as foodstuffs throughout history. This provides the foundation needed to understand why the captive rearing of fish and shellfish has been carried out for many centuries. The following twelve chapters lead the reader chronologically through the different epochs, highlighting key developments and also indicating when there were periods of stasis, regressions and lost opportunities. The text is an interesting mix of anecdotes and discussion about aquaculture development and techniques, interspersed with information about the establishment of fisheries and aquaculture organizations, the subsequent expansion and consolidation of some and the demise of others. Interest-

ing snippets about the interface between aquaculture, fisheries science and marine biology, and insights into the circumstances surrounding the construction of the first commercial fish hatcheries, marine research laboratories and public aquariums are intertwined.

The fast-moving and engaging text reveals the enthusiasm that the author has for his subject matter, but his eagerness sometimes gets the upper hand and leads him to run ahead of a strictly chronological sequence. It is, however, not difficult for the reader to become so fascinated by, and engrossed in, the content that such anomalies may often pass unnoticed. In addition to its thirteen chapters, the book also has an appendix that gives a list of abbreviations, a glossary of terms, a species list and some guidelines for further reading, with an end-note that describes the evolution of the book from conception to publication and an index.

On the down side, there are a few points that detract from the overall impression. Throughout the book there is frequent use of Imperial units, weights and measures, and these may be unfamiliar to those used to working with the SI system; unfortunately, the author has not seen fit to include the conversions needed by many non-American and non-British readers. The text does not contain any direct reference to sources (literature citations), which can be accepted in a book of this nature, but the failure to refer to the illustrations in the text was a quite serious oversight. In addition, the book does not have a reference list, but some chapters are accompanied by a bibliography. There is also an appendix which gives some guide to further reading, but unfortunately the literature collations seem to owe much to serendipity, and there is a particular dearth of literature recommendations covering the development of aquaculture in recent years (1990–2010).

The lively narrative style, along with the inclusion of numerous anecdotes, makes it a very easy book to read; ideal for summer reading while sitting on the veranda on a sunny afternoon. The book should have a broad appeal to all who wish to gain some insight into the way that aquaculture has developed and advanced over the centuries. *The History of Aquaculture* is not a textbook, but could be used as supplementary reading for courses in aquaculture, and those who teach such courses will find many interesting tidbits of information that can be used to spice-up lectures and tutorials.

This comprehensive book is fully illustrated with over 40 plates and 6 maps, and includes chapters on: Fish and Shellfish as Food; Seeds in Antiquity (2000 BC–500 AD); Subsistence Farming through the Middle Ages (500–1450); The Slow Dawn of Science (1450–1900); The Roots of Modern Aquaculture (1750–1880); Farming the Sea (1880–1920); Fifty Lost Years (1900–1950); Aquaculture in a World at War (1935–1945); Post-War Pioneering (1950–1970); Uncontrolled Expansion (1965–1975); The Rise of the Institutions (1970–1980); Building Global Capacity (1980–2000); Modern Times (twenty-first century).

Clinical Abstracts—Hematology

Compiled by A. David Scarfe PhD, DVM, MRSSAF

Blood Gas, Oxygen Saturation, pH, and Lactate Values in Elasmobranch Blood Measured with a Commercially Available Portable Clinical Analyzer and Standard Laboratory Instruments.

Gallagher AJ, LH Frick, PG Bushnell, RW Brill, & JW Mandelman (2010). *J. Aqua. Anim. Health*, 22(4): 229-234

Abstract

Blood gas, pH, and lactate data are often used to assess the physiological status and health of fish and can often be most valuable when blood samples are analyzed immediately after collection. Portable clinical analyzers allow these measurements to be made easily in the field. However, these instruments are designed for clinical use and thus process samples at 37°C.

A few studies have validated the use of portable clinical analyzers for assessing blood gases and acid-base profiles in teleosts, but equivalent data are not available for elasmobranchs. We therefore examined the relationship of blood gas, pH, and lactate values measured with an i-STAT portable clinical analyzer with those measured using standard laboratory blood gas (thermostatted to 25°C) and lactate analyzers in samples taken from three species of carcharhiniform sharks.

We found tight correlations ($r^2 > 0.90$) between these methods for pH, pO_2 , pCO_2 , and lactate level values. We thus developed species-specific equations for converting blood values measured with an i-STAT portable clinical analyzer to those taken at 25°C. Additional studies need to address a wider range of temperatures and elasmobranch species.

Hematology, Plasma Biochemistry, and Tissue Enzyme Activities of Invasive Red Lionfish Captured off North Carolina, USA.

Anderson ET, MK Stoskopf, JA Morris, EO Clarke & CA Harms (2010). *J. Aqua. Anim. Health*, 22(4): 266-273.

Abstract

The red lionfish *Pterois volitans* is important not only in the aquarium trade but also as an invasive species in the western Atlantic. Introduced to waters off the southeastern coast of the United States, red lionfish have rapidly spread along much of the East Coast and throughout Bermuda, the Bahamas, and much of the Caribbean.

Hematology and plasma biochemistry were evaluated in red lionfish captured from the offshore waters of North Carolina to establish baseline parameters for individual and population health assessment. Blood smears were evaluated for total and differential white blood cell counts, and routine clinical biochemical profiles were performed on plasma samples.

To improve the interpretive value of routine plasma biochemistry profiles, tissue enzyme activities (alkaline phosphatase [ALP], alanine aminotransferase [ALT], aspartate aminotransferase [AST], γ -glutamyl transferase [GGT], lactate dehydrogenase [LD], and creatine kinase [CK]) were analyzed from liver, kidney, skeletal muscle, gastrointestinal tract, and heart tissues from five fish. The hematological and plasma biochemical values were similar to those of other marine teleosts except that the estimated white blood cell counts were much lower than those routinely found in many species. The tissue enzyme activity findings suggest that plasma LD, CK, and AST offer clinical relevance in the assessment of red lionfish.

Hematological and Plasma Biochemical Parameters of Aquarium-Maintained Cownose Rays.

Ferreira CM, CL Field & AD Tuttle (2010). *J. Aqua. Anim. Health*, 22: 123-128

Abstract

There is generally a dearth of information involving reference ranges of health variables for numerous elasmobranch species commonly housed in zoos and aquaria; thus, extrapolation from a few existing elasmobranch studies is commonly used to assess health parameters in these species. The primary objective of this study was to establish baseline complete blood cell count and plasma chemistry reference ranges for captive individuals of the cownose ray *Rhinoptera bonasus*, an elasmobranch that is widely displayed in zoos and aquaria worldwide. This study was conducted using 18 adult cownose rays currently housed at the Mystic Aquarium and Institute for Exploration in Connecticut.

Median blood and plasma values were 550 cells/ μ L for total white blood cell count; 511,250 cells/ μ L for total red blood cell count; 31% for packed cell volume; 5.8 g/L for total solids; 2.85 g/dL for total protein; 33 units (U)/L for aspartate aminotransferase; 34 U/L for alkaline phosphatase; 0.2 mg/dL for total bilirubin; 1,155 mg/dL for urea nitrogen; 0.1 mg/dL for creatinine; 0.6 g/dL for albumin; 2.15 g/dL for globulins; 144 mg/dL for cholesterol; 157 mg/dL for triglycerides; 45 mg/dL for glucose; 16.9 mg/dL for calcium; 5.8 mg/dL for phosphorus; 294 mmol/L for sodium; 1.55 mmol/L for potassium; and 270 mmol/L for chloride. Gamma glutamyl transpeptidase, amylase, creatine kinase, and lactate dehydrogenase were below the detectable limits for several samples. In nine samples, alanine aminotransferase levels were below the instrument range (<4 U/L). No significant differences between sexes were detected.

The reference ranges reported in this study should provide a useful guide for routine health monitoring of captive cownose rays.

Colleague's Connection

Finding a Way into Aquatic Veterinary Medicine

Julius M. Tepper DVM

When I was young, I didn't dream of being an aquatic veterinarian. In fact, it really wasn't until the last year in college (university for those of you outside the U.S.) that I even thought seriously about what I would do to earn a living after graduation. Up until that point, I was much too busy having a good time and being involved with all sorts of projects, some intellectual, some not so much. It was the late 60's, and the youth of America was high on life and enjoying a taste of everything!

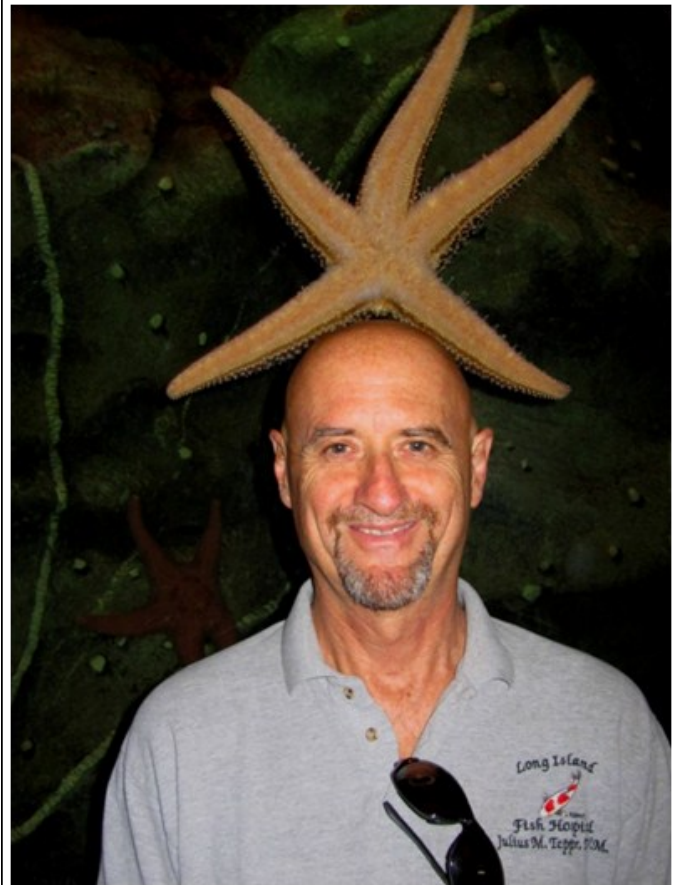
When I finally realized I had to eventually do something, I decided I would really like to become a small animal veterinarian. After all, I had always been involved with pets, had worked for veterinary hospitals and pet shops, had really liked animal care and husbandry.

Unfortunately, it was already too late to expect to be accepted in a U.S. veterinary school. Though my grades were pretty good, that just wasn't enough to make it through the highly competitive triage for the few places open each year. Not to be discouraged by this minor setback, and learning that my college friends had made plans to study medicine in Belgium, I applied and was accepted at the State School of Veterinary Medicine, University de Liege, located in Brussels, Belgium.

Being very determined to succeed at this point, I would not let minor roadblocks, like courses being taught only in French, deter me. After all, I had passed the French exam to be accepted at the school. (Upon entering the room, a professor, without lifting his head, would say "*asseyez-vous*" (*sit down*). When he looked up, if you were still standing, he would bellow "*le prochain*" (*next!*). After five years, I graduated with honors and headed back to the states with a veterinary degree, a new wife and not a lot else. Or so I thought

As luck would have it, Belgium was the world capital of pigeon racing. And fanciers and breeders in the Brussels area were enjoying a rich premium on sales of live birds and eggs, both domestically and abroad. This status helped support a very active caseload and justified the presence of a well-developed avian course, targeted research and regular avian clinical rotation during my last three years in school. (By comparison, most vets I knew in the U.S. at that time graduated with only a slight taste of avian medicine, usually a one-day slideshow on poultry diseases).

On returning to New York in 1976, I began practice in small animal medicine, with an avid interest in pet birds.



There were only a few of us willing to see birds then, and networking was essential. We eventually formed the Association of Avian Veterinarians. In 1982, I opened my own practice. Anyone who saw pet birds back then was the default exotic pet expert. Thus came veterinary care for reptiles, amphibians, pocket pets, ferrets, pot-bellied pigs, etc.etc.....

As a young boy growing up in Queens, a suburban part of New York City, fish and fishing were always part of my life. Fish tanks filled the basement, goldfish ponds were in the backyards. After I started a family and built my home, a pond was part of the package. I also moved up to koi-keeping, learning as much as I could about their care.

It was during the mid-90's when a very good client at my practice asked me if I treated koi. Besides his regular menagerie of pets, he had a pond with expensive show koi and was experiencing problems. I agreed to help and it was that case which made me realize how interested I was in pet fish medicine. The next few years were spent taking all the courses and attending all the conferences on fish medicine I could manage, while still trying to run a busy small animal-exotic practice. I swear the frequent lecturer Dr. Greg Lewbart (WAVMA member) must have thought I was stalking him!

In 1998, I launched the Long Island Fish Hospital and began seeing koi and other pet fish. Time restraints required I do house calls on weekends and days off. This was physically tiring, but professionally very rewarding.

Several years later, for a seminar for fish practitioners, I offered to talk about the economics of pet fish practice. It was my conclusion that the ideal arrangement, both financially and professionally, was to work part-time as an employed practitioner and part-time as a pet fish veterinarian. In 2007, with the kids out of the house on their own and adequate financial savings, I took my own advice and sold my small animal practice. I now run a veterinary relief practice on Long Island, NY, helping other practitioners and continue to enjoy aquatic veterinary medicine.

I can now especially enjoy the camaraderie and professional bonds I have formed with other founding members of our association. Being a veterinarian is having a unique calling, with a wonderful power to help animals and understanding the day to day stresses and successes we all go through allows me to relate to every aquatic vet I get to meet. Having helped form our association has entailed much time and hard work, but the friendships I have made along the way serve as my reward.

I would challenge those entering the profession and having an interest in aquatics to seek out experience and knowledge on your own, through membership to our association, attending lectures and conferences and from working with other practitioners. It has never been a high priority in many veterinary schools, but there are some schools that have well developed aquatic programs.

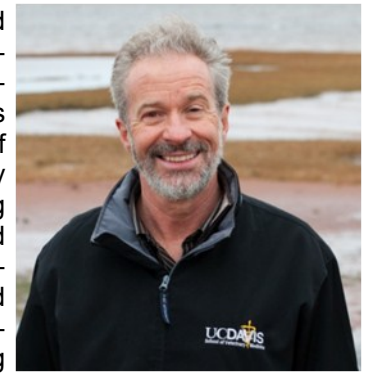
My hope for the future, at least for the pet fish practitioner, is that at some point the switch is flipped in the mind of the average fish keeper concerning health care options. As we saw with birds and other exotic pets in the past, people largely recognized the benefits of early diagnosis and proper veterinary care once the specialty became well-known. We must do our part as professionals, not only in helping publicize what we can now do to help treat pet fish, but also continue to press for advances in the medical care and knowledge that will bring us up on a par with the other specialties.

UPEI, Atlantic Veterinary College Revamps its Emphasis in Aquatic Veterinary Epidemiology

Aquaculture has become an essential source of protein for populations around the world. This knowledge, combined with the United Nations Food and Agriculture Organization's recent report that global fish consumption has hit an all-time high, sets into motion an urgent need for solutions to feed a growing, hungry planet.

As a world leader in aquatic species health, the Uni-

versity of Prince Edward Island's Atlantic Veterinary College (AVC) is focused on making sure this much-needed source of protein is safe, healthy and sustainable. Building on its expertise in food production animals, population health and food safety, the Atlantic Veterinary College is leveraging its knowledge of land-based animals and food production to that of marine environments.



In April 2011, Dr. Ian A. Gardner, an internationally renowned epidemiologist joined the effort and became one of only 19 prestigious Canada Excellence in Research Chairs (CERC) to be funded in Canada, and will anchor AVC's team to advance scientific study in this area. At AVC he will study and lead research in aquatic ecosystems and managing diseases in populations of sustainably produced aquatic food animals, with an emphasis on developing cost-effective testing strategies and surveillance programs for the prevention and control of diseases. While investigating disease dynamics and health interactions between farmed and wild fish populations. Dr. Gardner's research will also assist aquaculture regulators in Canada in making science-based decisions to maintain healthy food production in marine environments, as well as providing the knowledge needed to help improve nutrition for human populations around the world.

"The new scientific frontier of aquatic epidemiology being developed at the Atlantic Veterinary College will make a difference in people's lives," says Dr. Gardner. "This research deals with the health of our oceans, but is also about what goes on our plate at dinnertime. This knowledge will help improve nutrition for human populations around the world."

Dr. Gardner comes to AVC from the University of California where he was Professor of Epidemiology at the Davis School of Veterinary Medicine. He is internationally recognized for developing methods to assess disease risk and evaluate diagnostic tests in terrestrial and aquatic food animals, and is one of the most cited researchers in his field.

"We are very pleased to welcome Dr. Gardner to the Atlantic Veterinary College," says Dr. Don Reynolds, Dean of AVC. "The addition of Dr. Gardner to our impressive team of aquatic species experts, in combination with a major expansion to the college's aquatic facility, propels AVC forward in becoming the world's leading academic-based aquatics institution."

Clinical Reports

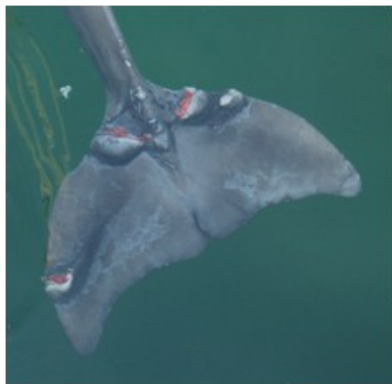
Dolphin Rescue Operation in Turkey

Erdem Danyer, VH & Işıl Aytemiz VK,
Faculty of Veterinary Medicine,
University of Istanbul, Turkey

On June 30, 2011, around 10 a.m., the Istanbul Directorate of Agriculture under the Turkish Ministry of Food, Agriculture and Livestock reported a wounded dolphin off the coast of Haydarpaşa, Istanbul, Turkey. It was reported that the fisherman found the dolphin and transferred it to the Fisheries Control Boat of the Directorate in Fenerbahçe. Until the expert team arrived, in order to protect its skin from drying, the dolphin was covered and rested on a stretcher, on the sea surface, via the assistance of divers and volunteers.



When we arrived, the dolphin was stabilized in a stretcher. It was a juvenile, female bottlenose dolphin (*Tursiops truncatus*) 182cm in length. Dolphin was weakly responsive and looked tired. External examination was performed and capillarity time <1 sec. She took one breath every 1.5 min., and there were some scratches and marks on the body. There was a wound present on her body starting from cranial insertion of the fluke to middle of the fluke. After examination of the wound and according to information received from the fisherman, the wound occurred from entangling with a long line. The fisherman removed a part of the long line by himself. The appearance of the wound suggested it occurred 7-10 days earlier. After the physical examination and articulation, it was decided that the wound would not be a problem for the functions of the fluke.



The wound was cleaned with povidone-iodine antiseptic (Betadine®), and bismuth subgallate (Dermatol®, 7 g) was applied with the fluke held out of the water for a short while. Thereafter the dolphin started to move its fluke with less discomfort. Prior to being transported to this location the dolphin was treated with 7mg/kg amoxicillin/clavulanic acid combination (Klavil, Vilsan®) IM, 1.5mg/kg carprofen (Rimadyl®) IM, and 1000 mg ascorbic acid (İnjacom C®) IM. After safety transportation procedure was executed, the dolphin was released into the pool. For seven hours volunteers assisted the dolphin to rest in a shaded, calm area and she was finally moved to an isolated area in the marina that was separated from human activity by nets (2.5 m deep, 3 m wide, 5 m long). Humans stayed back and started to observe her and the animal looked bright, alert and responsive. Slowly she started to search the depth of the pool and nets for a space, and 10 minutes after the release, she started to deep dive in the pool and normal fluke movements indicated that she was comfortable.

After observation to ensure normal behavior and fluke movements, the dolphin was transported by boat to an area where she was able to



join a wild dolphin pod in the area. Prior to release, she was treated again with 5 mg/kg amoxicillin/clavulanic acid combination and 1.5mg/kg carprofen. At about 10 p.m., having been released 1 nautical mile off the coast, the dolphin waited briefly on the surface for a couple of minutes, and then dove and disappeared.

This operation was performed by The Turkish Marine Research Foundation (TUDAV) with assistance from the Faculty of Fisheries and Faculty of Veterinary Medicine of Istanbul University, Fisheries Control Branch, Directorate of Istanbul and Kocaeli Food Control Laboratory Ministry of Food, Agriculture and Livestock, Fenerbahçe-Kalamış Marina., Assoc.

Prof. Ayhan De-
de, PhD, Arda
M. Tonay, PhD,
Lora
Koenhemi,
DVM, Captain
Umur Za-
manoglu, Yılmaz
Dagci, Rıza
İrku, Rıfat
Akulger, Ahmet
Akturl and other



Guidelines for Submitting Clinical Reports for Publication in *Aquatic Vet News*

Objectives

The objective of the Clinical Report Section of the WAVMA Quarterly Newsletter (*Aquatic Vet News*) is to provide a forum for Aquatic Veterinarians to publish uncommon or important clinical cases encountered, or to present a new/improved method of diagnosis, treatment or control of a particular anomaly which affects any aquatic animal.

Submission

Clinical Reports of around 1000 words in Microsoft Word (10 point Arial font) should be sent to Dr. Devon Dublin (devdub@yahoo.com) for editing and formatting by the following *Aquatic Vet News* submission deadlines: February 15; May 15; August 15; November 15.

Clinical Report should be divided into the following sections:

- Title
- Author/s and corresponding author's affiliation & contact information
- Abstract (and key words)
- Introduction
- Case Description
- Discussion & Conclusions
- References

Additional Guidance

Title—10 words or less that succinctly describes the clinical case

Abstract (Summary)—maximum 200 words; should include a description of the condition, diagnosis, treatment, results and conclusion

Key words—up to 8 words that can be used to search all WAVMA Clinical Reports

Introduction—200 words or less; should highlight uncommon or new/improved method diagnostics, treatment, control or resolution.

Case Description—350 words or less; describe species, breed, age, sex, type etc and include subsections describing: *Signalment & History; Differential Diagnoses; Clinical Evaluation; Clinical Test, Results & Rule-outs; Treatment Options & Follow-up and Case Resolution*. If necessary include postmortem findings.

Discussion & Conclusions—approximately 200; interpretation of findings and diagnostics and the relevance of the case; when necessary cite other publications (use 1, 2, etc referring to reference list).

References—Less than 5 *directly relevant* references preferred, numbered in the order that they appear in the text; use standard, abbreviated citations, e.g., Smith AB, et al (2010). Death by Asphyxiation in Snails. *J.Irreprod.Results*, 111(4): 210-220.

Tables, Figures, Graphs and Illustrations—all tables, figures, graphs or illustrations must be simple, clear and have a brief legend description, e.g., Table 1. Comparison of Diagnostic Techniques; JPG, GIF, TIFF or BITMAP formats are preferred.

We look forward to your input to keep WAVMA members the most informed group of veterinarians. Please submit your interesting or unusual case reports to share with other Aquatic Veterinarians. We look forward to hearing from you!

Emerging Issues

Local carp die-off turns out to be short-lived

Hometown Life.com, Gannett News Service [edited]

According to Kensington Metropark officials, an estimated 700 carp died last month [June 2011] at Kent Lake [Michigan, USA] and portions of the Huron River. However, the die-off -- likely due to a virus called spring viremia of carp, according to the Michigan Department of Natural Resources [DNR] -- was thankfully short-lived, said Huron-Clinton Metroparks Chief of Communications Denise Semion.

Semion said the die-off continued for only a few days after dead carp were first reported by boaters at Kent Lake and a segment of the Huron River just east of the lake. "We have had no incidents since, and we're estimating between 600 and 700 fish died," said Semion. She noted that the lake is about 800 acres [324 ha] in size, equating to approximately one dead fish per acre. "We did receive reports then of things being unsightly, and we did hear complaints of odors," she said.

Semion said cleanup crews worked diligently to remove dead fish to reduce any risk posed by dead or decomposing fish. The disease that likely caused the die-off affects only species of carp and posed no human health risk.

Jim Francis, a fisheries biologist for the DNR, said last month [June 2011] that evidence pointed to spring viremia of carp, primarily because no other fish were otherwise affected. "Typically, when we get calls for fish die-offs, people assume (it's caused by) water contamination, but if there were poison in the water, it would kill indiscriminately." Semion said cleanup crews sent samples of the dead carp to the DNR, which forwarded them to labs at Michigan State University. Results, she said, are expected within a few weeks.

From: ProMED-mail <promed@promed.isid.harvard.edu>
[Comments by - Mod.TG, ProMED-mail]

While it may be spring viremia of carp, it may be Koi herpes virus as well. Neither disease can be diagnosed by visual signs alone. Both affect only carp, so to claim one over the other may be premature.

Spring viremia of carp (SVC) is a contagious viral disease of carp and related species. Outbreaks can cause substantial economic losses. SVC can be highly fatal in young fish, with mortality rates up to 90 percent. In Europe, where this disease has been endemic for at least 50 years, 10-15 percent of 1-year-old farmed carp are lost to SVC each year. The causative virus can be spread by fomites and parasitic invertebrates, and is difficult to eradicate; once it is established in a pond, elimination of the virus may require the destruction of all aquatic life. Since 2002, several SVC outbreaks have been reported in the

US, with both cultivated and wild species affected.

The clinical signs of SVC can include darkening of the skin, swollen eyes, abdominal swelling, pale gills, trailing fecal casts, and protrusion of the anus. Infected fish may be lethargic and show areas of bleeding in the gills and skin. Diseased fish tend to gather at the water inlet or sides of the pond, swim and breathe more slowly than normal, and react sluggishly to stimuli. Loss of equilibrium, with resting and leaning, are seen in the late stages. Concurrent bacterial infections (carp-dropsy complex) or parasitic infections influence the symptoms and mortality rate.

It could be koi herpesvirus, since only carp are affected, and koi are a type of carp. When results from the diagnostic laboratory are returned, then the exact cause of death of these fish may more likely be found.

Koi herpesvirus (KHV), also known as cyprinid herpesvirus-3 or CyHV-3, is a highly contagious viral disease capable of causing significant morbidity and mortality in common carp (*Cyprinus carpio*). In many countries, the common carp is a foodfish and also has been selectively bred for the ornamental fish industry, where it is known as koi. Almost all countries have reported KHV, which was first recognized in 1996 in England. However, publications (Pokorova et al) in 2005 report that Australia does not have the disease.

The most significant sign of KHV is the sudden appearance of mass mortality within 1-2 days of initial infection. Aside from mass mortality, the other common signs are white patches or necrosis of the gills. Other clinical signs are sunken eyes, bleeding gills, and secondary bacterial infection or parasite infestation.

There is no treatment for KHV. Prevention is the key. For cultured fish, inquiring about any mortalities may give a buyer a clue that some fish may be carriers.

For further information, refer to Chapter 2.3.6. "Koi Herpesvirus Disease" in OIE's manual of Diagnostic Tests for Aquatic Animals -- 2010, available online at <http://www.oie.int/fileadmin/Home/eng/Health_standards/aahm/2010/2.3.06_KHVD.pdf>.

Portions of this comment were extracted from <http://www.cfsph.iastate.edu/Factsheets/pdfs/spring_viremia_of_carp.pdf>.

Koi Herpesvirus Detected in Kent Lake Fish Kill August 5, 2011

Michigan, USA – Samples taken from a June 2011 fish kill, involving an estimated 300 to 500 common carp from Kent Lake in Oakland and Livingston counties, have detected the presence of koi herpesvirus (KHV), which may have contributed to the fish kill, the Department of Natural Resources announced on June 3.

"This virus is capable of large-scale common carp die-offs as seen in Ontario in 2007 and 2008," said Gary

Whelan, DNR Fish Production Manager. "The virus is an internationally reportable disease, and it is being officially reported at this time."

KHV had not been previously found in wild fish samples in Michigan but was detected in a private koi pond near Grand Rapids in 2003. KHV affects common carp and koi. There are no human health effects. The impact of KHV on native minnow species, which are members of the carp family, is not known at this time. KHV disease is found worldwide and likely was introduced to Michigan waters from the release or escape of infected ornamental fish.

"The disease is easy to confuse with other diseases such as viral hemorrhagic septicemia, so laboratory analysis is needed to confirm this disease," Whelan said. "While there are no treatments for this disease, the DNR is evaluating potential steps to manage it."

The public is reminded to contact the DNR when they see unusual fish kills at www.michigan.gov/fishing. "This disease outbreak is another example of why the DNR reminds anglers and boaters that they need to drain bilges and live wells upon leaving a boat launch," said Jim Dexter, Acting Chief of the DNR's Fisheries Division. "Anglers should clean their boats, disinfect their gear, and not move live fish, to reduce the possibility of any fish diseases being transferred to new locations."

SEAFDEC develops vaccine against devastating fish virus **September 9, 2011**

Tigbauan, Philippines – A vaccine is being field tested against a virus that causes one of the world's most lethal fish diseases that wipes out entire stocks. "The emergence of fish diseases caused by viruses, bacteria and other parasites is one of the downsides of the booming aquaculture industry," said Dr. Joebert D. Toledo who heads the Southeast Asian Fisheries Development Center (SEAFDEC) Aquaculture Department here. "One of these diseases is Viral Nervous Necrosis, or VNN, considered one of the most devastating diseases in cultured marine fish that results in massive economic losses if left unmanaged," he said.

While a vaccine is also being developed in Japan and Taiwan, the SEAFDEC vaccine is being tested in broodstock, or breeders, as an attempt to produce offspring that are free from VNN, explained Dr. Rolando V. Pakingking Jr., a virologist at SEAFDEC's Fish Health Section. This is important because it is suspected that VNN outbreaks in the Philippines are caused by the transmission of the virus from VNN-positive broodstocks to their offspring, he told Malaya Business Insight.

The suspicion is based on the fact that the virus is already widespread in the marine environment as indicated by trash fish used as feed to breeders that test positive for the virus, he said. Pakingking's research demon-

strates that a single injection with a formalin-inactivated vaccine induces potent immune responses and substantial protective immunity among experimental sea bass, grouper and pompano exposed to the VNN virus.

See the source (www.malaya.com.ph/sep09/agri1.html) for the full story.

Scientists warn of deadly shellfish in part of Alaska **July 23, 2011**

ANCHORAGE, Alaska – Public health officials warned Alaskans to avoid eating shellfish they harvest from the southeastern tip of the state after high concentrations of a poison than can kill humans was found. State officials said scientists monitoring algae blooms near Ketchikan discovered some of the world's highest-ever recorded levels of toxins that cause paralytic shellfish poisoning -- a potentially fatal ailment that can paralyze vital organs.

The most poisonous shellfish discovered were baby mussels at a dock in Ketchikan with toxin levels of more than 30,000 micrograms per hundred grams of shellfish meat. This is well over the 80-microgram level considered toxic, the Alaska Department of Health and Social Services has warned. Those levels are so high that a single mussel could kill several people, scientists at the University of Alaska Southeast said in a statement on Thursday.

In other types of shellfish, members of the multi-agency Alaska Harmful Algal Bloom monitoring program found toxin levels ranging from 1,100 to 5,000 micrograms per gram of shellfish meat, the department said. State officials have posted warnings on the region's beaches, docks, stores and other public places, and police have issued warnings on marine radios, the department said.

Paralytic shellfish poisoning toxins are absorbed by certain shellfish from algae. Symptoms of poisoning start with tingling and numbness in the mouth, and can spread through the body. "If it gets to your lungs, it shuts them down," said Greg Wilkinson, a spokesman for the state health department. The shellfish warning does not apply to commercially harvested products.

See the source (<http://tinyurl.com/42ybd2t>) for the full story.

Extracted from AquaVetMed e-News, provided by the American Veterinary Medical Association's Aquatic Veterinary Medicine Committee.

Legislative and Regulatory Issues

Animal Health Australia - Surveillance Report July 30, 2011

(Contributed by Brett Herbert, Aquatic Animal Health Program, Australian Government Department of Agriculture, Fisheries and Forestry)

Abalone viral ganglioneuritis in Tasmania

The virus causing abalone viral ganglioneuritis (AVG) was isolated from abalone in farms and in the wild in Victoria in late 2005. The outbreak of AVG in Victoria has not spread further along the coast in the past year, and abalone farms in Victoria have been free of the disease since 2006 after decontamination of infected farms.

In 2008 and 2009, AVG was detected in Tasmania in processing plants where wild abalone are brought and held in large tanks before processing or live export. These two outbreaks were controlled and contained, and the facilities successfully decontaminated. In late December 2010, abalone at a processing facility in Tasmania displayed signs of AVG, and control measures were immediately implemented by the Tasmanian Department of Primary Industries, Parks, Water and Environment (DPIPWE). In mid-January 2011, AVG was confirmed in a second processing plant and an abalone farm. Abalone held in three other processors were found to have AVG virus present in the absence of clinical disease.

Laboratory testing incorporating both histopathology and PCR occurred at both the DPIPWE laboratories at Mount Pleasant and the Australian Animal Health Laboratory of the Commonwealth Scientific and Industrial Research Organisation. Histopathology detects disease-related changes in neural tissues, whereas PCR detects the pathogen, which, in some cases, may be present without pathology.

Quarantine restrictions were imposed on infected properties, including stopping discharge of effluent into the surrounding marine environment (except after disinfection and approval for release), and the cessation of the movement of abalone to and from the premises (except in accordance with DPIPWE biosecurity orders). A state disease control headquarters was established to oversee the response, including removal of all abalone, decontamination of the infected farm and the tracing of potential sources of the outbreak. There is a possibility that some wild abalone from Tasmanian waters may carry the virus and that it expresses itself when abalone are stressed. This hypothesis is being investigated by the Tasmanian authorities.

All restrictions have now been lifted on all premises involved in this outbreak. Industry-wide biosecurity measures are being developed to reduce the risk AVG poses to the farmed and wild-capture sectors. There is

no human health risk associated with consuming or handling abalone infected with this virus. The response to this most recent AVG outbreak followed the DPIPWE emergency animal disease response plan. A draft disease strategy management manual for the abalone industry has been prepared and is currently under review.

Pacific oyster mortality syndrome

A syndrome caused high mortalities in farmed and feral Pacific oysters in parts of the Georges River and Botany Bay in New South Wales in late 2010. In early 2011, the disease was detected in feral Pacific oysters in the Parramatta River. High mortalities of Pacific oysters have occurred overseas, but have not been reported in Australia previously. This disease has not affected Sydney rock oysters.

The New South Wales Department of Primary Industries is managing the incident locally and has placed movement restrictions on the affected areas in Botany Bay and the Georges River to manage the risk of disease spread. The Aquatic Consultative Committee on Emergency Animal Diseases has been convened to monitor developments and to assist New South Wales in its management of the situation. The states with Pacific oyster industries (New South Wales, South Australia and Tasmania) are participating in a national surveillance program to determine the distribution of the virus in Australia. The states involved, the Australian Government Department of Agriculture, Fisheries and Forestry, and the Australian Animal Health Laboratory are contributing to this program.

The latest issue of the full Animal Health Surveillance Quarterly Report (Vol. 16, Issue 1 – 1 January to 31 March 2011) is now available at <http://tinyurl.com/3w2tu8t>.

PUBLIC CONSULTATION ON THE RISK ASSESSMENT OF FOOD AND FEED FROM GENETICALLY MODIFIED ANIMALS

August 11, 2011

European Union – The European Food Safety Agency (EFSA) has launched a public consultation on draft guidance for the risk assessment of food and feed derived from genetically modified (GM) animals and related animal health and welfare aspects.

In its guidance document, the EFSA outlines specific data requirements and the methodology to be followed for risk assessment should applications for food and feed derived from GM animals be submitted for market authorisation in the European Union (EU). The risk assessment approach compares GM animals and derived food and feed with their respective conventional counterparts integrating both food and feed safety as well as animal health and welfare aspects. All stakeholders and interested parties are invited to provide their comments

through an online public consultation that runs until 30 September 2011.

At present, no applications for market approval of food and feed derived from GM animals have been submitted in the EU. The technology has advanced rapidly in recent years and in some countries outside the EU regulators are already evaluating the safety of GM animal products developed for food and feed purposes. In this context and as a proactive measure in anticipation of potential future applications, the European Commission requested EFSA in 2007 to develop comprehensive guidance for the risk assessment of food and feed derived from GM animals and in 2010 requested the inclusion of related aspects of animal health and welfare.

The draft guidance document, developed by scientific experts from EFSA's Panel on Genetically Modified Organisms (GMO) and Panel on Animal Health and Welfare (AHAW), integrates the risk assessment of food and feed from GM animals with related aspects of animal health and welfare. A separate EFSA guidance document, due to be launched for public consultation in 2012, will address the environmental risk assessment of GM animals.

The present draft guidance document outlines a risk assessment approach to compare GM animals and derived food and feed with their respective conventional counterparts. The basic assumption of this type of comparative assessment is that food and feed from conventionally-bred animals have a history of safe use and therefore can serve as a baseline for the risk assessment of food and feed derived from GM animals. The document outlines specific data requirements for the comparative analysis of different components of the food and feed risk assessment.

Important components of the risk assessment include molecular characterisation, compositional analysis and assessment of toxicity, nutritional aspects and potential allergenicity. For example, experts can assess whether food and feed from GM animals are as nutritious to humans and animals as those from conventionally-bred animals. The draft guidance document also outlines the methodology required for the comparative assessment of health and welfare aspects of GM animals.

This assessment is applied in two ways: firstly, in relation to the GM animal itself, where the assessment should focus on the effective functioning of the animal's body systems (e.g. disease resistance); and secondly, in relation to the food and feed risk assessment, as the health and welfare status of animals is seen as an important indicator of the safety of animal-derived products.

The draft guidance highlights the need for extensive comparative analysis of the characteristics and traits of GM animals, including physiological parameters, with

those of their conventional counterparts. It also proposes that health and welfare should be assessed at all stages of development of the GM animal, up to the point at which it would receive authorisation, should this be granted. The recommended three-stage assessment strategy covers the laboratory setting where the GM animal is initially developed, experimental field trials outside the laboratory involving a higher number of animals and trials with large numbers of animals carried out in a commercial setting (prior to authorisation).

In the final chapter of the draft guidance document, recommendations are made for the post-market monitoring and surveillance (PMM) of GM animals and derived food and feed, which seeks to identify any potential unintended effects related to the genetic modification which might arise after the product has been authorised for placement on the market. In the case of food and feed safety, PMM is not a substitute for but rather a complement to a thorough pre-marketing toxicological testing programme. PMM should be required in specific cases such as for GM food and feed with altered nutritional composition and/or for food and feed genetically modified to achieve specific health benefits.

In regard to animal health and welfare, PMM is required to determine possible long-term unexpected effects with low incidence. The monitoring takes into account the breeding of large numbers of GM animals for food and feed purposes in more varied commercial conditions than those established during stage three of the proposed assessment strategy for animal health and welfare, i.e. trials carried out in a commercial setting.

EFSA invites stakeholders and all interested parties to comment on its draft guidance through a public consultation available on the EFSA web site until 30 September 2011. Following the public consultation, EFSA will assess all comments made and, where relevant, these will be incorporated in a revised guidance document to be adopted by EFSA's GMO and AHAW Panels at the end of 2011.

For more information, and to download the current draft guidance on which to comment, go to <http://www.efsa.europa.eu/en/consultations/call/110810.htm>.

Extracted from AquaVetMed e-News, provided by the American Veterinary Medical Association's Aquatic Veterinary Medicine Committee and are for public distribution.

Aquatic Veterinary CEPD

Veterinarians attending these meetings may be awarded veterinary CEPD credit towards annual re-licensure or re-registration, which is required in some countries to practice veterinary medicine. Individuals should check with the organizers to see if CEPD certificates are provided.



Meetings with Caduceus are sponsored by a Veterinary School or Organization.

15TH INTERNATIONAL CONFERENCE ON DISEASES OF FISH AND SHELLFISH

SEPTEMBER 12-16, 2011

Annual Meeting of the European Association of Fish Pathologists, Radisson Blu Resort in Split, Croatia

This is a large conference and is a great forum for exchange of information with other fish health scientists from throughout the world.

From Monday September 12 through Thursday September 15 there will a full scientific program of keynotes, oral presentations, dedicated poster sessions, workshops and roundtables. An EAFP plenary session is also scheduled. The deadline for presentation abstracts is April 8, 2011, and the deadline for early registration rates is May 13, 2011.

An additional histopathology workshop dealing with lymphoid organs, musculoskeletal system and nervous system will be held in conjunction with the EAFP meeting on September 17, 2011, after the close of the main scientific conference. Workshop space is limited to 30 participants. Preference is given to EAFP members who can contribute a case presentation on one of the workshop topics. If you wish to attend please contact Dr. David Bruno (david.bruno@scotland.gsi.gov.uk) before you register and pay your conference fee so he can reserve you a place. The cost will be 35-40 Euros which will go towards the cost of a CD.

For further information about the scientific and social programs, abstract submission, registration, optional workshops and study visits, and the stunning conference venue on the Adriatic Sea, please visit the conference website at <http://eafp.org/second-announcement/>.

VETERINARY WORKSHOP ON FISH REGULATORY MEDICINE SEPTEMBER 19 & 20, 2011

Madison, Wisconsin, USA

A free workshop for veterinarians on fish regulatory medicine is scheduled for September 19-20 at the Pyle Center on the University of Wisconsin-Madison campus. TOPICS: Improve Fish Regulatory Practices
Improve Surveillance Techniques
Improve Interstate Fish Health Regulations

There is no fee, and ten veterinary CE credits will be awarded to veterinarians who attend. Lunch and breaks are included. An agenda will soon be available.

The workshop is funded by the U.S. Department of Agriculture and the Wisconsin Department of Agriculture, Trade and Consumer Protection. The workshop is organized by Dr. Gretchen May and Dr. Myron Kebus.

Please contact me with any questions.

Gretchen May, DVM

Animal Health Veterinarian

DATCP - Division of Animal Health

gretchen.may@wisconsin.gov

Ph: 608-224-4352

fax: 608-224-4894



INTERNATIONAL SYMPOSIUM OF FISH PARASITES

SEPTEMBER 26TH - 30TH, 2011

Hotel Gala, Vina del Mar, Chile

Deadline for abstract submission: June 10th, 2011

For more information see WWW.8ISFP.COM



8TH ANNUAL CONFERENCE OF THE UNUSUAL AND EXOTIC PETS GROUP

OCTOBER 7-10, 2011

Alice Springs Convention Centre,

Northern Territory, Australia

UEP 2011 is sure to be a hit with presentations on veterinary and pharmaceutical sciences, zoo and wildlife, reptiles and mammals, and wet labs focusing on endoscopy and clinical reptile medicine. The always popular "speed vetting" session will be repeated this year. Invited speakers include Cathy Shilton, livewire veterinary pathologist from Darwin who will present on cutting edge topics from the Top End and Annabelle Olsson who will show us how to perform a coeliotomy on a 400kg crocodile.

For more information, and a brochure and to register go to <http://www.ava.com.au/event/uep-annual-conference-2011>, and www.alicespringsconventioncentre.com.au/uploads/File/accommodation.pdf for accommodation.

For additional details contact Robert Johnson

(clinic@reptilevet.com.au) or Mike Cannon

(mcannon@hotmail.net.au).

For all registration enquiries contact Lauren Gadd

(events@ava.com.au, or +61 (0) 2 9431 5056).

Aquaculture Europe 2011**October 18-21, 2011**

Annual Meeting of the European Aquaculture Society, hosted by The Federation of Greek Maricultures and the Hellenic Centre for Marine Research – Rhodes, Greece.

With a theme of “Mediterranean Aquaculture 2020,” this meeting will be the most innovative event of European aquaculture to date, bringing together research institutions, academia and the industry. Sessions will address vital questions affecting the development of Mediterranean aquaculture over the next decade, with reviews of the importance of aquaculture in EU food production; the sustainability of aquaculture feeds and the implementation of selective breeding strategies in aquaculture.

A review of current EU-funded research programmes will highlight their relevance to the current and future production practices. Aquaculture Europe 2011 will establish benchmarks for future research that will lead to a clear foresight of the development dynamics of Mediterranean aquaculture 2020. The conference will include an international trade show, a Farmer’s Day, a student workshop and will provide a platform to showcase European initiatives in aquaculture. Call for papers deadline April 15, 2011. Sessions include: Sustainable feeds and feeding management; Reproduction and breeding; Hatchery production; Health management; Welfare management; Novel technologies; New species for aquaculture production (including ornamentals); Aquaculture engineering and technology; Tuna farming; Zebrafish; Aquaculture and the consumer; Escapees; Energy efficiency in aquaculture production; Aquaculture governance, policy and socio-economics; Aquaculture planning; Organic aquaculture; Diverse freshwater aquaculture systems; Alternative aquaculture; Mollusc aquaculture; and an EU Forum. For more information see: www.easonline.org.

**3RD INTERNATIONAL SYMPOSIUM ON CAGE CULTURE IN AQUIACULTURE IN ASIA (CAA3)
NOVEMBER 16-19, 2011**

In conjunction with the Malaysia International Seafood Exposition, Putra World Trade Centre, Kuala Lumpur, Malaysia

Sessions include: Site selection and environmental management (including adaptation to climate change); Species selection and seed production; Feeds and feeding; Biosecurity and health management; Production technology and systems; Economics, markets and certification; Policy and regulations; Seafood trade & certification; and a Farmer’s Day programme.

For more Information see <http://www.asianfisheriessociety.org/caa3/>

**8TH SYMPOSIUM ON DISEASES IN ASIAN AQUACULTURE
NOVEMBER 21-25, 2011**

Fish Health Section of the Asian Fisheries Society, the College of Fisheries, Mangalore, India & Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar, India.

With the Theme “Fish health for food security” the conference will deliberate on the following tentative issues: Global aquaculture – Past, present and future; Public health and trade impacts; Environmental approaches to disease management; Epidemiology of fin-fish diseases; Epidemiology of crustacean shellfish diseases; Epidemiology of molluscan shellfish diseases; Emerging issues and approaches in aquatic animal health management; Biosecurity and aquaculture; Diagnostic development – conventional to molecular; Immunological approaches to disease management; Genomics, proteomics and bioinformatics; Pathogen risk analysis and risk assessment; and Alternatives to antimicrobials. For more information see: www.daa8.org/index.html.

FLAVOBACTERIUM 2012**JUNE 5-7, 2012**

3rd International Conference on Members of the Genus *Flavobacterium*.

Åbo Akademi University, Turku (Åbo), Finland

Organized by the Laboratory of Aquatic Pathobiology, Environmental and Marine Biology, Department of Biosciences, this meeting will take place in the Arken Campus at the Åbo Akademi University, close to the Aura River and Turku Cathedral. Arken offers well-equipped facilities for the conference and hotels in the center of Turku and are within walking distance from the meeting venue. Turku is served by an international airport with connections from Stockholm, Copenhagen, Gdansk, Riga and Helsinki and a port with ferries from Stockholm.

The conference will provide a platform for oral presentations on diverse aspects of these environmental and pathogenic microorganisms. Participants are especially encouraged to submit abstracts on the biology and epizootiology of *Flavobacterium* species.

For more information, registration, hotel information, abstract submission and practical information see the conference website – <http://www.abo.fi/flavobacterium2012>.

[Aquatic Veterinary Opportunities](#)

2012 Veterinary Intern Announcement – CALL FOR APPLICATIONS

The Marine Mammal Center, an equal opportunity, non-profit employer, is seeking a Veterinary Intern to join our team. The Marine Mammal Center's mission is to expand knowledge about marine mammals—their health and that of their ocean environment—and to inspire their global conservation. Our core work is the rescue and rehabilitation of sick and injured marine mammals, supported by state-of-the-art animal care and research facilities, a corps of dedicated volunteers, and an engaged community.

The Marine Mammal Center, in collaboration with the University of California at Davis has an exciting opportunity for a Veterinary Intern, based in Sausalito California at The Marine Mammal Center. This position reports to the Director of Veterinary Science and works closely with the Veterinary Science team. **This position is scheduled to start July 1, 2012 and is for a one year term.**

This position requires a DVM degree or equivalent and previous marine mammal or wildlife experience is desirable. Preference will be given to individuals that possess at least one year of clinical veterinary experience. The Marine Mammal Center veterinary staff includes full and part time veterinarians, three veterinary technicians, a medical technologist and research staff. The Veterinary Intern's responsibilities include assisting the veterinary medical staff in providing medical management of a large number of stranded marine mammals (mostly pinnipeds); performing post mortem examinations, sample-taking for various research projects, and record-keeping. A research paper or case report should be completed during the internship.

If qualified, send your CV, letter of intent and three professional references to the contact individual listed below.

Applications are **due by Monday December 5th 2011**. Late applications will not be accepted. A selection will be made by the second week in January 2012.

Send your application to:

2012 Veterinarian Intern Program
Sophie Guarasci, Veterinary Science Assistant
The Marine Mammal Center
2000 Bunker Road, Fort Cronkhite
Sausalito, CA 94965-2619
E-mail: guarascis@tmmc.org

MARINE HARVEST (SCOTLAND) LTD – FINFISH VETERINARIAN

We currently have a vacancy for a Health Specialist at our Freshwater Salmon site at Loch Lochy. The successful applicant will be required to be pro-active in all fish health matters on site and to take appropriate corrective action in the face of any health challenges with the objective of maximizing welfare, survival and performance. The main duties will include the following:

- To provide advice, support and training to farm staff on best practice with regard to the health and welfare of the fish.
- To supervise the use of medicines and support the development of new medicines and health initiatives.
- To provide a monitoring and diagnostic service to the site for rapid detection of health challenges.
- To collate data on fish health and produce regular reports for the Lochs Area Manager and Freshwater Health Manager.
- To support the Freshwater Health Manager in wider projects and visits to other sites.

Candidates should be able to demonstrate a high degree of commitment to the job, be able to work independently as well as being a strong team player, be computer literate, and have previous experience of working in a similar role or have fish health qualifications.

If you are interested in applying for this post, please submit a CV with a supporting letter to: Vicky Ferguson, Human Resources Manager, Marine Harvest (Scotland) Ltd., Business Resource Centre, Blar Mhor Industrial Estate, Fort William, PH33 7PT, UK. For an informal enquiry please email vicky.ferguson@marineharvest.com

To all student members

You can be featured in the next edition of AVN.

Simply send your biography and photo to the editor

or to

WAVMA Student Cmte@mailhost.wavma.org

UNIVERSITY OF GHENT, BELGIUM – AQUATIC VETERINARY GRADUATE COLUMNARIS RESEARCH (PHD DEGREE)

Are you interested in captivating scientific research in the area of fish disease? The Faculty of Veterinary Medicine, Department of Morphology, Ghent University has an opening for a PhD research position involving the pathogenesis of columnaris disease in catfish and rainbow trout.

The Department of Morphology is in search for a Master in Biotechnology, Biomedical Sciences, Bio-engineering, Biology or Veterinarian for the execution and follow-up of an innovative and intriguing research project on the way that the bacterium *Flavobacterium columnare* causes disease in catfish and rainbow trout. This concerns a research project with a fixed term of up to four years which includes varying research (in vitro research, research with organ perfusion models and experimental infections in fish) within a multidisciplinary team of researchers in the area of aquatic veterinary medicine.

Research will include and involve chemotaxis, adhesion, biofilm formation, quorum sensing, apoptosis and antimicrobial resistance; the ultimate goal is to develop efficient and environmentally friendly measures to combat columnaris disease.

If you are interested in this ground-breaking research, have any questions about this program or the research, or want to apply, please contact Prof/Dr A. Decostere (annemie.decostere@ugent.be). Applicants should send a CV, along with a cover letter explaining their motivation.

WAVMA is now on Facebook!



Assisted by the WAVMA Student Committee, WAVMA and aquatic veterinary medicine is being actively promoted on Facebook.

Become a WAVMA “friend” and feel free to post information useful for other veterinarians, veterinary students, and inform the public about what aquatic veterinarians do.

Simply go to www.facebook.com and search for “WAVMA”

**UNIVERSITY OF MANITOBA/
CANADIAN DEPARTMENT OF FISHERIES & OCEANS -
MSc/PHD GRADUATE STUDENT POSITION**

DFO Freshwater Institute is accepting applications from students interested in pursuing a PhD (1 position available) or Masters (1 position available) degree in the field of viruses of lower vertebrates. The students will be located at the Freshwater Institute, Fisheries and Oceans Canada, Winnipeg, Manitoba and enrolled in the Department of Biological Sciences Graduate Program at the University of Manitoba. Possible start date is September 2011 or earlier.

The Ph.D. student's project will involve meta-genomics, disease ecology and epidemiology of viral diseases of endangered lake sturgeon in Canada. The Master's student's project will involve the application of Koch's postulates and molecular diagnostic tool design and development for viral diseases of endangered lake sturgeon in Canada.

Lake sturgeon (*Acipenser fulvescens*) populations in Manitoba were designated as endangered by the Committee on the Status of Endangered Wildlife in Canada in 2006 and are currently being assessed for inclusion in Schedule 1 of Canada's Species at Risk Act. Population enhancement through a sturgeon conservation stocking program is being considered as a supplementary measure to mitigate any further reduction in natural populations. To further these efforts we are investigating the effect(s) that infectious diseases might have on the recovery of threatened lake sturgeon populations. The students' projects will be part of a larger research program that addresses existing knowledge and technological gaps in viral diseases of lake sturgeon.

The successful candidate must have graduated from an officially recognized university with a degree in an appropriate discipline (i.e. molecular biology, virology, microbiology, genetics or biochemistry), earned by June, 2011. The applicants must show evidence of excellent academic qualifications, strong written and verbal communication skills, high motivation and the ability to work both independently as well as part of a larger collaborative research team.

Apply online at www.jobs-emplois.gc.ca/rap-par/index-eng.htm or for more information, please contact Sharon Clouthier at DFO Freshwater Institute, 501 University Crescent, Winnipeg, Manitoba, Canada, R3T 2N6; Email Sharon.Clouthier@dfo-mpo.gc.ca; Telephone 204-984-5215.

ATLANTIC VETERINARY COLLEGE, CHARLOTTETOWN, PEI, CANADA – CERC POST-DOCTORAL RESEARCH SCIENTIST POSITIONS IN AQUATIC EPIDEMIOLOGY

The Atlantic Veterinary College (AVC) at the University of Prince Edward Island (UPEI) is seeking highly-qualified applicants for up to 4 post-doctoral research scientist positions in aquatic epidemiology. Positions will range from 2 to 5 years depending on the individuals' qualifications and experience.

The goal of the CERC program is to make UPEI and Canada the global leader in applied aquatic epidemiology research (with an ecosystem health focus). The successful applicants will join a multi-disciplinary team of epidemiologists, statisticians, finfish, crustacean and mollusc clinicians, ecosystem health and regulatory veterinary medicine specialists whose work focuses on holistic approaches to assist the Canadian and international aquaculture industries improve the productivity, sustainability and health of farmed fish stocks.

A veterinary degree, expertise in epidemiology, and strong quantitative skills will be considered assets, as will experience with fish diseases and aquaculture. However, strong candidates with other relevant backgrounds are encouraged to apply. Individuals must be self-motivated and able to work both independently and as an effective partner in the growing UPEI CERC team.

Salary and benefits will be commensurate with qualifications and experience of the individual. Interested applicants are encouraged to contact either Dr. Ian Gardner (phone: 530-752-6992; e-mail: iagardner@upei.ca) or Dr. Ian Dohoo (phone: 902-566-0640; e-mail: dohoo@upei.ca) for further information about the positions.

Interested candidates should submit their curriculum vitae, a statement of interest and the names and contact information of two referees. Review of applications will begin on April 1, 2011 and the positions will remain open until filled.

Applications should be sent to: Leanne Newson, Administrative Project Manager, Centre for Veterinary Epidemiological Research, Department of Health Management, Atlantic Veterinary College, University of Prince Edward Island, Charlottetown, PEI C1A4P3 Canada (cver@upei.ca; ph: +1 (902) 6205049, fax: +1 (902) 620-5053).

ATLANTIC VETERINARY COLLEGE, CHARLOTTETOWN, PEI, CANADA – GRADUATE STUDENT (PH.D.) POSITION

A doctoral student position is available on a project investigating genetic diversity of infectious salmon anaemia virus (ISAV) (Kibenge *et al.*, 2009, *Virology Journal*, 6:88) and antiviral genes (Workenhe *et al.*, 2009, *Molecular Immunology*, 46:2955-2974). Candidates should have a BSc or DVM or MSc in virology, cell biology, molecular biology, biochemistry or a related discipline. Prior laboratory experience in cell culture, and cellular and molecular biology techniques, is required.

Graduate student stipend will be at the current NSERC maximum salary/stipend for doctoral students.

Applicants should be independent, creative, goal-oriented and have strong written and verbal communication skills. An ability to work in collaboration with others in a busy lab is essential.

If interested, please submit a current *Curriculum Vitae* (CV) with cover letter stating your research interests and outlining practical experience as well as course work in virology, cell biology, molecular biology, biochemistry and related disciplines, university transcripts, and contact information for 3 professional references to: Dr. Fred Kibenge, Department of Pathology & Microbiology, Atlantic Veterinary College, University of Prince Edward Island, 550 University Avenue, Charlottetown, PEI C1A 4P3, Canada. Tel: 902-566-0967 (office) / 902-566-0940 (lab); Fax: 902-566-0851; e-mail: kibenge@upei.ca.



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World Aquatic Veterinary Medical Association

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2011 MEMBERSHIP FORM

New Application or Renewal (check one)

Use this Form for mailing with cheque, or credit card payment information

(Membership Application and Renewals, and on-line credit card payments can also be done through www.WAVMA.org)

Please complete all mandatory fields marked with*, as accurately as possible.

Contact Information

*Name (First, Middle, Last) _____ *Date _____

Business/Organization Name (if applicable) _____ Position/Title _____

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(Secondary e-Mail addresses will be used if the primary address becomes non-functional)

Please Check One Membership Category below and complete all the information required for that category

Full Member (a graduated of a Nationally recognized veterinary school that awards a Doctor of Veterinary Medicine, or equivalent, degree) – US\$100

Full Member (New Graduate) (graduated in the immediate previous 12 months from a recognized veterinary school that awards a Doctor of Veterinary Medicine, or equivalent, degree) – US\$50

*Primary Veterinary Degree (as awarded e.g. DVM; VMD; BVMS; DEDV; Dr. vet. med.; MVZ, etc) _____

*Year _____; University _____; City _____; Country _____

Student Member (currently enrolled in a Nationally recognized veterinary school that awards a Doctor of Veterinary Medicine or equivalent degree, or a graduate veterinarian enrolled in a post-graduate degree program, internship or residency) – US\$25

*Primary Veterinary Degree (to be, or already, awarded e.g. DVM; VMD; BVMS; DEDV; Dr. vet. med.; MVZ, etc) _____

*Year _____; University _____; City _____; Country _____

Veterinary Technician/Nurse Member (must be working under the supervision of a veterinarian) – US\$50

*Name of supervising veterinarian _____; Phone _____; e-mail _____

Affiliate Member (para-veterinary professional (non-veterinarian) graduate of a nationally recognised university or institution of higher education who supports the Mission and Objectives of the Association) – US\$100

*Degree _____; *Year _____; *University _____; *City _____; *Country _____

Allied Veterinary Organization Member (legally formed organization or society whose members are predominantly veterinarians) – US\$500

*Current total number of members _____; *Number (or %) of members that are veterinarians _____;

*Estimated number (or %) of members involved with aquatic veterinary medicine (any species or disciplines) _____

Membership Annual Dues Payment Options

(New members joining in November/December will be considered paid through December 31 of the following year)

Check One Payment Option: Please send me an invoice , accept enclosed cheque # _____, or charge the credit card below for the total amount of US\$ _____

Please return this form to:

Dr. Nick Saint-Erne (Treasurer)
3845 W. Calle Lejos
Glendale, AZ 85310
e-Mail: Saint-Erne@Q.com

Please charge my:

VISA

MasterCard

Name on Card _____

Card Number _____ Expiry Date: _____(Mo); _____(Yr)

Card Security Code _____ Signature _____

All membership applications or renewals will receive an e-mail confirmation once processed.

Contact Corner

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One Profession; One Discipline; One Voice—Cohesive & Inclusive!

WHO ARE WE

The mission of the World Aquatic Veterinary Medical Association is to serve the discipline of aquatic veterinary medicine in enhancing aquatic animal health and welfare, public health, and seafood safety, in support of the veterinary profession, aquatic animal owners and industries, and other stakeholders.

The purpose of the World Aquatic Veterinary Medical Association is:

- To serve aquatic veterinary medicine practitioners of many disciplines and backgrounds by developing programs to support and promote our members, and the aquatic species and industries that they serve.
- To identify, foster and strengthen professional interactions among aquatic medical practitioners and other organizations around the world.
- To be an advocate for, develop guidance on, and promote the advancement of the science, ethics and professional aspects of aquatic animal medicine within the veterinary profession and a wider audience.
- To optimally position and advance the discipline of aquatic veterinary medicine, and support the practice of aquatic veterinary medicine in all countries.

Aquatic Vet News

Instructions for Authors and Contributors

Do you want to make an impact and a contribution to aquatic veterinary medicine? If so, consider becoming a regular or periodic contributor to the quarterly *Aquatic Vet News*.

Help make the *Aquatic Vet News* the source for pertinent and important news. If you would like to be an Associate Editor or have material published in AVN, contact Nick Saint-Erne (Saint-Erne@Q.com).

We particularly invite contributions for (and Associate Editors to assist with) the following regular columns:

Aquatic Vet Q&A

Short description of a problem and solution to an issue – if you don't have the solution, ask the questions and let readers submit solutions for the next issue.

Clinical Cases

Clear description of a distinct clinical case or situation and how those were resolved.

Book Reviews

Brief review of a published book, including an overview and critique and where to obtain the book.

Legislative & Regulatory Issues

Description of legislation or regulations with information on how to access further details.

Externships, Internships & Residencies

Description with specific contact information for veterinary student externships and post-graduate internships or residencies at private practices, institutions, universities or organizations.

Meetings & CEPD Opportunities

Description of upcoming aquatic veterinary educational meetings noting the meeting title, dates, location, and contact person or website.

Jobs Available

Description of available full or part-time employment for aquatic veterinarians.