

# AQUATIC VET NEWS

WORLD AQUATIC VETERINARY MEDICAL ASSOCIATION

Volume 6, Number 1

First Quarter 2012

## We Have a Winner!

In our contest last issue, we asked readers to identify fish photographed at the WVC meeting in South Africa. **Dr. Allen Riggs** ([Allen.C.Riggs@hawaii.gov](mailto:Allen.C.Riggs@hawaii.gov)) correctly identified the following fish from the cover of the last Aquatic Vet issue:

Fish #1: *Gymnomuraena zebra* - Zebra Moray Eel

Fish #2: *Acanthurus xanthopterus* - Yellowfin surgeonfish

Fish #3: *Acanthurus triostegus* - Convict surgeonfish

Fish #4: *Heteroconger hassi* - Spotted garden-eel

For his efforts, Dr. Riggs will be sent a free WAVMA shirt. If you would like a shirt, too, go to the WAVMA.org website and you can order shirts and more from the WAVMA online store. Or try to win one in this fish identification contest (Part 2)!

## Name that Tune-a Fish #2

At the World Veterinary Congress in Cape Town, our intrepid Secretary, **Chris Walster**, managed to photograph some of the native fauna of the Indian Ocean near South Africa. The fish to the right are waiting for YOU to identify them. This is a chance to show your expertise in knowledge of the world of fishes. Send an email to the *Aquatic Vet News* editor, **Nick Saint-Erne** ([SaintErne@Q.com](mailto:SaintErne@Q.com)) with the scientific names of the fish pictured, and you could win a prize from WAVMA. Winners that correctly identify the fish pictured fish will be listed in the next newsletter.



Fish #8

Fish Photos  
by  
Chris Walster

## Inside this issue:

<u><a href="#">Front Page News</a></u>	<u><a href="#">1</a></u>	<u><a href="#">Clinical Reports</a></u>	<u><a href="#">12</a></u>
<u><a href="#">Editor's Note</a></u>	<u><a href="#">2</a></u>	<u><a href="#">Emerging Issues</a></u>	<u><a href="#">14</a></u>
<u><a href="#">Executive Reports</a></u>	<u><a href="#">3</a></u>	<u><a href="#">Legislative &amp; Regulatory</a></u>	<u><a href="#">20</a></u>
<u><a href="#">Committee Reports</a></u>	<u><a href="#">5</a></u>	<u><a href="#">Aquatic Veterinary CE &amp; PD</a></u>	<u><a href="#">22</a></u>
<u><a href="#">Listserv Letters</a></u>	<u><a href="#">7</a></u>	<u><a href="#">Aquatic Veterinary Opportunities</a></u>	<u><a href="#">24</a></u>
<u><a href="#">Literature Review</a></u>	<u><a href="#">8</a></u>	<u><a href="#">Contact Corner</a></u>	<u><a href="#">25</a></u>
<u><a href="#">Colleague's Connection</a></u>	<u><a href="#">10</a></u>	<u><a href="#">WAVMA Mission Statement</a></u>	<u><a href="#">26</a></u>

## Editor's Note

This year we will see the advent of the Certified Aquatic Veterinary Practitioner Program, about which I am very excited. This will allow qualified veterinarians to finally be able to show that they have experience and training in Aquatic Veterinary Medicine. It is not Board Certification or any form of Specialty Practice authorization, but is recognition of the basic skills required for this type of practice. Part of the certification process will be submission of completed training or education in aquatic medicine. One method that will aid veterinarians in acquiring the necessary training will be online Continuing Education classes or programs.

In that regard, WAVMA has incorporated the use of the Network Of Veterinary ICT in Education (NOVICE). You must be a veterinarian, veterinary student, ICT education-alist or veterinary educationalist to become a member of the NOVICE network. Once you have become a member, which is free of costs, you will be able to use group discussion boards, blogs and wikis to discuss veterinary topics with like-minded people. The NOVICE project seeks to explore and extend the

## WAVMA Book Store

We are working on making available to our members books on Aquatic Veterinary Medicine and related topics at discounted prices. This will be good for members and good for WAVMA. To start things off, we are making available the softcover book **Advanced Koi Care** (2nd Edition 2010) by our own newsletter editor, Nick Saint-Erne.

This book is regularly priced at \$65.00 plus shipping and handling costs. Through WAVMA, you can purchase this book at a \$10.00 discount (only \$55.00) PLUS get free shipping - saving another \$5-\$10.00. But wait, there's more! WAVMA will receive \$10.00 from the proceeds of the books sold to any WAVMA member through this offer. That is helping you and helping WAVMA, plus helping the fish once you read the book. It doesn't get any better than that!!

If you have a book that you would like to offer to the members, please contact the newsletter editor. We would like to create an online bookstore at the [WAVMA.ORG](http://WAVMA.ORG) website, where members can save on books or videos that would help them in their aquatic veterinary practice. We also have WAVMA polo shirts for sale. These can be ordered from Julius Tepper ([cypcarpio@aol.com](mailto:cypcarpio@aol.com)) and will be available on the website soon.



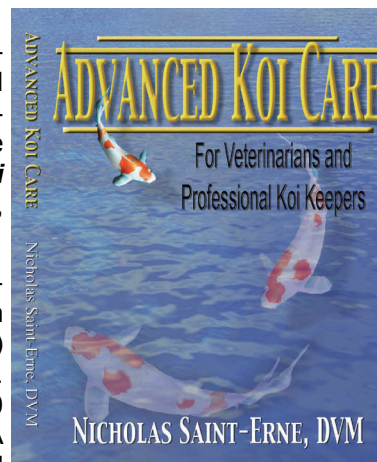
use of Web 2.0 tools in veterinary education and lifelong learning. Currently there are over 2000 members of NOVICE. The website was founded by five European Veterinary Schools and is funded by the European Commission.

WAVMA has built a section for Aquatic Veterinary Medicine on the NOVICE website. We will be able to have computer-based learning programs, web conferences, and other educational programs available on the site for our members. We are only just getting started, but go ahead and sign up and take a look:

<http://www.noviceproject.eu/>.

Your comments and help are always appreciated!

**Nick Saint-Erne**  
Newsletter Editor  
[Saint-Erne@Q.com](mailto:Saint-Erne@Q.com)



To order your copy, mail a check for US \$55.00 to:

**Nick Saint-Erne**  
**3845 W. Calle Lejos**  
**Glendale, AZ 85310**  
**USA**

Or call 623-680-8853 with your credit card to order a book, and it will be shipped to you post paid.



This book is the product of Dr. Saint-Erne's 35 years of personal experience in keeping fish, 20 years of practicing exotic and aquatic animal veterinary medicine, and 10 years of research in koi healthcare.

It is written to be a singular complete reference book for veterinarians, koi professionals, and the serious hobbyist. It covers all aspects of koi keeping including their history, color varieties, koi breeding and genetics, water quality, pond filtration, nutrition, surgery, anesthetic and medication dosages, disease diagnosis, treatment and prevention.

## Executive Reports

Dear Colleagues,

I would like to praise WAVMA committee members for their activities in the past year, and share my hopes for the year to come. **Dr Julius Tepper** will be assuming the role of Past-President, and I become the President as of January 1st. **Dr Mohamed Faisal** is our President-Elect. The three of us will continue to work diligently on WAVMA member's behalf, and hope to continue the line of successful undertakings that started during 2011.

Our web site had a significant overhaul in 2011. Thanks to members of the communication committee, and Dr Tepper who made this the top of his priorities, the new web site is offering our members a suite of options and privileges that will continue to grow and upgrade in 2012. If you haven't done so, please check our website ([www.wavma.org](http://www.wavma.org)) and, of course, please renew your membership for 2012 if you haven't already done so.

In 2011, WAVMA initiated the development of the Aquatic Veterinary Practitioner Credentialing program. The program was spearheaded by our Credentialing Committee (Drs. Faisal, Miller-Morgan, Palić, Palmeiro, Scarfe, Saint-Erne and Walster). Thanks to numerous members' inputs and committee work, we hope to release this program in early 2012.

A WAVMA Fellowship Program is also in the works, and Dr Faisal will be inviting nominees for WAVMA Fellows in early 2012 as well. The honor of Fellowship will be bestowed to outstanding WAVMA members who have contributed significantly to the development of aquatic veterinary medicine practice, art and science. Please consider nominating colleagues that you would like to recognize for their contributions to the field.

Other membership services will continue to grow in 2012. The *Aquatic Vet News*, members listserv, and online payment system, are embedded in the new web site. The members database, and archive of listserv messages about your cases and questions are developing, and we hope to offer access to an online store with WAVMA branded items soon. The executive board is exploring a cloud data storage option that would allow our members in good standing (renewed before April 1, 2012) unlimited personal computer files backup for a fraction of the cost of similar services. Another possible membership service that is being developed is the discounted book purchase program, which we hope to offer with support from several major publishers who offer titles in the areas of veterinary medicine and aquaculture.

I will likely be the first WAVMA president to run the Association from two continents. I am starting my term in North America (Iowa State University College of Veterinary Medicine), but will be finishing it in Europe (Faculty of Veterinary Medicine, Munich, Germany). Regardless of geographical location, I will be expecting to hear from you, and I will also do my best to expand WAVMA presence in the EU and worldwide. I am here to serve you, and to lead the WAVMA through another successful year.

However, I don't think anyone can do this work alone. Therefore, I invite all members to help us expand and grow our Association. Please, invite new members: "Are you a WAVMA member?" Ask colleagues "Did you renew your WAVMA membership yet?" And, most importantly, please talk about WAVMA membership benefits that are important to you, with your colleagues and students: "Have you seen this (insert cool membership service here) that WAVMA provides?"

For 2012 to be successful, we most certainly need your input on multiple programs that are developing, and most of all, please share with me what you would want to see in return for your membership dues. It is my primary goal as the President to bring new programs online as WAVMA member services. However, to keep evolving and serving our members, we need your ideas and input about new services and improving existing. I will be waiting for your e-mails ([president@wavma.org](mailto:president@wavma.org)) in 2012 and beyond.

All the best in the next year,

**Dušan Palić**  
2012 WAVMA President

Assistant Professor,  
Dept of Biomedical Sciences  
Iowa State University

Professor and Chair (June 2012) of Fish Diseases and Fisheries Biology,  
Faculty of Veterinary Medicine,  
Ludwig Maximilian University,  
Munich, Germany.  
[dulep@iastate.edu](mailto:dulep@iastate.edu)



**Dr. Dusan Palic**

## Secretary's Report

Members are reminded that membership runs from the 1<sup>st</sup> of January through the 31<sup>st</sup> December each year. Dues payment can be made online through a secure credit card payment system in your member profile or paid through the post to the Treasurer. Those who do not pay their 2012 dues by the 1<sup>st</sup> April 2012 will be deactivated from the website. This means that although your original details will still be available to you, you will not be able to access the member's only section of the website or receive any benefits. If you log into your [members profile](#) you can check whether you have paid or still owe your 2012 dues. If you have forgotten your log in details or have any problem concerning the website then please email [administrators@wavma.org](mailto:administrators@wavma.org).

As with any publication what you see is written some time before publication and whilst the past quarter has been busy, at the time of writing several projects still need to be signed off by the Executive Board although they are otherwise finalized. These include the CertAqVP program, WAVMA Fellowship Program and CEPD Webinars, and members may well have been fully informed of these programs by the time you read this. Other projects still at the discussion stage include member discounts for published textbooks, the provision of unlimited online backup of computers for members (through [www.livedrive.com](http://www.livedrive.com)), collaboration with the NOVICE project ([www.novice.eu](http://www.novice.eu)), which is an educational and social network for veterinary professionals, along with initial discussions for 5 days of WAVMA organized CEPD at the AVMA Convention ([Chicago 2013](#)) and the WVC ([Prague 2013](#)).

Whilst some of the costs of these projects can be ameliorated through sponsorship, the bulk of the costs are covered by the contribution you as members make through your membership dues and contributions of time by the members of the various committees. There are both tangible and intangible benefits of membership and it may be appropriate to discuss some of these as some people have raised the question of "what is in it for me?" WAVMA is now over five years old and some of these projects have been under discussion for much of that time, but it should be pointed out that with limited funds and other resources, much has been achieved and with your help much more can be.

For a review of past activities see [www.wsava.org/WAVMA.htm](http://www.wsava.org/WAVMA.htm), WAVMA's page on the World Small Animal Veterinary Association's website, which fits well with [WAVMA's mission statement](#). Membership of WAVMA in the WSAVA ([www.wsava.org](http://www.wsava.org)) and the WVA ([www.worldvet.org](http://www.worldvet.org)) ensures that aquatic veterinary

medicine is promoted at all levels within the veterinary profession. An example of this need is the current WSAVA Convention for the Protection of Companion Animals, which clearly, although in essence is compatible with, was not formulated with ornamental fish in mind, even though ornamental fish by species and individual number far outstrip cats and dogs.

Being part of the International Aquaculture Biosecurity Consortium ([www.iabconference.org](http://www.iabconference.org)), WAVMA has forged links with several universities, the OIE, FAO and aquaculture industries, and the IABC has provided funds for WAVMA as well. The [Student Scholarship Program](#) assists the development and encourages future aquatic veterinarians and, for those of us of a certain age, there is an importance in encouraging younger vets to become involved. Whilst these activities may not be of apparent benefit to all WAVMA members, they do provide intangible benefits to all in promoting and developing the discipline of aquatic veterinary medicine.

Tangible member benefits obviously include the ability to communicate with other aquatic veterinarians around the world through the listserv and the quarterly *Aquatic Veterinary News* (AVN). With the advent this year of the Cert AqVP achieved through e-learning, which is aimed to ensure competence in aquatic veterinary medicine and provide your clients with that assurance, as well as the introduction of webinars, you can achieve your CEPD requirements for re-licensure at considerably reduced cost. The provision of discounted publishing and cloud computer backup on their own will cover the cost of annual membership and, coupled with everything else, provide exceptional value. Perhaps this year WAVMA members should aim to encourage at least one colleague to join and enjoy these benefits.

Finally, the ubiquitous appeal for content to put on the website such as photos or even to help keep it updated. Without assistance it is difficult to keep the website up to date and with the e-news and AVN sending in potential content becomes even more important. The website along with the e-news and AVN are the public face of WAVMA and, by contributing content, you are helping to promote the discipline from which we all derive our income. To me this is a win-win situation and a cheap way to promote your abilities to a global audience. Support WAVMA, aim to attend WAVMA meetings, contribute to the development of further programs and gain personally, socially and professionally.

**Dr Chris Walster (UK)**  
[chris.walster@onlinevets.co.uk](mailto:chris.walster@onlinevets.co.uk)  
WAVMA Secretary

## Committee Reports

### Meetings Committee Report

The Meetings Committee has now finalized our schedule for the coming year. We have 4 venues at which we will be present in 2012. The year kicks off with Aquaculture America 2012 in Las Vegas, Nevada from February 29 - March 2, 2012. In addition to our information booth, we have organized a Special Session titled "Reducing the Risk of Disease" - on Thursday, March 1, 2012, with several WAVMA members as featured speakers. Veterinarians participating in this Special Session will receive a Continuing Education & Professional Development (CEPD) Certificate for possible use towards meeting annual veterinary licensing or registration requirements. With the majority of the members of the Executive Board present, we will also hold our February Executive Board meeting there.

The 41st SAVMA Symposium will be held from March 15-17, 2012 at Purdue University, West Lafayette, IN. As in the past, WAVMA will have our information booth at this event. This is the best opportunity for WAVMA to promote aquatic veterinary medicine to US vet students.

The World Small Animal Veterinary Association 2012 Congress will take place in Birmingham, England from April 12-15, 2012. As a new member of this organization, WAVMA will have a representative present.

The AVMA Annual Convention will take place in San Diego, CA from August 4-7, 2012. In addition to our information booth, and in conjunction with the

AVMA Aquatic Veterinary Medicine Committee, we have organized a special full day Aquatic Veterinary session on August 7th. Based on discussions at our dinner meeting in St. Louis at last year's WAVMA Annual General Meeting, this session has been arranged with advanced topics, case reports and roundtable discussions designed to help us bring new clinical insights to our aquatic practices. In addition, attending this conference will allow the participant to earn up to 42 Hours of CE credit.

Below is a list of the topics to be presented each day at the AVMA Convention:

Saturday, August 4, 2012 - Career Options in Aquatic Veterinary Medicine & Fish Medicine Basics

Sunday, August 5, 2012 - Diagnostic Techniques

Monday, August 6, 2012 - Infectious Diseases of Fish

Tuesday, August 7, 2012 - Advances in Clinical Aquatic Veterinary Medicine.

On Monday, Aug. 6, from 6:30 PM-10 PM, we will have our Annual General Meeting and dinner. Although the exact hotel has still not been decided, it is not too early to register for the conference to receive early bird discounts. As we anticipate a great turnout, please let me know as soon as possible if you plan to attend the dinner so we can arrange seating.

**Julius Tepper, DVM**

Meetings Committee Chair

[cypcarpio@aol.com](mailto:cypcarpio@aol.com)

## WAVMA New Members

Members are the life-blood of any professional Association. Please join us in welcoming the following new members:

### Veterinarian Members:

Cynthia Fulton (USA)  
 Robert Hildreth (USA)  
 Dominique Keller (USA)  
 John Loy (USA)  
 Fernando Mardones (USA)  
 Alexandra McLaran (Australia)  
 Hamisi Nikuli (Tanzania)  
 John Shobiye (Nigeria)  
 Constance Silbernagel (USA)  
 Win Surachetpong (Thailand)  
 Laura Urdes (Romania)  
 Claudia Venegas (Chile)  
 Janet Whaley (USA)  
 Christopher Wilson (USA)  
 Dwi Wisnugrahani (Indonesia)

### Student Members:

Toni Erkinharju (Norway)  
 Ari Fustukjian (USA)  
 Sunghyun Hong (South Korea)  
 Caitlin Kozel (USA)  
 Noelle Litra (USA)  
 Miguel Mendoza Roldan (Colombia)  
 Andrew Nelson (USA)  
 Erich Roush (USA)  
 Jennifer van der Lee (Canada)  
 Maria Serrano (USA)  
 Babak Shoaibi Omrani (Iran)

### Affiliate (Non-Vet) Members:

Monica Lorravaquio (Colombia)

## WAVMA Student of the Month

Barry Baker, WAVMA Member since 2009, grew up just outside of Boston, Massachusetts. He spent his high school years volunteering at the New England Aquarium, working with the SCUBA diving aquarists in the giant ocean tank exhibit.



In 2000 he flew south to earn his Bachelor of Science degree with a double major in marine science and biology from the University of Miami. During his third year he studied abroad at James Cook University in Townsville, Australia. While in Australia, he had the opportunity to be a research assistant aboard the *Falie* on one of Rodney Fox's great white shark cage diving expeditions. After graduating in 2004, Barry returned to Boston to work in the animal health department at the New England Aquarium for a brief period of time before finding a research technician position at a zebrafish lab in the Dana Farber Cancer Institute. He worked there for three and a half years before being accepted to St. George's University School of Veterinary Medicine (SGU SVM) on the island of Grenada in the West Indies.

During Barry's first year of veterinary school, he became a delegate to the Student Affiliate of the American Veterinary Medical Association (SAAVMA), as well as the aquatic representative for the Exotic and Wildlife

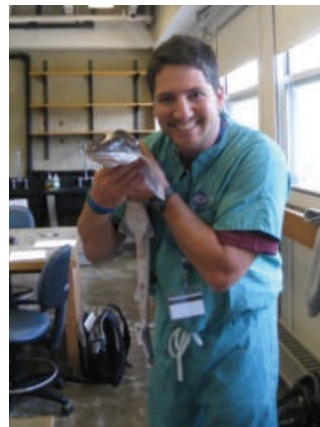
Society at SGU SVM. Barry's responsibilities with the Exotic and Wildlife Society included organizing wet labs involving fish medicine and coordinating member participation with the non-profit organization Ocean Spirits, researching leatherback sea turtles that nest on the northern shores of Grenada. Barry attended the AQUAVET® I program in Woods Hole, MA during his first summer of vet school, and was also selected as the AQUAVET® Summer Research Fellow to spend two months working with Dr. Paul Bowser at Cornell's Aquatic Animal Health Laboratory, researching largemouth bass virus virulence in cell culture. In the summer of 2010, Barry attended AQUAVET® II in South Hampton, NY, MARVET in Playa del Carmen, Mexico, and was a recipient of the John L. Pitts WAVMA student scholarship.



During Barry's first three years of veterinary school, he was awarded many honors including the Outstanding Colleague Award, the Pfizer Student Research Scholarship, the Exotic and Wildlife

Medicine, Surgery and Research Award, and the Phi Zeta International Honor Society Research Emphasis Day Award.

Barry is now completing his final clinical year of veterinary school at North Carolina State University, College of Veterinary Medicine. In pursuit of a career in aquatic medicine, he has completed externships at the Mystic Aquarium in Connecticut, the John G. Shedd Aquarium in Chicago, and will be completing a veterinary preceptorship at the Georgia Aquarium in April. Currently he is also waiting to be matched to a small animal rotating internship after graduation this June. His goal is to eventually be a veterinarian at a public aquarium.



## Listserv Letters

Dear WAVMA Members,

I had been asked to investigate the reason for opercular deformities in koi fry. Operculae are either shortened, have cavernous bulge or are concave (i.e., just deformed). The broodstock had been diagnosed with *Gyrodactylus* and *Dactylogyrus* flukes. The fry have since been treated with an organophosphate compound.

The most consistent finding on wet preps of the gills is that there seems to be an abundance of granular cells along one aspect of the primary filaments (see picture below right). Significant? Evidence of previous or ongoing irritation? No evidence of ectoparasitism (maybe the owner's treatments were successful in removing the flukes).

Will the opercular deformities right themselves (I suspect not)? Please reply if you have seen similar incidences.

Thank you,

Dr Richmond Loh, BSc BVMS MPhil  
MANZCVS (Aq & Pathol)  
The Fish Vet, Perth, Western Australia.  
<http://www.thefishvet.com.au>  
Ph: +61 (0)421 822 383  
[thefishvet@gmail.com](mailto:thefishvet@gmail.com)

Richmond,

The opercular deformities suggest Vitamin C deficiency, at least in other fish (catfish, cichlids, and salmon).

Drury Reavill, DVM, DABVP, (Avian Practice), DACVP  
Zoo/Exotic Pathology Service  
Shipping Address: 2825 KOVR Drive  
West Sacramento, CA 95605  
(916) 725-5100

## *Cryptobia* in Orange Chromide Cichlids

Please, has anybody seen gastritis/enteritis/coelomic granulomas with *Cryptobia* in Asian brackish water cichlids, specifically orange chromide (*Eetroplus maculatus*)? If so, did it have similar epidemiological and pathological characteristics to "CB" in Rift Valley cichlids? Many thanks,

Mark Stidworthy MA VetMB PhD FRCPath MRCVS  
Veterinary Pathologist  
International Zoo Veterinary Group  
[M.Stidworthy@izvg.co.uk](mailto:M.Stidworthy@izvg.co.uk)

(800) 457-7981

FAX (916) 725-6155

[Dreavill@zooexotic.com](mailto:Dreavill@zooexotic.com)

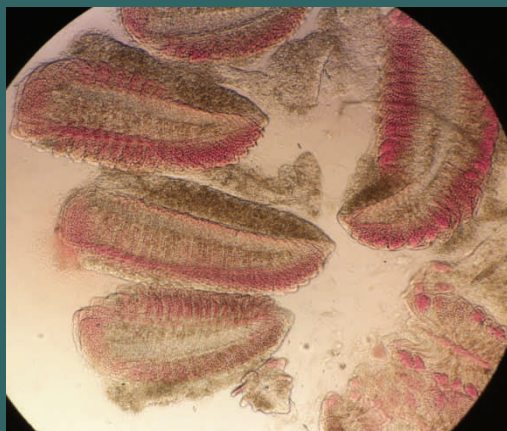
Website: [www.zooexotic.com](http://www.zooexotic.com)

Richmond,

I would concur with Drury regarding the Vitamin C deficiency. Without seeing the gross pathology on the operculum it's hard to give an opinion. There appears to be all sorts of issues with the gills, but that's another story. Have seen opercular defects related to vitamin deficiency phosphorous deficiency, calcium imbalances and genetic selection issues.

Cheers,

Stephen Pyecroft  
Manager Diagnostic Services  
Animal Health Laboratories  
Launceston, Tasmania  
[stephen.pyecroft@dPIPWE.tas.gov.au](mailto:stephen.pyecroft@dPIPWE.tas.gov.au)



Orange Chromide photograph from Wikipedia.org



## Literature Review



Ornamental Fish Abstracts  
compiled by David Scarfe

### Histopathological survey of lesions and infections affecting sick ornamental fish in pet shops in New South Wales, Australia.

Wickins SC, et al. (2011). *Dis. Aquat. Organ.*, 94 (2):143-152.

#### Abstract

The objective of this study was to describe the frequency of the histopathological lesions and categorize the evident infections in sick ornamental fish from pet shops in New South Wales, Australia. We examined 108 fish that had evidence of morbidity or mortality, including 67 cyprinids, 25 osphronemids, 11 poeciliids, 4 characids and 1 cichlid, sourced from 24 retail outlets.

Conditions frequently observed in the study population included branchitis (62/86, 72.1%), visceral granulomas (41/108, 38.0%), dermatitis (17/55, 30.9%), wasting (31/108, 28.7%), and intestinal coccidiosis (18/104, 17.4%). Branchitis and dermatitis were usually due to monogenean flukes, or flagellate or ciliate protozoa. Intralesional Microsporidia (16/41, 39.0%), Mycobacterium (7/41, 17.0%), or Myxosporidia (5/41, 12.2%) were identified in the majority of fish with visceral granulomas; however, special stains were critical in their identification. The proportion of histologically evident infections was remarkably high (77/108, 71.3%), and parasitic infections predominated.

### Clinical and Physiologic Effects of Sodium Chloride Baths in Goldfish (*Carassius auratus*)

Burgdorf-Moisuk A, MA Mitchell & M Watson (2011). *J. Zoo Wildlife Med.*, 42(4): 586-592.

#### Abstract

Sodium chloride (salt; NaCl) has been used for freshwater fish to decrease stress and manage a variety of disease conditions. Recommendations for dose and duration vary greatly. The purpose of this study was to determine the potential adverse clinical and physiologic side effects of different concentrations of saltwater baths on goldfish.

Eleven goldfish (*Carassius auratus*) were used in a cross-over study to assess the effects of three different salt concentrations (5, 10, and 20 g/L) on plasma biochemistries and clinical response. Baseline plasma chemistries were obtained and analyzed immediately prior to placing the goldfish into the saltwater bath and

after the fish was removed. A 2-wk washout period was used in-between each treatment. Significant differences were found in fish in the sodium (10 g/L,  $P = 0.007$ ; 20 g/L,  $P = 0.01$ ), chloride (10 g/L,  $P = 0.006$ ; 20 g/L,  $P = 0.001$ ), and alanine aminotransferase (10 g/L,  $P = 0.002$ ; 20 g/L,  $P = 0.004$ ) after their exposure to 10 and 20 g/L saltwater. Glucose levels were found to differ significantly after exposure to all three NaCl concentrations (5 g/L,  $P = 0.0009$ ; 10 g/L,  $P = 0.0001$ ; 20 g/L,  $P = 0.0005$ ). Clinically, 5 g/L and 10 g/L saltwater baths were well tolerated by the fish for the duration of the intended 12-hr treatments, with only one goldfish being removed during the 10 g/L bath at 7 hr for listlessness. The average time goldfish spent in the 20 g/L salt bath was 43 min, with six (54%) of the fish remaining in the 20 g/L salt bath for the intended 60-min treatment period. The remaining 5 (46%) goldfish were removed because they became listless or dyspneic. All of the fish recovered from the treatments without complication.

The results of this study suggest that goldfish tolerate saltwater baths but that physiologic disturbances can occur at the higher doses.

### Zoonotic bacteria, antimicrobial use and antimicrobial resistance in ornamental fish: a systematic review of the existing research and survey of aquaculture-allied professionals

Weir M, A Rajic, L Dutil, N Cernicchiaro, FC Uhland, B Mercier & N Tusevljak (2012). *Epidemiology & Infection*, 140 (2): 192 – 206.

#### Abstract

Using systematic review methodology, global research reporting the frequency of zoonotic bacterial pathogens, antimicrobial use (AMU) and antimicrobial resistance (AMR) in ornamental fish, and human illness due to exposure to ornamental fish, was examined. A survey was performed to elicit opinions of aquaculture-allied personnel on the frequency of AMU and AMR in ornamental fish.

The most commonly reported sporadic human infections were associated with *Mycobacterium marinum*, while *Salmonella* Paratyphi B var. Java was implicated in all reported outbreaks. *Aeromonas* spp. were most frequently investigated ( $n=10$  studies) in 25 studies surveying ornamental fish from various sources. High levels of resistance were reported to amoxicillin, penicillin, tetracycline and oxytetracycline, which was also in agreement with the survey respondents' views.

Studies on AMU were not found in our review. Survey respondents reported frequent use of quinolones,



## Literature Review - continued

followed by tetracyclines, nitrofurans, and aminoglycosides. Recommendations for future surveillance and public education efforts are presented.

### **Surgical removal of an anal cyst caused by a protozoan parasite (*Thelohanellus kitauei*) from a koi (*Cyprinus carpio*).**

Shin SP, H Jee, JE Han, JH Kim, CH Choresca; JW Jun, DY Kim & SC Park (2011). *J. Amer. Vet. Med. Assoc.*, 238(6): 784-786

#### **Abstract**

**Case Description**—An 8-month-old koi (*Cyprinus carpio*) fish was examined at the animal hospital at Seoul National University for anal obstruction.

**Clinical Findings**—The affected fish was lethargic and anorexic, appeared depressed, and had a nodular obstruction at the anus. A biopsy specimen from the anal mass was submitted for histologic examination, which revealed a number of protozoa. On the basis of the morphological characteristics of the spores and the location of the plasmodia (ie, vegetative form of the parasite), a diagnosis of a cyst containing *Thelohanellus kitauei* was made. *Thelohanellus kitauei* is a protozoan parasite that affects freshwater fish by producing cyst-like tumors that may cause intestinal obstruction. *Thelohanellus kitauei* infection with cystic disease has been reported to affect *Cyprinus* spp worldwide.

**Treatment and Outcome**—The cyst was removed surgically. After surgery, low-concentration tricaine methanesulfonate immersion was used for sedation and antimicrobial treatment was administered. The surgical wound healed completely, and the fish was clinically normal 14 months after surgery.

**Clinical Relevance**—The successful outcome in this fish suggested that surgical removal may be a viable option for treatment of *T kitauei* infection in koi fish. The results of morphological analyses provided basic information on the relationships between tissue tropism and *Thelohanellus* spp.

### **Disorders of the Respiratory System in Pet and Ornamental Fish**

Roberts HE & SA Smith (2011). In: SE Orosz & CA Johnson (eds), *Veterinary Clinics of North America: Exotic Animal Practice*, 14(2): 179-206.

#### **Abstract**

The respiratory organ of fish is the gill. In addition to respiration, the gills also perform functions of acid-base regulation, osmoregulation, and excretion of nitrogenous compounds. Because of their intimate association

with the environment, the gills are often the primary target organ of pollutants, poor water quality, infectious disease agents, and noninfectious problems, making examination of the gills essential to the complete examination of sick individual fish and fish populations. The degree of response of the gill tissue depends on type, severity, and degree of injury and functional changes will precede morphologic changes. Antemortem tests and water quality testing can, and should, be performed on clinically affected fish whenever possible.

### **Phenotypic and genotypic characteristics of *Mycobacterium* isolates from fighting fish *Betta* spp. in Malaysia**

Najiah M, KL Lee, H Noorasikin, M Nadirah & SW Lee (2011). *Res. Vet. Sci.* 91(3): 342-345.

#### **Abstract**

Mycobacteriosis due to mycobacteria is one of the most common bacterial diseases in ornamental fish. We describe here the phenotypic and genotypic characteristics of *Mycobacterium* isolates from fighting fish *Betta* spp. using ATCC *Mycobacterium marinum*, *Mycobacterium fortuitum* and *Mycobacterium chelonae* as references. A total of four isolates (M1, M2, M3, M4) were obtained from four out of 106 fish samples using selective agar, and identified to *Mycobacterium* genus using acid-fast staining and 16s rRNA gene-based genus specific polymerase chain reaction. DNA sequencing and NCBI-BLAST analysis further identified isolate M1 as *M. marinum* and isolates M2, M3, M4 as *M. fortuitum*. Morphological, physiological and biochemical tests were carried out for phenotypic characterizations. Universal M13 and wild-type phage M13 RAPD dendrogram was generated to illustrate the genetic relationship of the isolates and reference strains.



Male  
Crowntail  
Betta  
picture from  
Wikipedia.org

## Colleague's Connection

### Dr. Helen Roberts – A Pet Fish Doctor

When a dog or cat needs medical care, it's not difficult for a client to find a local veterinarian who is familiar with these pets. But if your fish needs a doctor, whom are you going to call? Veterinarians with knowledge of pet fish medicine may be few and far between, but things are changing. Said to be the fastest growing discipline in veterinary medicine, the question always asked by other veterinarians is, "how do I get involved and expand my practice in aquatic veterinary medicine?" A good example for other veterinarians is Dr. Helen Roberts, a small and exotic animal veterinarian who is one of the few practitioners who now provide medical and surgical care for fish.



Located in upstate New York, only 15 minutes from Niagara Falls, she is a partner at the 5 Corners Animal Hospital and is the go-to fish doctor at her associated practice, **Aquatic Veterinary Medicine of Western New York**. And the image her practice portrays clearly indicates to her clients her active involvement in aquatic veterinary medicine.

She says that when she talks to people about her work, most are "amazed" that she treats fish, and that she even performs surgery on fish. "I think the public perception is once a fish is sick, it's dead," she says. But through her veterinary practice, her educational publications and her lectures to all kinds of audiences about fish health, this outdated perception is beginning to change.

Dr. Roberts grew up around fish. Her father bred and showed killifish and was an avid sports fisherman. As a veterinary student at the University of Georgia,

she took a course taught by pet fish medicine pioneer Dr. Jack Gratzek. "When I went to school it was not usual to have fish part of the curriculum or as an elective," she recalls. In some vet schools today, fish medicine is offered as an elective, but students or practicing clinicians with an interest in fish medicine still have to seek out these opportunities on their own. The search, Roberts insists, is "half the fun."

After graduation, Roberts worked primarily in small animal medicine, and then in the early 2000's she started focusing more on fish medicine. She served six years as a member on the American Veterinary Medical Association's (AVMA) Aquatic Veterinary Medicine Committee (AqVMC), and is a member of the Fish Veterinary Society in the UK, and is a founding member of the World Aquatic Veterinary Medical Association. She routinely interacts and participates with producer groups. Networking with other aquatic veterinarians and potential clients, and getting involved with veterinary organizations decision making process, has been the keys to figuring out what veterinary services are needed, who needs them and helping set the direction for aquatic veterinary medicine.

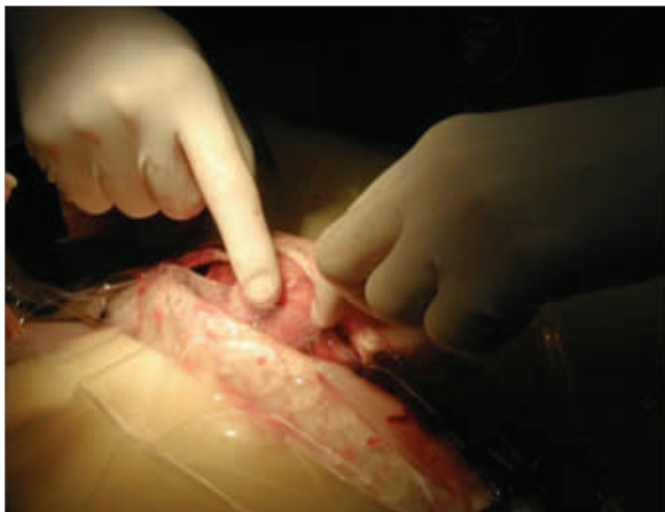
Finding appropriate drugs to treat many fish diseases has always been a challenge, somewhat alleviated by a veterinarian's ability to extralabel drugs used in other species or on occasion, humans. But important changes Roberts has seen during her tenure on the AqVMC are regulations that resulted from AVMA's efforts to ensure the passage of the Minor Use and Minor Species Animal Health Act of 2004. "MUMS" legislation and regulations provided a process by which drugs for rare or exotic animal species can be approved by the FDA.

So far two new drugs have been 'indexed' for use in ornamental fish, Ovaprim and Aquacalm. The former is a spawning aid used for Koi and tropical fish breeding; the latter an over-the-counter anesthetic agent that allows for sedation of fish during transport or other procedures. The availability of these medications has proven to be a boon to her practice.

In addition to practicing medicine, Roberts enjoys educating others about fish health. She edited and also contributed several chapters to her book *Fundamentals of Ornamental Fish Health*, and has published several scholarly journal articles. She has taught courses and wet labs for professional audiences, including veterinarians, veterinary students, veterinary technician students and advanced hobbyists.

## Colleague's Connection - continued

She has also developed a reputation among her clients as a fish surgeon that will take care of 'any lumps or bumps' in fish big and small, which often turned out to be life-threatening tumors.



**Dr Roberts performing abdominal surgery on a koi.**

On the other hand, she also recognizes the need for general audiences like pet fish owners to be better educated on the basics of how to properly keep and care for fish. Despite all the advances in treating aquatic animal diseases, basic water quality is still the main problem she sees in her practice. The age-old problem still looms about where clients will get reliable information about fish husbandry and health. Ideally, Roberts believes the places that sell fish could offer this information to the con-



*Betta splendens*  
with  
abdominal  
swelling

sumers at the point of sale – and, if developed by aquatic veterinarians, this would make clients more aware of aquatic veterinary practices, but would also generate repeat customers for the retailer.

Unfortunately, one of the biggest changes to the industry in the past 10 years has been the rise of the Internet. While it is good that people can find a lot of information online about fish health, diseases and treatments, including purchasing a lot of "disease remedies," the information is not always accuracy. It's not unusual for Dr. Roberts to hear a client cite incomplete or misinformation from the web. "We call that 'Dr. Google'" she says. In contrast, Roberts believes the most reliable sources of information about fish medicine and husbandry come from veterinary sources, including aquatic organizations and individual aquatic veterinary practice websites.

First-hand experience with your own fish always sets you one step ahead with your clients. When asked about her own fish, Dr. Roberts says that she keeps "what might affectionately be called 'ugly pond fish'" – Golden Orfe and Koi – in two outdoor ponds. Although her favorite type of aquarium set-up varies with species, outdoor fish generally seem "happy." Fish do better in larger volumes of water, and outdoor ponds tend to have more volume and require less upkeep than indoor aquaria of compatible size. She also likes well-maintained reef tank set-ups. Her favorite indoor fish species is the feisty and interactive Betta, which she describes as "the fish version of terriers." Her favorite outdoor fish are Koi: "you can hand feed them, you can train them to a certain extent, and it's very peaceful to watch them swimming outdoors in a pond." After a pause, she adds quickly, "And they don't have teeth. As a veterinarian, we are always worried about animals with teeth regardless of species."

Dr. Roberts is one of several hundred aquatic veterinarians that are listed in the online Aquatic Veterinary Directory ([www.AquaVetMed.info](http://www.AquaVetMed.info)) that clients and colleagues use to locate aquatic veterinarians.

Adapted from <http://blogs.oregonstate.edu/wetvet/> by Dr. Tim Miller-Morgan/Cait Goodwin, Oregon Sea Grant, with permission.

If you know of a WAVMA member who has contributed to advancing any area of aquatic veterinary medicine and is willing to be profiled in this column, please contact [AVNeditor@WAVMA.org](mailto:AVNeditor@WAVMA.org).

## Clinical Reports

### New Probiotic Bacteria in Shellfish Aquaculture As an Alternative to Antibiotics

**Shelley Dawicki**, Northeast Fisheries Science Center, National Oceanographic & Atmospheric Administration, Woods Hole, MA, USA

The use of probiotic bacteria, isolated from naturally-occurring bacterial communities, is gaining in popularity in the aquaculture industry as the preferred, environmentally-friendly management alternative to the use of antibiotics and other antimicrobials for disease prevention. Known to the public for their use in yogurt and other foods to improve human digestion and health, probiotic bacteria isolated from other sources can also be used to improve survival, nutrition and disease prevention in larvae grown in shellfish hatcheries. Researchers at NOAA's Milford Laboratory in Milford, Conn. have shown that naturally-occurring bacteria isolated from the digestive glands of adult eastern oysters (*Crassostrea virginica*) and northern bay scallops (*Argopecten irradians irradians*) may be used as potential probiotic candidates in oyster larviculture.



Oysters (NEFSC/NOAA)

Two related research studies (see References) published in the Journal of Shellfish Research identify a new probiotic bacterium, designated OY15, which has been shown to significantly improve larval survival in pilot-scale trials during the first two weeks of life, the most critical stage for the organism when mortality rates are among the highest. "We are cautiously optimistic that this probiotic candidate, OY15, will offer a number of significant benefits to the shellfish industry," said Gary Wikfors, co-author of both studies and head of the Milford Laboratory's Biotechnology Branch.



Five-day old oyster larvae under 10x magnification. (NEFSC/NOAA)

"Commercial and public shellfish hatcheries can have low survival rates for shellfish seed during the first two weeks, so improving those survival rates and the health of the organisms beyond that point is a pretty significant step forward."

Hatcheries produce shellfish seed to supplement natural seed, which is often limited by loss of habitat, contamination from pollution, climate change and other factors. Bacterial diseases caused mainly by pathogenic bacteria such as *Vibrio* are a major cause of mortality in hatchery shellfish, particularly at the very early larval stage. The result: significant financial losses to commercial growers and to production of farmed shellfish, which accounts for 25 percent of the total world aquaculture product. Antimicrobial drugs approved for use in aquaculture in some countries, but not the US, have traditionally been used to treat bacterial diseases, but overuse of antibiotics can result in the development of resistant strains of bacterial pathogens. The use of probiotic bacteria has become increasingly popular for improved nutrition, healthy digestion and disease prevention and is used in human foods like yogurt and in pet foods. As demand for environmentally-friendly aquaculture grows, the use of probiotics for disease prevention and improved nutrition in shellfish aquaculture is also growing. While a number of research studies have shown promise, development of probiotics that can be used in aquaculture is a multistep process requiring fundamental research and full-scale trials.

"The objective of the first part of this study was to

## Clinical Reports - continued

isolate and evaluate new probiotic bacteria which, when incorporated into foods used in shellfish hatcheries, might significantly improve larval survival," said co-author Diane Kapareiko, a microbiologist at the Milford Laboratory. The second part of the study was to test the new probiotic candidate on the survival of oyster larvae in pilot-scale trials during their first two weeks of life. "We conducted a very cautious, step by step study, to identify the best candidates under a variety of scenarios," Wikfors said. "Our bench-scale challenge studies indicated that oyster larvae exposed to probiotic candidate OY15 had the highest survival rate, and that the survival of pathogen-challenged larvae was further improved by the presence of OY 15 compared to the pathogen alone. It is somewhat analogous to a human building up immunity to a certain organism by being exposed to it, but without the involvement of antibodies."

The Milford scientists isolated 26 candidate probiotic bacteria from oysters and scallops of which 16 had an inhibitory effect against a known shellfish-larval pathogen (B183) of the *Vibrio* species of bacteria. Further screening for safe use in culturing the oyster larvae and their microalgal feed indicated which probiotic candidates would inhibit growth of the pathogen most effectively and therefore could confer a protective effect upon oyster larval survival.

Lab studies indicated that survival of two-day old oyster larvae during two-week pilot scale trials improved when supplemented with the probiotic candidate OY15 strain. Four treatments were conducted: a larval control with no bacteria, a pathogen control with larvae and pathogen B183 only, a probiotic control with larvae and probiotic candidate OY15 only, and a combination treatment comprised of larvae and both probiotic and pathogen.

"Our research focused on the critical first stage of larval growth, when mortality rates are among the highest," Kapareiko said. Positive effects of probiotic candidate OY15 were found on the survival of oyster larvae (short term), on growth of phytoplankton used as larval feed, and upon oyster survival during pilot-scale larviculture conditions. "This two-part study confirms that use of naturally-occurring probiotic bacteria confers protection to oyster larvae against bacterial disease and improves their survival," Kapareiko said. "The results can be used as guidelines for isolating and screening other potential probiotic candidates for similar aquaculture applications, and provide the basis for developing functional foods for use in shellfish hatcheries that incorporate a naturally occurring, probiotic bacteria."

## References

Lim HJ, D Kapareiko, EJ Schott, A Hanif & GH Wikfors (2011). Isolation and Evaluation of New Probiotic Bacteria for use in Shellfish Hatcheries: I. Isolation and Screening for Bioactivity. *J. Shellfish Res.* 30(3): 609-615.



Dr. Hyun Jeong Lim of South Korea began searching for probiotic candidates at the Milford Laboratory's Biotechnology Branch while on a Korea Science and Engineering Foundation Fellowship.

Kapareiko D, HJ Lim, EJ Schott, A Hanif & GH Wikfors (2011). Isolation and Evaluation of New Probiotic Bacteria for use in Shellfish Hatcheries: II. Effects of a *Vibrio* sp. Probiotic Candidate Upon Survival of Oyster Larvae (*Crassostrea virginica*) in Pilot-Scale Trials. *J. Shellfish Res.*



Diane Kapareiko sampling oyster larvae at the Milford Laboratory. (NEFSC/NOAA)

## Emerging Issues

**The Exclusive Economic Zone...Is it *really* exclusive? – the need for aquatic veterinary involvement in Japanese/Alaskan fisheries and international relations.**

**Trista I. Welsh\*** MS & Jeffrey D. Berejikian\*\* PhD

\* DVM Student (2013), University of Georgia, College of Veterinary Medicine, Athens, GA 30602

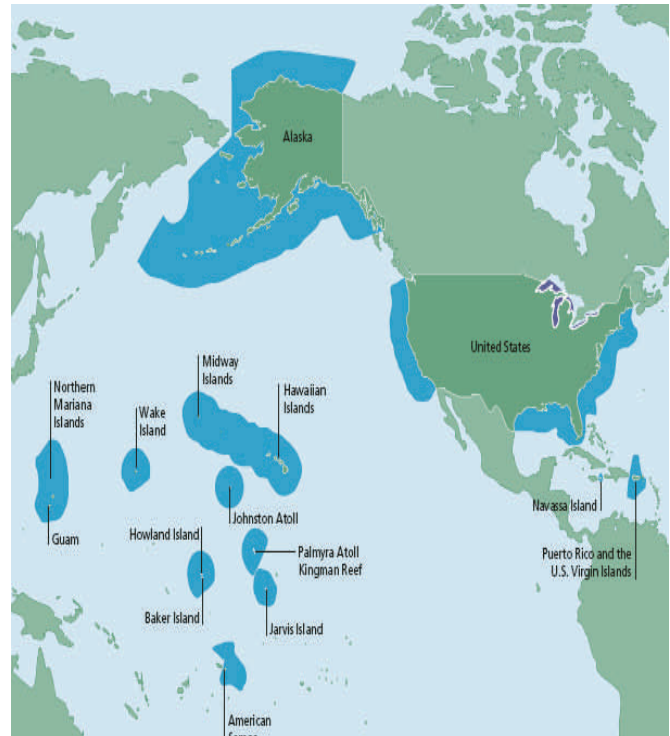
\*\* Associate Professor, Department of International Affairs, University of Georgia, 307 Candler Hall, Athens, GA, 30602

Rising twenty feet base to crest, undulating walls of blue-green waves violently throw white sprays of salt-water effortlessly into the sky, only to be swept away by an unforgiving Arctic wind. Here, even the largest floating vessel seems but a small, unimportant entity, powering through the storm with valiant determination. Somewhere in this large body of water, hundreds of boats struggle north to the fishing grounds every year for a season's earnings. Most successfully battle the storm, but a few lose the gamble with the Bering Sea.

### **Japan, a rich history in Alaskan waters**

An ocean and thousands of miles away, Japanese families prepare meals of Alaskan sablefish and yellow-fin sole. Japan, a country with a long history of commercial fishing in Alaskan waters, still has a strong connection to the industry despite the formation of the Exclusive Economic Zone (EEZ - [http://aquaculture.noaa.gov/pdf/20\\_eezmap.pdf](http://aquaculture.noaa.gov/pdf/20_eezmap.pdf)).

Japanese boats fished the waters of the Bering Sea and Gulf of Alaska (GOA) as early as the 1930s. Though other countries (such as Russia) were historically represented, Japanese vessels had a corner on the yellowfin sole, pollock and crab fisheries. Over time, the United States became concerned over progressive depletion of fish stocks and passed the Magnuson-Stevens Fishery Conservation & Management Act in 1976. This was the beginning of the end of foreign commercial harvest in the waters off Alaskan coastlines, and by 1991 all foreign offshore harvesting within the 200 mile EEZ had ended. To encourage foreign investment in the new market and get the ball rolling for American-run vessels, the American Fisheries Promotion Act in 1980 aided the establishment of joint-venture fisheries. These partnerships between mostly Japanese and American Corporations remain the backbone of commercial fishing in certain sectors (NMFS Observer Training Manual, 2011).



**Figure 1.** U.S. exclusive economic zone (EEZ) extends 200 nautical miles offshore, encompassing diverse ecosystems and vast natural resources, such as fisheries and energy and other mineral resources. The U.S. EEZ is the largest in the world (including a significant portion of the Great Lakes), spanning over 13,000 miles of coastline and containing 3.4 million square nautical miles of ocean—larger than the combined land area of all fifty states.

Fishing in waters within a few miles of the shoreline has been controlled by the State of Alaska (the EEZ being a federal action) since the official enactment of all its regulations and statutes in 1960. The EEZ moved the international waters to 200 miles offshore. The Alaska Department of Fish and Game manages the commercial salmon and shellfish fisheries (including crab and scallops) in the Bering Sea (United States side) and GOA fisheries, while the International Pacific Halibut Commission manages the Pacific halibut fishery in these areas ([www.adfg.alaska.gov](http://www.adfg.alaska.gov) 2011). The National Marine Fisheries Service has assumed management of all other commercially harvested fish species outside “state waters” and lumped them into the “groundfish” group. Some species have been fished to

## Emerging Issues - continued

the point where intensive management is necessary, whether due to direct harvest or incidental by-catch. Quota systems have been developed to limit overfishing of both specific species and harvest areas.

Despite the Americanization of Alaskan waters, Japan remains a major player in the Bering Sea and North Pacific fisheries. Joint-venture industries are central to the economy and much of the annual harvest is sold to the Japanese market. Harvested fish brought to ports in Alaska (such as Dutch Harbor) is made into fillets, surimi and fish meal. Many processing plants and fishing vessels still rely on expertise of Japanese employees when shipping product to Japan.

### ***Fish Master***

Many fish plants, floating processors, and factory boats in the Bering Sea area are (co)owned and operated by foreign markets, especially Japan. Some vessels hail from US ports on paper, with a mixed bag of employees from a variety of nations, and rarely - if ever - tie to Seattle docks. Sometimes, American officers are figureheads and actual fishing operations are conducted by Japanese "fish masters". Decisions as to where, when, and how to conduct activities may be made by the fish master, the man striving for success at any cost.

One controversial example is the Catcher/Processor Alaska Ranger which was owned by the Fishing Company of Alaska. The Alaska Ranger sank on Easter Sunday, March 23 2008, and forfeited 5 of its 47 lives to the Bering Sea. The final US Coast Guard (USCG) report indicated the ship sank following flooding of several aft compartments on the ship, but the actual cause of the flooding was inconclusive (Olsen, Jan 11, 2011). The ship could not be recovered from its deep watery grave, but the story brought much of this unspoken relationship to public view as the tale unfolded. The fish master, among the five who perished, was witnessed having regular disputes with the American captain over running the boat. Some crew members testified to seeing the fish master take control of the boat on the previous trip and driving the vessel through a field of ice at unsafe speeds, which may have caused structural weakness and lead to the sinking on its last voyage (Bernton, April 17, 2008).

A September 30, 2009 report by the National Transportation Safety Board (NTSB - an agency that investigates marine, automotive, and aviation accidents) determined a hull breach and lack of internal watertight integrity allowed progressive flooding to sink the vessel. This may have occurred after a rudder was lost (NTSB, 2009). Once taking on water the boat automatically switched

itself into reverse, thanks to a controllable pitch propulsion system, driving water into the breach and onto the aft deck. The crew didn't anticipate this feature could cause such a malfunction resulting in a devastating effect on a vessel in distress. As a result, the officers were not able to stop it. The vessel remains unrecoverable at the depths of the Bering Sea, so a definitive conclusion cannot be reached based on physical evidence.

While the USCG makes much less specific conclusions than the NTSB about the actual cause and contributing factors of this disaster, several potential violations were brought to light. Boats owned by this company are also "dry-docked" in Japan, though they regularly operate in US waters, with all major repairs and renovations performed in a Japanese port. The USCG performs routine yearly safety inspections as part of the requirements for operating in US waters and commercial fisheries (basically to carry marine fisheries observers, which are required for lawful commercial harvest of this type). Though passing yearly inspections, these vessels are of questionable operational stability and safety often lapses post-inspection.

### ***The Fukushima impact***

The influence of Japan extends beyond the Alaskan front. After the 2011 earthquake and tsunami disasters in Japan, there was considerable concern over the potential impact of radiation exposure following the Fukushima nuclear power plant meltdown. Though only minimal levels of radiation were detected in the air over Alaska in the first days after the initial disaster, there was concern over radiation contamination in the ocean.

Much of the fleet immediately around the tsunami strike zone was destroyed. In the following days, no products came from the contaminated areas around Fukushima and what few Japanese exports trickled in to the US were subject to radiation testing (if shipped post-meltdown). However, the Food and Drug Administration (FDA) announced domestic US fish harvests would not be tested for radiation exposure, though many Americans wished for a more cautious approach.

Though governmental organizations in the US assume radiation released into the ocean will be diluted before reaching US waters, potential avenues of contamination undeniably exist. Little is known about long range movements of fish in the North Pacific, and recent studies have seen long distance migrations tuna (Inagake et. al 2001) and salmon (Urawa et. al 2000) between North American and Japanese waters. A pre-

## Emerging Issues - continued

ventative approach may be healthier and more cost effective than handling a massive radiation exposure in the US food source should one occur.

Five months post-Fukushima, the Canadian government announced intentions to test domestic fish products for radiation (CBC News, Aug. 19, 2011), and though the action occurred after anadromous salmon already moved inland, it remained a wise cautionary approach. Pacific salmon spawn in streams along the Alaskan, Canadian and the western Pacific coasts, but spend most of their lives at sea migrating long distances in search of food. The potential for exposure of salmon (as well as other migrating species such as sablefish, grenadier, flounder, and Pacific halibut) to fallout from Fukushima is uncertain but cannot be discounted. A responsible action would be preliminary testing as a precaution in the event fish were exposed at some level, not only for protection of potential food sources but also to monitor ecological impacts on reproduction in fish and marine mammals.

### **Supply and demand**

When a 9.0 earthquake struck Japan on March 11, 2011, the city of Sendai lost power for an extended length of time. Large storage facilities on the east coast went without power and major supplies of frozen fish soured (Hays, November 6, 2011). Many Alaskan fishermen have speculated the subsequent increased demand from this season's catch may have contributed to higher 2011 selling prices for sablefish. Longline caught sablefish reached \$9/lb this summer, a price not seen in decades. It must be noted a lower 2011 sablefish individual fishing quota (IFQ - an individual allotment set annually by NMFS in Alaska) may have also contributed to the increased demand for sablefish.

### **The veterinary role**

Veterinary medicine has an important role in animal product safety across the world. While food animal vets play a major part in captive land animal health, their role in cultivated aquatic systems as well as wild populations may have room for expansion. The role of vets in aquatic systems is increasing, but tremendous potential for growth remains in the aquatic food animal sector. An increased demand for vets in aquaculture worldwide is somewhat stifled by a lagging educational system struggling to meet the needs of industry through providing a balance of qualified aquatic vets. Confounding the issue is the little recognized need for improved monitoring of wild fish stocks harvested in the United States. While vets are already used extensively in the

food animal sector (namely beef and poultry inspection), there remains a void in wild and cultivated aquatic harvests.

Veterinarians with the United States Department of Agriculture (USDA) are responsible for inspecting many animal food products. This does not include aquatic species to the same degree, however. To date, there is arguably a lack of training which will hopefully subside as veterinary institutions continue to incorporate aquatic education into the curriculum. Some attribute this lack of training to veterinarians not being well instituted as agents of aquatic food regulation. As industrial aquaculture continues to expand, veterinary institutions are slowly recognizing the need for DVMs trained in aquatic health. Veterinarians are trained in general preventative medicine and diagnostics, which could be valuable assets to disease transmission prevention in wild fish stocks.

Veterinarians currently work with fisheries pathologists to diagnose and treat illness in aquatic systems. An increase in aquaculture to supplement a growing seafood demand will stress current aquatic veterinarians to meet client's needs, assuring health of cultured as well as wild stocks. The transfer of disease from aquaculture to wild fish is a real concern following the introduction of any new species. For example, Atlantic salmon in British Columbia could introduce infectious salmon anemia, a controversial disease foreign to this area and associated with Atlantic stocks. Monitoring the health and treatment of disease in cultured stocks (and thus prevention of disease spread to wild stocks) falls to private sector veterinarians. In some circumstances, namely state run inland water stocking programs for trout and salmon, fisheries veterinarians and pathologists are responsible for regularly testing and treating hatchery fish before release to public waters.

In the public sector, the National Marine Fisheries Service has minimal veterinary staff, including a few Veterinary Medical Officers that deal with seafood safety. The past year these veterinarians have been swamped with the Gulf Coast oil spill and a concern for the commercial shrimp industry.

Why should veterinarians be more involved in wild aquatic harvests? Among the most important factors may be the impacts of global warming, pollutants and radiation. Environmental stress from increasing water temperatures could increase susceptibility to disease. This phenomenon is of utmost concern in aquatic ecosystems, wild and captive alike. In monitoring for impacts of climate change on the environment we should be aware of the potential and realized impacts of an



## Emerging Issues - continued

increase in water temperature on aquatic flora and fauna.

Consider a hypothetical example: A trawler in the Bering Sea pulls aboard a 150 metric ton mid-water net consisting of mostly walleye pollock. These fish are delivered to a processor either on or offshore where they are accurately weighed and processed. Along the way, they may be handled by different personnel from deckhands and NOAA fisheries observers on boats to fish processors and other persons in the factory. The equipment used to process the fish are regularly cleaned while nets and tanks used in the capture of these fish are not. Boats regularly travel large distances from Washington and Oregon to the Bering Sea and are often used in other fisheries off the coasts of these different states. To the layman this may not seem like much of a concern. However, to veterinarians, infectious disease researchers, and ecologists many issues arise in such a scenario. The potential for disease (and invasive species) introduction and spread is present from many sources. If this scene were to fall in the realm of the cattle industry, for example, there would be much oversight and protocol written by both veterinarians and public health professionals for quality assurance and disease prevention. However, few such fisheries procedures are in place other than those set by the fish buyers and conducted by processing plants. This common scenario is paralleled by most other fisheries, especially in Alaska (Pacific cod, Bering Sea crab, Pacific halibut, Bering Sea flatfish, the list goes on).

Oceanic species have trans-boundary distributions, and Japan has long contributed to research of sablefish ecology in the GOA. Alaskan sablefish spawn in eastern GOA and migrate west to the Aleutian Islands as they age. Sablefish also travel between coastal British Columbia and the US. We cannot discount the potential for far western travel to Japan. Other species are either known to travel across international boundaries (US-Canada salmon, tuna between Hawaii and Japan) or suspected to (salmon stocks from Alaska in Japan, Urawa et. al 2000). We need international cooperation for successful management of migratory fish. Through federal involvement in epistemic communities (international networks of experts), veterinarians can provide consultation and make recommendations regarding the impacts of aquaculture on wild fish health. Working with domestic and international fisheries biologists, pathologists and policy makers, veterinarians can help identify potential risks posed by the introduction of cultivars to a natural ecosystem, identify major patho-

gens of concern, develop plans for prevention of disease transmission and early outbreak response, and provide treatment during periods of disease.

### Conclusions for the future

Other countries such as Bali and Taiwan are expecting Japan to increase its already high demand for fish imports in the near future. The United States, being the primary supplier of Japan's agricultural products, could expect similar trends in many supply lines. Not only should the US expect further pressure on its fisheries exports, but also a potential strain on domestic demand. Most fish consumed in the US comes from Japanese imports, which could provide a compounding hit on US fisheries for supplementation following the devastating hit taken by Japanese fisheries in 2011 (in both aquaculture and offshore fishing sectors). Veterinarians may be called upon in the near future to meet higher demands of fish production by providing services in the field of fisheries health. Through effective use of balanced international epistemic communities, we can strive for sustainable resources while decreasing conflict among nations over oceanic resources (Westing 1986). Oceanic biota does not recognize international waters. Collaboration among experts in a variety of impacted areas - from animal health to economics - will be important to maximize sustainable harvest from the oceans in the face of increasing demands, as healthy oceans are vital to the long-term survival of planetary ecosystems.

### References

- ADFG (2011). "Our history". Alaska Department of Fish & Game (accessed at [www.adfg.alaska.gov](http://www.adfg.alaska.gov) November 6, 2011).
- Bernton, H (2008). "Fishmaster pushed ship's pace, crew says." Alaska Daily News (accessed at [www.adn.com](http://www.adn.com), April 17, 2008).
- Hays, J (2011). Fishing and aquaculture after the March 2011 tsunami in Japan (Accessed at <http://factsanddetails.com/japan.php?itemid=1756&catid=26&subcatid=161> November 6, 2011).
- Inagake, D, H Yamada, K Segawa, M Okazaki, A Nitta & T Itoh (2001). Migration of young bluefin tuna, *Thunnus orientalis* (Temminck et Schlegel), through archival tagging experiments and its relation with oceanographic conditions in the Western North Pacific. Bull. Nat. Res. Inst. Far Seas Fisheries, 38:53-81.

## Emerging Issues - continued

### References - continued

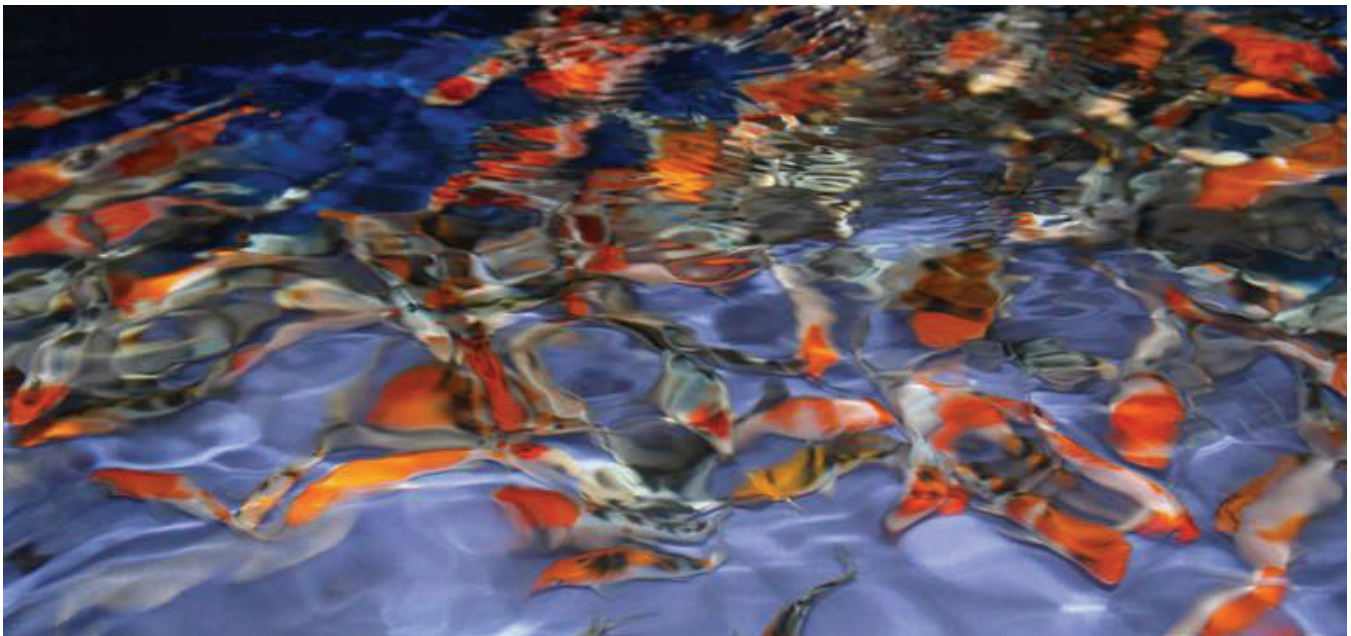
- NMFS (2011). Observer Training Manual. National Marine Fisheries Service, U.S. National Oceanic & Atmospheric Administration, Seattle, WA, USA.
- NTSB (2009). Sinking of U.S. Fish Processing Vessel *Alaska Ranger*, Bering Sea, March 23, 2008. U.S. National Transportation Safety Board, NTSB/MAR-09/05. Washington, DC.
- Olsen K (2008). Marine board of investigation - sinking of the *Alaska Ranger* on March 23, 2008. United States Coast Guard (accessed at <https://homeport.uscg.mil> January 11, 2011).
- Urawa S, M Kawana, G Anma, Y Kamei, T Shoji, M Fukuwaka, KM Munk, KW Meyers & EV Farley, Jr (2000). Geographic origin of high-seas chum salmon determined by genetic and thermal otolith markers. North Pacific Anadromous Fish Commission. Bulletin Number 2:283-290.
- CBC (2011). "West Coast fish to be tested for Fukushima radiation" Canadian Broadcasting Corporation (accessed at <http://www.cbc.ca/news/technology/story/2011/08/19/bc-salmon-radiation-testing.html> August 19, 2011).
- Westing, AH (1986). Global resources and international conflict: environmental factors in strategic policy and action. Stockholm International Peace Research Institute.



### Coming Soon from Novartis:

Cavoy – a new vaccine for the prevention of Cyprinid Herpesvirus-3 (Koi Herpes Virus) was approved by the USDA in February 2012. More information will be available this Spring at: [Cavoy.com](http://Cavoy.com)

Koi Photograph below (and in background on front cover) by David Kless, Phoenix Arizona - used with permission.



## Emerging Issues - continued

### Aquaculture to provide more than half of world consumption of consumed fish

9 November 2011, Rome - Aquaculture is the world's fastest-growing source of animal protein and currently provides nearly half of all fish consumed globally, according to a report published here by FAO.

The report **World Aquaculture 2010** found that global production of fish from aquaculture grew more than 60 percent between 2000 and 2008, from 32.4 million tonnes to 52.5 million tonnes. It also forecasts that by 2012 more than 50 percent of the world's food fish consumption will come from aquaculture.

"With stagnating global capture fishery production and an increasing population, aquaculture is perceived as having the greatest potential to produce more fish in the future to meet the growing demand for safe and quality aquatic food," the report said.

### Poverty reduction

With its growth in volume and value, aquaculture has clearly helped reduce poverty and improve food security in many parts of the world. But aquaculture has not grown evenly around the planet. Marked differences in production levels, species composition and farming systems exist within and between regions, and from one country to another.

The Asia-Pacific region dominates the sector -- in 2008 it accounted for 89.1 percent of global production, with China alone contributing 62.3 percent. Of the 15 leading aquaculture-producing countries, 11 are in the Asia-Pacific region.

A few countries lead the production of some major species, such as China with carps; China, Thailand, Viet Nam, Indonesia and India with shrimps and prawns; and Norway and Chile with salmon.

### Intensive systems

In terms of farming systems, intensive systems are more prevalent in North America and in advanced aquaculture-producing countries in Europe and Latin America. In the Asia-Pacific region, despite major technical developments, small-scale commercial producers remain the backbone of the sector.

Small-scale producers and small and medium entrepreneurs are also important players in Africa. Commercial and industrial-scale producers dominate in Latin America, but there is strong potential for the development of small-scale production.

While the demand for aquaculture products contin-

ues to increase, there is growing recognition of the need to address consumers' concerns for quality and safe products and animal health and welfare, the report said. Thus, issues such as food safety, traceability, certification and ecolabelling are assuming growing importance and considered as high priorities by many governments.

Aside from environmental sustainability, other major challenges faced by aquaculture include climate change and the global economic downturn, the report noted. The sector should therefore prepare itself to face their potential impacts and make special efforts to further assist small-scale producers by organizing them into associations and through promotion of better management practices.

"Achieving the global aquaculture sector's long-term goal of economic, social and environmental sustainability depends primarily on continued commitments by governments to provide and support a good governance framework for the sector," the report added.

The full report, together with regional reviews presented at Global Aquaculture Conference held in Phuket, Thailand in 2010 can be found on the following dedicated website:

<http://www.fao.org/fishery/regional-aquaculture-reviews/aquaculture-reviews-home/en/>

Edited From:

<http://www.fao.org/news/story/en/item/94232/icode/>

In the Asia-Pacific region, small scale fish farming continues to account for the bulk of aquaculture production.



## Legislative and Regulatory Issues

Items below are extracted from AquaVetMed e-News, which provides information to veterinary and veterinary-allied subscribers concerning aquatic animal medicine, health, welfare, public health and seafood safety, obtained from a variety of sources (largely AquaVetMed subscribers). Subscribe by contacting Dr David Scarfe at [dscarfe@avma.org](mailto:dscarfe@avma.org).

### Vietnam puzzled with seafood antibiotic residue control

March 18, 2012

Vietnam - Though seafood exports now have to undergo strict examination by Nafiqad (National Agro Forestry Fisheries Quality Assurance Department), a lot of export consignments still have been refused by the importers due to the high antibiotic residues. More than 50 percent of the consignments have been found with antibiotic residues from aquaculture. Meanwhile, enterprises have affirmed that they have obeyed the current regulations on having samples tested before shipping and got Nafiqad's certificates. Seafood processing companies said that they have been tightening the control in the processing phase, but they cannot control all material sources.

According to Deputy Chair of the Vietnam Association of Seafood Exporters and Producers (VASEP) Nguyen Huu Dung, Nafiqad is only in charge of examining the food hygiene at the processing phase. This means that the food hygiene supervision has been left open at other phases of the production line. No agency comes forward to take responsibility for the material quality in aquaculture or during the transport. Dung said that when he asked Nafiqad to supervise all the phases of the production chain, the agency said that this should be the responsibility of local agriculture departments. Meanwhile, the local departments say they do not have enough officers and necessary conditions to undertake this work.

The testing fees have been burdening export companies. "We understand that we have to try our best to control the export products' quality. However, we hope the State would set up reasonable policies to settle the problem," Chien said. VASEP has confirmed that the testing fees enterprises have to pay have increased by twofold, which has made the situation worse. Besides, it takes more time, about 7-10 days to have export consignments tested and follow necessary procedures, which has weakened the competitiveness of Vietnamese exporters in the world market.

For full article, see Source: <http://tinyurl.com/7prr92h>

### Consultations on the Development of a Proposed Regulatory Regime Under the Fisheries Act to Manage the Release of Aquaculture Substances

March 16, 2012

Ottawa, Canada – The Department of Fisheries and Oceans (DFO) is seeking stakeholder and public views on a proposed new regulatory regime regarding the release of aquaculture substances (formally referred to and consulted on as the Fish Pathogen and Pest Treatment Regulations) under the Fisheries Act. Feedback will be used by government officials to further inform the development of draft regulations.

This initiative is presented in the document entitled "A Proposed Regulatory Regime to Manage the Release of Aquaculture Substances." The following topics are covered:

- Context on why the regulatory initiative is being contemplated;
- Scope of the proposed regulatory regime;
- Management elements;
- Oversight of the regulatory regime;
- Roles and responsibilities of partner regulatory agencies; and
- Proposed design of new Fisheries Act regulations to support delivery of the regime.

We encourage all interested individuals and organizations to provide comments on the proposed regulatory regime by completing an online questionnaire. You may also send your comments by email to:

[fpptr-rtppp@dfo-mpo.gc.ca](mailto:fpptr-rtppp@dfo-mpo.gc.ca).

This initiative is at the discussion stage only. The Government of Canada and involved departments and agencies (Fisheries and Oceans Canada, Canadian Food Inspection Agency, Health Canada, Environment Canada, and provincial counterparts) have not taken a final position on elements of the proposed regulations, nor have draft regulations been developed. Input and feedback gathered as part of this online consultation will be used by government officials to further inform the development of draft regulations, expected to begin in spring 2012.

Need more information?

Email: [fpptr-rtppp@dfo-mpo.gc.ca](mailto:fpptr-rtppp@dfo-mpo.gc.ca)

Mail: RASRR-RRLSA Consultations  
Aquaculture Management Directorate  
Fisheries and Oceans Canada  
200 rue Kent St, STN 8N177  
Ottawa, ON K1A 0E6



# Aquatic Veterinary News

The Quarterly Newsletter of the World Aquatic Veterinary Medical Association

Consider promoting your products, services or programs to aquatic veterinarians, veterinary students, nurses and paraveterinary professionals throughout the world

## Submission Deadlines

2012 deadlines for submission of 'camera-ready' advertising layouts (submit as high resolution PDF JPEG, PNG, TIFF or similar files)

February 15; May 15; August 15; November 15

## Advertising Rates (per issue)

	Commercial	Non-Profit Organizations
Full page (~6.5" x 9")	\$200	\$100
1/2 page (~3" x 4.5")	\$100	\$50
1/4 page (~1.5 x 4.5")	\$60	\$25
1/8 page (~2" x 3")	\$40	\$20

**WAVMA Sponsors** supporting any WAVMA Programs receive a **free** listing in the Sponsor's Section and 1/2 price on any display advertisements

## **WAVMA Members**

Free 1/8 page (business card size) advertisement – 1 per year

## Information, Other Advertising Options & Submission

For more information on advertising in **Aquatic Veterinary News**, on the **WAVMA website**, or sponsoring **WAVMA seminars, symposia, WebCEPD and other programs**, and to submit advertising copy or layouts contact [administrators@wavma.org](mailto:administrators@wavma.org)

## Distribution

**Aquatic Veterinary News** is distributed to all WAVMA members, veterinary schools for distribution to students, subscribing libraries, and commercial and non-commercial advertisers. Past and present issues are available at [www.WAVMA.org](http://www.WAVMA.org)

***One Profession; One Discipline; One Voice – Cohesive & Inclusive!***

## Aquatic Veterinary CE & PD



### MEETINGS OF INTEREST TO AQUATIC VETERINARIANS

Veterinarians attending these meetings may be awarded veterinary CEPD credit towards annual re-licensure or re-registration to practice veterinary medicine. Individuals should check with the organizers if CEPD certificates are provided.

#### **WSAVA/FECAVA/BSAVA World Congress 2012** **April 11-15, 2012**

##### **Birmingham, UK**

On the heels of a very successful WSAVA 2011 World Congress in Jeju, Korea, preparations are well underway by WSAVA and its Congress partner FECAVA and host BSAVA for the World Congress 2012. Held at the ICC/NIA in Birmingham, World Congress 2012 will be the largest international veterinary event ever held in the UK.

Offering more than 40 streams of veterinary CPD lectures, featuring 300 lectures by world-class speakers spread over 4 days, a world-class exhibition space showcasing the latest industry advances from over 250 exhibitors, plus a vibrant social programme, this event caters for all levels and abilities of veterinary practice staff and includes extended Management Streams. For more information, including registration details, please visit the [Congress website](#).

#### **The 37th Eastern Fish Health Workshop** **April 23-26, 2012** **Lake Placid, NY.**

For more information see:

<http://www.facebook.com/pages/Eastern-Fish-Health-Workshop/164449723610923?sk=events#!/pages/Eastern-Fish-Health-Workshop/164449723610923?sk=wall>

#### **The Florida Marine Mammal Health Conference IV** **April 24-27, 2012** **Mote Marine Laboratory in Sarasota, FL.**

The purpose of this conference is to address issues bearing on the health and well being of the four principal species of wild marine mammals found in Florida waters: manatees, bottlenose dolphins, pygmy sperm whales and Northern right whales, as well as captive

marine mammals at theme parks, aquariums, and zoos.

#### **IAAAM MEETING AND CONFERENCE** **MAY 12-16, 2012**

##### **Atlanta, GA**

The 43rd Annual Meeting and Conference of the IAAAM will be held in Atlanta, GA. We will start on May 12, 2012 and go through May 16, 2012. The first call for abstracts will be sent via email. The abstract due date will be on or before February 10th, 2012 and the instructions for authors and a sample abstract will be available on the IAAAM website. If you have questions, please contact:

IIZE Berzins at [iberzins@sheddaquarium.org](mailto:iberzins@sheddaquarium.org)

#### **AQUAVET® I & II** **May 27 - June 23, 2012**

##### **Roger Williams University in Bristol, RI**

The University of Pennsylvania School of Veterinary Medicine and the College of Veterinary Medicine at Cornell University are pleased to announce the 2012 AQUAVET® I & II Programs. They are aquatic veterinary medicine education programs that currently consist of two courses that will be presented at Roger Williams University in Bristol, RI in June 2012.

AQUAVET I: An Introduction to Aquatic Veterinary Medicine is a 4-week course (27 May - 23 June 2012) intended primarily for veterinary students.

AQUAVET II: Comparative Pathology of Aquatic Animals is a 2-week course (27 May - 9 June 2012) that is oriented toward the pathology of diseases of aquatic invertebrates and fish that are used in biomedical research, encountered in display aquaria and are of importance in commercial aquaculture. Veterinary students can receive credits for the course and graduate veterinarians can receive CE credits.

Applications for admission will be due by January 14, 2012 and may be obtained on the web site. Additional information may be found at [www.aquavet.info](http://www.aquavet.info).

#### **FLAVOBACTERIUM 2012** **3rd International Conference on Members of the Genus Flavobacterium.** **JUNE 5-7, 2012**

##### **Åbo Akademi University, Turku (Åbo), Finland**

Organized by the Laboratory of Aquatic Pathobiology, Environmental and Marine Biology, Department of Bio-sciences, this meeting will take place in the Arken Campus at the Åbo Akademi University, close to the

## Aquatic Veterinary CE & PD - continued

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 Flavobacterial species.

For more information, registration, hotel information, abstract submission and practical information see the conference website:

<http://www.abo.fi/flavobacterium2012>.

### The 2012 Western Fish Disease Workshop June 13-14, 2012

#### Boise, Idaho

The Idaho Department of Fish and Game invites you to attend the 53rd Western Fish Disease Workshop on June 13-14, 2012 at The Grove Hotel, in Boise, Idaho. Registration and additional information will be available soon. Now is the time to reserve the dates on your calendar and plan to make your room reservations.

#### Workshop Costs:

Early Registration before June 8th - \$200

Registration after June 8th - \$220

Continuing Education Session - \$75

Continuing Education Session: Tuesday, June 12th on Fish Nutrition, Feeds and Feeding.

Hotel Reservations: The Grove Hotel, Boise, Idaho [www.grovehotelboise.com](http://www.grovehotelboise.com). For reservations call 1-888-961-5000 and identify yourself as part of the "Western Fish Disease Workshop". Or for online reservations go to: [https://reservations.ihotelier.com/crs/g\\_login.cfm?hotelID=76224](https://reservations.ihotelier.com/crs/g_login.cfm?hotelID=76224) and use Attendee code: WFDW.

### SHRIMP PATHOLOGY SHORT COURSE JUNE 18-29, 2012

#### University of Arizona, Tucson, Arizona, USA.

The course, entitled "Shrimp Pathology Short Course: Disease Diagnosis and Control in Marine Shrimp Culture", is taught by Dr. Donald Lightner and his colleagues from the Aquaculture Pathology Laboratory at the University of Arizona. This intensive course consists of comprehensive lectures and practical laboratory training that is focused on current methods used to diagnose, prevent, and treat the principal diseases of cultured penaeid shrimp. This program also provides an excellent opportu-

nity for participants to meet and interact with others involved in shrimp disease research and management.

For additional information regarding the course, visit: <http://microvet.arizona.edu/research/aquapath/index.htm> or contact Donald V. Lightner or Rita Redman (Short Course Coordinator), Department of Veterinary Science and Microbiology, The University of Arizona, Building 90, Room 102, 1117 E. Lowell St., Tucson, Arizona 85721, USA. FAX: (520)621-4899, Tel: US +1 520-621-4438, E-mail: [dvl@email.arizona.edu](mailto:dvl@email.arizona.edu); [ritar@email.arizona.edu](mailto:ritar@email.arizona.edu) or [aq-uapath@ag.arizona.edu](mailto:aq-uapath@ag.arizona.edu).

### 2012 AFS-FHS ANNUAL MEETING JULY 31-AUGUST 3 IN

#### Radisson Hotel, LA CROSSE, WI

The following groups will hold their annual meetings on July 30 and/or 31.

The Great Lakes Fish Health Committee

The Drug Approval Workshop

The Veterinary Workshop on Fish Regulatory Medicine <http://www.uwlax.edu/conted/fish/index.htm>

The link above will take you to the home page for all four events. From there you can link to information about each meeting. You may register on-line for the Drug Approval Workshop and AFS-FHS meetings separately, or save \$\$ and attend both meetings for a reduced fee. Register for the Veterinary Workshop on Fish Regulatory Medicine directly with Dr Gretchen May at WI DATCP. This workshop is free, thanks to a grant from USDAAPHIS. There is no formal registration to attend the Great Lakes Fish Health Committee meeting.

#### AFS-FHS Deadlines:

June 1 for hotel reservations

June 15 for abstracts (note that images or graphics can be appended to the abstracts)

In an effort to go mostly paperless, abstracts will be posted on the website well in advance of the meeting and can be downloaded, saved electronically or printed as you like. There will be a short paper program available at the meeting. To appreciate science as art and the "way coolness" of micrographs and other photographic images taken of our daily work, please bring prints of your favorites for display at the meeting. Special prizes will be awarded, and everyone is a winner!

Enjoy a cruise on the Mississippi River the evening of August 2, complete with Wisconsin's finest beverages and local specialty snacks. The boat has room for 60 people, so sign up early!

## Aquatic Veterinary Opportunities

### Aquarium Medical Center Internships – Spring/Summer 2012

#### New England Aquarium, Boston, MA, USA.

Internships at the Aquarium offer college students, recent college graduates and career changers experience in areas ranging from veterinary services and animal husbandry to communications and program and exhibit development. Internships are a great way to gain valuable, hands-on work experience and build your resume. You'll have the opportunity to network with marine sciences professionals both inside and outside of the Aquarium, help work towards the Aquarium's mission, may offer the opportunity to earn academic credit, and provides valuable tangible benefits for interns at the Aquarium.

Internships are available for the January term, spring, summer and fall. Spring, summer and fall internships are 12 weeks long, while January term internships range between 4 and 6 weeks and require a minimum of 125 total hours. Not all positions are available year round, and the time commitment varies slightly dependent on the department. Internships are unpaid and we do not provide housing assistance.

Time commitment – 3 full days/week (8:00am - 6:00pm). Responsibilities – assist the AMC staff in all areas of exhibit upkeep and animal care, including basic husbandry of AMC patients, cleaning, food preparation and feeding animals, and maintaining animal environments. Will be trained to perform water quality analysis on the hospital's aquatic systems. Must be able to take careful and consistent medical records. Will occasionally assist the AMC staff with medical treatments.

Qualifications – previous experience with animal care and handling is a must; a background in college-level basic sciences, especially biology and zoology, is desired. Candidates must be in good physical condition and be able to lift 50 pounds and must be able work independently. Some public speaking may be required. For more information and the application procedure, see [www.neaq.org/get\\_involved/index.php](http://www.neaq.org/get_involved/index.php).

### Veterinary Student (3<sup>rd</sup>/4<sup>th</sup> Year) Externships – New England Aquarium, Boston, MA, USA.

The New England Aquarium offers a unique experience to 3<sup>rd</sup> & 4<sup>th</sup> year veterinary students by offering the opportunity to work in both a museum/institutional setting and in the field of aquatic animal medicine. Externships are available from September 1 through June 30; summer rotations are not available. Because of limited

availability, veterinary students are encouraged to apply up to a year in advance; application deadline is November 1, although early decisions can be considered on a case-by-case basis. Incomplete applications will not be considered for review. Time commitment – minimum 6 - 8 week rotation.

The Animal Health Department at the New England Aquarium consists of a staff of 10 employees and serves to provide an optimal veterinary and preventive health program for collection and stranded/injured aquatic animals. The department includes 3 veterinarians, 4 biologists, 2 water quality specialists, and a lab office supervisor. We are devoted to education, research, and conservation to investigate and promote global aquatic animal health issues. Six to eight-week rotations are available for 3<sup>rd</sup> and 4<sup>th</sup> year veterinary students to complete veterinary externships in aquatic animal medicine at the New England Aquarium in Boston, MA. Clinical work at the off-site Animal Care Center in Quincy, MA may be required based on case load. Rotations are a comprehensive introduction into aquatic animal husbandry and veterinary medicine. Students are rotated through all areas of the aquarium, which includes working with fish, invertebrates, birds, reptiles, amphibians, marine mammals, environmental quality and marine animal rescue/rehabilitation. Students are expected to produce a case report, research paper, and 30 minute PowerPoint presentation.

To apply, send two (2) copies of a letter of intent, two (2) copies of a curriculum vitae, two (2) copies of veterinary school transcript, two (2) copies of 2 letters of recommendation, and 3 proposed dates of the externship in one package to: Attn - Veterinary Externship, Volunteer Programs & Internships, New England Aquarium, Central Wharf, Boston, MA 02110-3399; or Fax or e-mail to (617) 973-6552, [vols@neaq.org](mailto:vols@neaq.org). For more information see [www.neaq.org/get\\_involved/index.php](http://www.neaq.org/get_involved/index.php).





## Contact Corner

### 2012 WAVMA Executive Board

#### President

Dr Dušan Palić (USA/Germany)  
[dulep@iastate.edu](mailto:dulep@iastate.edu)

#### President Elect

Dr Mohamed Faisal (USA)  
[faisal@cvm.msu.edu](mailto:faisal@cvm.msu.edu)

#### Immediate Past President

Dr Julius Tepper (USA)  
[cypcarpio@aol.com](mailto:cypcarpio@aol.com)

#### Secretary

Dr Chris Walster (UK)  
[chris.walster@onlinevets.co.uk](mailto:chris.walster@onlinevets.co.uk)

#### Treasurer

Dr Nick Saint-Erne (USA)  
[saint-erne@q.com](mailto:saint-erne@q.com)

#### Director-at-Large

Dr Devon Dublin (Japan)  
[devdub@yahoo.com](mailto:devdub@yahoo.com)

#### Director-at-Large

Dr Myron Kebus (USA)  
[Myron.Kebus@Wisconsin.gov](mailto:Myron.Kebus@Wisconsin.gov)

#### Parliamentarian

Dr David Scarfe  
[dscarfe@ameritech.net](mailto:dscarfe@ameritech.net)

#### Past Presidents:

Dr Peter L. Merrill (USA) 2007  
 Dr Ron Roberts (UK) 2008  
 Dr Hugh Mitchell (USA) 2009  
 Dr Fotini Athanassopoulou (Greece) 2010  
 Dr Julius Tepper (USA) 2011



### Committee Chairs

#### Aquatic Veterinary Education Committee

Dr Scott Weber  
[sharkdoc01@gmail.com](mailto:sharkdoc01@gmail.com)

#### Communications Committee

Dr David Scarfe  
[dscarfe@ameritech.net](mailto:dscarfe@ameritech.net)

#### Credentialing Committee

Dr Dušan Palić  
[dulep@iastate.edu](mailto:dulep@iastate.edu)

#### Ethics and Governance Committee

Dr Peter Merrill  
[wetvet@comcast.net](mailto:wetvet@comcast.net)

#### Meetings Committee

Dr Julius Tepper  
[cypcarpio@aol.com](mailto:cypcarpio@aol.com)

#### Scholarship Committee

Dr David Scarfe  
[dscarfe@ameritech.net](mailto:dscarfe@ameritech.net)

#### Student Committee

Samara Parker  
[samara.parker@comcast.net](mailto:samara.parker@comcast.net)

*The ideas presented in this publication express the views and opinions of the authors, may not reflect the view of WAVMA, and should not be implied as WAVMA recommendations or endorsements unless explicitly stated. Information related to the practice of veterinary medicine should only be used within an established valid Veterinarian-Patient-Client Relationship.*

© 2012 World Aquatic Veterinary Medical Association

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

## **WORLD AQUATIC VETERINARY MEDICAL ASSOCIATION**



**We are on the Web!**

**WAVMA.ORG**

**For more information, please contact the WAVMA Secretary:**

Dr Chris Walster (UK)

132 Lichfield Road  
Stafford, UK ST17 4LE

Tel +44 1785 258411

Fax +44 1785 258416

[chris.walster@onlinevets.co.uk](mailto:chris.walster@onlinevets.co.uk)

### **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 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 the Editor, Nick Saint-Erne: ([Saint-Erne@Q.com](mailto:Saint-Erne@Q.com)).

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

#### **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.