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The Aquatic Veterinarian

What is your interpretation of this sonogram?
Photo by V.A. Semenov
See article on pages 20-23

Volume 10, Number 1
First Quarter, 2016

World Aquatic Veterinary Medical Association

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.

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.

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EDITORIALS

Editor's Note

This year marks the tenth year for the WAVMA quarterly publication: *Aquatic Vet News / The Aquatic Veterinarian.* The very first publication from the fledgling Aquatic Veterinary Association, which became the World Aquatic Veterinary Medical Association, was from June 2007 as the *AqVA Members' Newsletter*. This was followed by Volume 1, Number 1 of the *Aquatic Vet News* in September 2007 (the only issue in Volume 1!). The second issue of *Aquatic Vet News* was Volume 2, Number 1 in 2008. It was published quarterly from 2008 to 2013. In 2013 (Volume 7) the *Aquatic Vet News* became *The Aquatic Veterinarian* journal, with a revised cover and format.

It truly has been a privilege for me to have been the WAVMA publications editor since Volume 2, Number 2 in 2008. This issue of *The Aquatic Veterinarian* is my 32nd publication (This is the 34th total issue, as there was only one issue in Volume 1!). It takes a lot of time to put this together, and I couldn't do it without the help of other WAVMA members, who submit articles, case reports, or other news items to be included.

The value to our WAVMA members of this publication might be worth the cost of membership alone. But there are so many other benefits one gets from WAVMA membership that are of tremendous value as well: Online Webinars, education programs organized by WAVMA at major veterinary meetings worldwide, question and answers available by email on the members Listserv, externships and job postings on the WAVMA.org website, recognition as an Aquatic Veterinarian through the CertAqV program, and many more benefits!

I, for one, am very proud to be a WAVMA member since its beginning and have benefitted from membership in this great association. I hope you too are proud to be a member and can carry the torch to fellow wet vets and help the association grow and continue to meet the needs of its members, and of the aquatic patients for whom we care.

Nick Saint-Erne, DVM, CertAqV
Executive Editor
AVNeditor@WAVMA.org

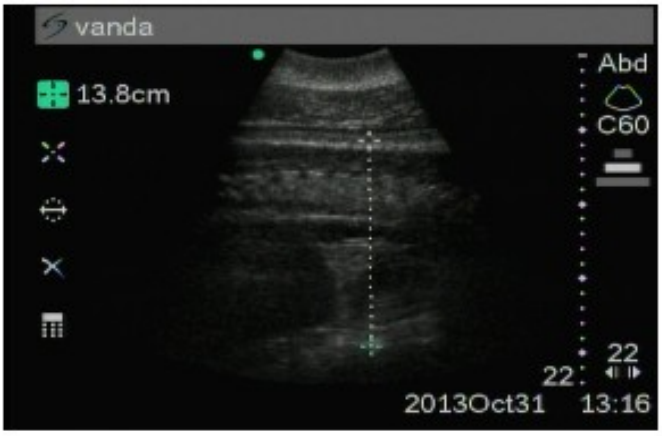
RIGHT: *A great way to look for fish! Kayaking with my daughter Rachel, at Watson Lake. See Volume 5, Number 2, page 2 for a similar photo from 2011 kayaking with my daughter Alexandra. Playing in the water, even when not examining fish, has always been a favorite family pastime.*

Download a QR reader onto your Smart Phone and scan the Quick Response Code to the right. It will take you to the WAVMA.org website page for accessing all of the past WAVMA Newsletters.

You will need your WAVMA User ID and Password to access the most recent issues of *The Aquatic Veterinarian.*

Cover Photo:

Ultrasonographic image of dorsoventral thoracic foetal dimensions in a Black Sea bottlenose dolphin.
Photo by V.A. Semenov
See article on pages 20-23



President's Report

This year is the tenth year of the World Aquatic Veterinary Medical Association: 2007-2016. Following in the foot steps of the nine previous presidents of this association is a daunting task. [See list of names on page 2!] Each of them had plans for WAVMA during their tenure as president that they carried out to improve the association. All of their successes have made WAVMA a strong and valuable organization for its members.

Looking through the President's Reports of previous newsletter/journal issues (all past issues are available online for download at http://www.wavma.org/publications) has provided a review of past programs and accomplishments. The next issue of *The Aquatic Veterinarian* (Volume 10, Number 2: June 2016) will be our 10-year anniversary issue and we will recount a full history of the association, but here are some highlights gleaned from the early publications to pave the way:

The Aquatic Veterinary Association Members Newsletter - First issue: June 2007.
First tasks - Drafting Bylaws, creating a Website, Incorporating the Association, choosing Directors and Officers. First General Meeting held at the AVMA Convention in Washington, DC on July 18, 2007.

Aquatic Vet News - Volume 1, Number 1: September 2007 - Changed association name from AVA to WAVMA at Annual General Meeting, Ratified Bylaws, Elected Officers and Directors for 2008.
Planned WAVMA's 2nd Annual General Meeting to be held in conjunction with the 2008 World Veterinary Congress in Vancouver, Canada.

Aquatic Vet News - Volume 2: 2008
Number 1: WAVMA Logo Development proposed, Committee formations.
Number 2: Registered as a Non-Profit organization, Website revised, Members' Listserv implemented.
Survey results ranking species importance for WAVMA members: 1. Finfish; 2. Crustaceans and mollusks;
3. Marine mammals; 4. Reptiles and Amphibians;
5. Aquatic Birds.
February 2008 – EB Meeting at Aquaculture America
July 21, 2008 – EB Meeting at AVMA Convention (New Orleans)
July 27, 2008 – 2nd Annual General Meeting at the World Veterinary Congress, Vancouver, BC, Canada.
Communication Tools Developed: Website, Listserv, *Aquatic Vet News,*
Number 3 – WAVMA joins AVMA in management of the AquaVetMed.info website
Number 4 – Instructions for using listserv published,
Organized WAVMA as a 501 (C) 6 Non-profit Professional organization, Logo design was introduced.

The goals and value of WAVMA to its members and the Aquatic Veterinary Community as a whole were determined: setting ethical standards, networking, CE opportunities, advocacy for the profession, job announcements, educational journal, providing a mechanism for action, preparing policy statements, representing aquatic veterinarians at international meetings.

This summary above reflects just the first two years of WAVMA accomplishments! Much more information will be included in the next issue of *The Aquatic Veterinarian*. But one common theme came out while reading the President's Reports – if you want WAVMA to grow and meet the needs of Aquatic Veterinarians, YOU should help out!

I would also like to consider the survey of members that was reported in *Aquatic Vet News* Volume 2, Number 2. It listed the ranking of species of importance for Aquatic Veterinarians. We want to be inclusive of all aspects of Aquatic Veterinary Medicine and provide our members with useful information that meets their needs. In this issue of *The Aquatic Veterinarian* alone we have included articles on the following species:

Food Fish - pages 31, 32
Ornamental Fish - pages 16, 17, 19, 28, 29
Shellfish - pages 12, 24, 26, 27, 32
Marine Mammals - pages 13, 20, 21, 22, 23, 30
Reptiles and Amphibians - page 13*
Aquatic Birds - Well, there is a photo of a penguin on page 14.

And this is just one issue! In every issue we cover a variety of topics to meet the needs of all our members [though typically not much on birds...so join the AAV]. The next issue will have more information about the history of WAVMA, and what we plan to do over the next 10 years.

*The asterisk from the Reptiles and Amphibians content list above is to inform members that the September issue of *The Aquatic Veterinarian* will be, by special request, an all TURTLE issue. It will cover sea turtles, water turtles, and some land turtle topics. We request that WAVMA members submit articles, case reports and other items of interest about turtles to the editor by August 15, 2016 for inclusion in the September issue. This will be the first issue that has an overall theme for the article topics. If there is interest in other topics for future editions, let me know and we can see if there is enough information for a dedicated issue.

EXECUTIVE REPORTS

Looking at the New Members list on page 8 of this issue, one can see that the majority of our new members are veterinary students. It is exciting to see young veterinarians-to-be interested in Aquatic Veterinary Medicine. It is heartening to know that veterinary schools are finally including aquatics programs in their curricula, and so many students are interested in them. Many of these students will not find jobs in Aquatic Veterinary Medicine initially, but their skills will help them in any facet of medicine, and if they are persistent, they will get their dream job!

While my initial interest was in fish medicine (my undergraduate study was in Fisheries Biology), I started my career in a small animal hospital that only saw dogs and cats. Over the next 15 years in practice, I expanded the care to not only dogs and cats, but also birds, reptiles, amphibians, zoo animals, and fish, before moving to working in the retail pet industry, where I now work exclusively with ornamental fish and reptiles. It has been an exiting career, and finally I am a Fish Vet!

When I was starting as a veterinary student at Kansas State University in 1980, I was the only student interested in fish in my class! There were no academic programs at KSU College of Veterinary Medicine for aquatic animals. Fortunately, the Dean was aware of my interests and recommended me to go to the AQUAVET® Program in 1982, which for me was a dream-come-true! There I met other veterinary students interested in aquatic medicine, including AQUAVET classmates Ruth Francis-Floyd (now at University of Florida College of Veterinary Medicine), Joe Groff (now at UC Davis College of Veterinary Medicine), and Tim Mullican (now at The Georgia Aquarium) who all went on to have careers involving aquatic veterinary medicine. AQUAVET is having their 40th Anniversary Party this May (see page 34), and I intend to be there as an AQUAVET alumni and to represent WAVMA. If you are there, be sure to let me know what interests you have in Aquatic Veterinary Medicine and where you would like WAVMA's involvement in the future.

Another reason why our student membership might be so high is that our annual dues are quite affordable. Initially, our student membership was $50 per year. Seeing the value in making WAVMA accessible to students, we lowered the annual dues for students to $25 in 2011. Recently the Executive Board has discussed if other categories of dues are "right priced", and we would be interested in comments from members who think the dues are reasonable or if there should be changes in any of the categories. In any event, it is likely that WAVMA members get more "bang for the buck" if they utilize all of the services we provide than from any other veterinary organization.

The final topic of this report (and the reason the first quarter issue was so late in publication) is that I wanted to provide information about the Fish Veterinary Society meeting (March 22-23, 2016) that I attended in Edinburgh, Scotland to represent WAVMA. This was a great event and a good source of collaboration with our colleagues in the UK.

The two day conference was organized by Matthijs Metselaar, a WAVMA member who recently became a Certified Aquatic Veterinarian. The conference theme was "Recirculating Water Systems", and the lectures included information on how to set up a Recirculating Aquaculture System (RAS), what medications were available for use in aquaculture in the UK and the USA, economic benefits of wild captured ornamental fish in the pet trade, natural disease control in aquaculture systems, maintaining water quality and biosecurity, and pathogen treatment and prevention.

Twice during the conference I heard an important tenet that all aquatic veterinarians should remember. The first time was during the talk on Setting-up a RAS by Nick Bridel from the Tropical Marine Center, who stated "Look after the water, the animals will look after themselves." The second similar one was during the talk on Microbial Control in RAS by Kari Attramadal from the Norwegian University of Science and Technology, who stated "To culture Fish, one has to culture the Water." One would do well to follow this!

Overall it was a great conference, and a wonderful time was had in Scotland. Special thanks to the Fish Veterinary Society for a delightful event, and to the folks at Ardtoe Marine Research Facility who gave us a wonderful tour of their operation after the conference. I just love those lumpsucker fish!

Lecturers at the Fish Veterinary Society meeting in Edinburgh (look at their name tags!).

Nick Saint-Erne, DVM, CertAqV
WAVMA President
President@WAVMA.org
Phoenix, AZ USA

Is that the sound of horse hooves? No, just coconuts… The President at Doune Castle, Scotland.

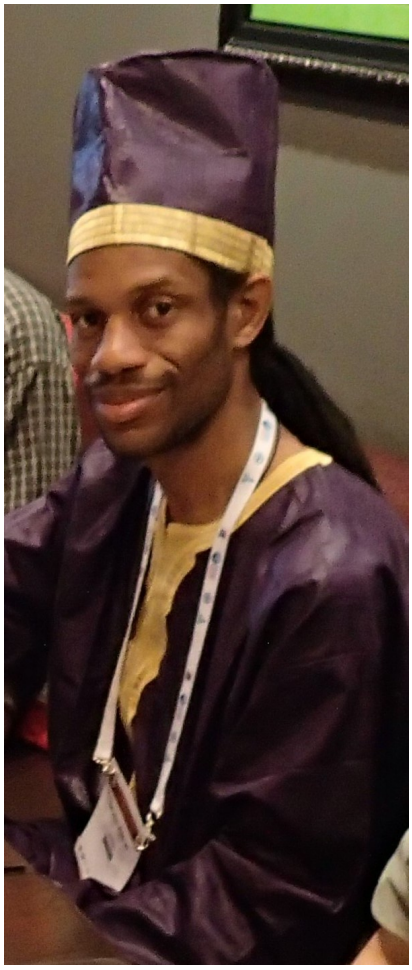
Secretary's Report

Dear WAVMA members, as 2016 continues to unfold, it is my hope that success in all your endeavors will be realized. The Board of 2016 has begun its work under the guidance of Dr. Nick Saint-Erne with the main objective of providing you with the relevant member services. Your elected members would like to better serve you as we continue to broaden alliances and seek other opportunities and benefits for you. As usual I continue to appeal for any suggestion that you may have to enhance WAVMA as a whole.

Many of our members continue to renew their membership quite early and I thank those of you that have done so. Allow me to also issue a reminder that membership runs from the 1st of January through the 31st December each year and that membership dues can be paid 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 2016 dues by the 1st April 2016 will unfortunately 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 such as the ability to communicate with other aquatic veterinarians around the world through the listserv, or access the quarterly *The Aquatic Veterinarian* (TAV) and webinars, which can be used to achieve your CEPD requirements for re-licensure at considerably reduced cost. If you log into your members profile you can check whether you have paid or still owe your 2016 dues. If you have forgotten your log-in details or have any problem concerning the website then please do not hesitate to email administrators@wavma.org to have the issue rectified.

This year continues to see more persons successfully completing the Aquatic Certification process, enlarging the pool of colleagues and mentors to strengthen this initiative. I encourage other members to consider doing same. Details can be found at http://www.wavma.org/CertAqV-Pgm.

Students continue to be a significant percentage of our total membership. Against this background, the Students Committee is an essential component of the WAVMA structure. Several initiatives have been embarked on by the committee and their members are cooperating with the Communications Committee and a report is submitted on a monthly basis to the Executive Board, thus allowing for the voice of the students to be heard at the highest level. I therefore encourage student members that may want to get involved to email WAVMA_Student_Cmte-L@wavma.org. Quite a few Student Chapters have been established and we will see the students much more involved in the affairs of WAVMA.



We continue to collaborate with several international organizations, such as the World Veterinary Association (WVA) and the World Small Animal Veterinary Association (WSAVA). In the case of WSAVA, we have been invited to collaborate further, which may see us hosting an Aquatic stream annually at their international conference, giving you, our members, an additional avenue to obtain continuing education credits in various locations around the globe.

I close by thanking all the members for your continued expression of confidence in the work we do and look forward to reporting on our achievements throughout the year.

Devon Dublin, DMVZ, MSc. CertAqV
WAVMA Secretary
Global Environment Facility - Satoyama Project
6-7-22-451 Conservation International–Japan,
Shinjuku, Tokyo,
160-0022, Japan
Secretary@wavma.org

EXECUTIVE REPORTS

Treasurer's Report

Income from memberships has increased nicely; we have now attained 85% of what I projected for the year: $14,150 of projected $16,600.

Our 2016 membership number totals 297.
53 members joined/renewed during the 10/01/15 - 12/31/15 early renewal period for 2016 membership.

The breakdown for dues collected 01/01/16 to 04/30/16 is as follows:

Full Members	99
New Grads	10
Vet Students	130
Vet Techs	2
Affiliates (non-vets)	2
Library Members	1

CertAqV income is also on the upswing: we've collected $3250 of the $4500 projected (72%).

We have not yet paid most of the expenses budgeted for 2016, however. I will be disbursing funds in May for the Pitts Education Awards, website improvements performed by Imaginaction, as well as some meeting expenses. Additionally, our $1000 sponsorship check for the AAFV dinner last month has not yet cleared.

That's all I have for now! I welcome your feedback and questions.

Thank you,

Sharon Tiberio, DVM, CertAqV
WAVMA Treasurer
Treasurer@WAVMA.org
srtiberio@att.net

New Members (2016)

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

Full Members
Anthony Gibson
Brittany Stevens
Charles Greco
Claire Andreasen
Darren Docherty
Gary Schwartz
Giana Gomes
Grace Karreman
Kasper Jorgensen
Kimberly Stewart
Maria Serrano
Mark Freeman
Matthijs Metselaar
Miguel Grilo
Robert Jones
Ruben Crespo
Sharmie Johnson
Tammy Hildreth

New Grads
Diane Jaramillo
Jessica Fox
Nicole Epstein

Vet Student Members
Abigail Wisnet
Adenike Babatunde
Adrien Izquierdo
Alyssa Vecchione
Amanda Borchardt
Amanda Combs
Andrew Cabrera
Angela Jackson
Anna Bird
Anne-Fleur Brand
Carlos Ortiz
Carly Legault
Chika Ikeogu
Christina Cheng
Christina McKenzie
Chun han Lin
Courtney Pearce
Crystal Snare
Elizabeth Hahn
Elizabeth Rengh
Felix Teitge
Georgia Wolfe
Haley Violetta
Jaqueline Dolan

Vet Student Members - Continued
Jean Fournier
Jeanna Villacarte
Jennifer Askin
Jennifer Camilleri
Jessica Sands
John Griffioen
Julia Meder
Julie Murphy
Kara Amber Lee
Kirstin Cook
Kortney Regan
Laura Burns
Lindsay Wilfong
Lucy Will
Melissa Joblon
Michelle Farkas
Michelle Moss
Michelle Sparks
Riley Shugg
Samantha Gonzalez
Sarah Wahlstrom
Shawn Wharrey
Silvia Fiscon
Veronica Liguori
Thomas Murphy
Tristan Rich
Karina Banuelos
Kaylee Brown
Kelsey Gump
Megan Joyce
Rebecca Crawford
Stella Levy
Stephanie Alexander
Yoen-Ji Sung
Zoe Bailey

PRIVILEGES & BENEFITS OF WAVMA MEMBERSHIP

Aquatic Veterinary e-Learning

Supporting WAVMA's WebCEPD, PubCEPD CertAqV & Clinical Cases Programs.

- **Enjoy on-line *e-Learning* programs & courses to advance your knowledge & skills**
- **Get continuing education credit through *Web-CEPD*, *PubCEPD* & *Clinical Corner***
- **Discover core knowledge, skills & experience needed to become a WAVMA Certified Aquatic Veterinarian *(CertAqV)***
- **Receive *discounted* subscriptions to publications & meetings**
- **Utilize *WAVMA's picture & video libraries* for your own presentations**
- **Join *listservs* to discuss clinical cases & other issues**
- **Mentor & be mentored to expand your and other's aquatic veterinary skills**
- **Publish your articles in WAVMA's quarterly journal: *The Aquatic Veterinarian***
- **Find world-wide externships, internships, residencies & jobs in all aquatic vet areas**
- **Access *Member Directories* & have your Clinic/ Hospital listed on-line**
- **Benefit from *Educational grants* for vet students & new veterinary graduates**
- **Form & participate in *veterinary school chapters* throughout the world**
- **Participate in veterinarian and client surveys**
- **Help build additional member programs by serving as an Officer, Director or Committee Member**

WAVMA Committees

As a member-driven organization, WAVMA relies on volunteers to help implement programs useful for all members. Any WAVMA member can volunteer on a Committee to help shape the direction of the Association, meet new colleagues, forge valuable and lasting relationships, and help address key issues affecting aquatic veterinary medicine today. To find out more about serving on a Committee, please contact the Committee Chair or the WAVMA Parliamentarian.

Budget and Finance Committee

This Committee develops and regularly revises the Association's annual budget and assists the Treasurer, as necessary, in developing the Association's annual financial reports and tax materials.

This Committee shall consist of the Treasurer (Chair); the President-Elect; and one other member of the Executive Board who will volunteer to serve a one-year renewable term.
Chair: Sharon Tiberio, Treasurer@WAVMA.org

Communications Committee

This Committee manages the communications among members and others involved with aquatic veterinary medicine. It oversees the listservs, membership lists, publication of WAVMA's quarterly journal *The Aquatic Veterinarian*, e-News, Facebook, Twitter, LinkedIn and other social media accounts.
Chair: Laura Urdes, laurau_2005@yahoo.com

Credentialing Committee

This Committee oversees and administers the CertAqV Program for credentialing aquatic veterinary practitioners, and evaluates aquatic veterinary educational programs useful to members.
Chair: Tim Miller-Morgan tim.miller-morgan@oregonstate.edu

Meetings Committee

This Committee oversees and coordinates logistics for WAVMA-organized or sponsored aquatic veterinary educational meetings, including the Annual General Meeting.
Chair: Julius Tepper, cypcarpio@aol.com

Membership Committee

This Committee oversees membership issues to optimally serve individual members and the organization. Co-Chair: Chad Harris caharris24@yahoo.com

Student Committee

This Committee facilitates networking between student members and helps development of student programs and services.
Chair: Justin Krol, justkrol21@gmail.com

COMMITTEE REPORTS

Fellowship Advisory Council

WAVMA has established a fellowship program to recognize those world-renowned veterinarians who have advanced aquatic veterinary medicine as a discipline and devoted their time and efforts to serve WAVMA's mission. The Fellowship Advisory Council allows Fellows to advise the Executive Board with guidance on their initiatives, and mentor applicants for Aquatic Veterinarian Certification (CertAqV).

Our WAVMA Distinguished Fellows are:

Dr. Peter L. Merrill
Dr. Ronald J. Roberts
Dr. A. David Scarfe
Dr. Julius M. Tepper
Dr. Christopher I. Walster
Dr. Dusan Palic
Dr. Grace Karreman
Dr. Marian McLoughlin

See: http://www.wavma.org/wavma-fellows.cfm?

Certified Aquatic Vets	Email Address
Bastos-Gomes, Giana	giana.gomes@jcu.edu.au
Bogan, James	thecritterfixer@gmail.com
Cecil, Todd	waavs@aol.com
Corcoran, Daniel Michael	mikecdvm@yahoo.com
Cornwell, Emily	erc58@cornell.edu
Dublin, Devon	devdub@yahoo.com
Faisal, Mohamed	faisal@cvm.msu.edu
Good, Christopher	c.good@freshwaterinstitute.org
Hayakijkosol, Orachun	orachun.hayakihkosol1@jcu.edu.au
Johnston, Colin	brightwaterconsultingnz@gmail.com
Loh, Richmond	thefishvet@gmail.com
Maas, Adolf	DrMaas@ZooVet.us
Miller-Morgan, Tim	tim.miller-morgan@oregonstate.edu
Palić, Dušan	d.palic@lmu.de
Palmeiro, Brian	petfishdoctor@gmail.com
Pasnik, David	chesapeakeaquatic@yahoo.com
Questen, Jena	drquesten@gmail.com
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Sahatrakul, Komsin	komsin.s@rwsentosa.com
Saint-Erne, Nick	nsainterne@gmail.com
Sanders, Jessie	ncfishvet@gmail.com
Scarfe, David	dscarfe@ameritech.net
Shelley, John	thejohnnyshelley@yahoo.com
Soto, Esteban	balasotom@gmail.com
Tepper, Julius	cypcarpio@aol.com
Tiberio, Sharon	srtiberio@att.net
Urdes, Laura	laurau_2005@yahoo.com
Van de Sompel, Greta	johan.van.der.cruyssen@telenet.be
Walster, Chris	chris.walster@onlinevets.co.uk
Weber, Scott	sharkdoc01@gmail.com

Credentialing Committee

The WAVMA CertAqV Program is administered by the WAVMA Credentialing Committee, along with the assistance of other Certified WAVMA members who serve as mentors and adjudicators.

To be credentialed by WAVMA as a Certified Aquatic Veterinarian and utilize the CertAqV honorific, individuals must be a WAVMA member, have a veterinary degree from a nationally recognized veterinary school, college or university and have demonstrated general knowledge and competency in core subject areas that are currently considered necessary to practice aquatic veterinary medicine. Students of a nationally recognized veterinary institution of higher education can register for the program, but will not be certified or entitled to utilize the CertAqV honorific until they graduate.

Individuals that desire to participate in the WAVMA CertAqV Credentialing Program are required to:

- Register for the Program (application at www.wavma.org/CertAqV-Pgm or contact the Administrators@WAVMA.org).
- Identify a mentor to assist the registrant through the Program. The potential mentors would be available WAVMA Certified Aquatic Veterinarians.
- Provide the mentor with written evidence of satisfactory completion of each of the core Knowledge, Skills and Experience (KSE) subject areas.
- Be adjudicated by the Credentialing Committee for recognition of completion of all KSE requirements after the mentor has approved the documentation.
- Have the CertAqV certification approved by the WAVMA Executive Board.

The WAVMA Certified Aquatic Veterinarian (CertAqV) program has now certified thirty-seven aquatic veterinarians. Please welcome our latest Certified Aquatic Veterinarians:

Dr Brian Joseph
Dr Jack Kottwitz
Dr Matt Metselaar
Dr Peter Werkman
Dr Trista Welsh
Dr Heather Bjornebo

There are an additional seventeen other WAVMA members currently in the process of being certified. For more information, see the WAVMA website: **http://www.wavma.org/CertAqV-Pgm.**

Tim Miller-Morgan, DVM, CertAqV
2016 Credentialing Committee Chair

COMMITTEE REPORTS

Meetings Committee

The WAVMA Meetings Committee is pleased to announce the location of our **2016 Annual General Meeting** in San Antonio, Texas in conjunction with the AVMA Annual Conference. The dinner meeting, open to all WAVMA members, will be held on **Saturday evening, Aug. 6, 2016**. If you are planning to be at this conference and wish to join us, please email me to reserve a seat as space will be limited. Watch for future notices about the exact time and venue.

Recently, several WAVMA members attended The Fish Veterinary Society Annual Conference held from March 22- 24, 2016 in Edinburgh, Scotland, UK. WAVMA co-sponsored that meeting and I along with several WAVMA Executive Board members attended this excellent scientific and social event with our British colleagues.

The WSAVA Congress will be held Sept. 27-30, 2016 in Cartagena, Columbia. Richmond Loh, sponsored by WAVMA, will be presenting 3 hours of CE on fish disease. Devon Dublin will be attending as the WAVMA Delegate to the WSAVA. If any of our members are planning to attend any of these events or would otherwise like to offer their input, the Meetings Committee would certainly welcome it.

Julius M. Tepper DVM CertAqV
Meetings Committee Chair
cypcarpio@aol.com

Communications Committee

WAVMA Social Media Report
(Jan 2016 – March 2016)
Compiled by **Stephen Reichley**

WAVMA Facebook Page
230 new page Likes (currently 1,552 total Likes)
Current Fans (people who have "liked" the page)
- o 53% female
- o 46% male
- o ~70% are age 18-34
- o ~30% are age 35 and over
- o Represent 45 countries
  - USA (393; up 75 from 2015 Q4)
  - Australia (117; up 12 from 2015 Q4)
  - India (73; up 4 from 2015 Q4)
  - Indonesia (56; up 5 from 2015 Q4)
  - Pakistan (55; down 1 from 2015 Q4)
  - United Kingdom (55; up 16 from 2015 Q4)
  - Turkey (up 8 from 2015 Q4)
  - Thailand (49; up 3 from 2015 Q4)
  - Canada (39; up 3 from 2015 Q4)
  - Myanmar (32; unchanged from 2015 Q4)

58 posts (up 44 from 2015 Q4)

Year-on-Year Comparison

Metric	Q1 2015	Q1 2016	Change
New Page Likes	151	230	+79 (152%)
Average Post Reach	128	414	+286 (323%)

WAVMA Facebook Group
603 members (up 14 from 2015 Q4)
18 posts (up 4 from 2015 Q4)

LinkedIn Page
124 new followers in 2016 Q1 (currently 1,241)
26 posts (up 21 from 2015 Q4)
o Impressions: 20,229 (up 14,061 from 2015 Q4)
o 265 clicks on content (up 111 from 2015 Q4)
118 organization page visits

Twitter
66 new followers (currently 122; up 51 from 2015 Q4)
51 tweets (up 43 from 2015 Q4)
o 32 re-tweets (up 27 from 2015 Q4)
o 10 likes (up 7 from 2015 Q4)

WebCEPD B-1023 - Surveillance & Management of Disease in Prawn Aquaculture

Join us on May 13, 2016 for this free webinar.
Click on http://tinyurl.com/he4ua73 to see the time in your time zone anywhere around the world.
Register now! Click on https://attendee.gotowebinar.com/register/4447063113198957828

About this webinar

This webinar will provide information on the economic importance of prawn/shrimp farming and different farm and hatchery systems, and health management programs. It will also cover the importance of disease surveillance in aquaculture and general wet-mount health check technique for farmed prawn/shrimp.

Learning Objectives - participants will understand:
1. Prawn/shrimp biology and economic importance of prawn/shrimp farming;
2. How to assess prawn/shrimp health status on farm and in hatcheries; and,
3. The main diseases affecting farmed prawns/shrimp.

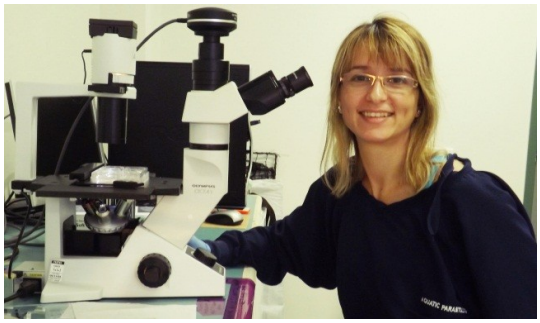
About the speaker

Dr. Giana Bastos Gomes is a veterinarian who graduated from Universidade Federal Rural de Pernambuco in 2003. In the same year she started working on the largest prawn/shrimp hatchery from Brazil (Aquatec). Her MSc work dealt with prawn diseases caused by intracellular bacteria, and she is pursuing a PhD on developing new tools for early detection of ciliate parasites in farmed barramundi from tropical Australia, at James Cook University. She also works as part of The Fish Vet team covering prawn and fish farms from Queensland, and recently won the "2016 Science and Innovation Awards" and the "2016 Minister's Award" which recognises the best emerging young talent in rural Australian industries.

This webinar is suitable for veterinarians, vet techs/nurses, vet students and shrimp farmers.
Feel free to forward this announcement to colleagues.

Want CEPD credit? (***Registration is required***)

Information on how to access the recorded webinar (at no cost), and a short knowledge & skills assessment (KSA or quiz) covering the webinar's principle learning objectives, in order to earn veterinary Continuing Educational & Professional Development (CEPD) credit will be e-mailed to all registrants in 7-10 days after the webinar.



As CEPD credit can be used towards re-licensing or registration requirements to practice veterinary medicine, and requirements for becoming a WAVMA Certified Aquatic Veterinarian. We provide WAVMA Members a discount off the US$25.00 fee for earning CEPD credit ($5 for student members, $15 for all others).

Interested but can't join the live webinar?

If you register for the live webinar and are unable to attend, you will be e-mailed a link to view the webinar at a later time.

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View webinar System Requirements
WAVMA WebCEPD Program Coordinator
administrators@wavma.org

Discover more about the ***World Aquatic Veterinary Medical Association*** at www.WAVMA.org.
Get listed in the on-line ***Directory of Aquatic Veterinarians*** and subscribe to ***AquaVetMed e-News*** by registering at www.AquaVetMed.info.

WAVMA is on Facebook!

Find us on Facebook

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

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

Search for WAVMA at www.facebook.com.

University of Florida CVM, WAVMA Chapter
Fall 2015 Semester Summary Activities
Hayley Bird, Chapter President 2015-2016,
Class of 2018

The fall 2015 semester has been a busy one for members of the University of Florida College of Veterinary Medicine WAVMA Student chapter. The group has hosted 4 meetings covering different aspects of the field of aquatic animal health.

Dr. Alyssa Demming, DVM and PhD candidate, came to speak about marine mammal medicine at the Marine Mammal Center and as well as her current PhD research, and John Than from the Center for Conservation at the Florida Aquarium spoke about coral health. Our Chapter also hosted a research panel with four speakers ranging from veterinary students, to PhDs. The group also had a visit from Dr. Adrian Cerezo, a well-known anthropologist, who spoke about human interpretations of aquariums, and what the students can do to bridge the gap between education and entertainment at these facilities.

Two club officers also went to the opening of the Sea Turtle Hospital at Whitney Lab and staffed a table in order to help educate guests about the club and the program at UF.

Chapter member also went on several trips. One was the Rainbow River trip where students participate in surveying river turtles for an ongoing population study with Dr. Peter Meylan and students participated in the collection, data workup, and x-raying of multiple freshwater turtle species. Another trip was to the Georgia Aquarium where the students had a behind the scenes tour from one of the associate veterinarians at the aquarium, Dr. Chelsea Anderson.

The group also helped staff a table at the Right Whale festival in Jacksonville, Florida with the Aquatic Animal Health Program. Club members helped educate the public on the Right Whales and what they can do to help them and their aquatic environment.

The group has many more wetlabs, trips and meetings planned for the spring 2016 semester to continue expanding their knowledge in the field of aquatic animal health!

Chapter Officers include:
Hayley Bird (President),
Aslyn Brandt (Vice-President),
Ashley Whitehead, (Treasurer),
Dana Applegate (Secretary),
Necia Godzisz (Outreach Coordinator)
and Greer Brander-McCoffrey (Events Coordinator),
with Dr. Tom Waltzek serving as Faculty Advisor.

Current WAVMA Student Chapters:

Murdoch University, School of Veterinary & Life Sciences (established 2014)
Faculty Advisors - Drs. Lian Yeap & Richmond Loh. ***Chapter contact*** – click here
Auburn University, College of Veterinary Medicine (established 2013)
Faculty Advisor - Dr. Ray Wilhite
Chapter Contact - click here
St. George's University, School of Veterinary Medicine (established 2015)
Tuskegee University, School of Veterinary Medicine (established 2012)
Faculty Advisor - Dr. Kenneth Newkirk
Chapter Contact - TBA
University of Florida, College of Veterinary Medicine (established 2013)
Faculty Advisor - Dr. Tom Waltzek
Chapter Contact - TBA
University of Illinois, College of Veterinary Medicine (established 2015)
University of Prince Edward Island, Atlantic Veterinary College (in development)
University of Tennessee, College of Veterinary Medicine (established 2012)
Faculty Advisors - Dr. Michael Jones & Dr. Debra Miller ***Chapter Contact*** - click here
View the Chapter's **Facebook** page
University of Wisconsin, College of Veterinary Medicine (in development)
Western University of Health Sciences, College of Veterinary Medicine (established 2014)
Faculty Advisor - Dr. Suzana Tkalcic
Chapter Contact - click here
University of Nottingham, School of Veterinary Medicine & Science (in development)
University of Sydney, Australia
(in development)
Ross University
(in development)
University of Georgia (New)

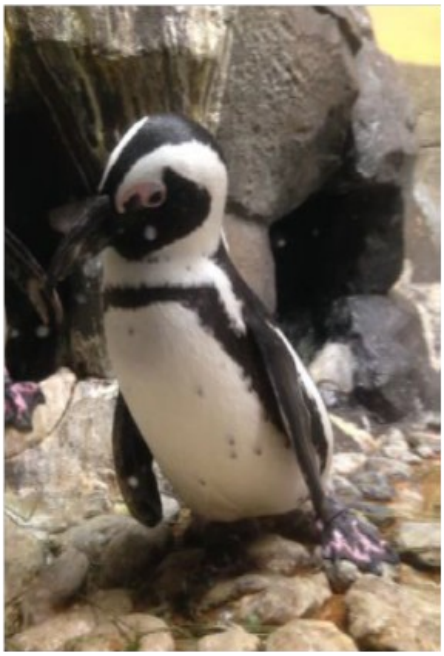
*For information or assistance, please contact the **WAVMA Chapter Coordinator***
To initiate a new Student Chapter see the **"Guidance for Forming a New Student Chapter"** (click here to download PDF).

SCHOLARSHIP COMMITTEE:
2015 WAVMA Aquatic Veterinary Education Award Recipient Reports

Meg Baker
St. Matthew's University, School of Veterinary Medicine, Grand Cayman, Class of 2016

In June 2015, I was lucky enough to be one of the recipients of the John Pitts Aquatic Veterinary Education Support Awards. This award helped to fund a four-week externship at the Georgia Aquarium.

During my time at the Georgia Aquarium I had the immense pleasure of working with so many wonderful people. My hope from this externship was to gain a better understanding of the daily role of a marine veterinarian and the husbandry and health management requirements of aquariums. During my externship I participated in many aspects of marine medicine such as annual physical examinations of Spotted Eagle Rays, diagnostic imaging of Cownose Rays, feeding Whale Sharks, conducting fin/skin/gill scrapes on teleost species, laboratory diagnostics, and progression monitoring on newly hatched penguin chicks.



In addition to experiencing the numerous and diverse veterinary medicine requirements, I was also able to spend time with the aquarium's Water Quality department. It was a very insightful experience to see first-hand (and help with) the number of water quality tests that are required for each habitat to ensure that proper environmental conditions are continuously being met.

My four weeks at the Georgia Aquarium was an extraordinary opportunity that has been one of my most enjoyable experiences of my clinical year of veterinary medicine. I gained valuable skills and insights for a future career in aquatic medicine. I would like to extend my appreciation and gratitude to WAVMA for the scholarship and helping me to pursue a career in a field that I love.

Photos of the Georgia Aquarium by Meg Baker

Dr Jessie Sanders: Aquatic Veterinarian Recounts Adventures Among Fish

By Ryan Masters, Santa Cruz Sentinel
Posted: 02/21/16, 6:54 PM PST

Jessie Sanders speaks to a full room at the Seymour Center in Santa Cruz on Sunday during her lecture, "Adventures of a Fish Veterinarian." (Photo by Kevin Johnson -- Santa Cruz Sentinel)

SANTA CRUZ >> Aquatic veterinarian Jessie Sanders was busy cleaning Henry's tank at the Mystic Aquarium in Connecticut when she suddenly woke up on the floor, disoriented and in pain. Henry was an 8-foot long American electric eel that weighed in at 44 pounds. Eels like Henry can transmit a 600-volt burst of electricity, which is roughly five times the power outage of a residential socket.

"How much of a human needs to be in the water to be knocked to the ground by an electric eel?" Sanders asked. "I'll tell you: the tip of one finger. Twenty seconds earlier I had both arms in the water up to my elbows. Needless to say, I wore rubber gloves around Henry every time after that."

The tale of Henry the American electric eel was just one of many misadventures with which local fish veterinarian Sanders regaled a capacity crowd at the Seymour Marine Discovery Center's latest Science Sunday lecture. Sanders has operated a mobile fish medical clinic for the last few years, traveling up and down the California coast to treat fishy health issues. Now she is poised to open Aquatic Veterinary Services of Northern California and Santa Cruz Koi, a permanent clinic in Soquel, California specializing in fish critical care and surgery that doubles as a commercial koi fish business.

A business savvy fish doctor? Yes. Sanders actually minored in business while earning a Bachelor of Science degree in marine biology from the University of Rhode Island. She is also a graduate from Tufts Veterinary School and became a certified aquatic veterinarian through the World Aquatic Veterinary Medical Association.

On Sunday, Sanders imparted some of the lessons she has learned over the last decade, some of them the hard way, en route to such a unique career. Her biggest skill? Catching fish.

"I am one of the world's best fish catchers. When you go into a pond full of fish and have to catch the lone sick one, you'd better be good at catching fish," she said. Catching and treating a full-grown sand tiger shark requires a team, a rather large team, according to Sanders.

"Sand tiger sharks only tend to get chompy when provoked," she said. "Of course, a health check by a team of humans usually qualifies as provocation to them."

Jessie Sanders, an aquatic veterinarian and owner of Aquatic Veterinary Services of Northern California, discusses her career at the Seymour Center in Santa Cruz on Sunday. (Kevin Johnson -- Santa Cruz Sentinel)

Sanders showed the crowd an X-ray of a koi fish with a severe kink in its spine and explained that diagnosing the injury was difficult because it could be many things: a congenital deformity, a nutritional deficiency or an old wound from a heron or raccoon attack.

"It could also be from lightning," Sanders said. "When lightning strikes a koi pond it can break the spine of every fish swimming in it."

For more information about the Seymour Marine Discovery Center's Science Sunday lecture, visit seymourcenter.ucsc.edu.

About the Author

Ryan Masters is an award-winning journalist with over a decade of experience reporting on both sides of the Monterey Bay. His primary beats at the Santa Cruz Sentinel include South County and higher education. Reach the author at rmasters@santacruzsentinel.com or follow Ryan on Twitter: @RyanMasters831.
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Developing a Fish Specialty Veterinary Hospital

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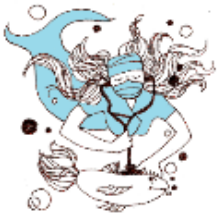
Ph: +1 (831) 346-6151
http://AVSNCA.com

Three years ago, in March 2013, we began operating our ambulatory aquatic veterinary clinic. A veterinary practice specializing primarily in fish, along with other aquatic animals, is an extreme rarity among the veterinary profession. Veterinary medicine is following in its counterpart human medicine path, with different specialties becoming more common. Your local vet is no longer a one stop shop for all your critter needs. Small vs. large animals, general vs. specialty and many more variations can now be found in your veterinary directory. But what about your fish? Don't they deserve the specialty care you can get for your cat or dog? Well, we agree with you 100%.

Aquatic Veterinary Services of Northern California opened the doors to its new fish hospital in January 2016. Increasing its ambulatory offerings to now include in-house procedures and hospital holding. Jessie Sanders, DVM, CertAqV, owner and chief veterinarian of Aquatic Veterinary Services, saw a need for our clients to have advanced treatment, and decided to set down roots in Santa Cruz, CA. The hospital shares its home with Santa Cruz Koi, a retail store tailored towards our main client base, koi owners.

So what goes into designing a specialty hospital for fish, especially larger fish like koi? Where a cat or a dog may have a kennel of its own, a sick fish, or a few, get their own private, heated tank. Starting at 250 gallons, each hospital tub is in complete quarantine from the tanks around it. Separate equipment keeps the spread of disease from occurring in the small space, an important consideration in a fish hospital. The tanks can be heated in order to promote faster healing for our surgical patients and any fish undergoing treatment for predator attacks. Our dedicated staff checks on the fish many times daily to note any changes in behavior or water quality.



Our hospital tanks need to be kept filtering 24/7/365 in order to maintain pristine water quality for our patients. We have several donated koi that are kept in the hospital permanently to keep the biological filtration running and provide companionship to any fish that come into the hospital unaccompanied. Koi, our most common patient type, need to have the company of other fish in their tanks to decrease their stress level. Fish are welcome to come with buddies of their own, since when renting the tank for any period of time, the whole setup comes as a package deal, not per fish. The fish's size will determine which of our tubs they will reside in for their stay. Prices range from $12-$20/day, with food included. Compare that to your average small animal hospital or kennel. What a bargain!

We have had lots of inquiries into holding whole ponds of fish for small pond projects, such as fixing leaks, adding water features or doing a long-forgotten cleaning. These projects require draining the pond for a few days minimum, so we provide fish wrangling (all safe with soft nets), transport to and from our facility, and a nice home for a few days to weeks, food included! We have already started to expand our facility in order to hold large ponds of larger fish, even if it's just a short visit.

Our other services now include in-house appointments and procedures. Owners looking to save themselves a bit of money can do the wrangling themselves and bring their fish right to us. We still offer our house calls if owners have difficulty or feel unsure about corralling their fish for the trip. One of our most practiced skills is catching fish, no matter how big the pond! With continuing our ambulatory service, we have added staff to our hospital in order to give all our patients the best care. Our hospital manager, Sara, who you will most likely end up talking to on the phone if you call, has been volunteering her time with us for over 2 years and has become an excellent fish assistant! Eventually, she

will be the first aquatic-only technician in private practice. While I am out on the road, she is here to look after our patients and other in-house fish.

In order to encourage fish keeping as a hobby, our hospital and store have become a showroom for different aquatic habitats. We have an amazing in-house pond that is approximately 600 gallons, built by Blazo Pond Services of Ben Lomond, CA, in our retail store and a small ½ wine barrel goldfish pond for those individuals living in small spaces. Our hospital reception area has several different tanks for different skill sets. From the basic goldfish tank to the more advanced saltwater tank and everything in between. Our goal is to make keeping fish a stress-free and enjoyable hobby no matter what the experience level of the owner.

Previously, our surgery service was limited to the equipment we could bring out on the road, but not anymore. Our new procedure suite was designed with only fish in mind. Plenty of water and drainage with all the advances of traditional small animal medicine. Be it a small bump removal or an intensive abdominal surgery, our staff is equipped to handle any critical need.

Overall, our hospital is a sick fish's dream come true. Sick fish in ponds with poor water quality can be whisked away to heal quickly in clean water. Fish with severe illness can be quarantined from the others in their pond in order to prevent the spread of disease. In our short three-year span, we have certainly seen the need for our advanced care and our clients are already taking advantage of it. We hope to advance aquatic medicine forward so more fish owners can have access to knowledgeable veterinary care and service.

For clients that live too far from our office and that have a new or sick fish in need of quarantine, we recommend that all owners have access to an emergency tank/pond/tub setup they can use on the occasion they need to quarantine a new or sick fish. It does not have to be overly fancy or complicated.

Separate filtration is a great feature to have, and several companies have all-in-one submersible filtration systems than can convert any size tub into a healthy koi home. If you have to take your quarantine system apart from time to time, add the filtration media (sponges, bioballs, etc.) to your main pond after thoroughly cleaning them in a dilute bleach solution and soaking in fresh water. Pre-starting your filters can make maintaining water quality in your hospital tank much easier. Remember that your quarantine tank needs to have separate equipment as well! Parasites can catch a ride on equipment, and possibly spread to your main pond if you do not disinfect it first. New fish need to wait in quarantine for 4-6 weeks minimum, depending on the water temperature, before they are deemed "safe" for transfer into the main pond. We have seen several instances where no quarantine protocol led to massive infections and die-offs. Remember that quarantining new or sick fish will save you lots of stress and cash in the long run, not to mention the lives of all of your fish!

And for clients we are unable to serve, we recommend they check out the American Association of Fish Veterinarians veterinary database at www.fishvets.org or the World Aquatic Veterinary Medical Association veterinary database at www.AquaVetMed.info.

New WAVMA goodies.
This style and many more available now.

AUTHOR'S INSTRUCTIONS

Instructions for Authors and Contributors

While any information relevant to aquatic veterinary medicine might be published, we particularly invite contributions for the following regular columns in *THE AQUATIC VETERINARIAN*:

Colleague's Connection

An article explaining why and how a veterinarian became interested in aquatic veterinary medicine and what that veterinarian has done in their aquatic veterinary career.

Peer-Reviewed Articles

Original research or review of any aquatic veterinary topic. Articles will be reviewed by 3 veterinarians and comments and changes referred back to the author prior to publication. The text for an article begins with an introductory section and then is organized under the following headings:

-Materials and Methods
-Results
-Discussion (conclusions and clinical relevance)
-References (cited in the text by superscript numbers in order of citation).

Clinical Cases

Clear description of a distinct clinical case or situation and how it was resolved. These may be submitted for peer-review. Begin with the signalment (species, age, sex, body weight or length) of the animal or animals, followed by a chronologic description of pertinent aspects of the diagnostic examination, treatment, and outcome, and end with a brief discussion.

Book Reviews

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

Publication Abstracts

Abstracts of published veterinary and scientific journals with full citation/reference (authors, date, title, and journal volume and page numbers – ½-1 page).

News

Brief synopsis or information about aquatic veterinary news published elsewhere. List original source of information.

Legislative & Regulatory Issues

Synopsis or description of emerging legislation or regulations with information on how to access further detailed information or a link to website.

Meetings and Continuing Education and Professional Development (CE&PD) Opportunities

Description or synopsis of upcoming aquatic veterinary or (veterinarian-relevant) non-veterinary in-person or on-line educational meetings noting the meeting title, dates, location, and contact person or website.

Jobs, Internships, Externships or Residencies

Description with specific contact information for veterinary student externships and post-graduate internships or residencies at private practices, institutions, universities or organizations. Description of available full or part-time employment for aquatic veterinarians, with contact information.

Advertising

See advertising rates on page 52.

Please send articles, clinical reports, or news items to the editor by the following submission dates:

Issue 1 – February 15 (published in March)
Issue 2 – May 15 (published in June)
Issue 3 – August 15 (published in September)
Issue 4 – November 15 (published in December)

All submissions should be in 10-point Arial font, single spaced. Submissions may be edited to fit the space available.

We can also use editors to proof-read submissions or review articles. Please contact the Editor if you are interested in assisting.

The World Aquatic Veterinary Medical Association also has opportunities for members to assist with committees. Contact any member of the Executive Board to volunteer to help.

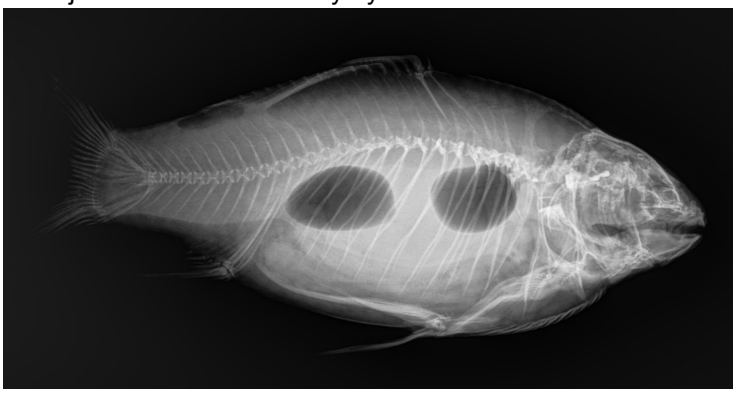
DO YOU HAVE A STORY TO TELL ABOUT HOW YOU BECAME INVOLVED WITH AQUATIC VETERINARY MEDICINE?

Send your article (<1,000 words) with pictures to AVNeditor@wavma.org.

Questions & Answers from the WAVMA Listserv (WAVMA_Members-L@wavma.org**)**

Goldfish X-ray

From: **Tom Roach** <tomjroach@gmail.com>
Subject: Re: Goldfish X-ray by Colin McDermott



I have one view only. This is the one fish I have; you saw videos of her and commented she looks bloated. She is 9 years old.
Tom Roach <tomjroach@gmail.com

Hello fellow fishy folks!

Here is a radiograph of a 9 year old blind goldfish with respiratory distress, improved with Baytril and a Dex injection given by the local small animal vet. The fish is near New Jersey and I have been giving what assistance I can remotely. Water quality, temperature, and environment otherwise are excellent.

On ultrasound the rDVM thought he might have seen a kidney issue, so I am thinking renal failure, possible neoplasia, interstitial inflammation/infection, or other/open for a diagnosis. The rDVM did not feel comfortable sticking the fish for a sample of the fluid in there.

The air bubble near the tail might be where the injection was given? And what do you make of the vertebrae behind the skull?

Any thoughts are much appreciated!

Jena Questen DVM, CertAqV
fish@drquesten.com
www.DrKoi.com:
Aquatic Veterinary Medicine Services.

Jena,

I'm right in line with your differentials. I'd really want to obtain a sample of the fluid and/or the kidney if I could!

Chad Harris, DVM
North Austin Animal Hospital
5608 Burnet Rd Austin, Tx 78756; 512-459-7676

Cyprinids have Weberian ossicles under the first three vertebrae that connect the cranial gas chamber to the inner ear. This allows the gas bladder to act as a sound amplifier to transmit sounds in the water to the ear. That is the unusual bone structure you see under the vertebrae.

The two chambers of the gas bladder seem farther apart than normal. The posterior kidney normally does hang down between the two chambers, so there may be some kidney swelling in that area displacing the gas bladder chambers.

The intestinal tract with ingesta is visible ventrally and the area above that does seem more dense than expected. This might be from mature gonads, or possibly from some neoplastic growth. If the gonads/mass were bilateral it could be displacing the caudal gas chamber, making them farther apart than normally seen.

There could be a bacterial infection of the kidney, which you might be able to diagnose with a needle aspirate and microscopic cytology exam and bacterial culture on an aspirated sample.

It might be possible to visualize protozoa on a cytology exam of the kidney sample. Here is information on a protozoa that causes kidney swelling:

"Hoferellosis carassii, or kidney bloater disease, is a disease of goldfish and other members of the genus Carassius. It is also known as kidney enlargement disease (KED), or polycystic kidney disease of goldfish. Recognized in Japan and Europe for many years, the disease was not reported in the United States until 1984, but is now common throughout the goldfish industry, particularly in pond-raised fish. The causative agent is a small protozoan parasite named *Hoferellus carassii* (formerly *Mitraspora cyprini*)."
http://www.petplace.com/article/fish/general/when-your-fish-is-sick/hoferellus-carassii-kidney-bloater

If the aspirated sample contained gonadal material, that would indicate it was enlarged reproductive organs, which can occur in females more often than males, but either gender can get gonadal sarcomas. Treatment in that case might be surgery. If the problem was egg retention and not a tumor, perhaps Ovaprim injections could be used to release the eggs in a female goldfish.

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office: 623-587-2935 | mobile: 602-568-1788 |
email: nsainterne@petsmart.com

Prenatal Ultrasound Dating in a Black Sea Bottlenose Dolphin

VA Semenov1, MN Danilova1, AY Shantyz2, LD Udovichenko3, AV Smyshnov4 and IV Osipova4
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2 Kuban State Agrarian University, 13 Kalinina St., Krasnodar, Krasnodar Region, 350044, Russia
3 "Ventsy-Zarya" Veterinary College, 25 Sovetskaya St., Ventsy vil., Gulkevichskiy District, Krasnodar Region, 352177, Russia
4 Municipal Health Care Facility "City Hospital", Gelendzhik, 353460 Krasnodar Region, Russia

Abstract

So far, occasional attempts to use ultrasound examination of the Black Sea bottlenose dolphin females (*Tursiops truncatus ponticus*) by general veterinary practitioners on the Black Sea coast has not always been successful, and have not yet been described in the literature. We were able to determine pregnancy during embryonic and fetal periods. During the second month of pregnancy we noted hyper-echoic structures of the embryo in the cavity of the chorion. In the third month of pregnancy the foetus and placenta were detectable. Dynamic differences in the size of the foetus' head and thorax were seen from the third to the twelfth month of pregnancy. Foetal development is characterized by the rapid growth of the foetus, differentiation of tissues and organs until birth.

Key Words: Gestation, embryo, foetus, Black Sea bottlenose dolphin, ultrasound examination/scanning.

Introduction

Pregnancy is a very important period of cetaceans' life, including those in captivity, particularly foetus growth and development. Pregnancy impacts eating habits of the animals, as well as their ability to participate in shows or scientific research. Hence, modern pregnancy testing and detecting its precise gestational age and course characteristics are becoming more and more vital (Ozharovskaya 1997, Shantyz 1999, Medvedev 2005).

Approximately 12±1 months were estimated as an average gestation period for bottlenose dolphins (Robeck, et al. 2001). The reproductive function of dolphins or any other mammals is regulated by a cooperative functioning of neurological and hormonal feedback mechanisms and involvement of the hypothalamic-pituitary-gonadal axis. The term generally refers to the hypothalamus, pituitary, and gonads (Aubin 2001). Once ovulation occurs, granulosa cells transform into large progesterone-secreting cells while thecal cells respectively convert into small luteal cells (Hendricks, 1991). Both hormones produced by the corpus luteum - progesterone and estrogen, the latter in the smaller extent though, reduce the level of Gonadotropin-releasing hormone from hypothalamus and thereby provide inhibition of luteinizing hormone as well as follicle-stimulating hormone. For that reason, until recently the level of plasma progesterone has been the most accepted criterion of detecting pregnancy in the female Black Sea bottlenose dolphins. Some authors consider this indicator as a reliable diagnostic criterion if the level of progesterone in the three successive tests with two-week intervals exceeds 3 ng/ml (Schroeder 1990, Robeck et al. 2001).

However, pseudo-pregnancy occurs for indeterminate reasons which can be numerous. In such a case, pregnancy can only be confirmed with the use of ultrasonography. Using ultrasound to monitor pregnancies in cetaceans in captivity provides valuable data on the morphology, development and well-being of the foetus, as well as his soundings of his head and chest for pregnancy in females, although these references require regulatory data (Williamson et al. 1990, Taverne 1991, Brook et al. 2001, Lacave et al. 2004, Robeck et al. 2015.).

So far, occasional attempts to use ultrasound examination in *Tursiops truncatus ponticus* by general veterinary practitioners on the Black Sea coast have not always successful and have not been described in the literature. The purpose of these studies was to identify pregnancy in females Black Sea bottlenose dolphin (*Tursiops truncatus ponticus* Barabash, 1940) using ultrasound and to study the dynamics of the linear dimensions of the head and thorax of the foetus depending on its duration.

Materials and Methods

Between 2004 and 2013 we detected 24 pregnancies in the Black sea bottlenose dolphins and did 106 researches on the base of various dolphinariums. Due to lack of experience in prenatal ultrasonography in the Black Sea bottlenose dolphins at the initial stage of the study, only some of the cases proved to be correct and veracious. For that reason, only 55 of them were included into the current study and went through the biometric processing.

The focus of this research was on pregnancy detection in the female Black Sea bottlenose dolphins via ultrasonography and dynamics examination of dorsoventral (upper-lower) cephalic and thoracic fetal dimensions in the sagittal plane at different stages of the gestation course. The head was measured according to the outlines of the bones at the widest section (Fig. 1) while the chest measuring included the soft tissue at the level of the the tip of the heart (Fig. 2). We expected these soundings of the head and the chest to have the same informative value as the biparietal diameter and thoracic diameter in transverse plane

(taken at the level of the heart), referred to by other scientists in previous studies of cetaceans (Williamson et al. 1990, Lacave et al. 2004, Robeck et al. 2015.).

The gestational age was estimated retrospectively from the delivery date. We examined 14 female Black sea bottlenose dolphins between the ages of 6.5 years and 20 years old; the body lengths varied between 240 and 275 cm and weights fluctuated from 172 to 283 kg in the period of absence of pregnancy or at its initial stage. The female dolphins remained in the water and were examined in lateral recumbency at the edge of the pool. The ultrasound examination was performed via the ultrasound machine SonoSite180 manufactured in the USA with the penetration depth of ultrasound waves up to 22 cm and Transducer Convex C60/5-2 MHz.

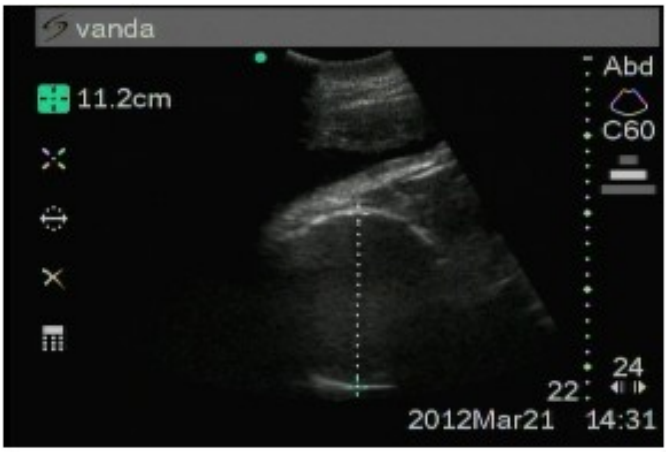

Figure 1. Ultrasonographic image of dorsoventral (upper-lower) cephalic foetal dimensions in a Black Sea Bottlenose dolphin.

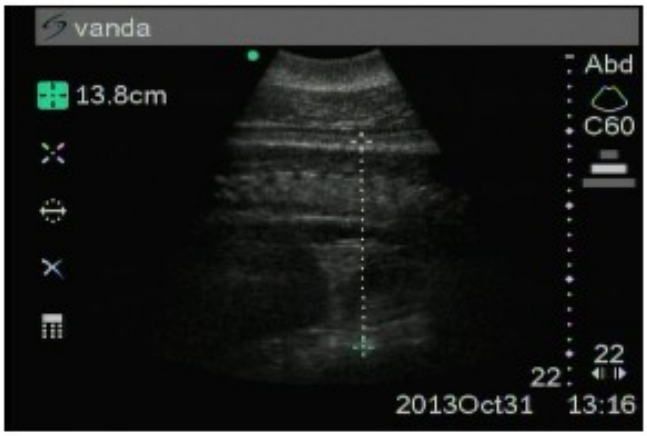

Figure 2. Ultrasonographic image of dorsoventral (upper-lower) thoracic foetal dimensions in a Black Sea Bottlenose dolphin.

Results

In our research we only studied pregnancies completed by vaginal birth. The level of plasma progesterone over a pregnancy period fluctuated between 1.70 ng/ml and 82.37 ng/ml. Foetal heartbeats were recorded in all pregnant dolphins as of the fifth month across the whole gestation course. The earliest gestation stage in a female bottlenose dolphin was detected via ultrasonography on the second month of its existence (Fig.3). The progesterone level in the blood comprised 7.58 ng/ml during this study. Ovoimplantation appeared in the uterine horn. The above said picture shows the hypo-echoic myometrium lined with hyper-echoic endometrium which bounds the chorion cavity where the hyper-echoic structure of the embryo is revealed in the ventral part.

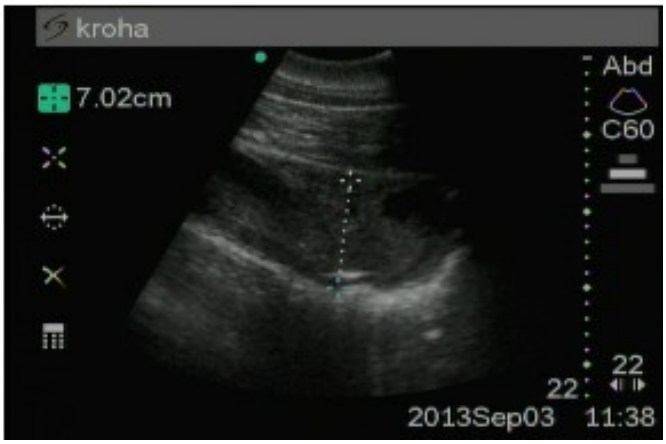

Figure 3. Second month of gestation in a Black Sea Bottlenose dolphin.

At the third month of the gestation course (Fig.4) we can see that the foetus has cephalic presentation and it is still small, being able to fit into the scanning sector; its length is only a little bit over 14 cm. We can easily see placenta formation, as well as shaping of the body, head and tail. The fetal head with the diameter of 3.04 cm (table 1) can be easily identified as a separate anatomical mass. Meantime, dorsoventral dimension of the forming chest is still smaller than the cephalic and only reaches 2.68 cm.

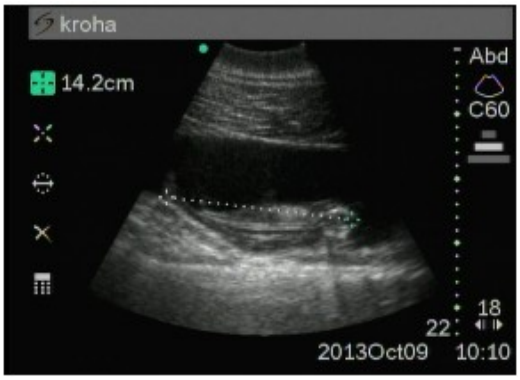

Figure 4. Third month of gestation in a Black Sea Bottlenose dolphin.

At the 4th month the foetus no longer fits the scanning sector and has to be examined in segments. At this age, cephalic dorsoventral dimension (3.9 ±0.12 cm) still exceeds dorsoventral dimension of the forming chest (3.7 ±0.11 cm).

At the 5th month we register a significant foetus growth, especially in the thorax whose dimension (5.3 ±0.01 cm) now exceeds cephalic (4.3 ±0.11 cm). The size of the chest is 43.2% greater in comparison to the previous, the fourth, month of pregnancy. Vertebral bodies, heart, abdominal aorta and caudal vena cava can be visually detected at this stage.

Both cephalic and thoracic foetal dimensions enlarge significantly from the 6th to the 9th months of gestational course: e.g. at the 6th month, on average, dorso-ventral dimension of the chest reaches 6,6±0,18 cm, while head dimension is 5,5±0,18 cm, as we can see in Table 1. At the 7th month we identified thorax growth up to 7.7 ±0.18 cm and cephalon up to 6.5 ±0.24 cm. During the 8th month thoracic diameter increased to 9.4 ± 040 cm, cephalic diameter - to 8.1 ± 0.37 cm. At the 9th month the chest growth equals to approximately 11,4 ±0,15 cm, while the head - 10,7±0,14 cm. Thereat, a monthly cephalic growth totaled to 32.1% as opposed to the size at the eighth month of gestation course and proved to be maximal throughout the whole pregnancy.

At the 10th month the chest keeps growing and reaches up to 12.8 ± 0.10 cm, while the head is 11.2 ± 0.30 cm. At the 11th month thoracic diameter of the foetus is 14.5 ± 0.14 cm, and cephalic diameter is 12.1 ± 0.23 cm. Furthermore, at the last month of gestation course (the 12th) the foetal head has grown while chest growth could not be identified. Size of the thorax has gone through insignificant changes (14.8 ±0.42 cm), while the cephalon size increases to 14.9 ±0.54 cm and effectively reaches thoracic dimensions.

Discussion

As it can be seen in the table, diameter of the foetal head at the 3rd and the 4th months is still slightly greater than the diameter of a forming chest, however between the 5th and the 11th months thoracic diameter exceeds cephalic diameter. Then, at the 12th month soundings of these foetal body parts equate and reach up to 15 cm. Thereat, the most significant increase of the foetal cephalic dimensions was identified at the 9th month, which was 32.1% greater as opposed to the previous month. However, maximal thoracic growth was detected at the 5th month and reached 43.2% in comparison to the previous, the fourth, month.

In the result of our research we estimated gestation dating in female Bottlenose dolphins using ultrasound scanning at embryonic and foetal stages and identified dynamic differences in cephalic and thoracic dimensions of the foetus between the third and the twelfth months of pregnancy. Use of ultrasound to monitor gestation of cetaceans in captivity provides valuable data of foetal morphology, development and well-being. Accountability of such parameters as thoracic and cephalic dimensions can play a significant role in gestation dating. Besides, dimensional estimation of head and chest are an important part of examining the foetus to monitor its proper development. For example, bony skeleton agenesis can lead to pulmonary hypoplasia which can respectively be the reason of perinatal mortality. On the contrary, minimised dimensions of the head, especially during full-term pregnancy, is often diagnosed with foetal growth restriction syndrome.

Thus, it becomes clear that the use of the ultrasonic diagnosis for pregnancy in the Black Sea bottlenose dolphins and actually is the most reliable in the first months of its occurrence. Although the presented data was obtained during the examination of a relatively small number of pregnant animals, at this stage of knowledge, they probably can be used as guidelines in the timing of pregnancy using ultrasound examination of the Black Sea dolphin females.

Acknowledgments

The authors would like to express our gratitude for professional advice and practical assistance to the State Veterinary Administration of the Krasnodar Region GBU "Gelendzik Veterinary Authority", Municipal Health Care facility "Birth Centre."

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*Table 1. Dynamics of changes in the dorsal-ventral dimensions of the head and thorax (± SE, cm) of the foetus during pregnancy in Black Sea bottlenose dolphins. (N = number of examined individuals; n = number of pregnancies studied; * - P <0.05; ** - P <0.01; *** - P <0.001 - significant difference between two pregnancies).*

Month of Pregnancy	Dorsoventral head sizes N=14, n=24		Dorsoventral thorax sizes N=14, n=24	
	The number of studies	**cm ± SE**	**The number of studies**	**cm ± SE**
3	1	3.04	1	2.68
4	2	3.9 ±0.12	2	3.7 ±0.11
5	2	4.3 ±0.11	2	5.3 ±0.01**
6	6	5.5 ±0.18**	6	6.6 ±0,18***
7	8	6.5 ±0.24**	8	7.7 ±018**
8	9	8.1 ±0.37 **	10	9.4 ±0.40 **
9	6	10.7 ±0.14 ***	6	11.4 ±0.15***
10	8	11.2 ±0.30	8	12.8 ±0.10***
11	9	12.1 ±0.23*	9	14.5 ±0.14***
12	4	14.9 ±0.54 **	3	14.8 ±0.42
Totals	55	-	55	-

Taxonomic Notes:

Bottlenose Dolphins in the Black Sea are recognized as a subspecies possessing morphological differences from Atlantic and Pacific populations (Barabasch-Nikiforov 1960, Geptner *et al.* 1976). The Black Sea population is also differentiated genetically from other bottlenose dolphin populations in the eastern and western Mediterranean and the northeastern Atlantic (Natoli *et al.* 2005).

The Black Sea Bottlenosed Dolphin is an endangered species on the IUCN redlist, and needs assistance in maintaining viable populations to continue this species:
http://www.iucnredlist.org/details/133714/0

For more information about Black Sea Bottlenose dolphins, see also:
http://blacksea-education.ru/dolphins.shtml

Australian Aquatic Animal Surveillance – Investigating Bonamiasis in native oysters in Southern Australia

Brett Herbert, Aquatic Pest and Health Policy Section, Australian Government Department of Agriculture and Water Resources

Farming of native flat oysters (*Ostrea angasi*) is expanding around Australia to diversify income streams for oyster farmers, reduce potential losses from diseases affecting other oyster species and re-seed old but depleted oyster beds. Strong domestic and international markets exist for native flat oysters, and shellfish industries in Victoria and South Australia are investigating re-establishing native oyster production to meet this demand. But this rapidly expanding industry faces a unique biosecurity issue that could threaten production.

Bonamia ostreae and *Bonamia exitiosa* are significant parasitic pathogens of oysters that cause high mortality rates and substantial economic losses to the oyster industry globally. The World Organisation for Animal Health (OIE) lists both pathogens as notifiable mollusc diseases.

Submerged, tethered oyster cages

In the early 1990s, a *Bonamia* sp. infection decimated experimental aquaculture of the native flat oyster and adjacent wild beds in Victoria. More recent surveys found *Bonamia* spp. in native flat oysters in Tasmania, Western Australia, New South Wales and South Australia. *Bonamia* sp. is present in Pacific oysters (*Crassostrea gigas*) in South Australia. Monitoring of apparently healthy native flat oysters since 2013 at Victorian aquaculture sites shows that *Bonamia* spp. are present at farm sites in Port Phillip Bay and Westernport Bay. After emergence of clinical disease in 2015, the CSIRO Australian Animal Health Laboratory completed in-depth testing using multiple techniques, which confirmed detection of *B. exitiosa* in some of the native flat oysters farmed at the sites. As a result, Australia notified the OIE of infection with *B. exitiosa* in January 2016.

Surveillance of *B. exitiosa* in southern Australia is vital to inform risk to aquaculture and restocking projects. While native flat oysters in most Victorian and South Australian farms are healthy, it is clear that infection with *Bonamia* spp. poses a substantial risk to production, especially given that the conditions that trigger clinical disease are unknown and no management techniques have been identified to minimise losses.

To address some of these issues, a project funded by the Fisheries Research and Development Corporation has commenced to identify the distribution and taxonomy of *Bonamia* spp. in Australia (particularly in southern Australia) and develop and test techniques to enable effective, accurate and sensitive identification of *Bonamia* spp. This information will assist in managing risks associated with emergence of clinical bonamiasis in Australia and minimise potential effects on aquaculture production. Research updates will be available through the Fisheries Research and Development Corporation's *Health highlights: Aquatic Animal Health Subprogram newsletter* (http://tinyurl.com/hy9zrba).

Adapted from Animal Health Surveillance Quarterly, 2016, 20(4): 6 (an open access publication).

The Angasi oyster (Ostrea angasi) also commonly known as flat oysters has had its population severely depleted due to dredging in the 1880s. Photo credit: Dr. Chris Gillies

From article:
http://www.abc.net.au/news/2016-01-06/angasi-oyster-reef-research-restoration/7068628

Taxonomy Chart from: https://en.wikipedia.org/wiki/Ostrea_angasi

Kingdom:	Animalia
Phylum:	Mollusca
Class:	Bivalvia
Order:	Ostreoida
Family:	Ostreidae
Genus:	*Ostrea*
Species:	***O. angasi***
Binomial name	
Ostrea angasi *Sowerby, 1871*	

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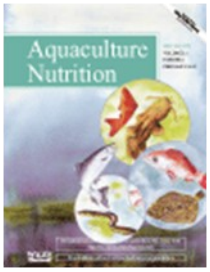

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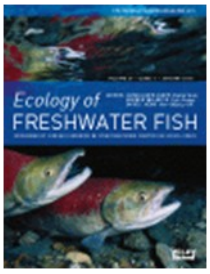

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AQUATIC VETERINARY ABSTRACTS
Compiled by David Scarfe

The Crucial Contribution of Veterinarians to Conservation Biology
Reading RP, DE Kenny & KT Fitzgerald (2013). Topics Compan. Anim. Med., 28(4):131–134.

Abstract

Conservation biology is a relatively new (began in the 1980s), value-based discipline predicated on the belief that biological diversity—from genes to populations to species to communities to ecosystems—is good and extinction is bad. Conservation biology grew from the recognition that the Earth has entered its sixth great extinction event, one that differs from previous great extinctions in that a single species—*Homo sapiens*—has caused this biodiversity crisis.

A diverse, interacting set of variables drive current extinctions. As such, to succeed, conservation efforts usually require broad-based, interdisciplinary approaches. Conservationists increasingly recognize the importance of contributions by veterinary science, among many other disciplines, to collaborative efforts aimed at stemming the loss of biodiversity. We argue that, to improve success rates, many wildlife conservation programs must incorporate veterinarians as part of an interdisciplinary team to assess and address problems.

Ideally, veterinarians who participate in conservation would receive specialized training and be willing to work as partners as part of a larger team of experts who effectively integrate their work rather than work independently (i.e., work as interdisciplinary, as opposed to multidisciplinary, teams, respectively). In our opinion, the most successful and productive projects involve interdisciplinary teams involving both biological and non-biological specialists. Some researchers hold multiple degrees in biology and veterinary medicine or the biological and social sciences. These experts can often offer unique insight. We see at least 3 major areas in which veterinarians can immediately offer great assistance to conservation efforts: (1) participation in wildlife capture and immobilization, (2) leadership or assistance in addressing wildlife health issues, and (3) leadership or assistance in addressing wildlife disease issues, including using wildlife as sentinels to identify new and emerging diseases or epidemics of old diseases. We cover each of these main topics in detail.

Scientific Opinion on the increased mortality events in Pacific oyster
EFSA Panel on Animal Health and Welfare (2010). *EFSA Journal*, 8(11):1894-1953.
Available online at:
http://www.efsa.europa.eu/en/scdocs/doc/1894.pdf

Abstract

In the summer of 2008 and 2009, severe mortality events in the cultured Pacific oyster (*Crassostrea gigas*) were reported from the main European producing countries. The European Commission requested EFSA to assess the relative importance of possible causes, including infectious agents with special focus on Ostreid herpesvirus 1 (OsHV-1) µvar and environmental factors. An assessment of the role of other mollusc species and the risks posed by transference of adult Pacific oysters from affected to unaffected areas was also requested. The available evidence suggests that OSHV-1 infection is a necessary cause but may not be a sufficient cause, the strain; OsHV-1 µvar seems to be dominant. An increase or a sudden change in the temperature was shown to be a risk factor. Husbandry practices such as introduction of non-certified possibly infected spat, movements and mixing of populations and age groups are also important risk factors. In addition to *C. gigas,* there is evidence of susceptibility to OsHV-1 in *Ostrea edulis, Pecten maximus* and *Ruditapes philippinarum*.

It was concluded that it is not safe to transfer oysters older than 18 months from affected areas to areas not affected. The panel recommended that to promote and preserve a high health status and in particular to prevent and/or control “increased mortality” measures are urgently needed to improve the general level of biosecurity in the oyster aquaculture industry in Europe. Furthermore to minimize the risk of subsequent transfer of infectious agents from hatcheries and wild-caught spat, there is a need to establish the health status of oyster spat at source. An assessment of the health status should include results of regular batch laboratory testing (at least in regards to OsHV-1, ref strain and µvar, Vibrio species, and histopathological examination) and epidemiological assessment. Improved diagnostic methods should be developed and clear criteria for viral strain differentiation taking in account genotype and epidemiological criteria are necessary.

Know Your Shellfish

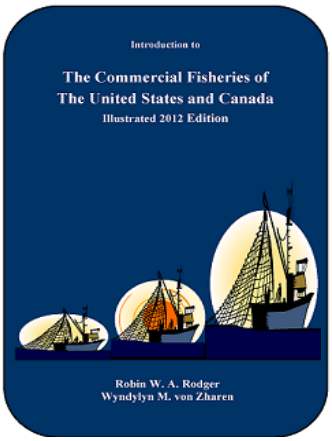
Iceland Scallop Bay Scallop Calico Scallop Sea Scallop

Scallops

About 300 species of scallop have been identified around the world, but only a few, like the sea scallop (*Placopecten magellanicus,* Family Pectinidae), are found in commercial quantities. The sea scallop accounts for about 99% of all scallop landings in North America and about 98% of the value. As a bivalve crustacean, the sea scallop exhibits some unique evolutionary characteristics. It can swim by "clapping" its shells together and it can see with dozens of rudimentary eyes located on the outer rim. Scallops have been photographed jumping over a fishing "dredge" or "rake" used to capture them.

Sea scallops are found on the Atlantic coast of North America from Newfoundland to Cape Hatteras. The catch is primarily harvested along the Georges Bank, off the Virginia/New Jersey coast, the Bay of Fundy (Digby), on the Scotian Shelf and in the Gulf of St. Lawrence. In the northern part of their habitat sea scallops prefer shallow water, about 60 feet deep, while their southern counterparts live in waters of 200 feet deep or more.

Scallops strain the water for minute plants and animals and prefer gravel or rock bottoms, where the current is reasonably swift and food availability is high. The prime landing season is from March through to November, though they can be harvested year-round. As much as 75 percent of the total catch is taken by off-shore scallop draggers on Georges Bank. These vessels drag the ocean bottom with large rakes or dredges. The inshore fishery uses smaller dredges.



Excerpted from **An Introduction to the Commercial Fisheries of the United States and Canada**, by R. Rodger and W. von Zharen. 2012. Used with permission.

US landings for sea scallop in 2008 were 24,286 tonnes (meats only), valued at $369.9 million. In addition, the US landed 59 tonnes of bay scallop in 2008, valued at $1.8 million and 170 tonnes of weathervane scallop (Alaska), valued at $2.4 million. Very small catches of calico scallop in the US add to these totals in some years.

In Canada, 2008 East Coast landings of sea scallop were 67,406 tonnes, valued at $92.2 million; there was also harvested 130 tonnes of Iceland scallops, valued at $446,000 from the Newfoundland Grand Banks; and BC landings of 13 tonnes of weathervane scallop, valued at $78,000.

Endangered Status: Not endangered.
Aquaculture: Sea scallop is now being farmed, with BC and Nova Scotia producing 285 tonnes in 2008, valued at $1.3 million. Various scallop species are extensively farmed in Japan and many other countries are now experimenting with scallop culture.

Additional information on scallop and other fishes and shellfishes can be found in ***The Commercial Fisheries of the United States and Canada.*** Also look for our new editions coming out soon.

See the book *The Commercial Fisheries of the United States and Canada* for more information on life style and habits of this fish.

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For additional information please see website:
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Clinical Report: Koi Lice (*Argulus*)

Authors
Ming Jun LIM, President, WAVMA Student Chapter, Murdoch University
Richmond LOH, The Fish Vet, Australia.

Signalment
Three ponds of koi (*Cyprinus carpio*) fish.

History
New fish acquired approximately 1 month previously. Fish showed clinical signs: flashing, and occasionally jumping out of the water.

Figure 1: Student chapter member using the Sera test kit to test the water quality.

Diagnostic examination

Water quality
Water was tested using the Sera test kit as shown in Figure 1, while results are shown in Table 1 below.

Gross pathology findings
In one fish, there were multiple lesions on the caudal fin, which were irregular, slightly raised, pinkish, and around 2-3mm in diameter (Figure 2). In another fish, its head had a focal, round (5mm in diameter), raised, and dark red (ulcerated) lesion (Figure 3).

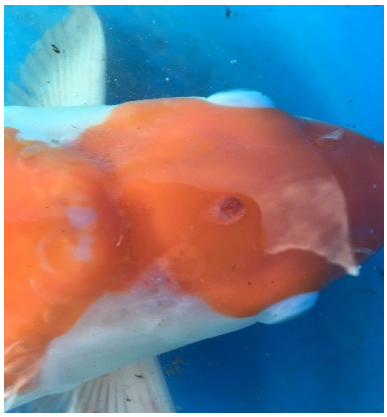

Figure 2: Multifocal raised epithelial lesions on the caudal fin of the fish.

Figure 3: Lesion on the head of the fish.

Table 1: Sera test kit water quality test results.

Pond number	1	2	3
Ammonia (mg/L)	0	0	0
Nitrites (mg/L)	0	0	0
Nitrates (mg/L)	10	10	0
pH ($-Log_{10}[H+]$)	7.5	7.5	7.5
Carbonate hardness (KH)	3 degrees (53.4 mg $CaCO_3$/L)	3 degrees (53.4 mg $CaCO_3$/L)	3 degrees (53.4 mg $CaCO_3$/L)
General hardness (GH)	> 23 degrees (>409 mg $CaCO_3$/L)	> 23 degrees (>409 mg $CaCO_3$/L)	not tested
Water temperature (°C)	21	21	21.5
Salinity (‰)	3	4	3
Total volume (kL)	14.4	4.8	2.7

Fish lice (*Argulus* sp.) were found on the animal, as shown in Figure 4.

Figure 4: Arrow points to extracted fish louse (Argulus).

A minimum of three fish were examined from each pond, as seen in Figure 5. There were no other significant findings grossly or microscopically (of gill biopsies and skin mucus scrapes sampled in Figures 6 and 7).

Figure 5: Sample fish, bowl is covered with netting to keep fish from jumping out during examination.

Figure 6: Student chapter member doing a gill clip for the gill biopsy.

Figure 7. Student chapter member doing a mucus smear for the skin scrape.

Aetiological diagnosis

Fish lice (Argulus sp.).

Treatment

Diflubenzuron was administered at 0.1 mg per litre of water, every ten days, for 4 treatments.

Outcome

The treatment was successful and a follow-up visit showed no signs of Argulus.

Discussion

Pimple-like raised lesions tend to be associated with anchor worms (Lernaea sp.), while flat lesions may are more suggestive of fish lice (*Argulus* sp.) or bacterial (*Aeromonas* sp., *Pseudomonas* sp.) infections. While the cause of lesions in fish can be many, the presence of lice on the fish, and the exclusion of other aetiological agents, confirmed that the lesions were due to *Argulus*. Fish lice cause irritation, and can be vectors for viral and bacterial diseases through their grazing activity on the skin of fish.

Due to not having a suitable fish-specific preparation of the diflubenzuron, a preparation for sheep (Coopers Magnum) was used off-label in this case. Since there had been no deaths, the environmental parameters were optimal, and skin lesions only mild, no additional medicines were necessary.

Argulus has a direct life cycle, thus infestations occur mostly via the introduction of new fish. To prevent this, incoming fish should be quarantined for a minimum period of 1 month, before mixing them with the current stock. The parasites may also spread through fomites. So, biosecurity measures should be in place, such as using dedicated equipment for the quarantine pond, and prophylactic saltwater dips for the new koi to eliminate any external parasites carried by the fish.

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Marine Biologists in Argentina Investigate Deaths of Endangered Dolphins
Published March 03, 2016
Fox News Latino

This photo released on Feb. 24, 2016 by Fundacion Mundo Marino, or Marine World Foundation, shows a dead dolphin on a beach in La Costa district in Buenos Aires province, Argentina. Marine biologists in Argentina say they are trying to understand why almost two dozen Franciscana dolphins recently appeared dead on a handful of beaches. The Franciscan is an endangered species, and only found waters off of Argentina, Uruguay and Brazil. (Fundacion Mundo Marino via AP)

BUENOS AIRES, Argentina (AP) – Marine biologists said that they are trying to understand why 23 endangered Franciscana dolphins have shown up dead on several beaches. Gloria Veira, spokeswoman for the Fundacion Mundo Marino, told The Associated Press that the animals were found last week. Veira said the majority had strange markings on their snouts. She said they were found on beaches south of Buenos Aires.

Specialists were struck by the number that died at the same time, Veira said. She said marine biologists so far believe climate change or large-scale fishing could be factors.

The Franciscan dolphin is an endangered species recognized by its long, slender beak. It is only found in waters off Argentina, Uruguay and Brazil.

Did you know?

WAVMA maintains an aquatic vet video library. Currently the videos cover a wide range of topics, including surgical procedures, diagnostic methods and guidance on how to be an aquatic veterinarian.

The videos can be accessed at:
http://www.wavma.org/WAVMAs-Aquatic-Vet-Video-Library

In addition, if you have a video that you would like to make available to other WAVMA members, kindly contact WebAdmin@wavma.org.

Scientists used high tech ultrasound imaging to study tiger shark reproduction
February 29, 2016

Researchers from the University of Miami's Rosenstiel School of Marine and Atmospheric Science and the University of New England used the same ultrasound imaging technology used by medical professionals on pregnant women to study the reproductive biology of female tiger sharks. The study offers a new technique to investigate the reproductive organs and determine the presence of embryos in sharks without having to sacrifice the animal first, which was commonly done in the past.

In the study, the research team performed in-water ultrasounds on live tiger sharks (*Galeocerdo cuvier*) and took blood samples for hormone analysis to determine the reproductive status of females at Tiger Beach in the Bahamas, a site known for its year-round abundance of tiger sharks. The new method allows researchers to determine if the female sharks at Tiger Beach were mature and pregnant.

Researchers use ultrasound probe to scan for pups on the abdomen of a tiger shark. Credit: Jim Abernethy

Populations of many migratory marine predators such as sharks are experiencing large declines across the globe and fishing aggregations of pregnant females can significantly impact the health of local and regional populations. Tiger Beach is located within the Bahamas Exclusive Economic Zone, where shark fishing has been prohibited since 2011. The relatively high abundance of tiger sharks in the Bahamas compared to the rest of the Caribbean where populations are much lower could be attributed in part to the protection of mature and gravid females in the Bahamas shark sanctuary.

More information: JA Sulikowski et al. Seasonal and life-stage variation in the reproductive ecology of a marine apex predator, the tiger shark Galeocerdo cuvier, at a protected female-dominated site, *Aquatic Biology* (2016). DOI: 10.3354/ab00648

Provided by: University of Miami

Read more at: http://phys.org/news/2016-02-scientists-high-tech-ultrasound-imaging.html#jCp
http://phys.org/news/2016-02-scientists-high-tech-ultrasound-imaging.html

Fish toxins at lowest levels in decades
By Joshua Emerson Smith
Jan. 30, 2016

Fish in today's oceans contain far lower levels of mercury, DDT and other toxins than at any time in the past four decades, according to a major review by scientists at the Scripps Institution of Oceanography in La Jolla.

The researchers looked at nearly 2,700 studies of pollutants found in fish samples taken from all over the world between 1969 and 2012. They saw steady, significant drops in the concentrations of a wide range of contaminants known to accumulate in fish — from about 50 percent for mercury to more than 90 percent for polychlorinated biphenyls, or PCBs.

But they also tempered the good news with a sobering reminder: Many fish in the wild still have pollutants at levels considered unsafe for frequent human consumption.

The report was published in the journal *PeerJ*, focused on five contaminants or classes of contaminants that are widespread in the oceans: chlordane, DDT, mercury, PCBs and polybrominated diphenyl ethers, or PBDEs.

See full story:
ttp://www.sandiegouniontribune.com/news/2016/jan/30/fish-toxins-pollutants-contaminants-scripps/

Discover core knowledge, skills & experience needed to become a WAVMA Certified Aquatic Veterinarian *(CertAqV)*

Did you know that WAVMA's ***CertAqV Program*** offers members the opportunity to become recognized and certified as having competency in 9 core areas deemed necessary to practice aquatic veterinary medicine and will be working with others on programs for recognizing highly specialized training?

More information is available at:
http://www.wavma.org/CertAqV-Pgm.

Reportable Aquatic Animal Diseases (UK)
First published: 16 May 2014
From: Department for Environment, Food & Rural Affairs and Centre for Environment, Fisheries and Aquaculture Science
Part of: Aquatic animal health and movements guides and Animal and plant health

Serious fish or shellfish diseases are called 'notifiable' because you must immediately report that you suspect or know about them to the Fish Health Inspectorate (FHI). You must tell FHI immediately if your fish or shellfish:

- could be infected with a notifiable disease (you must report it even if you only suspect an infection)
- are dying in larger numbers than normal

are affected by unusual deaths
If you know about or suspect a notifiable disease but don't report it you could be fined up to £5,000.

Notifiable fish diseases are:

- bacterial kidney disease (BKD)
- epizootic haematopoietic necrosis (EHN)
- Gyrodactylus salaris (GS)
- infectious haematopoietic necrosis (IHN)
- infectious salmon anaemia (ISA)
- koi herpesvirus disease (KHV)
- spring viraemia of carp (SVC)

viral haemorrhagic septicaemia (VHS)
Find out about notifiable fish diseases, the species affected and how to spot the symptoms:
Notifiable fish diseases (PDF, 974KB, 18 pages)

Notifiable crustacean diseases are:

- Taura syndrome
- yellow head disease
- white spot disease

Notifiable mollusc diseases are:
Bonamia exitiosa
Bonamia ostreae — see the guide to Bonamiosis (PDF, 106KB, 2 pages)
Perkinsus marinus — see the guide to Perkinsosis (PDF, 122KB, 4 pages)
Marteilia refringens — see the guide to Marteiliosis (PDF, 120KB, 3 pages)
Microcytos mackini — see the guide to Mikrocytosis (PDF, 89.4KB, 3 pages)

For more information, see:
https://www.gov.uk/guidance/report-serious-fish-or-shellfish-diseases

Anisakiasis
By Ingrid Koo, PhD
Updated January 14, 2016

Scared of sushi? The Anisakis nematode worm (*Anisakis simplex*) is a parasite that can cause infections in humans who enjoy eating raw fish. The Anisakis worm is 2 cm long and is sometimes coughed up after ingesting it in raw or undercooked fish.

Adult worms are found in the stomach of marine mammals, and their eggs are passed in the feces. After the larvae are hatched from the eggs, they are ingested by shellfish. Infected shellfish get eaten by fish and squid, where the larvae make their way into the muscle tissues. Ingestion of infected fish or squid by other fish allows spread of the infection. Ingestion by marine mammals is necessary for the larvae to develop into adult worms.

However, accidental human consumption of raw or undercooked marine fish that harbor the infected larvae can result in human infection or an allergic reaction, sometimes causing the individual to cough up the worms if swallowed. Penetration of the worms into the intestinal tissue causes anisakiasis, which causes nausea, vomiting and abdominal pain.

Who's at risk? People who eat raw or undercooked seafood. The parasite is found frequently in cod, haddock, fluke, pacific salmon, herring, flounder, and monkfish.

The US reports fewer than 10 diagnosed cases each year. In Japan, where raw fish is an integral part of the Japanese diet, more than 1000 cases have been reported each year.

Prognosis: Human infection is a dead end in the parasite's life cycle. The worms are usually eliminated or expelled from the intestines within 3 weeks of infection.

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 to see if CEPD certificates are provided.

Australian & New Zealand College of Veterinary Scientists - Chapter of Aquatic Animal Health
Science Week conference
7th and 8th July 2016
Website: anzcvs.org.au

Be at the forefront of aquatic veterinary sciences.

On behalf of the Aquatic Animal Health Chapter of the Australian and New Zealand College of Veterinary Scientists, we would like to invite you to register for this year's Science Week conference.

Science Week will be held at the usual venue, the QT Gold Coast, Surfers Paradise (qtgoldcoast.com.au) on the 7th and 8th July 2016.

For registration, Contact:
Aquatic Animal Health Chapter Science-Week Conveners.
Roger Chong (roger.chong@daf.qld.gov.au)
Richmond Loh (thefishvet@gmail.com)

For information about more meetings, go to:
http://www.wavma.org/Aquatic-Veterinary-Educational-Meetings-Conferences-Symposia-Workshops

2ND CONFERENCE OF FISH IMMUNOLOGY

June 26th – 30th, 2016
Holiday Inn, Bay
Portland, Maine

Latest and most important findings on the immunology of aquatic organisms will be shared with the most relevant researchers of the field, at this scientific congress of the International Society of Fish & Shellfish Immunology.

The conference will consist of plenary lectures, and oral and poster presentations covering a wide range of topics, including immunology, molecular biology and microbiology. Participation of undergraduate and postgraduate students and young researchers is encouraged. CLICK HERE to register.

ExoticsCon
August 27 - Sept 1, 2016
Portland, Oregon, USA

Submit a Proposal

Instructors, now's the time to submit your proposal! **DEADLINE: January 17**

Proposals will be considered for the following presentation types:

- Concurrent Session (15 - 20 Minutes)
- Master Class (60 Minutes)
- Master Class (120 Minutes)
- Lab (2 hour) • Lab (4 hour)
- Posters

CLICK TO **SUBMIT YOUR PROPOSAL HERE**

The 2nd Fisheries and Aquaculture Conference (FAC 2016)

August 24-26, 2016
Xi'an, China

We cordially invite you to submit or recommend papers to our conference through paper submission system. The main objective of FAC 2016 is to provide a platform for researchers, engineers and academicians from all over the world to present their research results and development activities in Fisheries and Aquaculture. For more details, please visit: www.engii.org/conf/FAC/2016Aug/

Conference Speakers
• Dr. Ali Aberoumand, Behbahan Khatam Alanbia University of Technology
Title: Comparison of freezing on fat, fatty acids, TBA and peroxide contents in fishes fillet in Iran
• Prof. Carin Napier, Durban University of Technology
Title: COPING STRATEGIES AND FOOD INTAKEOF RURAL AND URBAN COMMUNITIES IN KWAZULU NATAL: THE SOUTH AFRICAN CONTEXT
• Dr. Evgenia Dor, Newe Ya'ar Research Center
Title: Mutagenesis as a tool to improve agricultural crops
• Prof. KARIM SORKHEH, Shahid Chamran University of Ahvaz
• Prof. Magdy Mohamed Gaber, University of Temriazev Moscow
Title: Individual difference in Fish Nutrition research
• Prof. Wulf Diepenbrock, Martin-Luther-University of Halle-Wittenberg
Title: Energy Balancing in Cropping Systems

Submission Due: May 31, 2016
Conference: August 24-26, 2016

Email: agr_aug@engii.org
Tel: +86 156 2908 5792

AQUAVET® Alumni!

May 20-21, 2016
Virginia Beach, VA

40 YEARS !
2016 is our 40th year of aquatic veterinary medicine education!

We are planning a celebration and seminar on May 20th and 21st in connection with the 2016 IAAAM conference in Virginia Beach, VA.

IAAAM is planned for Sunday, May 22nd to Friday, May 27th. The icebreaker would be Saturday night, May 21st. Based on this we plan to have our conference Saturday, May 21st and the anniversary dinner on Friday night, May 20th. IAAAM will likely also have the wet labs after the conference this year, so you can do both things (AQUAVET® and IAAAM web labs). You'll be able to rent a hotel room for just Friday night for AQUAVET or rent it as part of the block for IAAAM.

I hope to also have this information on our webpage, which is part of the Cornell site.
www.aquavet.info

For more information and to keep in touch, please send your email and other updated contact information to aquavetmail@gmail.com.

Donald W. Stremme, V.M.D.
aquavetmail@gmail.com

P.S.—Spread the word to your classmates, since it's likely I don't have emails for many of them!

World Veterinary Congress to be an Annual Event

In its July conference call, the WVA Council approved the proposal from the Standing Committee for the World Veterinary Congress to hold the WVC as an annual event. Following the 33rd World Veterinary Congress that will take place in Inchon, Korea on 27-31st August 2017, the WVA Council agreed to hold the 34th WVC in Barcelona, Spain in April 2018. WVA and Korean Veterinary Medical Association already started to prepare the WVC in Korea in 2017. Please save the WVC 2017 date in your diary.

SeaWorld (3-4 weeks)

SeaWorld offers externships at each of its 3 locations. There is one common application where you rank each park. Externs get to work with the wild birds that are brought for rehabilitation, even surgery! You are required to give a small presentation to the veterinary staff on the last week of your rotation. Housing is not provided, but there are lots of hotels in the area, including an extended stay hotel with a small kitchenette for around $50/night.

The Marine Mammal Center (3-4 weeks)

Located in Sausalito, CA, the Marine Mammal Center is in the front-running for marine mammal rehabilitation and research. It is very seasonal, with more animals in the spring and summer. You will work with the veterinary staff 3-4 days per week, and then on crew, doing basic husbandry and feeding once or twice a week. Housing is provided with the veterinary intern and any other externs at one of the old fort houses nearby. It is highly recommended that you get a car for driving around. It is a beautiful area with lots of beach coast and hiking.

Mystic Aquarium

Mystic Aquarium in Mystic, CT, right near the coastal Rhode Island border, houses a large collection of marine mammals, fish and invertebrates. You work primarily with the veterinary intern, shadowing and assisting on procedures. You will also get very proficient in taking and processing analog radiographs. A presentation is required during this externship. No housing is provided, but you may want to ask if they know of anyone working at the aquarium who can provided you with a room for the time you are there. This is another rotation where you'll want a car to check out all the beaches nearby.

Georgia Aquarium

Atlanta, Georgia

Georgia Aquarium is one of the newest aquariums in the US. It has a new procedure suite and one of the most outstanding tanks in the world. Housing is not provided. You may not need a car since the aquarium is located in downtown Atlanta, GA.

Navy Marine Mammal Program (4 weeks)

The US Navy trains marine mammals to perform tasks underwater that cannot be performed by humans. This is a high priority for those interested in marine mammal medicine. This program is based in San Diego, CA and is highly competitive.

Vancouver Aquarium (2-4 weeks)

Located in Stanley Park of Vancouver, Canada, Vancouver Aquarium takes externs to work with their collection of mammals, birds, amphibians, reptiles and fish. A literature review project is required. Housing is not provided but they provide a guide on their website. Make sure your passport is up to date!

Georgia Sea Turtle Center (2-6 weeks)

The Georgia Sea Turtle Center is located on Jekyll Island along the southern coast of Georgia. They rehabilitate both sea turtles and native land turtles at their center. If turtles are your interest, this is one of the best facilities to participate in the latest research and rehabilitation techniques. A research project is required for non-4th year students that is financed by funding through your school. Housing available based on seasonality. A car is recommended.

National Aquarium (6-8 weeks)

Baltimore, MD

National Aquarium is located in Baltimore, MD and houses a large collection of fish, mammals, amphibians/reptiles and birds. This rotation gives hands-on experience with fish, birds, reptiles and amphibians. There is some work with mammals and other critters, but it is largely observational. Applications are accepted year round. A small presentation is required. No housing is available but there are lots of hotels in the area.

New England Aquarium (6-8 weeks)

Boston, MA

Located in Boston, MA, the New England Aquarium hosts a large collection of fish , birds, marine mammals and turtles. Their chief veterinarian, Dr. Charles Innis, is one of the most knowledgeable about cold stun in turtles and has made a significant contribution to researching their rehabilitation. Externs are required to prepare a case report and research paper with presentations for both. No housing is available, but there are lots of options nearby.

AQUATIC JOB OPPORTUNITIES

Crocodile Farm Veterinarian

Employer: Darwin, Northern Territory (Australia)
Application Deadline: June 5, 2016
Brief Description: This opportunity is to work with a progressive company managing Australia's largest *Crocodylus Porosus* farming operations throughout Northern Australia. The successful candidate will be expected to work with other specialists involved in animal welfare, water quality, WH&S and other R&D groups to ensure all aspects of our farming operations continue to develop and follow world's best practice. The ideal candidate will fulfil a leading role in the farm management team, including responsibility for continuous improvement of and implementation of animal health, biosecurity and welfare across all farms. The role will also be expected to assist in furthering the company's R&D programs. The successful candidate must have a veterinary degree that meets the qualifications for license to practice with the NT and QLD Veterinary Surgeon Boards
More Information & to Apply: ***Click here***.

Aquatic Veterinarian (Fish Health Specialist)

Employer: Washington Department of Fish & Wildlife - 3 locations - Wenatchee, Vancouver & Olympia, WA (USA)
Brief Description: Permanent full-time in the Fish Program, Science Division to routinely monitor and evaluate health of finfish, primarily at WDFW hatcheries but also at cooperative facilities, and in wild fish populations; recommend best possible treatments currently available to control disease; institute disease prevention programs; recommend modifications in rearing parameters and fish cultural practices to prevent disease; and perform applied research for improving the health of finfish at WDFW hatcheries. Incumbents will also prescribe, monitor and have oversight in the application of prescription medications for finfish at WDFW operated hatchery facilities and ensure compliance with FDA requirements for use of therapeutants, conduct surveillance for regulated pathogens to meet the requirements of the Salmonid Disease Control Policy and provide directions to Fish Program staff and aquaculturists regarding compliance with this Policy, and provide reports on status of the health of the fish to WDFW staff and staff at agencies, tribes, states and the general public.
More Information & to Apply: ***Click here***.

Post-Doctoral Fish Health Scientist

Employer: Center for Aquaculture Technologies, Souris, PEI (Canada)
Brief Description: To expand our research team with a focus on providing R&D support and professional services to the aquaculture industry we seek candidates with a background in applied animal health research with a strong working knowledge of cell culture methodologies and or parasitology. Candidates must have an understanding of the fish health market in general terms and have experience in and be prepared to carry out research using live fish of multiple species. They must be independent, creative thinkers with the ability to multi-task in a fast-paced environment. Excellent communication skills along with problem-solving expertise are essential.
More Information & to Apply: ***Click here***.

Position: Aquatic Veterinarian/Diagnostician

Employer: The Fish Group - Portland, Maine (USA)
Brief Description: This is a full-time position with a competitive salary and attractive benefits package for an immediate opening for an aquatic veterinarian/diagnostician to expand our team in Portland, Maine. The incumbent will perform disease diagnoses of aquatic animal diseases, including gross and histopathologic examination, bacterial and viral culture, and molecular assays on finfish, shellfish and crustaceans. This position will also provide veterinary support in the form of disease management and mitigation and biosecurity inspections in the field. This post reports to the Operations Director (or as assigned by the Director).
More Information & to Apply: ***Click here***.

Position: Aquatic Veterinarian (Veterinarian Specialist, General)

Employer: Fish and Aquatic Animal Programs, California Department of Fish and Wildlife (USA)
Brief Description: The Veterinarian Specialist position will serve as the expert for fish and aquatic animal programs related to fish hatcheries, provides veterinary medical support including diagnostic services and prescriptive treatment recommendations for disease control at 22 CDFW fish hatcheries, keeping client-patient veterinary records, providing veterinary feed directives, and design fish disease control programs as needed. The veterinary specialist will evaluate health of hatchery fish including broodstock, wild fish populations if considered for hatchery programs, and fish imported into California hatcheries for pathogens of concern and emerging diseases. The veterinary specialist will also serve as US Food and Drug Administration/California Veterinary Medical Board liaison for legal chemical and antibiotic use, for department hatcheries, and will plan, coordinate, and conduct research of aquatic animal diseases which have importance to hatchery production.
More Information & to Apply: ***Click here***

AQUATIC JOB OPPORTUNITIES

Position: Aquatic Veterinarian/Animal Welfare Officer (Finfish)
Employer: Elanco/Eli Lilly - Victoria, Prince Edward Island, Canada
Brief Description: Elanco Animal Health, a division of Eli Lilly Canada Inc., is seeking an aquatic veterinarian with clinical, research and animal welfare experience as a site veterinarian to ensure the proper care and husbandry of all animals on a PEI site, all R&D, and quality control of animals. As the local animal welfare (AW) officer the incumbent will to ensure the PEI site is in compliance with corporate and local regulatory animal welfare expectations, and will provide support for North American and global audits, as assigned.
More Information & to Apply: ***Click here***

Position: Resident Aquatic Veterinarian
Employer: Atlantis Paradise Island - Bahamas (Caribbean)
Brief Description: Atlantis is seeking a highly motivated and dedicated veterinarian to join our animal health team. This position reports directly to the Vice President, and helps provide the highest level of care to our entire animal collection. Experience in preventative medicine, nutrition, diagnostic imaging techniques, microbiology, quarantine techniques, rescue and rehabilitation, and proper husbandry are essential. Experience with research and manuscript publication is preferred. A good work ethic and ability to work as a part of a large, dynamic team is a must.
More Information & to Apply: ***Click here***

Associate Aquatic Veterinarian
Employer: Dallas World Aquarium - Dallas TX USA)
Brief Description: The Dallas World Aquarium is seeking a full-time veterinarian to provide quality and consistent veterinary care for a diverse collection of tropical/neotropical birds, fishes, reptiles, amphibians, invertebrates and mammals. Particularly seeking person with avian experience and/or interest in working one of the largest collections of neotropical birds. Responsible for emergency and routine medical care and preventive medicine for a diverse collection of aquatic and terrestrial animals, including internal medicine, surgery, anesthesia, radiology, and pathology.
More Information & to Apply: ***Click here***

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1/4 page (~3.5 x 4.5")	$30	$15

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Remember the Alamo!

And remember that our Annual General Meeting will be at the AVMA Convention in San Antonio, Texas on Saturday, 6 August 2016. Please contact the Meetings Committee Chair if you are planning to attend:

Julius Tepper cypcarpio@aol.com

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1. Sign-up online
2. By phone at 888-295-4523 (U.S. and Canada) or 972-349-5813 (International).
3. By mail by downloading a registration form.

For a program schedule, go to:

http://www.avmaconvention.org//avma2016//custom/images/CON_SAN16_FirstGlance_LR.pdf