



The



quatic

eterinarian

Volume 16, Number 2
Second Quarter, 2022



WHO ARE WE

MISSION

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.

OBJECTIVES

- A. To serve aquatic veterinary medicine practitioners by developing programs to support and promote our members, and the aquatic species and industries that they serve;
- B. To be an advocate for, develop guidance on, and promote the advancement of aquatic animal medicine within the veterinary profession and with associated industries, governments, non-governmental entities and members of the public;
- C. To develop and implement aquatic veterinary education programs, certifications and publications, including a credentialing process to recognize day-one competency in aquatic animal medicine;
- D. To foster and strengthen greater interactions among: aquatic veterinarians, related disciplines, veterinary allied and supportive groups and industries, governments and animal owners.

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.

© 2022 World Aquatic Veterinary Medical Association

ISSN 2329-5562



Executive Editor

Nick Saint-Erne (USA) TAVeditor@wavma.org

WAVMA Executive Board

Gillian Taylor (South Africa)
President@wavma.org
President

Bartolomeo Gorgoglione (USA)
President-Elect

Stephen Reichley (USA)
Immediate Past President

Devon Dublin (Japan/Guyana)
Secretary@wavma.org
Secretary

Wes Baumgartner (USA)
Treasurer@wavma.org
Treasurer

Nelly Isyagi (Africa/Middle East)
 Claudia Venegas (Americas)
 Stephen Pyecroft (Asia/Pacific)
 Dusan Palic (Europe)
Directors-at-Large

Non-voting Advisors:
 Laura Urdes (Romania)
Fellowship Advisory Council - Chair

Chris Walster (UK)
Administrators@WAVMA.org
Administrator

Past Presidents

Peter L. Merrill (USA)	2007
Ron Roberts (UK)	2008
Hugh Mitchell (USA)	2009
Fotini Athanassopoulou (Greece)	2010
Julius Tepper (USA)	2011
Dusan Palic (Germany)	2012
Mohamed Faisal (USA)	2013
Richmond Loh (Australia)	2014
Chris Walster (UK)	2015
Nick Saint-Erne (USA)	2016
Laura Urdes (Romania)	2017
David Scarfe (USA)	2018
Devon Dublin (Japan)	2019
Jena Questen (USA)	2020
Stephen Reichley (USA)	2021

Past Secretaries and Treasurers

Chris Walster, Secretary	2007-2013
Devon Dublin, Secretary	2014-2017
Stephen Reichley, Secretary	2018-2019
David Scarfe, Treasurer	2006-2007
Dusan Palic, Treasurer	2007-2010
Nick Saint-Erne, Treasurer	2011-2014, 2018-2020
Sharon Tiberio, Treasurer	2015-2017

Editorial 4
 Editor’s Note 4
 Advertising Rates 4

Executive Reports 5-7
 President’s Report 5
 Secretary’s Report 7
 Executive Board Responsibilities 6

Committee Reports 8-18
 Join a WAVMA Committee 8
 WAVMA Committees 8
 Meetings Committee 9
 Fellows Advisory Council 9
 WAVMA Fellows 9
 Credentialing Committee 10
 Certified Aquatic Veterinarians10-11
 WAVMA Student Chapters12
 New WAVMA Student Chapter:
 Makerere University, Kampala, Uganda..19
 John L. Pitts Aquatic Education Award Reports:
 Sampada Devkota 13
 Mural Sowlat 14
 Danielle Scott 16
 Jake Veilleux 18
 Annie K. Clift 20

Aquatic Vet News
 Public Comments Invited for Fish Practice
 Specialty Board Certification 17

Colleague’s Connection
 In Memorium:
 Dr. Sam Ridgway 22-23

Centerfold
 AQUAVET students during the fish anesthesia and surgery session, Photos by Nick Saint-Erne ...24-25

AQUAVET 1 Report
 by Nick Saint-Erne26-27

Grand Rounds Case 28-29
 Water Turtle Shell Disease 28
 Guppy Mortalities 29

Literature Review
 New Book: Fundamentals of Aquatic Veterinary Medicine30-31

Aquatic Veterinary CE & PD 32-36
 International Symposium of
 Fish Parasitology 32
 47th World Small Animal Veterinary Association Congress & XVIII FIAVAC Congress ... 33
 Antimicrobial Resistance Workshop 34
 AAFV 10th Anniversary Conference 35
 Health and Colony Management
 of Laboratory Fish 36
 Aquaculture Europe 2022 36

Sponsors
 WAVMA Shop 9
 AquaDocs Podcasts 15
 The Bug Company 31
 API Mars Fish Care 37
 ZooMed Laboratories 38

Cover Photo by Nick Saint-Erne:

Dr Shane Boylan (left) instructs AQUAVET 1 students on fish anesthesia and surgery, while Dr. Laurie Landeau (far right) takes photos. See pages 14-15 and 24-27.



Get The Fuller Picture From WAVMA WebCEPD Online Webinars

WAVMA’s WebCEPD Program - Webinars for Global Aquatic Veterinary Education

Given by leading experts, WAVMA’s real-time and recorded WebCEPD webinars are intended as educational programs on key aquatic veterinary issues and techniques to hone the knowledge and skills of aquatic veterinary students and practitioners.

<https://www.wavma.org/WebCEPD>

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? Find out more information online at: <http://www.wavma.org/CertAqV-Pgm>.

Editor’s Note

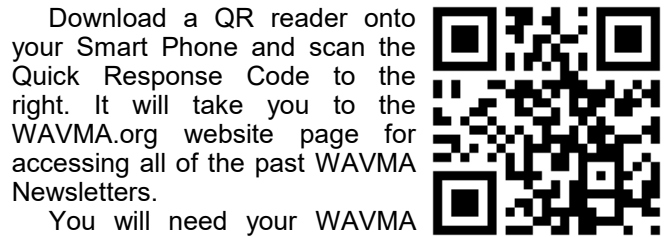
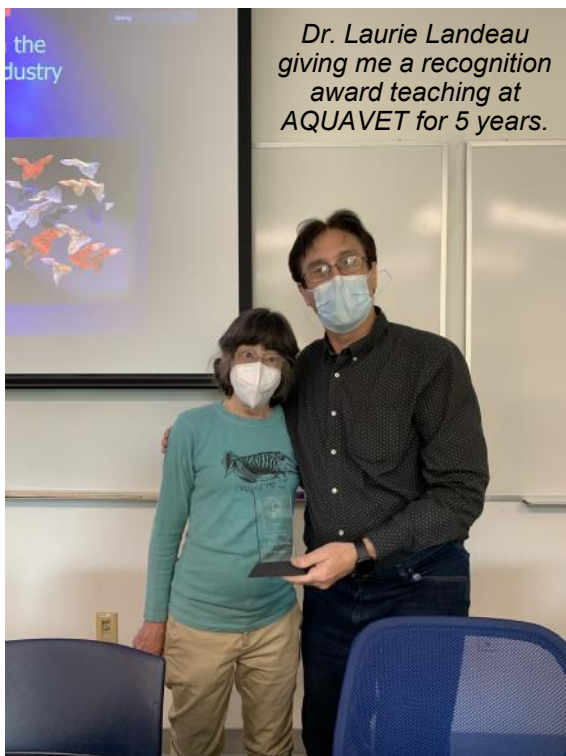
Summer is in full blaze now, with record high temperatures in many places around the world, but it is our normal 110-115°F heat here in Phoenix, Arizona. COVID-19 comes and goes, with new variants emerging, but life is beginning to get back to normal in many places. I will be attending an outdoor concert this evening (Loverboy, Styx and REO Speedwagon - yes, I am that old), and next month I will be going on an ocean cruise, so life seems to be almost normal, once more. Hopefully the rest of the world is recovering, too.

At the end of June, I had the honor of again lecturing to the veterinary students at the AQUAVET Program at Roger Williams University in Rhode Island. This program, sponsored by Cornell University School of Veterinary Medicine and directed by Don Stremme is in its 45th year. I was lucky enough to have attended AQUAVET as a vet student in 1982, and even luckier to be one of the many diverse teachers of this program. See pages 14-15 and 24-27 for more information about AQUAVET.

Vet students are able to attend externships again, many of which had been canceled in the past few years. We have student reports from the recipients of the Pitts Aquatic Educational Awards on pages 13-21. Please continue to support this WAVMA program with your donations!

Have a great summer, and stay healthy!

Nick Saint-Erne, DVM, CertAqV
Executive Editor
TAVeditor@wavma.org



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*.

The latest editions are available for download at <https://www.wavma.org/TAV-Current-Issues>.

Past years’ editions are available for download at <https://www.wavma.org/TAV-Archives>.



The Aquatic Veterinarian

The Quarterly Magazine of the World Aquatic Veterinary Medical Association

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

Advertising Rates (per issue)

	Commercial	Non-Profit
Full page (~7" x 9")	\$100	\$50
1/2 page (~7" x 4.5") or 1 column (3.5" x 9")	\$60	\$30
1/4 page (~3.5 x 4.5")	\$30	\$15

WAVMA Members

Free 1/8 page (business card size) advertisement
Contact TAVeditor@wavma.org for information on advertising and payment options.

President's Report

Dear WAVMA friends and colleagues,

What a rocketing 6 months this year has felt like. I think all of us can attest to the feeling of shaky ground beneath us, economic challenges, being pushed and pressed more than ever, and finding it hard to touch a place of "normal" than ever before. But despite this all, we continue to stand, dig deep, remain resilient and hopeful and find those connections and anchors within us.

I am deeply indebted to the amazing WAVMA EB team this year, that have truly continued to work hard, give so much of themselves towards our vision, and continue to build and support. As I shakily attempt to lead the team, they have filled the gaps, mentored and graciously forgiven all my tech ineptitude. A testimony to the calibre of people that lead our organization!

It has been a good 6 months so far for WAVMA, and I would like to commend our team for such groundbreaking achievements, listed below:

Our Education and Student committee chairs, Dr Bartolomeo Gorgoglione and Darbi Jones have done us proud, producing high-calibre webinars, which have been well attended and supported. We have established three new student chapters at Ankara University Turkey, St Matthew University Cayman Islands, and Makarere University Uganda - a testimony to our growing global influence - a role to take seriously and value.

Our certification program continues to thrive with growing numbers of CertAqV recipients and renewals and is truly one of a kind globally. Both ESC and CertAqV chairs have put in significant effort to fine-tune the programs so they continue to deliver quality products for WAVMA Members.

Our regional directors have worked hard to grow WAVMA's influence globally. With my personal vision, as a South African, to see aquatic health capacity grow significantly on my continent, it has been exciting to see the progress made by Dr Nelly Isyagi, our African regional director. WAVMA played a key role in the annual AFRAQ21 conference, hosting a side event to discuss key challenges such as diagnostic and veterinary/ para-veterinary capacity, legislative challenges, and technical support. In addition, WAVMA was able to sponsor the registration of two delegates to attend the conference. Small steps, but that is how the bigger picture comes together. Similarly, Dr Claudia Venegas is making WAVMA inroads in South America, increasing awareness of what we can offer and bring to developing regions of the world. As an established association, essentially with foundation in a developed nidus of the world, we carry the responsibility to share and mentor those that cannot easily access information; essentially we are all connected, and building one another builds up the whole.

We have endeavoured as an association to continue to work closely with the World Veterinary Association (WVA), in aligning ourselves with the global veteri-



nary priority areas of welfare, pharmaceutical stewardship, veterinary and para-veterinary education, and one health, from our aquatic standpoint. In this light, we have provided input into the WVA position statements on pain management in farm animals (aquaculture species) and one health education.

We have established a WAVMA task team with focus on one health, as our work environment speaks so closely to the topic with the close interface between water, host and pathogen. This will serve as a platform for all our members to share and collaborate. Close to my heart is the fact that we are stronger through sharing and networking, and I would encourage all of you to connect with the EB and broader membership; whether it be to offer suggestions, share on areas of research or study, your new publications, or to request help, let us know. EB and our association can only improve with input and feedback from our membership. We thank you for continued membership support and will continue to offer a quality service to you all.

A last few stand-out steps this year are our support of the very exciting ABVP fish specialty recognition initiative, as well as continued discussion and input into the BVA Policy on Wild caught fish.

In closing, I would like to also welcome our new EB members: Dr Devon Dublin, WAVMA President 2019, who is kindly serving again as WAVMA Secretary 2022; Darbi Jones, serving as co-chair of the ESC committee; and Dr John Griffioen, our coordinator for the John Pitts Education awards program. Many thanks for your willingness to serve. A big thankyou to our treasurer Dr Wes Baumgartner, who has managed our finances so well, and keeps the balance looking really healthy, to Dr Julius Tepper, who co-ordinates



all our meetings and conferences so well, Dr Stephen Reichley, our past-president, who has made sure I learnt the ropes and continues to offer sound and wise perspective, Dr Stephen Pyecroft who holds the Asia-Pacific region tightly, Dr Laura Urdes Chair of the Fellows committee and always ready to lend a hand and help, Dr Nick Saint-Erne, our editor of *The Aquatic Veterinarian*, and last but not least, our amazing administrator Dr Chris Walster, who honestly knows everything there is to know and holds our association together with years of experience.

The next few months of this year will be building into our first ever WAVMA Conference on the African continent, and speaks so well into my vision of developing that connection and mentoring association. Please come and join us. The conference will be a multi-day hybrid event 3-7th December 2022, in Pretoria, South Africa. You can attend from afar, but better still, come and see our beautiful continent; you'll meet amazing people, learn a lot, share a lot, get a good tan, and be able to take part in some fun post-conference events: visiting the Kruger Park, a One-Health Wildlife experience at the University of Pretoria Hans Hoësin Wildlife Research Centre, come on a Justin Bonello Wild Coast Adventure, or slackpack the Whale Trail. Visit the conference website at:

www.wavma2022.co.za

Registration and abstract submission to open soon. It has been an honour to stand as your President so far. Despite my minimalistic administrative skills, we have had a great year already and achieved a lot, and I am so excited about the last few months leading up to the conference where we hope to end off with a bang!

I wish you all health, resilience, hope and may you all continue to make waves wherever you are.

Dr Gillian Taylor
WAVMA President 2022
President@wavma.org

Executive Board Responsibilities

The WAVMA Executive Board consists of the President, Immediate-Past President, President-Elect, Secretary, Treasurer and Directors. The Executive Board will provide oversight and approve all fiscal and administrative activities of WAVMA and its committees, programs and services in accord with the Bylaws, and facilitates the development and implementation of WAVMA programs.

The President will: Schedule, draft agendas and preside over the Executive Board meetings; Monitor and facilitate implementation of all active WAVMA and Committee programs, services and other initiatives; serve on the Budget Committee; Provide an update of WAVMA activities for the association's quarterly publication; Work with the Meetings Committee to finalize and implement the WAVMA Annual General Meeting; Preside over the WAVMA Annual General Meeting.

The President-Elect will: Assume the President's responsibilities in the absence of the President; Serve as a member of the Budget Committee; Identify at least one new WAVMA program or initiative to implement during his/her 3-year tenure; Assist in facilitating and implementing active WAVMA programs and initiatives during his/her 3-year tenure;

The Immediate Past-President will: Assume the President's responsibilities in the absence of the President and President-Elect; Assist the President-Elect and other Board members in developing or implementing new or existing WAVMA initiatives and programs.

The Secretary will: Serve as the primary WAVMA point of contact for the public; Inform members of WAVMA programs & initiatives; Assist the developments and distribution of WAVMA official correspondence; Serve as Chair of the Communications Committee;

The Treasurer will: Maintain all WAVMA bank accounts and bookkeeping, receive all payments, and pay all approved expenses; Chair the Budget Committee and facilitate the development of an annual budget

Directors will: Represent individual WAVMA member's general interests in their geographical regions.

Secretary's Report

I am happy to report that the Executive Board, under the presidency of Dr. Gillian Taylor and with valuable contributions from all members of the board, has been charting a progressive course thus far as we reach the halfway mark of its mandate in 2022. Our intention is to continue working assiduously to bring more visibility to WAVMA and its work in promoting aquatic veterinary medicine, and continue to look for and create new opportunities and benefits for all members.

We continue to see new members signing up, an indication of the important role that WAVMA is continuing to play. I thank all of you that have renewed your membership for this year and the new members that have signed up with us. I am particularly pleased to report that we continue to see interest in the CertAqV program, which is by far the most popular benefit of WAVMA, where individuals become certified with day-one competency in Aquatic Veterinary Medicine. I congratulate those that have successfully completed the process in the first half of the year. If you may be considering this or intend to embark on the process, more details are available at:

<http://www.wavma.org/CertAqV-Pgm>.

Veterinary students continue to express an interest in pursuing a career in aquatic veterinary medicine and WAVMA will continue to support their capacity building in this regard. The work of the Education and Students Committee under the leadership of Dr. Bartolomeo Gorgoglione needs to be highlighted. One way of supporting the progress of students is through the John L. Pitts Aquatic Veterinary Education Awards Program. More about the scholarship can be found at <http://www.wavma.org/scholarships>. In addition, WAVMA continues to support the work of the International Veterinary Students Association.

Progress is being made in relation to WAVMA's 2022 Conference and Annual General Meeting to be held in December 2022 in South Africa. This event will provide a framework for discussion and reflection on the role of veterinarians in continuing to foster the sustainable development of worldwide aquaculture and ornamental fish industries, with a special focus on development and options in the African region.

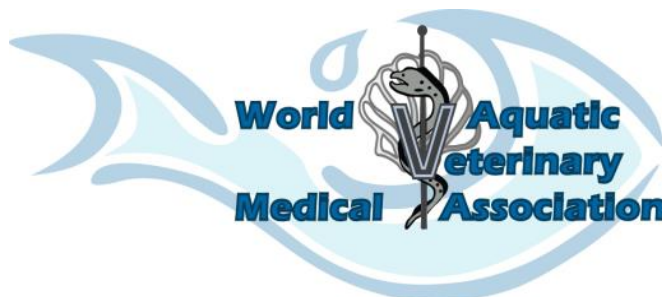
WAVMA continues to collaborate with international organizations such as FVS, WSAVA and WVA. WAVMA will be fielding talks on various themes on aquatic medicine at the World Small Animal Veterinary Association (WSAVA) Congress to be held in Lima, Peru from October 28-31, 2022. More information can be found here <https://wsava2022.com/>. WAVMA members wishing to attend this congress benefit from a special member rate. We continue to explore other avenues that would ultimately bring added benefits to all WAVMA members in other organizations.



As secretary I am also tasked with chairing the Communications Committee. I am please to announce that we will be revitalizing the WAVMA bulletin which will be sent out monthly and will provide a source of information between the TAV editions. There will be a special focus on One Health due to the changing times we live in and the importance of this approach to solving the issues that we are faced with currently. If you wish to contribute to the bulletin, feel free to reach out to our administrator Dr. Chris Walster, our president Dr. Gillian Taylor or myself.

We remain committed to serving you through the second half of the year and appreciate you informing us of ways in which we can serve you better.

Devon Dublin, PhD, DMVZ, MSc. CertAqV
 WAVMA Secretary
 Governance Coordinator
 WWF-Guianas
 2-37-17 Midorigaoka
 Kushiro, Hokkaido,
 085-0814, Japan
Secretary@wavma.org



Join A WAVMA Committee

All of the great programs and features you get from WAVMA membership are provided by volunteers. We are always looking for more helpers, whether veterinarians, veterinary students or veterinary nurses, to join us on the committees. If you are not interested in running for office, but would like to provide your input and guide the future of WAVMA, join one of our committees (no previous experience necessary!). See a list of our committees on page 8. Contact our Secretary or the committee chair for more information about the committee and the dates of the next meeting (also done via web conference). All are Welcome!

Join a WAVMA Committee today!



**TO SUPPORT FUTURE STUDENT
 SCHOLARSHIPS, PLEASE MAKE
 A DONATION TODAY
 TO THE SCHOLARSHIP FUND!**

[WWW.WAVMA.ORG/
 SCHOLARSHIPS.](http://www.wavma.org/scholarships)

The Aquatic Veterinarian is meant to be read as a 2-page spread (like a paper magazine!). To view it this way on your computer, open the pdf document using Adobe Acrobat or Adobe Reader, then go to the menu bar at the top of the computer screen and click on View, then Page Display, then Two Page View. That will allow you to scroll through the issue seeing the cover page by itself first, followed by two pages side by side for the rest of the issue. Doing this, you will be able to see the Centerfold picture in all its ginormous glory!

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 Secretary.

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: Wes Baumgartner, 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: Devon Dublin, Secretary@wavma.org

Credentialing Committee

This Committee oversees and administers the Cert-AqV Program for credentialing aquatic veterinary practitioners, and evaluates aquatic veterinary educational programs useful to members.

Chair: Matthijs Metselaar CertAqV-Admin@wavma.org

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 members and the organization.

Chair: Chris Walster, Administrators@WAVMA.org

Education & Student Committee

This Committee facilitates networking between student members and helps development of educational programs and services.

Chair: Bartolomeo Gorgoglione, BartGorg@msu.edu

Meeting Committee

The meetings schedule for 2022 continues to progress nicely, with events around the world. WAVMA has made a strong commitment to investing in the International Veterinary Student Association as a co-sponsor of the 2022 IVSA Live conference, which took place July 17-27 in Sao Paolo, Brazil. Laura Urdes and Devon Dublin attended and gave presentations. We had a booth there to allow for further one-on-one interactions with the students attending.

After that, the AVMA Convention will take place July 29–August 2, 2022 in Philadelphia, Pennsylvania, USA. WAVMA will have a booth setup with information available to all participants in the Exhibit Hall. Jessie Sanders will attend the booth.

Next on our schedule is ISAAH9, the once every 4-year event organized by the Fish Health Section of the American Fisheries Society, to take place from Sept. 04-08, 2022 in Santiago, Chile. WAVMA is collaborating with the American Association of Fish Veterinarians to organize a day-long series of talks on Monday, Sept. 05. Stephen Reichley and Claudia Venegas will be attending, along with several other WAVMA members who will be presenting on the targeted topic of Columnaris Disease.

From Oct. 29-31, 2022, the World Small Animal Veterinary Association will hold its Congress in Lima, Peru. As a co-sponsor of this annual event, WAVMA will again have a dedicated schedule of aquatic talks presented by Ladislav Novotny and myself.

To end the meetings calendar, plans are moving forward for the WAVMA Conference and Annual General Meeting, including KoiPrax4, to be held in Pretoria, South Africa the first week of December 2022. More details to follow in the coming weeks.

Julius M. Tepper, DVM, CertAqV
 Meetings Committee Chair

The Aquatic Veterinarian is meant to be read as a 2-page spread (like a paper magazine!). To view it this way on your computer, open the pdf document using Adobe Acrobat or Adobe Reader, then go to the menu bar at the top of the computer screen and click on View, then Page Display, then Two Page View. Adjust the size on your screen so you can see both pages side by side.

Make sure that the first page is viewed by itself. That will allow you to scroll through the issue seeing the cover page by itself first, followed by two pages side by side for the rest of the issue. Doing this, you will be able to see the Centerfold in all its ginormous glory!

Fellows Advisory Council

A WAVMA Fellow is someone who has conferred on them the honorific: *WAVMA Distinguished Fellow*. The Fellows Advisory Council is composed of WAVMA Distinguished Fellows who are current WAVMA members and who wish to contribute to the development of WAVMA. The Chair of the Fellows Committee will be the Fellows Representative to the Executive Board.

The Fellows Nomination Subcommittee (FNS) is a subcommittee of FC and evaluates applications for the WAVMA Distinguished Fellow and forwards a recommendation for a WAVMA Distinguished Fellow to the EB. The 2022 Distinguished Fellow will be announced at the Annual General Meeting.

Current Distinguished Fellows are:

Peter Merrill (2012)
 Ronald Roberts (2012)
 David Scarfe (2012)
 Julius Tepper (2012)
 Christopher Walster (2012)
 Grace Karreman (2013)
 Marian McLoughlin (2013)
 Dusan Palic (2013)
 Mohamed Faisal (2016)
 Nicholas Saint-Erne (2017)
 Richmond Loh (2018)
 Laura Urdes (2019)
 Devon Dublin (2020)
 Gregory Lewbart (2021)

A two day-meeting of WAVMA Board members, Fellows and invited guests will be held at the WAVMA AGM at the Faculty of Veterinary Science, University of Pretoria, to discuss strategic matters.

Laura Urdes, PhD DVM CertAqV
 Fellows Advisory Council Chair

WAVMA Shop

A number of WAVMA branded items
 (including shirts, mugs, caps) are available
 at the WAVMA Store. Get yours today!



Go to: <http://www.wavma.org/Shop>

Credentialing Committee

The WAVMA Aquatic Veterinarian Certification Program identifies the core competency or subject matter areas needed to practice aquatic veterinary medicine, and recognizes those veterinarians who have acquired the necessary knowledge, skills and experience (KSE) from a variety of sources, in the following 9 core subject matter areas:

1. Aquatic Environment and Life Support Systems
2. Taxonomy, Anatomy and Physiology
3. Husbandry and Industries
4. Pathobiology and Epidemiology of Aquatic Animal Diseases
5. Diagnostics and Treatment of Aquatic Animal Diseases
6. Clinical Veterinary Experience and Client Communications
7. Public Health, Zoonotics and Seafood Safety
8. Legislation, Regulations, and Policies
9. Principles of Aquatic Animal Welfare

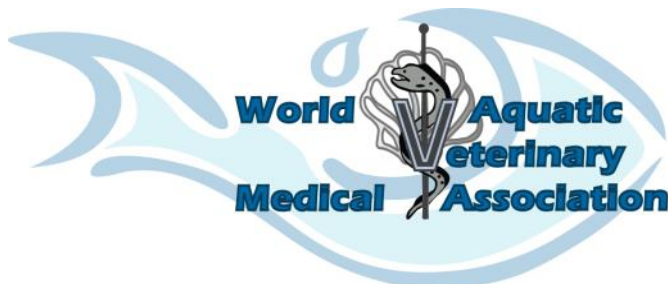
For CertAqV Program Description [Click here](#) to download, or go to WAVMA.org/CertAqV-Pgm.

Individuals who desire to participate in the WAVMA CertAqV Credentialing Program will first need to register and pay the US\$250 administrative fee. When registering you will select a mentor to assist and guide you through the requirements. After you have registered, you will receive an e-mail on how to download a document to record where you have obtained sufficient KSEs (knowledge, skills and experience/education) in each of the 9 modules or subject areas. You have up to 2 years to complete these.

When your mentor is satisfied you have sufficient KSE credits, he/she will request the WAVMA Credentialing Committee to evaluate these. Once the Committee and the WAVMA Executive Board have evaluated these and are satisfied you meet all requirements, you will be notified and mailed a certificate suitable for framing and display.

If you have questions about the Certification process, please send me an email.

Dr. Matthijs Metselaar DVM PhD CertAqV MRCVS
Credentialing Committee Chair
CertAqV-Admin@wavma.org



Certified Aquatic Veterinarians

Jessica Allen	USA
June Ang	Singapore
Nimrod Arad	USA
Brenda Arras	USA
Farah Gonul Aydin	Turkey
Sarah Balik	USA
Madison Barnes	St. Kitts & Nevis
Michelle Barnett	USA
Christa Barrett	USA
Heather Barron	USA
Giana Bastos-Gomes	Hong Kong
Mariah Beck	USA
Trista Becker	USA
Jenice Bell	USA
Heather Bjornebo	USA
James Bogan	USA
Pierre-Marie Boitard	France
Serena Brenner	USA
Erika Brigante	St. Kitts & Nevis
Tessa Brown	USA
Todd Cecil	USA
Bryony Chetwynd-Glover	UK
Prakan Chiarahkhongman	Thailand
Dondrae Coble	USA
Michael Corcoran	USA
Emily Cornwell	USA
Galaxia Cortes-Hinojosa	Chile
Rebecca Crawford	St. Kitts & Nevis
Rubén López Crespo	Mexico
Charles Cummings	USA
Nadav Davidovich	Israel
Manuel De la Riva Fraga	Spain
Darren Docherty	UK
Simon Doherty	UK
Devon Dublin	Japan
Michael Dutton	
Jacqueline Elliott	USA
Ashley Emanuele	USA
Azureen Erdman	USA
Antonella Fabrissin	Italy
Mohamed Faisal	USA
Erika First	USA
Lindsay Francis	
Ari Fustukjian	USA
Erika Gibson	USA
Danielle Godard	USA
Giana Gomes	Hong Kong
Christopher Good	USA
Bartolomeo Gorgoglione	USA
Krystan Grant	USA
John Griffioen	USA
Miguel Grilo	Portugal
Stephanie Grimmett	UK
Katharina Hagen-Frei	Switzerland
Alex Hall	
Katharine Haussman	USA
Orachun Hayakijkosol	Australia

Certified Aquatic Veterinarians

Eileen Henderson	USA
Chelsea Hester	USA
Nora Hickey	USA
Karlee Hirakis	Australia
Kelsey Hoag	USA
John Howe	USA
Dr Huynh	
Kerryn Illes	New Zealand
Leslie Jarrell	USA
Jimmy Johnson	USA
Kelsey Johnson	USA
Sharmie Johnson	USA
Kasper Jorgensen	Denmark
Brian Joseph	Canada
Hali Jungers	USA
Parinda Kamchum	Thailand
Fritz Karbe	Germany
Sherri Kasper	USA
Elizabeth Kaufman	Israel
Denyse Khor	Singapore
Amy Kizer	USA
Jessica Koppien-Fox	USA
Jack Kottwitz	USA
Lana Krol	USA
Diya Lake	
Elizabeth Leuchte	UK
Sarah Lietzke	USA
Jan Linkenhoker	USA
Eric Littman	USA
Richard Lloyd	UK
Richmond Loh	Australia
Ruben Arturo Lopez Crespo	Mexico
Jordi Lopez Ramon	Spain
Amber Lum	USA
Adolf Maas	USA
Raphael Malbrue	USA
Paul Manensis	Canada
David Marancik	Grenada
Victoria Maroun	St. Kitts & Nevis
Laura Martinelli	USA
Robert Martinez	USA
Alexandra Mason	USA
Colin McDermott	USA
Alicia McLaughlin	USA
Larissa Menke	
Matthijs Metselaar	UK
Sonja Miles	UK
Tim Miller-Morgan	USA
Haitham Mohammed	Egypt
Alissa Mones	USA
Danny Morick	Israel
Lucie Nedved	Australia
Ross Neethling	UK
Jenifer Nix	USA
Sally Nofs	USA
Ladislav Novotny	Czech
Massimo Orioles Italy	
Dušan Palić	Germany
Brian Palmeiro	USA
Christine Parker-Graham	USA

Lily Parkinson	USA
Chris Payne	USA
Melanie Peel	USA
Ayanna Phillips	Trinidad & Tobago
Maximillian Polyaki	
Ashley Powell	USA
Jena Questen	USA
Eva Quijano Cardé	USA
Janis Raines	USA
Atisara Rangsichol	Thailand
Zachary Ready	USA
Aimee Reed	USA
Stephen Reichley	USA
Nuno Ribeiro	Portugal
Camille Richie	USA
Julianne Richard	USA
Patinan Rookkachard	Thailand
Komsin Sahatrakul	Singapore
Nick Saint-Erne	USA
Sonja Saksida	
Jessie Sanders	USA
Sasha Saugh	South Africa
David Scarfe	USA
Neha Shah	India
Khalid Shahin	UK
Galit Sharon	Israel
John Shelley	USA
Chris Shirkey	USA
Constance Silbernagel	USA
Melissa Singletary	USA
Esteban Soto	USA
Brandon Spolander	South Africa
Elizabeth St. Germaine	USA
Brittany Stevens	USA
Chairat Sumgorthong	Thailand
Win Surachetpong	Thailand
Tanatporn Tantiveerakul	Thailand
Gillian Taylor	South Africa
Alissa Tepedino	
Julius Tepper	USA
Sharon Tiberio	USA
Miranda Torkelson	USA
Norrapat Towanabut	Thailand
Alexandra Troiano	
Laura Urdes	Romania
Greta Van de Sompel	Belgium
Claudia Venegas	Chile
Jelena Vukcevic	
Zachary Waddington	Canada
Sarah Wahlstrom	USA
Chris Walster	UK
Scott Weber	USA
Marcus Webster	USA
Trista Welsh	USA
Michael Wenninger	USA
Peter Werkman*	Holland
David Wilbur	USA
Sarah Wilson	USA
Howard Wong	Hong Kong
Sarah Wright	USA
Taylor Yaw	USA
Irene Yen	USA

To initiate a new Student Chapter, download the [WAVMA Student Chapter Guidelines](#)

A Spanish version of the Student Chapter Guidelines can be [downloaded from the WAVMA website](#).

PROGRAMS AVAILABLE TO STUDENT CHAPTERS:

- Assistance in organizing and promoting Chapter programs and activities.
- Access to recorded webinars and live web-based presentations from experts around the world.
- Low annual WAVMA Student Membership (\$25) - 50% Chapter member's dues may be available to support Chapter-organized activities.
- Reduced rate (50% off) WAVMA Full Membership the year after graduation.
- John L. Pitts Aquatic Veterinary Education Awards Program
- Access to WAVMA member-only programs.
- Aquatic veterinary externship and job listings.
- WAVMA promotional flyers, brochures and other materials for distribution to other students.
- Free or discounted registration for WAVMA meetings, conferences or educational webinars.
- Participation in the WAVMA Certified Aquatic Veterinarian (CertAqV) Credentialing Program.
- Access to WAVMA e-mail listservs, including Members-L, and Student-L.

A list of all current WAVMA Student Chapters is available on the website:

<https://www.wavma.org/WAVMA-Student-Chapters>

Consider joining the [WAVMA Chapter Facebook Group](#) to find out what's happening in other Chapters.

WAVMA Student Chapters

University of Pretoria, Onderstepoort [Faculty of Veterinary Science](#), South Africa (established 2017)

Murdoch University, [School of Veterinary & Life Sciences](#), Australia (established 2014)

University of Sydney, [School of Veterinary Science](#), Australia (established 2014)

Auburn University, [College of Veterinary Medicine](#), USA (established 2013)

Colorado State University, [College of Veterinary Medicine & Biomedical Sciences](#), USA (est. 2019)

Cornell University, [College of Veterinary Medicine](#), USA (established 2019)

Michigan State University, [College of veterinary Medicine](#), USA (established 2021)

Mississippi State University, [College of Veterinary Medicine](#), USA (established 2014)

The Ohio State University, [College of Veterinary Medicine](#), USA (established 2018)

Oregon State University, [College of Veterinary Medicine](#), USA (established 2017)

Ross University, [School of Veterinary Medicine](#), St. Kitts & Nevis, West Indies (established 2015)

St. George's University, [School of Veterinary Medicine](#), Granada, West Indies (established 2018)

Tuskegee University, [School of Veterinary Medicine](#), USA (established 2012)

University of California, [Davis School of Veterinary Medicine](#), (Established 2020)

University of Georgia, [College of Veterinary Medicine](#), USA (established 2015)

University of Illinois, [College of Veterinary Medicine](#), USA (established 2018)

University of Pennsylvania, [School of Veterinary Medicine](#), USA (established 2020)

Western University of Health Sciences, [College of Veterinary Medicine](#), USA (established 2014)

University of Edinburgh, [Royal \(Dick\) School of Veterinary Studies](#), Scotland UK (established 2020)

University of London, [Royal Veterinary College](#), England UK (established 2021)

Ankara University, Faculty of Veterinary Medicine, Turkey (established 2022)

Makerere University College of Veterinary Medicine Animal Resources and Biosecurity (established 2022)

St. Matthew's University School of Veterinary Medicine West Bay, Cayman Islands (established 2022)

**TO SUPPORT FUTURE STUDENT
 SCHOLARSHIPS, PLEASE MAKE
 A DONATION TODAY
 TO THE SCHOLARSHIP FUND!
[WWW.WAVMA.ORG/
 SCHOLARSHIPS.](http://WWW.WAVMA.ORG/SCHOLARSHIPS)**

**John L. Pitts Aquatic Education Award Report:
 By Sampada Devkota**

I clearly remember the day when I was selected as a John L. Pitts Scholar in 2021. I was overwhelmed with the fact that I will be completing my research project "Prevalence of Fish tapeworm *Diphyllobothrium latum* in commercial fish farms of Chitwan, Nepal" with the financial aid provided by John L. Pitts Aquatic Veterinary Education Award Program. In the present context of Nepal, there are just a handful of veterinarians working in aquatic medicine and the next generation of veterinarians rarely is interested in the field of aquatic medicine. This program definitely encourages most of the students to give a thought in the aquatic field.

I was always curious about aquatic life and its different aspects in relation to veterinarians. During my undergraduate studies I got to know about various fish diseases and their zoonotic risk but found no studies that address the case of Nepal. On second thought, I came up with an idea to address it on my own. Not much study had been carried out about its zoonotic importance in Nepal. I was ready to move forward with the project but the question was how will I be able to manage. I had to screen a significantly large number of commercial fish farms of the whole district. Then after a brief workout and hunting for financial aid, I found out that there were not many institutions that fund veterinary students for aquatic research.

Later I came to know about WAVMA and its education awards program. This award has supported my project financially but more



importantly it has encouraged veterinarians like me to build up a scope in the field of aquatic health. The project result has found significant prevalence of *Diphyllobothrium latum* in fish farms of Chitwan, showing a major public health concern. I would have never been able to reach the conclusion without the support provided by WAVMA. The result I have generated is a valuable asset for public health and a first study of its kind here in Nepal for *D. latum*. Thank you to WAVMA, without your support I would not have stepped outside conventional veterinary fields and got exposed to aquatic health.



Here are some of the pictures taken during my field visits that I would like to share.



**John L. Pitts Aquatic Education Award Report:
AQUAVET 1 Report
Maural Sowlat**

Last June 2021, I was able to participate in AQUAVET 1, the premiere program for aquatic veterinary medicine education. I first learned about AQUAVET several years ago, and as I was applying to veterinary school, I knew it was something I would want in my career. When you say you want to be an aquatic veterinarian, the common reaction is, "That's a real thing?" followed by "How do you get into that?" I applied to veterinary school three times, and every interview season, I would talk about the supplemental education I was planning, including AQUAVET. This winter, when I was accepted, it felt amazing for this plan to become real.

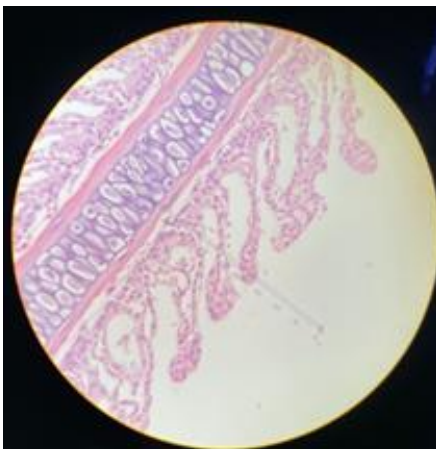
AQUAVET 1 is a four-week course held at Roger Williams University in Rhode Island and directed by faculty from Cornell University. The curriculum was intense, covering all of the basics for aquatic animal medicine. We began with invertebrates and worked our way through fish, amphibians, reptiles, birds, and mammals. The course also approached aquatic medicine from every angle: wildlife conservation, private practice, aquarium medicine, research, pathology, water quality, animal welfare, and aquaculture. When I eat catfish now, I always think, "I probably met this fish's doctor."

My ultimate goal has always been to become an aquatic veterinarian at a large aquarium, and AQUAVET gave me the best base of information to grow into that career. It also made all the other possibilities much more concrete, especially a career in aquatic private practice. While I had not known before how possible it could be, working in an exclusively aquatic or exotic practice is very solidly on the table for my future.

We spent the entire day every weekday and Saturday mornings in lectures and labs led by aquatic vets and other professionals in the field. My favorite labs were the necropsies, but we also practiced histology, microbiology, diagnostic methods, and other skills. The course covered an immense amount of

information, but it did not feel overwhelming. Coming out of my first year of vet school, I felt great to be able to learn and just absorb without worrying about an exam.

*Gill photograph
with H&E stain*



AQUAVET 2021 was a little different from other years. We were not able to take the regular field trips to nearby aquariums and research facilities, and some things had to be over Zoom. But as veterinarians and students, especially in aquatics, we have a great sense of adaptability.

The highlight of the program, for me, was the fish surgery, which consisted of a neuter, splenectomy, and double enucleation. As a first year student, I have had some surgical skill training and monitored many small animal procedures, but I had never performed real surgery before. To be able to say that my first surgery ever was on a fish is an incredible thing.

These patients were wild-caught striped bass. They served as our subjects as we practiced anesthesia induction, maintenance, and recovery in the lab the day before surgery. For the procedure, the overseeing doctors left all of the decisions in our hands. Working in teams of four students per fish, we decided and calculated their anesthetic and pain management doses ourselves and rotated through positions. We each had a chance to control the flow of anesthetic or untreated water, monitor anesthesia, and perform surgery.

Within our team, I performed half of the splenectomy and one enucleation. I enjoyed learning all of the nuances of fish surgery, such as factors that would influence our choice of incision site or suture pattern and the critical differences between fish and mammal practice.



Overall, AQUAVET 1 was everything I had been looking forward to and more. I believe it was the best way to begin my career in aquatic medicine.

WAVMA is excited to partner with Aquadocs Podcast



Looking for new and on-the-go ways to learn about aquatic medicine? Check out Aquadocs podcast hosted by Michelle Greenfield where aquatic animal health experts share their research, clinical cases, stories, and more.

Find episodes on Spotify and Apple/Google Podcasts and at www.aquadocspodcast.com
Follow us on Instagram and Facebook @aquadocspodcast



**John L. Pitts Aquatic Veterinary Education Award
Living My Dream: Sea Turtles, Manatees, and
Raptors, Oh My!**

Danielle Scott

2021 John L. Pitts Scholarship Recipient

Landing in San Juan, Puerto Rico, I was filled with excitement and anticipation to start my first day at El Centro de Conservación de Manatíes del Caribe (CCMC). CCMC is a wildlife rehabilitation center headquartered at El Universidad Interamericana de Puerto Rico. The facility has a dedicated team consisting of staff and volunteers that rescue and care for sick and injured marine wildlife. I didn't know what to expect on my first day and my nerves were growing in recognition of my deficit of knowledge about manatee medicine. However, what I lacked in experience I made up for in enthusiasm and walking into the center on my first day, I quickly realized I would be living my dream for the next two weeks.

I immediately jumped into the action and began treating patients. I was introduced to Loíza, an Antillean manatee calf that has been experiencing episodes of constipation on and off. There was Córdoba, a Green Sea Turtle with anorexia and positive buoyancy, and Squirtle, a juvenile Hawksbill Sea Turtle, also with a diminished appetite and positively buoyant. Alexander the Red Tail Hawk had a wound over its right wing. There were also several other patients in the center including Bajarí and Taicaraya, two other Antillean manatee calves who look forward to their release once they reach two years of age, as well as resident sea turtles who were deemed non-releasable for specific reasons, and multiple species of birds who presented for various causes.



Guacara (featured in the above photo) is the center's resident Florida manatee, who unlike the two mentioned sea turtles, is negatively buoyant. He enjoys spending his days relaxing in his huge pool and eating the biggest salad I have ever seen! He is the model manatee for enrichment training and through positive reinforcement has learned to accept tube feeding in the event he needs medications. He also rolls over on cue to present his flipper allowing for blood sampling, and of course he learned how to pose for the perfect picture.



Under the authority of USFWS MB50377D, MA231088, & MA791721, & PRDNER CSN LOA 2020-2025 permits

All my time spent at CCMC was incredibly hands-on. I learned so much and I experienced the pure joy of watching these wildlife patients make huge improvements in their health. I performed a thorough out-of-water manatee exam on Loíza, obtained a blood sample and gave her an enema that helped alleviate the constipation she was experiencing. I performed daily wound care and administered antibiotics and laser therapy to the Red Tail Hawk, watching his wound epithelialize and granulate daily.

The two weeks started out with me providing daily tube feedings to Squirtle and Córdoba and by the end of my visit, they were both eating on their own like champs! Additionally, Squirtle obtained neutral buoyancy and was able to get to the bottom of his tank more regularly. These advancements in their health were incredibly rewarding to witness and be a part of.

In addition to hands-on patient care and husbandry, learning the ropes of a manatee physical exam, and administering different treatments to an assortment of



Under the authority of USFWS MB50377D, MA231088, & MA791721, & PRDNER CSN LOA 2020-2025 permits

animals, I had the opportunity to create a template for performing a thorough sea turtle exam. The center has a resident veterinarian and an attending veterinarian, but on occasion, they are called to other locations, sometimes in other countries, to help manage and treat stranded and injured animals. In their absence, a veterinary technician may be called to perform a physical exam and communicate findings to the veterinarians remotely. I created an easy-to-follow exam template that provides instruction on performing a comprehensive physical exam on sea turtles, including both an in-water and out-of-water assessment, involving all the body systems including integumentary, musculoskeletal, neural, digestive, respiratory and more.

My time with CCMC was truly a dream come true. Every day was a huge learning experience, and it was incredibly fun. I developed new skills, and I had the opportunity to cultivate my clinical reasoning abilities working through various cases. The center's culture was incredibly welcoming and supportive. The last day was bittersweet. I reflected on the last couple of weeks with pure honor and gratitude to have had the opportunity to contribute to marine conservation and care for animals in need, but I was also very sad to say goodbye.

I look forward to my next visit to Puerto Rico and reuniting my new friends, both human and animal. I'd like to conclude with extending a very special THANK YOU to the John L. Pitts Aquatic Veterinary Education Awards Program for providing a scholarship to support my ventures to CCMC. My steadfast commitment to the health of our planet engages me to seek experiences outside of the walls of my veterinary school and this scholarship provided necessary support to facilitate these efforts. Thank you CCMC and John L. Pitts for gifting me an experience of a lifetime!

Public Comments for Fish Practice Specialty

The organizing committee for developing a Board Certification for Fish Practice through the American Board of Veterinary Practitioners (ABVP) is excited to announce that as part of the approval process the AVMA's American Board of Veterinary Specialties (ABVS) has made a call for public comments on the proposed recognition of the new specialty.

The organizing committee is made up of members from both AAFV and WAVMA and we are asking our memberships to please take the time to read the linked description and provide comments. We would also like to ask you to share the link with your clients and relevant stakeholder groups to solicit their comments as well.

To read the vision and goals of this proposed veterinary specialty, and to submit comments, go to:

<https://fishvets.us7.list-manage.com/track/click?u=0f02cfc7f16b5410b1eb10dd4&id=b0293895cf&e=5ac908f2e2>

<https://www.avma.org/education/veterinary-specialties/Call-for-comment-Proposed-recognition-of-new-specialty>



John L. Pitts Aquatic Veterinary Education Awards

Jake Veilleux

4th year student

NC State University College of Veterinary Medicine.

This past September, I participated in the Pacific Northwest Salmonid Veterinary Externship Program (PNSVEP) as one of my clinical year rotations. Thanks to the generous funding I received from the John L. Pitts Aquatic Veterinary Education Awards Program, I was able to gain incredible experience in the hatchery medicine world. As most of you know, aquatic medicine is not the largest part of a veterinary school curriculum, so I am certain that being able to partake in a program like this will be incredibly beneficial to my future career.

The PNSVEP is a student externship program supervised by several amazing fish veterinarians based in Washington, Oregon, and Idaho. With a focus on salmonid hatcheries (and some sturgeon), I had the opportunity to rotate between the Northwest Indian Fisheries Commission, Douglas County P.U.D, Washington Animal Disease Diagnostic Laboratory, Oregon Department of Fish and Wildlife, and Idaho Fish and Game. This afforded me the chance to build career connections in the field, find invaluable mentorship, and observe different styles of fish health medicine. I found one of the most interesting aspects of the rotating externship to be the regional differences in disease prevalence. The pathogens you were most concerned about were often determined by factors such as source water origin, temperature/elevation, and distance from the coast.

As you would expect in a hands-on program like this, I gained a ton of experience in fish diagnostic methods and techniques. That all starts with getting a good history from the hatchery managers and staff, whether it be a routine health check or potential outbreak. Asking about water quality, changes in feed/appetite, recent transport/movement, or observed predation are all relevant.

Next was getting some eyes on both healthy and sick fish, plus the facility in general. For example, in a raceway set-up, we walked the entire length of the set-up, watching how the fish were swimming and behaving. I learned to take note of sick fish signs like flashing or gathering near the outflow of a filter system. Now with a better understanding of what was going on at a hatchery, it was time to sample some fish. My supervisors did a phenomenal job of demonstrating fish necropsies and teaching me sterile technique when sampling for bacterial culture and virus isolation. I also got plenty of practice with skin scrapes and gill biopsies and saw pathogens like *Ichthyophthirius multifiliis* and *Flavobacterium psychrophilum*.

In addition to all this clinical field work, the PNSVEP provided me with diagnostic laboratory experience through the Washington Animal Disease Diagnostic Laboratory and Eagle Fish Health Lab. After spending

multiple weeks collecting kidney and liver samples, it was fascinating to see what happens at the place you send them.

Thanks again to some great teachers, I became familiar with ELISA testing for Bacterial Kidney Disease, whirling disease sample processing and *Myxobolus cerebralis* identification, and cell culture and virus isolation techniques. I even got to work on my histopathological interpretation, something any veterinary student can attest to needing more practice with.

My four weeks in the Pacific Northwest were one of the most educationally informative experiences I have had to date. It allowed me to gain a plethora of practical experience in fisheries and aquaculture medicine, a field I soon hope to work in. Though my veterinary school curriculum at NC State is absolutely world class, the PNSVEP gave me a crash course in fish health medicine I could not have gained on any other rotation. The funding from this award went a great length in alleviating my concerns about finances and allowed me to focus entirely on the learning opportunity at hand. I highly encourage any fish-focused students to consider the Pacific Northwest Salmonid Veterinary Externship Program, and to apply for the John L. Pitts Aquatic Veterinary Education Awards Program.

Photos:

Below - Ichthyophthirius trophont on salmon gills.

Top of next page - Salmon in stream





**New WAVMA Student Chapter:
Makerere University, Kampala, Uganda**

Photograph below: Student Chapter members

We are very thankful to WAVMA for approving the Makerere University WAVMA Student Chapter from the College of Veterinary Medicine Animal Resources and Biosecurity.

We are glad and excited for this opportunity to learn more and engage in the dynamics of the aquatic sector to boost our training and practice of aquatic medicine.

NAMATA ALICE
Bachelor's of Veterinary Medicine,
year 5 student.



John L. Pitts Aquatic Education Award Report
Annie K. Clift

With support from the John L. Pitts Aquatic Veterinary Education Awards Program I was able to complete a five-week externship at the South Carolina Aquarium (SCA) to further my aquatic veterinary education during my fourth year of veterinary school. I pursued this externship because of the extensive fish health the SCA veterinary staff provide, their renowned sea turtle rehabilitation hospital, and the work Dr. Shane Boylan has put into imaging techniques and innovate medicine for fish and reptiles. It was important to me to have an externship centered around fish and reptiles in both rehabilitation and captive settings. SCA was the perfect place for this and I was able to gain hands-on experience with a broad assortment of wildlife and collection animals.

Within the realm of fish medicine I was able to observe and participate in several pre-quarantine intake exams and end-of-quarantine exams. These experiences allowed me to learn and review several treatment options, their dosing, and important considerations. I now better understand how these are carried out in an aquarium setting and was able to practice diagnostic techniques such as blood draws, skin scrapes, and gill clips. I found the most intriguing part of these exams to be learning how to use a rigid endoscope to examine the gills of living fish gain a more comprehensive view of the structures.

Furthermore, my experience with fish medicine during this externship included diagnostics and treatments of sick fish as well as post-mortem work ups. I was able to get ample practice in diagnostic imaging and necropsy techniques. The thorough post-mortem exams also allowed me to test the boundaries of how much can be done in-house, as we did our own gram stains, acid fast stains, bacterial and fungal cultures, keyed out fungal growths for identification, and performed Kirby-Bauer disc diffusion susceptibility tests.

Fish health highlights during my time at SCA included being able to assist in working up two lionfish who were envenomated by their tank mates and later seeing these fish be successfully treated and returned to exhibit, observing an end-of-quarantine exam on three large cobia that were then put into the Deep Ocean Tank exhibit, learning how to cauterize the pseudo-branch to treat exophthalmia, necropsying a cow-nose ray that had dystrophic calcification, and assisting in an endoscopic exam of a file fish to diagnose the cause of her enlarged coelom. I was very lucky to have gained such incredible hands-on experience; this time at SCA absolutely bolstered my confidence in practicing fish medicine.

Outside of fish, I was able to encounter a multitude of reptile cases, from sea turtles to snakes, tortoises to diamondback terrapins. I was exceptionally lucky to work with so many species. My SCA reptile experiences spanned the management of geriatric arthritic



snakes, emergency stabilization of sea turtles, yearly wellness exams of collection animals, surgical procedures to remove fishhooks and lead shot, long-term care of rehabilitation cases, and more.

On my first day I was able to aid in placing a feeding tube in a severely debilitated diamondback terrapin and, throughout my time there, it was a joy watching him gain strength and energy (so much so that on my last day he took it upon himself to remove his feeding tube unassisted!) I am incredibly thankful for the opportunity I had to scrub in for hook removal surgery on a juvenile Kemp's Ridley, where I got to see an esophageal eversion technique. Soon after that I watched Dr. Michaels take a non-surgical approach to remove a hook that had not traveled as far down the esophagus.

Having now completed this externship, I feel as though I have been able put into practice much of what I previously learned through programs such as AQUAVET and SeaVet. While gaining confidence in my understanding of fish and reptilian medicine, my passion for this field continues to grow and I look forward to being able to contribute to the growth and development of aquatic animal health. Thank you to WAVMA and to the John L. Pitts Education Awards Committee for their continued support of students and pivotal role in making experiences like this possible.

Photographs

*Opposite page:
Examining an American alligator.*

*Right:
Endoscopy of a filefish with Dr. Boylan.*

*Below:
Cold laser therapy to help manage
spinal arthritis in a red tailed boa.*



In Memorium: Dr. Sam Ridgway

June 26, 1936 - July 10, 2022
 San Diego, California USA

Dr. Sam Houston Ridgway, DVM, PhD, distinguished marine mammal veterinarian and scientist, passed away peacefully at home on Point Loma in San Diego, California, surrounded by beloved family and friends. Sam was a humble man of heroic accomplishment, with a quick wit, kind heart, and gentle soul. He will be greatly missed by all that knew him.

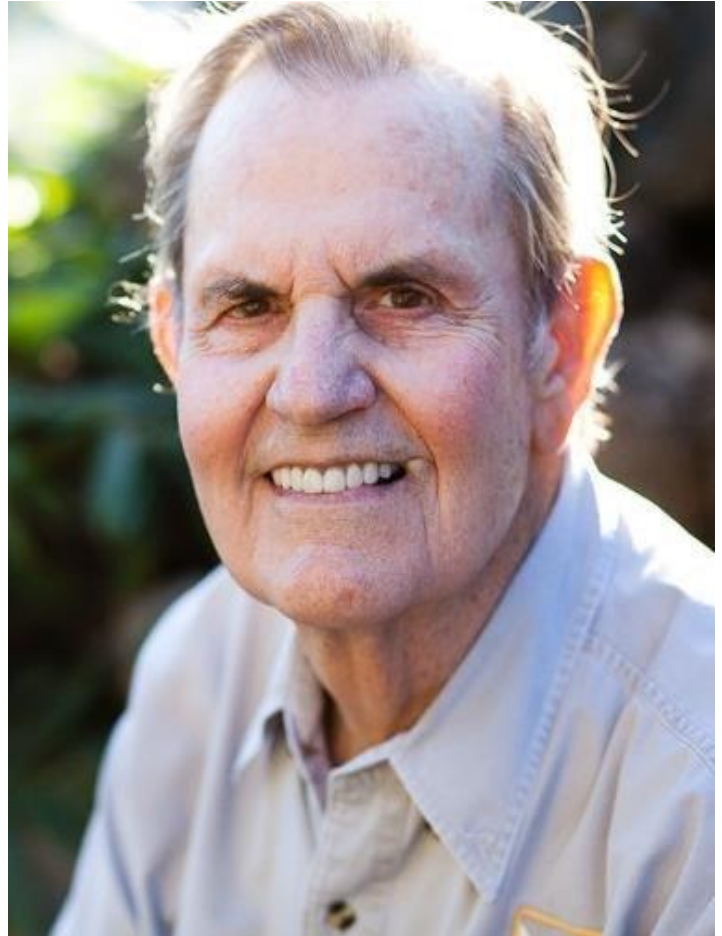
Sam was born in Bigfoot, Texas, son to Morris Shepard and Florence Lipscomb Ridgway. In 1960, he married his sweetheart, Dr. Jeanette Fuller Ridgway, PhD, of Richards, Texas. They enjoyed almost 60 years of marriage before she passed in 2020. Sam is survived by his brother Don Ridgway (wife Jo Layne), brother Sid Ridgway (wife Mary Jay), and their families.

He earned his undergraduate and veterinary degrees from Texas A&M University and was a loyal fan of the Aggies' football team. Sam was commissioned in the Air Force as a veterinary officer for military service animals. Upon moving to California, he became the attending veterinarian for the US Navy's marine mammals, which launched his career in marine mammal medicine and science. In 1970, he received a Navy fellowship to study under Sir Richard Harrison at Cambridge University, where he earned a PhD in neuroscience. He applied this knowledge to understanding the behavior and physiology of marine mammals, especially bottlenose dolphins.

Dr. Ridgway was a founder of the US Navy's Marine Mammal Program, which he served for more than 60 years. He was the founding President and CEO of the National Marine Mammal Foundation, a nonprofit he helped establish in 2007. Sam was widely known for establishing novel methods to partner with marine mammals in the open ocean, which allowed humans to observe and interact with animals in their natural environment. This led to great advancements in marine mammal behavior, physiology, and acoustics.

He was one of the largest contributors to marine mammal science, publishing more than 350 peer-reviewed papers, book chapters, and books. Early in his career, he published a book called *Dolphin Doctor*, a name that became synonymous with Sam himself. His book *Mammals of the Sea*, published 50 years ago, remains one of the most comprehensive textbooks on marine mammal physiology.

Sam was affectionately known among his colleagues as the father of marine mammal medicine due to his pioneering spirit and ground-breaking discoveries that advanced the health and welfare of dolphins, porpoises, whales, sea lions, and seals. Sam embraced conservation biology and medicine, and he was eager to apply his knowledge and expertise to marine mammals in the wild. His scientific discoveries served as a foundation for the protection and conservation of marine mammals globally.



Throughout his career, Sam mentored hundreds of veterinary and graduate students, post-doctoral fellows, marine mammal veterinarians, conservationists, and scientists. He cherished his mentor-mentee relationships and dedicated countless hours to his students. He traveled the world to share his discoveries through lectures and meetings, reaching students and colleagues on every continent. He continued to contribute in his final days, enjoying time spent with members of his Early Scientist Program as they discussed results and finalized publications.

Sam was revered as a leader in the marine mammal community. He was founding President of the International Association of Aquatic Animal Medicine (IAAAM). He served on the Scientific Advisory Committee to the Marine Mammal Commission, on committees of the National Research Council and National Academy of Sciences, and was elected a fellow of the Acoustical Society of America and American College of Zoological Medicine. He was awarded the Distinguished Alumnus Award by Texas A&M University, College of Veterinary Medicine; the Lifetime and Clinical Medicine Awards from IAAAM; the Kenneth S. Norris Lifetime Achievement Award of the Society for Marine Mammalogy; and, two Navy awards, the Gilbert H. Curl Award, and the Lauritsen Bennett Award.

Despite his impressive accolades, Sam navigated his life with humility and grace. He touched the minds and hearts of his colleagues with his curiosity and light-hearted nature. When Sam showed his strength, it was always in regard to the animals. He was globally respected and admired for his unwavering commitment to the animals in his care and in the wild. During his lifetime, he inspired students and colleagues all over the world to dedicate their careers to protecting, conserving, and caring for marine mammals.

In 2020, a StoryFile was created of Sam, inspired by long-time friend and colleague Carolyn E. Schlundt Melka. The StoryFile serves as a living memorial that allows present and future generations to interact with Sam about his personal and professional life. You can view the StoryFile video on YouTube: <https://youtu.be/1JWsaTDnT2l>

A memorial service for both Sam and his wife Jeanette will be held at the First United Methodist Church of San Diego on Friday, September 9th, 2022 at 3pm PT. Information about the memorial service will be made available at www.nmmf.org/ridgway. In lieu of flowers, donations may be made to the National Marine Mammal Foundation's Ridgway Fund, to continue Sam's legacy in pioneering marine mammal medicine, science, and conservation.

*Photographs on this page are from:
History of Veterinary Medicine and Marine Mammals:
A Personal Perspective
By Sam H. Ridgway
Publication Name: Aquatic Mammals, 2008
<https://www.academia.edu/10800001/>
[History of Veterinary Medicine and Marine Mammals A Personal Perspective](https://www.academia.edu/10800001/)*



Dr. Ridgway in 1961 at the start of his career with marine mammals as a U.S. Air Force veterinary officer.

Dr. Ridgway performing the first major dolphin abdominal surgery in 1966; the dolphin patient, an adult female, recovered and lived a healthy life until 1987.





Dr. Jessie Sanders (far left) and Dr. Shane Boylan (far right - next page) attend to AQUAVET students during the fish anesthesia and surgery session. Photos by Nick Saint-Erne



AQUAVET Report:

The four-week AQUAVET® I course, *Introduction to Aquatic Veterinary Medicine*, is a demanding educational experience requiring total involvement of participants, that takes place at Roger Williams University in Rhode Island, USA and is sponsored by Cornell University. The program is diverse, incorporating many topics relating to aquatic organisms, their environment, and the application of traditional veterinary disciplines to aquatic animals.

The course is Directed by Dr. Donald Stremme, and facilitated by Associate Director's Dr. Laurie Landeau and Dr. Robert Maze, who supervise the daily lectures that are provided by experts in Aquatic Veterinary Medicine from around the country, with backgrounds in Private Veterinary Practice, Zoos and Public Aquariums, University Teaching and Research, Government Agencies, Diagnostic Laboratories, and the Pet Industry. For more information, go to:

<https://www.vet.cornell.edu/education/other-educational-opportunities/aquavet/aquavet-i>

Photo on Right: Dr. Geoffrey Grocock demonstrating ultrasound on a striped bass during the Surgery Lab.

Below: the 2022 AQUAVET 1 class.



AQUAVET PHOTOS
by Nick Saint-Erne

Right:
Dr. Laurie Landeau
(standing) and
Dr. Robert Maze
(far right), with two
AQUAVET students.

Below:
Seven species of algae
are grown to feed larval
fish (bottom left are
clownfish raised in lab)
and invertebrates
cultured at RWU.

Middle Right:
Students performing
anesthesia and surgery
on striped bass.

Bottom right:
Dinner on last night
of AQUAVET!



7 species of algae
e T Isochrysis lutea (Tiso)
* Chaetoceros muleri (Chaeto)
* Thalassiosira weissflogii (Tiw)
o Pavlova pingus (Pav)
o Tetraselmis sp. (Teta)
e Nannochloropsis oculata
(Nano)
Rhodomonas salma (Rhod)



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

Water Turtle Shell Disease

I had a client send me these pictures. I don't usually treat turtles. It is a fully aquatic turtle and the tank water has no ammonia, or nitrite and less than 20 ppm (mg/L) nitrate. Any thoughts?

Thank you,

Michael Charney
 michael.charney@gmail.com



Hi Michael,

It's a pig-nosed turtle (*Carettochelys insculpta*), and those lesions would make me think of severe dermatitis or septicemia. I would recommend CBC, blood chemistries, and cultures from lesion +/- blood culture.

General management (diet, temperature, etc.) should also be reviewed to identify a possible cause.

Neus Morera
 neus.morera.celda@gmail.com
 Barcelona, Spain

Interesting photos. I have seen in the past shell lesions similar to this from bacterial etiologies. A culture should be submitted (after some deep debridement) but also would recommend cytology with acid fast stains, as mycobacteriosis would be a serious consideration. A CBC and serum chemistries would also be recommended.

Todd R. Cecil, DVM, DABVP (Avian), CertAqV
 Western Aquatic Animal Veterinary Service
 waavs@aol.com

This turtle is also called a fly river turtle (*Carettochelys insculpta*), and has significant shell lesions, as well as lesions over the head. These turtles are quite sensitive to issues in their husbandry, and are very prone to bacterial and fungal shell infections. In addition to the work up Todd recommended (CBC/Biochem, cytology, culture, +/- biopsy), I would also check the pH and alkalinity of the water. In my experience, they tend to do better in more basic pH water (at least 7.5-8 range) with higher alkalinity.

Unfortunately, by this stage he may have significant health issues leading to the signs you are seeing. He will likely need significant husbandry adjustments and long term treatment if he has a chance to recover.

Depending on the findings, he may need antibiotic and antifungal therapy, as well as topical treatments to clear the issues.

Colin T. McDermott, VMD, DABVP (Reptile/Amphibian), CertAqV
 Clinical Assistant Professor,
 Veterinary Clinical Sciences Department,
 City University of Hong Kong
 Veterinary Surgeon, Zodiac Pet and Exotics Hospital
 cmcd.vmd@gmail.com



The pig-nosed turtle is unlike any other species of freshwater turtle in its combination of traits. The feet are flippers, resembling those of marine turtles. The nose looks like that of a pig, having the nostrils at the end of a fleshy snout, hence the common name. The carapace is typically grey or olive, with a leathery texture, while the plastron is cream-coloured. Males can be distinguished from females by their longer and narrower tails. Pig-nosed turtles can grow to about 70 to 75 cm (28 to 30 in) carapace length, with a weight of over 20 kg (44 lb).

[Pig-nosed turtle - Wikipedia](#)

**TO SUPPORT FUTURE STUDENT
 SCHOLARSHIPS, PLEASE MAKE
 A DONATION TODAY
 TO THE SCHOLARSHIP FUND!**

[WWW.WAVMA.ORG/
 SCHOLARSHIPS.](http://WWW.WAVMA.ORG/SCHOLARSHIPS)

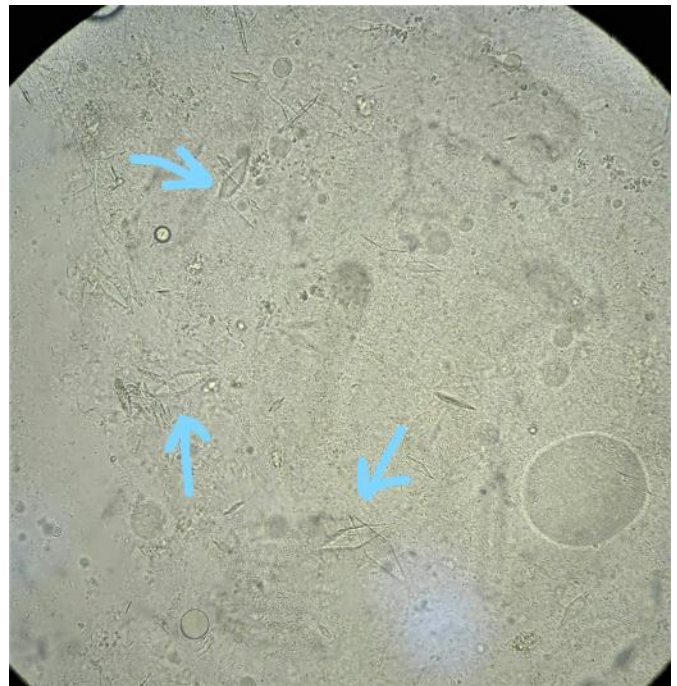
Guppy Mortalities

Dear colleagues,

I did a postmortem examination on a Guppy from an aquarium that has been experiencing high mortalities. I found these shapes resembling crystals (light blue arrows) within the intestines; has anybody seen them before?

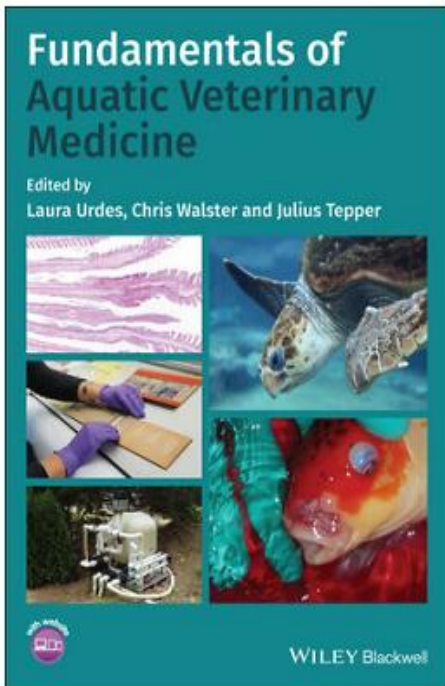
I suspect some sort of intoxication as there are two more aquaria in the house with fish coming from the same shop that haven't experienced any problems, and I've already ruled out parasites and water quality. Thanks,

Neus Morera,
 Exotic pets and fish vet
 neus.morera.celda@gmail.com
 Barcelona, Spain



Calcium Oxalate crystals can form in many shapes, and one form is the pointed diamond like what is seen in the image from the guppy intestines. Typical plants containing calcium oxalate include *Atropa belladonna*, *Datura*, *Dieffenbachia*, *Oleander* and *Philodendron*, and there have been multiple reports of poisoning from these plants. It is not certain that the crystals in the guppy intestines are calcium oxalate, but it would be helpful to assess the plants in the aquarium and any foods fed to the guppy that might contain calcium oxalate.

Nick Saint-Erne, DVM CertAqV
 WAVMA Distinguished Fellow



The Fundamentals of Aquatic Veterinary Medicine

LEARNING & TEACHING RESOURCE
FOR DAY-ONE COMPETENCE
IN AQUATIC VETERINARY MEDICINE

Fundamentals of Aquatic Veterinary Medicine

Laura Urdes (Editor), Chris Walster (Editor), Julius Tepper (Editor)

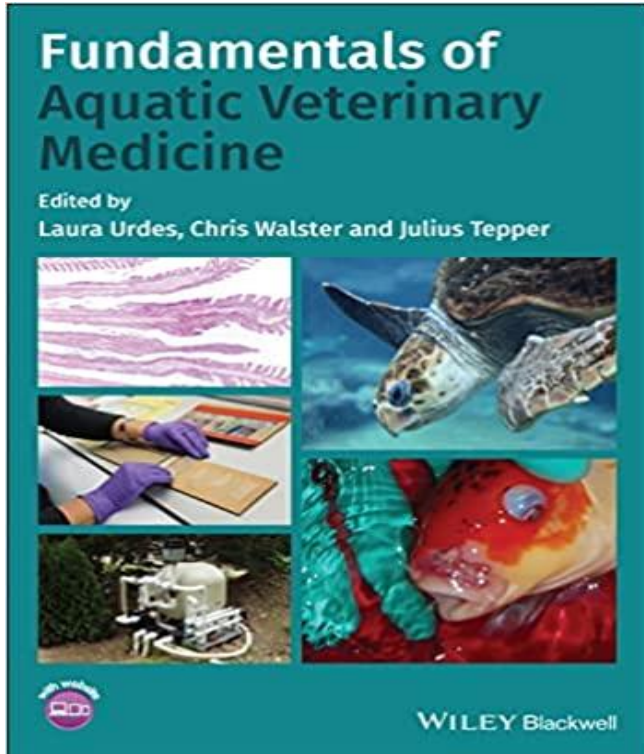
WAVMA - A Global Resource For Aquatic Veterinarians



CertAqV

- Chapter 1** - Aquatic Environment and Life Support Systems
- Chapter 2** - Taxonomy, Anatomy and Physiology
- Chapter 3** - Husbandry and Industries
- Chapter 4** - Pathology of Aquatic Animal Diseases
- Chapter 5** - Epidemiology of Aquatic Animal Diseases
- Chapter 6** - Diagnostics and Treatment of Aquatic Animal Diseases
- Chapter 7** - Clinical Veterinary Experience and Client Communication
- Chapter 8** - Public Health, Zoonoses and Seafood Safety
- Chapter 9** - Legislation, Regulations and Policies
- Chapter 10** - Principles of Aquatic Animal Welfare

www.wiley.com/buy/9781119612704, available from wiley.com, Amazon.com, and other book vendors.

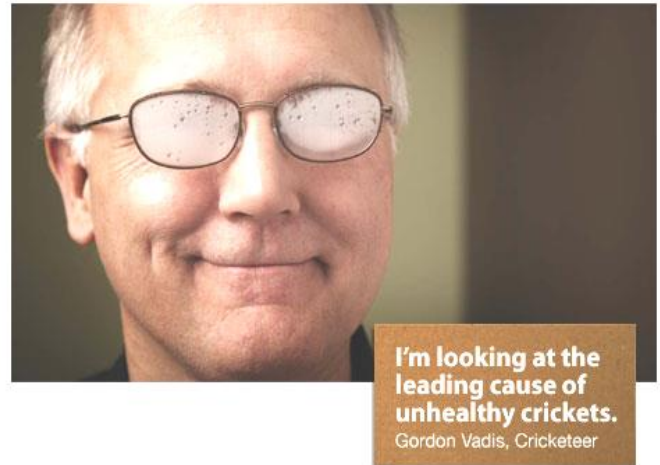


Fundamentals of Aquatic Veterinary Medicine covers the competencies necessary to assure the highest quality of aquatic veterinary services. This book provides systematic, practical guidance on the treatment of aquatic mammals, amphibians, fish, and invertebrates in veterinary practice.

Covering the nine core areas of the WAVMA Certified Aquatic Veterinarian (CertAqV) Program, this comprehensive clinical reference covers taxonomy, anatomy and physiology of aquatic species, water quality and life support systems, diagnostics, treatment, and prevention of aquatic diseases, and more. Designed to help readers acquire and demonstrate the necessary knowledge, skills, and experience to be competent in aquatic veterinary medicine, this authoritative guide:

- Focuses on “Day One” competencies outlined by the World Organization for Animal Health (OIE)
- Covers pathobiology and epidemiology of aquatic diseases, public health, zoonotic diseases, and seafood safety
- Provides up-to-date information on relevant legislation, regulations, and policies.

Fundamentals of Aquatic Veterinary Medicine is a must-have reference and review guide for veterinary students and practitioners interested in practicing aquatic veterinary medicine, as well as for aquatic veterinarians looking to become WAVMA certified or wanting to acquire OIE “Day One” competency.



The Bug Company, home of the world's tastiest, organic, and most nutritious line of insects! Since 1947 The Bug Company has refined its ability to produce and distribute only the healthiest live insects including Acheta Crickets, Mealworms, Super Worms, Fruit Flies, Wax Worms and more. We are proud to offer our line of bugs, which are second to none in gut-loaded quality nutrition for reptiles, turtles, birds, lizards, amphibians, fish and arachnids. Raised in temperature controlled all-natural settings, our bugs are reared on a strict diet of organic, vitamin-filled, high-quality grains and feed, making our insects the most responsible choice for creatures and pets of all kinds.

We carry a full line of tasty bugs, but our specialty and most popular product is the *Acheta domestica* cricket, otherwise known as the house cricket. Our crickets come in seven sizes, from pinheads to adults - sizes to satisfy the natural instincts of predators large and small. Our products are distributed throughout the United States and Canada to pet and birding/nature product retailers large and small. Browse the web site for more information, or to order your Crickets, Mealworms, Super Worms, Wax Worms or Fruit Flies right now, [Click Here!](http://www.ebugco.com/) <http://www.ebugco.com/>

The Bug Company

15941 Tippecanoe St. N.E.
Ham Lake, MN 55304
Phone: **1-888-777-2248**

[For general information or questions](mailto:info@ebugco.com)

info@ebugco.com

[For sales or pricing information](mailto:sales@ebugco.com)

sales@ebugco.com





**MEETINGS OF INTEREST TO
AQUATIC VETERINARIANS**

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



47th WSAVA World Congress - 2022

Dates: 29-31 October 2022

Lima, Peru

See: [WSAVA](http://WSAVA.org)

48th WSAVA World Congress - 2023

Lisbon, Portugal

49th WSAVA World Congress - 2024

Shanghai, China



AAFV Live Conference

October 21-23, 2022

St. Augustine, FL

The American Association of Fish Veterinarians (AAFV) is holding their annual conference on October 21-23, 2022.

Friday, October 21: Fish Necropsy Lab
Saturday, October 22: Lecture Day (8 AM – 5 PM)
Sunday, October 23: Fish Surgery Lab

GUY HARVEY RESORT ST. AUGUSTINE BEACH
A1A Beach Boulevard, St Augustine Beach, Florida,
32080, United States
\$189/Night AAFV hotel rate
Room Block and Price expires September 20, 2022.

More information coming soon.
Questions? Email americanfishvets@gmail.com



International Symposium of Fish Parasitology

Copenhagen, Denmark

August 21-26, 2022.

<https://icopa2022.org/>

This will be a hybrid meeting so people can join on-line or can be present physically. There will be at least three full days with fish parasitology (and even more if they get enough abstracts). Thus, fish veterinarians/parasitologists/pathologists are urged to submit abstracts before the end of January 2022.

Go to:

[15th International Congress of Parasitology - ICOPA 2022](https://icopa2022.org/)

**Columaris Disease –
A Clinically Oriented Look at the Pathology and
Epidemiology in Aquaculture and Ornamental Fish
ISAAH9 Conference**

Santiago, Chile

Sept. 4-8, 2022

A call for speakers:

In conjunction with the ISAAH9 conference, to be held in Santiago, Chile from Sept. 4-8, 2022, a full day program is being planned for Sept. 5, 2022 featuring discussion on the pathogenic species involved, the clinical appearance in different host species, the environmental factors predisposing to this disease, and successful management strategies.

If you would like to present on this topic, please contact J.M.Tepper at: dvm2468@gmail.com. Some financial support may be available.

**TO SUPPORT FUTURE STUDENT
SCHOLARSHIPS, PLEASE MAKE
A DONATION TODAY
TO THE SCHOLARSHIP FUND!**

[WWW.WAVMA.ORG/
SCHOLARSHIPS.](http://WWW.WAVMA.ORG/SCHOLARSHIPS)

WORLD AQUACULTURE SINGAPORE
Singapore – Nov 29 – Dec 2, 2022

Asia's leading international conference and exhibition on aquaculture will be taking place as planned in Singapore from November 29-December 2, 2022, as an in-person meeting. Over 200 [exhibitors](#) have already signed up in a strong show of confidence and support for the event and the industry. Registration for the conference remains open with early bird categories still available. The deadline for abstract submission and call for papers has been extended to September 1, 2022. Still time to [submit abstracts](#).

WAS North America & Aquaculture Canada 2022
 St. John's, NL, Canada
 August 15 –18, 2022

Preparations are ramping up for the first joint World Aquaculture Society (WAS), Aquaculture Association of Canada (AAC) and NL Aquaculture Industry Association (NAIA) meeting, and the largest conference and trade show in over 20 years in Canada on the science, business and technology of aquaculture.

"This meeting will celebrate the progress and cutting-edge innovations that have led to the successes of the industry to date and that will propel it into the future – but also recognize the important challenges faced in many areas," said John Cooksey, WAS Conference Manager. The programme sessions for the conference will be broad and topical, including those traditionally offered at WAS and AAC conferences, along with 36 special topics that are relevant, and timely.

<https://www.was.org/meeting/code/WANA2021>

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? Find out more information online at: <http://www.wavma.org/CertAqV-Pgm>.

The Aquatic Veterinarian is meant to be read as a 2-page spread (like a paper magazine!). To view it this way on your computer, open the pdf document using Adobe Acrobat or Adobe Reader, then go to the menu bar at the top of the computer screen and click on View, then Page Display, then Two Page View. Make sure that the first page is viewed by itself. That will allow you to scroll through the issue seeing the cover page by itself first, followed by two pages side by side for the rest of the issue. Doing this, you will be able to see the Centerfold picture in all its ginormous glory!



47th World Small Animal Veterinary Association Congress & XVIII FIAVAC Congress (WSAVA 2022)
29–31 October 2022
Lima, Peru
<https://wsava2022.com/>

Experience an event that is so much more than just a Congress - join the gathering of the global veterinary community at WSAVA 2022 in beautiful Lima, Peru! Become part of this long-awaited in-person meeting, where international veterinary experts, technicians and students will come together to collaborate and share knowledge on the latest in veterinary medicine and care for small companion animals.

You can find this year's [Scientific Program](#) online and review all the sessions that are going to be presented from global working groups and committees, veterinary organizations, plus exclusive streams in Spanish.

Additionally, abstract submission is open, so if you have recently concluded a study and have groundbreaking results to present, we would love for you to contribute your work to WSAVA 2022. Take the opportunity to showcase your study findings in front of a global audience and make an impact on veterinary medicine, and pet care.

Key Dates:

[Abstract Submission Deadline: 15 July 2022](#)

[Early Bird Registration Deadline: 6 October 2022](#)

For the latest congress news & registration information visit the official WSAVA 2022 website: <https://wsava2022.com/>



WAVMA | University of Pretoria
**WORLD AQUATIC HEALTH
 Conference 2022**
 HYBRID EVENT

3 - 7 DECEMBER 2022
 FUTURE AFRICA CAMPUS | UNIVERSITY OF PRETORIA | SOUTH AFRICA
 FOR MORE INFORMATION GO TO WWW.WAVMA2022.CO.ZA

Antimicrobial Resistance Workshop

August 30, 2022

The United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) will host a virtual Antimicrobial Resistance (AMR) Workshop on August 30, 2022. The workshop will be open to the public and will be an opportunity for APHIS to share with stakeholders what we've learned since the first AMR workshop held in 2012, find opportunities for collaboration, and guide future planning on this topic across the One Health interfaces of food safety, animal health, human health, and the environment. APHIS is cohosting the AMR workshop with our USDA partners from the Food Safety Inspection Service and the Research, Education and Economics mission area.

USDA hosted its first and only Antibiotic Resistance Workshop in 2012, public input from which was used to develop the [USDA Antimicrobial Resistance Action Plan](#), outlining USDA's current and proposed activities to address antimicrobial resistance. This plan also helped direct USDA's commitments in the first [National Action Plan for Combating Antibiotic Resistant Bacteria](#).

"The year 2022 marks 10 years since the first USDA Antibiotic Resistance Workshop in 2012 and provides an excellent opportunity for USDA to share successes and challenges with stakeholders and partners," USDA Under Secretary for Marketing and Regulatory Programs, Jenny Lester Moffitt, said. "We will leverage all of the tools and advances made over the

past decade in coordination with our federal partners and stakeholders to develop a new AMR action plan."

The workshop will be open to the public via Zoom and teleconference. A preregistered public comment session will be held during the workshop. To attend the meeting via Zoom you must register at https://www.zoomgov.com/webinar/register/WN_LFLkbcWuTdqGT0wxBZyuOQ.

Registration is required by August 23, 2022 for members of the public who wish to speak during the public comment period. We ask that comments be limited to 5 minutes. Members of the public will be heard in the order in which they registered.

Written comments may also be submitted before and up to 2 weeks following the virtual meeting, or by close of business September 13, 2022. Written comments must be sent to:

usdaamrpublicmeeting@usda.gov.

Please refer to Docket No. APHIS-2022-0027 when submitting comments.

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? Find out more information online at: <http://www.wavma.org/CertAqV-Pgm>.

AAFV'S 10TH ANNIVERSARY CONFERENCE

Fish Medicine CE Schedule



22/OCTOBER/2022

8:00 BREAKFAST & CHECK IN
Ham, Egg & Cheese Croissants
Bagel with egg, tomato, avocado & cream cheese
Served with Fresh Fruit Salad, Coffee & Orange Juice

8:15 WELCOME
Dr. Nora Hickey, 2022 AAFV President

8:30 ADVANCED FISH MEDICINE TRAINING: THE FORMATION OF AN ABVP - FISH PRACTICE, AVMA RECOGNIZED VETERINARY SPECIALTY
Dr. John Shelley

9:00 WHAT VETERINARIANS NEED TO KNOW ABOUT FISH FARMERS
Paul W. Zajicek

9:30 RISK ASSESSMENT OF FISH MOVEMENTS FROM USA GREAT LAKES REGION DURING A VIRAL HEMORRHAGIC SEPTICEMIA OUTBREAK
Dr. Myron Kibus

10:00 STRATEGIES TO IMPROVE FISH VACCINATION
Dr. Katharine "Ono" Onofryton

10:30 BREAK

11:00 HOW TO MAKE FISH PRACTICE PROFITABLE
Dr. Jessie Sanders

11:30 DIAGNOSTIC IMAGING IN PET FISH
Dr. Jessie Sanders

12:00 LUNCH
Caribbean Chicken Breast or Mojo Pulled Pork or Roasted Veggies in Pesto Sauce (V)
Served with Yellow Rice (V), Black Beans (V) & Roll (V)

BROWSE SILENT AUCTION ITEMS & SPONSOR TABLES

FLORIDA AQUARIUM VIDEO

1:30 HEMATOLOGICAL PARAMETERS IN FLORIDA POMPANO (TRACHINOTUS CAROLINUS) SUPPLEMENTED WITH B-GLUCAN AND PEDIOCOCCUS ACIDILACTICI SYNBIOTIC
Dr. Ashley Morgan

2:00 DEVELOPING A THROMBOELASTOGRAPHY ASSAY IN ELASMOBRANCHS
Kayla Bonadie

2:30 HISTOPATHOLOGICAL ANALYSIS OF LOCALLY ADMINISTERED LIDOCAINE VS SALINE IN THE ARMS OF A CEPHALOPOD, EUPRYMNA BERRYI.
Heather (Lane) Morrison

3:00 BREAK
SILENT AUCTION ENDS

3:30 AQUATIC CLINICAL CASES IN A MIXED ANIMAL VET PRACTICE
Dr. Jena Questen

4:15 DO FISH FEEL PAIN? NOCICEPTION, ANALGESIA, AND WELFARE IN FISH
Dr. Ashley Emanuele

PAY FOR SILENT AUCTIONS ITEMS & PREPARE FOR EVENING BOAT RIDE!

St. Augustine, Florida | AmericanFishVets@gmail.com | fishvets.org

Health and Colony Management of Laboratory Fish
 September 18-23, 2022

Health and Colony Management of Laboratory Fish is a short course to help colony managers, researchers, and veterinarians monitor and maintain the health of a colony of aquatic organisms. This course is broad and is appropriate for technical staff, students, post-docs, and investigators, as well as veterinary professionals and trainees.

The course consists of lecture, laboratory exercises and discussions. With a high faculty to student ratio, during the course there are ample opportunities for students to discuss unusual and/or unsolved diagnostic case experiences from their home laboratories as problem-solving exercises.

Topics covered include:

- Fish Disease: Pathogenesis, diagnostics, necropsy methods, treatment and control
- General Fish Biology: Anatomy, form and function
- General training: anatomy, histology and necropsy techniques
- Core management: breeding, nutrition, water quality, system design and biosecurity.

Several species are discussed, but particular emphasis is given to zebrafish.

Apply Now!

<https://mdibl.org/course/health-and-colony-management-of-laboratory-fish-2022/>

Course Director
 Michael Kent, Ph.D.
 Oregon state University

Course Faculty
 Rodman Getchell, Ph.D.
 Cornell University

Christian Lawrence,
 SmartLabs

Chris Whipps, Ph.D.
 SUNY

MDI Biological Laboratory /
 mdibl.org
 education@mdibl.org

**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? Find out more information online at: <http://www.wavma.org/CertAqV-Pgm>.

AQUACULTURE EUROPE 2022

Rimini, Italy
 27-30 SEPTEMBER 2022

The issues of compatibility and mutual synergy between the users of marine, brackish and freshwater resources and their relationship with the quality of those ecosystems are central in promoting the sustainable development of aquaculture. Traditional and emerging Blue economy sectors, currently operating in the Adriatic, Mediterranean and water bodies throughout Europe, are expected to grow and expand over the next years and to sustainably contribute to food production, biofuel and clean energy.

Nevertheless, scientific literature provides clear evidence that, according to current trends and within 10 years, our coastal and marine environment will change for sea acidification and warming, sea-level rise and coastal erosion and all water bodies will be affected by flooding, eutrophication and pollution, with important effects on ecosystem services, fish and shellfish stocks and food security.

Climate change, depletion of natural resources, loss of biodiversity, food security and safety, environmental pollution and waste represent important sustainability challenges for further expansion of European aquaculture and the ambition of the European Green Deal and the Farm to Fork Strategy. It will be necessary for the sector to address these externalities, but also focus on the way in which we chose, use and re-use resources, as we move towards a circular Blue economy.

How aquaculture is facing these challenges, and the solutions put in place to develop a sustainable, responsible and productive and climate neutral European aquaculture sector for key marine and freshwater fish, shellfish and algal species are the main themes for AE2022 event in Rimini.

**TO SUPPORT FUTURE STUDENT
 SCHOLARSHIPS, PLEASE MAKE
 A DONATION TODAY
 TO THE SCHOLARSHIP FUND!**

[WWW.WAVMA.ORG/
 SCHOLARSHIPS.](http://www.wavma.org/SCHOLARSHIPS)



INTRODUCING API® POND AQUA ESSENTIAL™

Your ALL-IN-ONE concentrated pond water conditioner



- Detoxifies Ammonia, Nitrite, and Nitrate
- Removes Chlorine, Chloramines, & Heavy Metals

[SHOP POND ESSENTIALS NOW](#)



“The Wipeout™ Terrarium and Aquarium Glass Cleaner works wonders for keeping my display tanks clean! I take a lot of photos of my fish and always hated the water stains on the glass. With the wipeout glass cleaner the water stains are gone and I enjoy the crystal clear view of my fish!”

– Marcel Wuethrich



**NON-TOXIC
FORMULA!**
Reptile, Fish and
Plant Safe!

Zoo Med WIPEOUT™ Terrarium and Aquarium Glass Cleaner, removes white mineral deposits without streaking or leaving a haze.

- Cleans streaks, haze, hard water deposits, dust or fingerprints on glass or acrylic aquariums and terrariums.
- Made from 100% sustainable plant-based ingredients



ZOOMED.COM

