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WHO ARE WE

MISSION

The Mission of the 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.

To fulfill this Mission, the World Aquatic Veterinary Medical Association has established the following:

Objectives

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

The ideas presented in this publication express the views and opinions of the authors, may not reflect the view of WAVMA, and should not be implied as WAVMA recommendations or endorsements unless explicitly stated.

Information related to the practice of veterinary medicine should only be used within an established valid Veterinarian-Patient-Client Relationship.

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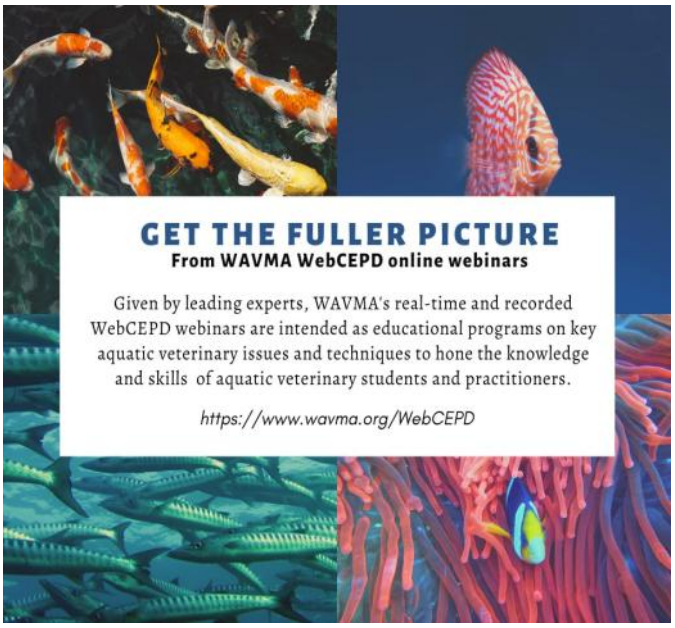
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Cover photo:

Drs Bartolomeo Gorgoglione and Cahya Fusianto searching for bryozoans in the Mad River in Dayton, OH.
Story on pages 20-21.





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.

EDITORIAL

Editor's Note

Merry Christmas, Happy Hannukah, and Happy New Year! The new year of 2025 is already upon us, and we are thankful for the good graces of 2024 and looking forward to this next year. My biggest Christmas gift came in the mail on December 26th, a copy of the new book *The Handbook of Ornamental Fish Health and Welfare* (see page 31). This book took four years of work by several WAVMA members, all of whom are Certified Aquatic Veterinarians. It is now available through CABI Publishers.

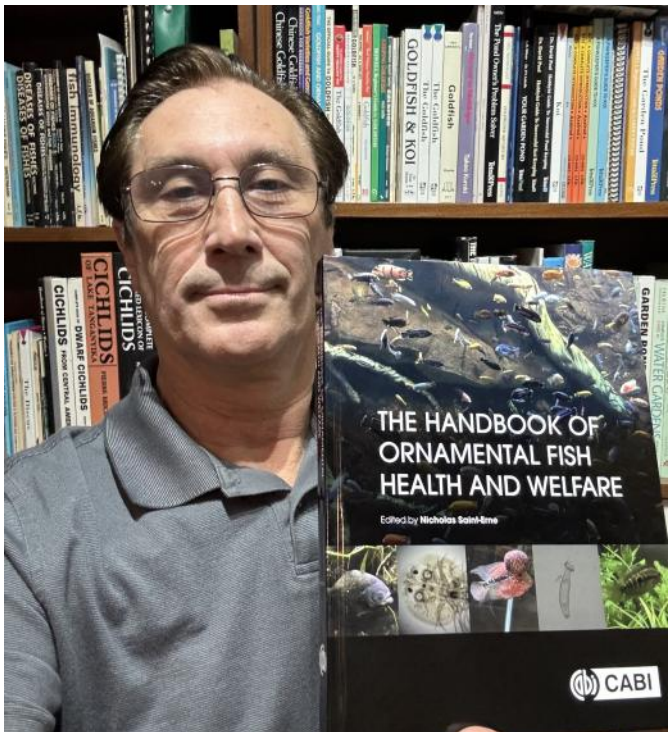
Other exciting events of 2024 are reviewed by President Metselaar (page 5), Secretary Venegas (pages 6-7), by Director Win Surachetpong (page 7) and Director Paola Barato (pages 8-9), and an AAFV Convention report by Robert Martinez (page 10). There is a student report by Kristina L. Kaleel on pages 18-19.

A reprint article from the MSU News about Past-President Bartolomeo Gorgoglione's research into fish diseases in the waters around the Great Lakes is on pages 20-21, and provides a photograph for the cover of this issue.

Sad, late-breaking news is the passing of WAVMA Director Simon Doherty. More information is found on page 23. Condolences to his family. He will be missed by WAVMA and veterinarians everywhere.

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

To go from FEED to FISH: feed-feet-fest-fist-fish.



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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.

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The Aquatic Veterinarian

The Quarterly Magazine of the World Aquatic Veterinary Medical Association

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WAVMA Members can place a free 1/8 page (business card size) advertisement in the TAV. Contact TAVeditor@wavma.org for information on advertising and payment options.

EXECUTIVE REPORTS

President's Report



Dear WAVMA Members,

As we approach the end of 2024, I'd like to take a moment to reflect on what has been a remarkable year for our association. WAVMA has achieved significant milestones this year, including surpassing our financial goals. I am pleased to report that we have over-delivered on income by approximately $3,000 while underspending by $20,000. This prudent management has bolstered our financial position, placing additional funds into our accounts to support WAVMA's future endeavours.

Our Distinguished Fellows are in the final stages of developing the WAVMA strategy document—a cornerstone for shaping the future direction of our association. This comprehensive plan reflects the collective vision of our members and leadership, ensuring WAVMA continues to thrive and lead in aquatic veterinary medicine.

This year, I had the privilege of representing WAVMA at the TAVA meeting in Bangkok, Thailand. As both WAVMA President and Chair of the Credentials Committee, I engaged in valuable discussions regarding the CertAqV certification. Recognizing the cost challenges that this program poses to many in diverse regions of the world, we are actively exploring adjustments to make CertAqV more accessible. Dr. Nelly Isyagi, our incoming President, has already noted similar concerns in Africa and will undoubtedly guide WAVMA with her expertise and commitment to equity and inclusivity.

As my presidency comes to a close, I want to express my heartfelt gratitude to all members, the Board, and our committee volunteers. It has been an honour to serve this incredible association. I am confident that under Dr. Isyagi's leadership, WAVMA will continue to grow, adapt, and make a meaningful impact globally.

Thank you for your dedication to advancing aquatic veterinary medicine. I wish you a joyful holiday season and look forward to seeing all that WAVMA will accomplish in 2025.

Warm regards,

Matthijs Metselaar DVM PhD Dipl ECAAH
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EXECUTIVE REPORTS

Secretary's Report

Dear WAVMA Members,

Wow, what a year 2024 has been! It's been a whirlwind of activity, and I wanted to give you the full scoop on all the exciting developments and milestones we've reached. This report summarizes the key happenings, achievements, and, sadly, some losses we've experienced.

First off, a big shout-out to our fantastic leadership team! Dr. Matthijs Metselaar (UK) has been leading the charge as President, with Dr. Bartolomeo Gorgoglione (USA) transitioning to Past President, and Dr. Nelly Isyagi (Uganda) stepping up as President-Elect. We've also got a seriously awesome new Executive Board, with regional directors from across the globe! This expanded, truly international team means more effective representation, increased support for members worldwide, and stronger networking opportunities for everyone. We're talking about improved communication, better addressing of regional concerns, and fostering connections across continents. A big welcome to all our new regional directors!

One of the most exciting developments this year has been the continued success and evolution of our Aquatic Certification programs. Both the CertAqV (for aquatic veterinarians) and CertAqVNT (for aquatic nurses and technicians) programs are flourishing. And we've made significant improvements to the application process by making it entirely online. This digital upgrade has resulted in faster processing times and a far more user-friendly experience for applicants. It's all about making certification more accessible and efficient for everyone.

Our WebCEPD program (our fantastic webinar series) also continues to be a rockstar! We're celebrating a major milestone – five years of delivering high-quality, informative webinars. With well over 100 lectures available, and 10 delivered this year alone, and more planned, it's established itself as the go-to resource for continuing education in aquatic veterinary medicine. These webinars have truly become a cornerstone of our professional development efforts and a fantastic testament to the hard work and dedication of the team behind them.

We've also seen a surge in applications for the John L. Pitts Aquatic Veterinary Education Awards Program! This is fantastic news, highlighting the ongoing commitment to supporting the next generation of aquatic veterinarians. The hard work of Dr. Rob Martinez and Dr. Dave Scarfe in developing an efficient selection process cannot go unmentioned. Maribel Escobedo and her Students Support Subcommittee have been busy producing newsletters packed with information valuable to our student members, so make sure you're keeping an eye out for those.

WAVMA's commitment to collaboration and advocacy has been a major driving force this year. We've worked collaboratively with the World Veterinary



Association (WVA) and the World Organization for Animal Health (WOAH) on developing critical position statements on issues vital to the future of aquatic veterinary medicine. These include topics like the essential role of veterinarians in aquatic animal health, the importance of vaccination preparedness, and the growing challenge of antimicrobial resistance (AMR). These collaborative efforts have not only strengthened our global partnerships but also amplified our collective voice on critical global health issues. These statements will be posted on the website soon.

Dr. Paola Barato has been instrumental in organizing a series of valuable workshops and training sessions in Latin America, focusing on aquatic veterinary medicine, pathology, and biosecurity in fishes. This initiative showcases our commitment to capacity-building, collaboration, and strengthening expertise within the region.

It's with heavy hearts that we also remember our dear friend and colleague, Simon Doherty, who passed away recently this year. His impact on veterinary medicine, particularly in the field of aquatic animal health, was immeasurable. Beyond his professional achievements – including his role as WAVMA's Director-at-Large for Europe and his recognition as the 2024 Fellow of the Year – Simon will be fondly remembered for his warmth, generosity, and unwavering support. He was a true mentor and friend to many, and his absence is deeply felt.

EXECUTIVE REPORTS

2024 has been a year of significant growth and achievement for WAVMA. We've strengthened our leadership, expanded our reach, advanced our educational resources, and amplified our global advocacy efforts. The passing of Simon Doherty serves as a reminder of the importance of cherishing the strong relationships we have within our community. We remain committed to our mission, fostering a more cohesive, inclusive, and dynamic organization where everyone's voice is heard, and we look forward to continued progress in 2025 and beyond. We're on the right track, building a strong foundation for the future of aquatic veterinary medicine.

WAVMA needs your contribution and interaction to keep going with our motto:
One Profession, One Discipline, One Voice – Cohesive and Inclusive!

Claudia Venegas, MV, PhD, CertAqV, MVetClinTr
WAVMA Secretary
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WAMVA Joint Meeting with the Thai Aquatic Veterinary Association and the WAVMA Annual General Meeting

The joint annual meeting between TAVA (Thai Aquatic Veterinary Association) and WAVMA was held in Bangkok, Thailand, on December 13, 2024. Approximately 100 participants attended the event, which featured guest speakers presenting on various topics, including aquatic animal health management, the application of AI technology, and industry expectations for veterinarians working in the field of aquatic animals.

During the session on collaboration between TAVA and WAVMA, the President of WAVMA provided an overview of WAVMA, highlighting the benefits of membership and introducing the CertAqV program. Several attendees expressed interest in becoming members and pursuing the CertAqV certification.

The WAVMA Annual General Meeting (AGM) also took place in Bangkok on December 13, 2024.

Win Surachetpong
Director for Asia

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.



Latin American Workshops on Fish Medicine and Pathology 2024

During 2024, the World Aquatic Veterinary Medical Association (WAVMA), the University of California-Davis (UC Davis, USA), CORPAVET/ MolecularVet (Colombia), the Universidad San Francisco de Asis Veritas (Veritas, Costa Rica), Universidade Federal de Minas Gerais (UFMG, Minas Gerais, Brazil), Corhuila and Universidad Surcolombiana (Colombia), Universidad Nacional Autónoma de Mexico (UNAM, Mexico), the Latin Comparative Pathology Group of the Davis-Thompson Foundation, and the World Aquaculture Society (WAS) partnered to organize four workshops on fish medicine and pathology for veterinarians, students, pathologists, and aquatic professionals in Costa Rica, Brazil, Colombia and Mexico by the leadership of Dr. Paola Barato (Regional Director for WAVMA) and Dr. Esteban Soto (WAVMA member). The events were delivered in multiple languages—Spanish, Portuguese, and English—with live translation provided when necessary. The primary format included oral presentations, complemented by discussion sessions and a one-day laboratory. Participants practiced key skills, including anesthesia, euthanasia, necropsy, and sample collection in fish.

In Costa Rica (March 22 and 23, 2024), Professors Esteban Soto (UC Davis) and Paola Barato (Corpavet) with the coorganizers Drs. Roberto Olivares (Veritas) and Ezekiel Salas (Costa Rican Fish Vet) meet 40 participants. The lectures were given on topics ranging from fish anatomy and histology to disease diagnosis and water quality. The workshop also included a practical laboratory in which the participants performed different medical procedures including necropsies, macroscopic and microscopic evaluation of different tissues (Fig. 1).

In Brazil (September 3 and 4, 2024), the workshop provided an excellent opportunity to learn about fish medicine and pathology with Professors Esteban Soto (UC Davis), Henrique Figueiredo (UFMG), Guilherme Tavares (UFMG), and Paola Barato (Corpavet). On the first day, attendees explored topics such as the anatomy and histology of teleost fish, the impact of water quality on fish health, and the diagnosis of major fish diseases affecting ornamental and cultured species. The second day focused on biosecurity and health management in aquaculture, emerging diseases in cultured fish in Latin America, and fish farm inspections. The practical session took place on the afternoon of the second day, where participants performed anesthesia, euthanasia, necropsy, sample collection, and wet mount and histopathology evaluations. A total of 30 participants attended the workshop (Fig 2).

In Colombia (September 30, October 1 and 2, 2024), we held lectures featuring Professors Esteban Soto and Melanie Ammersbach (UC Davis), Fernando Mardones (Universidad Católica de Chile), Benjamin LaFrentz (USDA), Fernando Yamamoto (Mississippi



Figure 1. *Workshop Fish Medicine and Pathology, March 22 and 23, 2024, in Universidad San Francisco de Asis Veritas, San Jose, Costa Rica.*
A. Costa Rican participants of workshop.
B. Dr. Esteban Soto lectured about water quality.
C. Dr. Paola Barato lectured about anatomy and histology of teleost fish.
D. Participants in the practice of necropsy.



Figure 2. *Workshop Fish Medicine and Pathology, September 3 and 4, 2024, in Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.*
A. Drs. Renata Egger (UFMG), Henrique Figueiredo (UFMG), Esteban Soto (UC Davis), Paola Barato (Corpavet), and Guilherme Tavares (UFMG).
B. Brazilian participants of the workshop.
C. Professor Henrique Figueiredo teaching in practice.
D. Professor Esteban Soto instructed on fish necropsy.
E. Professor Paola Barato teaching blood sampling.

State University), Henrique Figueiredo (UFMG), Sara Patricia Bonilla (RedFish), and Paola Barato (Corpavet). This workshop focused specifically on tilapia health. On the first day, participants learned about

the anatomy and histology of tilapia, the impact of water quality on fish health, and the diagnosis of infectious, noninfectious, and nutritional diseases affecting tilapia and catfish, as well as vaccination strategies. The second day covered biosecurity and health management in aquaculture, epidemiology, clinical pathology, necropsy, and tilapia farm inspections. The third day was dedicated to practical sessions.

Under the guidance of Professor Soto, 100 participants in six concurrent labs performed tilapia necropsies. Following this, they received training in wet mount analysis from Professor Paola Barato. Simultaneously, 30 participants worked with Professor Fernando Mardones in a computer lab, focusing on aquaculture epidemiology. In the afternoon, Professors Soto, LaFrentz, and Figueiredo led bacteriology and molecular biology practices for 60 participants across three labs. Meanwhile, Professor Barato continued training 40 participants in histopathology, emphasizing the major diseases affecting tilapia (Fig. 3). The Colombian workshop had the participation of people from Peru, Mexico, Honduras, and Colombia.



Figure 3. *Workshop Fish Medicine and Pathology, September 30, October 1 and 2, 2024, in Universidad Sur-Colombiana and Universidad Corhuila, Neiva, Huila, Colombia.*
A. Participants from Colombia, Peru, Mexico, and Honduras. B. Dr. LaFrentz (USDA), Prof. Mardones (UCC), Dr. Barato (Corpavet), Prof. Figueiredo (UFMG), Ms. Bonilla (RedFish), Prof. Soto (UC Davis).
C. Prof. Soto in demonstrative necropsy with 100 participants in six concurrent laboratories. D. Dr. Barato lectured about the main gross and histologic lesions in tilapia diseases. E. Prof. Mardones in the practice of epidemiology.

In Mexico (November 21 and 22, 2024) the workshop was presential and virtual with 78 participants. The lectures were given by Professors Esteban Soto (UCDavis) and Paola Barato (Corpavet) in anatomy and histology of teleost fish, the impact of water quality on fish health, biosecurity and health management in aquaculture, diagnosis of major fish diseases affecting ornamental and cultured species, emerging diseases in cultured fish in Latin America, and fish farm inspections. The second day was practical session with Professors Soto, Barato and Ariadne Hernández (UNAM) where participants performed anesthesia, euthanasia, necropsy, sample collection, and wet mount evaluations. Professor Luz Chavacán also was part of the organizing committee (Fig. 4).

Scholarships were provided for students of veterinary medicine in Costa Rica (6), Brazil (5), Colombia (16), and Mexico (3). In total, over 300 attendees/students from industry, independent practice, academia and government participated in the workshops.

Well-trained fish veterinarians and pathologists are critically needed in many Latin American countries to ensure the successful implementation of health programs that benefit aquatic animal health, farm operations, and the broader One Health mission to provide safe fish for human consumption.

The workshops received an overwhelmingly positive response. While there is still a need for more educational opportunities, programs like these represent a significant step forward in advancing aquatic veterinary medicine in Latin America.

Additionally, the workshops served as a valuable forum for exchanging the latest information on infectious and noninfectious diseases in cultured fish, including disease prevention, diagnosis, and treatment, with a focus on internationally reportable diseases.

Thank you to all participants, co-organizing institutions, organizing committees, the WAVMA for making this experience so enriching and successful!

Paola Barato
Director at Large for Latin America/Caribbean



Fig. 4. *Workshop Fish Medicine and Pathology, November 21 and 22, 2024, in Universidad Autonoma de Mexico, Ciudad de Mexico.* ***A.*** *Professor Luz Chavacán (UNAM), Dr. Barato (Corpavet), Prof. Orbelín Soberanis Ramos (Secretary Continuing Education, UNAM), Prof. Ricardo Anguiano Báez (Department Director, UNAM), Prof. Soto (UC Davis), Prof. Ariadne Hernández (UNAM).* ***B.*** *Prof. Soto, in practice, explains the necropsy procedure.* ***C.*** *Prof. Barato presented a wet mount analysis.*

EXECUTIVE REPORTS

American Association of Fish Veterinarians Convention Report
By **Robert Martinez**, DVM, CertAqV

I had the pleasure and honor of attending and presenting at the 12th annual American Association of Fish Veterinarians (AAFV) conference in Seattle Washington in October. I would like to express my appreciation to the WAVMA travel fund in helping offset some of the costs associated with this conference.

This was a sold-out conference of 120 in-person attendees and 40 speakers. There were 4 days of lectures and separated into various session topics. On Thursday, the conference kicked off with a hatchery tour and a wide variety of events on Friday, such as wet labs, afternoon lectures, and a panel session.

The panel session was on Evidence Based Medicine and Fish Health Policy Decisions. It was a rousing discussion on how certain government policies do not align with fish health. The pro and cons were discussed and allowed for audience participation. This was great insight into what the Pacific Northwest and Canadian aquaculture veterinarians are facing.

On Saturday and Sunday, full days of lectures were held, and Monday was a half day for the pathology session. Each day had afternoon events for the members to kick back and mingle with like-minded fish enthusiasts. At this conference, you are encouraged to build relationships with your fellow peers and students. This is one of many reasons I love attending the AAFV conference versus larger conferences. I love that I get to meet many fish vets in different aspects of aquatic medicine who share the same common passion as I do. It's also a great place to catch up with old friends and colleagues from previous years.





I was not only an attendee but also a speaker at the 2024 event. I had the pleasure of presenting three times during the conference. I presented on Saturday, October 19th during the Pet Fish session: Emergency Fish Medicine. Recalling the uniqueness of this conference, I had a few members discuss with me their experiences with emergencies in fish and also learned of a technique for attempting CPR in fish. If you research CPR in fish, you will find that it isn't possible due to anatomy. Though talking with other members I was enlightened to learn of someone doing "open cardiac massage" with some success perioperative. Also learned of a novel technique of placing the index finger back past the gill arches and thumb roughly over the pectoral girdle region and attempting a cardiac massage or compression. Does this technique work? I don't know, but learning of these techniques that have been attempted or thought of is exciting. You won't find this wealth of knowledge and experience in the textbooks currently. This is what excites me for the progression and advancement that we are taking in fish medicine.

On Sunday and Monday, I did a tag-team presentation with pathologists from the Washington Animal Disease Diagnostic Laboratory (WADDL). It was a fun experience to present the clinical case and the pathologist to describe the pathologic findings. A great way for members to see the collaboration between clinician and pathologist.

I had a great time at the conference. I learned a lot, I made some great connections with old and new colleagues. I also had the pleasure of meeting many veterinary students. The passion and interest the students exhibit gives me hope for the future of fish medicine. I am looking forward to the 2025 AAFV Conference in Riverhead, New York. I hope you decide to attend and present next year with the help of the WAVMA travel fund.

EXECUTIVE REPORTS

WebCEPD Program

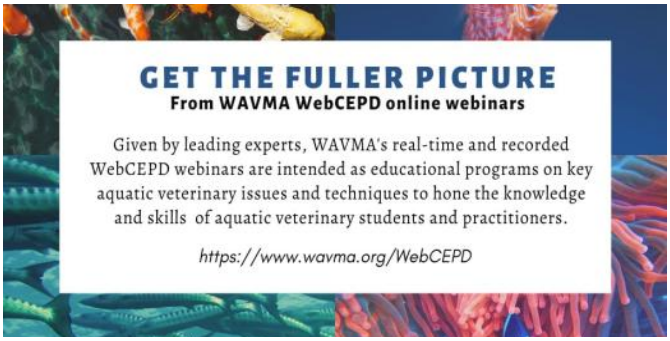
Since 2013, WAVMA has produced over 180 Webinars that are available to watch on our website: https://www.wavma.org/WebCEPD, and conference recordings on the Video page: https://www.wavma.org/video-library. You may be able to use these for continuing education credit for veterinary licensing, and you will also sure learn a lot!

Lectures are given by leading experts, and WAVMA's WebCEPD webinars are intended as educational programs on a variety of aquatic health issues and veterinary techniques to hone the knowledge and skills of aquatic veterinarians and veterinary students. To earn Continuing Education and Professional Development (CEPD) credit, you will need to complete a short Knowledge and Skills Assessment (KSA) to ensure you have met the learning objectives. On successful completion, you will receive a CEPD Certificate, which may be useful for licensure/registration to practice veterinary medicine and to earn credit towards becoming a WAVMA Certified Aquatic Veterinarian.

Recent WAVMA WebCEPDs

WebCEPD videos available:
 B-1085 When seafood is ´fishy´ in more ways than one – Foodborne illnesses of marine origin
by Dr Carla Phillips Savage, (September 5, 2024)
 B-1086 Genetic improvement and Disease resistance: Applications in Aquatic Veterinary Medicine
by Dr Liane Ney Bassini Joint webinar WAVMA & MEVEA (October 14).
 B-1087 The Need for a New Normal—Why We Need to Rethink Feeding of Salmon and
Trout for Better Fish Health Outcomes
by Dr Jesse Trushenski (November 14).
 B-1088 Aquaculture is not agriculture under water – So what?
by Dr Karin Pittman (December 5).

Next webinar
 B-1089 Fish ER medicine
by Dr Robert Martinez (January 30, 2025).



WAVMA's Member Programs and Services

Find a Fish Vet Directory - a directory for the public to find aquatic veterinarians

Member Directory - a members-only tool to locate other members and for vet students to locate mentors

The Aquatic Veterinarian - a quarterly publication with news, peer-reviewed contributions, clinical cases, jobs, meetings and more

Certified Aquatic Veterinarian (CertAqV) Program - a program identifying and certifying veterinarians with competency in core subject matter necessary for practicing aquatic veterinary medicine

WebCEPD Program - live and recorded webinars, courses, and presentations;; many are available for CEPD credit

John L. Pitts Aquatic Veterinary Education Awards Program - an international program that provides financial support for veterinary students and new graduates to increase their experience in aquatic veterinary medicine

Employment Opportunities - a list of available aquatic veterinary jobs, available to members only

Image Library - a collection of images useful for presentations, diagnostic interpretations, and more

Video Library - a collection of videos to help members and others understand aquatic veterinary techniques and issues

WAVMA Student Chapters - WAVMA chapters formed by veterinary students and faculty mentors at veterinary schools and colleges around the world

Members-L - (WAVMA_Members-L@.wavma.org). A members-only listserv for discussions on any topic of interest. To post to it, you must be a current member and ticked the appropriate box in your Member Profile Preferences tab.

Students-L - (WAVMA_Student-L@wavma.org). A discussion listserv for WAVMA student members. you must be a current member and ticked the approrpiate box in your Member Profile Preferences tab.

Leadership Roles - All members (including students) have the opportunity, and are encouraged, to serve on any WAVMA Committee. All full members may also be nominated for a position on the Executive Board. If you are interested in more information, please contact the WAVMA President.

COMMITTEE REPORTS

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. It is over 10 years since WAVMA introduced the CertAqV and since then hundreds of veterinarians around the world have achieved the qualification. Originally the process was manual, but during 2023 WAVMA introduced an online system and also the CertAqVNT for veterinary nurses and technicians. Currently around 30 VN's/VT's have signed up for the certificate, with 11 having achieved the qualification. It is a globally recognized qualification.

The certificates demonstrate to your employer that you have achieved the competence of at least a new graduate, with each of the modules reflecting the areas needed to be competent in aquatic veterinary medicine.

Recently, WAVMA updated the online system to make it easier for all to complete the process, in response to user comments. Most of these changes are visual, making it easier to see where you are in the process. There were also changes to the logic and automation of the system which had caused some confusion among reviewers. Overall, these changes will enhance all users experience of the system.

Whilst the changes were tested first before going live, the real world can throw in some unknowns. If you are currently going through the process and have any questions then please contact the WAVMA Administrators for advice or use the Contact Us page on the website.

All current CertAqV and CertAqVNT are listed on the appropriate pages of the WAVMA website as well as all the information you need to decide if the certificate is right for you. If you are interested in aquatic veterinary medicine, wherever you are in your career, whether student, recently qualified, wishing to take a change in career direction, or simply interested in adding to your knowledge, then the certificates are well worth looking at.

If you have questions about the Certification process, please send me an email, or refer to the website: How to use the automated CertAqV, CertAqVNT system.

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

Certified Aquatic Veterinarians

Samah Abdelrazek	United States
Ali Anwar Ahmad	Singapore
Jessica Allen	United States
Sara Alves	United States
Chelsea Anderson	United States
June Ang	Singapore
Farah Gonul Aydin	Turkey
Romualdo Balagapo	Philippines
Benjamin Balducchi	Canada
Sarah Balik	United States
Marcello Balzaretti	Italy
Madison Barnes	United States
Christa Barrett	United States
Heather Barron	United States
Julia Bauer	Germany
Trista Becker	United States
Jenice Bell	United States
Heather Bjornebo	United States
James Bogan	United States
Pierre-Marie Boitard	France
Rachel Brown	United Kingdom
Faith Burgos	United States
Shraddha Cantara	United States
Christian Capobianco	United States
Todd Cecil	United States
Ri Chang	United States
Bryony Chetwynd-Glover	United Kingdom
Prakan Chiarahkhongman	Thailand
Annie Clift	United States
Mike Corcoran	United States
Emily Cornwell	United States
David Craton	United States
Rebecca Crawford	United States
Hannah Dadah	United States
Manuel De la Riva Fraga	Spain
Zarah Deutsch	United States
Darren Docherty	United Kingdom
Simon Doherty	United Kingdom
Christina Dover	United States
Devon Dublin	Japan
Freeland Dunker	United States
Michael Dutton	United States
Ashley Emanuele	United States
Maribel Escobedo	Mexico
Antonella Fabrissin	Italy
Mohamed Faisal	United States
Erika First	United States
Julie Fithian	United States
Ari Fustukjian	United States
Danielle Godard	United States
Giana Gomes	Singapore
Emmanuel Gonzalez Rueda	Mexico
Bartolomeo Gorgoglione	United States
Krystan Grant	United States
Michelle Greenfield	United States
Miguel Grilo	Portugal
Stephanie Grimmett	United Kingdom
Katharina Hagen-Frei	Switzerland
Alex Hall	United States
Eileen Henderson	United States
Jenny Herbert	United States
Chelsea Hester	United States
Kelsey Hoag	United States
Adrien Izquierdo	United States

COMMITTEE REPORTS

Leslie Jarrell	United States
Sharmie Johnson	United States
Jimmy Johnson	United States
Brian Joseph	United States
Hali Jungers	United States
Kyle Kansman	United States
Elizabeth Kaufman	Israel
Kristina Kelley	United States
Denyse Khor	Singapore
Amy Kizer	United States
Victoria Koch	United Kingdom
Jack Kottwitz	United States
Lana Krol	United States
Marie Kubiak	United Kingdom
Diya Lake	Mauritius
Lucinda (Wing Sze) Lam	Australia
Jan Linkenhoker	United States
Juan-Ting Liu	United States
Richard Lloyd	United Kingdom
Salina Locke	United States
Richmond Loh	Australia
Alfonso Lopez	Singapore
Rubén Arturo López Crespo	Mexico
Jordi Lopez-Ramon	Spain
Amber Lum	United States
Adolf Maas	United States
Raphael Malbrue	United States
Paul Manesis	Canada
David Marancik	Grenada
Victoria Maroun	United States
Laura Martinelli	United States
Robert Martinez	United States
John Mastrobuono	United States
Colin McDermott	Hong Kong
Alicia McLaughlin	United States
Margaret McTighe	United States
Larissa Menke	United States
Matthijs Metselaar	United Kingdom
Sonya Miles	United Kingdom
Timothy Miller-Morgan	United States
David Minich	United States
Haitham Mohammed	United States
Katrina Murray	United States
Kunda Ndashe	Zambia
Lucie Nedved	Australia
Jenifer Nix	United States
Ladislav Novotny	Czech Republic
Massimo Orioles	Italy
Alec Ortiz Colosi	USA
Courtney Pace	United States
Dušan Palić	Germany
Veronica Pardini	USA
Christine Parker-Graham	USA
Lily Parkinson	USA
Chris Payne	USA
Melanie Peel	USA
Sarah Pellett	United Kingdom
Ayanna Phillips Savage	United States
Maximilian Polyak	United States
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
Julianne Richard	USA
Camille Richie	USA
Michelle Rivard	USA
Rifky Rizkiantino	Indonesia
Lucy Robson	United Kingdom
Patinan Rookkachard	United Arab Emirates
Justin Rosenberg	United States
Benjamin Rosenbloom	Saint Kitts and Nevis
Daniel Ruvolo	United States
Komsin Sahatrakul	United Arab Emirates
Nick Saint-Erne	USA
Sonja Saksida	Canada
Maria Eugenia Sancho Santos	United States
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 Martinez	USA
Brandon Spolander	South Africa
Heather Srch-Thaden	United States
Elizabeth St. Germaine	USA
Brittany Stevens	USA
Chairat Sumgorthong	Thailand
Win Surachetpong	Thailand
Spencer Ee Joon Tan	Australia
Tanatporn Tantiveerakul	Thailand
Gillian Taylor	South Africa
Alissa Tepedino	USA
Julius Tepper	USA
Sharon Tiberio	USA
Miranda Torkelson	USA
Norrapat Towanabut	Thailand
Aubrey Traina	United States
Alexandra Troiano	USA
Kaitlyn Upton	United States
Laura Urdes	Romania
Julian Vaillard Cerdio	Mexico
Greta Van de Sompel	Belgium
Claudia Venegas Morales	Chile
Pedro Viadanna	United States
Jelena Vukcevic	Australia
Zachary Waddington	New Zealand
Sarah Wahltinez	USA
Bridget Walker	United States
Chris Walster	UK
Lindsey Waxman	United States
Scott Weber	USA
Marcus Webster	USA
Trista Welsh	USA
Michael Wenninger	USA
Laura Whalen	USA
David Wilbur	USA
Sarah Wilson	USA
Howard Wong	Hong Kong
Sarah Wright	USA
Taylor Yaw	USA
Irene Yen	USA

COMMITTEE REPORTS

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.

Communications Committee
This Committee manages the communications among members and others involved with aquatic veterinary medicine. It oversees the e-News, Facebook, Twitter, LinkedIn and other social media accounts.
Chair: Claudia Venegas, Secretary@wavma.org

Credentialing Committee
This Committee oversees and administers the CertAqV Program for credentialing aquatic veterinary practitioners, and evaluates aquatic veterinary educational programs useful to members.
Chair: Matthijs Metselaar CertAqV-Admin@wavma.org

Education & Students Committee
This Committee facilitates networking between student members and helps development of educational programs and services. It is composed of three subcommittees: WebCEPD, Education Resources, and Student Support.
Chair: Bartolomeo Gorgoglione, BartGorg@msu.edu

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

Membership Committee
This Committee oversees membership issues to optimally serve members and the organization. It oversees the listservs and membership lists.
Chair: Chris Walster, Administrators@WAVMA.org

Publications Committee
This committee oversees the publication of WAVMA's quarterly journal, *The Aquatic Veterinarian*, and other occasional publications.
Chair: Nick Saint-Erne, TAVeditor@WAVMA.org

A variety of items (mugs, t-shirts, hoodies, bags) are available for purchase at WAVMA's Store.

Items in the Zazzle store can be purchased in a variety of sizes, colors, and can even be customized to include your name, clinic name, or to include WAVMA Student Chapter information. For help with customization, please contact the WAVMA Administrator.

https://www.zazzle.com/store/wavma788

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



COMMITTEE REPORTS

Fellows Advisory Council Annual Report

This was a busy year for the WAVMA Distinguished Fellows. Following on the previous year, our main task this year was to create the WAVMA DEVELOPMENT STRATEGY 2025–2035, as a sustainable foundation for WAVMA's continued growth and visibility in the field of aquatic veterinary medicine. The council's role in this process has been crucial in ensuring that the strategic plan reflects the needs and expectations of our WAVMA community.

In this process, our association's Mission, Vision, Objectives and Values were reviewed in light of current and future membership programs, and considering the global context of sustainability. Several action points under the strategy have been identified, focusing on the membership, governance, visibility, educational quality and communications strategy. Amongst the points discussed by the Fellows there has been a focus on the Strategic planning and governance, Membership engagement and value perception, Certification programs, Communication development, and Revenue sustainability and diversification.

Fellow of the Year 2024

This year, the honorary title was awarded to Dr. Simon Doherty. Simon was an Animal Health & Aquaculture Sector Specialist for the U.K. Department for International Trade and has over 20 years of experience in veterinary practice, industry, academia and professional representation.

Simon's journey in the aquaculture sector began in 2011 when he was appointed Manager of the Fish Diseases Unit whilst a Veterinary Research Officer and Named Veterinary Surgeon at the Agri-Food & Biosciences Institute, in Belfast. Simon was awarded the 2024 FVE – Federation of Veterinarians of Europe Award for outstanding contribution to the veterinary profession. He joined WAVMA in 2015 and was awarded CertAqV in 2016.

It is with great sadness we have learned of the recent death of Simon Doherty. See page 23 for more information.

Laura Urdes, PhD DVM CertAqV
Fellows Advisory Council Chair



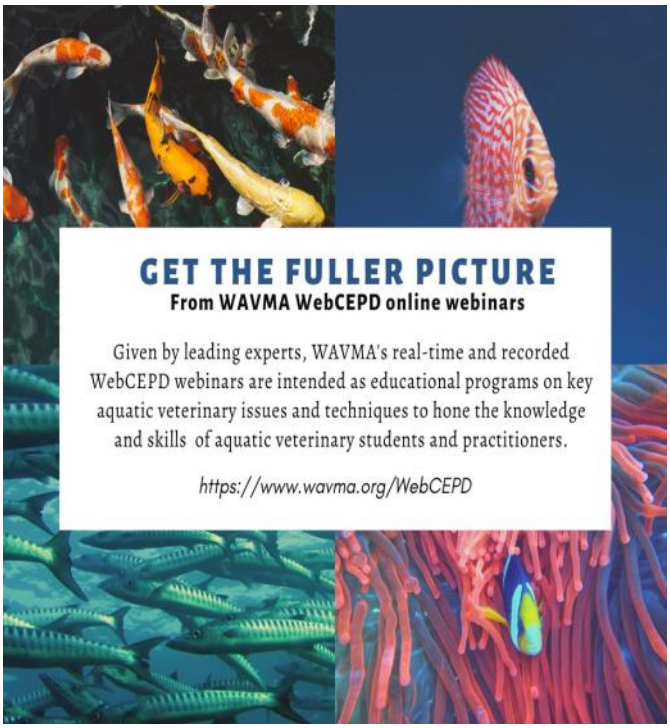
Fellows Advisory Council

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.

WAVMA 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)
Matt Metselaar (2022)
Stephen Reichley (2023)
Simon Doherty (2024)

Laura Urdes, PhD DVM CertAqV
Fellows Advisory Council Chair



COMMITTEE REPORTS

WAVMA Student Chapter Guidelines

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.*

Examples of available Student Chapters programs:

- Assistance in organizing and promoting Chapter programs and activities.
- MiniGrants of up to $500 USD are available to assist official WAVMA Student Chapters with conducting activities intended to engage students in opportunities related to aquatic veterinary medicine. Download the Flyer here and the application form here.
- 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. Get more information here and a Spanish version here.
- Reduced rate (50% off) WAVMA Full Membership the year after graduation.
- John L. Pitts Aquatic Veterinary Education Awards Program
- Access to the latest editions of WAVMA's quarterly journal, *The Aquatic Veterinarian*.
- Access to WAVMA member-only webpages.
- Aquatic veterinary externship and job listings.
- Participation in the WAVMA Certified Aquatic Veterinarian (CertAqV) 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)

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

University of Florida, College of Veterinary Medicine USA (Established 2013)

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)

University of Bristol, Bristol Veterinary School, England (established 2023)

University of Calgary, Canada (established 2023)

COMMITTEE REPORTS

Education and Students Committee

WebCEPD Subcommittee
(Leader: Claudia Venegas)
- 10 webinars hosted in 2024
- Coordinating future webinars with:
  - Dr. Rob Martinez (January)
  - Dr. Paola Barato (February)

Education Resources Subcommittee
(Leader: Robert Martinez)
- Fall 2024 WAVMA Student Chapter Mini-Grant Awardees:
  - Bristol University, $500 – Tilapia Pathobiology Workshop by Dr. Matthijs Metselaar
  - Oregon State University, $500 – Home Aquarium Health and Enrichment: Nuances of Keeping Freshwater Fish in Enriching and Sustainable Conditions (WAVMA Student Chapter Aquarium)

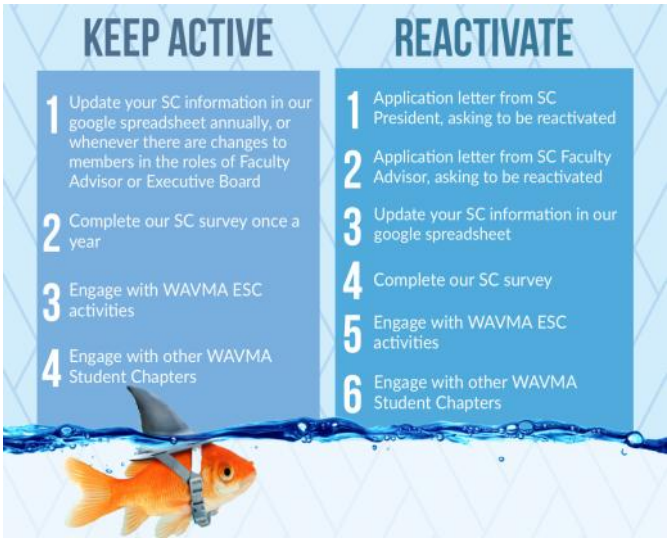
Student Support Subcommittee
(Leader: Maribel Escobedo Mondragón)
- WAVMA Student Chapter Survey
  - 18 individual responses from the following 6 chapters: University of California, University of Illinois, University of Sydney, Ankara University, Colorado State University, University of Edinburgh
- Updating the Student Chapter website to ensure accurate and relevant information.

WAVMA ESC Vice Chair **Rachel Feeney**
at rzf3@msstate.edu

Bartolomeo Gorgoglione, DVM, MSc, PhD, CertAqV
Chair of WAVMA Education and Students Committee

Robert Martinez, DVM CertAqV
Education Resources Subcommittee Leader

Maribel Escobedo Mondragón,
Student Support Subcommittee Leader



Prospects for Effective One Health Aquatic Biosecurity Control in Africa

Integrated One Health Approaches:

Effective aquatic biosecurity in Africa requires integrating One Health principles, emphasizing the interconnectedness of human, animal, and environmental health. The focus includes sustainable aquaculture practices, controlling transboundary diseases, and addressing challenges like climate change, antimicrobial resistance, and biodiversity loss. Such measures are vital for safeguarding aquatic ecosystems and improving resilience in aquaculture systems.

Capacity Building and Education:

Education and research are critical for bridging gaps in aquatic biosecurity. Initiatives like the Aquatic Health for Africa (AHA) project aim to enhance local expertise by developing skills for disease detection, control, and prevention. Promoting partnerships between public and private sectors and fostering targeted research is essential to meet industry needs and enhance biosecurity measures..

Governance and Stakeholder Engagement:

Strengthening governance frameworks through multi-stakeholder engagement is a key strategy. Policymakers, industry players, and communities must collaborate to develop harmonized disease control protocols and environmental management strategies. Increasing public awareness and adopting ecosystem-based management approaches also play a critical role.

Research and Innovation:

Focused research into disease transmission, host susceptibility, and intervention strategies is essential. Innovative tools and cost-effective practices tailored to local contexts are required to improve the effectiveness of biosecurity strategies across Africa's diverse aquaculture landscapes.

FAO Report on Aquatic Animal Health in Africa:
FAO Presentation on Aquatic Animal Health

Frontiers in Veterinary Science:
Bridging Knowledge Gaps in Fish Health Management

STUDENT REPORTS

John L. Pitts Aquatic Education Award Report
Kristina L. Kaleel, MPS
University of Florida College of Veterinary Medicine
Summer 2024



My name is Kristi Kaleel, and I am currently a fourth-year veterinary student at the University of Florida. Like many fellow aquatic friends and colleagues, my interest in this field stemmed from a young age. At the beginning of my veterinary education, I set several research and educational goals for myself and knew that I wanted to take advantage of as many aquatic opportunities as I could. During the Summer of 2024, I was fortunate to have been selected as a recipient of the John L. Pitts Aquatic Veterinary Education Award, which allowed me to embark on an aquatic-filled journey, turning my goals and dreams into a reality.

In May, I gave a virtual presentation at the 55th Annual International Association for Aquatic Animal Medicine (IAAAM) Conference. This was my first time formally presenting research, so to have been selected to give a student presentation at this renowned conference was an honor. The research focused on using endoscopy and rectal enema for fecal collection in wild sea turtles while out in the field. The project was based in Ecuador and the Galápagos Islands, and the field technique was utilized both on land in a formal facility and on a boat. Though the technique was not without its trials and errors, it did prove to be successful for collecting large volume fecal samples from these turtles. Ultimately, these samples were then analyzed by a PhD student, Juan Pablo Muñoz-Pèrez, at the time from the Universad San Francisco de Quito, to evaluate microplastic contents.

Though I was not directly involved in the field component of this project, the team, led by Dr. Greg Lewbart from North Carolina State University, welcomed me with open arms as an additional collaborator to help write and publish this work. This opportunity not only allowed me to practice my research writing skills and experience the formal journal submission process, but it also allowed me to disseminate information to a larger audience of veterinary scientists, with the hope of making a positive impact on the field.

The next aquatic experience this summer was my four-week externship at the Pacific Marine Mammal Center (PMMC) in Laguna Beach, California. PMMC is a nonprofit organization that rescues, rehabilitates, and releases marine mammals. Part of the core of their conservation mission is to spread ocean awareness and inspire stewardship through research and education and provide the highest standard of care possible for their patients. During my externship, the hospital was bustling with over 80 pinniped in-patients, including California sea lions, elephant seals, and harbor seals. The majority were initially brought to the hospital as stranded, malnourished pups. However, one of the most memorable cases was the subadult male California sea lion, “Tad,” who was rescued from a marina for having a cervical gillnet entanglement. Prior to my arrival, he underwent an extensive surgery to remove the fishing material through collaboration with a local veterinary surgeon. By the time I arrived, Tad was well on his way to recovery. I was fortunate enough to have been a part of his anesthetic procedure to remove his sutures, and towards the end of my externship, I joined the PMMC team in celebrating his successful release.

Unfortunately, not all rescue and rehabilitation efforts result in the same outcome. While externing, I also participated in several necropsies of pinnipeds and cetaceans. Although the successful release cases are incredibly exciting, I found that performing necropsies and submitting samples for histopathology were just as important because these animals served as ambassadors for their fellow conspecifics and sentinels for ocean health.

The last stop on my summer aquatic journey was to Baltimore, Maryland, where I participated in another four-week veterinary externship at the National Aquarium. I not only participated in the care of the aquarium’s diverse array of collection animals, but also provided care to the rescue animals undergoing rehabilitation. From terrestrial and aquatic mammals, to avians, reptiles, amphibians, teleosts, elasmobranchs,

and aquatic invertebrates, no day at the National Aquarium was the same. Like PMMC, the National Aquarium implemented the utmost standard of care for its patients and offered an incredible educational learning opportunity for students. Not only did I learn a lot about the basic, and intricate, practices of aquarium medicine, but I also learned about the importance of interpersonal communication, establishing trust, and developing positive rapport with aquarists/trainers/animal care staff, as the foundation of this field is built upon teamwork and collaboration. Furthering the concept of collaboration, the National Aquarium is one of several partner institutions that houses Florida corals as part of the Florida Reef Tract Rescue Project (FRTRP).

As a native Floridian, I decided to delve more into this and did my student presentation on coral medicine, the efforts of the FRTRP as it relates to stony coral tissue loss disease, and the National Aquarium's role in these efforts.

I was able to network with expert coral aquarists at the facility who showed me nothing but kindness and eagerness to share their knowledge. This collaborative and welcoming nature is one of the many reasons I love the aquatic field.

As an aspiring aquatic veterinarian, I am beyond grateful for the mentorship and guidance that I received from my research colleagues and the veterinary/animal care staff at both externship facilities. The diversity of these experiences provided me with a wealth of knowledge, skills, and new perspectives that I know will greatly benefit me in my future career. I want to offer my sincere gratitude to all those who made this summer possible, and a special thanks to WAVMA and the John L. Pitts Scholarship Committee for this generous financial award.

Florida Reef Tract Rescue Project culture tank.



RESEARCH REPORT

Warming lakes and rivers may spread fish pathogens

Michigan's rivers and lakes were once cold enough that fish were protected from some infection-causing parasites. As the Great Lakes ecosystem warms, an MSU researcher is investigating new pathogens that may become relevant to fish. Bartolomeo Gorgoglione, MSU assistant professor leading the Fish Pathobiology and Immunology Laboratory (FPIL), found new evidence of *Tetracapsuloides bryosalmonae* occurring in at least three Great Lakes and several rivers throughout the Great Lakes region. This myxozoan parasite is listed as an "Emergency Pathogen" by the Great Lakes Fish Health Commission (GLFHC), and as a reportable pathogen in Michigan and surrounding states. This is because it is known to cause proliferative kidney disease (PKD) in salmonid fish species. While causing no risk to humans, it has been known to heavily impact farmed and wild fish in Europe and in the Western United States, although so far, no PKD-related fish mortality has ever been documented in the Great Lakes area.

Warming water temperatures due to climate change have created an environment where the parasite may reproduce faster, Gorgoglione said. What that means for fish still needs to be studied. It's possible the infected fish could release infectious malacospores into the water without developing PKD, as a tolerant fish host. For now, Gorgoglione is helping the Michigan Department of Natural Resources (DNR) identify which fish stock is infected and which rivers are free of the myxozoan parasite, so they can prioritize where their farmed fish may be stocked.

"This is something completely new," Gorgoglione said. "We don't precisely know what it may mean for salmonid hosts in the Great Lakes, and if they may be able to complete the parasite life cycle naturally and without suffering from disease, or if they will develop the disease and eventually die or become easier preys."

T. bryosalmonae is a unique fish pathogen because it can't be spread directly from fish to fish. Instead, it must first infect an aquatic invertebrate called Bryozoa, the "moss animals," which are microscopic aquatic invertebrates that live in colonies. Bryozoans then release spores that infect salmonid fish, which may release another type of spore and complete the parasite's life cycle. It's a seasonal parasite that mostly spreads in the warm water temperatures of summer months.



Drs. Gorgoglione and Cahya Fusianto searching for and showing bryozoans to Dave Meuninck (IN-DNR), in the St. Joseph River in Mishawaka, Indiana.

Gorgoglione previously studied this parasite in Europe, working on trout immune responses to PKD in Scotland, and discovering its presence in Austria. He also confirmed its presence in Pacific Salmon in Alaska. In recent years, it caused fish mortality outbreaks in the Western United States. In 2016, *T. bryosalmonae* was blamed for a massive fish kill in Montana's Yellowstone River, leaving thousands of Mountain Whitefish dead.

This summer, Gorgoglione and his team set out to see if the parasite was infecting wild salmonids in the northern part of Lake Michigan. They boarded the DNR "Steelhead" research vessels at Charlevoix, MI and sampled Lake Trout during DNR fish population surveys. They also walked in rivers and lakes around the region, sampling fish and turning over rocks and logs looking for bryozoans.

Sometimes they have found bryozoan colonies also attached to material discarded in rivers, such as inside discarded beer bottles. Looking for bryozoans they found that these invertebrates often share substrates in rivers and lakes with the highly invasive Zebra and Quagga mussels and have been found growing on top of their shells.

"From a scientific point of view, it's really exciting," Gorgoglione said. "There's no evidence in the

RESEARCH REPORT

scientific literature about the involvement of mussels in the *T. bryosalmonae* life cycle, so it opens up many new questions."

So far, most of the fish Gorgoglione's group have tested are asymptomatic and don't show signs of PKD. He believes it's possible that fish bred in hatcheries can be essentially immunized against developing PKD from the parasite. Fish in the hatcheries are exposed to *T. bryosalmonae* when they're kept in river water, but because the water temperature is maintained low and they are well fed, they don't develop the disease and they're able to develop antibodies to fight the parasite. There's still more to be studied and more work to be done. Gorgoglione is using the data to warn the DNR of hot spots and areas that may be infected.

The research group is advancing. They are developing new detection methods, including mapping the seasonal load of the parasite spores in water from rivers and lakes in Michigan. "The use of environmental DNA detection (eDNA technique) can be very sensitive to find hot spots where the parasite life cycle is completed," Gorgoglione said.

He also wants to recreate adequate conditions in his lab to study the life cycle of *T. bryosalmonae* and monitor its effects, which would be a first in America. However, this would be costly and difficult, since it involves the adaptation to lab conditions and maintenance of both salmonids and bryozoans. But only a study of this magnitude would enable the FPIL scientists to provide answers about the tolerance or susceptibility of Great Lakes fish stocks. He's seeking grant funding to move forward on this research to help the DNR to prevent future fish kills.



The FPIL team during a field sampling from the Mad River in Ohio, in partnership with OH-DNR, with Dr. Cahya Fusianto and two visiting vet students from Toulouse, France, Baptiste Esterez (sitting) and Axel Valentini (standing).



Dr. Gorgoglione and the PhD student Santosh Lamichhane sampling on northern Lake Michigan on board the DNR "Steelhead" research vessel.



For more information, go to:
https://msutoday.msu.edu/news/2024/msu-research-warming-lakes-and-rivers-may-spread-fish-pathogens

FarmExpo 2024 Report

Enhancing Aquatic Animal Health and Productivity through Collaborative Veterinary Consultation at FarmExpo 2024

The Thai Aquatic Veterinary Association (TAVA), in collaboration with the World Aquatic Veterinary Medical Association (WAVMA) provide free consultations for farmers and participants at the FarmExpo event in Bangkok, Thailand, from October 3 to 6, 2024. With over 10,000 attendees daily, this was a unique opportunity for farmers to gain knowledge about aquatic veterinary practices and improve the health and productivity of aquatic animals.

Aquaculture is a rapidly growing industry with considerable economic and nutritional importance, particularly in Southeast Asia. Thailand, one of the region's aquaculture leaders, faces challenges in maintaining aquatic animal health due to issues such as disease outbreaks, environmental stressors, and resource limitations. Addressing these challenges necessitates expert intervention from aquatic veterinarians who can offer specialized care and guidance to farmers. The Thai Aquatic Veterinary Association (TAVA) and the World Aquatic Veterinary Medical Association (WAVMA) provided such expertise at Farmexpo 2024, a major agricultural exposition in Bangkok. This paper explores how their services contributed to advancing sustainable practices in aquaculture.

Results

1. Outreach and Engagement

The consultation sessions held by WAVMA and TAVA attracted hundreds of farmers daily, evidencing a substantial demand for veterinary expertise within the aquaculture community. By integrating WAVMA's global practices with TAVA's local expertise, these consultations provided accessible, actionable advice that farmers could directly apply to improve their practices.

2. Disease Control and Biosecurity Improvements

Farmers reported increased confidence in disease management, with many noting their intent to implement WAVMA and TAVA's recommended pathogen control protocols. Common challenges, such as waterborne pathogens and parasites, were addressed with customized interventions tailored to specific farm environments, emphasizing sustainable and preventative practices over reactive approaches.

3. Enhanced Productivity and Animal Welfare

WAVMA and TAVA's focus on nutrition and biosecurity will contribute to improved animal welfare and productivity. Farmers who consulted with the organizations indicated a greater understanding of balanced diets and feed quality. This knowledge can lead to measurable improvements in growth rates and survival rates, highlighting the correlation between expert guidance and sustainable productivity in aquaculture.



Conclusion

The joint WAVMA-TAVA initiative at FarmExpo 2024 exemplifies the critical role of veterinary associations in supporting sustainable aquaculture through accessible expertise and education.

By aligning global standards with regional practices, WAVMA and TAVA provided farmers with essential tools for promoting aquatic animal welfare, enhancing productivity, and embracing environmentally sound practices. This model of accessible, expert-driven consultation could serve as a blueprint for similar initiatives globally, underscoring the importance of veterinary collaboration in shaping the future of aquaculture.



IN MEMORIAM

In Memoriam:
Professor Simon Doherty, BVMS, FRCVS, CertAqV

We're extremely saddened by the news that Professor Simon Doherty has passed away on 17th December 2024, peacefully at Marie Curie Hospice. He was the dearly loved husband of Anne, and father of Callum, Lewis and Isla. Following a private committal, a Service of Thanksgiving was held in the Chapel of Unity, Methodist College Belfast on Saturday 28th December 2024 at 2.00 pm.

Professor Simon Doherty began his veterinary career in progressive farm animal and equine practice after graduating from the University of Glasgow in 2000. He was a past president of the British Veterinary Association (BVA) in 2018-19, having earlier served as president of its Northern Ireland branch and the North of Ireland Veterinary Association.

He was later appointed the Animal Health and Aquaculture Sector Specialist for the UK Government's Department for International Trade, and was the founding chair of the UK One Health Coordination Group, later chairing the Federation of Veterinarians of Europe (FVE) Food Safety and Sustainability Working Group.

For the last fifteen years, Professor Doherty was also working with the international NGO, Ripple Effect (formerly Send a Cow), which is involved in sustainable development in six sub-Saharan countries – Ethiopia, Kenya, Uganda, Rwanda, Burundi, and Zambia. His deep commitment to change characterised his work with Ripple Effect, and many Ripple Effect programme teams had the privilege of knowing Simon personally through his visits to their projects in East Africa, and earlier this year to the Africa Hub in Kenya. These encounters were marked by his genuine interest and unwavering support for improving human, environmental and animal health as one.

Professor Doherty was appointed as an Honorary Lecturer at Queen's University Belfast in 2011 and joined the staff as a Senior Lecturer in 2018. He was a very talented vet, scientist and teacher who inspired everyone he met and who worked alongside him, investing much time in supporting the next generation of veterinary practitioners. He had a profound impact on the lives and futures of many students.

Professor Doherty was made a Fellow of the Royal Society of Biology in 2015 and appointed as a Chartered Biologist in 2016. In the same year, he became a Certified Aquatic Veterinarian with the World Aquatic Veterinary Medical Association. He was awarded Fellowship of the Royal College of Veterinary Surgeons for Meritorious Contributions to the Profession, and Associateship of the Royal Agricultural Societies (both 2020).



A passionate advocate for the positive role veterinarians can play in championing sustainability, he oversaw the publication of BVA's UK sustainable animal agriculture position, calling for the introduction of sustainable animal agriculture measures to better protect the world which both people and animals share. More recently, Professor Doherty led BVA's working group on sustainable finfish aquaculture, resulting in a policy position calling on the aquaculture industry to take a One Health approach to achieve sustainability goals.

Professor Doherty also worked with many other organisations, including VetSustain, and this year, he was named World Vet of the Year at the WVA Global Veterinary Awards in Cape Town, South Africa for his contribution to One Health, and secured the Federation of Veterinarians of Europe Award for Outstanding Contribution to the Veterinary Profession. He recently also received the honour of a Professorship from his university, Queen's University in Belfast, recognising his exemplary contributions to veterinary science and education. Professor Simon Doherty was this year honoured by the World Aquatic Veterinary Medical Association as its Distinguished Fellow for 2024. He was also the *Director for Europe* for WAVMA.

COLLEAGUE'S CONNECTION

An interview with Dr. Chris Walster, BVMS, MVPH
Certified Aquatic Veterinarian
WAVMA Distinguished Fellow



Has working in aquatic medicine always been your passion? What inspired you to work in this specific field?

No. As a veterinary student (in the 1980s) I never realized there was that opportunity. What inspired me was realizing there was a gap in my veterinary knowledge (aquatic veterinary medicine) and then the opportunity to learn about it came up. Treating fish absolutely fascinated me and they deserved better care than they received at that time.

What is your job and what education did you have to receive to get to your current position? Did you get to experience any training or internships, if so can you explain what that was like and what tasks it included?

I aways worked in private veterinary practice with my main focus being ornamental fish, but this led to working with fish farms, fish welfare and public health. So I worked with farms, importers/exporters, hobbyists and various universities. Pretty much including every aspect of veterinary medicine coupled with the opportunity to "tour" the world.

At the time, no formal education was required, mainly because it did not exist. I learnt from anyone I could: Professors, other veterinarians, PhD students in whatever relevant field. So, I gradually acquired the needed knowledge.

Today, I think it is necessary to have some sort of formal education, mainly because the field has advanced significantly (the first veterinary fish textbook was published in 1986, now there are dozens). Veterinary courses now provide more aquatic veterinary medicine modules, there are numerous post graduate courses you can take, and the availability of internships/externships has increased. In some respects, I wish I was at the start of my career rater than the end, just to be able to experience some of what is currently available.

Do you have any research projects or cases that you are currently working on, and can you explain them?

Currently I'm working on a third textbook with a group of international authors currently titled, "One Health Concepts And The Aquatic Ecosystem". This is important as few people realise the damage we've done to aquatic ecosystems or their importance: 70% of the available oxygen is produced in the world's oceans, their importance as carbon sinks, or that fish stocks do not always recover, even when you cease fishing. Spring spawning Baltic Herring that were overfished back in the 14th century and have yet to recover commercially is the most dramatic example, and more recently, cod stocks declining on the Grand Banks. There is credible, but unproveable evidence, since it relies on verbal accounts, that 95% of the biomass of the North Sea has been "fished out" since 1840 and the introduction of trawling. That is before you talk about what might be considered more traditional veterinary topics such as disease control, welfare or medicines availability and usage. What it demonstrates is, the need for people to adopt One Health principles. The examples above required input from archeologists to zoologists and numerous other sciences to work out. So we need to break down silos between scientific disciplines.

I find it fascinating and exciting that an archeologist might provide the evidence to me as a veterinarian as to why something occurred.

What is the best part about treating and working with marine life?

The animals and people you work with, along with the travel to various parts of the world.

Are there any current issues that are affecting our marine life that you have come across while doing research or while working with the animals? How can these issues be fixed?

Aquatic animals are out of sight and therefore out of mind, so often ignored. There are numerous issues that are complex to solve, with many differing opinions, and perhaps the biggest problem to resolve is what is the "right balance." Sticking to veterinary issues, then the problems are: welfare, how to treat /

COLLEAGUE'S CONNECTION

control disease due to a small pharmaceutical armory, evolution of pathogens, and perhaps the biggest issue – how to develop farming in the full glare of the 21st century social media.

We need to farm aquatic animals if we are to continue to eat them. But farms cause pollution (although wild species are killed by pollution) and maybe do not offer the best welfare (although only an average 1% of wild aquatic organisms reach maturity – the rest are eaten by various predators). How do we control disease in "intensive" farming when we have limited pharmaceuticals? Getting the balance right is particularly complex when you add in climate change which adds to the disease burden experienced. We need new ideas and new concepts to solve these problems.

What difficulties do you experience, and how do you deal with them?

The difficulties are the variety and range of topics aquatic medicine encompasses, along with the degree of uncertainty that what you are doing will work. The biggest difficulties can be actually seeing your patients. You may need to get "on-farm" but can't due to the weather, which can stop access for weeks. Dealing with those issue is best handled, I suppose, with "be prepared!"

Are there any specific animals that you work with or treat? Are there any health problems that you get to work with?

My favorite animals to work with are koi carp, as they're "easily accessible" non-food fish, so wider availability of medicines can be used, and the fish are worth sufficient money and treated as pets, so that you can offer individual treatment or surgery, coupled with individual personalities. So, I see them as "cute and cuddly," which always helps with any animal. The most frustrating is knowing you can help an animal but are restricted by economics, or unable to reach it.

Otherwise, I've been lucky enough to work with numerous species form corals to sharks. Perhaps my "favorite" disease was Koi Herpes virus (CYHv-3). I was one of the first clinicians to see it and that led to working with specialists in HIV (Aids), vaccinologists, cancer specialists, and national/global regulatory authorities. All very fascinating.

What is the best part about working with the animals? Is it hard to work with sickly animals as patients?

Being with the animals is the best part, the people can often be a bit of a pain. It is hard if you can help the animals but economics gets in the way. However, it is always a privilege, which extends to being able to relieve their suffering.

Do you think that aquatic medicine is helping with climate change? Are you a part of any conservation efforts, and if so can you explain how it is helpful in your current career path?

Yes! I'm not involved in any particular conservation efforts, but would like to think that through my work (either as a veterinary clinician, author, lecturer, or working with the likes of WAVMA) I've contributed to a better understanding of how the aquatic world is linked to terrestrial life.

How do you think aquatic medicine and the overall field of marine biology are going to change in the future? Are there any changes you would like to see happen?

They will continue to expand in knowledge and their impact. The changes over my career have been huge and recognition is wider. This will and needs to continue if we're going to save 70% of the planet that is covered in water. We call it the Earth (30% of the surface is land) whilst it would be better perhaps to call it the Water (70% of the surface). Changes needed are recognition of the importance of aquatics (by the public) and better funding by governments.

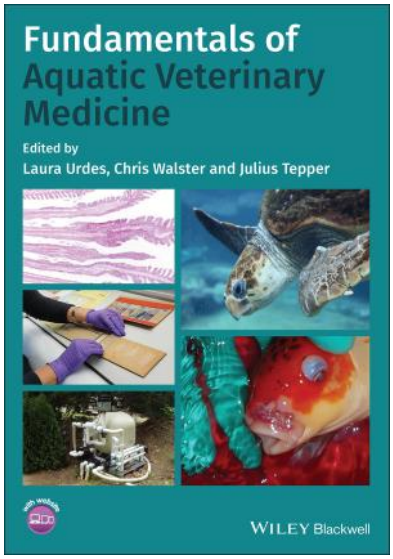
How does teamwork play a role in your job?

A very necessary part. Not only with the veterinary team (my direct colleagues) but also including other scientists.

What is the best advice you would tell a college student pursuing this career about this career?

I'm biased but it is the best career out there. The diversity of experiences and the knowledge learnt is the greatest reward. Get as much diverse experience as you can whilst a student and build contacts. Always keep learning and keep your mind open. You never know when the next opportunity will arise.

Dr. Chris Walster is one of the authors and editors of the WAVMA publication, ***Fundamentals of Aquatic Veterinary Medicine,*** *designed to teach veterinary personnel how to incorporate aquatic veterinary medicine into their practice.*



EDUCATION REPORT

Advancing Aquatic Veterinary Expertise: WVEPAH Aquaculture Hybrid Program

The World Veterinary Education in Production Animal Health (WVEPAH) Aquaculture course is an advanced educational program recently developed through a collaborative Memorandum of Understanding (MOU) signed between WAVMA and WVEPAH. Several WAVMA members served as Course Masters and took an active role in organizing and delivering this program. Validated by the World Organisation for Animal Health (WOAH) and culminating in a diploma from the Université de Montréal, the course is structured to deepen participants' knowledge beyond foundational competencies.

This program is designed for veterinarians who have already achieved Day-1 competencies, such as those provided by WAVMA's Certified Aquatic Veterinarian (CertAqV) program. While the CertAqV equips professionals with essential skills in areas like diagnostics, water quality, and client communications, the WVEPAH course goes further, offering specialized training in biosecurity, epidemiology, advanced disease management, and other areas crucial for today's aquaculture industry.

The Hybrid Course Structure:

Online Component: This virtual module provides a comprehensive foundation, covering critical topics such as anatomy, physiology, pathology, nutrition, genetics, epidemiology, animal welfare, and farm management. Participants engage with real-world case studies, enabling them to identify weaknesses in farm systems and potential biosecurity risks, building a solid theoretical foundation.

Residential Week: The five-day residential module takes place at locations across the globe. The first course was held in Padova, Italy, and included an aquaculture farm visit, where participants apply their theoretical knowledge to hands-on activities. It also has several lab-based workshops. This practical component offers an invaluable opportunity to experience real-world challenges and best practices for farm health management.

The WAVMA President, Dr. Matt Metselaar, DVM, PhD, Dipl. ECAAH, CertAqV, MIFM, MRCVS, currently the owner of Aquatic Vets Limited, described his contribution in several online posts:

"It was a pleasure to lecture at the WVEPAH Aquaculture Course in Padova, where we combined theoretical knowledge with practical fieldwork. The course included a site visit to a local fish farm, offering participants an invaluable opportunity to engage directly with the farmer, ask questions, and gain real-world insights into the industry."

"During the visit, we conducted a clinical review of the farm setup, assessing the health of the fish based on clinical signs observed during our walkthrough. This hands-on experience allowed attendees to apply their veterinary knowledge in a real-



EDUCATION REPORT

world scenario. The afternoon session was dedicated to reviewing the findings from our visit. What followed was a lively and dynamic discussion, where we not only challenged the advice presented but also explored how it might be received by the farmer. The conversation shifted toward strategies for engaging with farmers, emphasizing the importance of communication to ensure that recommendations are both practical and beneficial in improving animal health and welfare. The day highlighted the complexity of veterinary practice in aquaculture, where balancing scientific expertise with the farmer's perspective is crucial for achieving meaningful improvements."

The next day there were sessions that covered treatment strategies, prescribing protocols, and a thorough exploration of the veterinary cascade. We also delved into vaccination protocols, effective vaccination strategies, and the often-complex registration process for vaccines.

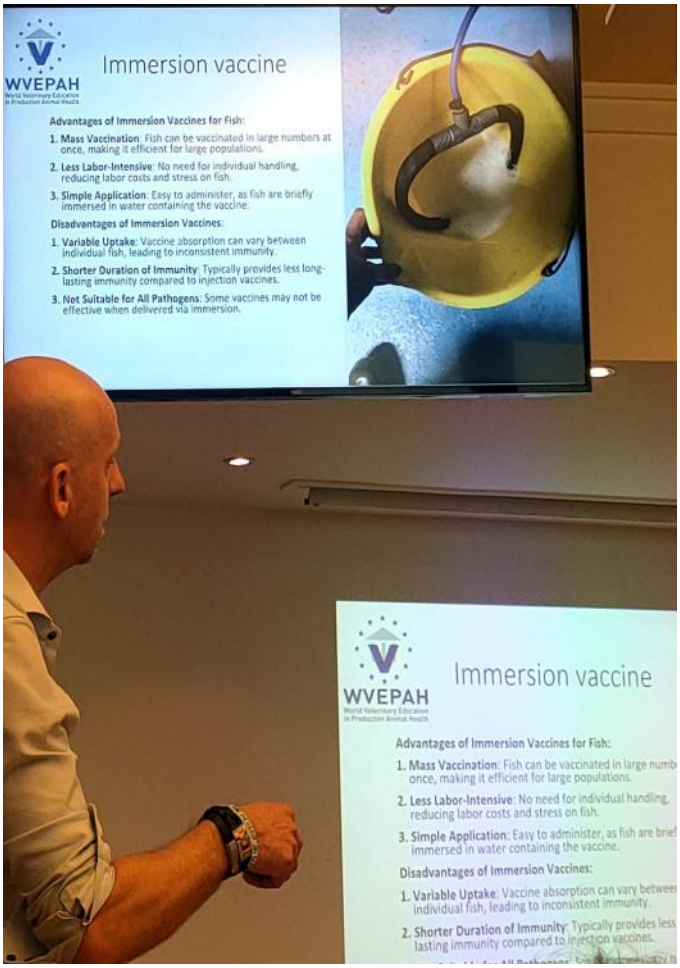
A key aspect of the presentations was understanding how to apply these treatments and vaccination strategies in the field, ensuring they align with real-world challenges and regulations. We discussed the importance of the vaccine registration process and its direct implications for prescribing, especially under the cascade system, which is vital for ensuring safe and effective animal care.

These detailed presentations aimed to equip veterinary professionals with both the technical knowledge and practical tools necessary to navigate these areas, providing better animal health outcomes and compliance with regulatory standards."

The WAVMA Past-president, Dr. Bartolomeo Gorgoglione, DVM, MSc, PhD, CertAqV, currently working at Michigan State University, said this on the course:

"I delivered two online sessions: Anatomy and Physiology of Fish, and Fungal and Oomycete Fish Diseases. In the first lecture I aimed to provide participants with a thorough understanding of fish anatomy, starting with the evolutionary history of aquatic vertebrates and focusing on the unique structures and functions of teleosts, the most diverse group of vertebrates. In this module, I detailed critical systems like the fish respiratory and circulatory systems, highlighting adaptations such as gill structure and buoyancy control. These are fundamental concepts for assessing and diagnosing health conditions in aquaculture, where an understanding of these specialized structures is key to effective fish health management."

"Recognizing the complexity of fungal and oomycete infections in aquaculture, I delved into the challenges posed by pathogens, such as *Exophiala* and *Saprolegnia* spp., which can significantly impact fish health. In this module, I shared diagnostic approaches ranging from culture and histopathology to advanced molecular diagnostics, equipping participants with effective methods for identifying and managing these infections, which can lead to high mortality rates if left unchecked."



"We also discussed the control and preventive measures available, even though treatment options are limited, aiming to help participants mitigate the spread of these challenging pathogens in aquaculture settings."

Both Presidents reiterated that this program builds on foundational skills, such as those provided by WAVMA's CertAqV program, and takes participants further by exploring complex topics like biosecurity, epidemiology, and advanced disease management—skills that are essential for today's aquaculture veterinarians.

Through these experiences, the WVEPAH course exemplifies the One Health approach that WAVMA endorses, focusing on sustainable aquaculture practices and animal welfare. WAVMA's involvement as Course Masters strengthens the program's quality and relevance, preparing participants to tackle complex health challenges in the field.

WAVMA and WVEPAH's joint effort is advancing the field of aquatic veterinary medicine, equipping professionals with essential knowledge and skills for driving sustainable practices and addressing global health issues in aquaculture.

CASE REPORTS

Assessment of Parasitic Prevalence and Potential Health Impacts in Captive Gharial Hatchlings at Chitwan, Nepal

Prepared By Sujan Adhikari, B.V.Sc. and A.H.
10th Semester
Agriculture and Forestry University (AFU),
Chitwan, Nepal

1. Introduction

The gharial (*Gavialis gangeticus*), a critically endangered crocodilian species, faces significant threats to its survival, including habitat loss, declining prey availability, and health challenges in both wild and captive populations. They have experienced a population decline exceeding 94% compared to historical estimates. The current population stands within the range of 300-900 and is categorised as Critically Endangered under IUCN Red List.

Captive breeding programs play a crucial role in the conservation of gharials; however, helminth parasitic infestations in hatchlings can severely compromise their health and survival rates. These helminths can greatly affect their immune function, growth and increase susceptibility to secondary infections.

This study focuses on assessing the prevalence of gastrointestinal helminths in captive gharial hatchlings at Gharial Breeding Centre, Chitwan, Nepal, and investigates the potential health impacts of parasitic infections. The findings will contribute to improved management practices in captive breeding programs and strengthen efforts toward gharial conservation.

2. Materials and Methods

Fresh faecal samples were collected per rectum from gharial. It was scooped out by a sterile cotton swab. Each collected sample was placed in an air and watertight sample bottle containing 70% ethyl alcohol labelled with a unique identification code. The sample was preserved in a cool box and then transported to the parasitology laboratory as soon as possible. Faecal examination was carried out on the very same day at the laboratory when possible. Samples that were not tested on the same day were stored at +4°C. Parasitological examination of samples was done by direct smear and flotation techniques to identify eggs.

a. Sedimentation Technique

A 1 gram faecal sample was taken, ground with mortar & pestle, and 50 ml of distilled water was added. Then, the mixture was poured on the beaker, through a tea strainer. Filtrate was collected, agitated, and added into 15-mL sample vials. The filtrate was allowed to settle for 30 minutes, and the sediment was placed on a clean and grease free slide making a thin smear. The sediments were observed throughout the slide at 4x magnification, followed by examination at 10x magnification, using a compound microscope to identify any parasitic eggs or larvae present.



b. Flotation Technique:

A 1 gram faecal sample was mixed with 10 parts of tap water and strained through a wire gauze. The filtrate was collected in a Wassermann tube and centrifuged at 2,500 rpm. The supernatant was discarded, and the sediment was resuspended in water. This process was repeated until the supernatant became clear. Afterward, 3-4 mL of 33% zinc sulphate solution was added to the sediment, and it was thoroughly mixed. The solution was then filled with zinc sulphate solution up to about half an inch from the rim. A few loopfuls of the supernatant fluid were collected with a bacteriological loop and examined for parasites.

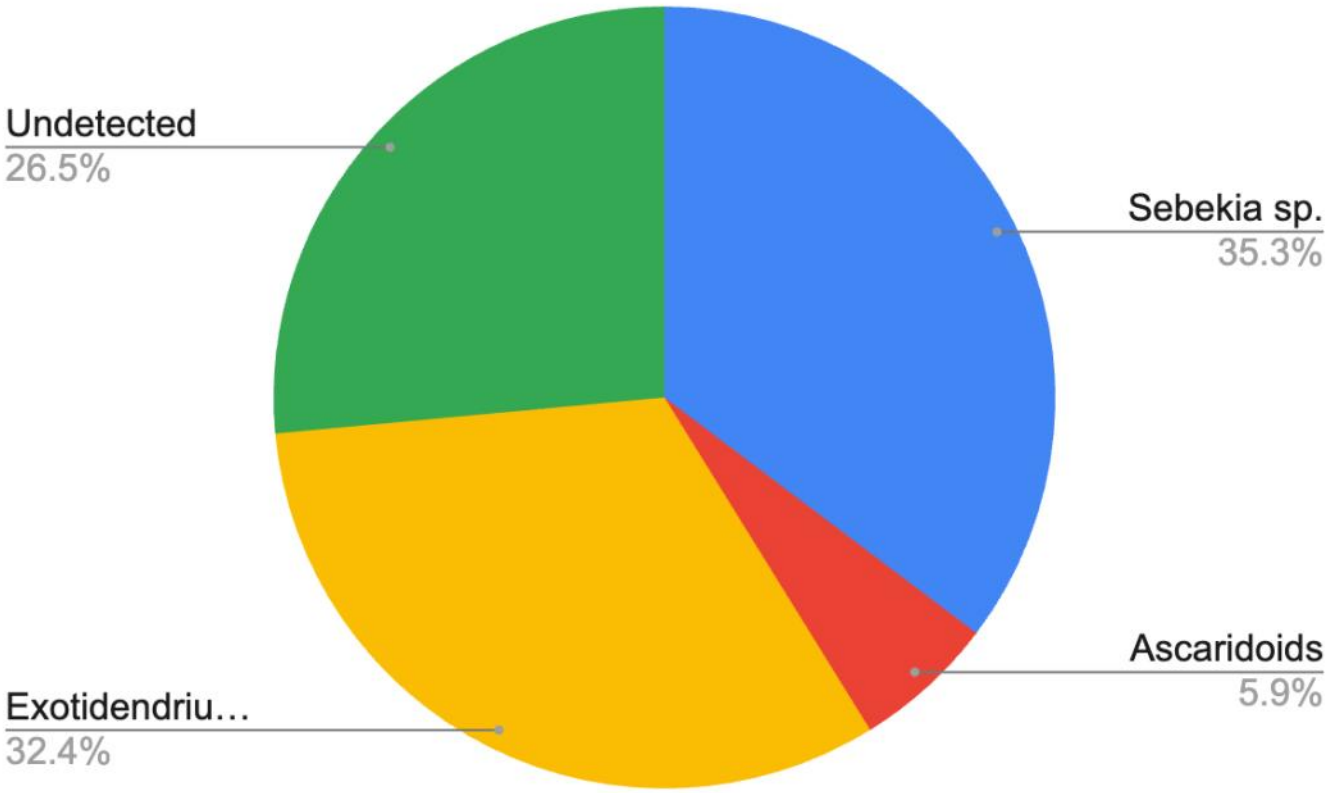
3. Results

A total of 34 faecal samples from captive gharial hatchlings were examined for the presence of gastrointestinal helminths. The most prevalent parasite observed was *Sebekia sp.*, detected in 12 samples, which accounted for 35.29% of the total samples.

Exotidendrium sp. was found in 11 samples, representing 32.35% of the total. *Ascaridoids* were detected in 2 samples, or 5.88% of the total. Additionally, parasitic infestations were undetected in 9 samples (26.47%).

Table:
Gastrointestinal helminths detected in gharial hatchlings. (n=34)

1 *Sebekia* sp.	12	(35.29%)
2 *Ascaridoids*	2	(5.88%)
3 *Exotidendrium* sp.	11	(32.35%)
4 *Undetected*	9	(26.47%)



The findings suggest a high parasitic load in the gharial population, which correlates with their health status. The heavily parasitized hatchlings showed retarded growth along with increased susceptibility to secondary infections. They are often associated with lethargy and diarrhea which make them susceptible to dehydration, electrolyte imbalance and malnutrition. These results underline the importance of regular parasitological monitoring in critically endangered gavials. The targeted interventions to improve the health and management of captive gharial hatchlings is of uttermost importance.

4. Funding and Acknowledgments

This research was funded by the World Aquatic Veterinary Medical Association (WAVMA) through John L. Pitts Aquatic Veterinary Education Award Grant 2024. I extend my sincere gratitude to WAVMA for providing this invaluable funding opportunity. The support has significantly helped in the successful execution of this project. I am deeply grateful to Asst. Prof. Dr. Rupak K.C., Prof. Hom Bahadur Basnet, Asst. Prof. Chhet Raj Pathak, and Asst. Prof. Himal Luitel for their invaluable support and guidance throughout the course of this research. I would especially like to express my heartfelt appreciation to Mr. Swagat Khanal and Mr. Aakash Marasini for their tremendous help and cooperation during the research activity.

WORD LADDER PUZZLE

Change the first word into the last word by changing just one letter at a time to make a new word. Each word contains four letters:

FEED

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FISH

(see answer in Editors' Report)



WAVMA SPONSOR

Esox Biologics *Detect* Diagnostics





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With prices starting at just £125, Detect offers unparalleled value, delivering comprehensive pathogen insights that are easy to interpret and accessible from your mobile device. Contact us today and elevate your diagnostic accuracy.

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LITERATURE REVIEW

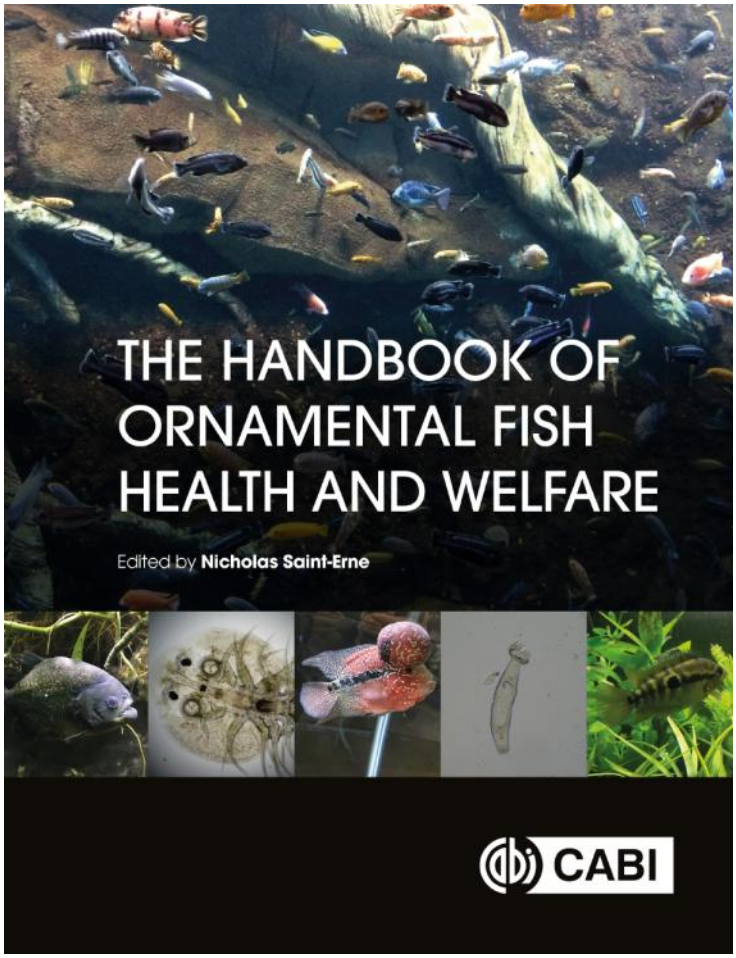
***The Handbook of Ornamental Fish Health and Welfare* (2024)**

Edited by **Nicholas Saint-Erne**, DVM, CertAqV
Certified Aquatic Veterinarian
WAVMA Distinguished Fellow

This book forms a complete resource covering ornamental fish health and welfare from a recognized expert on the topic. Beginning with an overview of the tropical fish industry and aquarium keeping, it covers all the key elements of care, including water-quality testing and maintenance, filtration systems, nutrition, husbandry, handling and transportation of fish, disease diagnosis, treatments and medications, and disease prevention. It also reviews areas of wider interest, such as biosecurity and zoonoses.

Chapters include:
1 A Brief History of Keeping Fish in Aquariums
2 Overview of the Ornamental Fish Industry
3 Fish Taxonomy, Anatomy, and Physiology
4 Aquarium Care
5 Water Quality
6 Filtration Systems
7 Fish Pond Care
8 Fish Nutrition
9 Equipping the Veterinary Hospital to Treat Fish Patients
10 Clinical Procedures
11 Diagnostic Tests
12 Fish Hematology and Biochemistry
13 Transporting Samples for Laboratory Analysis
14 Advanced Diagnostic Techniques
15 Sedation, Anesthesia, and Euthanasia
16 Surgery
17 Infectious Diseases
18 Protozoan Parasites
19 Metazoan Parasites
20 Zoonotic Diseases from Fish
21 Non-infectious Diseases
22 Fish Facility Husbandry and Biosecurity
23 Administering Medications to Ornamental Fish
24 Ornamental Fish Welfare
25 Welfare of Fish in Public Aquariums
26 Quarantine Protocol
Recommended Reading
Glossary
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The chapter authors are all WAVMA members and Certified Aquatic Veterinarians and include:
Azureen Erdman, DVM, CertAqV
Sharmie Johnson, DVM, CertAqV
Wildlife World Zoo & Aquarium
Robert Martinez, DVM, CertAqV
Aquatic Veterinary Consulting, PLLC.



Lily Parkinson, DVM, DACZM, DACVECC, CertAqV. Brookfield Zoo
Nicholas Saint-Erne, DVM, CertAqV
WAVMA Distinguished Fellow
Chris Walster, BVMS, MVPH, CertAqV
WAVMA Distinguished Fellow

The book can be read through to gain a complete overview of the care and welfare of ornamental aquarium and pond fish, or it can be used to easily look up specific information about a topic of interest. With extensive photographs, plus references allowing readers to study areas of interest in more detail, this book makes an invaluable teaching and reference handbook. It is a vital source of information for veterinarians, scientists using fish in their labs, students, ornamental fish breeders, retail pet store workers, and aquarium keepers looking for trusted advice about how to properly care for their ornamental freshwater fish.

Available through the CABI website:

https://www.cabidigitallibrary.org/doi/book/10.1079/9781789246032.0000

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AQUAVET® 2025 COURSE ANNOUNCEMENTS

We are pleased to announce the *AQUAVET*® 2025 courses and related information.

AQUAVET® I and II will be presented at Roger Williams University in Bristol, Rhode Island. Bristol is a picture perfect New England town about 20 minutes from Newport.

***AQUAVET*® I - An Introduction to Aquatic Veterinary Medicine**
The course is designed for veterinary students and veterinarians who have an interest in applying their veterinary training to aquatic animals.
Duration: 4 weeks – May 26 to June 22, 2025
Fee: $3,050 for full-time veterinary students, although a program benefactor will pay $200 for each student, bringing the cost down to $2,850. This includes tuition, room and most meals.

***AQUAVET*® II – Comparative Pathology of Aquatic Animals**
The course is oriented toward the pathology of vertebrates and invertebrates commonly used as laboratory animals, encountered in display aquaria, and of importance to aquaculture enterprises.
Duration: 2 weeks – May 26 to June 8, 2025 – Prerequisite: AQUAVET® I
Fee: $1,825 for full-time veterinary students. This includes tuition, room and most meals.

***AQUAVET*® Summer Research Fellow (one offered)**
Fellows pay no tuition for the 8 weeks of the research program itself and will be reimbursed for room and board expenses via a stipend of $3,800 for the research period.
Duration: 8 weeks following AQUAVET® I – Prerequisite: AQUAVET® I
Venue: Laboratory at Cornell University

Detailed information about the courses is available on our website. The specific course programs for each course in 2024 are also listed there.

Applications for admission are due by January 15, 2025. The application is available on our website. You will receive an e-mail acknowledging receipt of your completed application and supporting materials.

Please visit our website at: www.aquavet.org

MEETINGS OF INTEREST TO AQUATIC VETERINARIANS

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

WAVMA Resources for CertAqV and CertAqVN/T
www.wavma.org/WebCEPD
Resource: one hour Webinars on various topics
Cost: Available for free to WAVMA Members.
KSE Credit: Stated for each webinar. To gain the CEPD certificate you need to complete a short quiz.
Evidence: Submission of Certificate with KSE record.

www.wavma.org/video-library
Resource: Video recordings deemed of good quality but not part of WebCEPD
Cost: Free to WAVMA members
KSE Credit: Variable,
Comments: One of WAVMA's primary aims is to promote aquatic veterinary medicine. There are other resources WAVMA provides such as The Aquatic veterinarian, member listservs, e-news and blog.

Aquadocs
www.aquadocspodcast.com
Resource: Various discussion topics
Cost: Free
KSE Credit: Dependent on time and topic
Evidence: None. Discuss with mentor
Comments: Lots of information on various topics.



Aquaculture Conferences & Exhibitions

XI International Symposium on Fish Parasites
Fish Health, Parasites and Biodiversity Conservation
Mérida, Mexico – 20 January to January 24, 2025

AQUACULTURE AMERICA 2025
New Orleans, Louisiana USA
March 6-10, 2025
www.was.org

WORLD AQUACULTURE 2025 CHINA
Qingdao, China
April 24-27, 2025
www.was.org

WORLD AQUACULTURE SAFARI 2025
Entebbe, Uganda
June 23-26, 2025
www.was.org

AQUACULTURE EUROPE 2025
Valencia, Spain
September 22-25, 2025
www.aquaeas.org

LACQUA 2025
Puerto Varas, Chile
October 6-9, 2025
www.was.org

40th World Veterinary Association Congress
Washington DC, USA
18-22 Jul 2025

WVA and the American Veterinary Medical Association are proud to invite you for the WVAC 2025 Congress organised in conjunction with the AVMA Convention 2025, July 18-22, 2025 in Washington, D.C.

We'll be bringing together the global veterinary community for an experience unlike any other: high-quality education, exciting events, and the incredible opportunity to meet colleagues from all over the world.

For more information, visit :
https://www.avma.org/events/avma-convention

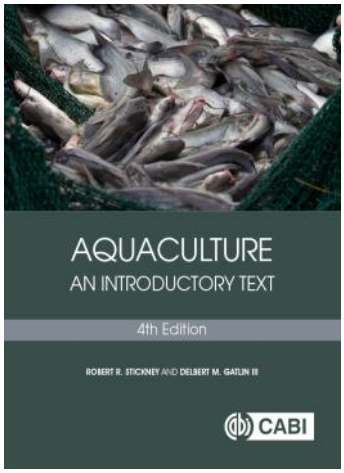
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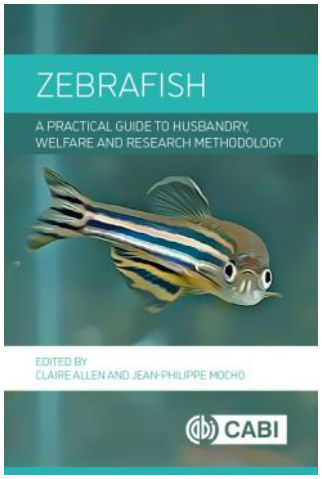
WWW.WAVMA.ORG/SCHOLARSHIPS.

CABI Aquaculture Books

CABI publishes a number of books in aquaculture, fish welfare, and fisheries that may be of interest to WAVMA members. These books can be viewed here: https://www.cabidigitallibrary.org/action/showPublications?pubType=book&ConceptID=780213&sortBy=TitleSort&startPage=

These include 15 recently acquired titles that are new to CABI and published as eBooks for the first time. You can find out more about the acquisition here. Previously published in print by 5m Books, the titles are available digitally and as a collection for the first time on CABI Digital Library. Publication in eBook format makes them accessible to a wider audience, both for individual purchase and for libraries.





AQUACULTURE 2025
New Orleans, USA – March 6-10, 2025

Every three years, the Triennial is held somewhere in the United States. In 2025, the Triennial returns to sunny New Orleans – one of America's favourite cities. The Triennial is the largest aquaculture conference and tradeshow with nearly 4,000 attendees from over 90 countries. The Triennial combines the annual meetings of the National Shellfisheries Association, Fish Culture Section of the American Fisheries Society, World Aquaculture Society, and the National Aquaculture Association. In addition to the annual meetings of the main sponsors, look what else is happening at AQUACULTURE 2025 with the annual Meeting of USAS, the U.S. Chapter of World Aquaculture Society and the Aquaculture Suppliers Association, the annual Meeting of the U.S. Trout Farmers Association, the special sessions organized by Aquacultural Engineering Society and International Association of Aquaculture Economics and Management and many other meetings of working groups, government agencies and related aquaculture activities. Click for Brochure and abstract.

The Marine Mammal Vet
Health, Education, Conservation

Marine Mammal Medicine Online Course

Marine mammals are critical indicators of ocean health and biodiversity. *The **Introduction to Marine Mammal Medicine in the UK course*** offers a structured, evidence-based curriculum for Veterinary Surgeons, Veterinary Nurses, and Students of veterinary medicine or veterinary nursing. Over four weeks, participants delve into seal and cetacean anatomy, health diagnostics, and conservation strategies, exploring topics such as disease pathology, ecological roles, and treatment protocols for stranded individuals.

Led by Dr. Natalie Arrow, this four-week, self-paced online program is designed to equip veterinary professionals and students with essential knowledge and skills. Combining theoretical learning with practical applications, the course provides a comprehensive overview of marine mammal health, ecology, and conservation.

The first two weeks are dedicated to seals and seal pup strandings, health assessments, and care. The second two weeks are dedicated to cetaceans and cetacean stranding response. Also included are two sixty-minute online, interactive sessions, led by Natalie Arrow. These will take place during an evening of week 2 and week 4, and will be clinical scenario based (dates and times of live sessions will be displayed for each course pre-booking). In total, this course provides 11 hours of CEPD. A certificate of completion will be provided at the conclusion of the 4 weeks.

The next course is scheduled to begin in February 2025 and be repeated 2-3 times per year, as a demand led course the frequency may vary. It offers tiered pricing to accommodate professionals and students. With flexible access and expert guidance, it's an opportunity to learn at your own pace. You can contact Dr Arrow via the contact page on the website if you have any queries.

Prices
Veterinary Surgeons: £300 (£27 per hour of CPD)
Registered Veterinary Nurses: £225 (£20 per hour of CPD)
Students of veterinary medicine or veterinary nursing: £110

https://themarinemammalvet.co.uk/courses/an-introduction-to-marine-mammal-medicine-in-the-uk-2/

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