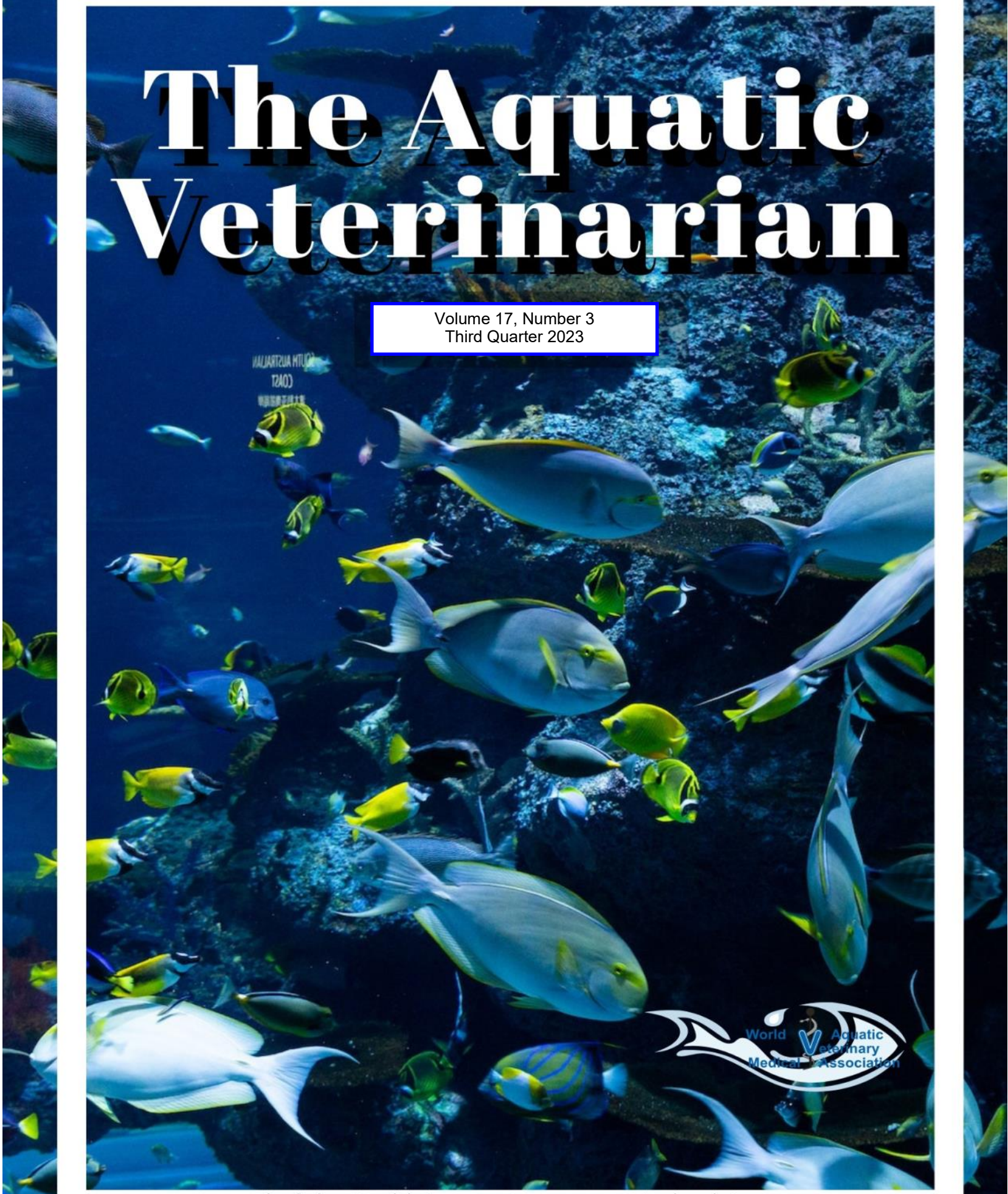
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The Aquatic Veterinarian

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Journal of the World Aquatic Veterinary Medical Association

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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Executive Editor
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Cover by Giorgia Maria Gottifredi

"I am thrilled to have had the opportunity to work on the redesign of The Aquatic Veterinarian. As someone who is passionate about fish, I have dedicated the past two years of my career to aquaculture, where I have gained invaluable experience and knowledge. I am now eager to take the next step in my journey by pursuing a degree in fish pathology. I'm excited to be a member of the WAVMA among all of those who play such a critical role in promoting the health and wellbeing of aquatic animals!"

- Giorgia Maria Gottifredi

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

Did you know that WAVMA's ***CertAqV Program*** offers members the opportunity to become recognized and certified as having competency in 9 core areas deemed necessary to practice aquatic veterinary medicine? Find out more information online at: http://www.wavma.org/CertAqV-Pgm.

Editor's Note

It is hard to believe that fall is upon us, as it is still very hot here in Phoenix, Arizona (over 100°F). Cooler weather will soon come, and the holidays and year end will be upon us before we realize it. An important event this time of year is the annual elections for the WAVMA Executive Board members for 2024. Please consider running for an office, or as a committee chair or member. Read more information in the President's Report on page 5.

In this issue, we can see WAVMA is involved in many in-person meetings this year, a good sign that the world is recovering post-COVID. In the Directors' Reports on pages 8 and 9 are listed the numerous events that were attended by WAVMA representatives. Our Secretary has also reported on these activities, on page 6. The Meetings Committee Report (page 17) further elaborates on the worldwide activities of WAVMA members. We have grown to be a major influence in aquatic veterinary education.

Our students are represented by two reports from Pitts Aquatic Educational Award recipients: Nathan Ma (pages 20-22) and Maria-Antonia Minea (pages 24-25). More information about the Pitts Award can be found on pages 19 and 23. See also on the WAVMA.org Website: John L. Pitts Aquatic Veterinary Education Awards Program.

Get to know our newest Distinguished Fellow, and the WAVMA President for 2024 in the Colleague's Connection article: Meet Dr. Matthijs Metselaar on pages 26-27. Also, there is an obituary for Dr. Raymond F. Sis on page 27.

A review of the Dr. Richmond Loh's Fish Vetting Crash Course is provided by Dr. Kris Chandroo on pages 28-31. This looks like a great course, and he has also just released an online training class on his website: https://thefishvet.com. There is also a literature review of using Catappa leaves in Aquaria, by me, on pages 32-34. And a question about shark bites in the Grand Round Cases, by Dr. Veronica Pardini (page 36). That's it for this issue. Be sure to send me your articles for the next issue by December 15th.
See you in December!



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

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

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

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

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

The Aquatic Veterinarian

The Quarterly Magazine of the World Aquatic Veterinary Medical Association

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

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Full page (~7" x 9")	$100	$50
1/2 page (~7" x 4.5") **or 1 column** (3.5" x 9")	$60	$30
1/4 page (~3.5 x 4.5")	$30	$15

WAVMA Members 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.

President's Report

Dear WAVMA members,

Thanks for being part of a diverse community, representing a wide range of expertise and specialties in the health of aquatic animals. WAVMA is a global reference association for aquatic veterinarians and para-veterinarians. Members of our great community play key roles in providing consulting, diagnostic services, and therapeutic solutions to support the fast-growing sectors of aquaculture and sea food production, as well as in zoo attractions, ornamental aquatic pets, helping with wildlife species management, and to support the exponential use of aquatic species in biomedical research.

WAVMA is administered by the Executive Board, with volunteer leadership positions assigned annually from an online poll, in which all Full Members and New Graduate Full Members will be invited to vote (membership will be validated to enter the website). WAVMA is committed to promoting a broad diversity of experiences, traits, and backgrounds. These are valuable in providing a positive learning environment, rich with many perspectives. Each Executive Board member will be treated with respect and courtesy, regardless of their social, disability, religious, and sexual background.

We are now seeking nominations from engaged and motivated WAVMA members wishing to contribute to the WAVMA administration and with the development of new activities at regional level. All Executive Board members receive complimentary WAVMA membership beginning during their year of service on the Executive Board. Please consider nominating yourself for one of the following WAVMA Executive Board positions that are now open:

President-Elect
Secretary
Treasurer
Director-at-Large for Africa
Director-at-Large for Middle East
Director-at-Large for North America
Director-at-large for Latin America and the Caribbean
Director-at-Large for Asia
Director-at-Large for Oceania
Director-at-Large for Europe

Candidates need to email a completed Nomination Form, attaching a portrait picture to the WAVMA Administrator by 22nd October 2023. Executive Board members elected will serve as ad hoc advisors to the 2023 Executive Board, until they take office as voting members of the Executive Board on 1st January 2024. Please review the WAVMA Executive Board Responsibilities for summarized descriptions of the responsibilities of each position, and the current WAVMA Leadership. For further questions about the 2024 elections, please contact me or Chris Walster (the WAVMA Administrator), or access the website: www.wavma.org/elections with your WAVMA user and password.



I am also pleased to announce that we have signed a memorandum of Understanding (MOU) between WAVMA and the World Veterinary Education in Production Animal Health (WVEPAH). The WVEPAH Director, Dr. Pierre Cadot, and I have sealed a new partnership. Our two organizations are working together to design and start the new Professional Certificate in Animal Health: Aquaculture Production (PCAHAP). The new veterinary certification program will be administered by the Université de Montréal (UdeM) and validated worldwide by WOAH. Further details about the modality of participation, application costs etc. will be provided before the end of this year.

Cheers,

Bart Gorgoglione
WAVMA President
President@wavma.org

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EXECUTIVE REPORTS

Secretary's Report



Dear WAVMA members,

Time Flies!!! And we are in the last part of the year already! As the year continues, we see more members successfully completing the Aquatic Certification and Renewals, both for the Certificate of Aquatic Veterinarian (CertAqV) and for the Certificate of Aquatic Nurse/Technician (CertAqVNT), enlarging the pool of colleagues and mentors/ adjudicators to strengthen the program. I invite other members to apply. Details can be found at https://www.wavma.org/CertAqV-Pgm and at https://www.wavma.org/CertAqVNT-Pgm.

As the in-person meetings are now a consolidated reality again, our members and Executive Board members have been very dynamic in this arena, attending and representing WAVMA in various meetings organized in different parts of the world to give great visibility to our Association. Briefly, Dr Paola Barato, our Director for Latin America and the Caribbean, was at WAS LACQUA 2023 held in Panama, and other meetings in the region; Dr Win Surachetpong – Director of Asia – attended WVA held in Taiwan, President Bart Gorgoglione attended Aquaculture America, while Dr. Nelly Isyagi – Director of Africa – attended Eastern Aquaculture Africa in Kenya, and is now preparing to attend to WAS AFRAQ23 along with Dr Gillian Taylor - WAVMA Immediate Past President. We had also representatives at the EAFP held in Aberdeen, Scotland 11-14 of September, with oral presentations by Dr Bart Gorgoglione, Dr Farah Gonul Aydin – Director Middle East – in where I also contributed to those pieces of work. Furthermore, Dr Jena Questen – Director North America and Past President – attended AVMA held in Denver past July.

This year – I would say – has become the year of collaborations between Veterinary Associations/ organizations. A MoU was signed by WAVMA and MEVEA – Aquatic Veterinarians Association from Chile – whose initial contributions are starting this coming October in our iconic WebCEPD Program.

A nice interaction between WAVMA and TAVA – The Thai Veterinary Association – has found a perfect scenario to sponsor one of the relevant Asian Fisheries Society Fish Health Conferences, held from 6-8 of September in beautiful Bangkok; thanks to Stephen Pycroft – Director Oceania – and Dr Win Surachetpong – Director Asia.

A new partnership between WAVMA and WVEPAH - World Veterinary Education in Production Animal - moving forward to start the new Professional Certificate In Animal Health: Aquaculture Production, for more information visit https://www.wavma.org/blog/WAVMA-and-WVEPAH-partnership. Stay tuned on this, we will have relevant information and updates soon!!

We continue to work to keep the WAVMA website updated, thanks to our Administrator, Dr Chris Walster, with all the news and updates to WAVMA programs. We are also present in different social networks, so please have a look on our Facebook page and LinkedIn. These are great places to ask your aquatic questions, share stories or pictures and jobs, and talk to other colleagues involved in aquatic animal health. Don't hesitate to use our Members-L listserv! I also encourage you to submit articles dealing with Clinical Cases, and Book Reviews to *The Aquatic Veterinarian* or short news stories for the WAVMA e-News!

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
WAVMA Secretary
Puerto Varas, Chile
Secretary@wavma.org



New WAVMA Members - 3rd Quarter 2023

Members are the lifeblood of any organization! Please welcome our newest members:

Full Members

Anthony Snyder	Canada
Laura Darie	Romania
Sarah Jayne Smith	United Kingdom
Katie Stein	United States
Carla Schubiger	United States
Ainjil Bills	United States
Alexandre Beljean	France
Enea Tentoni	Italy
Margaret McTighe	United States
Victor Contreras	United States
Emily Rutherford	Canada
John O'Halloran	Canada
Nicholas Dannemiller	United States

New Graduate Full Members

Casey Martinez	United States
Léa Provencal	Canada
Emily Haines	United Kingdom
Zaira Gomez	United States

Student Members

Tumanyomwe Boaz	Uganda
Sarah-Ashlyn Barber	United States
Justine Mike Okot	Uganda
Kelly Patterson	United States
Kaitlyn Upton	United States
Fabiane Januario	United States
Autumn Harris	United States
Sophie Ramirez	United States
Danielle Mansour	United States
Madeleine Gauthier	Canada
Kiera Reardon	United States
Madison Kasbaum	United States
Desiree Arcemant	United States
Natasha Anne Serrano	United States
Jeannette Cortes Ruiz	Grenada
Madeline Brookings	United States
Carla Gustafson	United States
Sarah Turner	Grenada
Jenna Renas	United States
Bridget Reid	United States
Cailey Banken	United States
Katie Broikos	United States
Greg James	Grenada
Nora Oukili	United States
Maria Alejandra Rivero	United States
Lauren Staiger	United States
Sebastian Elsenbroek	United States
Danielle Liesenfeld	United States
Jose Luis Arzabala Molina	Mexico
Kristina Dutart	United States
Lily Samborska	Grenada
Sandra Knapczyk	United States

Student Members - continued

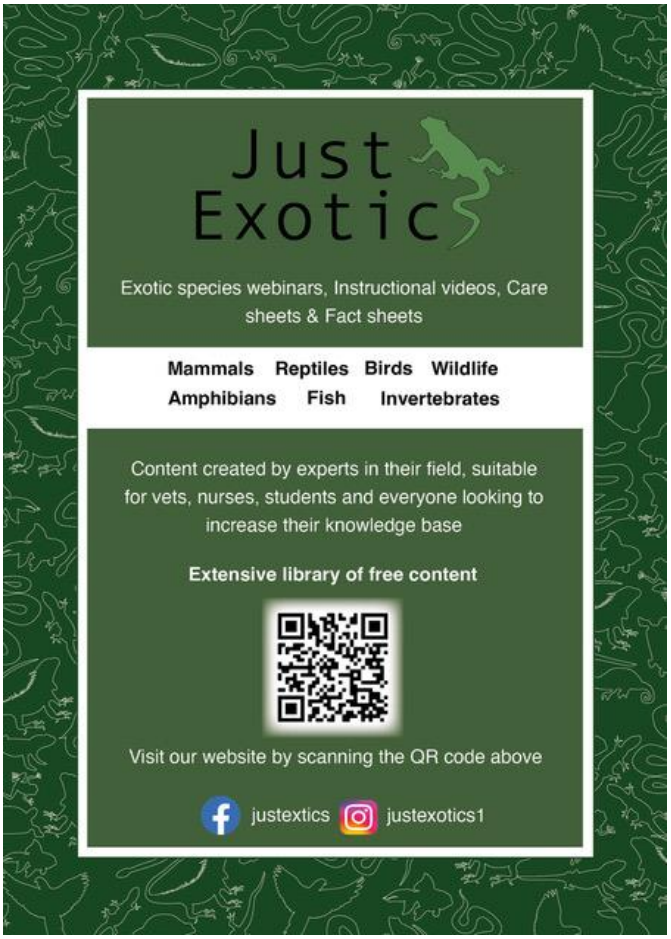
Xoel Souto GuitiÃ¡n	Spain
Claudia Gabel	United States
Christina Eliades	United States
Maeve Rogers	United States
Brianna Lemenze	United States
Kayla Jordison	Canada
Abby Phillips	United States
Anastasia Geletka	United States
Keegan Bellingham	Canada
Nicole Jones	United States
Victoria Lewis	United States
Autumn Audet	Grenada
Fiona Marlowe	Grenada
Britney Dowling	United States
Robin Yochim	Grenada

Veterinary Technician/Nurse Members

Nur Shabrina Binte Zulkifli United Arab Emirates

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

WWW.WAVMA.ORG/SCHOLARSHIPS.



DIRECTORS' REPORTS

World Veterinary Association Conference (WVAC) - Taipei, Taiwan, April 26-29, 2023

In summary, the WVAC 2023 and WVA meeting discussed the work done over the past year, their collaboration with various organizations such as OIE, FAO, and WOAH, and endorsed the following agenda items:

- Endorsing the report from the previous meeting
- Endorsing the 2022 operational budget, which is in deficit but still manageable
- Endorsing the adjustment of membership fees, which were originally calculated based on the number of veterinarians and the Human Development Index, but will be increased by an additional 3%. It was found that this would have minimal impact on existing fee collection.

Each of the four working groups - Animal Welfare, Pharmaceutical Stewardship, One Health, and Education - presented summaries of their work over the past year and plans for the future. The most attention was given to the Pharmaceutical Stewardship group, which has compiled data on drug use, including antimicrobials, liquid substances, metabolism group drugs, and antibiotics. Preliminary work has been done for livestock, and the results will be published on wordvet.org at the end of May, 2023.

There were suggestions for the WVA to promote the reduction of antibiotics for prophylactic use. India proposed focusing on probiotics, while the Americas recommended emphasizing human health benefits but not forgetting that some drugs, when restricted, can lead to increased costs for the livestock industry due to companies discontinuing production for animal use, such as Xylazine.

For the WVA Global Veterinarian Awards 2023, veterinarians will be selected to receive awards in 4 categories - Animal Welfare, Pharmaceutical Stewardship, One Health, and Education - with nominations requested through the associations of each country.

New WVA members include Ukraine, Kurdistan, Kenya, and Africa. The WVAC-2024 will be held in Cape Town, South Africa.

Reported date 17 July 2023
Best regards,

Win Surachetpong
WAVMA
Director of Asia



Figure 1, WVA general assembly and representing of World Aquatic Veterinary Medical Association on 26 April 2023, Nangang Exibition Center TaiNEX 2.



Figure 3.
With WVA immediate past president Dr. Johnson Chiang (left).



Figure 4.
Win Surachetpong and current president Rafael Laguens (above) at the Gala dinner on 28 April 2023.

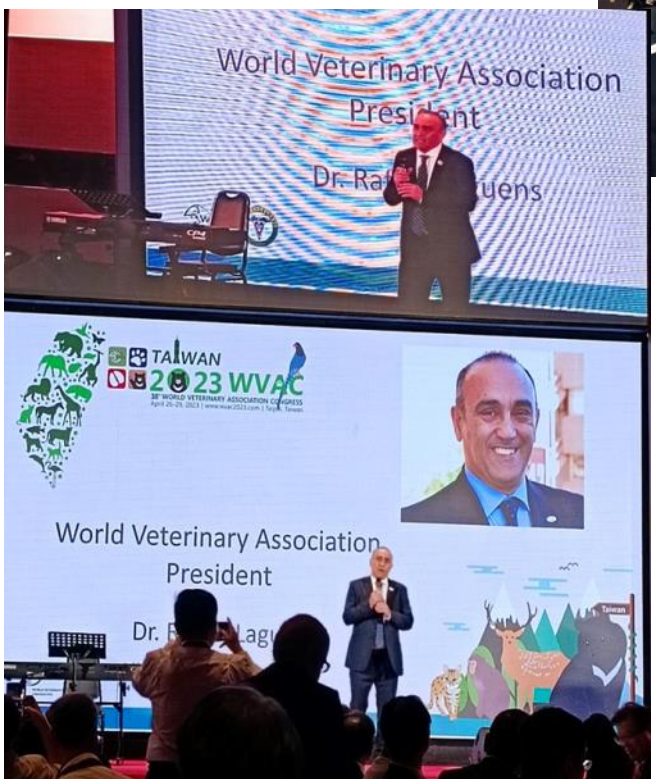


Figure 5.
Gala dinner and final speech by Current WVA president Dr. Rafael Laguens.

DIRECTORS' REPORTS

Dr Farah Gonul AYDIN, CertAqV
Director for the Middle East

I am onthe Aquatic Working Group committee of the Turkish Veterinary Association, where I actively promote WAVMA agendas, seeking new legislations to be implemented. As a member and representative of Aquatic animals working group organized by Turkish Veterinary Association, we will discuss new legislations on the laboratory aquatic animal health with Turkish National Assembly

Collaboration with representatives for Turkish Veterinary Association to include and promote aquatic veterinarian education for the following semesters; organize a webinar series in Turkish, through promotion to increase WAVMA membership from Türkiye.

I am a member of a working party for the continued development and promotion of training programs for veterinary pathologist within Australia and New Zealand. Group convened by the Australian Society of Veterinary Pathology, where I represent the university sector and aquatic animal pathology sector.

I have helped co-found WAVMA student chapters with the University of Bursa and the University of Samsun and developed collaboration efforts.

I am meeting with EB members of TUDAV-Turkish Marine Foundation to establish a bridge between our two organizations. Attended the "Online 101 Ocean Academy" organized by TUDAV as a director.

We have three possible candidates to enroll in the CertAqV program, from Türkiye and Saudi Arabia.

Organizing a workshop as committee members (with WAVMA Ankara Student Chapter President) accepted by the Scientific Technological Research Council of Türkiye (TÜBİTAK), Titled with "Role of Veterinarian in Disasters" in October, 2023.

Dr Nelly Isyagi
Director - Africa Region

Participated together with Gillian Taylor in the workshop to launch the Regional Aquatic Animal Health Network for SADC. Dr David Scarfe gave a recorded presentation of 'Building a Veterinary Workforce' that elaborated on WAVMA's programs. WAS African Chapter also had a slide on their collaboration with WAVMA at this event.

Dr. Kunda Ndashe, a WAVMA member from Zambia has agreed to act as our local focal point in Zambia to assist with the organization of the Aquatic Health Session, including the field events.

Dr Paolo Barato
Director for Latin America/Caribbean

I attended FERIA INTERNACIONAL ACUICOLA in Neiva, Huila, Colombia, from May 4 to 6, 2023 as the speaker "Sanitary status of tilapia production in Colombia" as Director of CORPAVET and Regional Director for Latin America for WAS and WAVMA. https://feriaacuicola.com/

I attended CARIBBEAN AQUACULTURE EDUCATION AND INNOVATION HUB webinar, June 1, 2023 as the speaker "Emergent streptococcosis in tilapia in the Americas" as Director of CORPAVET and Regional Director for Latin America for WAS and WAVMA.

I attended ENAPAVE 2023 and 7th Brazilian Congress of Veterinary Pathology on July 17 to 20, 2023 as the speaker for the minicourse "Pathology of freshwater fish diseases" as Director of CORPAVET, Past-President of the Latin Comparative Pathology Group of Davis-Thompson Foundation and the Regional Director for Latin America for WAS and WAVMA. https://enapave.com.br/

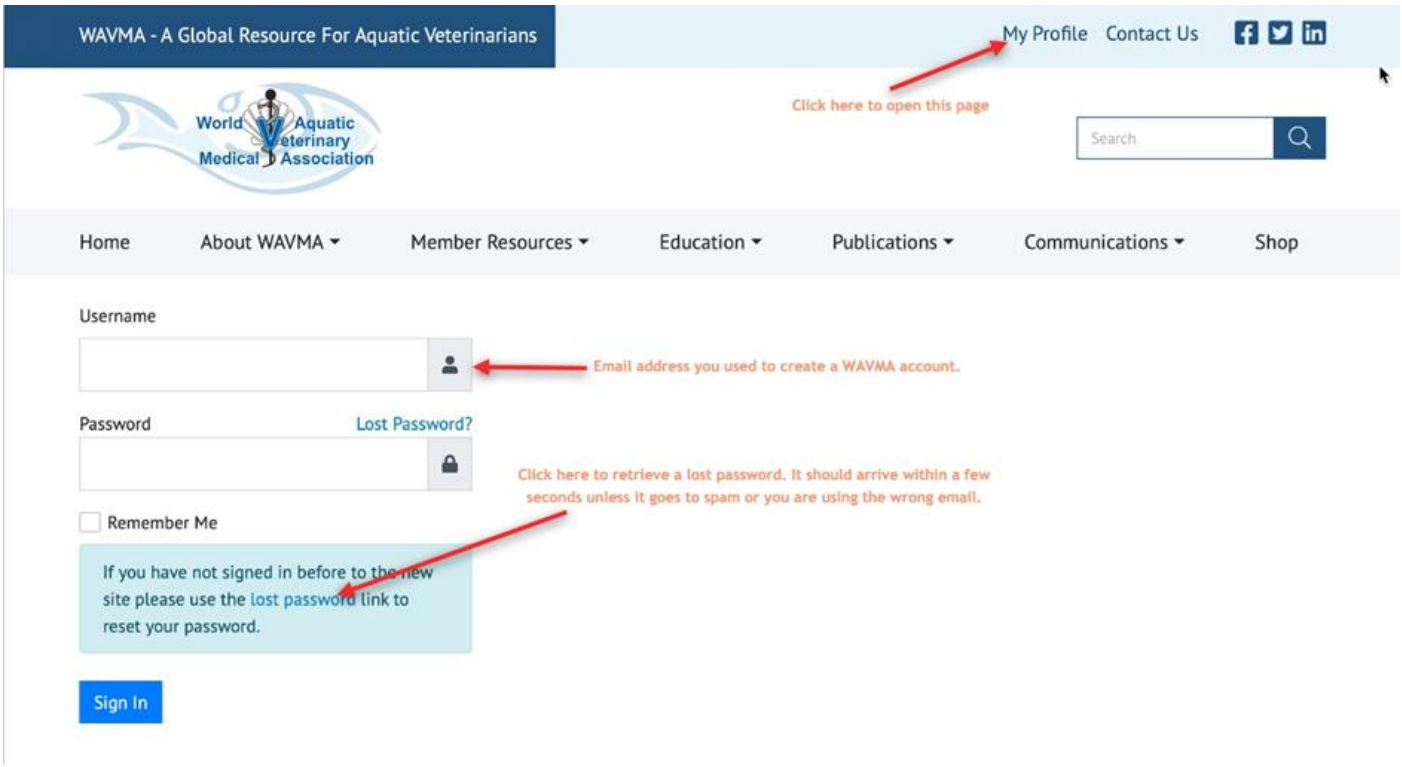
Dr. Ezekiel Salas, from Costa Rica, and I contacted faculties of veterinary medicine in Latin America and the Caribbean and now these Universities are interested in webinars about aquatic medicine:
Universidad Nacional Pedro Henríquez Ureña UNPHU, Dominican Republic with Prof. Emmanuel Montero; Universidad de los Llanos, Colombia with Prof. Pedro Eslava; and Universidad de las Américas, Ecuadro with Prof. Tatiana Montes. We are working to define dates and speakers (in Spanish) for these webinars.

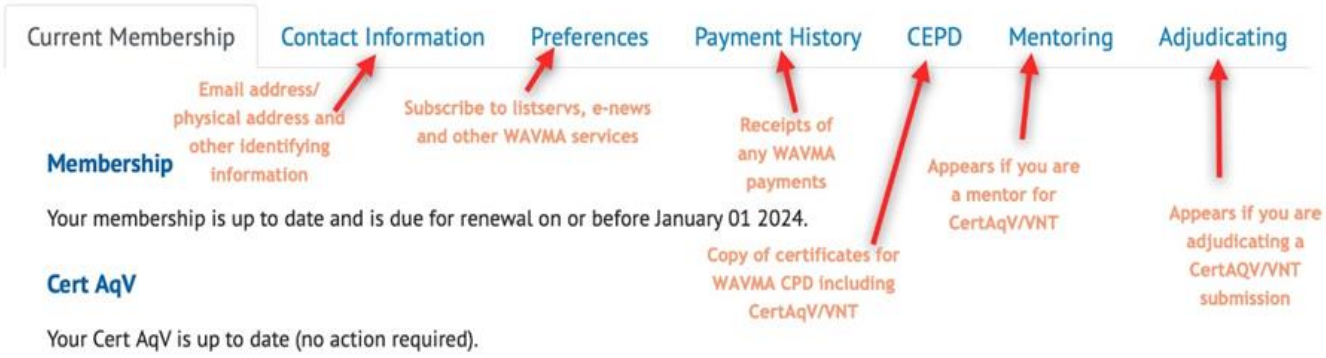
I attended ALAM 2023, XXVI Latino American Congress of Microbiology 2023 from August 23 to 25, 2023 in Quito, Ecuador as the speaker of two conferences "AMR in aquaculture" and "Emergent streptococcosis in tilapia in the Americas" as Director of CORPAVET and Regional Director for Latin America for WAS and WAVMA.

I will attend ENICIP 2023, XVII National and X International Meeting of Researchers in Animal Science, from October 24 to 25, 2023 in Medellín, Colombia as a speaker about "Sanitary challenges and biotechnological development in animal health for the sustainable growth of global aquaculture" as Director of CORPAVET and Regional Director for Latin America for WAS and WAVMA.
https://enicip.edu.co/en/

LACQUA-WAS 2024 is going to be in Colombia in October 2024 in Medellín. We will have a post-meeting workshop about "Health and Biosecurity of Freshwater Fish" in Neiva, Huila (the most important area of tilapia production in Colombia) after the LACQUA-WAS 2024. I propose that this activity be co-organized and sponsored partly by WAVMA.

Using the WAVMA Member Profile
By Chris Walster
WAVMA Administrator





To access the Members Profile, use your WAVMA login credentials (user email and password). This area provides a record of your WAVMA membership and communications preferences. It is **important** to keep the information here up to date. If you've previously set up a WAVMA account, please try and access it first before setting up another account. This way, all your interactions with WAVMA will be in one account.

Current Membership Tab

This informs you whether your membership is up to date and provides access to renew. It also lists the status of your CertAqV or CertAqVNT if you hold one.

Contact Information Tab

Lists the contact information you have provided to WAVMA. Here is where you can update and add to the contact information.

At the bottom of the page you can opt-in to the Members Only Directory or the Find a Fish Vet Public Directory. The contact information you have given is automatically used to populate these directories. Fields marked † might be included in the online directories. Please check the information you want is being displayed and can be edited from this tab.

WEBSITE REPORT

Preferences Tab

Here you can update your password (you need to go to Contact Information to update your email). Subscribe/unsubscribe to the various listserv options. All WAVMA account holders (current and past) are automatically subscribed to the e-news. It is suggested you do not untick this option.

If you hold CertAqV or CertAqVNT additional options will appear to be a mentor or adjudicator. You can tick or untick these boxes at any point depending on your availability. When making changes do remember to click the green Save button at the bottom of the page.

Payment History Tab

Provides receipts for membership, WebCEPD and lists all financial interaction with WAVMA.

CEPD Tab

List all WAVMA CEPD taken and provides pdf copies of certificates you have received e.g., WebCEPD or CertAqV, along with date taken/ approved.

Additional Tabs

Depending on your status within WAVMA, further tabs will appear allowing you to undertake your duties, e.g., as an Executive Board Member or undertaking the CertAqV.

These additional tabs are:

Certification Program Tab

This is where you can complete your KSE and upload supporting documentation for the CertAqV or CertAqVNT.

Mentoring Tab

This lists any candidates you are mentoring and any messages requiring action e.g. approve candidates KSE and submit for adjudication. You will be informed via email of any action required.

Adjudicating Tab

This lists any candidates you are acting as an adjudicator for and any messages requiring action e.g. approval. You will be informed via email of any action required.

Board Approval Tab

This lists any candidates requiring final Board approval and other Board activities. You will be informed via email of any action required.

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.

EXECUTIVE REPORTS

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.



WebCEPD Program

Since 2013, WAVMA has produced over 172 Webinars that are available to watch on our website: https://www.wavma.org/WebCEPD, including 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 Webinars include:

B-1072: Practical measures in shrimp disease management

B-1071: New diseases in fishes

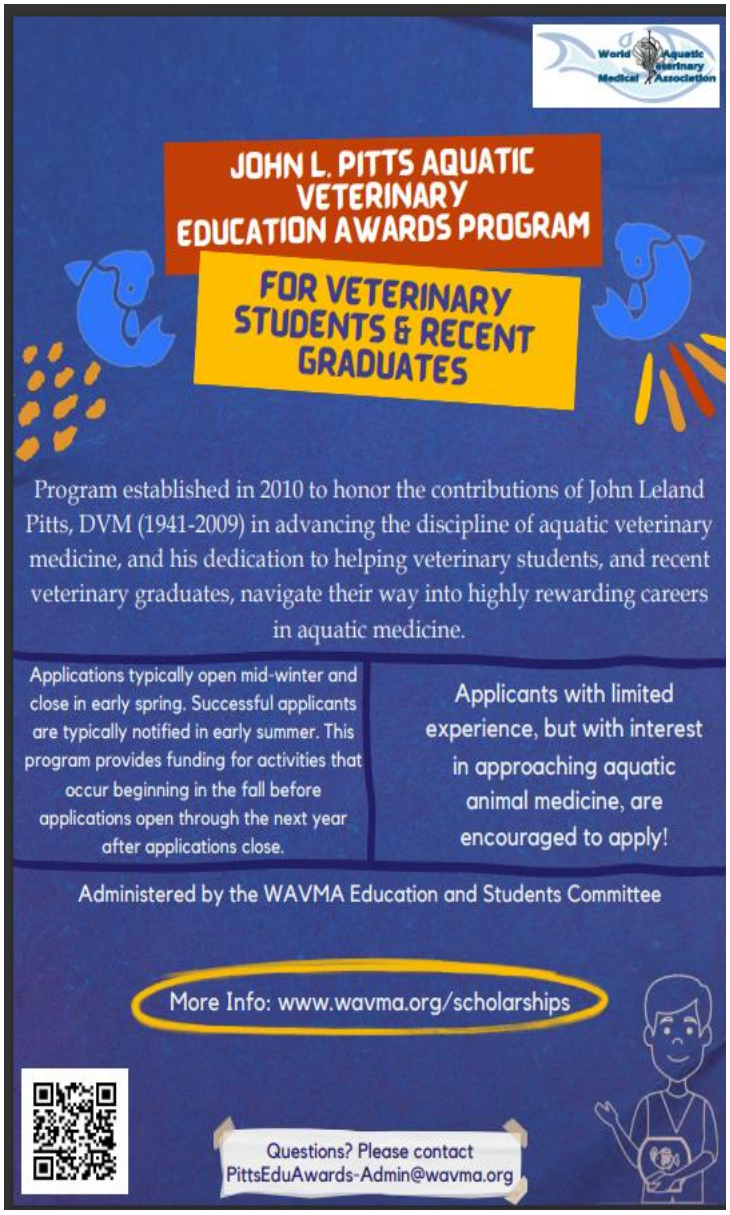


COMMITTEE REPORTS

Join A WAVMA Committee

All of the great programs and features you get from WAVMA membership are provided by volunteers. We are always looking for more helpers, whether veterinarians, veterinary students or veterinary nurses, to join us on the committees. If you are not interested in running for office, but would like to provide your input and guide the future of WAVMA, join one of our committees (no previous experience necessary!). See a list of our committees on page 10. Contact our Secretary or the committee chair for more information about the committee and the dates of the next meeting (also done via web conference). All are Welcome!

Join a WAVMA Committee today!



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

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, in the following 9 core subject matter areas:

- Aquatic Environment and Life Support Systems
- Taxonomy, Anatomy and Physiology
- Husbandry and Industries
- Pathobiology and Epidemiology of Aquatic Animal Diseases
- Diagnostics and Treatment of Aquatic Animal Diseases
- Clinical Veterinary Experience and Client Communications
- Public Health, Zoonosis and Seafood Safety
- Legislation, Regulations, and Policies
- Principles of Aquatic Animal Welfare

The Process

It is recommended that you initially speak with a mentor prior to applying, this is to ensure that you can complete the CertAqV process within the 12 months allowed. You can identify a mentor by going to the WAVMA Member Directory and click on the green CertAqV box at the bottom of the page. This will bring up a list of all potential mentors. Alternatively, you can email: administrators@wavma.org who will talk you through the process prior to you applying.

For CertAqV Program Description *Click here* to download, or go to WAVMA.org/CertAqV-Pgm.

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

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

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

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

Certified Aquatic Veterinarians

Ali Anwar Ahmad	Singapore
Jessica Allen	USA
Sara Alves	USA
Chelsea Anderson	USA
June Ang	Singapore
Nimrod Arad	USA
Brenda Arras	USA
Farah Gonul Aydin	Turkey
Romualdo Balagapo	Philippines
Sarah Balik	USA
Marcello Balzaratti	Italy
Jo Bannister	Australia
Madison Barnes	St. Kitts & Nevis
Michelle Barnett	USA
Christa Barrett	USA
Heather Barron	USA
Giana Bastos-Gomes	Hong Kong
Julia Bauer	Germany
Mariah Beck	USA
Trista Becker	USA
Jenice Bell	USA
Heather Bjornebo	USA
James Bogan	USA
Pierre-Marie Boitard	France
Serena Brenner	USA
Erika Brigante	St. Kitts & Nevis
Tessa Brown	USA
Faith Burgos	USA
Shraddha Cantara	United States
Christian Capobianco	United States
Todd Cecil	USA
Ri Chang	United States
Bryony Chetwynd-Glover	UK
Prakan Chiarahkhongman	Thailand
Dana Clark	USA
Annie Clift	USA
Dondrae Coble	USA
Michael Corcoran	USA
Emily Cornwell	USA
Galaxia Cortes-Hinojosa	Chile
David Craton	United States
Rebecca Crawford	St. Kitts & Nevis
Rubén López Crespo	Mexico
Charles Cummings	USA
Nadav Davidovich	Israel
Manuel De la Riva Fraga	Spain
Darren Docherty	UK
Simon Doherty	UK
Christina Dover	USA
Devon Dublin	Japan
Freeland Dunker	USA
Michael Dutton	USA
Jacqueline Elliott	USA
Ashley Emanuele	USA
Azureen Erdman	USA
Maribel Escobedo	Mexico
Antonella Fabrissin	Italy
Mohamed Faisal	USA
Erika First	USA
Lindsay Francis	USA
Ari Fustukjian	USA
Cherissa Garcia	United Arab Emirates
Erika Gibson	USA
Danielle Godard	USA
Christopher Good	USA
Bartolomeo Gorgoglione	USA
Krystan Grant	USA
John Griffioen	USA
Miguel Grilo	Portugal
Stephanie Grimmett	UK
Katharina Hagen-Frei	Switzerland
Alex Hall	USA
Katharine Haussman	USA

COMMITTEE REPORTS

Orachun Hayakijkosol	Australia
Eileen Henderson	USA
Jenny Herbert	United States
Chelsea Hester	USA
Nora Hickey	USA
Karlee Hirakis	Australia
Kelsey Hoag	USA
Emma Houck	USA
John Howe	USA
Aivee Huynh	Australia
Kerryn Illes	New Zealand
Adrien Izquierdo	USA
Leslie Jarrell	USA
Ericka Johnson	United States
Jimmy Johnson	USA
Kelsey Johnson	USA
Sharmie Johnson	USA
Kasper Jorgensen	Denmark
Brian Joseph	Canada
Hali Jungers	USA
Parinda Kamchum	Thailand
Kyle Kansman	USA
Fritz Karbe	Germany
Sherri Kasper	USA
Elizabeth Kaufman	Israel
Denyse Khor	Singapore
Amy Kizer	USA
Jessica Koppien-Fox	USA
Jack Kottwitz	USA
Laura Krogman	USA
Lana Krol	USA
Marie Kubiak	UK
Diya Lake	Mauritius
Lucinda (Wing Sze) Lam	Australia
Krista Ann Lee	USA
Veronica LePage	Canada
Elizabeth Leuchte Rising	USA
Sarah Lietzke	USA
Jan Linkenhoker	USA
Eric Littman	USA
Richard Lloyd	UK
Salina Locke	United States
Richmond Loh	Australia
Alfonso Lopez	Singapore
Ruben Arturo Lopez Crespo	Mexico
Jordi Lopez Ramon	Spain
Amber Lum	USA
Adolf Maas	USA
Raphael Malbrue	USA
Paul Manensis	Canada
David Marancik	Grenada
Victoria Maroun	USA
Laura Martinelli	USA
Robert Martinez	USA
Alexandra Mason	USA
Colin McDermott	USA
Alicia McLaughlin	USA
Celia Megdal	USA
Larissa Menke	USA
Matthijs Metselaar	UK
Sonja Miles	UK
Tim Miller-Morgan	USA
David Minich	United States
Haitham Mohammed	Egypt
Alissa Mones	USA
Danny Morick	Israel
Charlene Morotti	USA
Katrina Murray	United States
Kunda Ndashe	Zambia
Lucie Nedved	Australia
Ross Neethling	UK
Jenifer Nix	USA
Sally Nofs	USA
Ladislav Novotny	Czech

Massimo Orioles	Italy
Alec Ortiz Colosi	USA
Courtney Pace	United States
Dušan Palić	Germany
Brian Palmeiro	USA
Veronica Pardini	USA
Christine Parker-Graham	USA
Lily Parkinson	USA
Chris Payne	USA
Melanie Peel	USA
Ayanna Phillips	Trinidad & Tobago
Maximilian Polyak	United States
Ashley Powell	USA
Jena Questen	USA
Eva Quijano Cardé	USA
Janis Raines	USA
Atisara Rangsichol	Thailand
Zachary Ready	USA
Aimee Reed	USA
Stephen Reichley	USA
Nuno Ribeiro	Portugal
Julianne Richard	USA
Camille Richie	USA
Michelle Rivard	USA
Rifky Rizkiantino	Indonesia
Patinan Rookkachard	United Arab Emirates
Justin Rosenberg	United States
Komsin Sahatrakul	Singapore
Nick Saint-Erne	USA
Sonja Saksida	Canada
Jessie Sanders	USA
Sasha Saugh	South Africa
David Scarfe	USA
Neha Shah	India
Khalid Shahin	UK
Galit Sharon	Israel
John Shelley	USA
Chris Shirkey	USA
Constance Silbernagel	USA
Melissa Singletary	USA
Esteban Soto	USA
Brandon Spolander	South Africa
Elizabeth St. Germaine	USA
Brittany Stevens	USA
Chairat Sumgorthong	Thailand
Win Surachetpong	Thailand
Tanatporn Tantiveerakul	Thailand
Gillian Taylor	South Africa
Alissa Tepedino	USA
Julius Tepper	USA
Sharon Tiberio	USA
Miranda Torkelson	USA
Norrapat Towanabut	Thailand
Alexandra Troiano	USA
Laura Urdes	Romania
Julian Vaillard Cerdio	Mexico
Greta Van de Sompel	Belgium
Claudia Venegas	Chile
Jelena Vukcevic	Australia
Zachary Waddington	Canada
Sarah Wahltinez	USA
Chris Walster	UK
Scott Weber	USA
Marcus Webster	USA
Trista Welsh	USA
Michael Wenninger	USA
Peter Werkman*	Holland
Laura Whalen	USA
David Wilbur	USA
Sarah Wilson	USA
Howard Wong	Hong Kong
Sarah Wright	USA
Taylor Yaw	USA
Irene Yen	USA

Choosing a Mentor for the CertAqV or CertAqVNT

There are three possible ways of finding a mentor for your credentialing process, which are discussed below. In choosing a mentor it is recommended that you try and use someone you recognise/know, and is from the same country or region as you. This helps the mentor understand what KSE credits you may already have achieved, check that you are a registered vet, vet nurse or vet tech in your country (the mentor needs to confirm as well as you submitting evidence of registration), and assist in providing suitable opportunities to gain more KSE credits.

In the first instance please check the lists of CertAqV and CertAqVNT on the respective WAVMA website pages. These list all the CertAqV and CertAqVNT who currently comply with the certificate requirements (completed the certificate and are current WAVMA Members). Currently, all CertAqV can act as mentors for both CertAqV and CertAqVNT, whilst CertAqVNT can only act as mentors for CertAqVNT. If someone you know and believe to hold a certificate is not listed here, then the likeliest is that they are not up to date with their WAVMA membership. Check this first before contacting the Administrators. Unfortunately, WAVMA cannot list mentor contact details on these pages. To find them, if unknown to you, there are two possible ways:

Log in to your WAVMA membership. This will allow you to access the WAVMA Member directory listing contact details. You can search by name, or for CertAqV mentors, ticking the green CertAqV button at the bottom of the page will bring up all CertAqV in the directory. The Directory is "opt-in" so not all potential mentors are listed here (although it is recommended all mentors/members should be - there is a tick box towards the bottom of the "Contact Information" tab in your WAVMA profile).

Once you've paid for your certificate, a new tab will appear in your member profile "Certification Program." Clicking on the green "Add KSE credits and supporting documents" will open a new page. Here you can select your chosen mentor or pick a mentor. All available mentors are listed here, but if your chosen mentor is not, then ask them to make sure they have ticked the appropriate boxes in the Preferences tab of their WAVMA profile. These boxes only appear in the Preferences tab if you are a current CertAqV or CertAqVNT.

When you select a name here, an automated email will be sent to the prospective mentor asking them to confirm if they agree to act as a mentor. They can do this by going to their WAVMA profile where they will see a new tab "Mentoring". Here the mentor can accept or decline and if wished provide a reason why. You will receive an automated email showing if the mentor has accepted or declined. If the mentor accepts, then all documents you submit will be seen by them. The actual KSE Credit Record form will not appear to them, within the automated system, until you have reached the minimum required credits for all subject areas. It is recommended you download the example KSE Credit record form provided on the CertAqV and CertAqVNT pages. This will indicate what information you need to record as well as providing a potential template for your own record. The PDF format will convert to Word, if easier, for editing.

You can change mentor at any time, but you need a mentor to submit your documents to the Credentialing Committee for approval. Mentors are not obliged to accept a request to be a mentor. You are also encouraged to discuss the certificates with a potential mentor before applying. If you do not know a potential mentor, to discuss questions you may have regarding the certificate, then please feel free to contact the WAVMA Administrators.

Regards,

Chris Walster, BVMS MVPH CertAqV MRCVS
WAVMA Administrative Coordinator



COMMITTEE REPORTS

Fellows Advisory Council

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

The Fellows Nomination Subcommittee (FNS) is a subcommittee of FC and evaluates applications for the WAVMA Distinguished Fellow and forwards a recommendation for a WAVMA Distinguished Fellow to the EB. The 2022 Distinguished Fellow was announced at the Annual General Meeting in South Africa, the first week of December 2022.

Current Distinguished Fellows are:

Peter Merrill (2012)
Ronald Roberts (2012)
David Scarfe (2012)
Julius Tepper (2012)
Christopher Walster (2012)
Grace Karreman (2013)
Marian McLoughlin (2013)
Dusan Palic (2013)
Mohamed Faisal (2016)
Nicholas Saint-Erne (2017)
Richmond Loh (2018)
Laura Urdes (2019)
Devon Dublin (2020)
Gregory Lewbart (2021)
Matt Metselaar (2022)

Laura Urdes, PhD DVM CertAqV
Fellows Advisory Council Chair

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

Make sure that the first page is viewed by itself. That will allow you to scroll through the issue seeing the cover page by itself first, followed by two pages side by side for the rest of the issue.

Meeting Committee

The meetings schedule for 2023 progressed throughout the summer into this fall, with events around the world. WAVMA has again had a place of recognition in the exhibit hall at the AVMA Convention, which took place July 14–18, 2023 in Denver, Colorado, USA. WAVMA had a booth setup and we had information available to all participants. Jessie Sanders and Jena Questen maintained the booth.

Next on our schedule was the European Association of Fish Pathologists, held September 11-14, 2023 in Aberdeen, Scotland. WAVMA had several members in attendance, including our current president, Bart Gorgoglione. From September 27-29, 2023, the World Small Animal Veterinary Association held its Congress in Lisbon, Portugal. As a co-sponsor of this annual event, WAVMA will again have a dedicated schedule of aquatic talks presented by a team of three WAVMA speakers, Estaban Soto Martinez, Eva Lewisch and Dusan Palic.

Julius M. Tepper, DVM, CertAqV
Meetings Committee Chair

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.

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

WAVMA Student Chapters

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.

TO SUPPORT FUTURE STUDENT SCHOLARSHIPS, PLEASE MAKE A DONATION TODAY TO THE SCHOLARSHIP FUND! WWW.WAVMA.ORG/SCHOLARSHIPS.

WAVMA Student Chapters

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

University of Edinburgh, Royal (Dick) School of Veterinary Studies, Scotland UK (established 2020)

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

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

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

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

Education and Student Committee

WebCEPD Subcommittee
(Leader: Claudia Venegas)
Recent WebCEPD webinars:
B-1069: From French Guiana to the French Quarter. The Evolution of Pathogenicity in *Mycobacterium ulcerans* by Dr Michael W. Sandel (USA) on 16th June at 14:00 UTC. Moderated by Bart Gorgoglione and Claudia Venegas; registered 47/attended live 19 people.
B-1070: Clinical Cases in Private Aquatic Animal Practice by Jena Questen (USA) on 29th June at 14:00 UTC. Moderated by Claudia Venegas and Ryan Nel; registered 148/attended live 56 people.
B-1071: New diseases in fishes by Dr. Pedro H. de Oliveira Viadanna (USA) on 27th July at 16:00 UTC. Moderated by Claudia Venegas and Ashely Powell; registered 219/attended live 74 people.
B-1072: "Practical Measures in Shrimp Disease Management" by Dr. Loc Tran (USA) by Dr. Loc Tran (USA) on 24th August 24 at 14:00 UTC; registered 144 people/68 attended.
B-1073: The Mucus: Advantages for early diagnosis of Piscirickettsiosis (SRS) and in non-lethal sampling of ISAV, by Patricio Bustos. This is the fist webinar organized in partnership with MEVEA, the Chilean association of Aquatic Veterinarians. The webinar, moderated the Bartolomeo Gorgoglione and by the MEVEA President Alejandro Poblete,will be presented on 13th October.

Student Support Subcommittee
(Leader: Maribel Escobedo Mondragón)
ESC-SSS members meeting was held on 7 July.
Working on retrieving 2023 updates from each WAVMA Student Chapter for webpage updating.
Working on organizing the next Student Panel initiative. Suggesting new learning opportunities for WAVMA Students and Student Chapters. Discussing the reshaping of the WAVMA Student Chapters.

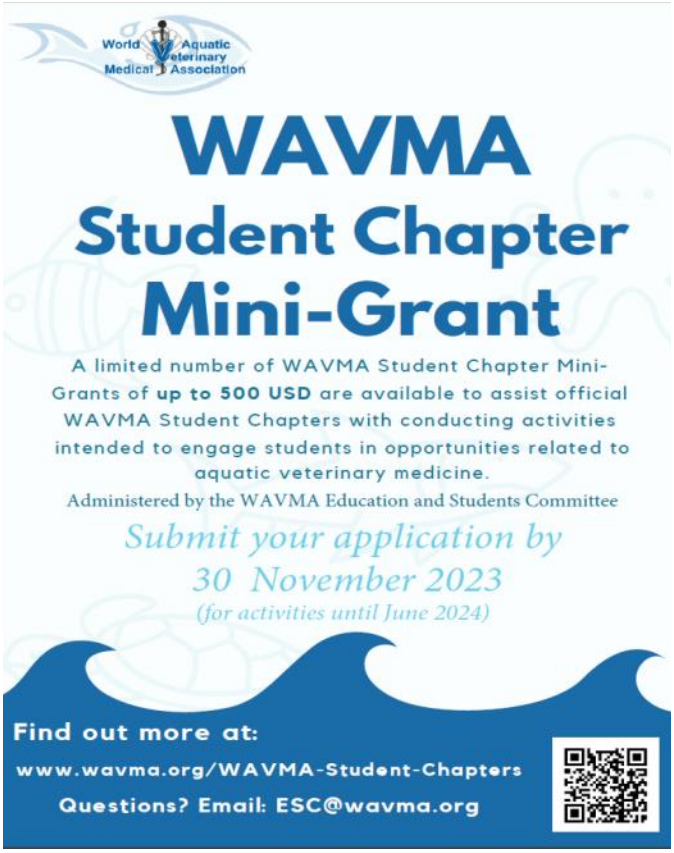


John L. Pitts Aquatic Veterinary Education Awards Program

All agreements have been received, still pending some bank transfers (issues with some developing country). Bartolomeo Gorgoglione and Jena Questen met Madelyn Pitts via Zoom on 10 August. She was opportunistically approached by members of the AAFV because she felt that WAVMA community was not any longer active, due to the lack of communication and exclusion from the awards management. WAVMA's intentions and the ambiguous situation were clarified. She understood that WAVMA is very active and running well, worldwide well represented, and that the awards management is currently supported by a dedicated new subcommittee, the **Education Resources Subcommittee** (although a new leader is needed). Madelyn has been added to the members of the Education Resources subcommittee, given back the complimentary WAVMA membership, and included in WAVMA email lists. The program will continue better than before.

WAVMA Student Chapter Mini-Grant

Colorado State University Student Chapter application was reviewed and found suitable: awarded $500 to attend the AAFV annual conference in October. Student Chapter representatives are invited to submit an application for the new funding cycle of the Student Chapter Mini Grant by 30th November 2023.



STUDENT REPORTS

John L. Pitts Aquatic Education Award Report

Hello! My name is Nathan Ma, and I'm a third-year veterinary student at the University of California - Davis. I was incredibly honored to receive the John L. Pitts Aquatic Veterinary Education Award from WAVMA for an immersive experience in zoological/ aquatic medicine and wildlife conservation this summer in Hong Kong.

I first started a four-week externship with the veterinary team at Kadoorie Farm and Botanic Garden (KFBG) in Lam Tsuen, Hong Kong (Figure 1). KFBG is the only wildlife rescue and rehabilitation center in Hong Kong (Figure 2), and it provides care to many species of aquatic and terrestrial wildlife that have been injured or have been confiscated from illegal trades, ranging from amphibians, reptiles, and birds to monkeys and barking deer. At KFBG, I had the opportunity to learn from and work alongside the veterinarians, vet nurses, and staff from the wild animal rescue and the education display team.



Figure 1. The view of Lam Tsuen.



Figure 2.
Wild Animal Rescue Centre (WARC) at KFBG.

Every morning, we started with the treatments for animals at the hospital and neighboring wards, including administering medications and providing water baths to some box turtles (Figure 3), performing crop washes and collecting cytology samples on rescued birds. After that, we would tackle our tasks of the day, and every day was different. Some examples include deworming over 90 Mexican box turtles, performing a coelioscopy on a lesser sulphur-crested cockatoo, and conducting a physical examination on a Styan's squirrel. I was able to practice many clinical skills on various exotic species, such as taking radiographs and monitoring general anesthesia on birds, performing necropsies on birds and rodents, and administering injections to turtles. Externing at KFBG taught me the importance of maximizing the efficiency and efficacy of veterinary care in rescued settings.



Figure 3.
Oral swab on a Chinese three-striped box turtle.

Next, I did another four-week externship with the veterinary team at Ocean Park, Hong Kong (Figure 4). Ocean Park is the only AZA-accredited zoological facility in Hong Kong, with a diverse collection of terrestrial and aquatic animals ranging from amphibians, invertebrates, and fish to pandas, dolphins, and sharks. I worked with the veterinary team at Ocean Park and learned about the unique dynamics between veterinary care and husbandry needs in a zoological setting. One of the most memorable experiences was moving six bottlenose dolphins from one facility to another in the park.

Figure 4. Ocean Park Hong Kong.



Although everyone who participated is highly experienced in cetacean transports, we were still extremely cautious of every procedure as one mistake may lead to unimaginable consequences for the animals. On the last day of my stay at Ocean Park, I assisted in a major procedure (gastroscopy) to remove a foreign object in the stomach of a largha seal named David. The keepers first noticed David exhibiting abnormal behaviors, such as frequent belly scratching and prolonged stay on the platform out of water. We used Computed Tomography (CT) to identify and confirm the location of the foreign object and the veterinarians decided to intervene. The gastroscopy went smoothly, and David was returned to his enclosure later that day. In addition to these special events, I observed and assisted in various routine and diagnostic procedures, such as performing an ultrasound on an electric eel, collecting blood samples on rockhopper penguins (Figure 5), annual examinations (Figure 6), and vaccinating mobs of meerkats.



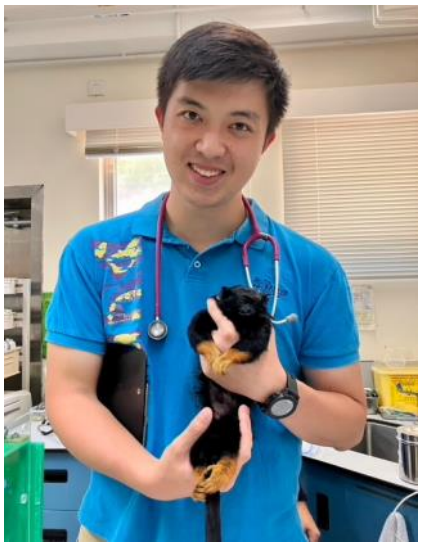


Figure 5. Venipuncture on a rockhopper penguin.

Figure 6. A tamarin after its annual examination

During my stay in Hong Kong, I also conducted a research project in collaboration with several organizations (Figures 7, 8, 9): Ocean Park, KFBG, University of Hong Kong School of Public Health, Lingnan University, and UC Davis One Health Institute. The project evaluated potential pathogen prevalences in populations of endangered freshwater turtles (captive Chinese three-striped box turtle, captive Beale's eyed turtle, and wild Beale's eyed turtle) in Hong Kong. Additional financial support for the research project was provided by Ocean Park Conservation Foundation, the UC Davis Students Training in Advanced Research (STAR) Program and Global Programs. The study provided valuable data to aid in the decision-making of reintroductions of two different endangered freshwater turtle species in Hong Kong.



Figure 7. Collecting samples.

Figure 8. Recording data.





Figure 9. Journey through the jungle for the research project.

In conclusion, I obtained a highly diverse experience in wildlife/ zoological medicine and conservation research in Hong Kong. It allowed me to implement the basic knowledge and skills I've acquired in school, understand the differences between wildlife/zoological medicine and traditional veterinary medicine, and learn from veterinarians and researchers coming from different backgrounds. I am profoundly grateful to have the support from WAVMA to enable me to expand my horizons in veterinary medicine and wildlife conservation, and look forward to becoming a participating professional member of the organization when I graduate from veterinary school.

Nathan Ma
Third-year veterinary student
University of California - Davis.

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STUDENT REPORTS



John L. Pitts Aquatic Veterinary Education Award

2024 Program will begin accepting applications shortly. For more information, go to: WAVMA.org/scholarships.







STUDENT REPORTS

John L. Pitts Aquatic Education Award Report

By Maria-Antonia Minea
University of Agronomical Sciences and Veterinary Medicine of Bucharest

Dear WAVMA members, here is my report on this year, full of educational activities about the cetaceans from the Black Sea coast. Right after I received the Pitts Aquatic Education Award, I started planning for the practical workshop on stranded Phocoenas that we were able to gather with the help of NGO Mare Nostrum from Constanta, which is focused on cetacean conservation. By organizing those activities, I got the opportunity to develop my communication and management skills. The students were selected based on an online application form, disseminated through the professors at the Marine Mammals and Fish Pathology discipline. After the selection took place, we communicated with the students through a WhatsApp group and offered more information about the activities.

The workshops were aimed at developing the students' knowledge of cetacean necropsy, pathology, and sample collecting. During the activities, 16 students performed guided necropsies on 6 different specimens, and, with the help of the professors from the discipline, they identified the pathology that was likely to contribute to or cause the strandings.





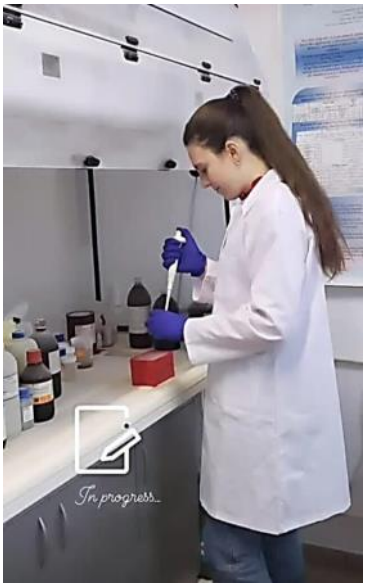
Students collecting samples from a deceased stranded dolphin.



The collected samples were sent for toxicology, histopathology, microplastic, and PCR testing. What we are interested in, by conducting these tests, is to evaluate the toxins and microplastics in the Black Sea, and the pollution levels of the water. The histopathology samples are important for identifying any underlying pathology that may not be visible during the necropsy and for confirming the suspected diseases. Furthermore, before each necropsy, we performed RX and CT scans to assess the possibility of other internal lesions.



The microplastics were evaluated at The National Institute for Research and Development in Optoelectronics, INOE 2000, where I was able to assist in the process of spectroscopy. Thanks to the scholarship, I was able to attract the attention of my university, teachers, and local labs, which offered to support my research activity. I am very grateful for this opportunity to bring cetacean research to their attention while educating future doctors on this subject.

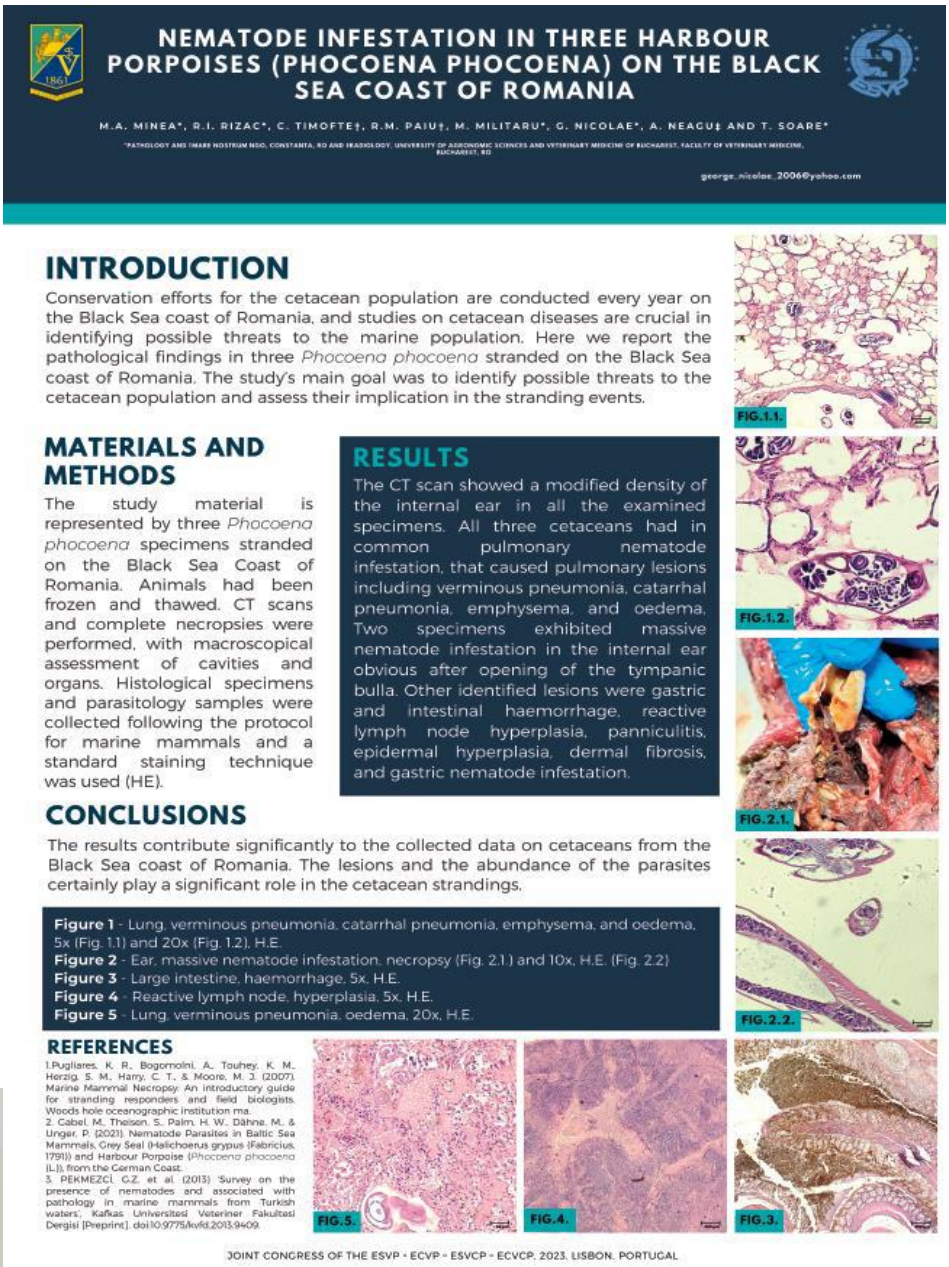


STUDENT REPORTS

Histopathology samples were processed at the Faculty of Veterinary Medicine of Bucharest and at local private laboratories, while PCR samples for Morbillivirus and Brucella were sent to a lab in England.

On the 5th of May 2023, I had the opportunity to present my past studies at the Student's Scientific Symposium at the Faculty of Veterinary Medicine in Bucharest. In this context, I've shared the results on five examined *Phocoena phocoena* specimens, such as gastro-intestinal pathology manifested with reactive mesenteric lymph nodes, hepatic steatosis, signs of human interactions (by-catch) and infestation with the gastric parasite *Pholeter gastrophilus*.

The specimens examined in the months of November 2022 to January 2023 were compiled with the sample results in a poster presented by my colleague during the Joint Congress of the ESVP • ECVP • ESVCP • ECVCP, in Lisbon, Portugal. Although I wasn't able to attend the congress this time, I'm glad that the research was passed on. The poster can also be viewed on the official congress website: https://www.esvp-ecvp-estp-congress.eu/esvp_ecvp_congress/abstracts/posters_veterinary_pathology.



NEMATODE INFESTATION IN THREE HARBOUR PORPOISES (PHOCOENA PHOCOENA) ON THE BLACK SEA COAST OF ROMANIA

M.A. MINEA*, R.I. RIZAC*, C. TIMOFTE†, R.M. PAIU†, M. MILITARU*, G. NICOLAE*, A. NEAGU‡ AND T. SOARE*

george.nicolae.2006@yahoo.com

INTRODUCTION

Conservation efforts for the cetacean population are conducted every year on the Black Sea coast of Romania, and studies on cetacean diseases are crucial in identifying possible threats to the marine population. Here we report the pathological findings in three *Phocoena phocoena* stranded on the Black Sea coast of Romania. The study's main goal was to identify possible threats to the cetacean population and assess their implication in the stranding events.

MATERIALS AND METHODS

The study material is represented by three *Phocoena phocoena* specimens stranded on the Black Sea Coast of Romania. Animals had been frozen and thawed. CT scans and complete necropsies were performed, with macroscopical assessment of cavities and organs. Histological specimens and parasitology samples were collected following the protocol for marine mammals and a standard staining technique was used (HE).

RESULTS

The CT scan showed a modified density of the internal ear in all the examined specimens. All three cetaceans had in common pulmonary nematode infestation, that caused pulmonary lesions including verminous pneumonia, catarrhal pneumonia, emphysema, and oedema. Two specimens exhibited massive nematode infestation in the internal ear obvious after opening of the tympanic bulla. Other identified lesions were gastric and intestinal haemorrhage, reactive lymph node hyperplasia, panniculitis, epidermal hyperplasia, dermal fibrosis, and gastric nematode infestation.

CONCLUSIONS

The results contribute significantly to the collected data on cetaceans from the Black Sea coast of Romania. The lesions and the abundance of the parasites certainly play a significant role in the cetacean strandings.

Figure 1 - Lung, verminous pneumonia, catarrhal pneumonia, emphysema, and oedema, 5x (Fig. 1.1) and 20x (Fig. 1.2). H.E.
Figure 2 - Ear, massive nematode infestation, necropsy (Fig. 2.1.) and 10x, H.E. (Fig. 2.2)
Figure 3 - Large intestine, haemorrhage, 5x, H.E.
Figure 4 - Reactive lymph node, hyperplasia, 5x, H.E.
Figure 5 - Lung, verminous pneumonia, oedema, 20x, H.E.

REFERENCES

1.Pugliares, K. R., Bogomolni, A., Touhey, K. M., Herzig, S. M., Harry, C. T., & Moore, M. J. (2007). Marine Mammal Necropsy: An introductory guide for stranding responders and field biologists. Woods hole oceanographic institution ma.
2. Gabel, M., Theisen, S., Palm, H. W., Dähne, M., & Unger, P. (2021). Nematode Parasites in Baltic Sea Mammals, Grey Seal (Halichoerus grypus (Fabricius, 1791)) and Harbour Porpoise (*Phocoena phocoena* (L.)), from the German Coast.
3. PEKMEZCİ, G.Z. et al. (2013) 'Survey on the presence of nematodes and associated with pathology in marine mammals from Turkish waters', Kafkas Universitesi Veteriner Fakultesi Dergisi [Preprint]. doi:10.9775/kvfd.2013.9409.

FIG.1.1. FIG.1.2. FIG.2.1. FIG.2.2. FIG.5. FIG.4. FIG.3.

JOINT CONGRESS OF THE ESVP • ECVP • ESVCP • ECVCP, 2023, LISBON, PORTUGAL



This scholarship was, for me, a unique opportunity for developing my scientific and organizational skills, while creating amazing opportunities for the students who participated in the activities. Moreover, it brought new opportunities that will help me achieve my dream of becoming a researcher. To the people who made this possible, you will forever have my admiration.

Thank you!

COLLEAGUE'S CONNECTION

Meet Dr. Matthijs Metselaar



I am Dr. Matthijs Metselaar, a dedicated veterinarian and the proud owner of Aquatic Vets Limited, a renowned veterinary clinic specializing in evidence-based fish medicine. My journey has been driven by a profound love for aquatic life, leading me to establish Aquatic Vets Limited as a global leader in providing exceptional veterinary services to aquatic species.

With a Doctor of Veterinary Medicine degree from the esteemed School of Veterinary Medicine at the University of Utrecht, Netherlands, and a Doctor of Philosophy in 'Aetiology of red mark syndrome in rainbow trout' from the Institute of Aquaculture, University of Stirling, UK, I bring a wealth of knowledge and expertise to the field of fish medicine. My commitment to staying at the forefront of advancements in aquatic veterinary care is evident through my recognition as a Certified Aquatic Veterinarian through the World Aquatic Veterinary Medical Association (WAVMA). I also hold a Certificate in 'Basic Fish Health Medicine Program' from the School of Veterinary Medicine, University of Wisconsin, USA, which further enhances my expertise in fish health management.

Additionally, my exceptional achievements have been acknowledged by the Diplomate status awarded to me by the European College of Aquatic Animal Health, accredited by the European Board of Veterinary Specialisation within the European Union. Furthermore, my recognition as an RCVS Specialist in Fish Health & Production by the Royal College of Veterinary Surgeons (UK) solidifies my position as a distinguished authority in the field.

At Aquatic Vets Limited, my commitment to evidence-based veterinary medicine ensures that every fish under my care receives the most advanced and tailored treatment plans. My clinic serves as a beacon of excellence, providing comprehensive fish health management services that encompass diagnostics, treatment, and preventive care for a diverse range of aquatic species. Through my dedication to promoting sustainable aquaculture practices, improving disease management strategies, and enhancing the welfare of aquatic species, I aim to make a positive impact on the field.

In my spare time, I stay engaged in a diverse range of interests that showcase my remarkable skills and passion for hands-on projects and outdoor adventures. One of my current endeavours involves the renovation of a Victorian residence, where I am applying my keen eye for design and craftsmanship to modernize the space. Additionally, I am undertaking a ground-up rebuild of my 1986 Land Rover 110 V8, utilizing my mechanical skills to create a reliable off-road vehicle for family adventures.

Staying active through swimming, ultra-running, cycling, and participating in triathlons, I embrace physical challenges that reflect my determination and resilience. My lifelong passion for aquatic life extends to the competitive aquarist community, where I compete at the national level with my biotope aquaria. These endeavours highlight my expertise in fish medicine and my dedication to creating thriving aquatic ecosystems.

My multifaceted interests and personal pursuits truly exemplify my remarkable skills, passion for craftsmanship, and thirst for adventure. Whether I'm renovating homes, rebuilding vehicles, pushing my physical limits, or competing in the aquarist world, my dedication and enthusiasm shine through in every endeavour I undertake.

My journey within the World Aquatic Veterinary Medical Association started in 2015, becoming a member and applying for the Aquatic Veterinarian certification. In 2018, I joined the CertAqV Credential Committee, engaging in upholding the highest standards in aquatic veterinary medicine, eventually becoming the Chair in 2020.



Simultaneously, I embraced a broader leadership role within WAVMA, serving as the Director at Large for Europe in 2019. I continued my involvement in this capacity throughout 2021 and 2022, demonstrating my commitment to fostering positive change within the European region and beyond.

Since 2022, I have proudly held the distinction of being a Distinguished Fellow of WAVMA, marking the pinnacle of my remarkable career in aquatic veterinary science. My expertise and passion for the field led me to contribute significantly to the association's mission.

In 2023, I stepped into the role of President Elect, a testament to the trust and esteem of my peers in my leadership capabilities. This position marked a transition towards even greater responsibility and influence within the association.

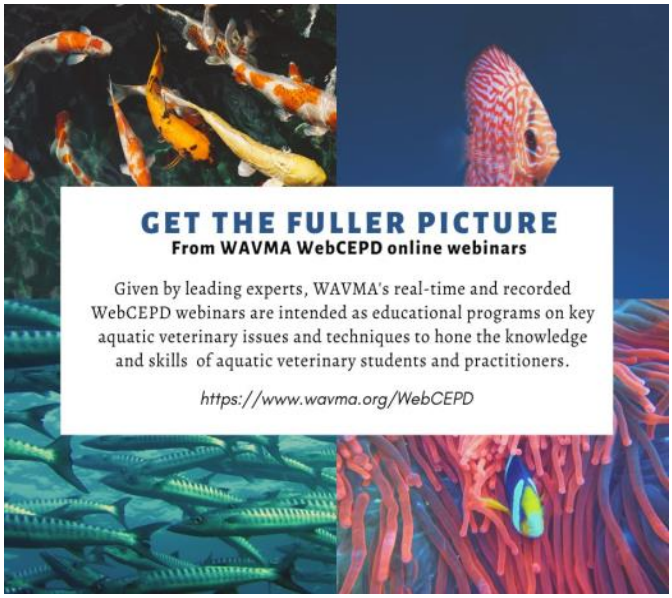
As the year 2024 approaches, I hope to commence my journey within WAVMA – in the position of President. In this role, I hope to lead the association towards new horizons, championing collaboration, research, and advancements in aquaculture veterinary medicine. Please reach out if you have idea's you like to share

Hopefully, my biography stands as an inspiring narrative for aspiring professionals in the aquatic veterinary field, showcasing the power of unrelenting passion, steadfast dedication, and the pursuit of knowledge and leadership. Through my journey, I have not only elevated my own career but have tried to also contribute to the global advancement of aquatic veterinary medicine.



Dr. Matthijs Metselaar preparing to perform a necropsy





In Memoriam: Dr. Raymond F. Sis

Dr. Raymond Sis (Kansas State University '57), age 91, of Bryan, Texas, died July 6, 2023. From 2003-2013, he served as dean of St. George's University School of Veterinary Medicine in Grenada, West Indies. Dr. Sis was named Dean Emeritus in 2014. During his deanship, he led the veterinary school through the accreditation process with the AVMA Council on Education. The veterinary surgical laboratory at the school was named the Ray and Jan Sis Hall in honor of his and his wife's service to the university.

Following graduation, Dr. Sis served four years as a base veterinarian with the US Air Force. He subsequently earned a master's degree in small animal surgery and a doctorate in veterinary anatomy from Iowa State University, and joined Texas A&M University College of Veterinary Medicine & Biomedical Sciences as a professor of anatomy. During his 35-year tenure, Dr. Sis served as head of the anatomy department and co-directed the aqua med and aquatic animal medicine continuing education programs. While in Texas, he also served as the official veterinarian for dolphins at Astro World in Houston.

Dr. Sis was a past president of the International Association for Aquatic Animal Medicine, American Association of Veterinary Anatomists, the Texas branch of the American Association for Laboratory Animal Science, and Brazos Valley VMA, and was a past vice-president of the Texas Academy of Veterinary Practice. He served on the board of directors of the Texas VMA and American Association of Feline Practitioners. In 2013, Kansas State University College of Veterinary Medicine honored him with the Alumni Recognition Award.

Dr. Sis served as an environmental health officer in the Air Force Reserve for 25 years, retiring with the rank of colonel. In 1977, he received the Air Force Commendation Medal for his leadership in controlling Newcastle disease in California. Upon retirement from the Air Force, Dr. Sis was awarded the Air Force Meritorious Service Medal.

He is survived by his wife, Janice; three daughters and two sons; eight grandchildren; and seven great-grandchildren. Memorials may be made to the Come to the Table Annual Fund, St. Joseph Catholic School, 600 S. Coulter, Bryan, TX 77803, or Aggieland Humane Society, 5359 Leonard Road, Bryan, TX, 77807.

COURSE REVIEW

Review of the Fish Vetting Crash Course
By Dr. Kris Chandroo

The ringing of my phone echoed through the air. Our mobile vet clinic, known as The 100x Vet, had recently put out a shingle in Ottawa, Canada proclaiming that we were willing to treat pet fish. The response was overwhelming, inundating me with a flood of calls from concerned fish owners! This surge in demand would propel me into a remarkable journey to Australia, to Dr. Richmond Loh's Fish Vetting Crash Course - Practical (FVCC-P).

Two factors had contributed to this pent-up demand for fish vetting in our area. First, the scarcity of veterinarians and registered veterinary technicians (RVT's) equipped with practical fish vetting education left fish owners without accessible expertise. Second, Health Canada had recently taken a necessary step by removing over-the-counter medications from retail shelves, effectively eliminating do-it-yourself treatment options for fish keepers. This confluence of circumstance created a void concerning the welfare of fish, because it can be argued that fish have the ability to experience pain, fear, and stress (Chandroo, *et al* 2004).

My quest for enhanced fish vetting knowledge led me to find Dr. Loh's excellent YouTube channel. I promptly purchased his fish vetting manuals, which I found to be exceptional in terms of practical application for the general practitioner (Figure 1). So when his FVCC was announced, my RVT and I jumped at the chance. It must be said that the FVCC being located in Australia is a good thing. Reaching the workshop from Canada involved embarking on an adventure, beginning with a stopover on the mesmerizing island of Hawaii. Amidst the crashing waves and the thrill of the surf, we embraced the spirit of new experiences.

From there, our path led us to the iconic Sydney Opera House, and finally, as we soared through the vast expanse of the outback, gazing at the sprawling Australian wilderness, we arrived in Perth for the workshop.

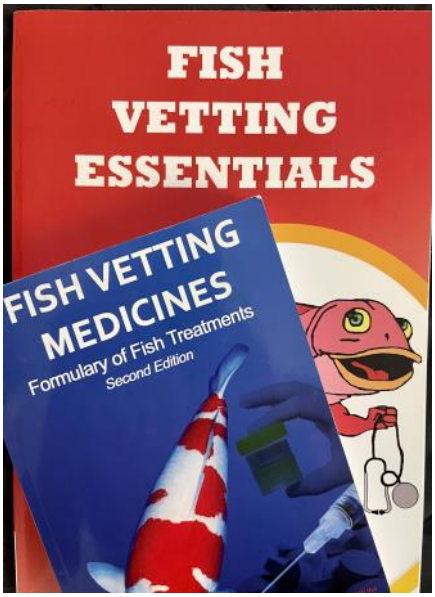


Figure 1. These manuals are very practical!

The Workshop:



After coffee and introductions, we gathered on a crisp day under the Australian sun, and began our first session (Figure 2). It was great to do this with a small group (three vets, one RVT), and it was evident that we all shared a passion for the intricate world of fish medicine. The carefully selected equipment and drugs that compose the foundation of a fish veterinarian's toolkit was revealed. It was a privileged glimpse into the culmination of years of experience. We surveyed the array of meticulously arranged instruments and supplies, and we were able to take notes and pictures for later reference and personal use.

After lunch, we dove headfirst into an immersive experience, using cadavers to develop our skills. This helped to prepare us for working with live fish the next day. Necropsy, anatomy, gill biopsies, skin scrape biopsies and surgery, to name a few topics, were explored and practised (Figures 3, 4). We kept going until dusk, at which point we set aside our tools and techniques for refreshments, enjoying the Australian sunset.



Figure 3. Dr. Kris Chandroo performs a gill biopsy.

Figure 4. Tarra Brazeau, an RVT, performs necropsy.



The next day, Richmond provided a confidence boosting, hands-on session at his home base, which contained a koi pond and a aquaponic set up with perch (Figure 5). Richmond, with his wealth of expertise, understood that technical tasks often raise a myriad questions. How does one navigate the intricacies of gill biopsies when faced with a lively, wriggling fish that wants to bounce out of your hands? What kind of handling can calm a resistant, larger fish? What is the proper technique for using a Koi sock? What do you do if you can't catch a specific fish? Which water quality tests are crucial, and why given the history? How does one swiftly calculate pond volume and prepare anes-



Figure 5. Learning practical skills at the Koi pond.

thetics and medications? How do you inject medications without causing damage? How do you judge anesthetic depth, and remember to keep your battery operated gear out of the water's reach at the same time!? How do you know when your feeding tube is appropriately placed when tube feeding a fish? All of this and more we found out as we honed our techniques, while Richmond constantly observed and coached us. With each task, the puzzle pieces began to interlock, paving the way for competent, skillful vetting in the field with clients.

As the week unfolded, our hands-on tutorials at Richmond's home base became a gateway to a multitude of captivating procedures with booked clients. We travelled in his fish vet mobile (Figure 6). The foundation of thorough history taking, purposeful water quality analysis, and comprehensive examinations led us towards an array of clinical tasks during these appointments (Figure 7, 8).



Figure 6. The official fish vet mobile!



Figure 7. Examining skin scrapes and gill biopsies at a client's residence.

Figure 8. Water testing at a fish farm.



We ventured into anesthesia (Figure 9), enucleation (Figure 10), skillfully identifying a broken back (which the fish would survive), meticulously treating wounds through debridement and utilization of a topical gel formula that Richmond had developed. Humane euthanasia, feeding recommendations, and the identification and treatment of ectoparasites further tested our capabilities.



Figure 9. Anesthesia is performed on a koi.

Figure 10. Enucleation in an anesthetized koi.



Richmond's clients embraced us with warmth and hospitality, creating an atmosphere that felt like a home away from home. It was amidst these practical experiences that our competence further increased, as the challenges we encountered sparked more questions. How you do treat thousands of gallons, without creating lethal medication hotspots, while being time efficient (Figure 11)?



Figure 11. Treating thousands of gallons without creating medication hot spots.

How do you successfully treat for a given parasite, when apparently all options have been already tried and failed? How does one maintain adequate biosecurity between appointments? Did you remember to get your skin scrape done before placing your patient in the anesthetic and why does this matter? Did you point the iris scissors the right way, when your fish patient is in the net was balanced on your thigh? Did you test that rock for stability before you perched yourself on it to catch a fish (Figure 12)? How quickly can you alter the pH in this pond for therapeutic purposes? If using isoeugenol instead of MS-222, how much surfactant do you need?



Figure 12. Catching fish, without falling in!

Precision and careful consideration became our guiding principles as we navigated the practical realm. Amidst a whirlwind of mobile appointments our days overflowed with vibrant activity, excellent food, facility tours, tutorials and retail experiences. We got a behind-the-scenes tour at a Perth aquarium (AQUA), a large saltwater retail store, as well as hand-on experience at two fish farms (Figure 13).



Figure 13. The AQUA tour.

We did several tutorials, and I'll highlight one of my favourites here: The ability to discern food quality and create medicated feeds. Through a series of practical exercises, we delved into the art of judging food quality using our senses (Figure 14). The significance of this skill quickly became apparent as we reflected on the unfortunate mortalities we had encountered during one of our mobile exams, likely from improper food choices. With Richmond's guidance, we learned the intricacies of formulating and preparing feeds infused with medication, a skill sometimes necessary to aid our fish patients on their path to recovery.



Figure 14. Making our own medicated feed.

When back at Richmond's home base, we settled in one evening, and did a series of slides and videos, designed to reinforce our knowledge of the common disease we might diagnose with our fish patients back home (Figure 15). As the FVCC drew to a close, we reflected on the journey we had undertaken at an amazing buffet at the bustling Crown Entertainment Complex.



Figure 15. From left to right: Tarra Brazeau (RVT), Dr. Rina Maguire, Dr. Kris Chandroo, Dr. Ben Rosenbloom, Dr. Richmond Loh.

I topped it off the next day with a guided tour to the outback, which says it all: it was well worth the time and expense for a unique experience (Figure 16). My search for better fish vetting information had led to a catalyst for personal growth and extraordinary experiences. I capped off the experience by signing up for Richmond's Fish Vet Masterclass, which is an online course: https://fishvetmasterclass.mykajabi.com.

This way I could continually review what I had learned, stay in contact with fellow fish vets, and receive advice for cases. The FVCC-P is highly recommended!

REFERENCES:

Chandroo KP, Duncan IJH, Moccia RD. Can fish suffer? Perspectives on sentience, pain, fear and stress. *Appl Anim Behav Sci*. 2004;86:225–250.



Figure 16. Dr. Kris Chandroo contemplating in the desert.



Catappa Leaves for Use in Aquaria
Compiled by Nick Saint-Erne, DVM, CertAqV

The tropical almond tree (*Terminalia catappa*) is a large tropical tree in the Combretaceae (leadwood tree) family that grows mainly in tropical areas of Asia. The tree grows from 10 to 30 meters high and has horizontal whorls of branches with shiny and ovate leaves, 8-25 cm long, and tapering below to a narrow and heart-shaped base with an expanded rounded apex (Dianala, 2019). It is also known in the Philippines as 'talisay,' as 'deshi badam' in India, and in Sri Lanka as 'kotamba.' The catappa leaves are widely used as a folk medicine in Southeast Asia for the treatment of dermatosis and hepatitis. The extract of catappa leaves has been shown in humans to have anticancer, antioxidant, anti-HIV, anti-inflammatory, and antidiabetic effects (Mohale, *et al*., 2009).

Tropical almond leaves contain tannins (terflavin A and B, corilagin, granatin B, geranin, punicalagin, quercetin, chebulagic acid, tergallagin, punicalin, and tercatain) flavonoids (rutin, isoorientin, isovitexin, and vitexin), triterpinoids (ursolic acid, 2á, 3â, 23-trihydroxyurs-12-en-28 oic acid) and humic acid (Mohale, *et al*., 2009). Punicalagin is the main tannin, and its extracts are helpful in decreasing heavy metal toxicity as well as decreasing the water pH (Khan, *et al*., 2023). Using Dragendorff's test for alkaloids, Froth's test for saponin, and the tannin test with ferric chloride, the catappa leaf extract was shown to have alkaloids, phenolics, tannins, and saponins (Murray, *et al*., 2023).

Tropical almond (catappa) leaves have been widely used in aquaculture. Fish that come from blackwater rivers, especially in the Amazon Basin, benefit from the darkened water created by the release of tannins because the leaves help make the aquarium more like their natural water. The leaf extract is used to promote breeding activity of some fish that prefer acidic environment (Lee, *et al*, 2016). The presence of the catappa leaf litter allows small organisms, such as zooplankton and insect larvae, to colonize the leaf surfaces. These organisms become food for the fish. One study observed that the catappa leaves, which were simply laid on the bottom and allowed to decompose in the culture tanks, resulted in a 48% survival of larval ayungin fish. Meanwhile, those tanks without the leaf substrate only achieved 27% larval survival rate (Aya *et al*., 2019). Catappa leaves can help freshwater shrimp by adding beneficial chemicals to the water. As the leaves decay, they become coated with a biofilm that shrimp eat. Using catappa leaves is not suitable for all fish, particularly those species that prefer alkaline environments (Fish Laboratory Aquatics, 2022).

Traditionally, catappa leaf extract was used to lower water pH to create an acidic environment for fish that prefer low pH water. Catappa leaves slowly lower pH by releasing tannic acid, humic acid, fulvic acid, and other organic compounds with weak acidity. Their



gradual effect on lowering the pH is considered safer than the use of chemicals that quickly drop the pH (Aquarium Co-op, 2023). Tannins present in the aqueous extract of the leaves can enhance water quality in culture tanks by reducing the pH and total ammonia nitrogen (TAN) levels, as well as removing the turbidity in water (Bryan, 2017), indicating that this plant-based coagulant could be used as a water treatment in culture tanks. The extract of catappa leaves has antifungal properties and works as a control of fungal infections (Murray, *et al*., 2023). The results showed that 2-4 mg of catappa leaf extract per liter of water is effective in preventing fungal infection in goldfish.

Fish breeders often use catappa leaves with angelfish, discus, *Apistogramma* cichlids, bettas (*Betta splendens*) and freshwater shrimp. Commercial betta breeders have been using almond leaves for many years to improve fish color, stimulate breeding, and fry survival (Ash, 2023). Also, since the leaves float for the first few days, betta fish and gouramis sometimes create bubble nests underneath them (Aquarium Co-op, 2023).

Preparation of catappa leaves for adding to aquaria

Catappa leaves are thoroughly washed with cold water to remove dirt, debris, and other impurities. After being cleansed, the leaves are sun-dried for two days to dry them out. The dried catappa leaves are added to the water to create a bath treatment. They usually float for the first 3-7 days, so can be weighed down with a rock or decoration to prevent floating. Also, the leaf can be cut in half to just use part of it, or crumble it into smaller pieces to speed up the decomposition process (Aquarium Co-op, 2023).

Use one large leaf for every 10-20 gallons of water in the aquarium. Most leaves last about one to two months in the aquarium until they break down. Once the leaf is mostly decayed, add a second leaf to give it time to start breaking down and releasing tannins. The decaying leaves in the aquarium can be removed when they begin to fall apart.

Adding dried catappa leaf powder to the aquarium

Dried catappa leaves were ground and dissolved in water. A variety of concentrations of this solution were used to determine resulting activities against tilapia pathogens. The results indicated that *Trichodina* ectoparasites were eradicated at 800 mg/L. The growth of two strains of *Aeromonas hydrophila* was also inhibited at a concentration of 500 mg/L (Mohale, *et al*., 2009). In another study, fresh and tender catappa leaves were selected, and shade dried at room temperature. The dried leaves were then ground to a powder and packed into sachet. The sachet was soaked in water at the concentration of 1000 mg/L for three days consecutively before the treated water was used for aquarium water.

Catappa leaf extract production

Aqueous extracts of catappa leaves were made by washing them with distilled water and drying in a laboratorial oven at 50 degrees Celsius (°C). Afterward, the leaves were ground. The aqueous extracts were made using 25 grams of catappa leaves, soaked in 500 mL of sterile distilled water in a glass beaker for 1 hour at two different temperatures (hot temperature of 80°C and room temperature of 27°C). The solutions were then filtered, and the retained leaf material was subjected to a re-extraction procedure (two-step extraction using the same extraction procedure twice). Testing the liquids showed that the active compounds (Gallic acid, Ellagic acid, α-Punicalagin, β-Punicalagin) were 2-3 times higher in the hot extract than in the room-temperature extract (Meneses, *et al.,* 2021). The extract was then used at 5-10 ml/L of aquarium water for treatment against *Saprolegnia* fungus on angelfish (*Pterophyllum scalare*) eggs.

During the *in vivo* experiment, reduction in dissolved oxygen occurred due to the decay of organic matter in the extract and the presence of tannins, which also increased electrical conductivity. However, these values remained within the acceptable level for angelfish farming (Meneses, *et al*., 2021). The efficacy of catappa extract to prevent infection in eggs is related to the presence of active compounds including tannins, which inhibit enzymes and proteins in the cell membrane (Cowan, 1999), and phenolic compounds, such as gallic and ellagic acids, and α-and β-punicalagin, which damage the membrane and affect the metabolic activity of cells (Hili et al., 1997). In addition, this solution can reduce the fungal infection in tilapia eggs (Mohale, *et al*., 2009).

Another extract was created after the catappa leaves were dried at room temperature. To yield 50 mg/ml concentration, 1 kilogram of dried leaves was minced and soaked in 20 liters of distilled water for 3 days at room temperature. The extracted solution was filtered (Whatman paper No. 4). The resulting solution had 13.6 mg/L of tannins (Chansue and Assawawongkasem, 2008). This solution was added to aquariums to produce a final tannin concentration of 2.0 mg/ml (0.002 mg/L).

Catappa leaf powder added to food

Several experimental studies have reported the use of leaves against parasites, bacteria, and fungal infections of fish, including adding the leaves into the food (Lusiastuti, *et al*., 2017). Green leaves were washed and then dried in an oven at 50°C, ground and sieved at 425 µm. The powder was added to fish food at 100 g of powder to 1 kg of food (10%). Some Tilapia (*Oreochromis niloticus*) were fed treated food, and a control group was fed nonmedicated food for 15 days, and then the fish were injected with *Streptococcus* bacteria and became infected. They were fed the same foods for an additional 21 days, and the group fed the food containing 10% catappa powder had 5.4% mortality, and those fed the same food without the catappa powder added to it had 24.2% mortality.

References

Aquarium Co-op (2023) Are Indian Almond Leaves Good for Aquarium Fish? https://www.aquariumcoop.com/blogs/aquarium/indian-almond-leaves.

Ash, Erica (2023) Using Indian Almond Leaves in Your Aquarium. Fish Tank Advisor. https://fishtankadvisor.com/indian-almond-leaves/

Aya, F.A., Nillasca, V.S.N., Sayco, M.J.P., and Garcia, L.M.B. (2019) Improved survival, prey selectivity and diel feeding cycle of silver therapon Leiopotherapon *plumbeus* (Perciformes: Terapontidae) larvae reared in tanks with substrate. *Ichthyological Research* 66:239–248.

Bryan, M.N. (2017) *Terminalia catappa* (Talisay) leaves for preliminary surface water treatment: an eco-friendly approach. *Nat Prod Chem Res* 5: 249. doi: 10.4172/2329-6836.1000249

Chansue, N. and Assawawongkasem, N. (2008) The in vitro antibacterial activity and ornamental fish toxicity of the water extract of Indian almond leaves (*Terminalia catappa* Linn.). *KKU Veterinary Journal*, 18 (1): 25-30.

Cowan, M.M. (1999) Plant products as antimicrobial agents. *Clinical Microbiology Reviews*, 12(4), 56–64. https://doi.org/10.1128/CMR.12.4.564.

Dianala, RDB. (2019) Utilization of the tropical almond tree leaves in aquaculture. *Fish for the People*. Southeast Asian Fisheries Development Center, Bangkok, Thailand; Volume 17 Number 3: 41-43.

Fish Laboratory Aquatics (2022) Catappa Leaves for Aquariums: The Ultimate Guide. https://www.fishlaboratory.com/fish/catappa-leaves/

Continued on next page.

References - continued

Hili, P., Evans, C.S., and Veness, R.G. (1997) Antimicrobial action of essential oils: The effect of dimethylsulphoxide on the activity of cinnamon oil. *Applied Environmental Microbiology*, 24, 269–275. https://doi.org/10.1046/j.1472-765x.1997.00073.x.

Khan, NG, Panezai, MA, Kakar, MA, Achakzai, JK, Kakar, AM, Khan, NY, Tareen, AK, Agha, Z, Habibullah, B, and Tareen, S (2023) Biological activities and phytochemistry of tropical almond tree leaves extract from Gwadar, Balochistan (A Review) *European Academic Research*. Vol. XI:1; April 2023.

Lee SW, Farhan R, Wendy Wee, Wan Zahari M, and Ibrahim CO (2016) The effects of tropical almond, *Terminalia catappa* L., leaf extract on breeding activity of Siamese Gourami, *Trichogaster pectoralis. International Journal of Fisheries and Aquatic Studies*; 4(4): 431-433.

Lusiastuti, M., Taukhid, T., Anggi, I., and Caruso D. (2017) Dry green leaves of Indian almond (*Terminalia catappa*) to prevent streptococcal infection in juveniles of the Nile tilapia (*Oreochromis niloticus*). *Bulletin of the European Association of Fish Pathologists*, 37 (3), pp.119-125.

Meneses, JO, da Silva, ICA, Santos da Cunha, AF, dos Santos Cunha, F, Dias, JAR, Abe, HA, Paixão, PEG, da Costa Sousa, N, do Couto, MVS, dos Santos Lima, B, de Carvalho Neto, AG, de Souza Araújo, AA, da Costa, LP, dos Santos, FJ, Cardoso, JC, Diniz, LEC, and Fujimoto, RY. (2021) Protective effect of *Terminalia catappa* leaf extracts against Saprolegniosis on angelfish eggs. *Aquaculture Research*; 00:1–11. DOI: 10.1111/are.15579.

Mohale, D.S., Dewani, A.P., Chandewar, A.V., Khadse, C.D., Tripathi, A.S., and Agrawal, S.S. (2009) Brief Review on Medicinal Potential of *Terminalia catappa*. *Journal of Herbal Medicine and Toxicology* 3 (1) 7-11.

Murray, BAG, Pama, Wyomia, BJC, Alima, A, Bayquin, JXG, Saldo, IJP, Dandoy, MJP, and Gumanyao, J. (2023) Phytochemical Screening and Antifungal Activity of Tropical Almond (*Terminalia catappa*) Leaf Extract Against Fish Pathogenic Fungi. *American Journal of Zoological Research*, vol. 8, no. 1: 1-5. doi: 10.12691/ajzr-8-1-1.

Literature Review: Fish Reproduction

Optimization of Live Prey Enrichment Media for Rearing Juvenile Short-Snouted Seahorse, *Hippocampus hippocampus*

by Jorge Palma, Ricardo Lima, José Pedro Andrade, and Maria João Lança.

Fishes 2023, 8(10), 494
https://doi.org/10.3390/fishes8100494

Abstract

This study aimed to determine a nutritionally adequate feeding protocol for *Hippocampus hippocampus* juveniles. In the experimental trial, seahorses were fed copepods from 0–7 days post-parturition (DPP) and, from 8–28 DPP, four different dietary treatments:
1. copepods (control diet) (Cop);
2. microalgae-enriched *Artemia* with a docosahexaenoic acid (DHA)/eicosapentaenoic acid (EPA) ratio of 2:1 (ArtDHA/EPA);
3. microalgae-enriched *Artemia* with a DHA/EPA ratio of 2:1 along with 5% copepods (ArtDHA/EPA5%);
4. microalgae-enriched Artemia with a DHA/EPA ratio of 2:1 along with 10% copepods (ArtDHA/EPA10%).

At the end of the trial, juvenile seahorses fed Cop grew significantly more ($p < 0.05$) (5.1 mg d−1) than those on fish-fed diets ArtDHA/EPA5% or ArtDHA/EPA10% (3.09 and 3.07 mg d−1, respectively), or those on the fish-fed ArtDHA/EPA (1.83 mg d−1) diet, all of which performed poorly. Data suggest that feeding copepods during the first 7 DPP promotes maturation of the digestive tract of juvenile seahorses, and the addition of a limited amount of copepods to the diet improves *H. hippocampus* juvenile growth performance when compared with the use of Artemia as a single diet due to the improvement of the essential fatty acid profile in the diets.

Keywords:
nutrition; *Hippocampus*; live feed enrichment; microalgae; essential fatty acids; copepods.



Seahorses (Hippocampus sp) at the Arizona Sonora Desert Museum. Photograph by Nick Saint-Erne.

LITERATURE REVIEW

Fish breeding and genetics for improved productivity, profitability and sustainability of small-scale farms

By John A. H. Benzie, Malcolm C. M. Beveridge and Nisha Marwaha

Program Brief: FISH-2021-20. CGIAR Research Program on Fish Agri-Food Systems. Penang, Malaysia.

Abstract

Faster growing tilapia strains demonstrate continued increase in growth rate in genetic improvement programs and superior profitability for farmers in Africa and South Asia, with reduced environmental impact. New genetic improvement programs for three carp species (rohu, catla, and silver carp) in Bangladesh have begun, with the release of a rohu strain with 30 percent faster growth to farmers.

The lack of access to improved strains for many farmed fish species is a major impediment to achieving efficient and sustainable fish farming across the globe. The success of genetic improvement in salmon and shrimp has shown the immense potential of selective breeding for aquaculture. Access to genetically improved fish strains for locally important species in Africa and Asia is critical to achieving food and nutrition security and sustainable livelihoods for millions of people.

Key species include Nile tilapia and rohu, catla and silver carps, which collectively provide 27 percent of the world's farmed finfish production. Fish that grow faster and survive well reduce risks that threaten food and nutrition security and increase the likelihood of providing sufficient yields for sustainable livelihoods. However, under a changing climate, the development of more resilient fish is required. The CGIAR Research Program on Fish Agri-Food Systems (FISH) aimed to respond to demand from small- and medium-scale farmers for fish strains with superior performance in the diverse aquaculture systems across Africa and Asia.

To address this, key objectives included:

1. development and dissemination of faster growing tilapia and carp strains;
2. identification and characterization of new productivity and resilience traits to incorporate in fish genetic improvement programs;
3. development of genomic tools, methods and knowledge to accelerate genetic gain and incorporation of new traits in fish breeding programs;
4. understanding the trait preferences of poor men and women for genetically improved fish.

For full paper, go to:
https://digitalarchive.worldfishcenter.org/bitstream/handle/20.500.12348/5009/80b3a39f15bf8f755a16e7ddee66d3e2.pdf?sequence=2&isAllowed=y

The Role of Genetics in Fish Breeding and Its Impact on Production and Meat Quality

By Tamboli YA, Apurva Kumar Joshi R, and Ritismita Devi.

REDVET - *Revista electrónica de Veterinaria*
ISSN 1695-7504; Vol 24, No. 2 (2023)
http://www.veterinaria.org
5 June 2023

Abstract

Over the past 25 years, advances in biotechnology have enabled scientists to create animals that have been genetically modified (GM) for use in agriculture and medicine. The bulk of GM fish and animals are still in the research stage. In order to produce high-quality fish stocks and satisfy the rising worldwide demand for seafood, fish breeding is essential to the aquaculture sector. The business has undergone a revolution because to the use of genetics in fish breeding, which has improved desired features, including growth rate, illness resistance, and environmental adaptation. The concepts and uses of genetics in fish breeding are summarized with an emphasis on the main methods and tactics used to accomplish the desired genetic advancements.

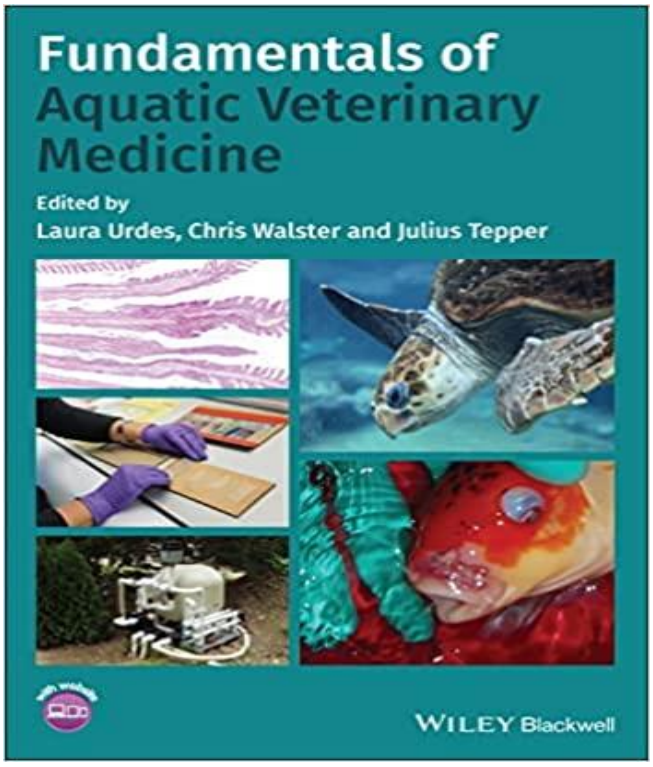
Understanding genetic diversity, heritability, and connections is essential to understanding the principles of fish breeding. Breeders can find fish with better features by using genetic variation as the foundation for selection. Heritability calculates the percentage of phenotypic diversity under the control of genes and sheds light on the possibility of genetic advancement. Breeders can better grasp the connections between various features and the likelihood of simultaneous selection using genetic correlations.

Most fish breeding businesses view their growth rate as the main attribute that has to be enhanced in their breeding program. When a farm operates with a biomass quota, the increasing growth rate is anticipated to boost farm profit by cutting production time, which is the case, for instance, for salmon farms in Norway, boosting yearly production and returns. The environmental effects of genetic enhancement of characteristics in cattle and fish production have previously been the subject of research projects.

For human nutrition, fish is an essential source of protein from animals. Analysis of quality can increase the marketability of aquaculture products since excellent meat quality is linked to a healthy animal. Therefore, understanding how muscle characteristics impact fish flesh quality might be crucial for the aquaculture sector.

For full article, go to:
https://www.veterinaria.org/index.php/REDVET/article/view/327/135

LITERATURE REVIEW

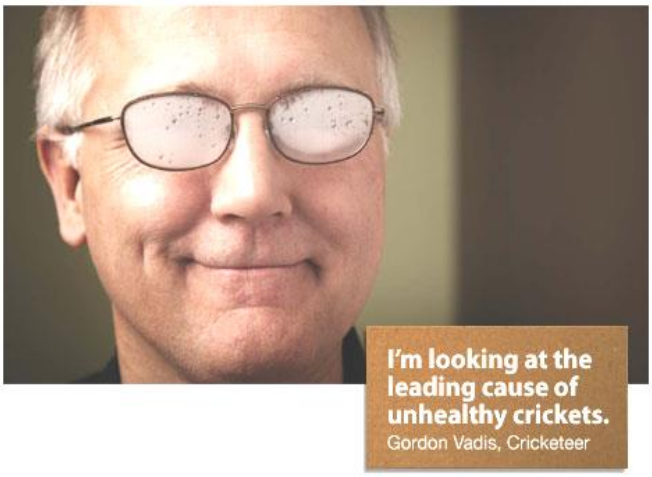


Fundamentals of Aquatic Veterinary Medicine covers the competencies necessary to assure the highest quality of aquatic veterinary services. This book provides systematic, practical guidance on the treatment of aquatic mammals, amphibians, fish, and invertebrates in veterinary practice.

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

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

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



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

When that Shark Bites...

Hello Everyone!

I consulted on two smooth hound sharks about two years old, both females. They are privately owned, and in the same tank there are other sharks, all a little smaller than them. There are also a couple of eels. The water parameters are all normal and good for the species present.

One of the females presented with what appeared to be a bite wound (it was fine one day and the next day it had the bite lesion). It was deep up to the muscle layer. Besides being a little deep, it didn't seem like a complicated wound. This shark was also not eating. The other one had a minor bite on the tail. Both sharks were put on 20 mg/kg of ceftazidime every 72h for 5 injections.

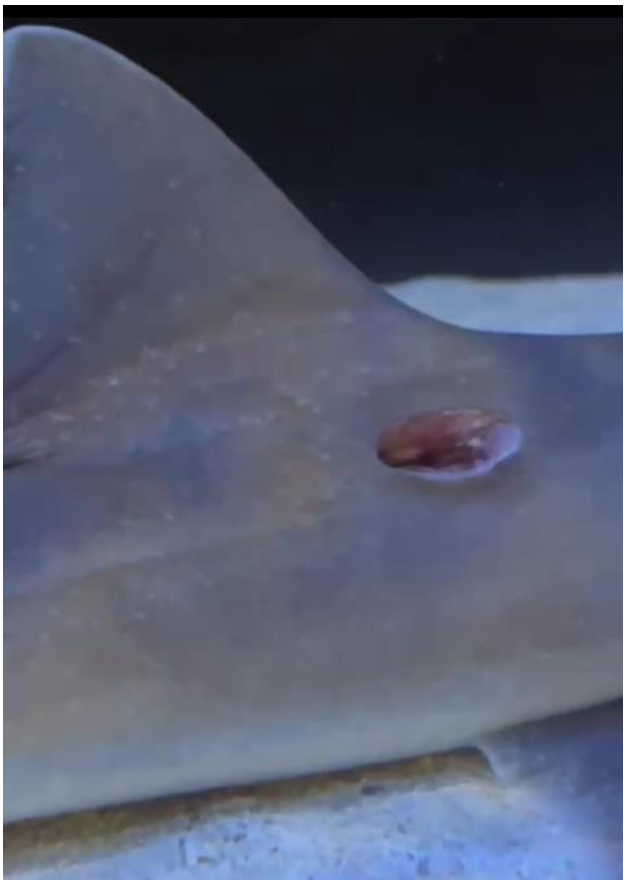
On injection number 4 the shark with the deep wound started presenting small white bumps all over the skin from head to tail. I gave her a 0.5 mg/kg Meloxicam injection. At that time the other shark was fine. Three days later, both sharks have the weird bumps on their skin (if it was a mammal I would say it looks like hives). I have attached pictures.

The owner also said that they look blind.... not fully sure what he means by that since I wasn't able to check them today. No other fish in the tank are showing signs of anything abnormal.

I did a bacterial culture of the wound and there was *Vibrio* (not surprised), but there was also *Mycobacterium*. Could the bumps be Myco? Do you have any idea what this is and how to treat it?
I appreciate any input!

Sincerely,

Dr. Veronica Pardini, DVM, CertAqVet
Wildside Veterinary Health Center
Instagram: @wildside.vet





The wound is quite deep, but most elasmobranchs can tolerate wounds without an issue and usually heal very well. An infection from Mycobacteria is possible (generally very uncommon in elasmobranchs – due to their different osmolarity?) but you would need to be certain that it was in the wound and not a contaminant.

I have seen white spots like that in sharks before. Generally, they do not get *Cryptocaryon*, as I think their denticles act as a barrier. Definitely worth a skin scrape biopsy and examination, but I suspect it will be negative for parasites.

When I have seen these white spots, I think in terms of raised denticles due to an osmoregulation issue (non-specific). The fact that there are two affected suggests an environmental issue. Always add Vitamin C (either orally or injectable) to any elasmobranch treatment regime as it really seems to kick start their immune system.

Regards,

Dr. Rob Jones
The Aquarium Vet
www.theaquariumvet.com
www.aquariumschool.com
Veterinary Advisor to AZA Marine Fish TAG





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AQUAVET® 2024 COURSE ANNOUNCEMENTS

We are pleased to announce the AQUAVET® 2024 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, RI.

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 27 to June 23, 2024
Fee: $2,750 for full-time veterinary students, although a program benefactor will pay $200 for each student, bringing the cost down to $2,550. 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 27 to June 9, 2024 – Prerequisite: AQUAVET® I Fee: $1,665 for full-time veterinary students. This includes tuition, room and most meals.

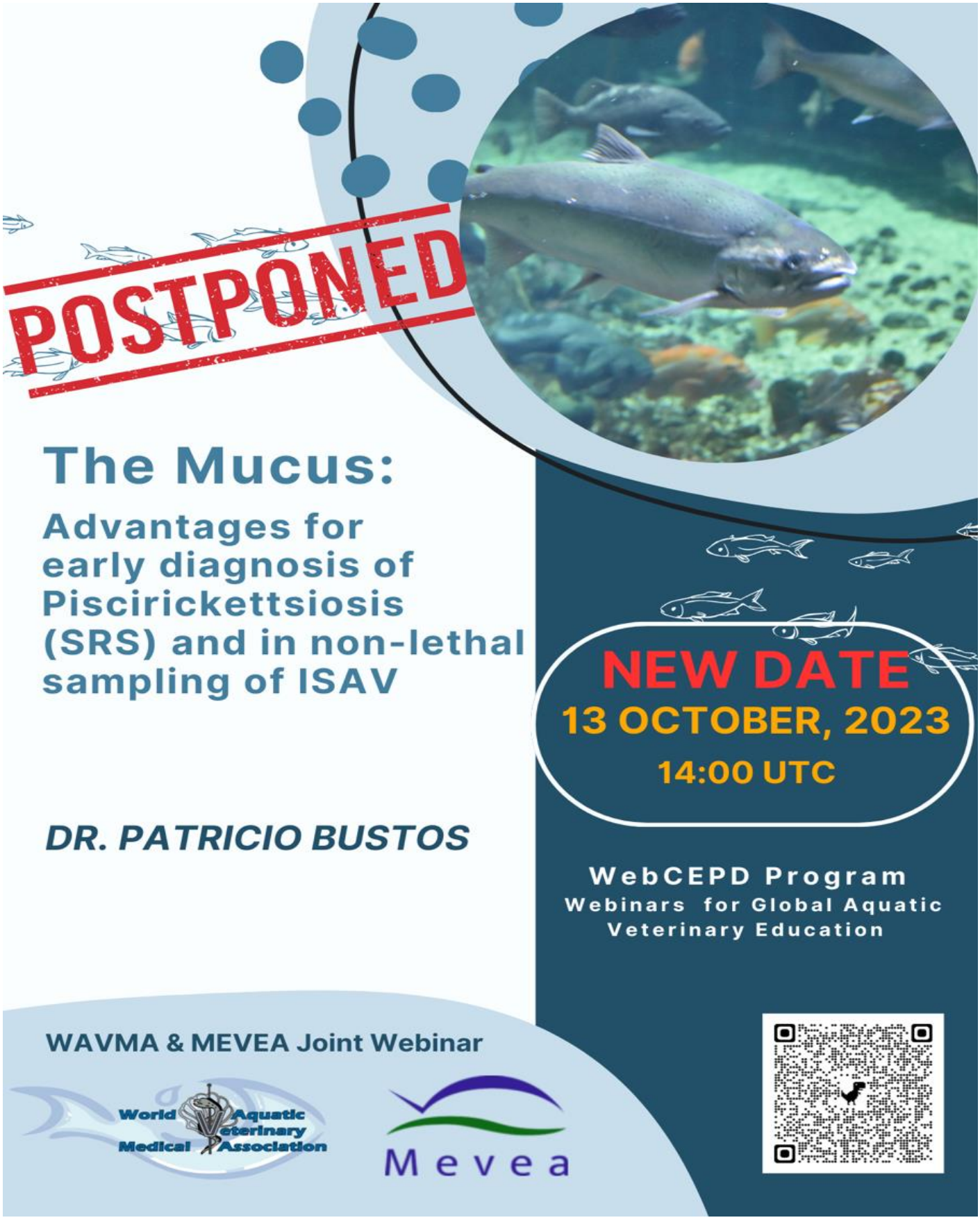
AQUAVET® Summer Research Fellow (one offered) Fellows pay no tuition for the 8 weeks of the research program itself and will be reimbursed for room and board expenses. In addition, research student will receive a stipend of $3,800 for the research period.
Duration: 8 weeks following AQUAVET® I – Prerequisite: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

Detailed information about the courses is available on the AQUAVET website. The specific course programs for each course in 2023 are also listed there.

Applications for admission are due by January 15, 2024. The application is available on the website. You will receive an e-mail acknowledging receipt of your completed application and supporting materials.
Please visit the website at: www.aquavet.org.

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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.



International Conference on Aquatic Animal Epidemiology (AquaEpi)
Lucknow, India
November 29-December 01, 2023

The International Society of Aquatic Animal Epidemiology (ISAAE) has held two previous Conferences: in Oslo, Norway in 2016 and Hua Hin, Thailand in 2019. The ISAAE in collaboration with Indian Council of Agricultural Research announces the 3rd International Conference on Aquatic Animal Epidemiology (AquaEpi III) that will be held at ICAR-National Bureau of Fish Genetic Resources, Lucknow, India during November 29-December 01, 2023.

The AquaEpi III will provide a platform for focused discussions to address issues relating to risk factors which catalyse horizontal spread of diseases, emergence of new pathogens and spread of transboundary pathogens, increased diseases susceptibility and possible strategies for their mitigation and strengthening surveillance system thereby minimizing losses due to diseases. The Conference will include Keynote Presentations from renowned experts on Aquatic Animal Epidemiology and other relevant disciplines. It would have a strong practical aspect in order to familiarize the use of epidemiology in day-to-day challenges.

Conference Themes

- Epidemiology of finfish and shellfish diseases
- Molecular epidemiology and application in source tracking
- Surveillance and reporting
- Spatial and temporal patterns in prevalence and risk mapping
- Risk assessment and management studies
- Outbreak investigation, case reports, data collection/sampling procedures
- Interaction of wild and farmed aquatic species - the challenges for disease control.
- Use of artificial intelligence in disease diagnosis
- Environmental DNA - A tool for monitoring pathogens in aquaculture
- Disease informatics and its application for control strategies
- Biosecurity in aquaculture
- Social and economic impacts of aquatic animal diseases

For more information go to:
https://www.nbfgr.res.in:804/home.aspx

World Aquatic Veterinary Medical Association

48th WSAVA World Congress - 2023
Lisbon, Portugal
https://wsava-congress.org/



49th WSAVA World Congress - 2024
Shanghai, China



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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.

The next International Aquarium Congress in 2024 will take place at Michin Aquarium, Guadalajara, Mexico!



AAFV Conference Information



AQUACULTURE EUROPE 2023 – AE23
Vienna, Austria – September 18-21, 2023.

Annual meeting organised by the European Aquaculture Society. AE2023 will take place at the Messe Wien Exhibition and Congress Center – a modern, high capacity venue in the city and easily accessible by the Vienna Metro (U-Bahn) system.

The AE event is a focal point for meetings of European associations, satellite workshops of EU projects and other events. Program schedule online now.
More info www.aquaeas.org or
contact ae2023@aquaeas.eu;

AFRICAN AQUACULTURE 2023 – AFRAQ23
Lusaka, Zambia – November 13 – 16, 2023.

This is the 2nd Annual International Conference of the African Chapter of the World Aquaculture Society (AFR AQ2023). Zambia, being one of the fastest growing aquaculture producer countries in Africa, will host the largest aquaculture conference and trade show in Africa. AFRA2023 will undoubtedly provide numerous networking and collaboration opportunities.

AQUACULTURE AMERICA 2024
San Antonio, Texas, - Feb.. 18-21, 2024.

AA 2024 returns to one of the favorite tourist spots in the world for the only major national aquaculture conference and exposition held in the U.S. The U.S. Aquaculture Society (formerly U.S. Chapter of WAS) joins with National Aquaculture Association and the Aquaculture Suppliers Association to produce the annual Aquaculture America meetings. These sponsors are joined by the annual meetings of Aquacultural Engineering Society, US Trout Farmers Association and many more associations to make Aquaculture America 2024 the one meeting in the U.S. that you don't want to miss!

Aquaculture America 2024 will have the largest aquaculture trade show in the Western Hemisphere and one of the largest anywhere in the world with nearly 200 booths! This is your opportunity to inspect the latest in products and services for the aquaculture industry. It is the place to visit current suppliers and make new contacts. To keep ahead and to keep profits building, you need to keep pace with the technological advancements in the industry - and AQUACULTURE AMERICA 2024 is the place to do it! www.was.org.

ASIAN PACIFIC AQUACULTURE 2024 – APA24
Surabaya, Indonesia – June 11-14, 2024.

Aquaculture – Driving the Blue Economy is the theme of the conference at the Grand City next year.
The event is hosted by the Ministry of Marine Affairs & Fisheries and co- organised with PT Tirta Anugrah Abadi. Asian Pacific Aquaculture 2024 will be the next chance for the international aquaculture community to visit Indonesia and see the rapidly expanding aquaculture industry in Indonesia – nearly 20% increase in the last 5 years in hectares in aquaculture production and over 50% per year increase in tons produced every year for the last 10 years! Now more info online on www.was.org – info on booths and sponsorship - mario@marevent.com.





The Purdue University Medicine of Aquatics, Amphibians & Reptiles Symposium is *IN PERSON* this year. Join us for our 4th biennial symposium that will provide veterinary professionals and students the opportunity to develop the skillsets for treating aquatic, amphibian, and reptilian patients by learning from experts in these fields.
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