

Getting your feet wet

- Guidance & Resources for the developing Aquatic Veterinarian.



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BSc, BVMS, MANZCVS (Aquatics & Pathobiol), MPhil (Pathol), CertAqV, CMAVA
2014 President, wavma.org

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Recording available at



http://youtu.be/O8g8kL_xsM0

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Why do we need Aquatic Veterinarians?

Predictions:

- By 2030, 62% of seafood from aquaculture.
- By 2050, 50% animal protein from aquaculture.
- Require 100,000 veterinarians to help increase food production & security (cf similar agriproduction [e.g. beef]).

Courtesy: C. Walster.



How do Aquatic Veterinarians get jobs?

- When things start happening, employers are looking for those with experience.
- How do you get experience, when you don't have experience?
- What do we need to know?



Where do aquatic vets work?

- Few vets work fulltime in aquatics
- Many incorporate a component of aquatics to their practice.
- Examples:
 - Aquaculture farms
 - Aquariums / marine parks
 - Zoos/wildlife & museums
 - Laboratories



What does an Aquatic Vet need to know?



identified 9 core areas:

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



Current Veterinary Education & Training

- Veterinary degree is intensive, limited flexibility in the curriculum for specialised training.
- Some universities provide final year electives in aquatics.
 - 58% of veterinary schools in 19 European countries
 - 84% of veterinary schools in North America provided content relevant to aquatic veterinary issues.

Courtesy: C. Walster & D. Scarfe



Current Veterinary Education & Training

- Veterinary schools with established aquatic component:
 - LMU Munich,
 - Institute of Aquaculture Stirling,
 - University of Florida,
 - Atlantic Veterinary College at UPEI,
 - North Carolina State University College of Veterinary Medicine,
 - Edinburgh & Glasgow Veterinary Schools
- Many others following suit.

Courtesy: C. Walster & D. Scarfe



Current Veterinary Education & Training

- Extra-mural experience difficult to get.
- Few private practices focus on aquatic veterinary medicine.
- Fish cases intermittent and difficult to schedule (always “urgent”).
- Experience through academic departments, diagnostic labs, research facilities & public aquaria (where there is a veterinarian).



Current Veterinary Education & Training

- Generally, for “Day-1 Competency” it requires training beyond veterinary school (undergrad, grad, post-grad electives).
- WAVMA encourages Veterinary School Chapters & provides Aquatic Veterinary Education Grants through the WAVMA/AVMF program.
- Residency programs approved by the American College of Zoological Medicine (ACZM): North Carolina, California, and Florida



Aquatic Education & Training

- Specific Courses
 - MSc (Aquatic Vet Studies), University of Stirling
<<http://www.stir.ac.uk>>
 - Seavet <<http://conference.ifas.ufl.edu/ame/seavet/>>
 - Clinical aspects of captive & wild aquatic megafauna, and fishes.
 - Aquavet <vet.cornell.edu/aquavet> Cornell U. & U. Penn.
 - I: Intro: Ecology, WQ, lifecycles, anatomy, medicine, pathology (4w)
 - II: Histopathology of farmed & wild, invertebrates & fish (2w).
 - III: Clinical Aspects of captive aquatic animal medicine (5w)
 - Aquamed <<http://www.vetmed.lsu.edu/aquamed.htm>>
 - Marvet <marvet.org>
 - Marine megafauna (4w). Lectures & wet labs (e.g. fish, reef, turtle, bird, dolphin). Diving.



Aquatic Education & Training

- Specific Courses
 - NCSU Fish Medicine short courses - Koi, Goldfish, and Pond Health Management
<<http://www.cvm.ncsu.edu/conted/fishhealth.html>>
 - UPEI – Fish Disease Diagnostics for Practicing Veterinarians.
 - Mote Marine Lab – Diseases of coral and other reef organisms <<http://isurus.mote.org/>>
 - University of Arizona – Shrimp Pathology short course.
 - Veterinary Information Network (VIN) – Basic Fish Medicine.
<<http://vin.com>>
 - Diseases of warmwater fish <conference.ifas.ufl.edu/wwf/>
 - Fish pathology and treatment (2w, even years)



Aquatic Education & Training Aquavet II



Aquatic Education & Training Seavet



Aquatic Education & Training

- Online Courses
 - WAVMA WebCEPD <<http://www.wavma.org/WebCEPD>>
 - University of Florida, Distance Learning Online Course <<http://aquatic.vetmed.ufl.edu/education/courses/distance-learning-courses/>>
 - University of Wisconsin, Fish Health Courses for Producers and Veterinarians <https://ce.vetmed.wisc.edu/Fish_Health_Courses_for_Producers_and_Veterinarians>
 - The Aquarium Vet <www.theaquariumvet.com.au>



Aquatic Education & Training WebCEPD

2014 WebCEPD Program

This year, the WAVMA Communications Committee is re-launching the Aquatic Vet WebCEPD Program by embracing the internet as a means of more equitably sharing benefits among a global network of our members. After testing several systems over the past year for delivering educational webinars to members, the WAVMA Executive Board settled on one that is simple and automatically sends reminders to those that register. While these WebCEPD webinars will be delivered by members in different time zones around the world, recordings of the programs will be available through the WAVMA website for future viewing.

Importantly, these webinars are planned to provide continuing education and professional development (CEPD) credit to those that require a certain amount of CEPD every year to be re-licensed or re-registered to practice veterinary medicine. Additionally, instructors at veterinary schools might

Date	Speaker	Topic
August 28, 2014	Jo Bannister	Field Surgical Insertion of Catfish Radio Transmitters
September 3, 2014	Nahid Stephens	Dolphin Diseases
October 8, 2014	Susan Kueh	Barramundi (Asian Seabass) Disease Management
November (TBD)	Véronique LePage	Seahorse Diseases
December (TBD)	Nick Saint-Erne	Fish Anaesthesia and Surgery

Aquatic Veterinary Qualifications

- WAVMA
 - CertAqV. Peer-reviewed recognition of KSE.
- ANZCVS
 - Membership exams. Purely Aq.
- EBVS
 - ECAAH exams. Purely Aq. Specialist reg.
- ACZM
 - Exams. Very broad. More than aquatics.
- PhD, MPhil, Hon
 - Research focused. Narrow field. Many opportunities.



Aquatic Veterinary Qualifications pending

- Specialist Veterinary Registration
 - AAFV
 - South African Veterinary Authority
 - ANZCVS – AAH - Fellowship

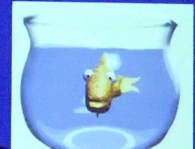




Journals

Courtesy: T. Watlzeck

- *Journal of Aquatic Animal Health*
- *Journal of Fish Diseases*
- *Diseases of Aquatic Organisms*
- *Journal of the Fish Veterinary Society (UK)*
- *Veterinary Clinics of North America, Exotic Animal Practice*
- *Seminars in Avian and Exotic Pet Medicine*
- *Journal of Invertebrate Pathology*
- *Marine Mammal Science*
- *Journal of Wildlife Diseases*
- *Journal of Zoo and Wildlife Medicine*
- *Exotic DVM*
- *JAVMA*
- *Compendium*



Fact Sheet Resources

- University of Florida, IFAS
– <http://edis.ifas.ufl.edu/deptlist.html>
- USDA APHIS, Veterinary Services
– <http://www.aphis.usda.gov/>
- Regional Aquaculture Centers (5)
– SRAC
– <http://www.msstate.edu/dept/srac/publicat.htm>

Courtesy: T. Watlzeck

Websites

Courtesy: T. Watlzeck

- Coral Health and Monitoring Program (CHAMP)
– <http://www.coral.noaa.gov/>
- Shellfish Diseases
– http://www.pac.dfo-mpo.gc.ca/sci/shelldis/toc_e.htm
- Trout Histology Image Collection, USFWS online at:
<http://aquaticpath.umd.edu/fhm/index.html>
- Atlas of Normal Fathead Minnow Histology:
– <http://aquaticpath.umd.edu/fhm/index.html>
- Diseases of Zebrafish in Research Facilities:
– <http://zfir.org/zirc/disMan/diseaseManual.php>

ListServes

Courtesy: T. Watlzeck

- AquaVetMed (AVMA)
– Contact: DScarfe@avma.org
- WAVMA
- AAFV
- Marine Mammals: MARMAM
– listserv@uvm.vic.ca
– <http://marinemammal.vetmed.ufl.edu>
- Invertebrates: crust-l@vims.edu
- Marine pathology: marine_pathol@vims.edu

Professional Aquatic Associations

- WAVMA (Global) <wavma.org>
- ANZCVS (Aust. & NZ) <anzcv.org.au>
- AAFV (US) <fishvets.org>
- FVS (UK) <fishvetociety.org.uk>
- EAFP (Europe, non-vets) <eafp.org>
- Asian Fisheries Society (non-vets)
<asianfisheriessociety.org>



Professional Aquatic Associations

- American College of Zoological Medicine.
- Association of Aquatic Veterinarians of Nigeria.
- Association Francaise des Veterinaires Aquacoles.
- Canadian Aquaculture Veterinary Association.



Professional Aquatic Associations

- Eastern Aquaculture Veterinary Association.
- Sociedad Chilena de Medicos Veterinarios Especialistas en Acuicultura.
- International Society of Aquatic Animal Epidemiology.
- International Association of Aquatic Animal Medicine.



Professional Associations that support Aquatics

- AVMA (American Veterinary Medical Association)
- VIN (Veterinary Information Network)
- WVA (World Veterinary Association)
- WSAVA (World Small Animal Veterinary Association)
- FVE (Federation of Veterinarians of Europe)
- NAVC (North American Veterinary Community)
- FAVA (Federation of Asian Veterinarian Associations)



Professional Associations that support Aquatics

- The Society for Marine Mammology (SMM).
- European Association for Aquatic Mammals (EAAM).
- European Cetacean Society (ECS).



WAVMA Student Chapter

Programs and privileges

- Assistance in organizing and promoting Chapter programs and activities.
- Access to recorded webinars and live web-based presentations from experts around the world.
- Low annual WAVMA Student Membership (\$25) - 50% Chapter member's dues may be available to support Chapter-organized activities.
- Reduced rate (50%) WAVMA Full Membership the year after graduation.
- WAVMA veterinary student/new graduate scholarships.
- Access to the latest editions of WAVMA's quarterly newsletter ("The Aquatic Veterinarian").
- Access to WAVMA member-only webpages & programs.
- Discounted book purchases from select publishers.
- Aquatic veterinary externship, internship and residency programs and job listings.
- Free or discounted registration for WAVMA meetings, symposia, conferences or educational webinars.
- Participation in the WAVMA Certified Aquatic Veterinary Practitioner (Cert-AqVP) Program.
- Access to WAVMA e-mail listservs, including Members-L, Student-L (all students) and (if requested) a Chapter-dedicated listserv.



Internships

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Deep/Brackish (3-4 weeks)

Deep/Brackish offers externships at each of its 3 locations. There is one common application where you rank each rank. Externs get to work with the wild birds that are brought for rehabilitation, learn about the care of these birds, and get a small presentation to the veterinary staff on the last week of your rotation. Housing is not provided, but there are lots of hotels in the area, including an extended stay hotel with a small kitchenette for around \$100/night.

The Marine Mammal Center (3-4 weeks)

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

Aquatic Aquariums

Aquatic Aquarium is in Mystic, CT, right near the coastal Rhode Island border. Houses a large collection of marine mammals, fish and invertebrates. You work primarily with the veterinary staff and get very involved in taking and processing and necropsies, as well as presentation to the public. It is highly recommended that you get a car for driving around. It is a beautiful area with lots of beach coast and hiking.

Georgia Sea Turtle Center (2-6 weeks)

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

Heavy Marine Mammal Program (4 weeks)

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

Marine Mammal Program (2-4 weeks)

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

Georgia Sea Turtle Center (2-6 weeks)

The Georgia Sea Turtle Center is located on Jekyll Island along the southern coast of Georgia. They rehabilitate both sea turtles and native bird turtles at their center. If turtles are your interest, this is one of the best facilities to participate at. Their research is not published as frequently as a research project is required for non-4th year students that is financed by funding through your school. Housing available based on seasonality. A car is recommended.

National Aquarium

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

New England Aquarium

Located in Boston, MA, the New England Aquarium hosts a large collection of sea birds, marine mammals and turtles. Their chief veterinarian, Dr. Charles Pratt, is one of the most knowledgeable about cold skin in turtles and has made a significant contribution to researching their rehabilitation. Applications are accepted year-round. A small presentation is required. No housing is available but there are lots of hotels in the area.

What does it take?

1. Experience
2. Training/qualifications
3. Persistence
4. Willingness to move
5. Network
6. Specialise in an area of veterinary science & bring that with you.



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