

W h o y o u G o n n a C a l l ? ? ! !  
**Educational and fish health resources available to ornamental pond  
keepers and retailers**

Dr. Tim Miller-Morgan, DVM  
Extension Veterinarian – Aquatic Pets  
Ornamental Fish Health Program  
Sea Grant Extension  
College of Veterinary Medicine  
Oregon State University

**Local Koi and Water garden clubs (Idaho, Oregon and Washington)**

- Associated Koi Clubs of America, <http://www.akca.org/index.htm>
- Pacific Northwest Koi Clubs Association, <http://www.pnkca.com/index.html>

**Hobbyist Magazines:**

- Koi USA
- Koi World
- Ponds and Water Gardens USA
- Ponds Magazine
- Tropical Fish Hobbyists
- Freshwater and Marine Aquarium
- Aquarium Fish
- Nishikigoi International
- Koi Bito

**Industry Magazines:**

- Water Garden News
- Pet Product News
- Pet Business
- Ornamental Fish International

**Books: (\*\* good beginners books)**

- *Advanced Koi Care* – Saint-Erne, Nicholas – 2003
- *Aquaculture Desk Reference* – Creswell
- *Aquariology*, Master Volume, The Science of Fish Management - Gratzek, John – 1992
- **\*\*Associated Koi Clubs of America Guides** – Available from [akca.org](http://akca.org).
  - **AKCA Guide to Koi Health**
  - **AKCA Guide to Koi Nutrition**
  - **AKCA Guide to Pond Construction**
  - **AKCA Guide to Filters and Pre-filters**

- ***Carp and Pond Fish Culture***, Second Edition – Horvath, Laszlo; Tamas, Gizella; Seagrave, & Chris –
- ***Carp: Biology And Culture (Springer-Praxis Series In Aquaculture & Fisheries)***, Billard, R. -1999
- ***Diseases of Carp and other Cyprinid fishes***, 2001 - Hoole, D., et al
- ***\*\*Judging & Buying Koi*** – AKCA, 2003 - reprints of articles from Koi USA.
- ***Koi*** – Fujita, Grant
- ***Koi Appreciation, the first step*** – McGill, Kate – 2001
- ***Koi Kichi*** – Waddington, Peter – 1995
- ***\*\*Koi Health and Disease***, Johnson, Erik, 2006
- ***\*\*Koi – Living Jewels of the Orient*** – Hickling, Steve, et al –2002
- ***Kokugyo, Vols 1 & 2*** – Kodama, Mamoru, Vol. 1, 2003, Vol. 2, 2004
- ***\*\*Manual of Koi Health***, Homes, Keith and Tony Pitham, Firefly Books, 2004
- ***\*\*Practical Koi Keeping, Volumes 1, 2, & 3*** – AKCA – reprints of articles from *Koi USA*.
- ***The Physiology of Fishes***, Second Edition, Evans, D. - 1998
- ***Physiology of Fish in Intensive Culture Systems*** – Wedemeyer, Gary –
- 1996
- ***Recirculating Aquaculture Systems – 2nd Ed.*** – Timmons, Ebeling, Wheaton, Summerfelt, Vinci –
- ***\*\*World of Koi*** – Holmes K, Pitham T, Fletcher N –2005

#### **Videos:**

Watson, CA: Fish Health Management. Six video series. University of Florida, Cooperative Extension Service (in conjunction with the FTFFA and the Pet Care Trust): <http://www.petsforum.com/petcaretrust/PCTE2.htm>.

#### **DVD/CD:**

Durborow, R: Diseases of Warmwater Fish and Trout Diseases. Kentucky State University Aquaculture Program and the U.S.D.A. 2001. DVD available through The World Aquaculture Society ([www.was.org](http://www.was.org)).

Kane, A.: FishGuts: A Multimedia Guide to the Art and Science of Fish Anatomy, Health and Necropsy. Aquatic Pathobiology Center, University of Maryland, Baltimore, MD. 1996. <http://aquaticpath.umd.edu/fg/>

Strange, R: Fish Physiology on CD-ROM. Professor Richard Strange, University of Tennessee. 2003. <http://bellsouthpwp.net/r/s/rstrange/>

Strange, R: Recirculation Aquaculture on CD-ROM. Professor Richard Strange, University of Tennessee. 2004. <http://bellsouthpwp.net/r/s/rstrange/>

### ***Fact Sheets/Circulars***

University of Florida (UF), Institute of Food and Agricultural Sciences (IFAS) Electronic Data Information Source (EDIS): <http://edis.ifas.ufl.edu/deptlist.html> (aquatic animal medicine related fact sheets can be found by entering through the Veterinary Medicine link and the Fisheries and Aquatic Sciences link).

University of Florida Circular: Florida Aqua News (for aquatic animal veterinarians): <http://fishweb.ifas.ufl.edu/Petty/Petty.htm>

Oregon Sea Grant, Ornamental Fish Health Newsletter: <http://seagrant.oregonstate.edu/extension/miller-morgan.html>

Commercial Fish and Shellfish Technology (CFAST): <http://www.cfast.vt.edu/Publications/newsletters.shtml>

USDA APHIS, Veterinary Services: <http://www.aphis.usda.gov/vs/aqua/>

Regional Aquaculture Centers:

Southern Regional Aquaculture Center (SRAC): <http://www.msstate.edu/dept/srac/fslist.htm>

North Central Regional Aquaculture Center (NCRAC): [http://aquanic.org/publicat/usda\\_rac/efs/ncrac.htm](http://aquanic.org/publicat/usda_rac/efs/ncrac.htm)

Western Regional Aquaculture Center: <http://www.fish.washington.edu/wrac/>

Northeastern Regional Aquaculture Center: <http://www.old.umassd.edu/specialprograms/nrac/>

Tropical and Subtropical Regional Aquaculture Center: <http://www.ctsa.org/PublicationList.aspx?type=fact>

### ***Courses, Seminars and Workshops***

Aquarium Science Program, Oregon Coast Community College, Newport, Oregon

Ornamental Fish Health Program, Hatfield Marine Science Center, Newport Oregon

- Tuesday Seminars, Portland, Oregon
- Weekend Workshops, Newport, Oregon

North Carolina State University, Fish Medicine Short Course, Raleigh, NC. Contact G. Lewbart ([greg\\_lewbart@ncsu.edu](mailto:greg_lewbart@ncsu.edu)) or S. Hartford at 919-513-6421 ([samantha\\_hartford@ncsu.edu](mailto:samantha_hartford@ncsu.edu)) for more information.

University of Florida, Two-Day Fish Health Management Workshops (Ruskin, Gainesville): contact Roy Yanong (Ruskin) (rpy@ifas.ufl.edu) or Denise Petty (Gainesville) ([pettyd@ufl.edu](mailto:pettyd@ufl.edu)) for more information.

University of Florida, Diseases of Warmwater Fish, (Ruskin, FL & St. Augustine, FL) (~ 2 weeks): <http://conference.ifas.ufl.edu/ame>

University of Georgia, Koi Health Management (Athens, GA) (3 day course): <http://www.gactr.uga.edu/conferences/2004/Jan/23/koi.phtml>

Harbor Branch Oceanographic Institute, Aquatic Animal Health Management, Fort Pierce, FL (3 days): [http://www.hboi.edu/aqua/acted\\_workshops.html](http://www.hboi.edu/aqua/acted_workshops.html)

### **Aquatic Veterinarian Database:**

[Aquavets.com](http://Aquavets.com) is an online database that allows veterinarians and non-veterinarians to find aquatic animal veterinarians and diagnostic laboratories that specialize in aquatic animal medicine and diagnostics.

**Local Veterinarians who treat pet fish (Oregon and Washington):** Contact Dr. Miller-Morgan for a current list of veterinarians.

**Koi Health Advisors (KHA):** This program, developed by the Associated Koi Clubs of America, trains pond hobbyists to become volunteer husbandry and health management resources to other hobbyists in their region. Each KHA is generally sponsored by their koi or water garden club. They then complete a yearlong training program culminating in an intensive weekend wet-lab. The graduates then return to their clubs and become a resource to other club members and new pond hobbyists in their area. They are trained to troubleshoot pond problems, assist with common husbandry related health problems, and assist the hobbyists in locating a local veterinarian in the event of more serious health problems. Most clubs in the Pacific Northwest have at least one KHA.

- Link to the KHA program website: <http://www.akca.org/kht/kht.htm>
- List of currently certified KHA's as of 8/1/06, <http://www.akca.org/kht/graduate.pdf>

## **SUBMITTING FISH FOR NECROPSY/LABORATORY WORK-UPS**

Whenever possible all fish that die in the aquarium/pond should be necropsied. A thorough necropsy provides not only an opportunity to determine the cause of death but also a chance to learn more about the biology of that particular species. The results of a necropsy may suggest areas where aquarium or pond management might be improved to prevent further losses.

The best scenario would be to have all fish necropsies done by a veterinarian, fish pathologist, or some other fish health professional. Individuals experienced in fish health and necropsy provide the best opportunities for the aquarist to obtain useful information from the examination of the dead fish.

The best specimens for necropsy are those fish that are exhibiting clinical signs of disease. Alternatively, a fish that is freshly dead is also useful. Fish decompose very rapidly. Therefore, fish that have been dead more than a few hours, especially in warmwater situations, are generally not very useful necropsy specimens.

Whenever possible fish should be examined immediately after removal from the water. Alternatively, the fish should be wrapped in moist paper or plastic, to prevent drying, and refrigerated or placed on ice. **Do not** freeze specimens because the gross and histological appearance of the tissue will be altered and the identification of parasites is impossible.

The more information an aquarist can provide the individual carrying out the necropsy the greater the chance of a diagnosis. Be sure to note the species, length, weight, and age of the fish, your name, and any current treatment regimes. Additional information should include:

- Your description of the problem
- The type of facility, home pond(s), dealer, and number of tanks
- How many tanks or ponds are affected
- Photos of lesions and system (if possible), Digital photos are great.
- Appearance of the sick animals
- How well they are feeding
- Any behavioral changes
- Whether or not it is breathing normally
- The system size and type of life support
- Whether it is salt or freshwater
- How long it has been set up
- Number of animals in the system, their average size, and species composition
- When you first noticed sick fish and/or dead fish in the system
- How often you check the water quality, what parameters you test for, and the most recent water quality findings
- If there have been any new introductions to the system recently and the species introduced
- The source of your water and the types of pipes in the system
- A history of routine tank/pond maintenance
- Type of feed used and how often you feed

Written records of any necropsy should be saved.

Interpretation of any necropsy findings must be in light of an understanding of the entire case, and not just the physical lesions and any laboratory tests.

A careful necropsy may take several hours to complete.

This article from the University of Florida addresses submission of fish to diagnostic laboratories for a diagnostic work-up, <http://edis.ifas.ufl.edu/FA055>.

### **Pacific Northwest Veterinary Diagnostic Laboratories accepting ornamental/pond fish submissions**

There are two state diagnostic laboratories that regularly handle food fish and increasingly ornamental fish.

The two laboratories are the Veterinary Diagnostic Laboratory (VDL) at Oregon State University, College of Veterinary Medicine in Corvallis, Oregon and the Washington Animal Disease Diagnostic Laboratory (WADDL) at the Washington State University, College of Veterinary Medicine.

I have listed the pertinent information below as well as the individuals you should contact if you are considering sending a fish or samples. It is very important that you contact the labs **BEFORE** you ship them anything so that they are set up to process your samples or fish quickly once they arrive.

While all the diagnostic labs listed in the accompanying Florida publication are in Florida, the two labs listed below use essentially the same procedures. You may contact myself or the individuals listed at the labs below for more information.

#### **Veterinary Diagnostic Laboratory**

Magruder Hall, Room 134

30th and Washington Way

Corvallis, OR 97331

Phone: 541-737-3261

Fax: 541-737-6817

Contact: Dr. Jerry Heidel, DVM, PhD, DACVP Director, VDL

#### **Washington State University-WADDL**

155N Bustad Hall

Pullman, WA 99164-7034

Phone: (509) 335-9696

Fax: (509) 335-7424

Contact: Dr. Kevin Snekvik, DVM

**If you have further questions please contact:**

<p>Dr. Tim Miller-Morgan, DVM Extension Veterinarian/Assistant Professor – Aquatic Pets Ornamental Aquatic Animal Health program Sea Grant Extension College of Veterinary Medicine Oregon State University</p>	<p>Hatfield Marine Science Center 2030 Marine Science Drive Newport, OR 97365 (541) 867-0100 (office) (541) 270-4218 (cell) tim.miller-morgan@oregonstate.edu Web site: <a href="http://seagrant.oregonstate.edu">http://seagrant.oregonstate.edu</a></p>
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