

FISH HEALTH NEWSLETTER

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President's Report:

A Fish Disease "Perfect Storm"

In 1991, an intense rapidly moving cold front, a huge high pressure system, and the remnants of a hurricane combined to form a devastating meteorological (and nicely cinematic) event known as the perfect storm. Now in 2006, the aquatic animal health version of the "Perfect Storm" is forming from the confluence of rapidly moving exotic diseases, huge regulatory pressures, and the remnants of debates about appropriate diagnostic methodologies, professional credentials, and inspection strategies. Recent disease fronts have included ISA, SVCV, KHV, and a host of shellfish pathogens, but the rapidly moving Great Lakes strain of VHSV has brought an unprecedented chill to fish movements in the Eastern US and Canada. A regulatory high pressure system has developed from the greater participation of APHIS in fish health, from increasing scrutiny of interstate and international trade, from state's rights issues, and from the development of the National Aquatic Animal Health Plan (NAAHP). Through this, the swirling remnants of long standing debates about test validation, PCR, sampling strategies, and credentials are creating the instability needed for a truly epic tempest.

As individual fish health professionals, we stand no more chance alone in the gathering storm than did the seasoned crew of the "Andrea Gale". However, as the largest group of fish health professionals in North America, the FHS can be more of a Fish Health Coast Guard able to move through the storm rescuing aquatic animals by identifying important emerging diseases, guiding regulatory decisions by providing sound data and technical advice, and by assuring that regulatory efforts are based on appropriate diagnostic methodologies and professional credentials. We will only be effective in that role if the ship is fully crewed, if we cover every critical station, and if those beleaguered victims know that help is on the way.

I'll spare you any more of the "Perfect Storm" analogy, but in my one year as captain of this crew of committees and pathology passengers, I plan to move rapidly forward to consolidate our recent gains and to more firmly position the section as the voice of North American Fish Health Professionals. Specifically...

- The Blue Book, including the new Inspection and QA/QC sections, is now recognized in the draft NAAHP, in many state regulations, and in the new APHIS Emergency VHS order. In order to insure the continuing recognition of this important document, the Section has made the Inspection Section freely available on the Internet, has (along with the USFWS) granted a request by APHIS for representation on the Inspection Committee, and is continuing the process of adding and updating new chapters including sections for shellfish and marine fish.
- Credentialing professionals for the many roles in aquatic animal health has always been difficult, but the value of FHS Certification programs is evident both in the level of participation and by frequent references in State regulations and by Federal authorities. As the roles and training of fish health professionals change, so must our certification programs. I have formed a new ad-hoc committee charged with reviewing our programs from the ground up and suggesting changes that will more directly address the concerns of section members and of those that rely on our certifications to identify appropriate fish health expertise.
- I find it remarkable that as the leading association of fish health professionals in North America, the FHS has no formal mechanism for expressing a section opinion on fish health matters. While the section is often invited to send a representative to regulatory and professional meetings, that person is often faced with trying to guess the needs and opinions of the section. That isn't good enough. We must have a clear and loud voice in fish health matters. To achieve this, a new committee is developing a procedure to determine and disseminate section opinion.
- The greater the level of participation in the Section, the more effective the section will be in shaping the policies that control our careers, that protect the natural resources that we all value, and that sustain aquaculture as a viable business. Our Recruiting Committee is hard at work making sure that current members remember to pay their dues, that potential new members are identified and contacted, and that we are attracting the next generation of fish health professionals to our organization. I have created a new Student Committee charged with increasing student participation, identifying more ways that the Section can assist student members, and in helping us to identify new ways to assist in the professional development of student members. Be sure to check out the student link of the FHS web site.
- The other area of emphasis this year is on section communications. The Journal of Aquatic Animal Health is, of course, the place for scholarly peer-reviewed research articles. The Newsletter is an edited and archived quarterly document that contains important information about section business, carefully crafted articles about fish health news, and recent disease developments. The list serve is designed to bring new and interesting items to the attention of our members with content primarily harvested from the news and the Internet. The Web page is the central point of contact for all Section information and also has the By-laws, committee assignments and activities, meeting information, the student pages, the Blue Book, and many other features. If you have not been to the section web site at www.fisheries.org/fhs go there!

In conclusion, there is a lot going on, and more that needs to be done. If there is any aspect of aquatic animal health in North America that you feel is important, but that the Section is not adequately addressing, please let me know. If you have the urge to serve on a Section Committee, volunteer for an appointed committee or contact the

Nominating and Balloting Committee to see about running for an elected position. If you have an ambition to help our profession move forward, we have a way for your voice to be heard and for you to make a difference. Look at the web site, check out the committee charges, read the Newsletter (especially Drew's new series on FHS history) get involved, and be sure to join us at the annual meeting (along with the Western) in the Grand Tetons next June.

Andy Goodwin

Meetings and Workshops:

32nd Eastern Fish Health Workshop

Eisenhower Inn and Conference Center

Gettysburg, Pennsylvania

June 18-22, 2007

Important Due Dates:

General Session Titles: Currently accepting until the program is full

Abstract: 15 April 2007

Early Registration: until 1 May 2007

Late Registration: May 2 and thereafter

Hotel Reservation: 18 May 2007

Presentations: 1 June 2007

Certain events achieve monumental proportions and remain in national memory. Ever since 1863, Gettysburg has been such a place. Unlike any other place, Gettysburg embodies the essence of America's great struggle to preserve the Union. We dare not forget the tremendous sacrifices, the countless acts of bravery, nor the number of lives, hopes and dreams that were shattered here. In his personal reflections of those horrific days of battle, Joshua Lawrence Chamberlain (hero of Little Round Top) wrote: "In great deeds something abides. On great fields something stays. Forms change and pass; bodies disappear, but spirits linger, to consecrate ground for the vision-place of souls. And reverent men and women from afar, and generations that know us not and that we know not of, heart-drawn to see where and by whom great things were suffered and done for them, shall come to this deathless field to ponder and dream; And lo! The shadow of a mighty presence shall wrap them in its bosom, and the power of the vision pass into their souls."

Against the backdrop of the most famous battlefield of the American Civil War, the National Fish Health Research Laboratory (Kearneysville, WV) is proud to host the 32nd Eastern Fish Health Workshop at the Eisenhower Inn and Conference Center in Gettysburg, Pennsylvania. Registration begins Monday, 18 June from 5:00 - 7:00 PM, followed by three full day sessions, 19, 20, 21 June 2007. This year, battlefield tours and a special buffet dinner with the 2nd South Carolina String Band are included in the cost of your registration and, of course, not only will there be a complete session on the final day (21 June) but that evening also features our Annual Banquet and Dance. We encourage you not to depart before Friday, 22 June.

Special Sessions:

- Emerging Disease Problems in Crustaceans, chaired by Jeff Shields
- The cutting edge of cutting fish: surgery and anesthesia, chaired by Greg Lewbart
- Diving Deeper: The pursuit of truth in aquarium medicine, chaired by Charlie Innis

- DNA, RNA, Protein Technologies: Not just for CSI; Fish can use them too, chaired by Laura Brown
- Putting it all Together: A Fisheries Manager's Perspective on Aquatic Animal Health, chaired by Frank Panek
- Unraveling the Complexities of Coral Pathogens and the Etiology of Coral Diseases, chaired by Laurie Richardson
- Unusual Diagnostic Experiences, chaired by Andy Noyes and Cindy Driscoll

Call For General Session Titles and Abstracts: To guarantee a place on the program, please return a tentative title for your presentation via email as soon as possible. Do this by completing the appropriate sections of the Word attachment entitled "title". If you are presenting a diagnostic case, please indicate with your tentative title that you would like your contribution to be included in our special session entitled: "Unusual diagnostic experiences."

Changes in USGS review policies, necessitate that abstracts are submitted by 15 April 2007. They can be sent via email to rcipriano@usgs.gov. Please follow the directions for preparation of abstracts and presentations (see attachment: abstract prep). Your attention to these guidelines is greatly appreciated. Power Point presentations are due by 1 June 2007.

Best Student Paper Presentation: The Eastern Fish Health Workshop will donate \$200 and a plaque for the Best Student Presentation. Eligible individuals must (1) be enrolled in an undergraduate or graduate research program at the time that the presentation is given and present his/her own research. The award will be presented at our Banquet. You must register for this competition by completing the appropriate section of the Word attachment entitled "title".

Continued Education Opportunity: A course entitled "Using Clinical Pathology for Fish Health - Nonlethal Sample Collection" will be offered on Friday, 22 June from 8 AM until 3PM. The course is chaired by Dr. Scott Weber of the New England Aquarium (Boston, MA) and will involve instruction on obtaining and using samples for hematology, blood chemistry, organ biopsies, fecal analysis, urinalysis, impression smears, and the like. Participants in this program earn 6.0 CE credit hours from the Fish Health Section of the American Fisheries Society. For additional information contact Dr. Paul R. Bowser (prb4@cornell.edu). Cost is \$40 (U.S.) and includes registration, handouts, breakfast, lunch and break.

Registration: A \$165.00 registration fee (U.S. dollars) includes a reception on Monday evening, workshop proceedings, refreshments at breaks, buffet breakfasts and luncheons on each of the three days of the workshop, dinner with the 2nd SC String Band on Tuesday night and the Anniversary Banquet on Thursday night. Make checks payable to the "Eastern Fish Health Workshop c/o Rocco Cipriano" and return payment with your registration form by 1 May 2007. A late registration fee of \$190.00 (U.S. dollars) is charged after this date. The EFHW does not accept credit cards and there are no daily or discounted registrations.

Lodging Accommodations: Accommodations must be made with The Eisenhower Inn and Conference Center at (800) 776-8349 or (717) 334-8121. You must identify your affiliation with the Eastern Fish Health Workshop and call before 18 May 2007 to secure a room at the special convention rate. You can reach the Eisenhower Inn by:

automobile: about 4 miles south of downtown Gettysburg on Bus US 15. Exit from the US Route 15 by-pass at Steinwehr Ave and head north (towards Gettysburg) for 2 miles.

air: If traveling by air, you will need to reserve a rental car in order to reach the facility.

From Harrisburg (PA) Airport: 15 South to Steinwehr Avenue Exit. Turn right off ramp onto business 15 North, 3 miles on the right. (50 minute drive)

From Baltimore's BWI Airport: 695 to 795 to I40 West to 15 North. Take Steinwehr Avenue Exit. Turn left off ramp onto business 15 north about 3 miles on the right. (90 minute drive)

From Washington's Dulles Airport: Dulles Greenway (toll road) west towards Leesburg (VA). At Leesburg follow US 15N about 50 miles to Steinwehr Avenue Exit. Turn left off ramp onto business 15 North, about 3 miles on the right. (90 minute drive).

**32nd ANNUAL EASTERN FISH HEALTH WORKSHOP
Gettysburg, PA**

Name:
Affiliation:
Mailing Address:
City, State, Zip code:
P:
F:
E:

I wish to provide a scientific oral presentation at the Workshop. A tentative title for my presentation is:

Title:

I wish to provide a diagnostic case oral report at the Workshop in the session entitled, "*Unusual Diagnostic Experiences*," which will be moderated by Cindy Driscoll and Andy Noyes. A tentative title for my presentation is:

Title:

Best Student Presentation

If you are a student and wish to be registered for the Best Student Presentation Program, please provide the following information as well.

Degree Program:

College or University:

Major professor or advisor:
Phone number of that individual:
E-mail address of that individual:

GUIDE FOR PRESENTATIONS AND ABSTRACT PREPARATION

Due to recent changes in USGS review policies, we must ask that all abstracts be submitted by April 15, 2007.

ABSTRACTS

1. Limit your abstract to a single side of an 8.5"x11" page keeping margins within 1.5" on all sides.
2. Type the abstract in Microsoft Word using a 12 pitch Courier New font.
3. Center the title and capitalize the first letter of every word.
4. Denote genus and species with italic script.
5. Provide a double-blank space between the title and authors (use first name, middle initial, and last name of each author). Underline the name of the author who will give the presentation (even if that individual is the sole author). Precede the name of each author with a numeric superscript to denote affiliations.
6. Provide a single-blank space between the authors and their affiliations. Superscripts should also precede the author's affiliation. Superscripts are not needed for sole authors. Separate affiliations with a “ ; ” in a continuous paragraph (i.e. - do not start each affiliation on a new line). Affiliations should be a complete mailing address including zip code. If you are from America, do not place “USA” after the zip code. Do not place email addresses in the affiliations.
7. Provide a double blank space between the affiliations and the body of the abstract.
8. The abstract should be a single paragraph. There should not be any tables, figures, or citations within the abstract.
9. E-mail your abstract to rocco_cipriano@usgs.gov by 15 April 2007.

Presentations

Power Point is the format for oral presentations. We shall be using Power Point 2003 at the meeting. Please submit your presentation to me before 1 June 2007. A master CD will be prepared that has each of the talks linked to the master agenda, which will avoid loading delays. Power Point presentations will not be accommodated if they are not included on the master CD, so please have all of your talks to me by the appropriate deadline. Furthermore, we shall not be making additional changes to the CDs at the meeting. Please prepare your slides with this in mind. Ensure that all fonts on the presentation are equal to or greater than 24 pitch (gene sequencing excepted). People often complain that the font was too small to read and that there was too much data presented on an individual slide. Concise is best! Avoid large picture files and large amounts of animation that tend to slow the loading of individual slides. Another complaint that I often hear is that animations were not used for effect, but because it could be done.

Please Compress Picture Files. This will significantly reduce the size of your presentation file and shorten loading times between talks. In most cases, images don't need to be larger than 1024 × 768 pixels. If your images are larger than this, your PowerPoint files are probably bigger than they need to be. To compress your file:

1. Right-click on the picture, and then click **Format Picture** on the shortcut menu.
2. In the **Format** dialog box, click the **Picture** tab, and then click **Compress**. Under **Apply to**, do one of the following: To compress just the current picture, click **Selected pictures**. To compress all the pictures in your presentation, click **All pictures in document**.
3. Under **Change resolution**, click **Web/Screen**.
4. Under **Options**, select the **Compress pictures** check box and the **Delete cropped areas of pictures** check box.
5. Click **OK**.
6. If prompted, click **Apply** in the **Compress Pictures** dialog box. PowerPoint compresses the picture or pictures for you automatically.

Overnight express your presentation to me on either a CD or zip diskette. Presenters from outside the United States, may wish to send their talks to me via email.

Staying On Time

I encourage you to make wise and judicious use of your time. It is a kindness and courtesy to the other speakers on the program and to the audience that each presentation does not exceed its allotted time.

Special and General Session Presentations:

All such presentations should not exceed **12 minutes** and allow 3 minutes for questions. During the sessions, both the moderators and a timekeeper will monitor the length of your talk. A bell will ring after 12 minutes has expired and the speaker should wrap up his/her presentation. Should a speaker continue beyond this time, and the moderator be too embarrassed to cut off the speaker, the projectionist has already been directed to cut off the projector at 15 minutes. If they had not already been able to do so, moderators will close such talks at that time and move on to the next speaker. If speakers do not leave time for questions, moderators are instructed to divert all questions to either an Open Discussion period or to see the individual making the presentation at a break.

Diagnostic/Case Report Session Presentations:

Please try to make your report interactional with the audience. Do not give away your conclusions until the very end. All such presentations should not exceed **8 minutes** and allow 2 minutes for questions. During the sessions, both the moderators and a timekeeper will monitor the length of your talk. A bell will ring after 8 minutes has expired and the speaker should wrap up his/her presentation. Should a speaker continue beyond this time, and the moderator be too embarrassed to cut off the speaker, the projectionist has already been directed to cut off the projector at 10 minutes. If they had not already been able to do so, moderators will close such talks at that time and move on to the next speaker. If speakers do not leave time for questions, moderators are instructed to divert all questions to either an Open Discussion period or to see the individual making the presentation at a break.

If you have attended previous meetings, you will know that the EFHW does indeed enforce its time allotments.

For additional information, contact:

Dr. Rocco C. Cipriano

National Fish Health Research Laboratory

11649 Leetown Road

Kearneysville, WV 25430

PHONE: 304/724-4432

FAX: 304/724-4435

E-mail: rcipriano@usgs.gov

***Flavobacterium* 2007 Workshop, May 2-4, 2007, Shepardstown, West Virginia**

Flavobacterium 2007 Workshop to be held May 2-4th at the National Conservation Training Center located 60 miles from Washington D.C.

Sessions Include:

- Genomics and Proteomics
- Pathogenesis
- Vaccines and Immunity
- Taxonomy
- Diagnostics
- Broodstock Evaluation for Disease Resistance
- Environmental Flavobacteria

For more information or to get on the mailing list contact Dr. Greg Wiens (Greg.Wiens@ARS.USDA.GOV)

FHS PARTICIPATION IN THE AAVLD / USAHA ANNUAL MEETINGS

Scott LaPatra

As you know, the Fish Health Section (FHS) has made a commitment to becoming more involved in issues of importance to the membership. For the last nine years I attended and participated in the United States Animal Health Association (USAHA) and the American Association of Veterinary Laboratory Diagnosticians (AAVLD) annual meeting. For background information, the USAHA is the most well established animal health organization that has approximately 1,400 members and works with a variety animal health entities both nationally, including the United States Department of Agriculture Animal Plant Health Inspection Service (USDA/APHIS), and internationally. The purpose of the AAVLD, which works closely with the USAHA, is the dissemination of information relating to the diagnosis of animal disease, the coordination of the diagnostic activities of regulatory, research and service laboratories, the establishment of accepted guides for the improvement of diagnostic laboratory organizations relative to facilities, equipment and personal qualifications.

The FHS objectives, interests and goals regarding animal health are very similar to the USAHA. One of the reasons we were in attendance was to offer our expertise and established programs in aquatic animal health and maintain visibility with other groups also interested in aquatic animal medicine. The AAVLD and the USAHA Aquaculture Committees met jointly and were chaired by myself representing USAHA and Dr. Kevin Snekvik from Washington State University who represents the AAVLD. As in past years, I updated the committee about the Sections activities. Additionally, the committee has been very successful at passing resolutions which are then forwarded to the Executive Committee of the USAHA. This year four resolutions were passed by the committee and included,

Resolution #1: introduced by Myron Kebus.

The United States Animal Health Association (USAHA) requests that the United States Department Agriculture (USDA), Animal Plant Health Inspection Service (APHIS), Veterinary Services (VS) develop and implement an interim emergency regulation to prevent the movement of VHS virus from positive to negative areas.

Resolution #2: introduced by Randy MacMillan.

The United States Animal Health Association (USAHA) suggests that the United States Department Agriculture (USDA), Animal Plant Health Inspection Service (APHIS), Veterinary Services (VS) conduct a risk assessment for *Oncorhynchus Masu* Virus Disease (OMVD) as quickly as possible using a World Organization for Animal Health

(OIE) recognized risk assessment procedure. If the risk assessment demonstrates that OMVD is a significant risk to United States fisheries resources, the USAHA requests that USDA-APHIS-VS recommend to the OIE that OMVD be urgently considered for re-listing.

Resolution #3: introduced by Scott LaPatra.

The United States Animal Health Association (USAHA) requests that the United States Department Agriculture (USDA), Animal Plant Health Inspection Service (APHIS), Veterinary Services (VS), National Veterinary Services Laboratory develop and make available a standardized source of reagents, that are not readily available from commercial sources, for the diagnosis of the World Organization for Animal Health (OIE) notifiable diseases or the National Aquatic Animal Health Plan (NAAHP) listed diseases.

Resolution #4: introduced by Don Hoenig.

The United States Animal Health Association (USAHA) urges the United States Department Agriculture (USDA), Animal Plant Health Inspection Service (APHIS), Veterinary Services (VS), the United States Department of Interior and the United States Department of Commerce to propose line item funding in future budgets to adequately fund the National Aquatic Animal Health Plan.

These resolutions have been forwarded to the appropriate agency for comment. Next years meeting will be the 111th Annual Meeting that will be held October 18-24, 2007 at the John Ascuaga's Nugget Hotel in Reno, Nevada. I recommend that the FHS be in attendance and represented!

Announcements:

Archive Committee of the Fish Health Section

The Archive Committee of the Fish Health Section (presently a committee of one but soon to expand) plans to write several short reports for inclusion in the Fish Health Section Newsletter. These reports are planned so that the history of our Fish Health Section can be written in five-year (more or less) segments. The committee also plans to submit an occasional report on topics where the historical perspective on an issue may provide insight for future decisions. One such report concerning the rationale for certifying fish pathologists is planned for the near future. Your opinions and suggestions for the future direction of this committee are requested. The committee also is interested in your comments (including corrections and additions) on any of our reports. The committee is seeking someone who would be willing to scan the newsletters from the 1972 to 1990. This will give every member internet access to all FHS newsletters. If you are interested in being part of this committee please contact Andrew Mitchell at dmitchell@spa.ars.usda.gov.

Solicitation of Additional Manuscript Reviewers and Authors for increased Aquatic Veterinary Medical Articles for the Journal of the American Veterinary Medical Association

AVMA American Veterinary Medical Association

To support the rapidly increasing discipline of aquatic animal medicine, the attached implementation plan has been developed in collaboration with the AVMA's Publications (Journal of the American Veterinary Medical Association) staff. It is provided as background information and should not be construed to imply that AVMA will be mandated to implement these actions. Before other aquatic veterinary features are initiated in the JAVMA we are seeking additional experts to serve as manuscript reviewers. We also seek potential authors and manuscript titles.

Potential Reviewers: Individuals interested in being reviewers should provide their complete contact information and indicate those fields or areas of aquatic veterinary medicine in which they have expertise and would be willing to serve as a JAVMA manuscript reviewer.

Potential authors: Corresponding authors interested in having manuscripts published in JAVMA should provide the tentative manuscript title, all potential authors, and full contact information for each author. Please e-mail this information to: Dr. Bill van Bonn (bvanbonn@sheddaquarium.org) and Dr. David Scarfe (dscarfe@avma.org).

Introduction

Contemporary veterinary medicine clearly includes an increasing number of aquatic animal species from marine mammals, to commercial aquaculture, ornamental (pet) finfish, amphibians and invertebrates. Veterinarian involvement is wide, involves all veterinary disciplines and includes governmental activities and program diseases, private industry and academic research, therapeutics and biologics, private clinical and university teaching hospital practice, wild fisheries rehabilitation, seafood safety, public health and biosecurity. Being uniquely positioned, the JAVMA is able to provide a cohesive source and exchange of centralized, moderated and peer-reviewed aquatic veterinary information to veterinarians actively engaged in this wide range of aquatic veterinary activities and species. This document outlines the process and requirements for three focused areas of aquatic veterinary publications in JAVMA and focuses on education through publication of didactic exercises, clinical case reports, updates or reviews of clinically relevant topics to aquatic animal veterinarians, and emerging issues that directly affect the practice of aquatic animal medicine. It also outlines the process and requirements for expediting solicitation, review, and processing of manuscripts in order to assist JAVMA staff, authors, and JAVMA readers.

AREAS FOR PUBLICATION

Manuscripts will be accepted for processing, review, and possible publication under the following sections:

- Aquatic Animal Section
- Current features in Veterinary Medicine Today
- Emerging Issues in Aquatic Veterinary Medicine—New feature within Veterinary Medicine Today Authors will submit manuscripts for possible publication through established JAVMA channels and prepared in accordance with published JAVMA guidelines. These manuscripts would be processed in accordance with existing JAVMA policy.

Aquatic Animal Section

Aquatic animal reports are full-length manuscripts of an Original Study, Retrospective Study, Clinical Report, or Descriptive Report, as currently published in JAVMA under species categories in accordance with established JAVMA instructions for authors and manuscript processing.

Veterinary Medicine Today Features

Manuscripts on aquatic animal medicine will also be considered for publication in the Veterinary Medicine Today section of the JAVMA in current features, such as “What is Your Diagnosis?,” “Timely Topics in Nutrition,” or “Topics in Drug Therapy.” Manuscripts could include descriptive approaches to clinical aquatic cases illustrating contemporary aspects of aquatic clinical practice that are of immediate use to veterinarians desiring to expand their involvement in aquatic animal medicine or use of existing or emerging diagnostic tests or procedures, surgical approaches or techniques, and the optimal use of drugs.

Emerging Issues in Aquatic Veterinary Medicine

Emerging Issues in Aquatic Animal Medicine would represent a new feature within the current Veterinary Medicine Today section of JAVMA. Manuscripts considered for publication in this section would include brief, but complete and accurate, new or evolving issues of importance to the veterinary profession, but they may not be typically viewed as hard science or may be seen by clinical practitioners as immediately applicable to the practice of aquatic veterinary medicine (ie, more of a head’s-up focus on emerging issues). Examples include legislative or regulatory issues,

emerging environmental or ecological issues, and animal behavior or welfare.

INSTRUCTIONS FOR AUTHORS

Manuscripts for the Aquatic Animal Section or Veterinary Medicine Today Features

Manuscripts intended for the Aquatic Animal section in JAVMA or existing Veterinary Medicine Today features in the JAVMA (such as “What is Your Diagnosis?”, “Timely Topics in Nutrition,” or “Topics in Drug Therapy”) must be submitted in accordance with current established JAVMA instructions for authors (see http://www.avma.org/journals/javma/javma_ifa.asp).

Instructions for Emerging Issues in Aquatic Animal Medicine (New Feature)

Emerging Issues in Aquatic Animal Medicine should have the following format:

- Preferably one, but no more than two, printed pages (manuscript submissions approximately 3 double-spaced typed pages; approx 750 to 1,000 words).

- References should be limited to 8 in number

- Authors should follow all general guidelines for manuscript preparation and submission, including guidelines for preparation of electronic copies of figures, provided in the online Instructions for JAVMA Authors.

- Manuscripts submitted need to contain the following sections:

- **Title** – Title must clearly indicate the topic and significance to clinical veterinary medicine.

- **Author/s** – If multiple authors, at least one of them should be a veterinarian, and affiliations of all authors (especially the corresponding author) must be noted.

- **Introduction** – A brief overview of the issue, how this relates to veterinary medicine, and a review of the pertinent information related to the issue.

- **Body of the manuscript (identify relevant subheadings as necessary)** – Describes the relevant issues in detail.

- **Discussion and Conclusions** – Relates the issues directly to the practice of, or impact on, aquatic veterinary medicine.

- **References** – All citations cited in the body of the manuscript.

PROCESS FOR SUBMITTING, MANAGING AND PUBLISHING CONTRIBUTIONS

Publication frequency will be a function of the number of suitable manuscripts submitted and reviewed through AVMA’s standard processes. Before the new feature is started, at least 5 manuscripts must be received, processed through peer review, and tentatively accepted for publication.

- All manuscripts should be submitted to the JAVMA, preferably online

- (<http://avma.manuscriptcentral.com>) to expedite processing. However, manuscripts may also be submitted electronically to the JAVMA secretary (JAVMA@avma.org), who will assist with uploading of the manuscript and associated materials.

- Manuscripts submitted for consideration should identify the desired section or feature for inclusion (Original Study, Retrospective Study, Clinical Report, or Descriptive Report for the Aquatic Animal section; or the specific feature in the Veterinary Medicine Today section

- (such as Timely Topics in Nutrition, Topics in Drug Therapy, Emerging Issues in Aquatic Animal Medicine, etc).

- Manuscripts submitted for consideration will be routed to the appropriate AVMA Scientific Editor. A specific AVMA Scientific Editor will be designated to handle the new Emerging Issue in Aquatic Animal Medicine feature.

- The AVMA Scientific Editors will ensure manuscripts are reviewed in a timely manner. The AVMA Scientific Editor who handles the Emerging Issues in Aquatic Animal Medicine feature will work with a designated coordinator to ensure each manuscript is peer-reviewed by 2 or more reviewers. Review of each manuscript should be accomplished within a 3-week period.

- Based on reviewer’s comments, the AVMA Scientific Editor will:

- Reject the manuscript and inform the corresponding author, providing reviewer’s key issues;

Request the corresponding author resubmit the manuscript with consideration of reviewer's comments; or,
Route the manuscript, with reviewer's comments to the appropriate JAVMA editorial staff for editing, formatting, and publication.

PROMOTION AND OTHER NECESSARY ACTIVITY

The following activities will need to be implemented:

1. Solicitation and compiling of potential reviewers for each section.

Subject matter expert reviewers will be sought from the membership of several of the small established or developing organizations with an aquatic veterinary focus (e.g. International Association for Aquatic Animal Medicine (IAAAM), Eastern Aquaculture Veterinary Association (EAVA), Association of Aquatic Veterinarians of British Columbia (AAVBC), Canadian Association of Aquaculture Veterinarians (CAAV), Association of Reptile and Amphibian Veterinarians (ARAV), American Association of Zoo Veterinarians (AAZV), Fish Veterinary Society (FVS), etc).

2. Solicitation of manuscripts for each section. Manuscripts will be solicited from members of the aforementioned organizations with an aquatic veterinary focus.

3. Designate coordinator who will work with the appropriate AVMA Scientific Editor to ensure efficient, effective peer review of manuscripts submitted for the Emerging Issues in Aquatic Animal Medicine feature.

4. Coinciding with publication of the initial installment of the new feature, Instructions for Authors for the Emerging Issues in Aquatic Animal Medicine feature will be added to the JAVMA Web page

(http://www.avma.org/journals/javma/javma_ifa.asp).

Invitation to Join the Education Section of AFS

What is the largest bony fish?

If you are like me, you probably waited until the last minute to renew your AFS Membership for 2007. When you renew, please consider this invitation. The Education Section of the American Fisheries Society invites you to join our Section. Education Section activities, including preparation and revision of textbooks, support of student travel to meetings, and compilation of brochures on academic programs and fisheries career opportunities. One focus of the section is undergraduate and graduate education. However, the Education Section also supports lifelong learning of all fisheries professionals. We encourage all fisheries professionals to expand their minds through the pursuit of new knowledge. To that end, we are sponsoring a "Largest Fish" contest.

What is the largest bony fish known to science? If you think you know the answer, email your response to lochmann@uaex.edu. We will provide a small incentive to some lucky individual, randomly chosen from among the respondents with the correct answer. Take some time, explore the possibilities, and see what there is to learn about really big fish. You must be a member of the Education Section to be eligible for the "small incentive."

Steve Lochmann, Education Section - Membership Committee

New Aquaculture Titles Now Published:

Lobsters: Biology, Management, Aquaculture and Fisheries

By Bruce Phillips

Lobsters are one of the most commercially important groups of animals harvested and farmed throughout the world. Bringing high prices on the market and the table, the results and yields of farmed species has seen continued growth.

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Fish Health Section: The First Five Years (1973 to 1977) and a Little Before That

Andrew J. Mitchell/Archive Committee

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A little before that:

Jim Warren, a USFWS Hatchery Biologist from Genoa, Wisconsin, was the driving force behind the formation of the Fish Health Section. On April 30, 1971 (Warren letter), Jim wrote to Robert Hutton, the Executive Secretary of the American Fisheries Society (AFS), and asked that consideration be given for the formation of an AFS national chapter of fish pathologists. He also wrote several letters to the AFS Fish Disease Committee proposing the need for this chapter and succeeded in getting a consensus from the committee to establish the new chapter. The Fish Disease Committee was established in 1964 as a temporary AFS committee serving at the pleasure of the AFS president (Warren letter, February 16, 1973). Warren attended the AFS Annual Meeting in Salt Lake City, UT (September 17, 1971) where approval was given to form the new section called the Fish Health Section (Warren letter, September 22, 1971). Jim was very active in promoting the fledgling section by letter and by attending (or appointing a designate to attend) annual fish disease meetings (Midwestern Fish Disease Conference – established in 1970 and Western Fish Disease Conference – established in 1960; letters in file). Jim chaired the first steering committee that activated the section (first newsletter, Fish Health Section, 1972). The Fish Health Section was the first section established in the AFS.

The name “Fish Health Section” was derived from a modification of the name “National Section of Fish Health Specialists,” which in turn was modified from “National Chapter of Fish Health Specialists” (Statement for the Executive Committee AFS, September 14, 1971, Salt Lake City, Utah and a signed petition to establish the section on September 17, 1971). There is no information on the origin of “National Chapter of Fish Health Specialists”.

The starting date for the Fish Health Section (FHS) is a matter of some confusion. As previously mentioned, formation approval was given on September 17, 1971. The Fish Health Section was approved on September 14, 1973 at the Annual Business Meeting of the AFS, Lake Buena Vista, Florida, and made retroactive to September of 1972. In the 1972 Report of the Fish Health Section Steering Committee, it was stated that the section would be officially inaugurated on January 1, 1973. So go ahead and pick your own start date.

Although Warren was the major mover and shaker behind the Section, he certainly did not work alone. Ron Goede (UT), Chuck Hicks (MO), Bob Summerfelt (OK), Don Amend (WA), Dave McDaniel (UT), Pete Bullock (WV), Roger Herman (OH), Bill Klontz (TX), Bill Wingfield (CA), and John Plumb (AL) worked with Jim on the steering committee and its three subcommittees, Professional Standards, Technical Procedures, and Membership and Balloting, to bring the dream of the Section to reality (first Newsletter, Fish Health Section 1972). Others who were part of the process included Stanislas F. Snieszko (WV), Ken Wolf (WV), Harold Wolf (CA), George Post (CO), Howard Larson (MN), Larry McDermott (Ontario), J. David Erickson (ID), Gary Camenisch MO, James Wood (WA), Dave McLean (Ontario), John Fryer (OR) and Fred Meyers (WI) (Warren letter September 1, 1971). Doc Snieszko, although never in a position of leadership over the section, was always a very strong supporter. Ken Wolf was never a member of the section but was part of the founding group. Fred Meyer gave the only recorded dissenting vote against the establishment of the Fish Health Section, yet was important in its formation and direction. Fred was later elected to a leadership position in the section in December of 1973. The content of Fred’s letter of dissent will be briefly discussed in a later article of historic interest and perspective on the issue of certifying fish pathologists.

The AFS Fish Health Section was established with three written goals (Warren letter, September 22, 1971). The first was to “assure timely communications among members through the publication and dissemination of proceedings or abstracts of fish disease conferences and technical sessions.” The second was to “advise the officers of the American

Fisheries Society on the current status of fish disease problems, and prepare recommendations for society action.” The last was to “establish and disseminate approved procedures for the detection or diagnosis of certain fish diseases.” It is interesting to note that one of the initial needs, expressed as a purpose for founding the new organization, the classification or certification of fish pathologists (Warren letter, April 30, 1971), was not one of these three goals.

By the end of 1972, there were 104 members in the new section, each paying \$2.00 for dues in addition to the \$20.00 AFS membership fee. The new section sent out two newsletters in 1972 (in FHS archives - not considered an official FHS newsletter as Volume 1 starts with the first 1973 publication) in which several emerging fish disease issues were reported. These included 1) the certification of disease inspectors/fish pathologists, 2) the listing of bacterial kidney disease as a serious problem, 3) the detection of infectious pancreatic necrosis virus (IPNV) in Coho salmon returning to the Columbia River, 4) the chlorination of the Tobacco River, Michigan to depopulate fish infected with whirling disease, 5) incubation temperatures for best viral growth in cell cultures, 6) oral vaccination of salmonids against *Vibrio*, and 7) legislation authorizing the establishment of a cooperative National fish health program (Bills S. 2764 and H. R. 14730 – both bills failed for lack of congressional support).

The first five years (1973 to 1977):

The information that follows is taken from FHS Newsletters (1973-1977). In December of 1972, John Fryer, Associate Professor of Microbiology at Oregon State University was elected as the first President of the section, Graham L. (Pete) Bullock was elected Vice President and Jim Warren Secretary/Treasurer for 1973. President Fryer named the following chairmen for the section’s six standing committees: Professional Standards, Don Amend; Finance, Jim Warren; Nominating, Jim Wood; Membership and Balloting, Chuck Hicks; Technical Procedures, Dave McDaniels; and Newsletter, Dennis Anderson. These same committees were continued through the next five years with only the Nominating Committee becoming an elected position starting in 1974. The Presidents elected over the next four years were Pete Bullock (1974), Courtney Gustafson (1975), Donald Amend (1976), and Jim Warren (1977). Elected positions for 1974 through 1976 included President, Vice president, Secretary/Treasurer, and Nominating Committee Chairman. In 1977, the Vice President position was replaced by President Elect. In 1976, there was a special election for five members that formed the Board of Certification and in the 1977 regular election for 1978 officers, two positions for the Board of Certification were on the ballot.

In 1973, there were 155 section members; in 1974, membership increased to 180. In 1975, there were 187 members, and by April of 1976, membership stood at 245 including 7 library members. Final membership counts for 1976 and 1977 were not found (see later comment for 1977). Membership dues were increased from \$2.00 to \$5.00 in 1977.

There were several major issues that the society considered from 1973 to 1977. Nine of these issues are mentioned here and include the pending crisis associated with the need for more FDA approved fishery therapeutants and the loss of chemicals in use at the time, the need to certify fish pathologists/pathobiologists/health biologists or inspectors for inspection and diagnostic work, the need for guidelines on disease classification and standards for the detection and isolation of disease organisms, the need to update the nomenclature of fish bacterial pathogens, the conflict over the use of depopulation [called “backhoe to glory” by one biologist – FHS Newsletter 4(3):4] with/without indemnification as a means for fish disease control, the need for uniform federal legislation controlling the movement of serious fish pathogens throughout the U.S. (all the early efforts failed; indemnification was also an issue here), the need to increase membership [comment was made on breaking away from the parent society (AFS) and that 140 previous members had not renewed as of April 1977], the need for a fish health glossary, and the allegation that Federal government services, such as diagnostic services, created unfair competition with members of the private sector offering the same services for pay.

The major accomplishments of the FHS in these five years were the completion and publication of the first Blue Book “Suggested procedures for the detection and identification of certain infectious disease of fishes” in 1975, the development of standards and protocols for certifying fish health inspectors in 1976, the near completion of the

Glossary of Fish Health Terms in 1977, and the establishment of a committee to look into the nomenclature of fish bacteria.

The first Fish Health Section meeting, a workshop on Standards and Procedure, was held in Denver, Colorado on August 12-15, 1974. The second, a workshop on several different fish disease topics, was also held in Denver on August 24-26, 1976. The early meetings were held biennially.

From 1973 to 1977, the section put out four newsletters per year. These newsletters not only reported FHS activities, business and bylaws, but announced fish health and related meetings; new publications that included books, proceeding and journals; fish disease courses; fish diagnostic services; job openings, retirements (e.g., Bob Rucker, 1973 and A. J. Ross, 1975); and lab openings (e.g., Fort Morgan Fish Disease Control Center, CO, 1974). Issues and opinions were discussed under the “Ye ole’ fish box” editorial comment section (some of the topics were reported above) and a number of short reports (two sentences to a few paragraphs) were written on disease research and diagnostic issues. The topics in these reports were wide ranging including: fish dying from fire ant ingestion, the nature of rodlet cells, fish coughing, shellfish diseases, goldfish ulcer disease, a large die-off of eels, fluorescent antibody technique for diagnosis of bacterial kidney disease, oxalinic acid treatments for fish bacteria, and *Branchiomyces* infections in fish. Diseases mentioned most in these reports were infectious hematopoietic necrosis, infectious pancreatic necrosis, channel catfish virus disease, whirling disease, enteric redmouth disease, furunculosis and vibriosis. There were also several reports on fish vaccines, notably the *Vibrio* vaccine. These short reports kept FHS members current on a broad range of issues affecting the field of fish health.

As a final note, I did not comment on the editorial cartoons that were present in several of the early newsletters. Only the monkey that insulted the State of Alaska for poor hatchery design leading to fish diseases [Figure 1 from FHS Newsletter 3(2):3] really caught my attention, but it seems I could not compose any comment. Nevertheless, Don Amend sure did [Don’s comment in FHS Newsletter 3(3):4 is available upon request]. Well, so long for now.

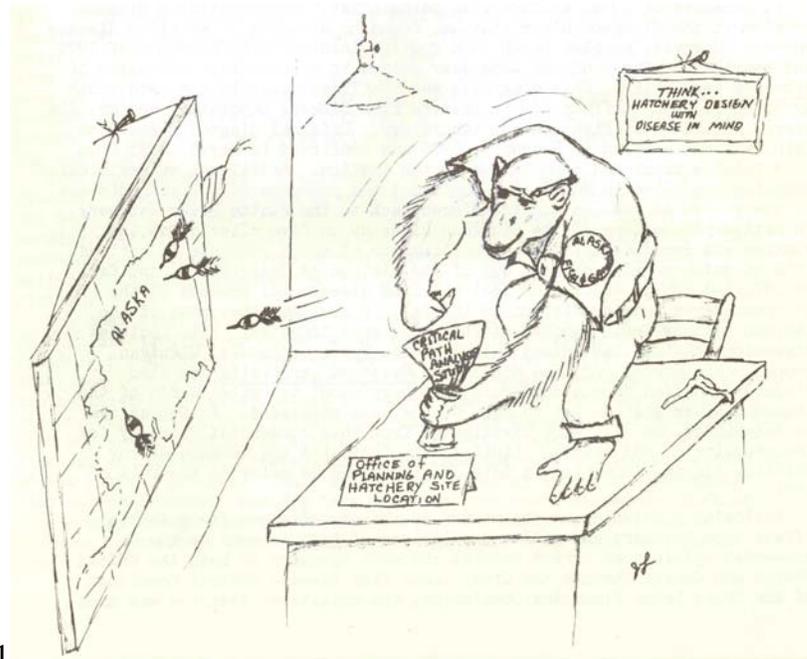


Figure 1

Aquaflor Performs Favorably for the Mississippi Catfish Industry

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In October 2005, florfenicol (Aquaflor®, Schering-Plough Animal Health, New Jersey) became the first aquatic antibiotic approved for use in the U.S. in over 20 years. Florfenicol (FFC) was approved for control of mortality in Enteric Septicemia of Catfish associated with *Edwardsiella ictaluri* in catfish and was designated as a Veterinary Feed Directive (VFD) drug. The class of VFD drugs, a designation that the FDA can assign to drugs used in or on feed, was created by the Animal Drug Availability Act (ADAA) of 1996 (an amendment to the Food Drug and Cosmetic Act).¹ A VFD drug can only be used in the fish species for which there is a label claim, and extralabel use of a VFD drug is prohibited by law.² A VFD order for florfenicol can only be obtained from a licensed veterinarian who must examine the fish and determine they have ESC based on clinical signs, lesions, or results of diagnostic tests such as bacterial culture.³

The veterinarian must discuss proper use of the medicated feed including dosage, treatment duration, and withdrawal time with the farmer.⁴ The quantity of medicated feed ordered is based on the weight of the fish in the pond as estimated by the fish farmer. The veterinarian must also provide follow-up evaluation or emergency coverage in the event of an adverse reaction or treatment failure.

The regimen as approved by the US FDA for treating ESC with FFC is a dose rate of 10 mg FFC/kg body weight one time a day for 10 days⁵ with a preslaughter withdrawal time of 12 days.⁶ The order forms can be faxed to the distributor or feed mill, but the original order must be received within 5 days. The feed distributor must retain the original VFD record, and the veterinarian and fish farmer must each retain a copy of the order for a minimum of 2 years.²

The VFD order for FFC expires 15 days from the date of issuance,⁷ and there are no refills. If the fish in the FFC-treated pond are still dying from ESC after the 10 day regime, the veterinarian must issue a new VFD order. Concurrent ESC outbreaks from multiple ponds on one farm may be treated with FFC based on results of the examination of ill fish from a representative pond at the discretion of the attending veterinarian. The veterinarian assumes responsibility and liability for diagnosis of fish in all treated ponds.

The drug's sponsor, Schering-Plough Animal Health (SPAHA) is pursuing other label claims for florfenicol including use in salmonids, tilapia, and a columnaris infection in catfish. In addition to being the first aquaculture drug approved under the ADAA, FFC is also the first drug approved under the Minor Use Minor Species (MUMS) Health Act of 2004. This act allows sponsors to gain conditional approval of drugs for use in minor species until efficacy studies are completed.⁸ All required safety studies of the drug must be completed as usual. Because all safety studies for catfish were approved with the ESC claim, SPAHA is pursuing a conditional approval of FFC for control of mortality associated with columnaris in catfish. Under the MUMS Act, studies demonstrating an antibiotic's efficacy must be completed within 5 years of conditional approval.

FFC was used in the Mississippi Delta during the 2006 spring and fall ESC outbreaks. The initial feed back on FFC's performance in the field is promising according to Dr. Jimmy Avery, Mississippi State University Extension Leader in Stoneville, MS. Avery said farmers have been optimistic about FFC's potential impact, and many have tried the antibiotic. "I think in most cases where they've been able to get feed to the fish before the ESC infection is too advanced, they've been pleased with the effect."

References

1. United States Food and Drug Administration, Center for Veterinary Medicine. Animal Drug Availability Act; Veterinary Feed Directive. Available at: <http://www.fda.gov/cvm/adaatoc.html>. Accessed December 20, 2005.
2. US FDA Center for Veterinary Medicine. Guidance for industry, Veterinary feed directive regulation. Available at: <http://www.fda.gov/cvm/Guidance/guide120.doc>. Accessed June 29, 2006
3. Gaunt P. Veterinarians' role in the use of veterinary feed directive drugs in aquaculture JAVMA 2006; 362-364.
4. Robinson E., Manning B, and Li M. Feeds and feeding practices *In* C.S. Tucker and J.A. Hargreaves, editors. *Biology and culture of channel catfish*. New York: Elsevier, 2004;324–348.
5. Gaunt P, Endris R, Khoo L, et al. Determination of dose rate of florfenicol in feed for control of mortality in channel catfish *Ictalurus punctatus* (Rafinesque) infected with *Edwardsiella ictaluri*, etiological agent of enteric septicemia. *Journal of the World Aquaculture Society* 2004; 35 (2):257–267.
6. Wresinski C, Crouch L, Gaunt P, et al. Florfenicol residue depletion in channel catfish, *Ictalurus punctatus* (Rafinesque) *Aquaculture* 2006; 253:309-316.
7. United States Food and Drug Administration, Center for Veterinary Medicine. FDA approves new antimicrobial for catfish. Available at: http://www.fda.gov/cvm/CVM_Updates/catfishapp.html. Accessed December 20, 2005.
8. CVM proposes rules on drug “designation” under MUMS Act. *FDA Veterinarian* 2005;20 (3):1–2.

Regulating Fish Disease Lessons Already Learned from VHS

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A previously unknown and virulent strain of VHS virus has entered the Great Lakes and caused impressive epizootics in several fish species¹. Initial mortality occurred in freshwater drum and exotic gobies, but when popular species like muskellunge and yellow perch were affected, it caused great alarm among fishermen, managers of natural fisheries, other state and federal agencies, and the aquaculture industry. There was near universal consensus that it was important to prevent movement of the virus out of the Lakes or into commercial aquaculture. Control efforts began, and since then it has been a continuing demonstration of just how difficult things can become when well intentioned regulations written by knowledgeable people meet up with the complexities of the real world.

The first formal regulatory move was made by the USDA. APHIS called a meeting in Washington for October 31, 2006 to meet with aquaculture industry representatives and state authorities and discuss what action was needed to prevent the spread of VHSV. Unfortunately, in the week prior to that meeting, concern about the discovery of VHS in some important commercial species caused APHIS to issue a sweeping Emergency Order² that stopped all interstate movement of 37 VHS-susceptible fish species³ out of any of the 8 Great Lakes States. This caused the participants in the October 31 meeting to change in perspective from “friendly cooperators in VHS control” to “angry opponents that felt they were blind sided by a draconian regulation that usurped regulatory turf and seriously affected the livelihoods of thousands of people”. The most serious issues raised at that meeting were 1) that the rule affected farms that were hundreds of miles from the VHS outbreak and often on different watersheds, 2) that it made no exceptions of any kind, including for farms raising fish in well water and with solid virus inspection histories, 3) that fish could not even cross state lines between the 8 Great Lakes States, and 4) that the list of susceptible species included many for which the evidence was preliminary and did not include others that were harvested and shipped live from the lakes, but that had not yet been tested for VHS. Despite early statements that the rule would not be changed, in early November, APHIS issued an amended order⁴ that addressed some of the participant’s concerns.

The amended order allowed some movement of fish out of the Great Lakes States for processing, research and diagnostic purposes, and for other commerce as long as certain conditions were met. Farmers wishing to ship live fish out of their states were allowed to do so as long as their “State Competent Authority” (the ag or wildlife agency with regulatory oversight of the aquaculture disease) would sign off on paperwork stating that the fish had been found free of VHS according to the methods outlined in the Inspection Section of AFS-Blue Book or OIE Manual (chapter 2.1.5). In response to this new regulation, the FHS immediately made the Blue Book Inspection Section freely available on the Internet⁵. The competent authorities and fish producers of the affected states were then able to review their options. Unfortunately, they were faced with too many.

Those folks that chose to follow the OIE link found a broad and all inclusive chapter on diagnostic methods for VHS⁶ (including everything from clinical signs to PCR) with links within footnotes within links that somehow led toward the information that they needed for decisions on the suitability of fish inspections. In the final analysis, the OIE is geared toward the establishment of disease free zones (farms in this case) based on farm level inspections, biosecurity, and a 2 year history of negative testing. Those opting for the Inspection Section of the Blue Book had much more direct information on the steps needed to establish the pathogen status of a fish population, but the Blue Book includes both farm level and lot inspections, options for sample sizes based on the stringency desired, and like the OIE, does not dictate a single path that must be taken. Thus, in order for farmers to move toward inspection, they had

to first negotiate a protocol that would be accepted by their competent authority. To assist farmers in their negotiations, a document was produced and then distributed by the NAA and FHS that specifically outlined the steps that farmers need to take and the questions that they must have answered⁷.

The Amended Emergency Order requires that the authorities of the shipping state verify that exported fish meet the Blue Book or OIE Standard, but differences in interpretation and enforcement are likely to result shipments of some fish where the concerns of the recipient jurisdiction are not adequately addressed. In response, many states are amending their regulations to include strict import requirements. The first State to do so was NY⁸ just before Thanksgiving. The NY regulations require that all fish destined for the public waters of NY be inspected for a lengthy list of bacteria, viruses, and parasites. In order to meet this requirement, farms must inspect 60 fish of each species once per year. Given the “public waters” angle, this regulation has the greatest impact on bait and sportfish producers. Farms within NY that sell fish in NY and wish to export must meet the requirements of APHIS, NY, and the receiving jurisdiction. This becomes increasingly complex as farms try to develop testing strategies that simultaneously meet the requirements of multiple jurisdictions.

One of the areas that is causing the most difficulty is a failure to clearly address the most fundamental issues of fish health inspection. The first step is to decide if the required inspection program is designed to prove that a particular lot of fish is free of disease, or if it is designed to prove that a farm is free of disease. Farm level inspections (described in the Blue Book and specified by the OIE) require semi-annual testing of all fish lots on the farm and disease free status is obtained after the farm establishes a history of negative inspections. There are also biosecurity requirements; the farm must have a protected water supply and bring on no fish of a lower inspection status. The advantage of this approach is that once disease free status is established, the farm can ship fish at any time without inspection delays. The disadvantage is that the OIE requires a 2 year testing history to establish disease status. The other option is to inspect individual lots of fish.

Lot inspections are based on the assumption that the farm has identified a particular lot (same age, species, broodfish, and water supply) of fish for export. That lot is then sampled and tested and, when the testing is complete, the fish can be shipped. The advantage of this approach is that only fish destined for export must be tested, but the disadvantage is that all shipments are delayed while testing is conducted. In the current round of regulation, the process has been made more complex because the lines between farm inspection and lot inspection have been blurred.

States that require fish inspections often require that 30 or 60 fish of each species be inspected for specific diseases and often allow that inspection to be valid for shipping any fish of that species for an entire year. In these inspections, the sampling and testing is conducted as for a lot inspection, but the test results are treated as if they were from a farm level inspection. These inspections do not require that all lots be tested or that the farm practice any particular biosecurity. Thus, while this approach does provide some information and it is not onerously complex or expensive, it does have very significant gaps. This lot vs farm question is also not clear in the APHIS Amended VHS Order because it requires that the state authority verify that the export meet Blue Book or OIE standards, but the Blue book describes both farm and lot inspections.

Difficulties related to finalizing inspection programs are still curtailing most interstate commerce from the Great Lakes region. State authorities are still trying to establish policy and farmers and hatchery managers are scrambling to look for labs with the expertise and capacity required to handle the sudden influx of cases. If state authorities require testing of 60 fish per lot, hundreds of farms will need to find laboratories that can handle virology on hundreds of fish per farm. Based on information provided at the October meeting in DC, these inspections are likely to cost \$5/fish and up, depending on the degree of subsidy from state governments. If states then decide to make lot inspections valid for export for 6 months, most farms are looking at thousands of dollars per year in additional expense. This is an especially serious problem for smaller farms that ship many species or that produce fish in ponds at several different sites.

APHIS is now working on a months-long process to develop an interim rule for VHS that will hopefully clarify current ambiguities and better allow the movement of fish while controlling the risk to wild and cultured fish. There is

little doubt that other states will enact new regulations that may resemble those of NY. Whether or not VHS spread from the Great Lakes will depend on the successful implementation and enforcement of regulations that prevent the spread of the virus. In order to be successful, those regulations must be respected by those that are regulated. That respect will be earned through education, a transparent and inclusive regulatory process, and a final rule that strikes the right balance between stringency, cost, and effectiveness. Regulators must always try to strike a balance between inspection strategies stringent enough to be meaningful, but flexible enough to allow legitimate commerce.

1. [VHS Epizootic overview](#)
2. [APHIS VHS Emergency Order](#)
3. [APHIS susceptible species list](#)
4. [APHIS VHS Amended Emergency Order](#)
5. [Blue book Inspection Section on the Internet](#)
6. [OIE VHS Chapter 2.1.5](#)
7. [VHS Questions](#)
8. [New Emergency NY regs](#)

Fish Health Newsletter – Editorial Policy

The *Fish Health Newsletter* is an electronic publication of the Fish Health Section of the American Fisheries Society and is available for downloading in Adobe pdf file format. Submissions on any topic of interest to fish health specialists and preliminary case reports are encouraged with the understanding the material is not peer-reviewed. Abstracts submitted to the *Journal of Aquatic Animal Health* are also encouraged. Submissions must be formatted in Microsoft Word, WordPerfect, or Rich Text Format, and can be sent by electronic mail or via 3.5” floppy disk to the editor’s address below. **Graphics files should be sent separately in jpeg format.**

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