FHS NEWSLETTER

FISH HEALTH SECTION - AMERICAN FISHERIES SOCIETY

Volume 24, Number 4 Page 1 October, 1996

A Report on the International Symposium on Fish Vaccinology

Oslo, Norway played host to over 250 fish immunology research and applied scientists June 5-7, 1996. The International Symposium on Fish Vaccinology was sponsored by the International Association of Biological Standardization (IABS), Norwegian veterinary group - VESO, and commercial companies marketing fish vaccines, medicines and diagnostic products.

In the first session, Chaired by T.O. Jorgensen (Norway), basic formation on the immune mechanisms of aquaculture species was presented by G.W. Warr (USA), A.G. Zapata (Spain), L.W. Clem (USA) and K. Soderhall (Sweden). At an early age, fish begin to develop a competent immune system to deal with the environmental problems and pathogens. The scientists explained how their genetic research may help to improve immune capabilities and prevent mortalities in aquaculture.

With such great numbers of fish in aquaculture pens, efficient and effective delivery of the vaccines to fish in a major consideration. W.B. van Muiswinkel (The Netherlands), T. Nakanishi (Japan), C. Quentel (France) and M.T. Horne (UK) spoke about how antigens are taken up from the water in bath or by oral vaccinations. When deemed necessary and conomically feasible, mass injections can be justified. M. Sakai (Japan) was this session's Chairperson.

Bacterial vaccines against vibrio, furunculosis yersiniosis, Edwardsiellosis and motile aeromonads were discussed by A.E. Toranzo (Spain), A.E. Ellis (UK), R.M.W. Stevenson (Canada), R.L. Thune and S.K. Otta (India) respectively. As explained by Chairperson T. Hastein (Norway), the exact biochemical nature of the immunogens is still not fully understood; however, for the first 3 mentioned, commercial vaccines are very successful.

The second session on bacterial antigens was chaired by P. Bustos (Chile) and included S.L. Kaattari (USA) speaking on bacterial kidney disease, G. Ghittino (Italy) on infections with Streptococci and related organisms, P. Smith (Chile) on pisicrickettsiosis, J.L. Romalde (Spain) on pasteurellosis and J.F. Bernadet (France) on Flavobacterium and Flexibacter infections.

Immunization with viral and parasitic antigens was lead by C. Endresen (Norway). K.E. Christie (Norway), N. Lorenzen (Denmark), J.R. Winton (USA), P. Dixon (UK) and P.T.K. Woo (Canada) spoke on Infectious Pancreatic Necrosis Virus, Viral Haemorrhagic Septicaemia, Infectious Haemotopoietic Necrosis Virus, viral diseases of carp and catfish and fish parasites. These researchers discussed the problems of deriving successful vaccines from these pathogens.

The session on antigen production, adjuvants and vaccine composition was chaired by P. Smith (UK). Polyvalent vaccines are becoming popular for one-step delivery as reported by R.A. Busch (USA). Information about the increased use of adjuvants and immunostimulants in these and monovalent vaccines is a recent development in commercial bacterins as discussed by D.P. Anderson (USA). New viral vaccines may result from research programs on recombinant DNA technologies as reported by J.A.

IN THIS ISSUE:

Leong (USA). Live vaccines are promising; however, these may have difficulty in certification because of environmental concerns (A. Benmansour, France).

Vaccine evaluation tests can be done in vitro to some degree (L.J. Reitan, The Netherlands), or by live challenges (R. Nordmo, Norway). The statistical analysis may be easier from controlled laboratory experiments (J. Jarp, Norway); the pitfalls of field trials were discussed by H. Mitchell (USA). This session was chaired by F. Baudin Laurencin (France).

M. Moos (Denmark) chaired the session on licensing criteria and regulatory aspects, and N.G. Birnbaum (USA) first presented some aspects of regulation of veterinary biological products in the United States. European and Canadian regulations were discussed by A. Lee (UK) and M.J. Sethi (Canada). T.D. Goodrich (USA) called for more harmonization of fish vaccine regulations among different countries in order to allow for more efficient utilization of assay results and marketing.

A session on safety and environmental issues of fish vaccinology was chaired by B. Hjeltnes (Norway), in which A. Markestad (Norway) pointed out the reduced use of antibacterial drugs in Norway due to increased vaccination. The side effects of vaccinations, in particular the use of some adjuvants, was discussed by P.J. Midtlyng (Norway), and operator safety during injection-vaccination was reported by H.L. Leira (Norway).

Vaccination strategies in aquaculture was the topic of the last session; it was chaired by W.D. Paterson (Canada). J.L. Larsen (Denmark), and A. Lillehaug (Norway) discussed strategies in freshwater and seawater cage culture of salmonids. Marine culture strategies were presented by O.M. Rodseth (Norway); carp and catfish by L.W. Clem (USA). Y. Song (Taiwan) presented her recent research on the use of immunostimulants in shrimp.

The program included 40 scientists from 15 countries giving these talks in their specialties of fish immunology. Poster sessions were informative and talkative as attendees were able to discuss among themselves and question the individual presenters. The mountain top conference, center, Soria Moria, was located at a spectacular acropolis setting overlooking Norwegian woods, lakes and suburbs of Oslo. The conference leaders. Roar Gudding and Paul Midtlyng and their colleagues are to be congratulated for making the meetings an outstanding success. The IABS will publish presented papers.

Doug Anderson Salmon Bay Biologics Seattle, Washington USA

Announcements

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Short Course on Marine Fish Diseases

Held January 6-8, 1997 at Hubbs-Sea World Research Institute, San Diego, California. The course instructors will be Drs. Michael Kent, Dept. Fisheries and Oceans, Canada, Jack Fournie, US Environmental Protection Agency, and Martin Chen, California Dept. Fish and Game. Lecture topics will include anatomy and physiology of fish, infectious diseases (viral, bacterial, protozoan and metazoan, noninfectious diseases (nutritional, supersaturation, pollution-caused) and treatment of fish diseases. Laboratory sessions will cover necropsy and basic diagnostic procedures, and identification of pathogens and disease conditions in fresh material and demonstration slides. This is an advanced-level course and will qualify for AFS/FHS continuing education credit. Enrollment is limited to 24. An optional tour of the new Hubbard Marine Fish Hatchery at nearby Carlsbad is offered on January 9. The tuition cost is $150.00 (US). For more information, contact either Martin Chen at 619-245-4076 (fax 9142) or Michael Kent at 604-756-7119 (fax 7053). Checks may be made out and

mailed to Martin Chen at California Dept. Fish and Game, 12550 Jacaranda Avenue, Victorville, CA 92392. A broad range of nearby accommodations is available at off-season rates. Lodging information will be sent on receipt of tuition or on request.

Western Fish Disease Workshop

The **Western Fish Disease Workshop** will be held **June 18-20, 1997** at the University of California, Bodega Marine Laboratory in Bodega Bay, California. For further information, contact **Kristen Arkush**, BML, at (707) 875-2062 or **Bill Cox**, California Department of Fish and Game, at (916) 358-2829.

ABSTRACTS AVAILABLE

ABSTRACTS from the FHS Meeting in Madison
Abstracts from the Madison meeting are available. If you want a copy, please contact Becky at 608-783-8442 or Sue at 608-266-2871.

7th Congress of the International Society of Developmental and Comparative Immunology

July 21-25, 1997, Williamsburg, VA hosted by College of William and Mary, School of Marine Science, Virginia Institute of Marine Science .Contact: **Stephen Kaattari,** VIMS, PO Box 1346, Gloucester Point, VA 23062. 806-642-7362, fax 804-642-7186, E-mail Kaattari@vims.edu.

Symposium on the Pathogens and Diseases of Fish in Aquatic Ecosystems-Implications in Fisheries Management.

Recent reports and media attention about fish diseases that have been discovered in wild fish have fueled and extensive debate in the public and governmental arena about the cause and effect of fish pathogens in the wild. The Pacific Northwest Fish Health Protection Committee is organizing a symposium to examine and expand the knowledge of selected pathogens and ideas, and their interactions on fish in aquatic ecosystems. This symposium will present documented cases, completed research and management strategies that address the risks and role that pathogens and diseases play in the aquatic ecosystem.

The Symposium will be comprised of two full days of sessions devoted to presentations and panels that will examine the current information on: a) distribution of pathogens and the impacts they have on fish populations in aquatic ecosystems, b) pathogen transmission between wild and cultured fish populations and the associated risks, c) illustrate management strategies used to minimize and avoid pathogen impacts on fish in aquatic ecosystems, d) determine research needs in these areas. The organizing committee has determined that the symposium will be held in Portland, OR during **June 3-4, 1997.** More information and a formal announcement will come out in the near future, but you may want to check your calendar for this very important event! For more information contact **Bruce Stewart** at 360-438-1180 or **Ray Brunson** at 360-753-9046.

AMERICAN FISHERIES SOCIETY FISH HEALTH SECTION EXECUTIVE COMMITTEE MEETING

August 7 and 8, 1996
Madison, WI

1) Meeting was called to order at 12:05 PM.

2) Committee reports were deferred until the business meeting.

3) Discussion about the Journal of Aquatic Animal Health
   a) Submissions are down 50% and a number of options were suggested;
      -sponsorship of the journal by the FHS
      -decrease or eliminate page charges by seeking a sponsor, increasing the number of subscriptions or subscription rates, advertisements, or FHS subsides
      -an expanded editorial board
   b) It was proposed to devote 1 issue/yr to a single topic.
   c) A new ad hoc committee will be formed to address these problems.

4) Discussion and Bylaws - changes are needed to coincide with the procedure manual.
   a) Ted Meyers has submitted a draft of a procedures manual and an electronic copy of the bylaws has been made.
   b) Ron Thune and Ted Meyers will remain as co-chairs and will poll other committee members to get an active group so that a draft can be published in the newsletter for a vote by the members.

5) Discussion on Advocacy and Testimony
   a)Several letters expressing concern on the role of advocacy in the FHS were written by members of the section in response to the presentation of testimony by the FHS president, Jim Winton, on the Hastings bill.
   b)It was decided that the membership should vote on the advocacy role the section should take and that a policy needed to be in place.

6) Requests for Support
   a) In response to a request by the PNFHPC for support for a symposium on Pathogens and Disease of Fish in Aquatic Ecosystems-Implications in Fisheries Management- the committee voted to cosponsor the symposium in the form of subsidizing page charges to a maximum of $3000 for one issue of the journal.
   b) In response to a request for funds from Rosalie Schnick, it was decided to commit $1000 on receipt of a budget and long range plan.
   c) Requests from the AFS to support the home fund and from a veterinary diagnostician to support videos for veterinary schools were denied.

7) There was discussion on membership in the US. Animal Health Association; a membership form is included in this newsletter.

8) Discussion on a joint meeting with the AVMA on national fish health policy: Ron Thune will contact AVMA representatives at their September meeting with the proposal that the FHS/AVMA

facilitate a meeting to act as an informed neutral party for the debate between the agencies, industry and states on aquatic animal health issues.

Business Meeting
August 8, 1996
Madison, WI

1) The meeting was called to order at 3:40 PM.

2) President's comments

3) Highlights of committee reports:
a) Newsletter policy change; the newsletter will no longer accept submissions longer than 2 newsletter pages or with greater than 5 references.
b) The 1997 national FHS meeting will be September 4-6 in Juneau, AK hosted by Ted Meyers, AK Fish and Game.
c) The 1998 international fish health meeting will be August 29 - September 3, Baltimore MD hosted by Sarah Poynton and Andrew Kane and will be co-sponsored by the FHS.
d) Discussion on the JAAH with suggestions that a survey be published in the newsletter and on options for decreasing page charges.

4) Other Business
a) Advocacy position- a motion that the FHS become involved in advocacy in national fish health issues was passed unanimously by a show of hands. Randy MacMilllan will develop a process; the task will be to make the process representative of our diverse membership.
b) Level of involvement of the FHS wit the parent society discussed; money is available to send someone on the EXCOM to national AFS meetings.

FHS Committee Reports for 1995-1996

Archives Committee

Photographs of Pete Taylor presenting the Snieszko Award to Tom Wellborn and photographs from the Syracuse meeting were submitted by Larisa Ford. Larisa also submitted proofs of the Fish Health Section Newsletter.-Yolanda Brady

Awards Committee Report

We received three applications for the S.F. Snieszko Student Travel Award and followed the new procedure to rank the applicants. We had enough money to fund each applicant for the amount they requested. The checks were sent to each applicant directly from the AFS office in Bethesda. I also requested that the recipients also be acknowledged or identified in the Annual Meeting Program, The awardees were:

Kathy Earnest-Koons, Cornell University	$955.00
Huseyln Kucuktas, Auburn University	$700.50
Yasunari Kiryu, University of Idaho	$716.00

Newsletter Report

Four issues of the newsletter were published and mailed in a timely fashion. No major problems came to the attention of either of the editors during this year. The transfer of Larisa to a new position in Idaho did not impact the newsletter schedule, thanks to the help received by Cindy Baker and Christine Densmore at the Leetown Lab who took care of the April newsletter mailing after Larisa had already left. The last of the July newsletters were mailed out on July 10, 1996 and should be reaching members on or about July 20, before the annual meeting. In the July issue the new policy for newsletter submissions was printed on the back cover and mentioned in the Letter to the membership by the President. Bev and I are enjoying doing the newsletter and are willing to continue serving as co-editors if the Excom so wishes. -Larisa Ford

Board of Certification

For the period between May 1, 1995 and April 30, 1996, the Board received 14 application requests for Fish Health Inspector. During this period, 9 certifications were granted, 2 certifications lapsed, and 6 Inspectors were re-certified. There are 4 re-certifications pending action. Currently there are 64 active Fish Health Inspectors on file with the Board.

There were 13 requests for Fish Pathologist applications. During this period, 3 Fish Pathologist certifications were granted, 1 was re-certified, 4 are pending the test, 1 is in processing and 3 certifications have lapsed. One application for re-certification was denied and has not been appealed. There are currently 51 certified Fish Pathologists.

Since the beginning of the certification program, the cumulative totals are as follows:

Fish Health Inspectors

Total Certificates issued	86
5 year Re- certifications	16
10 year Re-certifications	9
15 year Re-certifications	4
Number inactive (lapsed)	22
Current active Certificates	64

Fish Pathologists

Total Certificates issued	68
5 year Re-certifications	8
10 year Re-certifications	36
Number inactive (lapsed)	17
Current active Certificates	51

During this reporting period, the Board also received an ethics complaint on March 19, 1996, and initiated an investigation on two individuals within the active Inspector/Pathologist files. A complete report will accompany the next annual report. -Ray Brunson

Blue Book Advisory Committee

The Blue Book Advisory Committee has been somewhat quiescent this year, with only a single potential rectification of the BB in consideration. In October, 1995, as a representative of the Committee, I attended a meeting at the (insert the Federal Designation-of-the-month here) Laboratory in Seattle to consider standardization of the methods for detection of *Renibacterium salmoninarum*/ BKD. This was a continuation of the discussion that was held at the 1995 meeting at Syracuse, NY, with basically the same group attending.

The major emphasis was on the development of a written, detailed procedure for the use of the polyclonal antibody-based ELISA test for *R.s.*, incorporating experience gained by the agencies present. It was decided that Ron Pascho should write a detailed protocol for the ELISA procedure, distribute it to those groups present for modification, then the procedure would be put into the Fish Health Newsletter and comments invited. The BB Advisory committee would then take the information thus generated and incorporate the procedure into the *R.s.* Section of the Blue Book. Ron has recently assured me that the draft of the procedure would be sent out within a month or so. The other main topic was the preparation of a standardized ("gold standards") for both *R.s.* antigen (p57) and negative tissue material (kidney). This is currently being undertaken and information regarding the process and products will be forthcoming. -Paul W. Reno

Finance Committee Report
August 6, 1996
As of July 1, 1996 we have a total of $32,067.20 in the General Account (West One Bank, Buhl, Idaho). A detailed accounting of this year's income and expenses are listed below.

	Transactions	Subtotal	Total
FHS General Account			
Beginning Balance			27502.66
Credits			
Section dues	7293.00		
Certifications	950.00		
'95 Ntl meeting	418.20		
Miscellaneous	188.50		
Interest	860.06	9709.76	37053.92
Debits			
Newsletter	4059.69		
AFS Cert/Seal	260.00		
FHI Forms	146.09		
Misc. Postage	93.51		
'95 Ballot	85.93		
USAHA	300.00	5145.22	
Ending Balance of General Account			**32067.20**

Since the section raised annual dues and the treasury appears to be growing, a yearly budget should be established. This would include setting dates for a fiscal year, budgets for each officer as needed, and forecasting income and expenses, including what monies will be available for continuing and new programs. Programs such as professional certifications, continuing education, and annual meetings should be looked upon as potential money making opportunities for the section. A short term goal may include hiring an executive secretary or an administrative assistant. Monies are also available for updating the FHS directory and developing a contribution / advertisement flyer that would aid in obtaining financial donations from corporate sponsors and increasing section membership. -Scott E. LaPatra

Professional Standards Committee
To date, one examination was administered for fish pathologist certification.

I would like to thank Ray Brunson, Chair of the Board of Certification, ad Shirley Stroh, U.S. Fish and Wildlife Service for their extensive assistance with administrative matters for the past year.

I have found that there is some redundancy in administrative duties of the Board of Certification and the Professional Standards Committee. I will address this issue at the upcoming annual FHS/AFS meeting in Madison.. - Michael L. Kent

Time and Place Committee:
The 1996 meeting of the Fish Health Section will be held in Madison, Wisconsin on 7-9 August 1996 at the University of Wisconsin-Madison's Wisconsin Center. The scientific program was organized by Terry Ott, Becky Lasee and Richard Nelson of the LaCrosse Fish Health Center, USFWS. Local arrangements were made by Susan Marcquenski of the Wisconsin Department of Natural Resources. In addition to the Fish Health Section Meeting, a continuing education workshop on Hematology will be presented on 9 August.

The 1997 meeting will be a combined meeting of the Fish Health Section/American Fisheries Society and the Western Fish Disease Workshop. That meeting will take place on 4-6 September 1997 at the Baranof Hotel in Juneau, Alaska. The meeting will be hosted by the Alaska Department of Fish and Game and is being organized by Ted Meyers.

Plans are underway for an international meeting in 1998 in which the Fish Health Section/American Fisheries Society will participate. The meeting is planned for 29 August to 3 September 1998 at the Renaissance Harborcourt Hotel in Baltimore, Maryland. The meeting will be organized by Andrew Kane of the University of Maryland and Sarah Poynton of The Johns Hopkins University. Sponsoring organizations for this meeting include: Department of Pathology, University of Maryland; Department of Comparative Medicine, Johns Hopkins University; American Fisheries Society; Fish Health Section/American Fisheries Society; European Association of Fish Pathologists; International Association for Aquatic Animal Medicine; Japanese Society of Fish Pathologists; and the National Shellfish Association.

Bylaws Review
The FHS committee/officer Procedural Manual has been in final review by the EXCOM and committee chairs. Proposed amendments to the Bylaws will be published in an upcoming issue of the Newsletter for a vote by the general Section membership.-Ted Meyers

Scientific Journal Committee Report
After 7 years as a founding Coeditor of the *Journal of Aquatic Animal Health (JAAH)*, John Grizzle stepped down 1 June 1995, and Margaret Ewing joined John Plumb as Coeditor. In 1995, 72 manuscripts were submitted to be considered for publication; of these, 46 were accepted, 13 were rejected and 13 are in revision. To date in 1996, 15 manuscripts have been submitted; 3 have been accepted, none rejected and 12 are in review or revision.

The number of submissions to the Journal thus far in 1996 is exceedingly low, and we are concerned about the health and future of JAAH. A letter in the Fish Health Section Newsletter from the coeditors calls this situation to the attention of the membership, requests suggestions for ways to improve the Journal, and asks members to encourage manuscript submission whenever possible. We look forward to discussing some different approaches to this problem and hearing members' ideas at the FHS meeting in Madison.-John Plumb and Margaret Ewing

Continuing Education Committee
The chief accomplishment of the Continuing Education Committee for the past year has been the sponsoring of

a one-day class on Hematology in conjunction with both the Western Fish Disease Workshop in Corvallis, OR and the Fish Health Section national meeting in Madison, WI. Instruction was graciously supplied by Mike Kent at both meetings and his co-instructors, Charlie Smith at Corvallis, and Colleen Caldwell at Madison. Goals for the coming year are to get a system of accreditation standards approved and functioning so more educational opportunities can be supported, and to expand the committee membership. Those interested in continuing education are encouraged to contact the Chair, Craig Olson, at (360) 438-1181, ext. 343 or e-mail at "colson@nwifc.wa.gov".

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FROM THE PAST PRESIDENT

I want to thank the membership f or the privilege of serving the Fish Health Section during the past year. It has gone by too fast. As you know, we are in an important period that will shape the future of the Section. Both the new President, Jo-Ann Leong, and the President-elect, Scott LaPatra, can be counted upon to provide the needed leadership, but will require your advice and assistance with several issues, some of which are discussed below. Thanks also to all of you who were able to attend the annual meeting in Madison. I feel it was a great success. In addition to the superb arrangements and weather, the scientific program was excellent and the Panel discussion on development of a National Aquatic Animal Health Strategy was extremely valuable. In this issue of the Newsletter, you will find a summary of the meeting and the reports from t he various committees; however, I want to comment on four items.

During the Panel Discussion at Madison that included Randy MacMillan (private sector), Richard Fite(USDA-APHIS), Mary Ellen Mueller (Interior-FWS), Linda Chaves (Commerce-NMFS), and Kevin Amos (Washington Department of Fish and Wildlife) a suggestion was made by Randy MacMillan that the FHS take an active role in facilitating development of the National Aquatic Animal Health Strategy in collaboration with the American Veterinary Medical Association (AVMA). This approach was agreed to by all the Panel participants during the discussion period. Following the Panel, the EXCOM met again to review the suggestion and agreed to support this approach. Ron Thune was charged with contacting the AVMA and will propose that we co-host a meeting of all interested participants under the auspices of the Joint Subcommittee on Aquaculture. An important benefit of this strategy will be the significant progress that could be made in the area of FHS-veterinary interactions that must be addressed as a part of the development of the national strategy and Jo-Ann Leong will be responsible for appointing a new *ad hoc* committee to represent the interests and expertise of the Section during the development of the national aquatic animal health strategy.

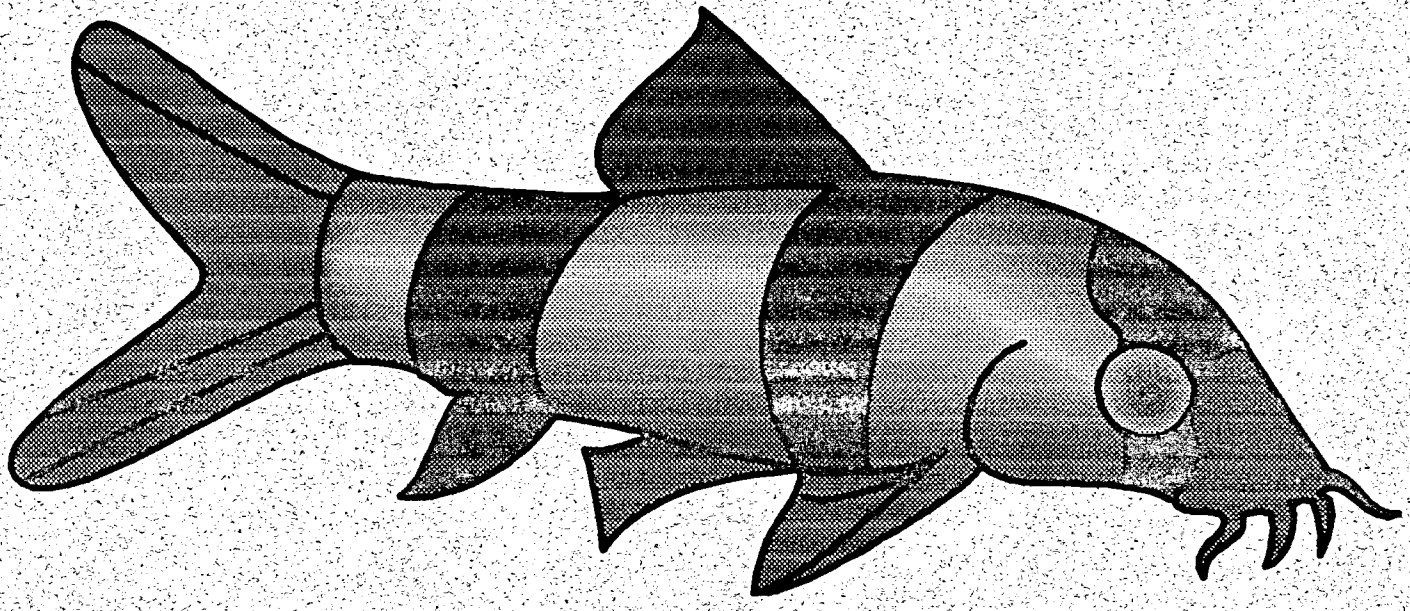
Regarding the Journal of Aquatic Animal Health, in addition to increasing the number of high quality submissions, there is a need to review all aspects of the Journal with a goal of making it more financially viable. At the EXCOM meeting, several ideas were put forward in both areas including sponsorship of the Journal by the Section (in name or also financially), modifications in page charges, expansion of the editorial advisor board, changes in editorial policy, development of special issues, bundling subscriptions with dues, creation of an affiliate membership category that would receive the Journal, and solicitation of advertising. In an effort to develop these ideas further, John Plumb recommended that the *ad hoc* committee on the Journal be reformulated and charged with development of a long-range plan that could be taken to the membership for approval. Jo-Ann Leong will be responsible for appointing members to the modified committee which will meet at the expense

of the Section to resolve this issue in the next several months.

Under the leadership of Ted Meyers and Ron Thune, a Procedure Manual was developed to remove routine operating instructions from the Bylaws to allow easer modification. The Procedure Manual is in a final draft form. Now, the Bylaws need to be "pruned" of procedural material and both Manual and Bylaws submitted for a vote of the membership. Included at this time should be discussion of other proposed changes to the Bylaws including increasing the term of some elected officers to two years, to elevate the *ad hoc* Continuing Education Committee to a Standing Committee, and to combine some of the standing committees (e.g. Blue Book with Technical Procedures and Professional Standards with Board of Certification). Other changes have been suggested but never voted upon. These appeared in the Newsletter (Vol. 22, No. 1). All the proposed changes will require review and approval by a vote of the membership. Ron Thune has agreed to get a disk version of the Bylaws ready and to contact Ted Meyers about polling the existing *ad hoc* Bylaws Review/Procedures Manual Committee to solicit ideas in order to draft the new Bylaws for consideration by the membership. The committee will meet at the expense of the Section and the final versions of both Manual and Bylaws are expected to be available in 2-3 months.

In the last year, the question of FHS advocacy and development of position statements has been raised. Following discussion in the EXCOM, it was agreed that we would ask the members at the business meeting in Madison for input and a vote on the issue of Section advocacy. After active debate, the members present at the annual meeting voted unanimously to support an active role for the FHS on issues of importance to the Section and for the EXCOM to develop a process by which to proceed. Randy MacMillan agreed to draft a proposed policy statement for consideration by the EXCOM. This has been done and is under consideration by the EXCOM who will review the draft and comment to Jo-Ann Leong by September 30th. After the comment period, the policy can be voted upon by the EXCOM and the policy sent to the membership for further discussion.

Jim Winton



POSITIONS AVAILABLE

Fish Health Specialist 3
Washington Department of Fish and Wildlife, Olympia, Washington

Responsibilities : Provides fish health services at assigned hatcheries to include preventative monitoring, diagnostics, and applied research.

Qualifications : Graduate degree in fish pathology/fish health management or related field and two years post graduate experience in the diagnosis and treatment of fish diseases or Doctor of Veterinary Medicine and a minimum of six months full-time experience in the diagnosis and treatment of fish diseases. Experience in fish health management of salmonids is desirable.

Salary:
$34,000 to $43,00 based upon experience plus an attractive benefits package.

Closing Date : October 31, 1996

Contact: Send resumes and requests for applications to :Karol Rogers, Personnel Division, Department of Fish and Wildlife, 600 capitol Way N, Olympia, WA 98501.

Aquatic Animal Health Veterinarian
Washington Department of Fish and Wildlife, Olympia, Washington

Responsibilities : Assists the Fish Health Division Manager in the administration of the aquaculture disease control program; oversees the use of prescription drugs at agency hatcheries; provides fish health services at assigned facilities.

Qualifications : Doctor of Veterinary Medicine and three years of experience in the practice of veterinary medicine, tow of which must be in aquatic animal health. Experience in salmonid aquaculture and health management is required. Successful applicant must be licensed to practice veterinary medicine in the State of Washington within two months of appointment.

Salary : $38,000 to $48,000 based on experience plus an attractive benefits package.

Closing Date : October 31, 1996.

Contact : Send resumes and requests for applications to Karol Rogers, Personnel Division, Department of Fish and Wildlife, 600 Capitol Way N., Olympia, WA 98501.

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DIRECTORY UPDATE

It has been over 5 years since the FHS Directory has been updated. Please type or print the requested information on the form included in this issue of the Newsletter by October 30, 1996 and either put a stamp on it, and mail it to Larisa Ford or FAX it to her at 208-885-9080.

Thank you, Jim Winton

FHS Participation in the U.S. Animal Health Association

The United States Animal Health Association (USAHA) is a national non-profit organization that has approximately 1,400 members and works with a variety animal health entities both nationally and internationally. The FHS's objectives, interests and goals regarding animal health are very similar to the USAHA. The FHS has applied for membership in the USAHA as an Allied Organization so that we can provide leadership and expertise in aquatic animal health management and maintain visibility with other groups also concerned with animal health. An Allied Organization membership is limited to national non-profit organizations interested in animal health science and includes a seat on the Executive Committee. However, an additional requirement for allied membership is the maintenance of 50 FHS members as individual members of the USAHA. If you are interested in applying for an individual membership in the USAHA an application form is included in this newsletter. If you apply or if you are currently a member, please contact Jerri Bartholomew (phone: 541-737-1856; fax:541-737-0496; email: bartholj@bcc.orst.edu) so that a list of USAHA members that also belong to the FHS can be compiled.

AQUACULTURE APPLICATION OF CONTROLLED DRUG AN VACCINE DELIVERY

An International Congress on the improvement of bioavailability and on the administration methods of therapeutic and prophylactic tools including sanitary measures in the fight against infectious diseases of farmed aquatic animals, will be held from May **21 to 23, 1997** in **Udine, Italy.**

The official language of the Congress, organized with the E.E.C. contribution will be English. There will be an introductive lecture for every theme followed by specific sessions of oral communications of 15 minutes with discussion, and posters. At the end of the Congress, a final Round Table is scheduled. For further information please contact:

G. Giorgetti and A. Amadei
Dipartimento di Ittiopatologia
Istituto Zooprofilattico delle Venezie
Via della Roggia, 94-33030 Basaldella di Coampoformido (UD), Italy
tel. 0039/432/561196 or -561532-fax 0039/432/561532

Fish Egg Incubator Design Impacts Efficiency of Chemical Treatment Delivery.

Mark P. Gaikowski, Jeff J. Rach, Jeff J. Olson
National Biological Service
Upper Mississippi Science Center
2630 Fanta Reed Road, La Crosse, WI 54603 USA

Although hatchery personnel depend on chemical treatments to control a multitude of fish diseases, verification of the administered therapeutant concentration is rarely conducted in a typical hatchery. The therapeutant is mixed with water based on an approximate water flow to the culture unit and the resulting therapeutant stock administered at a flow rate to produce some desired concentration. In some cases, that scenario may provide adequate results for a flow-through treatment. A more likely result is the dilution of the therapeutant, especially in culture systems designed to provide sequential water flow (e.g. Heath incubator). One reason that hatcheries have not previously verified treatment concentrations was the lack of a quick and inexpensive assay method for common therapeutants. A second reason is U.S. FDA approval of the administration of therapeutants well in excess of the minimum effective concentration (MEC). Formalin for example, is routinely administered at 1667 ppm, almost twice its MEC. Formalin administered at 1667 would have to be diluted by 50% before treatments are less than effective; not a likely occurrence in any of the incubator systems we evaluated.

Dilution of any therapeutant in an egg incubator may result in ineffective treatment, especially when a therapeutant is administered at or near its MEC. If this occurs, the applicator most likely assumes that the therapeutant is ineffective, when the actual problem is his or her lack of information describing the impact of the culture unit on the therapeutant regimen. Prior to conducting this study, we were unable to find data describing therapeutant delivery in an actual hatchery egg incubator. Based on this lack of data, we administered a water-borne therapeutant (hydrogen peroxide) to three common egg incubators. Hydrogen peroxide concentrations were monitored before, during and after therapeutant stock administration. Hydrogen peroxide is a Low Regulatory Priority (LRP) chemical routinely applied to fish eggs near its effective therapeutic regimen, approximately 500 μL/L for 15 min (Schreier et.al., In Press). Treatments were conducted in an egg jar, Heath, and Clark-Williamson incubator using flow rates typical for hatchery use.

Egg jar incubators deliver water to the egg jars through a parallel system, i.e., a headbox supplies water by gravity (3.8-5.7 L/min/jar) to $\geq$ 20 individually plumbed egg jars. Both Heath and Clark-Williamson incubators deliver water via sequential flow from one compartment to the next in series. Heath incubators are a vertical stack of 8-16 trays; culture water is supplied to the top tray and flows by gravity (11-26 L/min) to the trays below. Clark-Williamson incubators consist of a tank divided into compartments with baffles that direct water (11-19 L/min) horizontally through the incubator. We evaluated the delivery of hydrogen peroxide to common egg incubators to define actual treatment concentrations of the chemical in therapeutant administration to control fungus on eggs.

Assessment and sampling parameters for the individual incubator types are listed in Table 1. The individual culture unit (compartment, tray or egg jar) was numbered sequentially from 1 (inflow) to n (effluent). Thirty-five per cent food grade hydrogen peroxide (DuPont, Memphis, TN) was diluted with culture water to produce the desired stock treatment solution for delivery and mixing at the incubator water source. Stock solutions were prepared to produce treatment hydrogen peroxide concentrations of 500 and 1000 μL/L for 15 min. The treatment objective (target

concentration) was to maintain a hydrogen peroxide concentration of ≥ 500 µL/L for 15 min. Hydrogen peroxide concentrations were verified by titration (Jeffery et.al. 1989). Data reported are the mean of the highest three consecutive 5-min samples unless specified differently.

In general, hydrogen peroxide concentration decreased with increasing distance from the water inflow in both Heath and Clark-Williamson incubators. The average concentration of hydrogen peroxide over a 15 min period decreased with increasing distance from the treatment source in the Clark-Williamson incubator; compartment 2, 417 µL/L H2O2, compartment 6, 246 µL/L H2O2, compartment 12, 225 µL/L H2O2. In a similar treatment, only tray 2 of the Heath incubator received ≥ 90% of the target treatment concentration, >450 µL/L H2O2 for >13 min; whereas trays 8 and 16 maintained concentrations of >450 µL/L H2O2 for only 7-8 min when treated at 500 µL/L H2O2 (Figure). Trays 8 and 16 had longer hydrogen peroxide residence time than tray 2. Concentrations of hydrogen peroxide in Heath incubators during treatment at 1000 µL/L H2O2 increased and decreased similar to treatment at 500 µL/L H2O2 (Figure). Concentrations exceeded the effective concentration (500 µL/L) of hydrogen peroxide in all monitored trays for at least 15 min during treatment at 1000 µL/L H2O2.

An eddy effect at the incurrent water site was noted during treatment of the egg jar incubator. Jars 1 and 2 (directly below inflow) received the lowest treatment concentrations (110 and 424 µL/L H2O2 respectively for 15 min) of hydrogen peroxide during treatment at 500 µL/L. Hydrogen peroxide concentration was 607 µL/L H2O2 in jar 11 (middle) and 528 µL/L H2O2 in jar 22 (outflow) for 15 min. During the 1000 µL/L H2O2 treatment, jars 2 and 3 had extremely high peaks, reaching maximum concentrations of 1784 and 2097 µL/L H2O2, respectively.

Significant dilution of the chemical occurred in the Clark-Williamson and to a lesser extent in the Heath incubators. The concentration data indicate a sequential decrease of peak concentration and increase in residence time of hydrogen peroxide, magnified by passage through successive compartments. Three options to improve treatment success in these types of incubators would be 1) spike the treatment mixing compartment (i.e., site of stock solution addition) to the target concentration, 2) treat at 500 µL/L H2O2 for a longer time period (e.g. 30 minutes), or 3) treat at a higher concentration. The latter is not a legal option because the current LRP limit is 500 µL/L H2O2.

The egg jar incubator was the most efficient incubator in delivering hydrogen peroxide treatments to the individual culture units. The substantial variation in treatment concentration in monitored jars probably reflects poor mixing of the stock solution at the water inflow, not sequential dilution. The first few jars in this incubation unit should not contain eggs or should be the last jars to receive eggs, unless a suitable method can be developed to completely mix the chemical with culture water in the headbox.

Our results indicated that dilution of chemical applications occur in egg incubators. The Clark-Williamson incubator diluted the chemical treatment to below the effective concentration, whereas the egg jar incubator did not. The magnitude of the dilution was directly proportional to the water volume in each incubation chamber. The analysis of egg incubator effectiveness in delivery of a chemical treatment should lead to more effective chemical treatments.

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Table. Incubator treatment and sampling parameters. Samples were taken only until concentrations dropped below the detection limit of the assay method (≤ 0.01 μL/L).

Incubator	# Incubation units	Treatment Concentration (μL/L)	Flow Rate (L/min)	Sample Times (min)	Sample Location
Clark-Williamson	12	500	18.9	0, 5, 10, 15, ..., 60	Compartments 2, 6, and 12
Heath	16	500	18.9	0, 2.5, 5, 10, ...n	Trays 2, 8, and 16
Heath	16	1000	18.9	0, 2.5, 5, 10, ...n	Trays 2, 8, and 16
Egg Jar	44	500	227	0, 2.5, 5, 10, ...n	Jars 2, 11, and 22 (same row)
Egg Jar	44	1000	227	0, 2.5, 5, 10, ...n	Jars 1, 2, 3, 11, and 22 (same row)

*samples taken only at 5, 10, and 15 min after initiation of treatment

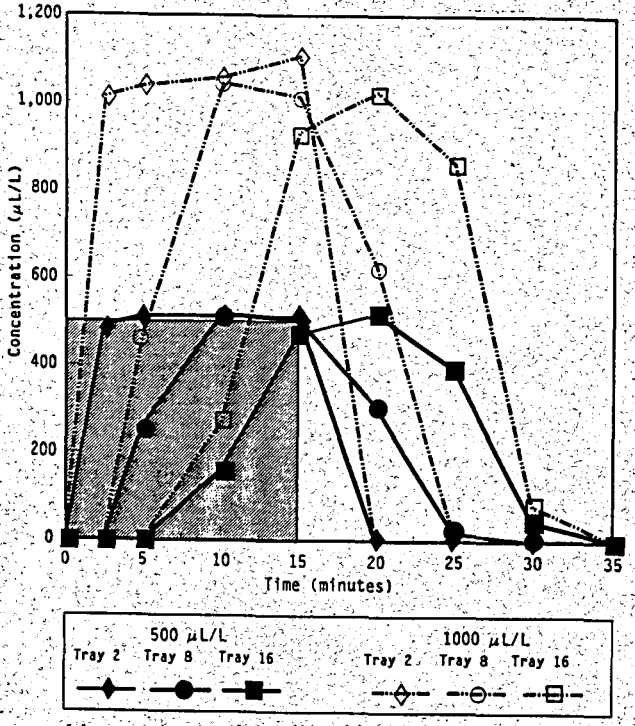

Figure. Actual hydrogen peroxide concentrations in a Heath incubator measured during and after treatment at 500 or 1000 μL/L for 15 min. Shaded area indicates the minimum treatment regimen for optimal control of fungal infections on fish eggs (Schreier et.al. In Press).

Fish Health Section Newsletter

The Fish Health Section Newsletter is a quarterly publication of the Fish Health Section of the American Fisheries Society. Submissions on a topic of interest to fish health specialists are encouraged with the understanding that material is not peer reviewed. Articles should not exceed two newsletter pages and should not have more than five references. Submissions should be submitted on disk in Word perfect 5.1 or in a generic form that can be read on WP5.1 for IBM. Disks will be returned if a SASE is included with your submitted article. Also, we will be glad to publish any abstract of a paper that has been submitted to the *Journal of Aquatic Animal Health* (whether accepted or not by JAAH). Submissions should be addressed to the editors listed below:

Dr. Beverly Dixon
Department of Biological Sciences
California State University at Hayward
Hayward CA 94542

Phone: 510-885-3422
Fax: 510-885-4747
Email: BDIXON@CSUHAYWARD.EDU

Dr. Larisa Ford
Department of Fisheries & Wildlife Resources
University of Idaho
Moscow ID 83844-1136

Phone: 208-885-7608
Fax: 208-885-9080
Email: lford@uidaho.edu

Fish Health Section-American
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Dept Fish & Wildlife
University of Idaho
Moscow ID
83844-1136

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Andrew J. Mitchell
PO Box 860
Stuttgart, AR 72160