



Fish Health Section Newsletter

AFS

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Volume 4

April - June 1976

Number 2

NATIONAL WORKSHOP THIS SUMMER

The Second Biennial Fish Health Section Workshop of the American Fisheries Society will be held August 24th through August 26th at the Radisson Hotel in Denver, Colorado. The opening session will begin at 8:00 a.m. on Tuesday, August 24th in order to provide sufficient time for the non-concurrent technical sessions scheduled for the remainder of the day. The workshop will close on Thursday, August 26th with a most important Fish Health Section Business Meeting and a review of the proceedings of the Workshop. A modest registration fee will be charged to cover the direct costs of the meeting.

The meeting will be opened by Section President Donald F. Amend. The program will take the form of chaired panel discussions led by outstanding authorities in the particular field together with audience participation. Technical sessions on Tuesday, August 24 will include presentations on Tropical and Ornamental Fish Diseases chaired by Dr. Jack Gratzek; Warm-water Fish Diseases, chaired by Dr. Tom Wellborn; Marine Fish and Shellfish Diseases, chaired by Dr. Don Lightner; and Cold-water Fish Diseases, chaired by Dr. Pete Bullock.

Wednesday's technical sessions will include Dr. Roger Grischkowsky and Feral Fish Diseases and Their Transmission in Nature; Dr. Mike Segal on Fish Immunology; Dr. John Fryer with Vaccine Development; and Mr. Doug Anderson on Sero-Diagnosis of Fish Diseases. Final technical sessions on Thursday will include discussions of Fish Toxicology by Dr. Gerry Bouck and Fish Nutrition by Dr. John Halver. The Fish Health Section Business Meeting and Closing Session will follow with President Don Amend conducting pertinent Section business and reviewing the proceedings of the Workshop. Important Section business will include various Committee reports including discussions of Section dues, publications, and other activities.

Tentative plans have been made to publish the formal text of the panel discussions in the form of formal papers on the various subjects. The published Proceedings may take one of several forms including a special edition of the Transactions of the American Fisheries Society. However, even though the parent AFS may be in a position to help the Section arrange for financial support for such a publication, the contributors and/or the members are reminded that a special levie may be necessary for publication.

For further information contact Dr. Donald H. Lewis, Workshop Chairman, Department of Veterinary Microbiology, Texas A&M University, College Station, Texas 77843 (713) 845-5941 For hotel reservations, contact the Radisson Denver Hotel, 1790 Grant Street, Denver, Colorado 80203 (303) 292-1500

SEE YOU IN DENVER - DON'T MISS IT!

Board of Certification Election Results

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FHS/AFS
WP in Europe - 7-8
Xenodiagnosis 8
MEMBERS

Aquatic Animal Health *An Editorial Comment*

ON THE NATURE AND CONTROL OF DISEASES OF FISHES

An invitation from Dr. G. L. Hoffman to write a note for the NEWSLETTER of the Fish Health Section of the A.F.S. coincided with an article in *Science* (192: 105-111, 1976, J. H. Conroe and R. D. Dripps) entitled "Scientific Basis for Support of Biomedical Science".

The dispute... "What is More Important, Basic or Applied Research" ...is still going on as evident from this article. This is a synthetic, artificial argument that "would be best put to rest". It became a very active issue when the National Science Foundation became the chief supporter of "basic" research.

Some years ago, I was asked to review an application for a grant. I believed that the application was well justified and supported it. In the last sentence of my evaluation, I stated that the results would possible help improve the control of fungal diseases of fishes. My evaluation was returned to me with a remark indicating that the National Science Foundation could not support "applied" research.

During my employment as Director of the Eastern Fish Disease Laboratory, I was often asked to define our activities. My reply was always the same: "obtaining information on the nature and control of diseases of fishes." If you prefer the terms basic and applied, consider "nature" as basic and "control" as applied. In order to control, we must know something about the nature of the disease.

What is an "experiment"? If I travel somewhere and I am not sure which way to go, I ask for directions. I do this by using a "code" made of words and sentences. I obtain a reply in the same way. If I wish to know the effect of a treatment for a particular fish disease, I must perform an experiment. In order to obtain clear



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The NEWSLETTER of the Fish Health Section of the American Fisheries Society is published four times annually in accordance with Section objectives and mailed to the Section membership in good standing at the time of publication. The use of company or registered trade names does not constitute an endorsement but serves only to keep the members informed. Contributions to the NEWSLETTER are encouraged and should be sent to one of the following Committee members no later than the 15th of the month preceding the date of publication to be included in the next quarterly issue. The Newsletter Committee members include:

- Dr. Robert A. Busch (editor), Rangen Research Hatchery, Route 1, Hagerman, Idaho 83332
- Dr. Brian Allee, New Business Research, Weyerhaeuser Co., 3400 13th Ave. S.W., Seattle, Washington 98134
- Dr. John Gratzek, Department of Medical Microbiology and Veterinary Medicine, University of Georgia, Athens, Georgia 30602
- Dr. Glenn L. Hoffman, Fish Farming Experiment Station, P.O. Box 860, Stuttgart, Arkansas 72160
- Dr. Donald V. Lightner, Environmental Research Laboratory, Tucson International Airport, Tucson, Arizona 85706

results, the experiment must be properly designed... that is a precise code must be used to ask the nature of a reply. The nature replies in a code showing how many fish survived in the treated lot as compared with controls. We decipher the reply from the code and express it in a sentence, or a big article, written in English. If the question is asked clearly... that is, the experiment is well designed... the reply, or results, will be clear. When we dispense with the formalities, big words, and all the trimmings that are designed to impress the audience and gain "status" for the investigator, it can be stated as simply as that.

It is important to ask the "question" clearly... that is to plan the experiment correctly. In biology, all our test animals (fishes in our case) are in an environment; they are of different species, ages, of strains. Therefore, performing a biological experiment is like attempting to solve an equation with many variables. The more precise the design and fewer the variables, the more intelligible will be the "question" and the more "significant" will be the reply (results).

I do not know where the "basic" research ends and the "applied" begins. It is best not to worry about this and simply to improve our knowledge about "the nature and control of diseases of fishes".

Dr. Stanislas F. Snieszko
107 Sunset Drive
Martinsburg, West Virginia
25401

UNFAIR COMPETITION FROM "FREEBE" GOVERNMENTAL LABORATORIES

It is with great regret I have learned that Biometrics, Inc. will no longer be in business. Biometrics has been in business for about two years conducting fish disease inspection and diagnostic services. The technical capabilities of the people and laboratory cannot be surpassed anywhere, but apparently a business cannot survive when it must compete with the free services of State and Federal Laboratories.

The United States was founded on the free enterprise system and it is still the basis for the strength of this nation. However, in the field of fisheries most of the governmental agencies have been a major block to the development of aquaculture. In my opinion the government should concern itself with the protection of the resource and fill the voids that cannot be done by the private sector. The idea that private industry is dishonest and cannot be trusted is hypocritical. As a former governmental employee, I know the double standard is alive and well. Governmental agencies often do things against their own policies and regulations, that a private company would not be allowed to do. Of course, there are white hats and black hats on both sides, but it pains me to see a company of the stature of Biometrics go under because of competition from "freebe" governmental laboratories.

Dr. Donald F. Amend, Director
Tavolek Laboratories, Inc.
2779 152nd Avenue, N.E.
Redmond, Washington 98052

COMMITTEE NEWS & REPORTS

-FINANCE COMMITTEE-

EMERGENCY PERSONAL CONTRIBUTIONS TO SECTION RECEIVED Following a heart
rending plea for some
emergency financial aid for the Section from the membership to cover increased

costs of operation, the general membership has come forth with nearly \$40.00 to advance the cause. This show of support has been warmly received and will be put to good use in bringing about the second biannual National FHS Workshop this summer. Those who have contributed should be commended and those who still intend to do so are reminded that it is still not too late. Mail a few bucks today... you will be a better man for it tomorrow! Thank you. (For comment or further information, contact Mr. Ivan B. McElwain, Finance Committee Chairman, P.O. Box 917, Fort Morgan, Colorado 80701)

~~MEMBERSHIP AND BALLOTING COMMITTEE~~

RESULTS OF NON-FHS MEMBER SURVEY AND RECOMMENDATIONS

A major project of the Membership and Balloting

Committee this year was to provide recommendations to the Section on how we can interest a greater number of fish health professionals in membership in our organization. To do this, we identified 29 professionals in the fish health field who have not joined the FHS and sent them a questionnaire to find out, quite frankly, how we could interest people such as themselves in our Section.

The questionnaire included questions concerning general interest in professional societies; interest in the FHS NEWSLETTER as a unique service to the profession; interest in the FHS as a unique representation in comparison with other related organizations; interest in or need of professional certification or recognition; the requirement of having to join the parent Society in order to join the Section; the professional stature of the FHS; Section services through the FHS NEWSLETTER and special publications; and pertinent comments. We received 17 replies for a total response of 59%. The results are summarized in the following table:

Table 1. Answers to questionnaire sent to 29 non-FHS members.

Question	Reason for not joining FHS		
	Yes	No	No Comment
I am not interested in professional societies in general.	4	4	8
The FHS NEWSLETTER is little incentive to join the FHS	1	5	10
I already belong to societies which better represent my interests	1	6	9
Professional certification and recognition are not of primary interest	6	2	8
Having to also join the parent Society is unacceptable to me	10	0	6
The FHS is not of sufficient stature	2	4	10
The FHS does not offer me sufficient services to justify joining	3	3	9
Respondents offering additional comments	8	5	

As you can see from the responses in Table 1, the single most common reply was "no comment". However, two responses did emerge with some consistency 1) "Having to join the parent Society is unacceptable", and 2) "The professional certification and recognition are not of primary interest to me". This last reason for not joining also came out in the comments section of the questionnaire. Two people wrote that the FHS appears to dwell on one limited aspect of fish health, diagnostic procedures for disease inspection and certification. Other comments were most constructive as well, however, the one that struck closest

to home was the reply; "I belong to so #!\$*+@ many organizations, I thought I was a member of FHS/AFS!!".

Based on these results, the Membership and Balloting Committee recommends that 1) dropping our AFS affiliation to gain another ten members or so would do us much more harm than good and 2) the concern that we are pre-occupied with diagnostics and certification will take care of itself since solutions to these two problem areas are hopefully almost at hand and we will be able to turn our attention to broader concerns. (For comment or further information, contact Dr. Gary Wedemeyer, Membership and Balloting Committee Chairman, Western Fish Disease Laboratory, Bldg. 204, Sand Point Naval Air Station, Seattle, Washington 98115)

BOARD OF CERTIFICATION ELECTION RESULTS

The Fish Health Section Board of Certification has finally become a reality with the recent election of five members. Following a special mail ballot election this spring, Dr. Fred Meyer and Dr. Graham Bullock have been named to serve 3-year terms on the Board as Co-chairmen. Dr. John Fryer and Mr. Jim Warren were elected to 2-year terms and Mr. Ron Goede will serve for a single year. We extend our sincere congratulations to these individuals together with the hope that they may be most successful in the task which yet lies ahead.

The election of the Board of Certification follows a strong mandate from the general Section membership to establish such a board. The Board was created under the Professional Standards Committee as provided for in Article VII, Section 1., paragraph f. of the FHS/AFS By-Laws. The primary function of the Board will be to design, establish, and administer a program within the Section to identify those individuals who are professionally qualified to perform disease certification procedures on fish, eggs, and fish products as may be required by law. The Board will be working to establish an effective program from a suggested outline of procedure as published in the FHS/AFS NEWSLETTER, 1975, 3(3): 6-8. Together with the current efforts of the Professional Standards Committee, they should be able to provide the first accurate and comprehensive listing of its kind to agencies around the world that may have need of such services and expertise. For comment or further information, the Board should be contacted through the Chairman of the Professional Standards Committee, Dr. Richard A. Heckman, Department of Zoology, 153 WIDB, Brigham Young University, Provo, Utah 84601

-TECHNICAL PROCEDURES COMMITTEE-

FHS "BLUE BOOK" BEING UPDATED THIS YEAR

Members of the Technical Procedures Committee have been active this year in their efforts to update the FHS "blue book", *Suggested Procedures for the Detection and Identification of Certain Infectious Diseases of Fishes*. Each member has been contacting individuals active in "daily" diagnostic work concerning their opinions. The Committee would greatly appreciate having those people who have not yet been contacted but use the FHS procedures, or those involved in diagnostics but not using them, mail their evaluation and constructive criticisms to the Committee prior to the Denver FHS Workshop.

The Committee presently plans to update the present edition by means of a supplement. New material concerning *Herpesvirus salmonis* as well as some sero-detection/diagnostic procedures will be added. The Committee feels that the recent development of these and other related procedures goes hand-in-hand in achieving a better understanding of the epizootiology of specific fish diseases.

During the business meeting of the Section to be conducted during the Denver FHS Workshop, the Committee will present a summation of the "blue book" opinion survey to date together with proposed changes in the Procedures based on that

survey and a summary of on-going research (which they have knowledge of) which may affect FHS procedures and some sort of an appeal for improved inter-agency, academic, and private industry communication and cooperation to accelerate the development of new procedures for the detection and identification of fish pathogens. (For comment or further information, contact Mr. Paul W. Janeke, Technical Procedures Committee Chairman, P.O. Box 917, Fort Morgan, Colorado 80701)

-PROFESSIONAL STANDARDS COMMITTEE-

COMMITTEE WORKING TO OBTAIN RECOGNITION OF FHS CERTIFIED INSPECTORS

The
Professional

Standards Committee has been very active this year in determining routes whereby the list of Certified Fish Health Inspectors developed by the newly elected Board of Certification will be adopted by the United States, Canada and other countries. Input from state and provincial governments is nearly complete and they are presently trying to obtain responses from the FAO and other countries. The Committee is also "charged" with the responsibility of outlining requisites for a Fisheries Pathobiologist and preparing a tentative academic program for individuals interested in certification. The Committee plans to hold a special meeting during the up-coming Denver Workshop to consolidate their findings and draft their recommendations. For comment or further information, contact Dr. Richard Heckman, Professional Standards Committee Chairman, 575 WIDB, Birgham Young University, Provo, Utah 84602)

PRESIDENT'S MESSAGE

Congratulations to the newly elected members of the Board of Certification. The creation of this Board represents a major achievement of the FHS. The activities of this Board could affect the future and course of the fish health profession. We already have had a positive response from many states with fish disease regulations and the acceptance of our registry appears very likely. The immediate task of the Board will be to develop guidelines for establishing a registry for fish disease inspectors. Future announcements of qualifications and application will appear in the FHS/AFS NEWSLETTER.

I am happy to report that all committees are actively functioning and are making good progress. Also, we are getting excellent support from the parent AFS. I attended the AFS Executive Committee meeting March 21-22 and was able to put in a pitch for the FHS. Arden Trandahl and I prepared a proposal to amend the AFS By-Laws to allow for Section presidents to vote on the AFS Executive Committee. The majority of the AFS Executive Committee approved our proposal and all AFS members will be allowed to vote for this amendment through a special referendum ballot. I am convinced that the AFS is sympathetic to the Section's needs, and they will help all they can.

In the past, several members of the FHS (including myself) have suggested that we divorce ourselves from the AFS and join another society or form our own society. This subject I am sure can be debated further, but at present I see very few advantages and many disadvantages of leaving the AFS. Bob Kendall, the AFS TRANSACTIONS editor, has offered to help us publish the Fish Health Glossary, and the possibility of publishing the Denver FHS Workshop review papers in the TRANSACTIONS is being given serious consideration. Dr. Cameron Stevenson, AFS President, has been very helpful in getting our views expressed in the AFS, and Carl Sullivan, Executive Director, has offered to help us promote the FHS through the new AFS publication, FISHERIES.

We should have an excellent program at the Denver Workshop. Dr. Lewis and his Committee have been working hard putting the program together. In addition

to the scheduled panels, we should have an interesting business meeting. All committees will give reports of their activities, and we will discuss methods of improving our NEWSLETTER, professional certification, publications, and methods of improving our financial status.

See you in Denver.

Dr. Donald F. Amend, President
Fish Health Section, AFS

PROFESSIONAL NEWS & VIEWS

CONCURRENT INFECTION OF ERM AND FURUNCULOSIS In early April of 1976, the Fish Disease Control Center, U.S.F.W.S., Fort Morgan, Colorado received several four to five inch rainbow trout (*Salmo gairdneri*) from a state hatchery in New Mexico. Mortalities in the lot had been increasing for the previous three weeks. Specimens received exhibited various signs of systemic infection. Both furunculosis (*Aeromonas salmonicida*) and the Enteric Redmouth bacterium were isolated from these fish. Formalin preserved specimens were examined for the presence of the ERM bacterium by means of the indirect fluorescent antibody technique (FAT) with the results be described as "spectacular". The FAT procedure has yet to be tried for the presence of *A. salmonicida* on these fish.

A combination treatment with sulfamerazine and furazoldine was recommended, however, the results are not known at this time. (for comment of further information, contact Mr. Paul W. Janeke, Fish Disease Control Center, P.O. Box 917, Fort Morgan, Colorado 80701)

REQUESTS FOR STRAINS OF *Aeromonas hydrophila (liquefaciens)* Professor L. A. McDermott at the University of Guelph is presently in the process of phage-typing various strains of the common fish pathogen, *Aeromonas hydrophila (liquefaciens)*. Professor McDermott would greatly appreciate receiving additional strains of this pathogen from fish pathologists together with any information on its original isolation. (For further information or to forward any isolates, contact Professor L. A. McDermott, Department of Microbiology, University of Guelph, Guelph, Ontario, Canada N1G 2W1)

ENTERIC REDMOUTH DISEASE REVIEW PUBLISHED A summary report of the current knowledge concerning Enteric Redmouth Disease in fish has recently been published through the Forest, Wildlife and Range Experiment Station at the University of Idaho. The publication reviews the current literature pertaining to the history, etiology, epidemiology, pathology, diagnosis, treatment and control of the disease together with the collated verbal opinions of commercial fish farmers familiar with the endemic presence of the ERM bacterium. (For further information, contact Dr. George W. Klontz, Fishery Resources Program, University of Idaho, Moscow, Idaho 83843)

✓ **PRACTICAL STATUS OF WHIRLING DISEASE IN EUROPE** Recent conversations with Drs. O. N. Bauer (Leningrad, USSR), H. H. Reichenbach-Klinke (Munich, West Germany), P. Ghittino (Torino, Italy, and N. O. Christensen (Copenhagen, Denmark) indicate that whirling disease (*Myxosoma cerebralis*) can be controlled satisfactorily and is no longer a great threat to

their fisheries. There is good circumstantial evidence that the causative agent, *Myxosoma cerebralis*, existed in wild native salmonids from Europe eastward to the island of Sakhalin/ of the eastern coast of northern Asia before the advent of trout culture.

Because of the enzooticity, no wholesale effort is made to eradicate the parasite, and no fish are confiscated. Even though most of the salmonid culture is done in earthen ponds, the disease is controlled by management (rearing fry in disease-free water in concrete tanks) and disinfection of drained ponds with calcium cyanamide or calcium hydroxide. However, every effort is made to prevent transferring *M. cerebralis* to ponds where it does not already exist. (For comment or further information, contact Dr. Glenn L. Hoffman, U.S. Fish Farming Experimental Station, Stuttgart, Arkansas 72160)

FIRE ANT CAUSED FISH KILLS IN SOUTHEASTERN U.S.

Fire ants and their nests have become a nuisance in pastures and lawns of Southeastern U.S. They may also be a problem in fish ponds at certain times of the year. During warm periods of weather in late winter (temperature above 75°F) the winged ants take to the air and many fall into ponds where fish feed on them. There are conflicting reports as to the toxicity of fire ants to fish ranging from non-toxic to severely toxic. During the week of 15-21 February, 1976 there were hundreds of largemouth bass and bluegill kills reported in Georgia and Alabama. The stomach and intestine of all dying and dead fish were gorged with the winged form of the fire ant. Affected fish did not have external lesions, there were not signs of disease other than their moribund condition, and no significant level of parasites or bacterial infections were involved.

Most affected bass and bluegill were less than 100 g. Usually only a few fish in a population were affected (a dozen to several hundred). This is a phenomenon that occurs infrequently and one of the magnitude observed in the winter of 1976 has not been noted for several years. Although fish populations are not severely damaged by fire ant kills, they are spectacular. (For comment or further information, contact Dr. John A. Plumb, Department of Fisheries and Allied Aquaculture, Auburn University, Auburn, Alabama 36830)

XENODIAGNOSIS OF ICH IN WATER RE-USE SYSTEMS

The only reason for using the technical term of "xenodiagnosis" is that it is shorter than "diagnosis by immersion of specific-disease-free fish in possibly contaminated water". Xenos = stranger.

In January of 1974, there was an Ich epizootic in the water re-use system at the Leetown National Fish Hatchery. Treatment was difficult because of the danger of killing the nitrifying bacteria in the bio-filters. It would be helpful to know if the Ich trophs were passing through the filter. A small basket containing several known Ich-free brown trout fry was placed in the water that had just passed through the filters. In 5 days Ich was found in skin scraping from the fry, thus demonstrating that Ich had passed through the filters. The temperature of the water was approximately 12 C.

In contrast to this, John Parvin, formerly manager at the Dwarshak National Fish Hatchery in Idaho, told us that Ich does not pass through their system which also contained other water purifying equipment. (For comment or further information, contact Dr. G. L. Hoffman, U.S. Fish Farming Experiment Station, Stuttgart, Arkansas 72160) (Note: recent conversations with personnel at Dwarshak National Fish Hatchery now indicate that the Ich trophs readily pass through the down-flow oyster shell filter systems while the passage through up-welling Norton ring systems is much reduced. Ed.)

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FDA CONSIDERS WITHDRAWING FURAZOLIDONE FROM MARKET

The Food and Drug Administration has

recently proposed the withdrawal of furazolidone (NF-180) and three other nitrofurans from the market (Federal Register, 41(94): 19906-19921). According to the FDA, the use of furazolidone (NF-180) in food-producing animals can result in carcinogenic factors being ingested when these animals are consumed. In addition, they state that there presently are no adequate, reliable and practicable methods of analysis available for assuring that no residue of the drug will be found in any edible portion of such animals. This considered action would affect not only furazolidone but also nitrofurazone (NF-7), nihydrazone (NF-64), and furaltadone (NF-260). A fifth nitrofurans, furmazone (NF-84), is not the subject of agency action at this time. Norwich Pharmacal Co., the sole American manufacturer of the four nitrofurans involved, and other interested parties were given until June 14, 1976 to submit written comments to the FDA Hearing Clerk concerning the matter. The pending decision by the FDA has not been received as of this writing.

Furazolidone (NF-180) is a member of a class of chemicals called "nitrofurans" which has been used in the poultry, swine, and dairy industries as well as fish culture to control a wide variety of bacterial and protozoan diseases. The FDA has determined that the withdrawal of NF-180 and related nitrofurans from the market would have a major inflationary impact particularly upon the poultry and swine industries. It is estimated that withdrawal could result in as much as 5 to 20% production loss at a cost of up to \$1.8 billion annually.

It might also be noted that the FDA is considering the possibility of withdrawing terramycin from the market at some time in the future due to its known induction of R factor development and multiple drug resistance. (For comment or further information, contact Dr. Robert A. Busch, Rangen Research Hatchery, Route 1, Hagerman, Idaho 83332)

WASHINGTON STATE SUPERIOR COURT JUDGE RULES ON SALMONID HATCHERY DISEASE ACCOUNTABILITY

In what may be the first legal decision of its kind, the Honorable Judge Bruce P. Hansen,

of the Superior Court for the State of Washington, has enjoined the Washington State Department of Game (defendants) from operating a salmonid fish hatchery on upstream property adjacent to and in the same watershed as an established commercial broodstock operation (plaintiff). The decision was made on the grounds that the Department of Game has been unable to obtain a water use permit to date and that operation of such a hatchery upstream from the plaintiff's facility would have an "affirmative prospect of substantial injury" due to disease considerations.

The evidence and reasons relied upon for the ruling were based primarily upon expert testimony which stated that "fish viruses are capable of surviving in the environment for up to several weeks and are capable of being transmitted over great distances (with) the water itself (being) a carrier". It was also stated "that many of the techniques and the ability to detect diseases in fish have been developed in the past several years (and that) some are still in the experimental stage". "Viruses particularly are difficult to control because there are no known methods of treating a fish that is infected with a virus, either eliminating the carrier state or treating the disease itself." Due to the rather unique demands placed upon a broodstock type of operation such as that of the plaintiff's, in terms of producing certified specific disease free products, "the potential for substantial damage is much greater than in a normal fish hatchery operation". "Inspection and certification program(s) require that no disease agent(s) be present (and just) one non-diseased carrier fish in the

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upper (State) hatchery could cause loss of certification for" the whole of the plaintiff's downstream facility. Judge Hansen found that "the defendant, traditionally, in its hatchery operation has been and is concerned with infestation and disease as they relate to survival ratio of fish". "The survival of their stock is primary, purity of the environment being secondary or incidental to their survival concern."

During the trial, the defendants "strongly urge(d) that the extraordinary precautions which it has committed itself to take to protect the plaintiff reduces the possibility of damage to plaintiff to minimal and acceptable proportions". "This argument the Court (was) unable to accept." "The fact that the fish disease detection and control is still in what might be referred to as an embryonic state, coupled with the requirement of virtually and absolute disease-free environment for plaintiff's hatchery, are compelling reasons for this conclusion". (For comment or further information, contact Dr. Robert A. Busch, Rangen Research Hatchery, Route 1, Hagerman, Idaho 83332)

FOREIGN DISEASE RESTRICTION ON EGG IMPORTATION

The staff at the Fish Disease Control Center in Fort Morgan,

Colorado has recently supplied information required to enable trout hatcheries in the United States to import eggs into Great Britain and Columbia, South America. Both countries require that egg sources be free of IPNV, IHNV, and *Mycosoma cerebralis*. In addition, Great Britain requires certification for spring viraemia virus and erythrodermatitis. Columbia's list also includes *Aeromonas salmonicida*. Great Britain's regulations are very thorough and describe in detail sampling procedures, processing and incubation of samples and identification of etiological agents. Both countries specify that all imported salmonid eggs must be treated with Wescodyne (R) or Betadine (R) solutions. (For comment or further information, contact Mr. Ivan B. McElwain, Fish Disease Control Center, P.O. Box 917, Fort Morgan, Colorado 80701)

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MARINE FISH AND SHELLFISH DISEASES

The Proceedings of the Third United States - Japan Meeting on Aquaculture at

Tokyo, Japan, October 15-16, 1974 has recently been published. Among the papers presented were several of potential interest concerning diseases of cultured marine fish and shellfish. Included were: 1) Pacific coast oyster mortality investigations; 2) mass mortality of cultured oysters in Japan and its prevention; 3) marine animal disease problems in the United States; 4) parasites of pearl oysters in Japan; 5) fungal diseases of marine crustacea; 6) a disease of cultured scallops in Japan; 7) Tuberculoidosis and Nocardial infections in cultured yellowtails; 8) diseases of cultured shrimp in North America; and 10) vibrio infections of marine fishes. Copies of the Proceedings are available from William N. Shaw, Office of Sea Grant, 3300 Whitehaven St., N.W., Washington, D.C. 20235.

WORKSHOP INCLUDES SESSION ON DISEASES OF FRESHWATER PRAWNS (*Macrobrachium spp.*)

Included in the proceedings of a workshop entitled "The Aquaculture of Freshwater Prawns" sponsored by

The Oceanic Institute, Waimanal, Hawaii, was a synopsis on the diseases of these animals and a list of individuals to contact for assistance with freshwater prawn diseases. Freshwater prawn culturists have had fewer problems with disease than culturists of other crustaceans. Sinderman, in his 1974 volume on "Diagnosis and Control of Mariculture Diseases in the United States", shows a dozen entries for marine shrimp, six for lobsters, seven for crabs, and only three for *Macrobrachium spp.* However, problems have occurred and will occur

again and the lack of experienced diagnosticians in key locations has resulted in only a few diagnosis being made on the causes of prawn kills.

Examples of known and potential diseases of *Macrobrachium* spp. include: 1) "Black spot" disease, which begins as a black or brown spot or lesion on the exoskeleton and which may enlarge and spread and eventually cause death of the affected animal; 2) At least two fungal infections of larval prawns, neither of which has been adequately described or isolated in culture; 3) An undescribed protozoan parasite that infests prawn larvae; 4) a "red tail" syndrome that has been postulated to be similar or identical to Gaffkemia in lobsters, but not proven; 5) Epicommensal organisms, some tentatively characterized as species of *Zoothamnium* or *Epistylus*, have been responsible for losses of larval prawns; 6) Other diseases of unknown or uncertain etiology have occasionally occurred and have been dubbed by observers as "bleeding gills", "white tails", and "muscle necrosis".

The following individuals were identified as being experienced in the diagnosis or freshwater prawn diseases:

Charles L. Bland
Department of Biology
East Carolina University
Greenville, North Carolina 27834
(919) 758-6718

Joseph Quick, Jr.
Florida Department of Natural Resources
100 Eighth Avenue, S.E.
St. Petersburg, Florida 33701
(813) 896-8626

S. Ken Johnson
Agricultural Extension Services
Texas A&M University
College Station, Texas 77843
(713) 845-7471

Harriet Shapiro
Department of Biology
San Diego State University
San Diego, California 92115
(714) 286-5374

Robert Nakamura
Department of Animal Sciences
University of Hawaii
Honolulu, Hawaii 96822
(808) 948-8334

Carl J. Sindermann
Middle Atlantic Coastal Fisheries Center
National Marine Fisheries Service
Sandy Hook, New Jersey 07732
(201) 872-0200 or 872-1882

Edward H. Nilson
Bodega Marine Laboratory
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(707) 875-3662

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Alpine, California 92001
(714) 286-5150

WHOLE DRIED EGG AS A FISH FOOD SUPPLEMENT Dr. Don Horak, Colorado Division of Wildlife, has had state hatchery managers use whole dried egg powder as a food supplement for fry and fingerlings of both trout and salmon for the last two years. Dr. Horak reasons that the additive gives the fish a highly palatable source of rapidly available nutrients and considers the success quite good to date. Whole dried egg powder can be an economically feasible and readily available byproduct of the fresh egg industry. For comment or further information, contact Mr. Dennis E. Anderson, Fish Disease Control Center, P.O. Box 917, Fort Morgan, Colorado 80701)

INCREASED INCIDENCE OF NUTRITIONALLY RELATED DISEASE PROBLEMS Since the first of the year, the staff at the Fish Disease Control Center in Fort Morgan, Colorado has been dealing with what appears to be an increasing number of trouble-shooting cases

of disease in fish directly caused by or apparently associated with nutritional deficiencies in salmonid fishes. Their records show five species of fish being involved (rainbow, brook, brown, kokanee, and steelhead) at 12 different hatcheries. Discussions with nutrition experts lead them to believe that similarly elevated levels of nutritional problems have been occurring throughout the country. They offer no explanation for the increased incidence of these problems but have found that the addition of beef liver to the trout rations of switching to salmon diets affected a reduction in mortality rates accompanied by overall improvement in appearance and demeanor of the fish. (For comment or further information, contact Mr. Ivan B. McElwain, Fish Disease Control Center, P.O. Box 917, Fort Morgan, Colorado 80701)

PROFESSIONAL OPPORTUNITIES

file

LECTURER POSITION IN FISH PATHOLOGY The Department of Fisheries at Humboldt State University has recently announced a temporary one-year lecturer appointment in fish disease and pathology that will become available September 1, 1976. The available position will be filled at the assistant or associate professor level with a candidate holding a doctoral degree in fisheries or a closely allied field and having experience in the areas of infectious and noninfectious disease and pathology of fishes. The candidate should be prepared to teach course offerings in fish disease management, introductory fish physiology, fish culture and breeding, advanced fish pathology, and advanced fish physiology. Humboldt State University is an affirmative action and equal opportunity employer. Qualified applicants should send their resume, curriculum vita, and three letters of recommendation to Dr. John DeWitt, Chairman, Department of Fisheries, School of Natural Resources, Humboldt State University, Arcata, California 95521.

MEETINGS & MISCELLANY

MID-WEST FISH DISEASE WORKSHOP JULY 14-15 The 7th Annual Mid-West Fish Disease Workshop will be held July 14 and 15 at the Ramada Inn near the LaCrosse, Wisconsin airport. Workshop sessions will begin at 8:30 a.m. and conclude at 4:30 p.m. according to Mr. James W. Warren, this year's Workshop Chairman. The general theme of the 1976 workshop is "Show and Tell". Key specialists in the detection and diagnosis of fish diseases, in the research and development of laboratory techniques, in mass immunization of fish, and in a variety of other important areas will lead "mini-sessions" devoted to these topics. Emphasis throughout the program will be placed upon the illustration of techniques, equipment and facilities which will aid others in putting new methods into practice. A highlight of the meeting will be an informal buffet dinner at the Ramada Inn following which Dr. S. F. Sneiszko, known around the world as a foremost fish disease specialist, will reminisce about his past and offer some thoughts on the future. (For comment or further information, contact Mr. James W. Warren, Workshop Chairman, P.O. Box 252, Genoa, Wisconsin 54632)

WILDLIFE DISEASE CONFERENCE JULY 20-22 A wildlife disease conference sponsored by the Wildlife Disease Association of the College of Veterinary Medicine at Texas A&M University will be held Tuesday July 20 through Thursday, July 22 at the Rudder Conference Tower in College

Station, Texas. Included in the usual sessions is a general section devoted to the "Diseases of Poikilothermic Vertebrates" to be held at 1300 hours in the afternoon of wednesday, July 21 in rooms 301 and 701. For further information contact Dr. W. J. Kilpatrick, College of Veterinary Medicine, Texas A&M University, College Station, Texas 77843

WESTERN DIVISION AMERICAN FISHERIES SOCIETY JULY 26-29 The Western Division of the American Fisheries Society is planning its annual meeting for July 26-29 in Sun Valley, Idaho in association with the Western Association of Game and Fish Conservation Commissioners. Program Chairman Bill Platts has put together an excellent series of sessions covering a wide variety of current fishery problems. Of particular interest to fish health investigators are sessions on the Environmental Physiology of Fishes chaired by Dr. Gary Wedemeyer and Fish Culture and Health, chaired by Dr. Ron Goede. These two sessions are planned for July 26 and 27, respectively. For comment or further information, contact William S. Platts, Program Chairman, 1503 Sunrise Rim, Boise, Idaho 83705)

FISH HEALTH SECTION WORKSHOP AUGUST 24-26 The 2nd Biennial Fish Health Section Workshop will be held August 24 through 26 at the Radisson Hotel in Denver, Colorado. For further information on this meeting, refer to the front page story in this issue. (For comment or further information, contact Dr. D. H. Lewis, Workshop Chairman, Department of Veterinary Microbiology, Texas A&M University, College Station, Texas 77843)

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RANGEN EXPANDS DIAGNOSTIC SERVICES The fishery division of Rangen, Inc., a well known trout feed manufacturer, has recently expanded their Fish Pathology Laboratory and staff in a continued effort to provide disease diagnostic and consultative services to the trout industry. Dr. Robert A. Busch has joined Otto Lynn and a full time technical staff in the newly enlarged facility located at Rangen's Research Hatchery in Hagerman, Idaho. The Laboratory will offer complete diagnostic pathology capabilities in both infectious and noninfectious diseases together with a disease isolation wet laboratory and an experimental production hatchery. In addition to its routine diagnostic and consultative capacities offered as a service to the industry, the Laboratory will be involved in cooperative efforts toward the development of new methods and products for fish disease prevention, diagnosis, treatment, and control. It is the continued goal of Rangen's Fishery Division to assist the technical progress of the trout culture industry through the continued efforts of its technical staff to solve practical and applied problems. The Laboratory invites the opportunity to establish cooperative studies with interested investigators in the field. (For comment or further information, contact Dr. Robert A. Busch, Rangen Research Hatchery, Route 1, Hagerman, Idaho 83332)

TRANSLATION SERVICES AVAILABLE Mr. Bob Howland, former editor of SPORT FISHERY ABSTRACTS, has recently announced that he will be available to translate technical articles in Russian, German, or French. Mr. Howland comes highly recommended from his past work in the translation of technical fish disease articles for various government agencies. He offers prompt service with a rate of \$15 per 1000 words of the original article. (For comment or further information, contact Mr. Robert Howland, 1 Whitehorn Drive, Kingston, Rhode Island 02881)

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Dr. Robert A. Busch, Editor
FHS/AFS NEWSLETTER
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