

Fish Health Section Newsletter

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Volume 6

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Number 2

SEVEN CERTIFIED

Seven of 13 applicants have completed all requirements for certification as Fish Health Inspectors by the Fish Health Section. Passing review by the Board of Certification were:

James W. Warren	USFWS	Genoa, WI
V. Charles Suppes	Missouri Dept. of Cons.	Sweet Springs, MO
Douglas L. Mitchum	Wyoming	Laramie, WY
Paul Janeke	USFWS	Ft. Morgan, CO
Dennis E. Anderson	USFWS	Ft. Morgan, CO
John G. Hnath	Michigan DNR	Mattawan, MI
John F. Conrad	Oregon	Clackamas, OR

The Board is currently processing four more applications. These applications should be processed in time for the successful applicants to be awarded their Fish Health Inspector certificates at the August meeting of the Fish Health Section in Kansas City, Missouri.

All fish health specialists engaged in providing laboratory services that support fish disease inspection work should seek FHS certification as Fish Health Inspectors. This peer review program is quickly replacing agency lists of inspectors that have been arbitrarily established by administrators in the past.

Application forms are available from Dr. Richard Heckmann, Department of Zoology, Brigham Young University, Provo, Utah 84601. Completed applications and all required supplementary materials should be sent to James W. Warren, Chairman, FHS Board of Certification, P. O. Box 252, Genoa Wisconsin 54632. Applicants should simultaneously solicit three letters of recommendation which should be addressed directly to the Chairman of the Board of Certification.

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FHS/AFS
Reprints P. 7
Chloromyxum
Salmonella

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EDITORIAL

At the recent Western Fish Disease Meeting, the subject of registration of drugs was brought up. Bill Klontz offered to accept and compile data from aquaculturists on their use of malachite green and its effectiveness in order to prove its worth to the F.D.A. In the midst of the embroglio which developed from this, Don Amend pointed out that the F.D.A. would require many more extensive tests to assure that the chemical used on food fish would not be harmful to human consumers later. He also pointed out that the aquacultural use of drugs is not great enough for private companies to justify performing these expensive tests.

However, we all know that the current "see no evil" attitude of the F.D.A. could change overnight and we could be left with salt and stone axes to fight fish disease. These tests must be done. The point to be taken from Klontz is that we must get coordinated. If we could share the burden, dividing responsibilities among those most qualified to take them on, we may make some progress yet. But to proceed with the greatest speed, our efforts must be organized; this is the only way to do it piecemeal. Corey will discuss the requirements for drug approval for fish at the Midwestern. I suggest we start there to see how things might be worked out and get our act together. The potential roadblocks to coordinated efforts are obviously legion, but it is necessary to surmount them.

EDITOR'S ADDRESS CHANGE -- PLEASE NOTE

Please send items for the Newsletter and any other correspondence to:

Dr. Joseph R. Sullivan
1640 Anderson Avenue
McKinleyville, CA 95521

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 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 August to be included in the next quarterly issue. The Newsletter Committee members include:

- Dr. Joseph R. Sullivan (editor), 1640 Anderson Ave., McKinleyville, CA 95521
- Dr. Mark Dulin, 1403 Clark Street, Ames, Iowa 50010
- Dr. Joe Geraci, Pathology Dept., University of Guelph, OVC, Guelph, Ontario, Canada N1G 2W1
- Dr. Glenn Hoffman, Parasitologist, U.S. Fish and Wildlife Service, Fish Farming Experimental Station, P. O. Box 860, Stuttgart, AR 72160
- Mr. Paul Janeke, U.S. Fish and Wildlife Service, Fish Disease Control Center, 1100 E. Burlington Ave., P. O. Box 917, Fort Morgan, CO 80701

D.V.M.'s -- FISHERIES BIOLOGISTS

Although I am a little behind in my reading of publications, and I note that some comments have been received, I would like to take a try at running with the ball you threw out in the Vol. 5(4) issue of Fish Health News.

You wondered how many fisheries people would be threatened by the prospect of veterinarians in the fish health field. Well, I would like to answer that from my perspective - a whole bunch! A few years ago, a veterinarian, attempting to gain a toe hold in the fish health field, proposed at the 1974 Denver meeting of the FHS that he conduct a survey of the lower 48 state administrators of the veterinary practice acts. The purpose of conducting the survey was to ascertain how many states include "fish" specifically under this respective veterinary practice acts. The results were not all that surprising. To my recollection only five stipulate the fish disease problems come under the purview of the acts. However, the uproar from the fishery biologists was deafening. Less noise would have been made if someone had proven that Bruno Hofer was a plagiarist and an adulterer. (Those of you who don't know who Bruno Hofer was can look it up.) And, since I took the side of the poor hapless veterinarian, I was cast in the same mold as he - that being to denigrate the work of the fishery biologists and threaten them with DVM replacements because their efforts would be legal in the eyes of the law. Which, by the way, he did not allude to in any fashion. Well, I still take the side of the hapless guy and I still have fisheries biologists I have known for more than 10 years reluctant to speak to me. I have been branded a "turn-coat," but that does not bother me as much as their being threatened per se.

Lee Harrell summed it up by stating that if he were threatened professionally it would not speak very highly of his professional confidence. I have to agree with that.

I cannot get over the strangeness of this whole matter. Shortly before the veterinary practices act episode, I was called to task for my professional conduct in training non-DVM's to handle the ills of certain aquatic animals. This came from the then President of the International Association of Aquatic Animal Medicine. As Bob Rucker put it "No matter what you do, in the eyes of someone it will be wrong."

Our profession has to grow up and cease to think that we are the only ones who can solve our problems. We need help and a person trained and experienced and dedicated to the clinical approach to medicine should be a welcome addition to our ranks in this battle (no, war) against beaurocrats desiring to take away our ammunition; i.e., therapeutic agents, and give us nothing in return. One only has to read an article written by Fred Fish - "Treat, Think and Be Wary: For Tomorrow They May Die" - Yes, 1938!! - to see how far we haven't come.

If I may, I would like to suggest a complete airing of this matter at the Kansas City meeting in August. I would be willing to bring the practice act data and anything else that might help us put this matter to rest so we can get on with replacing some names on the List of Top Ten Unwanted Diseases in Hatcheries.

Respectfully,
Bill Klontz
Fishery Resources
University of Idaho

REPORT TO THE EXECUTIVE COMMITTEE OF THE AMERICAN
FISHERIES SOCIETY ON THE FISH HEALTH SECTION, MARCH 14, 1978
MEXICO CITY, MEXICO

At the present time the Fish Health Section has between 200 & 225 members of which approximately 30 are new. We are striving to increase this membership, not only with individuals from the fish health area, but also from other areas of aquatic animal health.

One of the most important objectives of the FHS is to improve our professional status. In view of this the "Fish Health Inspector" program became a reality this past year with three scientists being approved by the Board of Certification as "Fish Health Inspectors." In the same area of professionalization, the Professional Standards Committee is developing criteria and standards for certifying biologists as "fish health practitioners." This will distinguish those individuals who are qualified to perform daily disease diagnosis and treatment.

The book Suggested Procedures for the Diagnosis and Detection of Certain Infectious Diseases of Fishes, or the "Blue Book," is being revised by Pete Bullock and Technical Proc. Comm. This book was originally published in 1974 and the revision is now in review.

During 1977 the Glossary of Fish Health Terms, which was edited by George Post and Bill Klontz, was published. Mary Frye informed us that a number of the glossaries have already been sold.

Projects for the current year include a Fish Health sponsored meeting in Kansas City in August. This is to be held in conjunction with the Midwestern Fish Disease Workshop. John Fryer is making arrangements for publication of the proceedings. We are also developing a brochure similar to that of the Fish Culture Section for advertisement purposes. There is a move afoot for the FHS to establish an annual "Distinguished Service Award" to be presented to outstanding fish health people.

Although the FHS is sound and viable there are some problems. For one, we do not know how curtailment of chemotherapeutics will affect aquaculture. As far as I know the FDA has made no decision on "minor use drugs." Another problem involves the commercial industry. As you know the FHS is for the most part built around federal and state employees or university and research people. There are relatively few commercially oriented people in our organization. In the future there will be an infinitely greater poundage of aquatic animals grown for commercial markets than by all state and federal hatcheries put together. We have not successfully taken these commercial interests into consideration in all of our actions. An example is our "Fish Health Inspector" program. The standards for this achievement are high and rightfully so. However, if they are so high and unacceptable to the growing commercial industry, that they do not recognize our program, then we have failed somewhere. It is my understanding that as a result of this, commercial fishery organizations are considering establishing their own inspection program. I think we need to work towards a common goal in this area.

At any rate the future of the FHS looks bright. Ron Goede is President-Elect and I have no doubt that he will serve the FHS well and continue its excellence.

J. A. Plumb, President
Fish Health Section

FHS CANDIDATES FOR OFFICES

The Nominating Committee has selected six candidates for next year. The candidates, followed by short resumes, are:

For President-Elect: Douglas Mitchum and John Schachte
For Secretary-Treasurer: Robert Busch and Paul Janeke
For Member of the Board
of Certification: David McDaniel and Steve Leek

Douglas L. Mitchum

Douglas L. Mitchum is a Fish Pathologist for the Wyoming Game and Fish Department, and is the Supervisor of the Research Laboratory at Laramie. Doug is active as a practicing diagnostician and in coordinating fish disease control efforts within the State of Wyoming and with the Colorado River Wildlife Council. He has been approved by the Board of Certification of the FHS/AFS as a Fish Health Inspector, and has served on several committees of the FHS/AFS including Newsletter, Membership and Balloting, Nominating, and Professional Standards. He is also engaged in research on bacterial kidney disease in feral trout, and is an adjunct professor at the University of Wyoming where he teaches a course in fish diseases.

John H. Schachte

Dr. John H. Schachte, Jr. is the Associate Fish Pathologist for the New York State Department of Environmental Conservation. He received his B.S. degree from Clemson University in Biology in 1963. He earned his M.S. and Ph.D. in Fish Pathology in 1972 and 1976 respectively at Auburn University. He is a member of the American Fisheries Society, the Fish Health Section and the New York Chapter of the American Fisheries Society and the Wildlife Disease Association. He has served on the Technical Procedures Committee of the Fish Health Section for the past two years. He is currently serving as a program co-chairman for the Fish Health Section - Midwest Fish Disease Workshop joint biennial meeting being held this year.

His interests include fish immunology, breeding of trout for disease resistance and diagnosis and control of diseases of cultured fish. His current activities involve the development and maintenance of a fish health program for New York State hatcheries and the direction of the Fish Disease Control Unit laboratory and personnel located at Rome, New York.

Robert A. Busch

Dr. Robert A. Busch is Director of Research at the Rangen Research Hatchery, Hagerman, Idaho. Bob is active in disease diagnostic and consultative services for the trout industry, and in contract research and development particularly involving vaccines and chemotherapeutics. He was formerly an assistant professor of fish pathology at Humboldt State University, Arcata, California. He served on the Finance Committee and is the Past Editor of the FHS/AFS Newsletter.

Paul Janeke

Paul Janeke is Assistant Director of the Fish Disease Control Center in Fort Morgan, Colorado. He has been employed by the U.S. Fish and Wildlife Service for 13 years. The first five years of his career were spent at six National fish hatcheries in the west and southwest where he was involved in the culture of trout and warm-water species. During this period, he also completed the "long course" in husbandry of cold water fish at Spearfish, South Dakota. After completing a 10-month course in fish disease diagnostics at the Eastern Fish Disease Laboratory, he was transferred to the Hatchery Biologist Laboratory in Springville, Utah, where he served as an assistant regional hatchery biologist. Paul moved with the Springville lab to its new location in Fort Morgan, Colorado in 1974.

Paul has served as chairman of the FHS Technical Procedures Committee, has been certified as a Fisheries Scientist by the AFS, and as a Fish Health Inspector by the FHS.

David W. McDaniel

David W. McDaniel is Assistant Director, National Fisheries Center (USFWS), Leetown, West Virginia. He received his B.S. in Wildlife Management (1959) from University of Arizona; 1960-63 U.S. Army, Regensburg, Germany; 1963-65 Willow Beach National Fish Hatchery; 1965-66 Cortland In-Service School (fish husbandry); 1966-67 Leetown In-Service School (fish diseases); 1967-71 Area Hatchery Biologist, Springville, Utah; 1971-77 Washington, D.C. (Chief Branch of Technology, Division of Fish Hatcheries - Assistant Program Coordinator for Inland Fisheries - Chief, Division of National Fish Hatcheries).

Steve Leek

Steve Leek is an Area Biologist for the Fish and Wildlife Service stationed at Little White Salmon Hatchery, Cook, Washington. He received a B.S. from the University of Wyoming in 1963 in Wildlife and Conservation Management. He started with Federal Fish Hatcheries in November, 1963 in South Carolina, moved to North Carolina with Hatcheries. He was sent to Spearfish Hatchery Management Training in 1967-68; sent to Leetown long course disease training 1968 and 1969; transferred to Little White Salmon Hatchery as Assistant Area Biologist doing disease inspection and certification. He became Area Biologist in 1973 to present time. Work includes disease diagnosis and certification for National Fish Hatcheries and State and Commercial hatcheries when requested.

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REFERRED PARASITIC MATERIAL

As usual, materials may be sent to G. L. Hoffman. To expedite such referrals it is recommended that, where facilities permit:

- (1) Platyhelminthes be stained and mounted; monogeneans need not be stained, but can be mounted in glycerine-jelly; large tapeworms should not be stained and mounted, but it is appropriate to stain and mount single segments from about one third back from the scolex.
- (2) Nematodes be fixed in near boiling 70% alcohol and preserved in same.
- (3) Small cysts be excised with a small amount of adjacent tissue and shipped in a small vial of formalin; if this can't be done, fabricate some means of easily locating the area in question.

In all cases, as usual, describe the material and any evident disease signs. Except for large material, the best screw cap vial sizes are 45 x 15 mm and 70 x 28 mm. Screw caps with conical Poly-seal liners are available from most scientific supply houses. Further methods can be found in Hoffman (1967) pp. 6-10. If material should be returned, please indicate. In the past two years many referral slides and one bottled specimen have been successfully broken in transit. Do not send slides in those handy envelope mailers only -- pack them well in a mailing cylinder or box. Vials and bottles should be sealed in plastic bags and shipped in well padded cylinders or boxes. For further information contact Dr. Glenn L. Hoffman, U.S. Fish and Wildlife Service, Fish Farming Experimental Station, P. O. Box 860, Stuttgart, AR 72160.

CHLOROMYXUM ESOCINUM: FIRST TIME IN NORTH AMERICA

During a general health survey of feral adult northern pike at the Valentine National Wildlife Refuge in Nebraska, an organism tentatively identified as Chloromyxum esocinum was found in the gall bladders in 10 of the 30 fish examined. Dr. Glenn Hoffman confirmed the initial identification of the organism and stated this was the first recorded incidence in North America (for further information, contact Larry Olson, Fish Disease Control Center, Fort Morgan, Colorado).

SALMINCOLA CALIFORNIENSIS MARCHES EASTWARD

Drs. G. L. Hoffman and Z. Kabata have noted recent epizootics of this parasite, which was originally a parasite of Oncorhynchus spp. on the west coast, occurring in Illinois, Missouri, and Arkansas. * This copepod occurs primarily on the gills of salmonids in contrast to S. edwardsi which occurs at the bases of fins as well as the gills of brook trout and other species of Salvelinus. Sometimes Salmincola becomes a problem where stream or lake water is used for trout culture. Presumably the larval stages can be killed with Masoten but no experiments have been reported. Probably sand-gravel filters would remove the larvae from water supplies. For further information contact Dr. Glenn L. Hoffman, U.S. Fish and Wildlife Service, P. O. Box 860, Stuttgart, AR 72160.

* 8/20/79 West Virginia, case H79-39.

Hoffman 1977 - Ark.

Camper J. ... saw it on Missouri fish in the 60's.

60's
1977

RESEARCH ON PROTOZOAN PARASITES -- PRAGUE

The Institute of Parasitology of the Czechoslovak Academy of Sciences, Prague is paying attention to external and internal protozoan parasites, to their taxonomy, ultrastructure and functional morphology, biology, host parasite reaction and host specificity. In this respect, the studies comprise ectozoic ciliates (especially trichodinids), flagellates - Cryptobia, "oodinium" group, hexamitids, Ichthyobodo, Microsporidia and Myxosporidia.

Investigation of protozoan fauna of commercially imported fish has also been under study; the research of carps in European region has already been completed.

Blood flagellates of fish are a matter of special interest; the studies concern their life cycle, ultrastructure, effect of environmental factors, host specificity and virulence, in vitro growth, dyskinetoplasty and, to a certain extent, taxonomy. The independent generic status of Trypanoplasma has been confirmed by life cycle studies.

Pathogenesis and host tissue reaction: studies have thus far centered on infections caused by Microsporidia, Myxosporidia and blood flagellates. Model infections with Henneguya psorospermica and Glugea anomala have served to elucidate the character of the inflammatory reaction of the host resulting in complete destruction of the parasite. Studies are in progress on infections with blood flagellates of the genera Trypanosoma and Trypanoplasma.

For further information contact Dr. Jiri Lom, Institute of Parasitology, Czechoslovak Academy of Sciences, 166 32 Prague 6, Flemingovo Nam.2, Czechoslovakia.

U.S.D.A. -- AQUACULTURE

On May 24th, a technical seminar on aquaculture was held at the Department of Agriculture Building in Washington, D.C. Representatives from the trout and catfish industries were there to present their views on the current status of the industry. Because the USDA has been designated as the lead agency on aquaculture (Food and Agricultural Act of 1977, Public Law 95-113), there has been considerable activity among the various agriculture agencies concerning commercial food fish production, especially the trout, catfish and crayfish industries.

Dr. H. Rudy Schmittou, aquaculture coordinator for the USDA is currently assessing the problems in the aquaculture industry and developing a USDA aquaculture plan. Some of the fish health related problems brought to Dr. Schmittou's attention include the need to license more immunizing agents and pharmaceutical products, as well as investigate the introduction and spread of fish pathogens. Attention was also given to offering diagnostic services for those fish producing states that lack adequate state diagnostic laboratories.

There are still a lot of barriers for the USDA to cross before they assume their role as the lead agency for aquaculture but groundwork is being laid and the general feeling on capital hill is for considerable USDA involvement by 1980.

For further information contact Dr. Mark P. Dulin, Pathology Investigator, USDA, APHIS, NVSL, P. O. Box 70, Ames, Iowa 50010.

UNIT OF AQUATIC PATHOBIOLOGY, UNIVERSITY OF STIRLING, SCOTLAND
MARKS SEVENTH ANNIVERSARY

The Unit was started with a grant from the Nuffield Foundation in 1971 and has grown to a staff of 14 headed by Dr. Ron Roberts. At present there are 4 Ph.D. candidates, 4 M. Sc. candidates, and 22 M Sc./Diploma students from 15 countries, a truly international endeavor. In addition to the two regular fish disease courses taught the past year, three short courses for fish farmers and disease workers were conducted. A textbook "Fish Pathology" edited by Dr. Roberts and written by members of the Unit and certain guest lecturers, has gone to press. Dr. Roberts is the charter editor of the Journal of Fish Disease; Vol. 1, No. 1 has been published and enough papers have been accepted to fill Vols. 2-4. Current projects include the relationship between hormonal status and saprolegniasis, aquarium fish diseases, viruses of Tellina tenuis, pathology of Stephanochasmus buccatus infections in flatfish, economics of British trout culture, use of anti-androgens for controlling precocious sexual maturity in Atlantic salmon, development of melanomacrophage centers in teleosts, pathogenesis of salmonid nephrocalcinosis, biology of Ichthyobodo necatrix (Costia n.) skin parasitism, and marine fish dermatology.

Overseas trips the past year have included Finland, Israel, Kenya, Spain, France, and South America. Some of these trips related to the Unit's activity in a tropical Aquaculture Project funded by the British Overseas Development Ministry, investigating husbandry, nutrition and disease aspects of intensive culture of tilapia (Sarotherodon), African catfish (Clarias spp.) and carp. Links with Dr. S. Sarig in Israel, and with Kenyan fisheries workers permit joint projects and field trials; investigations on acute mortalities of silver carp, on disease problems of intensive tilapia production, and on hormonal production of all-male tilapia fry, have already been carried out.

This note was prepared by Dr. G. L. Hoffman, U.S. Fish and Wildlife Service, Fish Farming Experimental Station, P. O. Box 860, Stuttgart, Arkansas 72160, from the annual report of the Unit.

FISH PARASITE COLLECTION

We have reorganized and catalogued the Bangham Collection of fish parasites. The collection consists of 77 boxes (6506 slides), mostly of helminths of fishes; however, there are some protozoa and parasitic copepods. Time has not permitted our verification of all slides and some slides are of poor quality, but they have served the function of helping us identify some parasites that we are not familiar with. There are some type and paratype specimens. Slides are available on a loan basis. For further information contact Dr. Glenn L. Hoffman or Andrew J. Mitchell, Fish Farming Experimental Station, P. O. Box 860, Stuttgart, Arkansas 72160.

MEETING

PROGRAM ARRANGEMENTS SET FOR KANSAS CITY MEETING

The Third Biennial Fish Health Section Workshop will be held at the Hilton Plaza Inn in Kansas City, Missouri August 15-18, 1978. This year's meeting will be held jointly with the 9th Midwest Fish Disease Workshop. The program consists of major formal reports on technical findings in the fish disease field and short papers on practical research work and current problems.

Dr. Robert Putz, Director of the new National Fisheries Center at Leetown, West Virginia will be the keynote speaker for the meeting. A special panel on professionalism and professional development will be headed up by Dr. Edward R. Ames of the Continuing Education office of the American Veterinary Medical Association headquarters in Chicago. Dr. Ames promises a lively exchange with the group.

Other highlights include fresh reports on an ulcerative disease (furunculosis) of goldfish, and new viral disease of golden shiners, and benchmark work on bacterial kidney disease. In all some 30 or more speakers will bring the meeting attendees up to date on many aspects of fish health.

Meeting announcements have been mailed to over 600 FHS'rs and midwesterners interested in fish health. You should make your reservations as soon as possible at the Hilton Plaza Inn. You should also pre-register by sending your name and address together with your check for the \$20 registration fee made out to "Fish Disease Workshop" to Mr. Chuck Hicks, Missouri Department of Conservation, P. O. Box 180, Jefferson City, MO 65101. The registration fee includes coffee breaks and a buffet supper on Wednesday evening. All registrants will receive a copy of the summaries and abstracts of the reports presented.

The buffet supper will be highlighted by an after dinner talk by Dr. John Fryer of Oregon State University who was the first President of the FHS. The first awarding of the FHS's annual Distinguished Service Award will also be made along with the presentation of Fish Health Inspector certificates to successful applicants.

Confirmed Titles

D. Mitchum	"Bacterial Kidney Disease in Feral Brook Trout"
D. Ransom	"Histopathology of Vibriosis in Juvenile Salmon"
B. Patterson	"Immune Response of Atlantic Salmon to Bacterial Kidney Disease"
R. Holt	"Recent Work on the Epizootiology of <u>Myxobolus insidiosus</u> in Oregon"
K. Wolf	"Advances in Fish Virology and Cell Culture"
J. Zinn	"Mass Immunization and It's Evaluation in the Field"
D. Heckmann	"Professionalism in Fish Health"
G. Klontz	"Prevention of Vertical Transmission of Bacterial Fish Disease Agents"

- D. McCarthy "Present Taxonomic Status of Bacteria of the Genus Aeromonas"
- J. Sanders "Some Recent Studies on Bacterial Kidney Disease"
- D. Mitchell "Field and Laboratory Findings on a Viral Disease of Golden Shiners"
- B. Busch/
N. Burmeister "Description of a Systemic Myxobacterial Disease of Rainbow Trout"
- P. Bullock "Diagnosis of Furunculosis and Enteric Redmouth Disease by Fluorescent Antibody Techniques"
- T. Yasutake "Idiopathic Diseases of Salmonids"
- D. Mitchell "Species Identification in Diagnostic Work"
- M. Dulin "Diagnosis and Treatment of the more Prevalent Freshwater and Marine Aquarium Fish Diseases"
- T. Yamamoto "Studies on the Persistence of Infectious Pancreatic Necrosis Virus in Brook Trout Populations and Transmission of Virus to Progeny and other Salmonids"
- J. Hartman "An Attenuated Virus Vaccine for the Prevention of CCVD"
- B. Nicholson "Studies of PEN Virus"
- C. Carlson "Field Trials of Mass Immunization for Controlling Enteric Redmouth"
- N. Burmeister/
B. Busch "Field and Laboratory Evaluation of a Commercial Enteric Redmouth Disease Vaccine for Rainbow Trout"
- D. Amend "The Role of Industry in Drug Registration for Fish"
- E. Ames No Title (Will present introduction and lead discussion on Professionalism)
- J. Warren "The Role of the USFWS in Drug Registration"
- B. Corey "The Requirements for Drug Approval for Fish"
- D. Lewis (Paper 1) "Immunology and Serology of Aeromonas hydrophila"
- (Paper 2) "Immunity in Penaeid Shrimp to Vibrio Species"
- J. Plumb "Field and Laboratory Findings on a Viral Disease of Golden Shiners"
- T. Evelyn "Sensitivities of Bacterial Kidney Disease Detection Methods"
- E. Shotts "Identification and Taxonomy of the Primary Etiologic Agent Associated with an Ulcerative Disease in Goldfish"
- D. Elliott "Diagnosis and Experimental Induction of an Ulcerative Disease in Goldfish"
- F. Leteux "Changes in Production Management Resulting from an Ulcerative Disease in Goldfish"

1978 JOINT FHS/MWFD WORKSHOP

TUESDAY 8/15	WEDNESDAY 8/16	THURSDAY 8/17	FRIDAY 8/18
J. Warren: Introduc & Announcements J. Plumb: FHS Pres Address B. Putz: Keynote Address	Ulcerative Dis. of Goldfish - F. Leteux D. Elliott E. Shotts	Bacterial Diseases - B. Busch: Myxos D. Mitchum: BKD in BKT G. Bullock: FA work D. Ransom: Histo of Two Vibrios	Immunology & Serology - D. Lewis: <u>A. hydroph.</u> B. Patterson: BKD in Atlantic Salmon D. Lewis: Shrimp/vib.
COFFEE	COFFEE	COFFEE	COFFEE
Professionalism Panel R. Heckmann: FHS Prof. Stds. Comm. E. Ames: Amer. Vet. Medical Assoc.	Taxonomic Status of the Genus Aeromonas - D. McCarthy Recent Studies on BKD - J. Sanders	Viral Diseases - B. Nicholson: PEN J. Hartman: Atten. CCVD vaccine T. Yamamoto: IPN Persis. in Nature	Immunization Update - C. Carlson: Field wk. J. Zinn: Mass Imm. Eval. in Field N. Burmeister: ERM Vac. Evaluation
LUNCH	LUNCH	LUNCH	Selection of 1979 site for 10th MWFDW
Vert. Trans. of Bact. Fish Pathogens - G. Klontz Sensitiv. of BKD Detec. Methods - T. Evelyn	A Viral Disease of Golden Shiners - D. Mitchell J. Plumb Adv. in Virol. & Cell Culture - K. Wolf	Miscellaneous Maladies - R. Holt: Myxobolus T. Yasutake: Idiopath M. Dulin: Aquar. Fish D. Mitchell: Species Identification	
COFFEE	COFFEE	COFFEE	
FHS Committee Meetings All attendees welcome	FHS Business Meeting All attendees welcome	Status of Therapeutics B. Corey: Regist. D. Amend: Role of Industry J. Warren: Role of USFWS	

GLOCHIDIA CYSTS CONFUSING?

Pick them out of the gills and optically clear them in nematode clearing agent (liquid phenol--104 ml, lactic acid--89 ml, glycerine--177 ml, water 115 ml, or liquid phenol--400 ml, 100% alcohol--100 ml). Such cleared specimens clearly show the "clam shell" and even the teeth on the two large hooks. Perhaps this will eventually aid in species identification. For further information contact Dr. G. L. Hoffman, U.S. Department of Interior, Fish and Wildlife Service, Fish Farming Experimental Station, P. O. Box 860 Stuttgart, Arkansas 72160.

BOTHRIOCEPHALUS GOWKONGENSIS IS A SYNONYM

According to Dr. K. Molnar 1977 (Parasit. Hungary 10:61-62), B. gowkongensis Yeh, 1955, B. opsalichthydis Yamaguti, 1934, and B. phoxini Molnar, 1968 are synonyms of B. acheilognathi Yamaguti 1934. Earlier, W. Korting 1975 (J. Fish. Biol. 7: 727-733) had determined that B. opsalichthydis and B. gowkongensis are synonyms of B. acheilognathi. This tapeworm has a very wide host range, having been found in 14 fish species in Asia, Europe, and North America. For further information contact Dr. G. L. Hoffman, U.S. Fish and Wildlife Service, Fish Farming Experimental Station, P. O. Box 860 Stuttgart, Arkansas 72160, U.S.A.

SHORT COURSES

FISHERIES ACADEMY

The Fisheries Academy at the National Fisheries Center has announced that courses will begin in October, 1978. The objective of the Academy is to provide fisheries workers from throughout the world with up-to-date training in the most modern theories and practices in fishery management and husbandry. Individual short courses on Electrofishing, Hydraulics and Hydrology for Fisheries Biologists, Farm Pond Management, Fisheries Legislation, and Indirect Fluorescent Antibody Testing for Fish Diseases will be presented at various locations around the country, during the next few months.

Additionally, the Short Course in Cold Water Fish Culture, which has been offered for several years, will again be taught at Spearfish, South Dakota.

More information on all of the above courses, and all future programs can be obtained by writing to the:

Superintendent, Fisheries Academy
National Fisheries Center
Route 3, Box 41
Kearneysville, WV 25430

UNIVERSITY OF IDAHO - INTENSIVE AQUACULTURE SHORTCOURSE

George (Bill) Klontz is offering a shortcourse in intensive aquaculture at the University of Idaho from 8:00 a.m. 24 July to 3:00 p.m. 28 July. The shortcourse is for all professional aquaculturists. Completing participants receive 3.8 Continuing Education Units (college level credit).

Classroom, lab, and hatchery work plus performance tests and evening sessions will be designed to provide a working knowledge of the interactions of an aquaculture system (i.e., fish, water, container, nutrition, and management). Particular subjects include: 1) concepts of aquaculture from the standpoints of product definition and how to achieve a desired product; 2) presentation and application of the methods of growth programming; 3) concepts of applied nutrition in aquaculture; 4) epidemiology of infectious and non-infectious diseases in fish; 5) diagnosis and treatment of infectious and non-infectious diseases of fish in aquaculture systems.

Upon course completion, participants will be able to: 1) develop a programmed growth plan for fish taking into account the interactions of fish, water, container and nutrition; 2) recognize and treat the major infectious and non-infectious diseases of fish; and 3) translate the techniques acquired to his or her facility personnel.

Registration fee is \$125.00 which includes instructional costs, books, take home materials, one fish barbeque, coffee, snacks and housing. Pre-registrations accompanied by a \$25 deposit must be returned by July 15, 1978. Enrollment is limited to 24 participants. Parking permits for those driving will be available from the Campus Information Center, or at the time of registration. Housing will be the University's Wallace Complex; however, those arriving the night before may secure housing at Ballard Hall, room 100, for approximately \$5. Registration and first day instruction will be in room 108 of the Forestry Building. Except for a \$5 service charge, all checks are fully refundable to July 15.

Make checks payable to:

Office of Continuing Education
University of Idaho
Moscow, Idaho 83843

POSITION

QUALITY CONTROL TECHNICIAN. Oregon Aqua-Foods, Inc., tentatively plans to hire a technician to aid in quality control at their salmon aquaculture facilities in Oregon. A bachelor's degree in microbiology or a closely related field is desired. Previous work in the area of fish diseases is not required but applicants should have experience with tissue culture. Duties would include work in the following areas: fish health, fish physiology, tissue culture, adult salmon sampling, and preparation of media, glassware and reagents. The position will tentatively be filled by August 1, 1978. Salary range \$10,500 to \$13,500. Applicants should submit a letter of application to Dr. David P. Ransom, Quality Control Manager, Oregon Aqua-Foods, Inc., 88700 Marcola Road, Springfield, Oregon 97477. Oregon Aqua-Foods, Inc., is an equal opportunity employer.

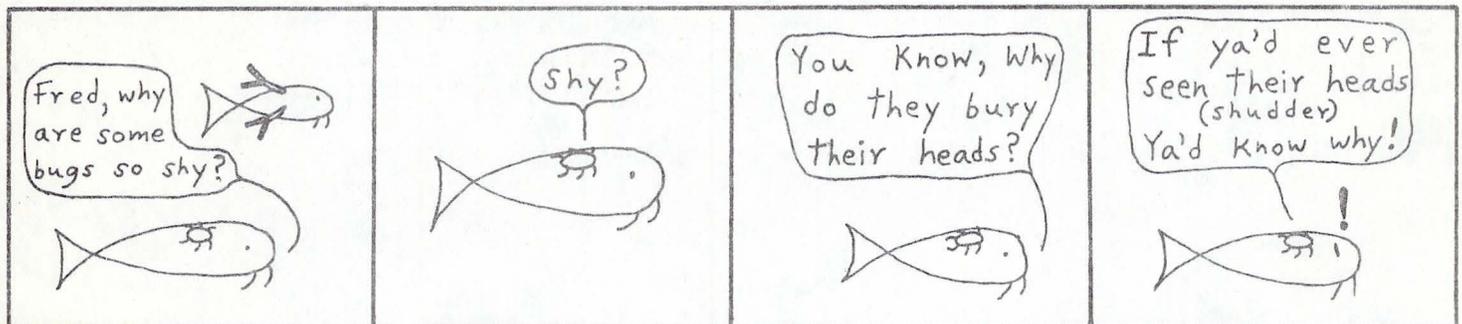
NEW PUBLICATIONS

TRANSLATION -- Shigin, A.A. 1976. Metacercariae of the genus Diplostomum, fauna of the USSR. Parazitologia 10(4): 346-351 (Russian). Methods of study and a key to the 13 species are presented. Available on loan from Language Services Branch, F412, National Marine Fisheries Service, NOAA, U.S. Dept. of Commerce, Washington, D.C. 20235.

TRANSLATION -- Polzin, B. and H. Bremer. 1971. Some cytochemical investigations of Ichthyophthirius multifiliis Fouquet and investigations on the variable density of infections of different fish species with the parasite. Loan copy available from G. L. Hoffman, U.S. Fish and Wildlife Service, Fish Farming Experimental Station, P. O. Nox 860, Stuttgart, AR 72160, U.S.A.

Catfish

Bert



Catfish

Bert



Dr. J. R. Sullivan
1640 Anderson Ave.
McKinleyville, CA 95521



Dr. Glenn L. Hoffman
Fish Farming Exp. Stat.
P.O. Box 860
Stuttgart, AR 72160