

FISH HEALTH SECTION

S.F.

NEWS LETTER



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HOFFMAN, FRYER: CO-RECIPIENTS OF 1982 SNIESZKO AWARD

The Fish Health Section proudly bestowed its annual S.F. Snieszko Distinguished Service Award on not one, but two of its most eminent members during ceremonies at the February meeting in Boulder, Colorado. Dr. John Fryer was the first president of the FHS and has had a long and diverse involvement in the fish health profession. He began as a Fishery Biologist with the Oregon Fish Commission in the late 1950s. Shortly thereafter, fish diseases caught his interest and he went back to Oregon State University to earn a Ph.D. in microbiology in 1964. Since that time he has concentrated his efforts on fish disease research studies ranging from parasitology to bacteriology and deeply into virology and immunology. Dr. Fryer's work has always been at the forefront of the field and has had immediate application in solving serious problems facing fish culturists and diagnosticians. He holds patents on fish vaccines and is recognized worldwide as a leader in the development of immunization techniques for cultured fish. He has been a much sought after speaker and lecturer both nationally and in foreign countries including Norway, Great Britain, Italy, Yugoslavia, Japan, Canada, Taiwan, Hong Kong, Thailand, Russia, Korea and Chile. He has authored or co-authored 89 scientific publications during his career and is presently a Professor and Chairman of the Department of Microbiology at Oregon State.

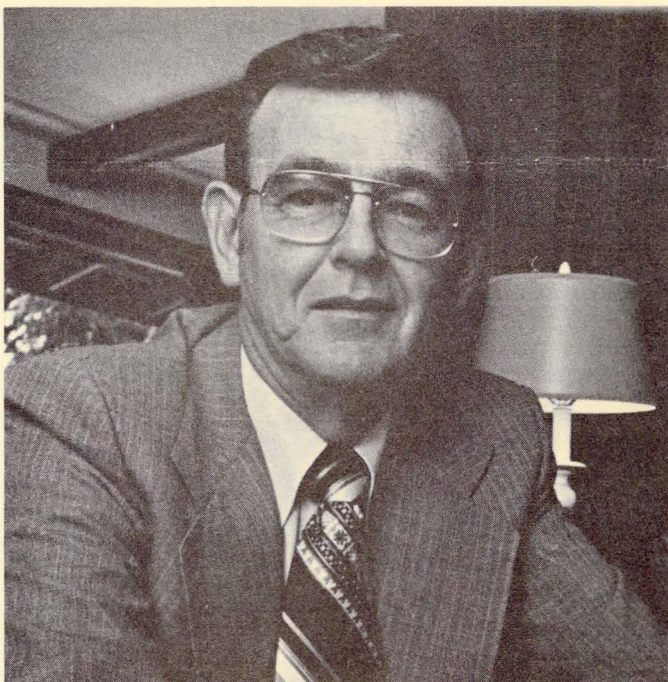
Perhaps John's greatest contribution to the well-being of the nation's fishery resources has been the never-ending parade of graduate students he has trained, inspired and motivated to achieve beyond their wildest

dreams. Many of his former students now hold key positions in the fish health field both in government and private industry. John Fryer's graduate program sets high standards that are an invaluable contribution to the advancement and professional development of our field. His dedication to his students, both graduate and undergraduate, was recognized in 1972 when he received the Elizabeth P. Ritchie Distinguished Professor Award and the Carter Award for outstanding teaching. Just recently, John received the Carski Foundation Distinguished Teaching Award, presented by the American Society for Microbiology.

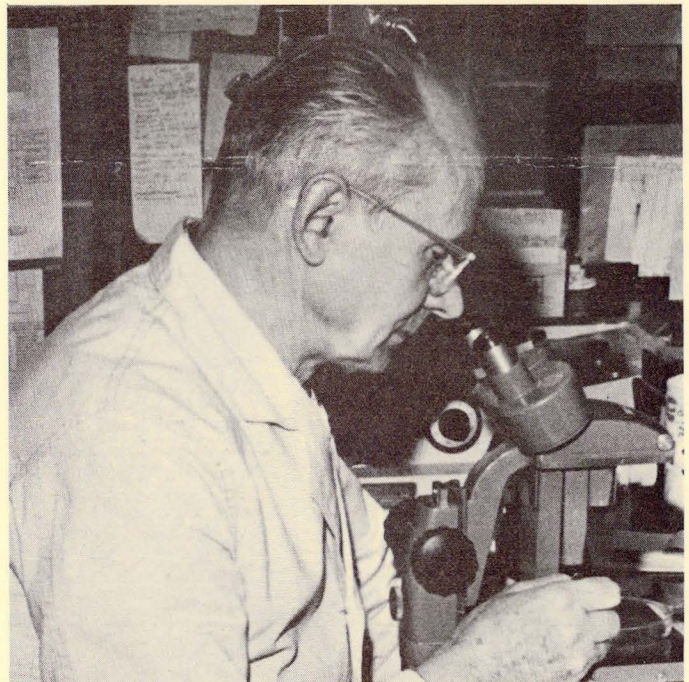
Dr. Glenn Hoffman began his career as a biologist for the Iowa Conservation Commission in 1942. It was at that time that he received his B.A. in Zoology at the University of Iowa. After a four-year stint in the Army Sanitary Corps - where, incidentally, he worked for a short time in Dr. Jonas Salk's virus laboratory - he returned to the University of Iowa's Zoology Department to earn a Ph.D. in 1950. Since that time he has devoted his career to fish disease research and diagnostics, especially in parasitology. From 1950 to 1958 he was a Professor of Parasitology and Bacteriology at the University of North Dakota Medical School; from 1958 to 1974 a Research Parasitologist at the Eastern Fish Disease Laboratory; and from 1974 to the present a Research Parasitologist at the Fish Framing Experimental Station in Stuttgart, Arkansas.

During his professional career, Glenn has made many significant advances in fish parasite identification and, in addition, made a concerted effort to disseminate this information. His assistance, publications, teaching and correspondence have influenced a great number of young (and not so young) biologists to success throughout the world. Glenn helped Dr. Snieszko organize and teach the Fish Disease Long Course at

(Photo provided courtesy of the Oregon State University Sea Grant Program.)



Dr. John Fryer



Dr. Glenn Hoffman

the Leetown Laboratory. His book, the classic *Parasites of North American Freshwater Fishes*, is known all over the United States and Canada as the bible of fish parasitology. He has collaborated with scientists in Czechoslovakia, U.S.S.R., Sweden, West Germany, Italy, Yugoslavia and India and is extremely active in the Public Law 480 Translation Program, making available English language versions of foreign, fish disease-related books and manuscripts. Glenn has personally authored or co-authored (at last count) 167 scientific and general interest publications.

Two last items characterize the respect held for Glenn Hoffman by our profession. The first: no less than 9 newly-discovered fish parasites have been named in his honor. These are:

Cercaria hoffmanensis Books, 1948
Myxosoma hoffmani Meglitsch, 1963
Trichodina hoffmani Wellborn, 1967
Gyrodactylus hoffmani Wellborn and Rogers, 1967
Biacetabulum hoffmani Mackiewicz, 1972
Thecamoeba hoffmani Sawyer et al. 1974
Neascus hoffmani Pendey, 1973
Eimeria hoffmani Molnar and Hanek, 1974
Myxidium hoffmani Jayasari, 1981

The second is the oft heard comment, "I've no idea what it is. Let's send it to Glenn Hoffman. If anyone alive knows, he'll be the one."

Submitted by Rowan Gould.

PKD NOT BKD - WHAT IS IT?

Facing page 22 in Plehn, Marianne (1924, *Praktikum der Fischkrankheiten*, Stuttgart Germany) is a color plate showing a rainbow trout with "amoeba infection" of the kidney. This condition, recently found by one of us (CS) in North America has been found in many places in Great Britain and Continental Europe. The casual agent is probably not an amoeba but a sporozoan possibly related to *Marteilia* of marine molluscs (Seagrave, Bucke and Alderman, PP 174-181 in Ahne, W. (ed) 1980, *Fish Diseases*, Third COPRAQ-Session, Springer-Verlag Berlin Heidelberg). The parasite has been found in the kidney, liver, pancreas, gills and somatic musculature adjacent to the kidney. The parasite was described by Ferguson and Adair (1977-Vet. Rec. 100:158-59) as being round, 15 micrometers in diameter (about twice as large as a red cell) and possessing one to several nuclei. The pathology was reported by Ferguson and Needham (1978—J. Fish Dis. 1 (1):91-108). And finally, Pietro Ghittino (1982, pers. comm.) has proposed the more complete name — Parasitic Hematopoietic Hyperplasia of Trout (PHHT) which you can spell better than pronounce. Dr. Ghittino and others recognize this as an infectious seasonal disease of great concern to fish farmers in the enzootic areas. Apparently there will be no opportunity to determine if this interesting parasite is native or exotic to North America.

Submitted by Glenn L. Hoffman, USFWS, Fish Farming Experimental Station, P.O. Box 860, Stuttgart, Arkansas 72160 and Charlie Smith, USFWS, Fish Cultural Development Center, Rt. 2, Box 333, Bozeman, Montana 59715.

IN MEMORIAM DR. PAUL MEGLITSCH

Dr. Paul Meglitsch of Drake University in Des Moines, Iowa died in early March after a long career in invertebrate zoology and myxosporidan research. He was certainly among the top ten researchers in the world in contributions to the knowledge of Myxosporidia. He was a student of the late Dr. R.R. Kudo, who published the *Synopsis of the Myxosporidia* (1920) and many other papers on myxos and protozoa. At the time of his death, Dr. Kudo was working on a revision of his 1920 synopsis. Dr. Meglitsch kindly agreed to complete this synopsis and was still working on it at the time of his own death. The synopsis is greatly needed. Dr. Larry Mitchell and I are in contact with Drake University and will do everything possible to bring the work to publication in the names of Kudo and Meglitsch. Dr. S.S. Shulman of Leningrad is preparing a similar synopsis in Russian.

Submitted by: Glenn L. Hoffman, Fish Farming Experimental Station, USFWS, P.O. Box 860, Stuttgart, Arkansas 72160.

FISHERY USE DRUG AND CHEMICAL REGISTRATION ACTIVITIES

With an increasing need for a registered anesthetic that does not require a withdrawal period when used on food fish, the U.S. Fish and Wildlife Service (Service) has requested a favorable ruling from the Food and Drug Administration (FDA) concerning the potential use of carbon dioxide for this purpose. A similar petition was presented to FDA several years ago for *Generally Regarded As Safe* (GRAS) approval of carbon dioxide to anesthetize salmonids during spawn taking operations. Although the Service's efforts were rebuffed at that time, clearance of the drug may now be more likely to gain acceptance. Carbon dioxide is currently registered only as a feed additive. If approval of the drug to anesthetize fish is affirmed, the Service's national fish hatcheries will be in a better position to recover some of their operating expenses through the sale of salmon carcasses for human and animal consumption. Otherwise, many of these fish will become a wasted food resource.

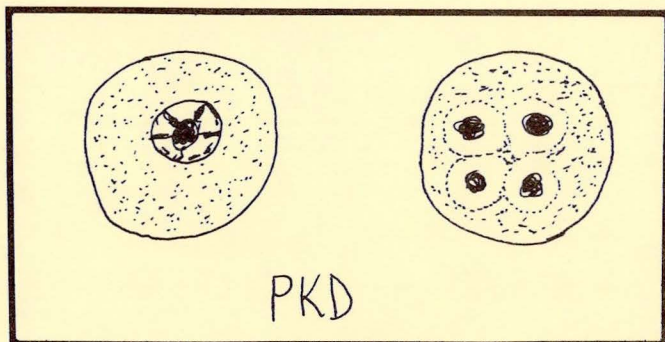
While the merits of carbon dioxide are debatable among fish culturists, no registered anesthetics are presently available or even near registration for which the withdrawal period requirement can be ignored. Fish that are treated with MS-222, the only registered anesthetic for food fish use, have a 21-day withdrawal period following exposure. The National Fishery Research Laboratory, LaCrosse, WI (NFRL-L), however, is conducting studies with MS-222 that may in time justify a shorter withdrawal period if not outright elimination of this requirement. Other potential anesthetics that are being researched by the laboratory include quinaldine sulfate, Piscaine, and benzocaine.

FDA has responded to the Service's September 11, 1981, and October 16, 1981, submittals pertaining to the registration of formalin for fishery use. Minor revisions in the labeling and the Freedom of Information summary recently were completed and approved by FDA, and they are now reviewing the announcement of availability of Service data for publication in the Federal Register. This document is needed to notify qualified sponsors who wish to apply for a *New Animal Drug Application* (NADA) to manufacture and market formalin labeled for the intended fishery uses.

The Service's Technical Advisory Group (TAG) on fish health matters is conducting their biennial survey of Fish and Wildlife Service needs for registered and unregistered fishery compounds. Questionnaires have been sent to all national fish hatcheries, fish cultural development centers, fishery assistance stations, and fish hatchery biologists for their input. These data, in turn, will be evaluated by the NFRL-L to develop priority rankings for chemical and drug clearance. Results of the survey will be noted in the next quarterly progress report.

Benomyl, a registered insecticide, recently was tested and found unacceptable as a fish toxicant for selective control of bullheads. However, a liquid formulation of the compound, Hydrothol 191, (a registered herbicide and algacide) also was evaluated as a possible toxicant on several problem species. This latter compound may have potential use in farm ponds to control both fish-thinning and vegetation.

Major research needs of the Great Lakes sea lamprey control units were discussed at an October 7, 1981, meeting at Marquette, Michigan. The participants included research and operations personnel from the Fish and Wildlife Service, the Canadian Department of Fisheries and



Oceans, and the Secretariat of the Great Lakes Fishery Commission. Planning for and prioritizing of these research needs were achieved for the coming year and beyond. While short-term needs received primary consideration, long-term needs also were addressed at length. Special topics included bottom-release formulations of lampricides, impacts of lampricides on non-target biota, loss of chemical activity, alternate lampricides, alternate control methods (attractants, repellents, sterilants, and lights), barrier dams and integrated pest management. Another meeting has been scheduled for the same time and place this year.

Experiments with a clay-pelleted formulation of TFM and Bayer 73 continue to show promise as a bottom-release type of lampricide for use in deeper areas of slow-moving streams and estuaries. A field test with this material is planned for this spring.

The experimental compound, Bisazir, already has demonstrated its effectiveness as a chemosterilant for adult sea lampreys by destroying the viability of their sex products without reducing the sex drive or mating instincts. However, a recently completed study reveals evidence of residues 10 days after treatment. Therefore, Environmental Protection Agency officials have recommended that identity of these residues be established and their significance determined before the Service applies for an "Experimental Use Permit" (EUP) for field trials. Methallibure, another candidate chemosterilant, also is being evaluated for possible use in managing certain problem fish species—sea lampreys, goldfish, and tilapia.

Compiled by Harry Van Meter, Registration Liaison Officer, and submitted by Robert E. Stevens, Chief, Division of Fishery Ecology Research, USFWS, Washington, DC 20240.

NEW PUBLICATIONS

Effects of Reservoir Releases on Tailwater Ecology: A Literature Review. Published by the National Reservoir Research Program (NRRP), East Central Reservoir Investigations with the assistance of the Environmental Laboratory of the U.S. Army Engineer Waterways Experiment Station as Technical Report E-81-12. Copies may be obtained from: National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. \$10.50 including postage.

Environmental Toxicology and Chemistry. New quarterly journal of SETAC (Society of Environmental Toxicology and Chemistry). Volume 1, Number 1 published Spring 1982. Institutional subscription rate (1982): \$75.00. Two year rate (82/83): \$142.50. Professional subscription rate (1982): \$50.00. Free sample copy and SETAC membership information, contact: William S. Ewell, SETAC, P.O. Box 352, Rockville, MD 20850. Send Manuscripts to: C.H. Ward, Editor-in-Chief, Dept. of Environmental Science and Engineering, Rice University, Houston, TX 77001. For subscriptions, send to (U.S.): Pergamon Press, Maxwell House, Fairview Park, Elmsford, NY 10523; (Canada) Pergamon Press, Suite 104, 150 Consumers Road, Willowdale, ON M2J 1P9; (U.K.) Pergamon Press, Headington Hill Hall, Oxford, OX 3 OBW.

Nutrient Requirements of Coldwater Fishes. ISBN 0-309-03187-7; 1981. 72 pp. Paperbound. National Academy Press, 2101 Constitution Avenue NW, Washington, DC 20418. \$8.95.

Unipub Catalog - 1982 (United Nations). Four pages of fisheries publications in six categories including aquaculture and environment. Unipub, Box 433, Murray Hill Station, New York, NY 10016.

HAPPY BIRTHDAY, DOC!

This is an English translation of the letter received on January 15, 1982 from Prof. Dr. Wilhelm Schäperclaus.

Prof. Dr. W. Schäperclaus
DDR 1162 Berlin-Friedrichshagen
den 6.1.82

Mr. Dr. Phil. Stainislas F. Snieszko
107 Sunset Drive
Martinsburg, WV 25401 USA

Much respected, dear Mr. Snieszko:

On January 28 of this year you will be able to celebrate your 80th birthday. On this occasion I, jointly with my colleagues and associates in the field of pathology of fishes, wish to congratulate you cordially. We wish you good health on the day of your celebration as well as good health and enjoyment of life for many years to come.

It is right to remember on the occasion of your birthday that you are one of the most outstanding fish pathologists, the one who developed this field from the modest beginnings to a modern and well-grounded discipline. You can look with pride to many of your basic contributions in the various branches of fish pathology which you with your associates have made at the "Eastern Fish Disease Laboratory" in West Virginia.

On your 80th birthday we wish to thank you for your readiness of giving sincere support to your colleagues as for example, by sending us copies of your and your associates publications. I am always enjoying the very lucid presentations in your papers which have had great influence on the clear understanding of the significance of the aquatic environment on the poikilothermic fishes and of their close relationship between the environment and the occurrence of fish diseases.

Particularly I wish to thank you for your efforts towards the translation of our book *Fischkrankheiten* into English, for which the "Akademie Verlag" in Berlin has already given its approval. Mr. Hoffman is informed about the arrangements made already. Please be assured, my colleague, that we value your contributions very much and that we jointly convey to you our best wishes for your birthday on January 28, 1982.

With cordial greetings and one more repeated best wishes,

Yours,
W. Schäperclaus

AND DOC'S REPLY

Professor Dr. W. Schäperclaus
1162 Berlin-Friedrichshagen
Werlseestrasse 44
Federal Republic of Germany

My dear Professor Schäperclaus:

There are days in anyone's life that are long remembered. Such a day was on January 25 of this year when your letter of January 6 arrived. On the occasion of my 80th birthday there were no other words said by anyone, except my wife, that pleased me more or honored me more than your letter. In it you have expressed so sincerely and so beautifully your feelings of friendship. I translated it immediately into English to be able to share it with my friends and associates here. My deep, heartfelt thanks for this expression of friendship.

I returned to Cracow, Poland in 1932 from two years of postgraduate studies at the University of Wisconsin. At that time Prof. Spitschakof, Director of the Fisheries Institute at the University in Cracow came to me saying that a big epidemic of *Lublinische Krankheit* was destroying carp culture in Poland. At that time I had read your classic monograph *Pseudomonas punctata als Krankheitserreger bei Fishen* that was published in *Zeitschrift fur Fischerei*, Vol. 28 in 1930.

Study of this disease in Poland was my first research in diseases of fishes and also the turning point in my work for the rest of my life. It is not an overstatement when I say that you were largely responsible for this choice. In this endeavor I was and still am sustained by your *Fischkrankheiten*, which is the basis of modern fish pathology. Therefore, in one way or another, I consider myself as one of your students. Your letter pleased me very much because it confirms that the teacher approves the actions of one of his students.

I wish to inform you that Dr. Glenn Hoffman, who is taking care of the business side of the translation of your book, is doing all he can to have the English version published as soon as possible.

As far as my personal affairs are concerned, I am working in my office two to three days per week. The other job is to take care of my and my wife's health which is fragile in this stage in our life.

With best wishes for your good health and good life,
Your good friend,
S.F. Snieszko
Senior Scientist

HAROLD WOLF RETIRES

Harold Wolf, widely recognized fish disease scientist with the California Department of Fish and Game, retired at the end of December, 1981. Harold's direct and fundamental approach to the solution of problems posed by fish diseases has earned him the greatest respect within the Department he served so well for 31 years. In addition to developing and organizing a Departmental fish disease section and training a staff of four fish pathologists, he designed and implemented a fish importation inspection and certification system which was one of the first in the nation. It has served well to protect California from several of the more serious fish disease problems. Mr. Wolf also served on several committees of the American Fisheries Society's Fish Health Section during its formative years.

Submitted by: Don Manzer, Fish Pathologist, California Department of Fish and Game, Fish Disease Lab, 2111 Nimbus Road, Rancho Cordova, California 95670.

HATCHERY MANAGER WANTED

Maine Department of Inland Fisheries and Wildlife - FISH HATCHERY MANAGER (Fish Hatchery Foreman) - one position. Responsible work managing the New Gloucester State Fish Hatchery (1 seasonal and 3 full time employees), a 30,000 lb. brown trout hatchery located about 20 miles from Portland. It will be a condition of employment to live in state provided housing rent-free. Requires a minimum of two (2) years experience in fish hatchery operations preferably with some supervisory experience. Annual salary ranges from \$15,610 to \$20,787 for a 45 hour work week. Applications will be accepted until July 31, 1982. Applications will be reviewed and the best qualified candidates will be invited for interviews. The State does not pay for interview expenses. For application forms and further details, contact Ms. Jean Bowman, Personnel Officer, Department of Inland Fisheries and Wildlife, 284 State Street, Station 41, Augusta, Maine 04333.

FHS PRESIDENT'S REPORT

The major activity during this period was the Workshop on Quality Improvement in Finfish Aquaculture sponsored by the Fish Health and Fish Culture Sections of the American Fisheries Society. The workshop was held 8-12 February 1982 at the conference facilities on the University of Colorado campus at Boulder. Although nearly 200 attendees were expected, 93 members were able to attend. The keynote speaker was Dr. Richard Anderson of the Missouri Cooperative Fishery Research Unit, Columbia, Missouri. The three days of presentations dealt very positively with the theme of the meeting; namely, what is fish quality? How do we produce a quality fish? As was expected, more questions were raised than were answered. Nonetheless, I, and hopefully the others, came away with a very positive outlook that we can do something about fish quality if we set our minds to it.

During the course of the workshop, the following FHS business items were dispatched:

1. The recipients of the S.F. Snieszko Distinguished Service Award were Dr. John Fryer, Oregon State University and the first FHS President, and Dr. Glenn Hoffman, U.S. Fish and Wildlife Service, Stuttgart, Arkansas. Both have long and distinguished careers in furthering the art and science of fish health management.
2. The FHS EXCOM met to discuss the following:
 - a. Who would be responsible for the soon-to-be-acquired display depicting Section activities? The display is to be set up at regional and national meetings to entice prospective members.
 - b. The proposed changes in FHS By-Laws. The ballots subsequently returned were significantly in favor of the changes.
 - c. The question of holding annual or biennial meetings. It was to be referred to the general membership.
3. The general membership in attendance met to discuss the following:
 - a. It was MSP to have an annual meeting. The 1983 meeting will be in the Midwest. The 1984 meeting will be a joint meeting with the Fishery Management and the Fish Culture Sections at the annual AFS meeting.
 - b. It was MSP to establish an ad hoc committee to review revenue possibilities. Although currently the Section is financially solvent, it does need to look ahead at increasing expenses to further the aims of the Section.
 - c. It was MSP that the President, FHS, request the AFS EXCOM to consider making Fisheries Bulletin on the AFS, optional with an appropriate reduction in dues to the AFS.

Currently the FHS membership is \$289. It currently has assets of \$3551.23 with an anticipated total annual income of \$3600. The anticipated (budgeted) expenses are \$4565. Thus, a short-fall of \$965 could occur. The newly appointed ad hoc Revenue Committee will investigate this problem and propose alternative solutions to be acted upon by the FHS EXCOM and general membership.

In summary, the FHS is *alive and well*. It is suffering some growing pains which are experienced by any organization of very active professionals having difficulty in finding the time to do much more than their assigned responsibilities to a managing a fragile renewable resource. The far-flung geographic distribution of the membership is also not conducive to cohesive FHS activities. Perhaps more FHS visibility in the many regional fish disease workshops and conferences would alleviate some of the feelings of remoteness. We will work on it.

George W. Klontz
President, FHS/AFS

SOME 1981 USFWS PUBLICATIONS

Reprints of the following publications produced by the staff members of the La Crosse National Fishery Research Laboratory, Southeastern Fish Control Laboratory and Hammond Bay Biological Station can be obtained from Rosalie A. Schnick, USFWS, National Fishery Research Laboratory, P.O. Box 818, La Crosse, WI 54601.

- Abidi, S.L. 1981. Synthesis of carbon-14 and deuterium labeled N-nitroso-2 (3', 7'-dimethyl-2', 6'-octadienyl) aminoethanols. *Journal of Labeled Compounds and Radiopharmaceuticals* 18:8-19.
- Allen, J.L., J.B. Sills, V.K. Dawson and R.T. Amel. 1981. Residues of isobornyl thiocyanacetate (Thanite) and a metabolite in fish and treated ponds. *Journal of Agricultural and Food Chemistry* 29(3): 634-636.
- Bills, T.D., L.L. Marking and W.L. Mauck. 1981. Polychlorinated biphenyl (Aroclor 1254) residues in rainbow trout: effects on sensitivity to nine fishery chemicals. *North American Journal of Fisheries Management* 1(2): 200-203.
- Chew, L.E. 1981. Culture of the glass shrimp. *The Progressive Fish Culturist* 43(1):25-26.
- Hanson, L.H. 1981. Sterilization of sea lampreys (*Petromyzon marinus*) by immersion in an aqueous solution of bisazir. *Canadian Journal of Fisheries Management* 1(1): 51-54.
- Marking, L.L. and T.D. Bills. 1981. Sensitivity of four species of carp to selected fish toxicants. *North American Journal of Fisheries Management* 1(1): 51-54.
- Marking, L.L. and J.H. Chandler, Jr. 1981. Toxicity of six bird control chemicals to aquatic organisms. *Bulletin of Environmental Contamination and Toxicology* 26(6): 605-716.
- Marking, L.L., V.K. Dawson, J.L. Allen, T.D. Bills and J.J. Rach. 1981. Biological activity and chemical characteristics of dredge material from 10 sites on the Upper Mississippi River. U.S. Fish and Wildlife Service, National Fishery Research Laboratory, La Crosse, Wisconsin. Prepared for the U.S. Army Corps of Engineers, St. Paul District, St. Paul, Minnesota. 146pp. NTISADA107176. Available from National Technical Information Service, 5385 Port Royal Road, Springfield, VA 22161. Price code AO8 paper copy, A01 microfiche.
- Rosen, R.A. and D.C. Hales. 1981. Feeding of paddlefish, *Polydon spathula*. *Copeia* 1981: 441-445.

WILDLIFE VACCINES ANNOUNCES THREE NEW BACTERINS

Here, at long last, is a bacterin for control of furunculosis. Wildlife Vaccines, Inc. has put three new licensed bacterins on the market for the immunization of salmonids against *Aeromonas salmonicida*. The catch: fish must be injected intraperitoneally. This may preclude the use of these products in large production lots. Still the fish culture community welcomes these new tools for the protection of valuable lots such as brood stock. The three new bacterins are AEROMONAS SALMONICIDA BACTERIN (ASB), AEROMONAS SALMONICIDA - VIBRIO ANGUILLARUM BACTERIN (ASB VAB-2) and AEROMONAS SALMONICIDA - ENTERIC REDMOUTH BACTERIN (ASB ERB).

For more information, contact: Wildlife Vaccines, Inc., 11475 West 48th Avenue, Wheat Ridge, Colorado 80033.

MEETINGS AND COURSES

July 12-16, 1982. Short course (#1103) - *Warm Water Fish Culture*. Location: San Marcos, Texas. Tuition: \$180.00. Contact: Superintendent, Fisheries Academy, National Fisheries Center - Leetown, Route 3, Box 40G, Kearneysville, WV 25430.

July 13-14, 1982. *Midwest Fish Disease Workshop*. Location: City Center Holiday Inn, Kansas City, Missouri. Contact: James W. Warren, Fish Disease Control Center, P.O. Box 1595, La Crosse, WI 54601-0146. Telephone: (608) 783-6451.

August 2-6, 1982. Short Course - *Intensive Aquaculture and Fish Health Management: Concepts and Methods*. Instructor: Dr. G.W. Klontz, University of Idaho. Location: Unity College, Unity, Maine. Tuition (including board and room): \$185.00. Contact: Kevin D. Curry, Unity College-ADM, RR 78, Box 1, Unity, ME 04988. Telephone: (207) 948-3131.

August 9-12, 1982. Short Course (#1106) - *Pacific Salmon Culture*. Location: Seattle, Washington. Tuition \$180.00. Contact: Superintendent, Fisheries Academy, National Fisheries Center - Leetown, Route 3, Box 40G, Kearneysville, WV 25430.

September 22-25, 1982. *The 113th Annual Meeting of AFS*. Location: the Hyatt on Hilton Head Island, Hilton Head, South Carolina. Contact: Carl Sullivan, Executive Director, AFS, 5410 Grosvenor Lane, Bethesda, MD 20814.

THE GOLDEN SHINER VIRUS - NEEDS AND MANAGEMENT

In the fall of 1977, through the joint efforts of Auburn University, Auburn, Alabama and the Fish Farming Experimental Station, Stuttgart, Arkansas, a viral agent was found in golden shiners. The agent, named the golden shiner virus (GSV), was characterized and determined to be similar to viruses of the reovirus group. Since 1977 a few positive cases have been reported each year. The impact of the GSV on the golden shiner industry is unknown because the reliability of the diagnostic approach is in question.

If our diagnoses to date are valid, then the virus, at best, is only of minor importance and another disease with signs (symptoms) similar to those of the GSV, is of great importance. The major signs of the GSV - listless fish, red back or head condition, intestinal hemorrhage, slow spiral swimming, hyperemia (reddening) on the belly, and a drawn out, low level mortality - have occurred in a great number of shiner populations on many baitfish farms. The Stuttgart diagnostic facility received only a small portion (certainly less than 10%) of such cases from the industry and in most of these cases no pathogen or noninfectious cause was found or considered as a probable cause. Upon analysis with tissue culture methods using the FHM cell line, only two positive viral diagnoses were made out of 23 suspect cases in 1981.

The low number of positive cases coupled with at least one case of varying results from the same sample, raise questions concerning the sensitivity and adequacy of the FHM cell line for GSV detection. The channel catfish ovary cell line has proven more sensitive than the brown bullhead cell line for channel catfish virus detection; therefore it would be logical to assume that a golden shiner cell line would likely be more

sensitive to GSV than would the FHM cell line. The procurement or development of a suitable cell line is a major priority in the quest for knowledge on this disease(s). It will take an extensive research effort to resolve whether there are large numbers of unconfirmed viral cases, or a large number of cases with another undetermined cause.

At this point, the only recommendations concerning this disease problem(s) are avoidance, disinfection (drying, discing and liming pond bottoms) and the use of *apparently* non-affected stocks. Non-affected stocks of fish can not be identified until a reliable detection method becomes available. Farmers are urged to obtain stocks of fish with no history of a disease similar to the GSV and to put such fish in disinfected ponds, if possible, well away from affected stocks of fish. A farmer with fish ponds in several distant locations has the advantage over one with ponds all in one area. If you have not had GSV suspect fish on your farm, be sure not to introduce any affected fish stocks!

Submitted by Andrew J. Mitchell, USFWS, Fish Farming Experimental Station, Box 860, Stuttgart, Arkansas 72160.

FISH DISEASE LONG COURSE SCHEDULED FOR 1983-84

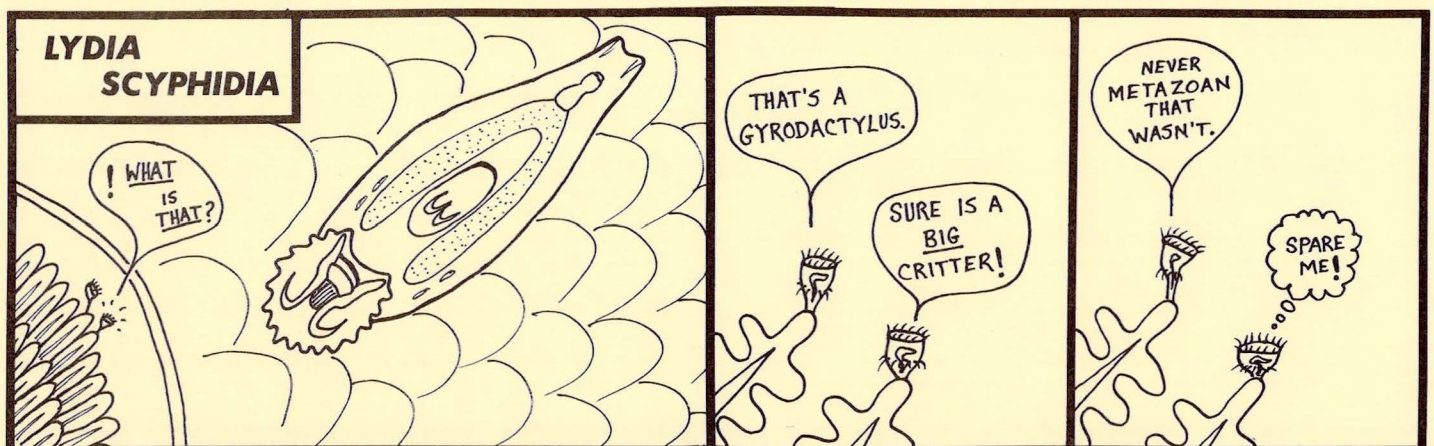
The USFWS Fisheries Academy has scheduled their famous long course, *Identification and Control of Fish Diseases*, for 1983-84. At the time of this writing, the exact dates have not been set. But, according to Academy spokesman Don Kuntzelman, it will probably run from September through the following March.

Over 80 fish health professionals from all over the world have received training in the prestigious course held at irregular intervals over the past twenty-five years at the laboratory in Leetown, West Virginia. Unlike previous sessions, this class will have the benefit of new facilities in both the new laboratory and the new academy building.

Up to 16 trainees will be accepted. Applications are available from the Superintendent, Fisheries Academy, National Fisheries Center - Leetown, Route 1, Box 40G, Kearneysville, WV 25430. Tuition costs will be set at a later date.

In addition to the long course, a number of short courses are planned by the Fisheries Academy for fiscal year 82-83. Four, one-week short courses titled *Introduction to Fish Health* are tentatively scheduled to be held in Fort Morgan, Colorado (Oct., '82), La Crosse, Wisconsin (Feb., '83), Leetown, West Virginia (March, '83) and Twin Falls, Idaho (August, '83). Several fish culture short courses are scheduled as well. Three, two-week courses in coldwater fish culture are planned for Spearfish, South Dakota (Dec., '82), Leetown (March, '83) and Twin Falls (Sept., '83). Two, one-week courses on the culture of Pacific salmon will be held at Corvallis, Oregon (April, '83) and Billingham, Washington (Aug., '83). Warmwater fish culture short courses, also one week long, are scheduled for San Marcos, Texas (July, '83) and Orangeburg, South Carolina (Sept., '83). A single week-long course in fish genetics is planned for Twin Falls in June, 1983 as well.

Exact dates and further details on these courses will be forthcoming.



Capillaria catostomi, A NEW PATHOGENIC NEMATODE OF GOLDEN SHINERS AND OTHER FISHES*

by Glenn L. Hoffman**

Nematodes of the genus *Capillaria* have long been known as dangerous parasites of birds and mammals. Also, they have long been known as agents that are difficult to treat successfully. In 1961 at Leetown, West Virginia, I found *C. catostomi* as the cause of obvious enteritis in the caeca and intestine of bluegill (*Lepomis macrochirus*) and green sunfish (*L. cyanellus*).

During the past several years we have been seeing many of these nematodes in the intestines and gall bladders of golden shiners (*Notemigonus chrysoleucas*) and occasionally in other fishes. When numerous, frank enteritis can be demonstrated grossly and histologically. In some situations, heavy infections appear to be associated with a severely debilitated condition of the fish. It is for certain that *C. catostomi* is pathogenic, but we don't know if there are other contributing factors. The associated condition causes tremendous losses of golden shiners.

Capillarids can be recognized by the slender anterior end, the spectacular row of paraesophageal cells (stichocytes) and the barrel-shaped eggs with plugs in each end. There are three known species of *Capillaria* of fishes in North America - *C. catostomi*, *C. catenata* and *C. salvelini*. Identification is based primarily on the males - *C. catostomi* is smaller than the other two, the male being only 2.3 to 6.1 mm long whereas the other two are 5.1 to 9.7 mm long (*C. catostomi* females are 3.8 - 11.6 mm and the other two 10.2 - 15.5 mm). The cirrus of *C. catostomi* has no spines; that of

C. catenata does. The caudal end of the male of *C. catostomi* is not narrowed as is *C. salvelini* (Bell and Beverly-Burton 1981, *Systematic Parasitol.* 1:157-169).

The eggs of *C. catostomi* are shed in the feces of the fish and, if eaten by oligochaetes (red worms, etc.), are probably passed back to fish when the oligochaetes are eaten by them (Bell and Beverly-Burton 1980, *Env. Biol. Fish* 5(3): 267-271).

Control: As with most parasites, thorough drainage and drying of ponds tends to eliminate *Capillaria*. The little that has been reported for chemotherapy is inconclusive. Schubert of Stuttgart, West Germany reported some success with 0.25 ppm Masoten in aquaria and Drew Mitchell of our lab had success with preliminary experiments in aquaria using 0.5 ppm Masoten. However, Masoten, which is most efficacious at 60-69° F, is not effective during hot weather. Dichlorvos (DDVP, Vapona, Task) has long been used for related nematodes in mammals and birds, but it was not effective in our preliminary experiments; probably because the moribund fish were not feeding. One fish farmer fed levamisole and piperazine, both well known nematocides, to golden shiners with no effectiveness. All of this on oral anthelmintics should be considered inconclusive because it is difficult to medicate millions of golden shiners in a large pond or even in aquaria if they are not feeding well.

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**Fish Farming Experimental Station, USFWS, P.O. Box 860, Stuttgart, Arkansas 72160.

THE GYROS OF GOLDEN SHINERS

Because of the growing importance of golden shiners (*Notemigonus chrysoleucas*) for bait, it seems appropriate to identify its parasites. The following *Gyrodactylus* key was modified from Mizelle & Kritsky 1967 and Price & McMahon 1967:

- 1. Superficial (ventral) bar rami absent, anchor bases nearly truncate, anchors 35 μ m long, total length 560 μ m
..... *G. rachelae* Price & McMahon 1967
- 1. Superficial bar rami present, anchor bases not truncate, anchors

- 57 μ m long 2
- 2. Superficial bar rami shorter than bar width, superficial bar shield with rounded posterior border, total length 367 μ m
..... *G. chrysoleucas* Mizelle & Kritsky 1967
- 2. Superficial bar rami about same length as bar, superficial bar shield with uneven posterior border, total length 287 μ m
..... *G. variabilis* Mizelle & Kritsky 1967
..... *G. wellborni* Nowlin 1968 may be a synonym of *G. variabilis*.

Submitted by Glenn L. Hoffman and Brenda Rodgers, Fish Farming Experimental Station, USFWS, P.O. Box 860, Stuttgart, Arkansas 72160. Drawing by Brenda Rodgers.

