FISH HEALTH SECTION
AFS
NEWS LETTER

Volume 9, Number 4 | Peter G. Walker, Editor | October - December, 1981

INAUGURAL ADDRESS
BILL KLONTZ TAKES THE HELM

At long last! The 1981-82 program for our section is getting underway. I apologize for the slowness; but I offer no excuse other than my general busy-ness.

While reading the introductory statements of each past-president of the FHS, I gained the impression that each, unlike me, had a program pretty well outlined before taking office. I would like to *feel* our way along by further developing the extant programs and grafting off-shoots from the new programs.

If I were to be asked of my major goal this year, I would respond that we need a firm set of guidelines for certification of fish stocks being free of specified viruses, bacteria and protozoa. Our current techniques are not uniformly accepted by all states and provinces. Further, we need perhaps another set of guidelines for definitive diagnosis of clinical infections. To this end, I have charged the Technical Procedures Committee with the task of preparing a looseleaf notebook containing said techniques. Their task is not easy. They are to canvass the *waterfront* for specific techniques for detecting, we'll say, IPN virus in a population of fish destined for an area where only IPN-free fish are permitted. I do not expect them to rewrite the *Blue Book*, just define the appropriate techniques - one per infectious agent - which will be uniformly accepted for certification. I hope all of you will participate when contacted for input.

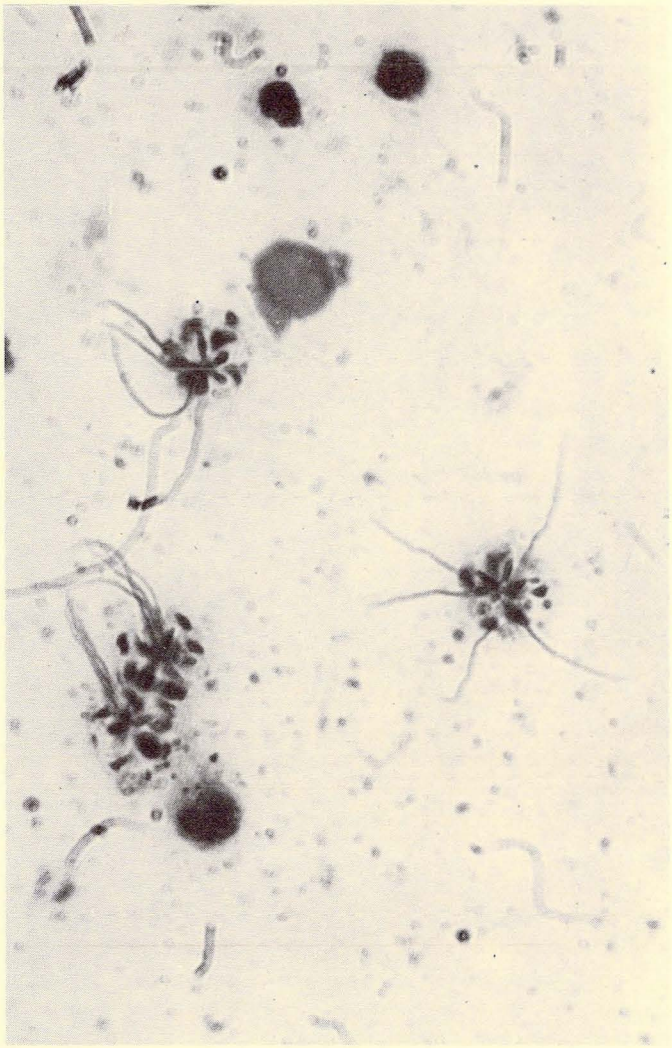
Another important - at least to me and, I hope, others - aspect of our fish health management activities is for us to be less microbiologically oriented and more nutritionally and environmentally oriented in our disease diagnostic methodology. I sincerely believe we have overlooked some significant noninfectious causal factors in clinical episodes of what we determined to be infectious diseases. For example, thiamine deficiency in trout and salmon being raised in 40-45° water mimics IPN and, in many cases, the virus is present but not entirely the problem. Histopathological examination of fish tissues in such cases has borne this out. There are many other examples which I could cite from my case journal. Others of you could probably do the same.

Now, I do not mean to imply that infectious agents are still not a problem. They are and will continue to be for many years to come. But as long as we raise fish under intensive culture conditions, the chances of noninfectious disease episodes occurring are high. I will be *riding the horse* more in subsequent issues of the *Fish Health Section Newsletter.* If some of you - or *all* of you - take issue for or against my stand, please feel free to respond, rebutt or whatever moves you.

On another matter, I have appointed, in response to Dick Heckman's suggestion, an ad hoc committee to look into the possibility of having an international meeting with representatives of each of the professional organizations around the world to discuss our mutual problems, with major emphasis on the exotic disease concerns we all have. Dick and Barry Hill of Weymouth, England dreamed this up and I think it merits consideration.

In closing, it is with a deep sense of honor and humility (even for me) that I approach the year ahead as the President of the Fish Health Section. I will do my best to uphold and, perhaps, advance the philosophies of the fish health management profession.

G.W. Klontz
President, FHS



5-CAPSULED MYXOSPOREAN

This new Myxosporean parasite was discovered recently in the musculature of collare butterflyfish (*Chaetodon collare* Bloch) at the New York Aquarium. The parasite causes jellied muscle tissue. This the first description of a Myxosporean with five polar capsules. A paper has been submitted to the *Journal of Protozoology* proposing that the organism be called *Pentacapsula muscularis* and that it be placed in a new family *(Pentacapsulidae)*.

For further information, contact: Dr. Paul J. Cheung, New York Aquarium, Seaside Park, Coney Island, Brooklyn, NY 11224.

ERYTHROMYCIN-SURFACTANT BATHS INCREASE UPTAKE

A recent study at the University of Idaho found the absorption rates of erythromycin phosphate in three species of salmonids were significantly increased when surfactants were added to the drug bath solution. Both *Tween 20* (polyoxyethylene sorbitan monolaureate) and *Aerosol OT* (dioctyl sodium sulfosuccinate) at 0.01% concentrations increased fish drug serum levels 11.4 and 18.2 times respectively in a 15 minute, 1,000 ppm erythromycin phosphate bath as compared to fish held in similar baths with no surfactants. Neither of these surfactants had any apparent deleterious effects (gross) on salmonids at concentrations of 0.005% or 0.01% for 24 hour immersion periods.

One of the primary objectives in the study was to determine the efficacy of erythromycin-surfactant baths in reducing the carrier state of *Aeromonas salmonicida* in juvenile salmonids. Early results indicated a significant decrease in the number of *A. salmonicida* carriers at the 99.9% confidence interval.

Although drug serum levels were tested only with erythromycin-surfactants, both oxytetracycline and sulfamerazine may be more readily absorbed by this method due to their lower molecular weights and higher water solubilities.

Surfactants are extensively used in both internal and external pharmaceutical formulations. Because of their unique ability to decrease water tension and, in turn, increase drub absorption, surfactants (under proper conditions) may someday prove to be the most efficacious means of treating latent bacterial carriers and epizootic diseases.

Submitted by Steve Swartz, Route #1, Box 3244, Oakland, Maine 04963 (a former student of Dr. G.W. Klontz, Dept. of Fishery Resources, University of Idaho, Moscow, Idaho 83843).

CONCURRENT INFECTIONS: ERM, FURUNC FOUND IN EMERALD SHINERS

The emerald shiner (*Notropis atherinoides*) is a very common minnow found throughout the Great Lakes region of North America. It averages three to four inches in length when mature and is considered to be an excellent bait and forage fish. The Wyoming Game and Fish Department has been seeking a suitable forage fish that could be introduced into large reservoirs on the North Platte River System. The emerald shiner appeared to meet all criteria.

On April 3, 1981, emerald shiners (144/ lb.) were imported from Wisconsin for stocking into Seminoe and Pathfinder Reservoirs located in south central Wyoming. The sourcce of the shiners was Lake Superior, but they had been held in a commercial bait company pond for three weeks prior to being hauled by truck to Wyoming. In order to reduce hauling loss, 0.2% sodium chloride was added to the hauling tank water. During the 24-hour hauling trip, the tank water temperature increased from 49°F to 60°F the water was cooled to 53°F in a 40-minute period. The truck driver, a fisheries biologist, reported that a low oxygen problem occurred during the trip. About eight pounds of shiners were lost during the haul, but the fish were reported in good condition at the point of destination.

About 40 pounds of the shiners were transferred to the University of Wyoming for a study to determine the feasibility of culturing and spawning the species. Five pounds (720 fish) of the shiners were placed into University aquariums and the balance of the fish were stocked into a small University pond. These fish were reported in excellent condition by University personnel.

However, on April 6 some dead emerald shiners were found at the pond and in the aquariums. The mortality rate in the aquariums increased from *50 to 80 fish per day during a four-day period.* On April 9, dead fish were submitted to the Wyoming Game and Fish Research Laboratory in Laramie. Necropsies were conducted and live and moribund shiners were observed in the aquariums. A full-scale epizootic was in progress. Dead and moribund shiners exhibited typical signs of a bacterial septicemia. Multiple parasitisms were also noted in some fish (*Dactylogyrus* sp., *Posthodiplostomum minimum, Hexamita* sp., *Saprolegnia* sp. and "black spot"). Following bacteriology and serology testing, enteric redmouth (ERM) and furunculosis were diagnosed as the causes of the epizootic. Direct fluorescent antibody tests were used to confirm the diagnosis. *Yersinia ruckeri* (Sero-Type I) was isolated from 100% of the original 24 shiners necropsied. Concurrent infections of *Aeromonas salmonicida* were found in 20% of these fish. Approximately 50% of the aquarium-held shiners died by April 13. Most fish refused food by that time. During the month-long course of this epizootic, the total mortality (in 54°F water) was 97%.

A similar mortality rate was estimated for the shiners being held in the University pond. The fate of the shiners stocked into the large reservoirs is not known, but biologists are attempting to locate and collect specimens for examination. The potential is present, of course, for transmitting these serious bacterial diseases to other fishes in the reservoirs.

Work is now being done at the Wyoming Game and Fish Research Laboratory to determine the virulence of the emerald shiner bacterial isolates towards salmonids. These results will be reported later.

It is unlikely that bait and forage fishes are routinely checked for serious bacterial or viral diseases. It is believed that this is the first report of enteric redmouth and furunculosis in emerald shiners. In the future, it is strongly recomended that emerald shiners and other bait and forage species (as well as game species) that are to be imported into Wyoming be certified free of specific diseases prior to shipment.

Submitted by: Douglas L. Mitchum, Fish Pathologist, Game and Fish Laboratory, University of Wyoming, P.O. Box 3312, Laramie, WY 82071.

FISH COCCIDIA

European and Canadian publications indicate that fish coccidia are more prevalent than the records indicate. It is suspected that many of us overlook them. Therefore, the following abstract from Professor Kalman Molnar, Research Institute for Veterinary Science, Hungarian Academy of Sciences, Budapest, Hungary is appropriate:

"Comments on the nature and methods of collection of fish coccidia." - Molnar, K. -*Parasit.* Hung. 10. 41-45, 1977.

ABSTRACT. Eimerian species of fish are little studied owing to the difficulties in their recovery and storage. Common separation procedures usually injure the extremely thin and vulnerable wall of the oocyst. For the detection of intestinal fish coccidia, native (microscopic) investigation of the intestinal content (faeces), intestinal mucus and mucosal scrapings is recommended, while the species localizing in the tissues should be separated by digestion with 0.25-0.5% trypsin solution. Stable microscopic preparations can be made from samples of faeces, mucus or tissues spread on a slide by compression with a coverslip and by the instillation of 4% formalin.

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

MEETINGS AND COURSES

May 9-13, 1982. *Joint Meeting of the IAAAM and the 7TH Eastern Fish Disease Workshop.* Location: the Inner Harbor Hyatt Hotel, Baltimore, Maryland. Contact: Dr. Richard Wolke, Department of Animal Pathology, University of Rhode Island, Kingston, RI 02881.

May 17-28, 1982. Short course - *Diagnosis and Treatment of Diseases of Warmwater Fish.* Location: Mississippi State University. Instructors: Dr. Fred P. Meyer and Dr. Thomas L. Wellborn, Jr. Tuition: $164.00. Contact: Thomas L. Wellborn, Jr., Extension Wildlife and Fisheries, P.O. Box 5405, Mississippi State, MS 39762.

June 15-17, 1982. *1982 Northeast Coldwater Workshop: Hydropower Development and Fisheries Impacts and Opportunities.* Location: Cornell University, Ithaca, New York. Registration fee (includes lodging, meals and refreshments): $130.00 (less $15 if pre-registered prior to May 15). Contact: Gerald Barnhardt, New York State Department of Environmental Conservation, Albany, MY 12233 or Carl Widmer, New York State Department of Environmental Conservation, Avon, NY 14414.

August 2-6, 1982. Short course - *Concepts and Methods of Intensive Aquaculture and Fish Health Management.* Location: Unity College, Unity, Maine. Instructor: Dr. G. W. Klontz (University of Idaho). Tuition: $85.00. Room and board will be provided by the college for an additional $100.00 This course will embody the concepts of fish and their environment. After mornings of lectures and presentations, hands-on experience in a laboratory setting will be featured. Contact: Kevin Curry, Unity College - ADM, Route 78, Box 1, Unity, ME 04988.

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

For those who have not seen the 1982 Course Listing of the USFWS Fisheries Academy, the following course may be of interest. Requests for applications and general information should be addressed to: Superintendent, Fisheries Academy, National Fisheries Center - Leetown, Route 3, Box 40G, Kearneysville, WV 25430.

May 3-7, 1982. Course # 4101 - *Chemicals in Hatchery and Fishery Management Practices.* Location: Athens, Georgia. Tuition: $100.00. Description: To familiarize fishery biologists, technicians and management personnel with chemicals (piscicides, insecticides, herbicides, fungicides, drugs and medications) currently used in fish husbandry and fishery management.

July 12-16, 1982. Course #1103 - *Warm Water Fish Culture.* Location: San Marcos, Texas. Tuition: $100.00 Description: Covers the basic principles, concepts and techniques employed in warm water fish husbandry.

August 9-2, 1982. Course #1106 - *Pacific Salmon Culture.* Location: Seattle, Washington. Tuition: $180.00. Description: Covers the basic principles, concepts and techniques employed in salmon culture, such as feeding, broodstocks, diseases, record-keeping and transportation.

USFWS FISHERY-USE DRUG AND CHEMICAL REGISTRATION ACTIVITIES

The time and effort expended over the past 7-year period to gain approval of formalin for fishery use is about to pay off. In August 1981, the Food and Drug Administration (FDA) notified the Fish and Wildlife Service that its recent data submission now satisfies FDA's requirements to clear formalin as a fish parasiticide and fungicide. Because the Service is not a producer (engaged in the manufacture, preparation, compounding or processing) of a drug or drugs, we are not eligible to be a sponsor. However, arrangements are being made to announce the availability of these data in the Federal Register to qualified sponsors. Interested companies may then apply to FDA for a New Animal Drug Application (NADA) to produce and sell formalin for the intended fishery uses. Like many other compounds, formalin is not new to the fishery scene; it has demonstrated it efficacy in fish cultural practices since the early 1900s.

Rotenone has been removed from the Rebuttable Presumption Against Registration (RPAR) list following a recent decision by the Environmental Protection Agency (EPA) that the pesticide does not exceed RPAR criteria. Rotenone is registered for use as a home garden insecticide and as a fish toxicant for the control of undesirable species in lakes, ponds and streams. The RPAR threat, which has been *hanging fire* for more than three years, came about because of allegations in a foreign study that rotenone was a suspect carcinogen. These allegations were refuted by more recent Service data. Federal Aid Administrative funds have been and are being used to cover costs of the studies needed to satisfy EPA's action for removal of rotenone from the RPAR threat and to meet their reregistration requirements for rotenone in the immediate future.

The word received from Regions 1 and 5 concerning the restricted use of malachite green for control of fungal diseases on adult salmon returnees is that the compound is providing the needed remedy to assure a successful spawn taking season. These fish are being held strictly for egg taking purposes at several designated National Fish Hatcheries on both coasts. The Service plans to apply to the FDA for the special use permit again this coming year.

Field tests were made this summer on two Wisconsin streams with a solid bar formulation of the lampricide TFM. Both tests resulted in virtually eliminating the sea lamprey populations. The solid bar, which dissolves at a relatively constant rate, offers excellent potential over the liquid compound for use in smaller streams since it will not require continuous monitoring.

Numerous inquiries have been received lately concerning the status of registration efforts on anesthetics. MS-222 is the only drug presently registered for food fish use, and it requires a 21-day withdrawal period after use. Negotiations are underway with FDA to shorten the withdrawal period for this compound. In addition, the Service is doing a re-evaluation of quinaldine sulfate and is asking FDA for an informal readout on safety questions regarding its associated salts, quinoline and sulfonate. The Service is also looking at other alternate drugs including benzocaine and Piscaine for possible fishery use. Unfortunately, registration of the compound, Etomidate, which showed considerable promise as a fish anesthetic, was withdrawn by the sponsoring company because of the small profit incentive.

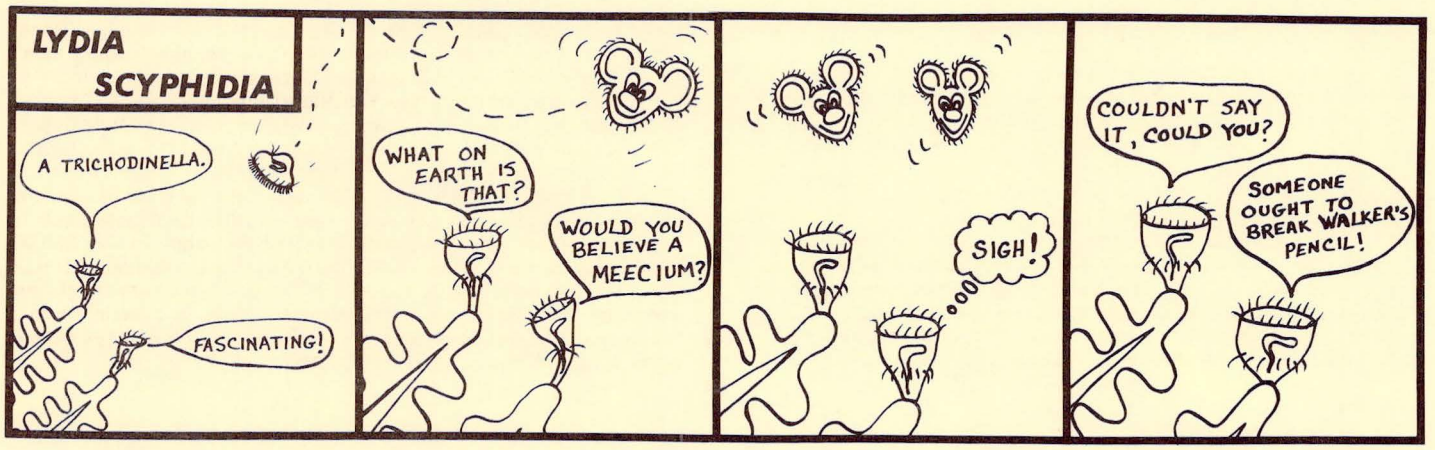
FDA has responded to the NADA submittal from Hoffman-La Roche, Inc. for Ro5-0037 by requesting additional data on its efficacy, palatability and environmental impact. This action means further delay in approval of the antibacterial as a control for furunculosis and enteric redmouth disease (ERM) in salmonids. Research studies involving efficacy of the compound are continuing at the National Fish Health Research Laboratory in Kearneysville, WV.

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

RECENT PUBLICATIONS

Manual for Bait Fish Culture in the South. By John J. Giudice, D. Leroy Gray and J. Mayo Martin. A joint publication of the Arkansas Cooperative Extension Service and the U.S. Fish and Wildlife Service. 1981. 49 pp. Paperbound. This booklet may well be the best on the subject since the classic *Raising Bait Fishes, Fish and Wildlife Circular 35* was published over 25 years ago. Although aimed specifically at the Southeast, much of the information will prove useful to bait fish farmers in other regions. A well-illustrated, 11-page section gives good coverage of the identification and control of parasites and infectious diseases commonly encountered in southern bait fish culture. However, only cursory mention is made of noninfectious disease problems. Copies are available from the University of Arkansas Extension Service, P.O. Box 391, Little Rock, AR 72203 and the Fish Farming Experimental Station, P.O. Box 860, Stuttgart, AR 72160.

Nutrient Requirements of Coldwater Fishes. Published by the National Academy Press, 2101 Constitution Avenue, NW, Washington, DC 20418. 1981. 72pp. Paperbound. $8.95.



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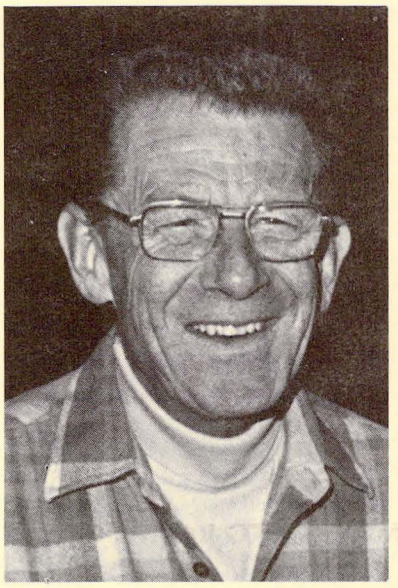

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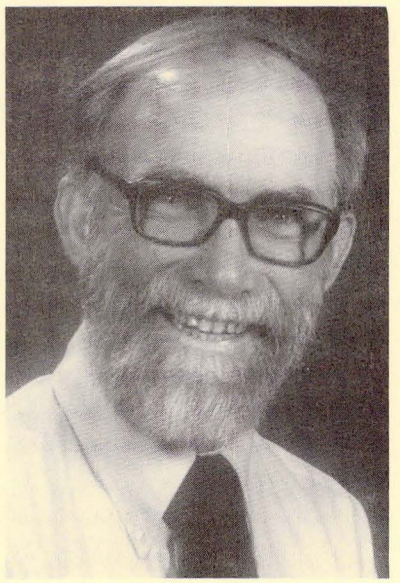

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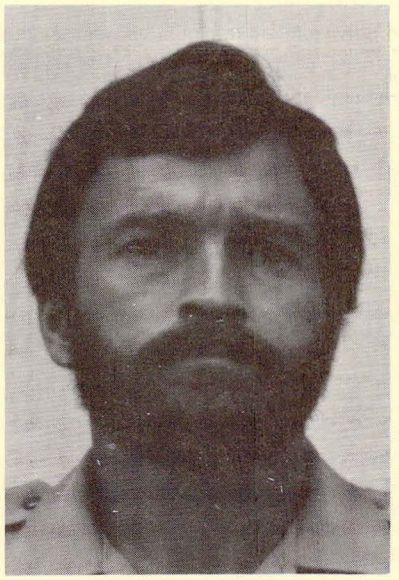

Mr. Paul W. Janeke
Secretary-Treasurer

UK RESTRICTS LOBSTER IMPORTS - YANKEE FISHERMEN MAD -

Citing recently published studies, the British Parliament has enacted a law restricting the importation of live North American lobsters. According to an Associated Press article, gaffkemia or red tail disease is the cause for concern. Tony Burne, a spokesman at the British Embassy in Washington, explained that the regulation is designed to protect native stocks from diseased lobsters held in storage in tidal waters.

Lobstermen on this side of the Atlantic think otherwise. The move by Parliament touched off a wave of cynical protests and accusations by both fishermen and biologists in Maine and Maritime Canada. Many believe that the action was actually based on economic reasons - namely that North American imports were lowering the price of Scottish lobsters. According to some spokesmen, gaffkemia is a disease confined to lobsters in holding facilities and is therefore not a valid concern. Burne, on the other hand, said he "believes the American lobsters' European cousins are free from red tail."

At any rate, the importation ban can be circumvented through proper procedures. Importers can obtain free licenses to import North American lobsters with the stipulation that they not be held in tide water.

GENOA FDCC MOVING TO LA CROSSE

As of February 1, 1982, the Fish Disease Control Center at Genoa, Wisconsin will relocate in facilities in the new National Fishery Research Laboratory at La Crosse, Wisconsin. The NFRL is next to the La Crosse Airport, just off Interstate 90 on the north side of La Crosse. Their new address and telephone numbers are:

Fish Disease Control Center
P.O. Box 1595
La Crosse, WI 54601-0146
Telephone: (608) 783-6451 and FTS 364-3212

As the new 9 digit zip code system is implemented by the U.S. Postal Service, we will all have to modify our address books. While you have yours out, the zip code of the American Fisheries Society's office in Bethesda, MD has been both lengthened and changed from 20014 to 20814-2199.

ICH EPIZOOTIC IN THREE MAINE LAKES

Ichthyophthirius multifiliis, the bane of fish culturists and aquarists everywhere, has seldom been reported in epizootic proportions in wild fish populations. In fact, Parasitologist Glenn Hoffman told me, "I am aware of only one reported incidence of this sort in the literature. But I suspect that these may occur more often, yet go unreported."

Epizootics of *Ichthyophthirius* in wild fish populations occurred in three different lakes in two seperate watersheds in southwestern Maine during 1980. Ich outbreaks in cultured fishes generally follow familiar patterns with respect to water temperature, season and mortalities. Yet, from the start, these Maine epizootics broke the rules.

Sick fish were first reported in Mousam Lake, Acton and Shapleigh Townships, York County, on April 3, 1980. A preliminary investigation by officers of the Maine Warden Service found that numerous largemouth bass *(Micropterus salmoides)*, yellow perch *(Perca flavescens)*, redbreast sunfish *(Lepomis auritus)* and pumkinseeds *(Lepomis gibbosus)* were congregated around the shore of the 365 hectare lake. The affected fish were lethargic, obviously distressed and displayed numerous, tiny, white spots on the fins and body surfaces. A subsequent examination of specimens sent to the Maine Department of Fish and Wildlife's Hatchery Laboratory identified the white spots as trophozooites of *Ichthyophthirius.*

With the exception of a band a few meters wide around the shoreline, Mousam Lake was still covered with ice. We were witnessing an epizootic of Ich in water barely above freezing !

On April 28, a similar epizootic of Ich was reported and subsequently confirmed in Square Pond, Shapleigh Township, York County. This shallow, 369 hectare lake is directly upstream of Mousam Lake in the same watershed. Sunfish, largemouth bass and smallmouth bass *(Micropterus dolomieui)* were involved.

At about this point, with the lakes now free of ice, the public became aware of the situation and inquiries began to come in. Assuming that the epizootics would intensify as the water temperature increased, I advised the Regional Fishery Biologists and others that large mortalities would be likely to occur. These never came about. Checks made during the spring by Fishery Biologist Sonny Pierce found small numbers of dead fish; but by and large, it appeared that most of the fish so grossly affected at ice-out had apparently recovered.

In early June, a fisherman reported that he had caught Ich infected bass in Little Ossipee Lake in the town of Waterboro. This 228 hectare body of water lies in a different watershed approximately 13 kilometers northeast of the previously mentioned lakes. Biologists Pierce and Stu DeRoche confirmed this a few days later. They could not find any infected bass, but reported that approximately 10% of the yellow perch that they observed had visible Ich trophozooites.

The June reports from Little Ossipee Lake were the last received on the *Ichthyophthirius* outbreaks. As the water warmed, the problem went away. No further incidences of Ich were reported from Maine lakes during 1981.

All we can do is speculate what might have caused these unusual phenomena. It is interesting to note that centrarchids and percids were primarily involved. Other fishes present in these waters, but apparently not affected to any great degree, include schooling types such as white perch (in Mousam and Square) and several species of minnows, as well as pickerel, suckers, bullheads and coldwater species. Just what environmental and behavioral circumstances contributed to these epizootics is open to speculation. Any ideas?

Acknowledgements: Many thanks to Mr. Jerry Ford, Warden Bob Rondeau, Warden Lt. Bill Vail, Fishery Biologists Stu DeRoche and Urban "Sonny" Pierce, and Dr. Glenn Hoffman (Stuttgart, Arkansas) for their assistance in this investigation.

Contributed by: Peter G. Walker, Fish Pathologist, Maine Department of Fish & Wildlife, Hatchery Laboratory, 8 Federal Street, Augusta, ME 04330.

MEMBERSHIP NOTES

FHS member Randy McCleary of Tacoma, Washington is recuperating from a very bad hunting accident. The latest word is that he is back on the job managing both his dental practice and the fish health lab at Troutlodge.

A year of uncertainty followed the closing of Tavolek, Inc., but Bev Goven has now joined the faculty at Texas Wesleyan College in Fort Worth. In addition, Dr. Goven has been named Adjunct Curator at the Dallas Aquarium; a post that will involve fish disease consultation as well as educational programs. She has already conducted a fish disease workshop for area wholesalers and retailers as well as staff members of both the Dallas Aquarium and the Fort Worth Aquarium.

KEEP IT COMING !

This has been a banner year for our publication. In addition to the recent facelift, the *FHS Newsletter* received a record amount of contributed material from the membership in 1981. The *Newsletter* is what we make it. Keep your colleagues informed and help make the 1982 issues even better than last year's. Send items of interest to one of the following members of the Newsletter and Publications Committee:

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