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Aquaculture & the fish farmer



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SPOTLIGHT ON CRAWFISH

EPA Seeks Constructive Regulations

The Environmental Protection Agency is faced with the awesome task of developing guidelines and regulations for environmental problems ranging from back yard bar-b-que pits to giant industries.

Seeking an agreement with the total industry of Aquaculture, the EPA must, simultaneously, fulfill the responsibility of the law created the Agency. This law was passed by Congress and signed by the President.

The intent of the law is good. In the final analysis it will provide mankind with air, land and water capable of producing, not only the basic requirements of life, but the needs of future generations in the development of civilization.

Aquaculture, covering the total area of fish farming, hatcheries and cultivation of all species for food, bait, pleasure, research, etc., is subject to regulations related to water quality. In this area, the EPA must not only execute its lawful responsibility, but a time limit was established by a court order following action on a suit filed by an environmentalist group. The deadline for final regulations affecting the industry of Aquaculture is mid-night October 24, 1974.

On June 13, 1974, in the Federal Register, the EPA published proposed regulations on aquaculture projects, subject to comments received on or before July 15, 1974. The term "aquaculture project" means a defined water area which is managed and uses discharges of a pollutant(s) into a designated area for the maintenance, propagation and/or production of harvestable freshwater, estuarine, or marine plant or animal life.

This proposed regulations will involve sewage lagoons, industrial settling basins, power plants, etc. Animal and plant life used in removing this waste will come under this arrangement. Final regulations will be issued following comments received.

The preceding project does not apply to aquaculture projects such as fish farms, hatcheries, and others not utilizing waste water discharged from industry or municipal facilities. Those who are involved in aquaculture projects using natural supplies of water such as lakes, streams, ground water and other sources will be subject to regula-

tions to be published between August 1 and August 15. A comment period will be allowed before final promulgation of regulations.

Presently, the proposed regulations are under internal review, with input from both private and public sectors. In April 1974 the EPA's National Field Investigations Center in Denver, Colo. sent several hundred copies of a Draft Development Document for review and comment. This document was for the proposed Effluent Limitations Guidelines and New Source Performance Standards for Fish Hatcheries and Farms to agencies and private sectors.

The draft contained over 200 pages and covered the problems known to exist, probable problems and possible problems.

Comments were invited. And from this input, coupled with anticipated input from proposed published regulations, a detente is expected to be reached between the EPA and industry. One that will not place the fish culturist operations in jeopardy — whether it is a federal agency, a state agency working within an appropriated budget or the private sector which is financed by private lending institutions.

The draft document deeply concerned a number of people involved in Aquaculture. Not only the private sector that is anxious about its investment, but the feed mills, suppliers and lending institutions extending credit to fish farming operations.

Also concerned were Sea Grant Programs, Bureau of Sport Fisheries and Wildlife, National Marine Fisheries Service and others whose purpose is research and development.

In some cases this document provided an "emotional input" to EPA, but as a whole the industry realized that the EPA was conducting diligent studies for the purpose of constructive action. The majority of the input was realistic and accepted by the EPA for consideration in drafting regulations for disclosure in August. Comments, received following this publication will have impact upon final regulations promulgated prior to midnight October 24, 1974.

The aquaculture industry will have regulations. However, the EPA deserves praise for not "acting like a bureaucracy". They

did communicate, listen and show some response to the problems and facts involved in Aquaculture.

The draft document, itself, indicates research into the industry. Although some of the possible, but improbable, pollution situations bordered on science fiction — at least an intelligent probe was made into the situation.

The EPA funded private consulting firms to determine economic feasibility. Apparently this will be considered in determining suitable, stringent regulations.

The original guidelines for the Aquaculture industry came at a time when the industry was faced with premature fish disease legislation, quadruple cost of fish feed and consumer resistance to increased cost of products. Therefore anything that implied increased costs was met with a negative reaction. This, coupled with a natural resistance to additional federal or state regulations, created an attitude of total opposition throughout the industry.

The predicted guidelines in August, subject to comment, will combine open and closed pond culture. Pond cultures discharging less than 30 days a year will be exempt. All cultures producing less than 20,000 pounds annually will, also, be exempt. Flow Thrus or Raceway Culture will be refined. Fecal Coliform regulations will be directed to users of manure. Ammonia limitations in raceways will be dropped as fish are excellent monitors.

Regulations on settleable solids will be established. Non-native fish after third generation will be considered native. Active concern over fish population in public waters and importation of diseases will be considered. However the EPA is inclined to issue favorable regulations to polyculture.

The EPA must realize that in many instances Aquaculture is enhancing the environment in the area of soil conservation and water quality. The director of the EPA has broad latitude in establishing regulations. And since regulations are inevitable, let's insist that reasonable people will join together and reach an agreement. Then we will proceed and progress in the industry of AQUACULTURE.



ABOVE — Dr. Reinard Spitzzy, one of Europe's foremost crawfish experts and coordinator of the First International Crawfish Symposium held in Austria in 1972, examines one of Louisiana's favorite foods — the red swamp craw fish.

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The molting cycle in the crayfish: recognizing the molting stages, effects of ecdysone, and changes during the cycle.

Capelli, Gregory M., and John J. Magnuson; Madison, Wisconsin USA, Reproduction, molting, and distribution of *Orconectes propinquus* (Girard) in relation to temperature in a northern mesotrophic lake.

Baker, Lynn; New Orleans, Louisiana USA, The toxicity of the organophosphates guthion and azodrin to the molting and non-molting crayfish, *Procambarus clarki*.

Graves, J. B., K. M. Hyde, J. F. Fowler, F. L. Bonner, and P. E. Schilling; Baton Rouge, Louisiana USA, The influence of mirex bait on production and survival of Louisiana red swamp crayfish *Procambarus clarki* (Girard).

Hobbs, H. H. III; Newport News, Virginia USA, Observations on the cave-dwelling crayfishes of Indiana.

Holt, Perry C.; Blacksburg, Virginia USA, The branchiobdellid (Annelida: Clitellata) associates of astacid crayfishes.

Salminen, Inga, and Ossi V. Lindquist; Finland, Blood glucose and temperature acclimation in crayfish, *Astacus astacus* L.

DeVillez, Edward J.; Oxford, Ohio USA, Current status concerning the properties of crustacean digestive proteinases.

Amborski, Robert L., Gayle Lopiccio, Grace F. Amborski, and Jay Huner; Baton Rouge, Louisiana USA, A disease affecting the shell and soft tissues of Louisiana crayfish, *Procambarus clarki*.

Amborski, R. L., J. C. Glorioso, and G. F. Amborski; Baton Rouge, Louisiana USA, Common potential bacterial pathogens of crayfish, frogs, and fish.

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Symposium Participants View Largest Crawfish Study Farm

Participants of the International Crawfish Symposium began their final day at the Symposium with a tour of the world's largest crawfish research facility, LSU's Ben Hur Farm.

The group visited a sprawling site that includes 80 ponds and raceways and 40 experimental pools. A 1,600 gallon-per-minute well supplies water which ages in a 17 acre reservoir before use.

In addition to crawfish, the group also saw mariculture projects that include four strains of Channel Catfish, grass carp and mirror carp hybrids, buffalo, the Louisiana strains of the largemouth bass and bluegill.

Research Is Varied

Crawfish research includes studies on how the animal fares on a diet of sweet potato vines and other agricultural wastes, population dynamics in commercial ponds as related to management, controlling wild fish in the crawfish ponds, culturing gizzard shad for crawfish bait, improved techniques for harvesting, nutrition studies and ration development, and processing and waste utilization.

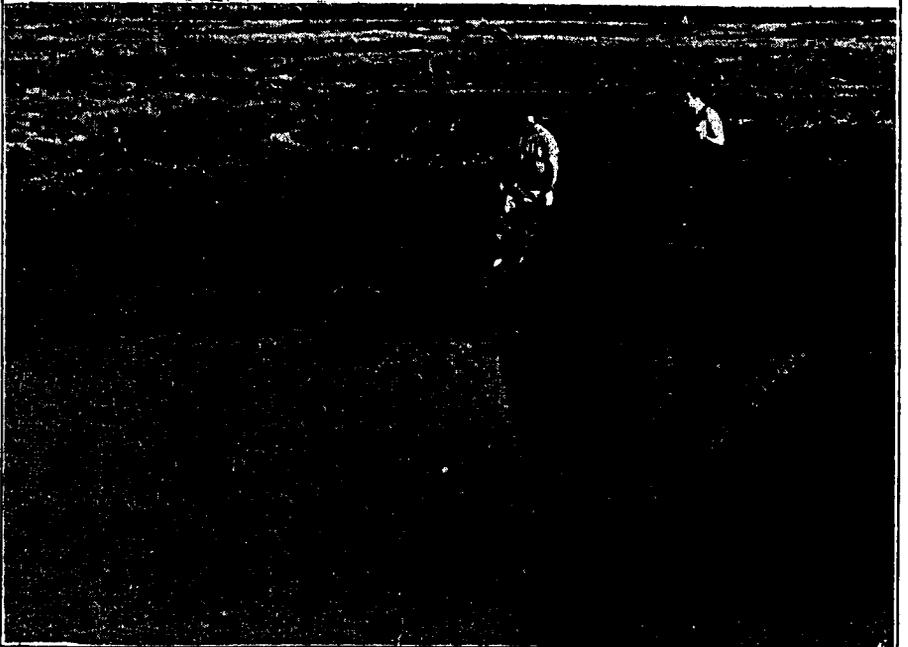
After leaving Ben Hur, the group traveled to Iberville Parish and End of the World, a settlement in the Bayou Pigeon Community. There they toured a commercial crawfish farm, then served coffee at pond-side, and were hosted by the Iberville Parish Cooperative Extension staff.

A special jambalaya luncheon, hosted by the Iberville Parish Homemaker Council, was served at St. Louis, the antebellum home of the Andrew Gay Family, following a tour of the old home.

The final activities of the day was another tour of two commercial crawfish processing plants in St. Martin Parish, after which the group assembled at the County Agricultural Building Auditorium in Breaux Bridge for a social hour. Local public officials, the Crawfish Queen and the Ecrevettes was there to welcome the visitors and to make introductions.

Guests were treated to crawfish dip, hogshead cheese, pork cracklins, "boudin" with crackers, cookies, and wine or punch. Local talent entertained. The Cooperative Extension Service in St. Martin Parish was host for the refreshment hour.

BELOW — The third day of the symposium was devoted to an all-day field trip that began at LSU's Ben Hur Farm, the largest crawfish research facility in the world. Some 80 ponds and raceways plus 40 experimental pools are available to crawfish scientists.





ABOVE — Senorita Teresa Aladren of Madrid, Spain, and His Imperial Highness, Archduke Andres Salvador Habsburgo-Lorsna of Austria and Spain, pose with a tub of red swamp crawfish during a field trip through Cajun Louisiana's crawfish country.

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the laboratory and comparative growth of *Astacus* and *Pacifastacus*.

Frost, Jack; Australia, Australian crayfish.

Goldman, Charles R., Jane C. Rundquist, and R. Warren Flint; Davis California USA, Ecological studies of the California crayfish, *Pacifastacus leniusculus* with emphasis on their growth from recycling waste products.

Westman, Kai; Finland, On crayfish research in Finland.

Meyers, Samuel; Baton Rouge, Louisiana USA, Development of water-stable diets for larval crustaceans.

Hobbs, Horton H., Jr.; Washington, D.C. USA, Adaptations and convergence in North American crayfishes.

Bovbjerg, Richard, and Sandra L. Stephen; Iowa City, Iowa USA, Behavioral changes with increased density in the crayfish *Orconectes virilis*.

Fitzpatrick, J. F.; Mobile, Alabama USA, The taxonomy and biology of the prairie crayfishes, *Procambarus hagenianus* (Faxon) and its allies.

Mason, John; Canada, Crayfish production in a small woodland stream.

Momot, Walter, and Howard Gowing; Columbus, Ohio USA, The cohort production and life cycle turnover ratio of the crayfish, *Orconectes virilis* in three Michigan lakes.

Carlisle, David Brez, and Roger G. H. Downer; Canada, Molting cycle and hydrocarbons in the blood of *Orconectes propinquus*: possible endocrine control.

Stevenson, J. Ross; Kent, Ohio USA,

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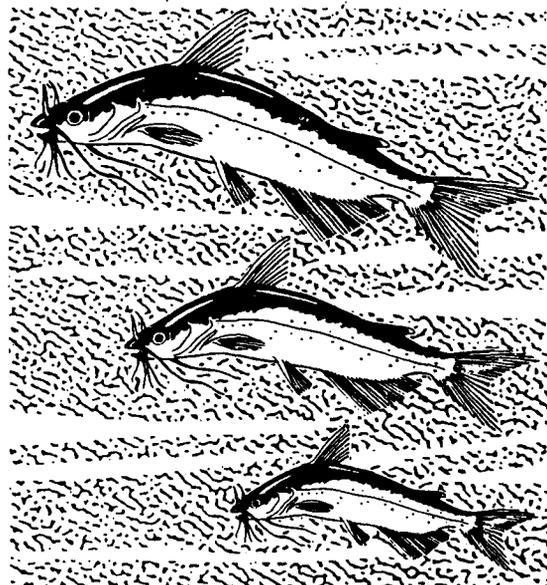
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