

## APPENDIX III: GREAT LAKES FISH DISEASE CONTROL PROGRAM

GREAT LAKES FISHERY COMMISSION

1451 GREEN ROAD

ANN ARBOR, MI 48105

The following recommendations of the Great Lakes Fish Disease Control Committee of the Great Lakes Fishery Commission were approved by the Commission at its 1975 Annual Meeting. These recommendations are hereby transmitted to the member agencies.

- (1) The Commission recommends agency adoption of the Great Lakes Fish Disease Control Policy and implementation of appropriate elements of the Model Fish Disease Control Program. Both are attached. The Fish Disease Control Policy is the established policy of the Commission. The Model Fish Disease Control Program is hereby presented to the member agencies as a Commission guide to the coordinated development of fish disease controls in the Great Lakes basin.
- (2) The Commission recommends agency endorsement and active support of legislation similar to H.R. 1083 "The Fish Disease Control Act of 1975".
- (3) The Commission recognizes the threat of certain infectious diseases and recommends their inclusion in the Great Lakes Fish Disease Control Program according to the following three major categories:

a. *EMERGENCY DISEASES*

Whirling Disease caused by *Myxosoma cerebralis*; *Ceratomyxa shasta* infections of salmonids; Viral Hemorrhagic Septicemia (VHS); Proliferative Kidney Disease.

b. *CERTIFIABLE DISEASES*

Whirling Disease caused by *Myxosoma cerebralis*; *Ceratomyxa Shasta* infections of salmonids; Infectious Hematopoietic Necrosis (IHN); Viral Hemorrhagic Septicemia (VHS); Enteric Redmouth (ERM) caused by *Yersinia ruckeri*.

In addition, the following diseases shall be monitored for observational and hatchery disease classification purposes:

Infectious Pancreatic Necrosis (IPN)  
Bacterial Kidney Disease (BKD)  
Furunculosis

c. *REPORTABLE DISEASES*

In addition to the diseases listed in 2 above, the following diseases shall be reported should they be detected:

Protozoans — Ichthyophthirius  
Copepods — *Lernaea*, *Salmincola*

Drug resistant or velogenic strains of — Motile Aeromonads  
Pseudomonads  
Columnaris

Other diseases, as determined by the Great Lakes Fish Disease Control Committee.

- (4) The Commission recommends the prompt and effective eradication of "Emergency Diseases", wherever practicable, which are detected in the Great Lakes basin.
- (5) The Commission recommends that each donor agency furnish a report of the disease history of all eggs and fish to the receiving agency prior to the transfer of such stocks.

The Great Lakes Fishery Commission also expresses its appreciation to the Great Lakes Fish Disease Control Committee members and Chairman, Mr. James W. Warren, who spent numberless hours in cooperative toil developing the policy and recommendations.

W.M. Laurence, Chairman  
GREAT LAKES FISHERY COMMISSION

Updated June, 1982

## GREAT LAKES FISH DISEASE CONTROL POLICY

Efficient propagation of fish may be severely affected by the occurrence of fish diseases. Major disease outbreaks have caused serious losses in fish hatcheries and in Great Lakes fish populations as well. Disease problems have resulted in reduced survival of stocked fish, production cost increases of 20 to 30 percent, significant losses of fish to the public, and diminished economic returns to Great Lakes communities.

To work toward the attainment of fish disease control in the Great Lakes basin, it shall be the policy of the Great Lakes Fishery Commission to encourage each member agency to:

- develop, by 1980, legislative authority and regulations to allow control and possible eradication of fish diseases,
- prevent the release of seriously diseased fish,  
discourage the rearing of diseased fish,
- prevent the importation, into the Great Lakes basin, of fish infected with certain certifiable diseases,
- prevent the transfer, within the Great Lakes basin, of fish infected with certain certifiable diseases, and
- eradicate fish diseases wherever practicable.

The Great Lakes Fishery Commission will strive to coordinate the fish disease control program of the member agencies. To this end the Commission endorses and supports the following Fish Disease Control Program as a guide for member agency program development.

## GREAT LAKES FISH DISEASE CONTROL PROGRAM\*

### INTRODUCTION

Fish disease control in the Great Lakes basin is the responsibility of the natural resources agencies managing the fisheries resources. The Fish Disease Control Committee of the Great Lakes Fishery Commission has developed this model program designed to unify and coordinate the fish disease control efforts of the member agencies. This program sets forth the essential requirements for the prevention and control of serious fish diseases. These include a system for inspecting and certifying fish hatcheries and the technical procedures to be used.

The major elements of this program and its annexes have been liberally adapted from the "Draft International Convention for the Control of Major Communicable Fish Diseases" of the European Inland Fisheries Advisory Commission (EIFAC) developed at Aviemore, Scotland, April 30 -May 1, 1974. In addition, guidance was also provided by the "Resolution of the Colorado River Drainage System" and from written policies of the United States Fish and Wildlife Service.

\* This is an edited version of the Model Fish Disease Control Program. Detailed copies may be obtained by writing to:

Great Lakes Fishery Commission,  
1451 Green Road,  
Ann Arbor, MI 48105

The Committee wishes to make it abundantly clear that it is in no way seeking fish disease control authority. The recommendations advanced by this program are provided as an aid to the member agencies in the development of legislation, regulations, and the Committee seeks the advice and counsel of the member agencies in the continuing development of fish disease control programs to assure they serve the best interests of all Great Lakes fishery resources.

### Section A. *Definitions*

For the purposes of this program the term:

- (1) "Commission" means the Great Lakes Fishery Commission;
- (2) "member agency" means the fishery management or conservation agency of each Federal, Provincial, or State government normally participating in the activities of the Commission;
- (3) "Great Lakes basin" means that geographical area encompassing Lake Ontario (including the St. Lawrence River from Lake Ontario to the forty-fifth parallel of latitude), Lake Erie, Lake Huron (including Lake St. Clair), Lake Michigan, Lake Superior, their interconnecting waters, and all tributaries to said lakes and waters;
- (4) "fish" means live fish, viable fish eggs, viable sperm, or fish products used for fish foods which have not been so processed as to render them incapable of transmitting a certifiable fish disease;
- (5) "fish hatchery" means any facility which holds, rears, or releases fish of the species listed in Annex I in the waters of the Great Lakes basin or whose effluent waters drain into said basin;
- (6) "certifiable fish disease" means certain infectious diseases of fish caused by viral, bacterial, or parasitic agents which are transmissible, directly or indirectly, from one fish to another;
- (7) "certificate" means Fish Disease Inspection Certificate as referred to in Section F. and exhibited in Annex II; and
- (8) "certifying official" means those fish health specialists who meet the requirements set forth in Section G.

### Section B. *Basic Obligation*

The member agencies shall take all appropriate measures including the development of legislative authority and regulations, where necessary, to restrict the spread of certifiable fish diseases, to contain them within their known geographic ranges, and to strive for their elimination in accordance with the provisions of this program.

Section C. **Application**

- (1) The provisions of this program apply to:
  - (a) fish of the species identified in Annex I;
  - (b) certifiable fish diseases as listed in Annex IV;
  - (c) fish disease research on fish infected with, or exposed to, certifiable fish diseases and/or the possession of the infectious agents causing these diseases.
- (2) The provisions of this program shall not apply to:
  - (a) fish in transit through the Great Lakes basin which are not released from their original shipping containers;
  - (b) specimens of fish imported or exported for purposes of diagnostic or inspection services and related laboratory tests provided that all necessary biological containment measures are taken to avoid any dissemination of fish pathogens.
- (3) Nothing in this program shall derogate from the right of the member agencies to apply additional measures of inspection, quarantine, and disease eradication for the control of fish diseases.

Section D. **Traffic in Fish**

Except as provided in Section C, paragraph (2), no fish may be imported into the Great Lakes basin, transferred between fish hatcheries within the basin, or released into basin waters unless:

- (1) In the case of fish imported into the basin or transferred between hatcheries, the source hatchery possesses a valid certificate issued by a certifying official in accordance with Section F.
- (2) In the case of fish imported from outside the jurisdiction of a member agency, they are accompanied by a certificate or other document giving equivalent assurance as to the state of health of the fish which is prepared and signed by a certifying official in accordance with Section F.

Section E. Release **of Fish**

- (1) No fish hatchery may release fish in the Great Lakes basin until a fish disease inspection certificate has been issued.
- (2) No fish exhibiting clinical signs of any infectious disease may be released into the waters of the Great Lakes basin.
- (3) Hatchery certification shall be immediately revoked upon the confirmation of any certifiable disease and releases prohibited until the hatchery once again meets the requirements for certification.

## Section F. *Fish Disease Certificates*

- (1) Fish disease inspection certificates, listing the certifiable fish diseases, shall be in the form prescribed in Annex II.
- (2) Certificates may only be issued by the certifying official performing the on-site fish hatchery inspection.
- (3) Certificates, valid for a period not to exceed one year subject to the provision of Section E, paragraph (3), may be issued only after inspection, by means of the procedures set forth in Annex III, fails to reveal evidence of certifiable fish diseases.
- (4) Fish disease inspection certificates and on-site hatchery inspections shall be used to support a hatchery classification plan such as described in Annex V for the purpose of fish disease control.

## Section G. *Certifying Officials*

- (1) Each member agency shall identify by name those individuals whom the agency desires to be responsible for carrying out inspections and issuing certificates in accordance with this policy.
- (2) Competence of certifying officials shall be based upon standards set forth by the Fish Health Section of the American Fisheries Society and/or by the Great Lakes Fish Disease Control Committee.
- (3) All certifying officials shall have, or have access to, adequate laboratory facilities and qualified personnel to assure the prompt and accurate conduct of inspections and diagnoses under the procedures set forth in Annex III.
- (4) Each member agency shall inform the Chairman of the Great Lakes Fish Disease Control Committee of the identity of certifying officials for the compilation and distribution of a list of certifying officials.
- (5) AU certifying officials shall submit copies of all certification forms to the appropriate member agency under whose jurisdiction the inspected hatchery lies.

## Section H. *Reports by Member Agencies*

- (1) Member agencies shall present to each periodic meeting of the Great Lakes Fish Disease Control Committee a report covering the status of fish diseases, the measures adopted for their control, the activities and problems of their certifying officials, and such other information as may be requested to enhance the effectiveness of this program.

- (2) The Chairman of the Great Lakes Fish Disease Control Committee shall maintain records of the reports submitted to him in an appropriate form.

Section I. *Amendment of the Model Program and the Annexes*

Amendment to this model program or its annexes may be proposed by any member agency or by the Great Lakes Fish Disease Control Committee. Any such proposal made by a member agency shall be submitted to the Committee for its comments and recommendations thereon. The proposed amendment, together with the comments and recommendations of the Committee, shall be communicated to the Commission for consideration.

ANNEX I

SPECIES COVERED BY THE PROGRAM

All species and hybrids of the family Salmonidae are subject to provisions of the Fish Disease Control Program for the Great Lakes basin.

ANNEX II

(FISH DISEASE INSPECTION FORM -NOT SHOWN)

ANNEX III

INSPECTION PROCEDURES AND METHODS OF DIAGNOSIS

A. *INSPECTION PROCEDURES*

The data obtained from the inspection program is an essential part of our program to control and improve the quality of fish that are produced at fish hatcheries. Therefore, it is essential that all hatchery inspections be conducted in accordance with the following procedures:

1. *Sample Population* — The following definitions will apply to the designation of populations for sampling purposes:
  - a. For all fish except those being inspected for whirling disease, the sample population is determined on the basis of the lot and production environment. For our purposes the lot is defined as those fish which originated from the same broodstock during the same year, and are being raised on the same water source.
  - b. When conducting a whirling disease inspection, the sample population is defined as all fish in the hatchery five (5) months of age or

older held in the same water supply. Samples should be weighted toward the most susceptible species and ages of fish available. Whirling disease spores are difficult to detect in lake trout and coho salmon and in fish larger than 12 inches in length.

- c. Wild broodstocks must be inspected at least once during the time that eggs destined for a Great Lakes basin hatchery are being obtained. All broodstock present at the time of inspection will constitute the sample population. The sample size should be large enough to detect diseases at an assumed incidence of infection of 2 percent. Where it is not feasible to sample wild broodstocks at the 2 percent assumed incidence level a smaller sample may be taken at the discretion of the inspecting pathologist after all risks are considered.

## 2. sample Size

- a. For viral and parasitic diseases the number of samples to be collected from a given lot is based upon stratified random sampling which provides 95 percent confidence of detecting a disease with an assumed minimum incidence of detectable infection of two or five percent depending upon conditions outlined as follows:

Minimum sample sizes for populations varying from 50 to infinity are as follows:

<u>Population or lot size</u>	<u>Assumed Incidence</u>	
	<u>2%</u>	<u>5%</u>
50	50	35
100	75	45
250	110	50
500	130	55
1,000	140	55
1,500	140	55
2,000	145	
4,000	145	60
10,000	145	60
100,000	145	60
and any larger		

The above sample sizes are minimum, and in situations where disease is suspected, larger samples may be necessary and should be taken at the discretion of the pathologist.

The method of collecting subsamples from rearing units to obtain a representative sample is left to the discretion of the pathologist.

- b. For bacterial diseases — Sampling of broodstock populations and production fish should be accomplished on a continuing basis throughout the year using the moribund and/or dying fish whenever possible. Samples of fixed material for the detection of the gram positive *Renibacterium* can be sent to agency laboratories by hatchery managers on a periodic basis. Training should be provided to hatchery managers in preparing culture material for diagnosis of the Gram-negative bacterial pathogens. Cultures also can be sent to agency laboratories for confirmatory diagnosis. The annual case history of each designated lot should be compiled by the pathologist using this accumulated sampling data. The minimum number of samples is left to the discretion of the pathologist. Symptomatic and moribund fish should be sampled during any inspection.

## B. METHODS OF DIAGNOSIS

The “Procedures for the Detection and Identification of Certain Fish Patho-” developed by the Fish Health Section (FHS) of the American Fisheries Society or the “Fish Health Protection Manual of Compliance” of the Department of Fisheries and Oceans, Canada provide the basis for the work supporting fish hatchery inspections and certifications. If more sensitive or more definitive procedures are available, they may be used but any departures from the basic procedures set forth by the FHS must be noted on all associated inspection certificates. The Fish Disease Control Committee, in an effort to encourage the use of the best possible methodology, should be notified of technical advances enhancing the implementation of the program. Procedural changes issued by the FHS will be incorporated into the program by the Committee as appropriate.

## ANNEX IV

### LIST OF DISEASE AGENTS COVERED BY THE PROGRAM

1. Inspections of fish populations shall be conducted so as to detect evidence of the following CERTIFIABLE fish disease agents.
  - a. Viral Hemorrhagic Septicemia (VHS) Virus
  - b. Infectious Hematopoietic Necrosis (IHN) Virus
  - c. Whirling Disease caused by *Myxosoma cerebralis*
  - d. *Ceratomyxa shasta* for all salmonids reared and/or shipped from west of the North American Continental Divide.
  - e. Enteric Red Mouth (ERM) caused by *Yersinia ruckeri*
2. In addition to the above certifiable disease agents, inspections shall also be conducted to include the following disease agents for observational purposes in order to support hatchery classification programs:
  - a. Infectious Pancreatic Necrosis (IPN) Virus
  - b. Furunculosis caused by *Aeromonas salmonicida*
  - c. Bacterial Kidney Disease (BKD) caused by *Renibacterium salmoninarum*

If these disease agents are detected these findings shall be noted on the inspection certificate and incorporated in the hatchery classification

3. The causative agents of Infectious Pancreatic Necrosis (IPN), furunculosis, and Bacterial Kidney Disease (BKD) shall be added to the list of certifiable fish disease agents at a date and time deemed appropriate by the Great Lakes Fish Disease Control Committee.

## Annex V

### HATCHERY DISEASE CLASSIFICATION PROGRAM

#### A. DISEASES

Each hatchery rearing salmonids and each spawning population, whether wild or domesticated, will be inspected and classified for the following:

<i>DISEASE OR AGENT</i>	<i>ABBREVIATION</i>
Viral hemorrhagic septicemia (VHS) virus	VE
Infectious hematopoietic necrosis (IHN) virus	VH
Infectious pancreatic necrosis (IPN) virus	VP
Bacterial kidney disease (BKD) ( <i>R. salmoninarum</i> )	BK
Furunculosis ( <i>A. salmonicida</i> )	
Enteric redmouth (ERM) ( <i>Y ruckeri</i> )	<b>BF</b>
Whirling Disease ( <i>M. cerebralis</i> )	SW
Ceratomyxosis ( <i>C. shasta</i> )	SC

#### B. CLASSIFICATION

##### 1. Class A-1

The A-1 classification is assigned to those fish hatcheries meeting the following criteria:

- (1) All fish cultural water must be obtained from enclosed sources such as springs or wells which are free of resident fish.
- (2) All fish reared on the station must have been inspected for all diseases listed above, at least annually. Three successive negative inspections over a continuous two year period are required.
- (3) To maintain A-1 status hatcheries must assure that all fish or eggs have been obtained only from properly inspected Class A-1 or Class A-2 sources.

##### 2. Class A-2

The A-2 classification differs from A-1 only to the extent that the hatchery has an open water supply such as a stream or lake with resident fish. The A-2 classification is also assigned to discrete spawning populations of free-ranging fish which have met all other class A-1 inspection requirements.

### 3. ***Class B***

Hatcheries and free-ranging spawning populations are assigned a B classification when one or more of the diseases or disease agents listed in (1)(a) above have been detected within the past two years.

### 4. ***Class C***

Hatcheries and free-ranging spawning populations having an unknown disease history, have not been inspected for all diseases listed, or have undergone only one or two complete annual inspections, will be assigned a C classification.

## ***C. RESTRICTIONS***

No shipments of fish or eggs will be made without prior approval of the receiving authorities whenever that shipment will knowingly downgrade the classification of the receiving hatchery. Shipments of fish or eggs between hatcheries will be governed by the disease status of the hatcheries involved. At least one inspection for each designated disease, except as noted above for unnecessary or unavailable samples, will be conducted on all lots of salmonids, regardless of age, prior to the transfer of eggs or the transfer or stocking of fish.