

ANNUAL REPORT

GREAT LAKES FISHERY COMMISSION



1956

GREAT LAKES FISHERY COMMISSION

MEMBERS—1956

CANADA

A. O. Blackhurst
W. J. K. Harkness
A. L. Pritchard

UNITED STATES

John L. Farley
Claude Ver Duin
Lester P. Voigt

ACTING EXECUTIVE SECRETARY

James W. Moffett

GREAT LAKES FISHERY COMMISSION

Established by Convention
between Canada and the United
States for the Conservation of
Great Lakes Fishery Resources.

ANNUAL REPORT

FOR THE YEAR

1956

1319 N. UNIVERSITY AVE.
ANN ARBOR, MICHIGAN,
U. S. A.

LETTER OF TRANSMITTAL

The Chairman of the Great Lakes Fishery Commission takes pleasure in transmitting to the Contracting Parties an Annual Report of the Commission's activities in 1956.

LESTER P. VOIGT
Chairman

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FOREWORD

For many years, a need has been recognized for international co-operation in the solution of problems confronting fishery interests on the Great Lakes. Several attempts have been made to negotiate a fishery treaty between Canada and the United States. A treaty was signed by the two countries in 1946, but it was never ratified because of vigorous opposition to a provision which granted authority to a proposed Commission to regulate the fisheries of all of the Great Lakes.

Intensified and continuing problems of conservation of Great Lakes fishery resources and the increasingly severe deprivations of the parasitic sea lamprey created a demand that the situation be reviewed and a new, modified treaty be negotiated. A treaty draft was prepared and at the invitation of the United States, Canada sent a delegation to Washington, D. C., on December 18, 1952. United States and Canadian delegations met again in Ottawa, Canada, on February 9, 1953, and reached general agreement on the terms of a convention. A third meeting of delegations was held in Washington, D. C., on September 8-10, 1954, at the end of which a treaty between the two countries was signed by the Acting Secretary of State, Walter Bedell Smith, and the Special Assistant for Fisheries to the Under Secretary of State, William C. Herrington, on behalf of the United States and by the Canadian Ambassador in Washington, Arnold Heeney, and the Canadian Deputy Minister of Fisheries, Stewart Bates, on behalf of Canada.

Instruments of ratification were exchanged at Ottawa, Canada, on October 11, 1955, on which date the Convention became effective.

As the Convention provided for the establishment of a 6-man Commission, three members from Canada and three from the United States, the following persons were named by their respective governments to serve:

For Canada:

DR. A. L. PRITCHARD, *Director*
Conservation and Development Service
Department of Fisheries
Ottawa, Ontario.

DR. W. J. K. HARKNESS, *Chief*
Division of Fish and Wildlife
Ontario Department of Lands and Forests
Toronto, Ontario.

DR. A. O. BLACKHURST, *Manager*
Ontario Council of Commercial Fisheries
Port Dover, Ontario.

For the United States:

MR. JOHN L. FARLEY, *Director*
Fish and Wildlife Service
Department of the Interior
Washington, D. C.

MR. CLAUDE VER DUIN, *Mayor*
Grand Haven, Michigan

MR. LESTER P. VOIGT, *Director*
Wisconsin Conservation Department
Madison, Wisconsin.

Rule 3 of *Rules of Procedure*, adopted by the Commission at its Organizational Meeting on April 23, 1956, requires the Commission to hold regular annual meetings. Under Rule 3 the Commission is also required to publish, after each annual meeting, a report of its activities during the preceding year. It was agreed that the annual meeting take place in the fall of each year; in 1956 it was held on November 19 and 20 in Ann Arbor, Michigan. The Annual Report of the Commission for 1956 includes a summary of the Organizational Meeting held in April and a report of activities during the short period from July 1, when the Commission began its program, to November 19, the date of the first Annual Meeting. Reports on lamprey control extend, however, to the beginning of the 1956 operating season.

JAMES W. MOFFETT
Acting Executive Secretary

CONVENTION ON GREAT LAKES FISHERIES between THE UNITED STATES OF AMERICA and CANADA

The Government of the United States of America and the Government of Canada,

Taking note of the interrelation of fishery conservation problems and of the desirability of advancing fishery research in the Great Lakes,

Being aware of the decline of some of the Great Lakes fisheries,

Being concerned over the serious damage to some of these fisheries caused by the parasitic sea lamprey and the continuing threat which this lamprey constitutes for other fisheries,

Recognizing that joint and coordinated efforts by the United States of America and Canada are essential in order to determine the need for and the type of measures which will make possible the maximum sustained productivity in Great Lakes fisheries of common concern,

Have resolved to conclude a convention and have appointed as their respective Plenipotentiaries:

The Government of the United States of America:

WALTER BEDELL SMITH, Acting Secretary of State of the United States of America, and

WILLIAM C. HERRINGTON, Chairman of the Delegation of the United States of America to the Great Lakes Fisheries Conference; and

The Government of Canada:

ARNOLD DANFORD PATRICK HEENEY, Ambassador Extraordinary and Plenipotentiary of Canada to the United States of America, and

STEWART BATES, Chairman of the Delegation of Canada to the Great Lakes Fisheries Conference,

who, having communicated to each other their respective full powers, found in good and due form have agreed as follows:

ARTICLE I

This Convention shall apply to 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 and their connecting waters, hereinafter referred to as "the Convention Area." This Convention shall also apply to the tributaries of each of the above waters to the extent necessary to investigate any stock of fish of common concern, the taking or habitat of which is confined predominantly to the Convention Area, and to eradicate or minimize the populations of the sea lamprey (*Petromyzon marinus*) in the Convention Area.

ARTICLE II

1. The Contracting Parties agree to establish and maintain a joint commission, to be known as the Great Lakes Fishery Commission, hereinafter referred to as "the Commission," and to be composed of two national sections, a Canadian Section and a United States Section. Each Section shall be composed of not more than three members appointed by the respective Contracting Parties.

2. Each Section shall have one vote. A decision or recommendation of the Commission shall be made only with the approval of both Sections.

3. Each Contracting Party may establish for its Section an advisory committee for each of the Great Lakes. The members of each advisory committee so established shall have the right to attend all sessions of the Commission except those which the Commission decides to hold *in camera*.

ARTICLE III

1. At the first meeting of the Commission and at every second subsequent annual meeting thereafter the members shall select from among themselves a Chairman and a Vice-Chairman, each of whom shall hold office from the close of the annual meeting at which he has been selected until the close of the second annual meeting thereafter. The Chairman shall be selected from one Section and the Vice-Chairman from the other Section. The offices of Chairman and Vice-Chairman shall alternate biennially between the Sections.

2. The seat of the Commission shall be at such place in the Great Lakes area as the Commission may designate.

3. The Commission shall hold a regular annual meeting at such place as it may decide. It may hold such other meetings as may be

agreed upon by the Chairman and Vice-Chairman and at such time and place as they may designate.

4. The Commission shall authorize the disbursement of funds for the joint expenses of the Commission and may employ personnel and acquire facilities necessary for the performance of its duties.

5. The Commission shall make such rules and by-laws for the conduct of its meetings and for the performance of its duties and such financial regulations as it deems necessary.

6. The Commission may appoint an Executive Secretary upon such terms as it may determine.

7. The staff of the Commission may be appointed by the Executive Secretary in the manner determined by the Commission or appointed by the Commission itself on terms to be determined by it.

8. The Executive Secretary shall, subject to such rules and procedures as may be determined by the Commission, have full power and authority over the staff and shall perform such functions as the Commission may prescribe. If the office of Executive Secretary is vacant, the Commission shall prescribe who shall exercise such power or authority.

ARTICLE IV

The Commission shall have the following duties:

- (a) to formulate a research program or programs designed to determine the need for measures to make possible the maximum sustained productivity of any stock of fish in the Convention Area which, in the opinion of the Commission, is of common concern to the fisheries of the United States of America and Canada and to determine what measures are best adapted for such purpose;
- (b) to coordinate research made pursuant to such programs and, if necessary, to undertake such research itself;
- (c) to recommend appropriate measures to the Contracting Parties on the basis of the findings of such research programs;
- (d) to formulate and implement a comprehensive program for the purpose of eradicating or minimizing the sea lamprey populations in the Convention Area; and
- (e) to publish or authorize the publication of scientific and other information obtained by the Commission in the performance of its duties.

ARTICLE V

In order to carry out the duties set forth in Article IV, the Commission may:

- (a) conduct investigations;
- (b) take measures and install devices in the Convention Area and the tributaries thereof for lamprey control; and
- (c) hold public hearings in the United States of America and Canada.

ARTICLE VI

1. In the performance of its duties, the Commission shall, in so far as feasible, make use of the official agencies of the Contracting Parties and of their Provinces or States and may make use of private or other public organizations, including international organizations, or of any person.

2. The Commission may seek to establish and maintain working arrangements with public or private organizations for the purpose of furthering the objectives of this Convention.

ARTICLE VII

Upon the request of the Commission a Contracting Party shall furnish such information pertinent to the Commission's duties as is practicable. A Contracting Party may establish conditions regarding the disclosure of such information by the Commission.

ARTICLE VIII

1. Each Contracting Party shall determine and pay the expenses of its Section. Joint expenses incurred by the Commission shall be paid by contributions made by the Contracting Parties. The form and proportion of the contributions shall be those approved by the Contracting Parties after the Commission has made a recommendation.

2. The Commission shall submit an annual budget of anticipated joint expenses to the Contracting Parties for approval.

ARTICLE IX

The Commission shall submit annually to the Contracting Parties a report on the discharge of its duties. It shall make recommendations to or advise the Contracting Parties whenever it deems necessary on any matter relating to the Convention.

ARTICLE X

Nothing in this Convention shall be construed as preventing any of the States of the United States of America bordering on the Great Lakes or, subject to their constitutional arrangements, Canada or the Province of Ontario from making or enforcing laws or regulations within their respective jurisdictions relative to the fisheries of the Great Lakes so far as such laws or regulations do not preclude the carrying out of the Commission's duties.

ARTICLE XI

The Contracting Parties agree to enact such legislation as may be necessary to give effect to the provisions of this Convention.

ARTICLE XII

The Contracting Parties shall jointly review in the eighth year of the operation of this Convention the activities of the Commission in relation to the objectives of the Convention in order to determine the desirability of continuing, modifying or terminating this Convention.

ARTICLE XIII

1. This Convention shall be ratified and the instruments of ratification shall be exchanged at Ottawa.

2. This Convention shall enter into force on the date of the exchange of the instruments of ratification. It shall remain in force for ten years and shall continue in force thereafter until terminated as provided herein.

3. Either Contracting Party may, by giving two years' written notice to the other Contracting Party, terminate this Convention at the end of the initial ten-year period or at any time thereafter.

IN WITNESS WHEREOF the respective Plenipotentiaries have signed the present Convention.

DONE at Washington, in duplicate, this tenth day of September, 1954.

FOR THE GOVERNMENT OF THE UNITED STATES OF AMERICA:

(Signed) WALTER BEDELL SMITH

(Signed) WM. C. HERRINGTON

FOR THE GOVERNMENT OF CANADA:

(Signed) A. D. P. HEENEY

(Signed) STEWART BATES

ORGANIZATION AND RULES

ORGANIZATIONAL MEETING

April 23-25, 1956

The Great Lakes Fishery Commission held its organizational meeting on April 23-25, 1956, at Ottawa, Ontario. The temporary Chairman, Mr. George R. Clark, Deputy Minister of Fisheries for Canada, introduced the Honorable James Sinclair, Minister of Fisheries for Canada, who addressed the group. The Minister expressed the great interest of the Government of Canada and the Government of the Province of Ontario in the Commission's operations and assured it of every support.

Mr. John L. Farley was elected Chairman and Dr. A. L. Pritchard, Vice-Chairman and Mr. Clark relinquished the chair to Mr. Farley. The Commission then proceeded to adopt *Rules of Procedure* and *Financial Regulations*. Dr. James W. Moffett was made Acting Executive Secretary pending selection of a permanent official.

The Commission discussed and adopted a budget for 1956-57 amounting to \$30,000 for Commission expenses and \$869,000 for sea lamprey control and research; and considered estimated 1957-58 budget requirements. The suggested 1957-58 budget included amounts of \$50,000 for Commission expenses and \$1,374,000 for sea lamprey control and research.

To comply with Article VIII of the Convention, the Commission agreed to recommend, until it determines otherwise as a result of further studies, that the proportion of contributions towards lamprey control expenses be on the basis of sixty-nine percent (69%) by the United States and thirty-one percent (31%) by Canada; and that the costs of administration be shared equally.

The Commission estimated that about \$556,000 would be spent by various agencies in 1957-58 on general research on the Great Lakes.

Authorization was granted to the United States Section to contract for work on sea lamprey control in the United States for fiscal year 1956-57, after approval of the contract by the Commission as a whole. The United States Department of the Interior, Fish and Wildlife Service was selected to carry out the control program in the United States and the Department of Fisheries in Canada. Both agents had previous experience in lamprey control.

In view of the manner in which funds had been voted in Canada, the Commission agreed to accept, in lieu of a direct contribution, a statement from Canada that its Fisheries Research Board had expended \$269,000 during 1956-57 on the control program approved by the Commission.

GREAT LAKES FISHERY COMMISSION RULES OF PROCEDURE

REPRESENTATION

- Rule 1 (a) The Commission established pursuant to the terms of the Convention on Great Lakes Fisheries signed at Washington on September 10, 1954, hereinafter referred to as "The Convention," is composed of two national sections, each consisting of not more than three members appointed by the respective Contracting Parties, hereinafter referred to as Commissioners.
- (b) Each national section shall promptly inform the Executive Secretary of the Commission of any change in its membership.
- Rule 2 When Advisory Committees are established by either Contracting Parties as provided in Article II, Section 3 of the Convention, the national section of such Contracting Party shall promptly notify the Executive Secretary of the Commission of the membership of such Advisory Committees and thereafter of any change in its membership.

MEETINGS

- Rule 3 The Commission shall hold a regular annual meeting at such time and place as may be agreed upon by the Commission. Any other meetings of the Commission shall be called, if agreed upon by the Chairman and Vice-Chairman, at such time and place as they may designate.
- Rule 4 Advisory Committees shall be entitled to attend all sessions of the Commission except those held *in camera* but members of Advisory Committees shall not be entitled to vote.
- Rule 5 At any meeting of the Committee each national section shall be entitled to be accompanied by such experts and advisors as it may select except that no expert or advisor shall attend sessions of the Commission held *in camera* unless invited by the Commission.
- Rule 6 The Commission may, from time to time, determine what additional persons may be invited or permitted to attend any meetings as guests or observers.
- Rule 7 No persons other than a Commissioner shall be entitled to address the Commission except upon permission by the Chairman and subject to the objection of any Commissioner.

VOTING

- Rule 8 Each national section shall have one vote which may be cast by any Commissioner from such national section.
- Rule 9 Decisions or recommendations of the Commission shall be made only by approval of both sections. Votes shall be taken by voice, by show of hands, by roll call, by ballot, as in the opinion of the Chairman appears to be most suitable.

- Rule 10 Between meetings of the Commission votes may be taken by mail or other means of communication. Such votes shall be transmitted to the Chairman.

OFFICERS

- Rule 11 (a) At the first meeting of the Commission and at every second subsequent annual meeting thereafter the members shall select from among themselves a Chairman and a Vice-Chairman, each of whom shall hold office from the close of the annual meeting at which he has been selected until the close of the second annual meeting thereafter. The Chairman shall be selected from one Section and the Vice-Chairman from the other Section. The offices of Chairman and Vice-Chairman shall alternate biennially between the Sections.
- (b) In the event that any office shall become vacant other than by expiration of such office, the vacancy shall be filled for the remainder of such term by a Commissioner to be selected by the Commission from the same national section as that of the former occupant of such office.

DUTIES OF CHAIRMAN

- Rule 12 The powers and duties of the Chairman shall be:
- (a) To call annual and other meetings in accordance with the provisions of Rule 3.
 - (b) To preside at all meetings of the Commission.
 - (c) To decide all questions of order raised at the meetings of the Commission subject to the right of either national section to request that any ruling by the Chairman be submitted to the Commission for decision by vote.
 - (d) To call for votes and to announce the results of the vote to the Commission.
 - (e) To determine, after consultation with the Vice-Chairman and the Executive Secretary, the agenda for the annual Commission meetings so that the Executive Secretary shall transmit the provisional agenda to both Contracting Parties and Commissioners not less than thirty days in advance of the meetings.
 - (f) To sign, on behalf of the Commission, official communications to the Contracting Parties including a report of the discharge of its duties as required by Article IX, and a report of the proceedings at each annual or other meeting of the Commission.
 - (g) Generally to make such decisions and to give such directions to the Executive Secretary, especially in intervals between meetings of the Commission, as may appear to be desirable to carry on the business of the Commission efficiently and in accordance with its decisions or recommendations.
 - (h) To take such other actions on behalf of the Commission as may be determined by the Commission.

DUTIES OF VICE-CHAIRMAN

- Rule 13 If the office of the Chairman shall become vacant or if the Chairman is unable to act, the duties of the Chairman shall be performed by the Vice-Chairman until the Chairman is able to act or until a successor is selected as provided by Rule 11 (b). Such assumption of the duties of the Chairman by the Vice-Chairman shall not affect the rotation of officers in the succeeding years.

DUTIES OF THE EXECUTIVE SECRETARY

- Rule 14 The Commission will appoint an Executive Secretary upon such terms as it may determine. The duties of the Executive Secretary shall be:
- (a) To conduct such correspondence on behalf of the Commission as the Chairman or the Commission may direct.
 - (b) To receive and transmit to the national sections communications from the Contracting Parties.
 - (c) To keep records of the Commission meetings and to prepare the draft of the reports referred to in Rule 12 (f).
 - (d) To prepare and keep in safe custody minutes of all Commission meetings in accordance with instructions from the Commission and promptly transmit to the Commissioners copies thereof.
 - (e) To maintain official files and records of the Commission.
 - (f) To fill such staff positions as may be designated by the Commission and, subject to general supervision of the Commission, to have full power and authority over such staff.
 - (g) To be responsible to the Commission for the management of its office and for the receipts and disbursements pursuant to the financial regulations of the Commission.
 - (h) To make all necessary arrangements for the Commission meetings and to prepare, after consultation with the Chairman, draft annual budgets to be submitted to the Commissioners at least sixty days in advance of the meeting at which they are to be considered.
 - (i) To direct and supervise all investigations and operations being carried out by the Commission's staff and to coordinate on behalf of the Commission any investigations and operations by other agencies conducted at the request or under arrangement with the Commission.
 - (j) To serve as Chairman of the Scientific Advisory Committee.
 - (k) To perform such other functions as may be assigned to him by the Commission or by the Chairman.

REGULATIONS, SALARIES FOR SECRETARIAT

- Rule 15 The Commission shall fix the tenure of office, rate of remuneration and travelling expenses of the Executive Secretary and members of the Commission's staff and may adopt such staff regulations as it considers desirable.
- Rule 16 A position of Assistant Executive Secretary shall be established. Such person shall be engaged by the Executive Secretary subject to the approval of the Commission.

SCIENTIFIC ADVISORY COMMITTEE

- Rule 17** There shall be a scientific committee consisting of two members from each Contracting Party who may be assisted by experts or advisors. The Executive Secretary of the Commission shall be Chairman of the Committee. The Committee shall advise the Commission on such matters relating to lamprey control and research and general fishery research as the Commission may submit to it.

PUBLICATIONS

- Rule 18** The Commission shall publish, following its annual meeting, a report of the activities during the preceding year and shall publish or authorize the publication of such other reports as it may, from time to time, deem desirable.

AMENDMENTS

- Rule 19** The Rules of Procedure may be amended from time to time by vote of the Commission provided such amendments are not inconsistent with the provisions of the Convention.

GREAT LAKES FISHERY COMMISSION
FINANCIAL REGULATIONS

SECTION I. APPLICABILITY

These regulations shall govern the financial administration of the Great Lakes Fishery Commission.

SECTION II. THE FINANCIAL YEAR

The financial year shall be the period from July 1 to the following June 30, both dates inclusive.

SECTION III. THE BUDGET

- (a) The annual budget estimates shall be prepared by the Executive Secretary after consultation with the Chairman of the Commission.
- (b) The annual budget estimates shall cover income and expenditures for the financial year to which they relate. They shall be presented in the currency of the country in which the seat of the Commission is located.
- (c) The annual budget estimates shall be divided into two parts—
 - (1) *Administration and General Research*: to cover the administrative expenses of the Commission, including but not limited to salaries of the staff, travel, headquarters expenses and the holding of meetings and to cover the expenses of programs of general research contracted for by the Commission or performed by the Commission's staff.
 - (2) *Lamprey Control Operations*: to cover expenditures for the lamprey control program including research on sea lampreys.

These parts shall be further sub-divided into sections corresponding to the organization and program and accompanied by such information, annexes and explanatory statements as may be requested on behalf of the Commission, and such further annexes and statements as the Executive Secretary may deem necessary and useful.

- (d) The Executive Secretary shall submit annually to the Commission at least sixty days prior to the opening of the meeting at which they are to be considered, budget estimates for the two following financial years.
- (e) A budget for the following financial year shall be adopted by the Commission. The budget for the latter of the two financial years for which estimates are submitted in accordance with Financial Regulation 3 (d) shall be considered by the Commission but not adopted.
- (f) After adoption by the Commission, the budget shall be submitted to the Contracting Parties for their approval.
- (g) Supplementary estimates may be submitted by the Executive Secretary when and as he deems necessary. After consultation with the Chairman, the Executive Secretary shall submit such estimates, in a form consistent with the annual budget, and recommended assessments on the respective Contracting Parties to each national section for approval. Upon receipt by the Executive Secretary of each national section's approval thereof, the estimates and the assessments shall be deemed to have been adopted by the Commission and shall be submitted to the Contracting Parties for approval.

- (h) In the event that any Contracting Party or Parties should not approve any budget adopted by the Commission, the Secretary shall immediately notify each national section of the fact. The Executive Secretary, after consulting with the Chairman, shall recommend to each national section such revisions of the budget as seem desirable and such revisions of the respective Contracting Parties' assessments as may be necessary. Upon receipt by the Executive Secretary of each national section's acceptance of such recommendations, the revised budget and assessments shall be deemed to have been adopted by the Commission and shall be submitted to the Contracting Parties for approval.

SECTION IV. APPROPRIATIONS

- (a) The appropriations voted by the Commission shall constitute, after approval of the budget by the Contracting Parties, an authorization to the Executive Secretary to incur obligations and make payments for the purposes for which the appropriations were voted and up to the amount so voted.
- (b) Appropriations shall be available for obligation during the year to which they relate.
- (c) Appropriations shall remain available for twelve months following the end of the financial year to which they relate to the extent that they are required to discharge obligations in respect of goods supplied and services rendered in the financial year and to liquidate any other outstanding legal obligation of the year. The balance of the appropriations shall be surrendered in accordance with Regulation 5 (b) (iii).
- (d) At the end of the twelve-month period provided in Regulation 4 (c) above, the then remaining balance of any appropriations retained will be surrendered in accordance with Regulation 5 (b) (iii). Any unliquidated prior year obligations shall at the time be cancelled, or where the obligation remains a valid charge, transferred as an obligation against current appropriations.
- (e) No transfer between appropriation sections may be made without authorization by the Commission.

SECTION V. PROVISION OF FUNDS

- (a) The appropriations, subject to the adjustments effected in accordance with the provisions of regulation 5 (b), shall be financed by contributions from the Contracting Parties in accordance with the provisions of Article VIII of the Convention on Great Lakes Fisheries.
- (b) In the assessment of the contributions of Contracting Parties, adjustments shall be made to the amounts of the appropriations approved by the Commission and the Contracting Parties for the following financial year in respect of:
- (i) Supplementary appropriations for which contributions have not previously been assessed on the Contracting Parties;
 - (ii) Miscellaneous income for which credits have not previously been taken into account, and any adjustments in estimated miscellaneous income previously taken into account;
 - (iii) Any balance of appropriations surrendered under Regulations 4 (c) and 4 (d).

- (c) After the Commission has adopted the budget, the Executive Secretary shall:
- (i) Submit the relevant documents to the Contracting Parties;
 - (ii) Inform the Contracting Parties of their assessments in respect of annual contributions;
 - (iii) Request them to approve the budget and remit their contributions.
- (d) Contributions shall be payable by the Contracting Parties in semiannual installments. The first installment shall be considered due as of the first day of the financial year to which it relates. The second installment shall be considered due as of the first day of the second half of that financial year. As of the first day of the following financial year the unpaid balance of such contributions shall be considered to be one year in arrears.
- (e) Payments made by a Contracting Party shall be credited to the contributions due in the order in which the Contracting Party was assessed.
- (f) The Executive Secretary shall submit to the regular annual meeting of the Commission a report on the collection of contributions.

SECTION VI. FUNDS

- (a) There shall be established two funds for the purpose of accounting for the expenditures of the Commission—an Administration and General Research Fund and a Lamprey Control Operations Fund. That amount of the contributions paid by the Contracting Parties under Regulation 5 (a) to finance the appropriations contained in the Administration and General Research part of the Annual Budget, as approved, and miscellaneous income shall be credited to the Administration and General Research Fund; that amount of the said contributions paid to finance appropriations contained in the Lamprey Control Operations part of the budget, as approved, shall be credited to the Lamprey Control Operations Fund.
- (b) The cost of land or any interest therein in the United States or Canada acquired for the use of the Commission shall be paid from the Commission's Lamprey Control Operations Fund.
- (c) Upon the written request of either national section, supported by vouchers or such other documents as may be required by the Commission, the Executive Secretary shall make payments to individuals or organizations designated by such national section from the Lamprey Control Operations Fund up to the amounts and in the manner approved by the Commission for the lamprey control program.

SECTION VII. OTHER INCOME

- (a) Miscellaneous income shall be credited to the Administration and General Research Fund and shall consist of all income other than:
- (i) Contributions to the annual and other budgets;
 - (ii) Refunds of direct expenditures made during the financial year;
 - (iii) Advances or deposits made for a specified purpose.

SECTION VIII. CUSTODY OF FUNDS

- (a) The Executive Secretary shall deposit and maintain the funds of the Commission in an account in the name of the Commission in a bank selected by him.

SECTION IX. INTERNAL CONTROL

- (a) The Executive Secretary shall:
 - (i) Establish detailed financial procedures in order to ensure effective financial administration and the exercise of economy;
 - (ii) Cause all payments to be made on the basis of supporting vouchers and other documents which ensure that the services or goods have been received, and that payment has not previously been made;
 - (iii) Designate the officers of the Secretariat who may receive monies, incur obligations and make payments on behalf of the Commission;
 - (iv) Maintain an internal financial control which shall provide for an effective current examination and/or review of financial transactions in order to ensure:
 - 1) the regularity of the receipt, custody and disposal of all funds and other financial resources of the Commission;
 - 2) the conformity of obligations and expenditures with the appropriations or other financial provision voted by the Commission;
 - 3) the economic use of the resources of the Commission.
- (b) No obligations shall be incurred until allotments or other appropriate authorizations have been made in writing under the authority of the Executive Secretary.
- (c) The Commission may, after full investigation, authorize the writing off of losses of cash, stores and other assets, provided that a statement of all such amounts written off shall be submitted to the Auditors with the annual accounts.

SECTION X. THE ACCOUNTS

- (a) The Executive Secretary shall maintain such accounting records as are necessary and shall submit to the Commission annual accounts showing for the financial year to which they relate:
 - (i) The income and expenditures;
 - (ii) The status of appropriations, including:
 - 1) the original budget appropriations,
 - 2) the appropriations as modified by any transfers,
 - 3) credits, if any, other than the appropriations voted by the Commission,
 - 4) the amounts charged against those appropriations and/or other credits;
 - (iii) The assets and liabilities of the Commission.

He shall also give such other information as may be appropriate to indicate the current financial position of the Commission.
- (b) The annual accounts and accounting records of the Commission shall be presented in the currency of the country in which the headquarters of the Commission is located.
- (c) The annual accounts shall be submitted by the Executive Secretary to the Auditors not later than sixty days following the end of the fiscal year.

SECTION XI. EXTERNAL AUDIT

- (a) The accounts of the Commission shall be audited annually by a competent firm of accountants selected by the Commission.
- (b) The Auditors, in addition to certifying the accounts, may make such observations as they deem necessary with respect to the efficiency of the financial procedures, the accounting system, the internal financial controls and, in general, the financial consequences of administrative practices.
- (c) The Auditors shall submit their report to the Commission not later than four months following the end of the financial year to which the accounts relate.

SECTION XII. BONDING

- (a) The Executive Secretary, the Assistant Executive Secretary, and such other members of the staff as may be required, shall be bonded by a reputable bonding company in such an amount as may be determined by the Commission from time to time. The cost of the premium shall be paid by the Commission.

SECTION XIII. DELEGATION OF AUTHORITY

- (a) The Commission may empower the Executive Secretary to delegate to other officers of the Secretariat such of his powers as it may deem desirable.

SECTION XIV. GENERAL PROVISIONS

- (a) These regulations shall be effective as of the date of their approval by the Commission and may be amended by the Commission from time to time.
- (b) In case of doubt as to the interpretation and application of any of the foregoing regulations, the Executive Secretary is authorized to rule thereon after consultation with the Chairman and Vice-Chairman.

INTERIM MEETINGS AND ACTIONS

Sault Ste. Marie, Ontario—July 30-31, 1956

At its meeting in Sault Ste. Marie, Ontario, the Commission, upon receiving a report of its investigating sub-committee, selected Ann Arbor, Michigan, as the seat of the Commission; offices were to be established at 1319 North University Avenue, in space provided by the University of Michigan.

In its consideration of organizational matters, the Commission discussed at length the employment of an Executive Secretary and made arrangements for bonding the Acting Executive Secretary. The Ann Arbor Bank was made the official depository of the Commission's funds and several additional administrative rules were established.

The Commission approved the appointment of Dr. W. A. Kennedy of the Fisheries Research Board of Canada, Mr. Norman Baldwin of the Ontario Department of Lands and Forests and Dr. James W. Moffett of the United States Fish and Wildlife Service to the Scientific Advisory Committee.

The collection of appropriate fishery statistics on the Great Lakes was discussed and a report of the Lake Erie Fish Management Committee on this activity reviewed. This committee's efforts to promote the collection of more accurate and useful data were commended.

A request from the University of Toronto for aid in preparing a bibliography on Great Lakes fisheries and related subjects was received and discussed by the Commission.

Ann Arbor, Michigan—August 14, 1956

At this meeting the Commission gave tentative approval, subject to more thorough analysis, to a budget estimate and program for its operation and for sea lamprey control during fiscal year 1957-58.

This budget provided for:

(a) Commission requirements for administration and general research	\$50,000	
(b) Sea lamprey control:		
Barrier construction	\$420,508	
Operation and maintenance of barriers	594,688	
Assessment of effectiveness of barriers	60,643	
Survey of sea lamprey spawning grounds	58,760	
Sea lamprey research	169,338	
Administration costs (local)	63,260	1,367,197
Total		\$1,417,197

Canada was asked to provide 31 percent of the amount for sea lamprey activities and one-half of the amount for Commission expenses. The United States was asked to provide 69 percent of the amount for sea lamprey activities and one-half for Commission expenses.

The Commission considered and recommended the programs and budget estimates of various agencies doing general fishery research on the Great Lakes and agreed that this work would effectively contribute towards the desirable general research program. The budgets for this work were as follows:

U. S. Fish and Wildlife Service:

Chubs (Coregonidae) in Lake Michigan	\$20,000
Lake trout in Lake Superior	44,230
Limnology and experimental fishing	60,610
Fish populations of Green Bay	7,500
Fishery statistics	20,400
Reports on earlier investigations	15,000
Fluctuations of Saginaw Bay fisheries	53,530
Fishery-limnological survey of Lake Erie	59,160
Operation of research vessel <i>Cisco</i>	35,500

	\$315,930

Fisheries Research Board of Canada:

Lake trout studies	\$19,630
Biology of Lakes Erie and Ontario	8,300
Scale reading	2,470
Water laboratory	20,000
Administration	5,980

	\$56,380

Ontario Department of Lands and Forests:

Headquarters: Biometrical studies	\$33,000
Hydrographic studies	50,000
Lake Ontario	17,900
Lake Erie	49,500
Lake Huron	52,600
Lake Superior	19,600

	\$222,600

Toronto, Ontario—September 14, 1956

The Commission heard a progress report on the testing of chemicals selectively toxic to sea lamprey.

The Commission budget for 1957–58 was submitted for final review and approved. The Acting Executive Secretary was instructed to call a meeting of the Scientific Advisory Committee and prepare a program and preliminary budget for fiscal year 1958–59.

The Acting Executive Secretary was instructed to hire a secretary and procure furnishings for the Commission's headquarters.

It was announced by the United States that Dr. Charles Dambach of Ohio State University would serve as the second United States member of the Scientific Advisory Committee. His appointment was approved by the Commission.

ANNUAL MEETING

AGENDA

1. Call to order by the Chairman.
2. Introduction of sectional advisory groups, welcome by Chairman and brief review of the history of the Commission.
3. Adoption of agenda.
4. Approval of minutes of past meetings.
5. Press relations.
6. Report of the Scientific Advisory Committee:
 - (a) Current lamprey control and general research programs.
 - (b) Lamprey control and general research programs in fiscal year 1957–58.
 - (c) Lamprey control and general research programs in fiscal year 1958–59.
 - (d) Lake trout rehabilitation.
7. Consideration of budget estimates for fiscal year 1958–59.
8. Consideration of organizational matters:
 - (a) Report of Acting Executive Secretary on discharge of Commission's duties.
 - (b) Discussion of publication of proceedings and activities.
 - (c) Discussion of additional Commission staff members.
 - (d) Position of Executive Secretary.
 - (e) Amendments to rules of procedure, if any.
9. Report of Acting Executive Secretary on status of accounts.
10. Report on deliberations regarding a Great Lakes bibliography.
11. Consideration of policy regarding outside relations:
 - (a) With other international bodies.
 - (b) With states and provinces (collectively or singly).
 - (c) With individuals and institutions.
12. Date and place of next meeting.
13. Resolutions.
14. Other business.
15. Adjournment.

ANNUAL MEETING

November 19-20, 1956

The first annual meeting of the Great Lakes Fishery Commission was held at Ann Arbor, Michigan, November 19 and 20, 1956. All members of the Commission were present and were attended by sectional advisors. After introduction of the sectional advisory groups, the agenda were approved.

The Commission reviewed the progress of sea lamprey control, research on sea lamprey control, and research on other Great Lakes fishery problems. Reports on the lamprey research and control activities appear on pages 28 and 31.

The Commission's agents were questioned regarding the amount of consultation with electronic specialists and toxicologists. The Commission was advised that there had been close collaboration with such persons.

It was learned that the electrical barriers, although effective in stopping adults, did not kill small lamprey as they migrated downstream to begin their parasitic life.

The ability of the electrical devices to block sea lamprey during floods, which raise some streams as much as 26 feet above the low-water level, was discussed. Flooding makes barrier operations extremely difficult. Adequate control in these situations may be more effectively obtained by destroying young lamprey in the stream with chemicals.

The Scientific Advisory Committee submitted for the Commission's review and ultimate adoption, a preliminary program and budget estimate for the fiscal year 1958-59. The program, which appears on page 33, included sea lamprey control operations and fishery research believed necessary to advance toward the Commission's assigned objectives.

The Chairman made it clear that budgets were not up for adoption at the annual meeting, but were being presented for review only. Final consideration of the program and budget would be made next spring.

It was explained that the technological work and detailed economic study recommended by the Committee were not within the terms of reference of the Commission. The Commission, however, recognized their importance, and favored their further development.

The Commission recommended that the annual report contain an account of meetings, progress and budgets, running to about 15 printed pages. Reports of established commissions could be used as

guides. The final version was to be approved by the Chairman and Vice-Chairman and submitted to the entire Commission for concurrence.

The Commission also asked that plans be made for the establishment of an appropriate series of publications to take care of its needs.

The Acting Executive Secretary was instructed to prepare a quarterly newsletter to keep members of the Commission and Advisory Committees informed.

The Commission agreed to the desirability of a bibliography of Great Lakes fisheries literature, prepared on cards and indexed by subjects, author, and locality. They also agreed that the University of Toronto was capable of doing the work. Action was deferred pending decisions regarding the availability of funds for this purpose.

The Commission agreed that the Executive Secretary should attend meetings of other fishery commissions after having cleared attendance with the body sponsoring the meeting. Where expenditures of considerable time and money were involved, such travel should be cleared with the Chairman.

The Executive Secretary should attend meetings of groups sponsored by states and provinces collectively or singly, or any informal group of similar nature. Working arrangements and formal contacts with the states and provinces by the Commission must be handled through the State Departments of the member countries.

It was agreed that a meeting of the Commission be held April 16 and 17 at either Madison or Milwaukee, Wisconsin, to discuss and approve budgets for the 1958-59 lamprey control and research program.

LAMPREY CONTROL AND RESEARCH IN CANADA

BY THE FISHERIES RESEARCH BOARD OF CANADA

Lamprey Control Activities

New electrical barriers were built on 11 tributaries to Lake Superior. On November 1, 26 barriers had been completed and 7 barriers completed except for the generators which have not been delivered. The four streams which still require barriers should be blocked before July 1, 1957, to make a total of 37 on the Canadian side of Lake Superior. In addition, 5 barriers which were operated in 1956 were found unnecessary and have been dismantled.

Rack type or multiple ground type electrodes were used in all new barriers. On many of the existing barriers rack type and multiple ground type electrodes were substituted for hanging electrodes and single ground electrodes. Extensive tests were made on the electrical fields of existing barriers and where necessary, changes were made to improve the field.

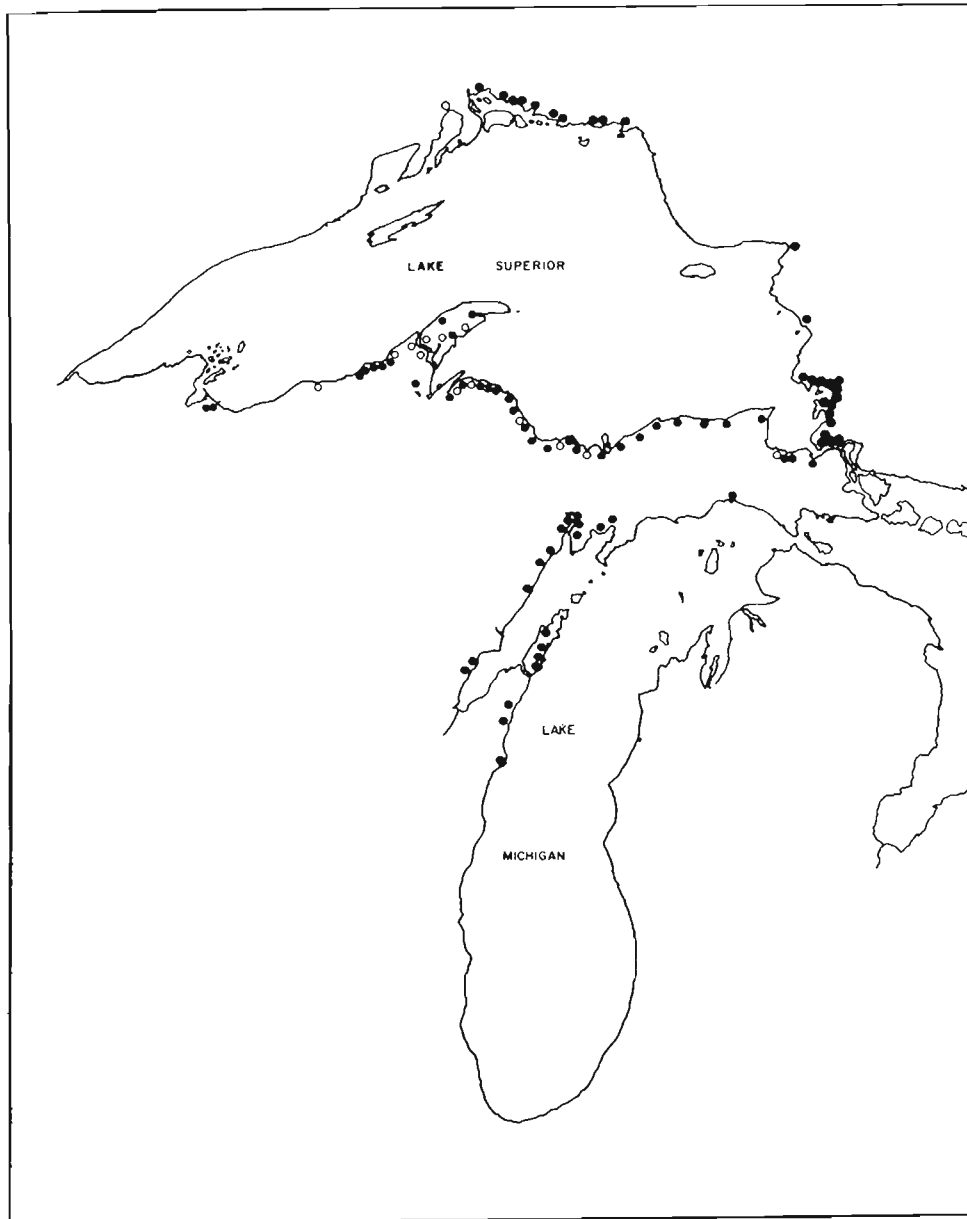
Twenty-nine barriers were operated and maintained, not all of them from the beginning of the season. Flood damage was considerable on two occasions, and as a result, some barriers were out of operation for various lengths of time.

The wire and wooden box traps of previous years were replaced by modified poundnets set below the barriers. The poundnets were much more satisfactory in preventing fish from being electrocuted.

An operation and maintenance unit was established to handle routine operation and maintenance of lamprey barriers. It is in charge of an engineer, has its headquarters at Sault Ste. Marie, controls four sub-units located on Lake Superior, and later will control other sub-units on Lake Huron.

A total of 2,311 dead sea lamprey were recovered below the electrical barriers, 2,243 at the 18 barriers nearest Sault Ste. Marie, 53 at the Michipicoten River, and the remaining 15 at the 10 barriers north and west of the Michipicoten River. Spawning surveys demonstrated that there had been minor escapement past five barriers, presumably when they were out of action because of flood damage. All nests found were destroyed.

A comparison of the kill with that in 1955 (2,131 near Sault Ste. Marie, none to the north and west) does not indicate a substantial increase in spawning population such as has apparently occurred on the United States side of the lake. The distribution of the kill indicates that sea lamprey are not seriously utilizing the streams north and west of the Michipicoten. Even in the extreme south-east, three



Electrical barriers in operation on Lakes Superior and Michigan in 1956.
Standby barriers shown as open circles.

rivers, Chippewa, Batchewana, and Pancake, accounted for 1,975 of the 2,243 animals taken.

The extent to which sea lamprey utilized 115 potential spawning streams between Agawa and Pigeon Rivers was investigated by installing a check weir in the mouth of each to trap upstream migrants. No sea lamprey were taken, nor did surveys of the stream reveal any evidence of spawning. This negative finding gives further indication that the sea lamprey has not yet become well established in the Canadian tributaries of Lake Superior, except in the extreme south-east.

The last 70 tributaries of Lake Superior were examined to assess their potential for sea lamprey spawning. No evidence of spawning was found and only three streams seemed to warrant further observation. This survey included the Pigeon River below the falls, because it had been arranged that the Canadian group would investigate both the United States and the Canadian sides of the river.

The deeper portions of the Chippewa, Batchewana, Pukasaw, and Montreal Rivers were surveyed by divers using SCUBA (Self Contained Underwater Breathing Apparatus). Banks of gravel were found in depths of 7 to 11 feet, but there was no indication that sea lamprey use them for nest building. A portion of the St. Mary's River rapids at Sault Ste. Marie was also examined with negative results.

With the help of Ontario Government personnel, the extent to which many Lake Huron tributaries are used by lamprey for spawning has been assessed. Most of the sites required for lamprey barriers between Sault Ste. Marie and Parry Sound have been chosen.

Sea Lamprey Research

Between June 26 and November 1, divers with SCUBA inspected the hulls of 51 of the ships that passed through the Canadian Sault Locks. The first sea lamprey was found on September 13 on the stern of the thirty-sixth ship, an upbound 400-foot freighter. Fifteen ships examined subsequently yielded 11 lamprey about equally distributed between upbound and downbound vessels.

Investigations with white light failed to demonstrate a phototaxis which could be used to lead or repel adult sea lamprey, but it was demonstrated that the tail region is highly photosensitive. The threshold voltage gradients which will paralyze the swimming muscles of larvae and the respiratory muscles of adult sea lamprey was found to increase with increasing frequency of the alternating current applied. During an investigation of the effects of sound and ultrasonic vibrations, it was discovered that adult sea lamprey produce electrical impulses which result in an electrical field ahead of the animal.

Adult sea lamprey confined in a large pen on suitable gravel, constructed nests and spawned successfully in both still and running water. Eggs from the nest in the still-water section of the pen had undergone the first stages of normal development when it was destroyed by a flood.

The preferences of ammocoetes of three size classes for substrates of various compactness were investigated in the laboratory. Newly hatched ammocoetes, taken from the nest before normal emergence, were incapable of penetrating any substrate more compact than loose gravel. A "preference" for gravel was shown by ammocoetes up to 2½ inches long. Ammocoetes larger than 2½ inches in length most frequently selected finer-grained, more compact substrates such as sand or sand-silt mixtures.

LAMPREY CONTROL AND RESEARCH IN THE UNITED STATES

BY THE UNITED STATES FISH AND WILDLIFE SERVICE

Lamprey Control Activities

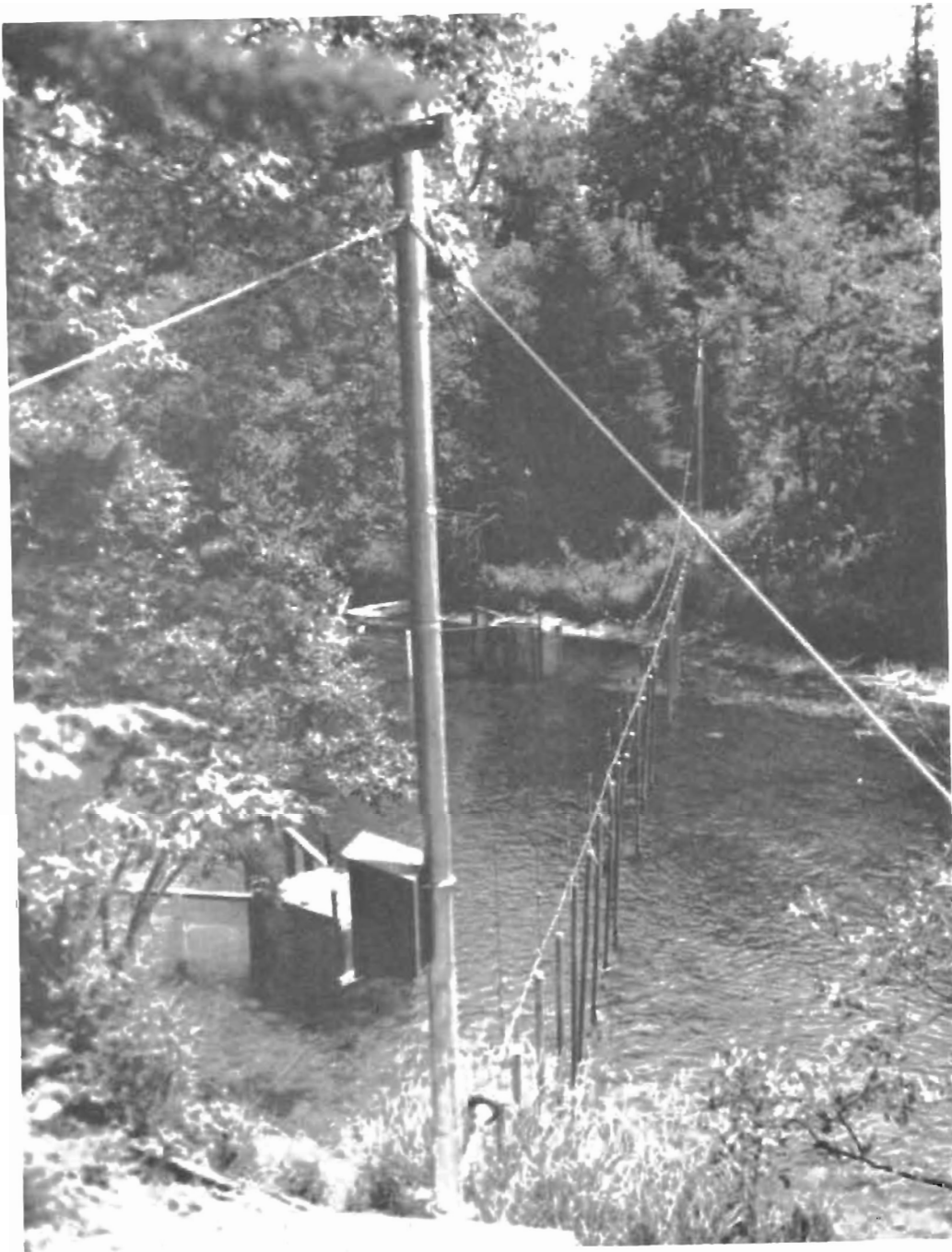
Electromechanical control barriers were constructed on the Bad and White Rivers, rather large tributaries to Lake Superior in Wisconsin. Use of these streams by sea lampreys was verified first in 1955. They represent the westernmost extension of lamprey spawning runs known. A new barrier was built on the Ford River, tributary to Green Bay (Lake Michigan) and rather extensive alterations were made in many existing barriers on both lakes.

The major effort in lamprey control continued to be made on Lake Superior, the only lake that still contains a sufficient number of lake trout to support commercial operations. In fiscal year 1956, as in the preceding one, all known spawning streams on the United States shore were blocked. Thirty-five barriers were operated and 13 others were held in standby status. Thirty-three barriers produced 24,070 sea lampreys; two produced none. The barrier on the Chocolay River took 6,888 sea lampreys and was the largest produced on Lake Superior.

Control operations were concentrated on Lake Superior in recent seasons in the hope that lampreys might be reduced in time to prevent the collapse of the lake trout fishery (indeed, the near extinction of trout) that has occurred in Lakes Huron and Michigan. This hope has been greatly dimmed by the rate of increase in the abundance of lampreys. How rapid the increase has been is illustrated by the take of lampreys in 30 streams that were under control in each of the last three years:

1954	.	.	.	.	4,922
1955	.	.	.	.	8,823
1956	.	.	.	.	19,009

Since the larval life of sea lampreys in streams is long—five years or more—benefits from the blocking of spawning runs cannot be expected before the end of a similar period. At the present rate of increase, the lamprey stock in Lake Superior will be enormous before decreases can come from the current program. Yet the fishery is already near collapse (1,340,000 lbs. below average production in 1955) because of scarcity of lake trout. It seems that nothing but the development of a means for destroying larval lamprey in streams can prevent failure of the fishery.



Electrical barrier (Type B) consisting of a single row of suspended electrodes and parallel submerged electrode, visible between traps, on the Iron River, Marquette County, Michigan.

Control devices in 19 streams tributary to western Lake Michigan and Green Bay took 54,932 sea lampreys. The biggest take was from the Cedar River which produced 13,324 lampreys.

Only one barrier has been operated in the Lake Huron basin. No expansion of operations will be undertaken until installations have been completed in Lake Michigan.

Sea Lamprey Research

The search for substances that will destroy larval sea lampreys in streams without injuring fishes has advanced markedly. Eight compounds were discovered that exhibited differential toxicity toward larval lampreys and of these, two gave particular promise. Extensive testing of chemicals structurally related to one of these compounds has brought to light four additional substances of great promise. Of these six compounds, five are related halogen nitrophenols and one is a chemical that can be identified, at present, only as NP-1458.

Two pilot models of a direct-current barrier to fish and sea lamprey migration were tested and proved to be especially effective in controlling upstream migration and in guiding migrants into traps. This device establishes in the water only the negative half of a pulsed direct-current, fish guiding electrical field. It acts as a diversion unit rather than a collecting unit and avoids the disadvantages of attracting fish to the positive pole of the circuit where they are stunned or electrocuted by the intense field. The device is a "grounded system" in which the negative side of the circuit is placed in the water while the positive side is grounded to electrodes driven into the stream bank.

In one stream, the Silver River, 78,648 fish (51,417 were smelt) and sea lamprey entered the control device and 98.7 percent of them were trapped successfully. This performance contrasts greatly with results obtained the previous year with an alternating-current barrier. The mortality among rainbow trout, white suckers, and sturgeon suckers in 1955 was 85.5 percent and in 1956 it was 8.1 percent.

On the Chocolay River in 1956, 14,884 fish and sea lampreys entered the control device and 94.1 percent of them were trapped successfully. No contrast between mortalities in 1955 with those in 1956 can be made because the Chocolay River was used as the experimental area in developing the device.

Other researches on the sea lamprey have included experimental and descriptive embryology and the histology of the digestive tract. The Hammond Bay laboratory continued to supply research materials to various medical and biological research organizations.

RECOMMENDATIONS OF THE SCIENTIFIC ADVISORY COMMITTEE

The sea lamprey control program, lake trout restoration and Great Lakes research were discussed at length at two meetings of the Committee. The outcome of the discussions was general agreement on several important program features:

1. Lamprey control and research to discover additional control methods should be developed as rapidly as possible.
2. Problems of lake trout restoration should be investigated and research begun on lake trout races and remnant stocks.
3. Increased attention should be given to adequate sampling of the commercial catch and to a program of sampling young fishes on all lakes.
4. Interrelationships among species including the effects of selective fishing should be investigated thoroughly. The study of smelt and alewives was described as very desirable.
5. Problems of natural history, *i.e.* population identities, movements, distribution, densities, fluctuations, etc.; life histories of important species and their associates; growth and replacement rates; and food relationships should be included in any research program.
6. Technological, market development and other economic problems of the fishery should be recognized and studies implemented.
7. Hydrography of the lakes should be studied, preferably concurrently with studies on fisheries.
8. Development of methods of profitably exploiting currently unused or partially used fish resources should be pushed with vigor.
9. The nature and extent of pollution in the Great Lakes should be learned and steps taken to correct practices adversely affecting fish stocks.
10. Catch statistics should be collected and every method possible should be applied to improve coverage. These records should be analyzed carefully for all information they contain. Statistics of catch should include the take of fish by sportsmen.

Lamprey control program, 1958-59

It was agreed by the Scientific Advisory Committee and its consultants that sea lamprey control with electrical and physical barriers should be applied rapidly. Meanwhile, research to find and develop other methods of sea lamprey control should be increased. New control techniques should be brought to the application stage without delay.

Research on the lamprey in all of its life history stages should be continued with increased vigor and effort. No possibilities for discovery of new approaches to control should be left unexplored. The sea lampreys of Lake Ontario and of the Atlantic Coast should be investigated to learn their habits, associates, enemies, parasites, diseases, and physiological characteristics in the hope of finding the factors which hold those populations within bounds. Such findings may be applicable in the reduction of populations above, and perhaps below, Niagara Falls.

Tentative sea lamprey control budget estimates

It is assumed that by the end of fiscal year 1957-58:

1. Sea lamprey barriers will be installed on at least
 - 104 Lake Superior streams
 - 107 Lake Michigan streams, and
 - 43 Lake Huron streams, for a total of
 - 254
2. Sea lamprey barriers will remain to be built on at least
 - 6 Lake Superior streams
 - 4 Lake Michigan streams
 - 74 Lake Huron streams
 - 8 Lake Erie streams, and
 - 10 Lake Ontario streams for a total of
 - 102
3. Stream surveys will have to be made on Lake Superior, Lake Michigan, Lake Huron, Lake Erie and Lake Ontario; and
4. Research on sea lamprey biology and the development of control methods will have to be continued.

On the basis of this tentative but very realistic appraisal, funds will have to be obtained in 1958-59 to:

1. Operate and maintain 356 barriers.
2. Construct at least 102 barriers.
3. Conduct stream surveys on all the Great Lakes.
4. Do research on sea lamprey biology and control methods.

Preliminary estimates of funds required in the major categories of this activity are:

Operation and maintenance of 356 barriers	. \$1,028,400
Construction of 102 barriers	 510,000
Stream surveys	 119,670
Sea lamprey research	 200,000
Administrative expenses	 65,000

Total	 \$1,923,070

Lake trout rehabilitation

The problem of lake trout rehabilitation is a large portion of this control program. Rehabilitation will have to be done in Lake Huron and Lake Michigan and it appears more likely each year that it will have to be done in Lake Superior. Planning for this undertaking must be considered in its preliminary phases now. Agencies, developing or operating fish hatcheries and rearing facilities, require at least two, preferably three years, for their planning and start of production.

Experiments conducted to date indicate that lake trout reared to yearling stage before planting survive better than trout planted at earlier ages. Furthermore, holding yearling lake trout until the spring before planting is more effective than planting in the fall. Small lake trout, up to 10 inches in length, are not specific objects of attack by sea lampreys. Considering a growth rate of three inches per year, lake trout could live relatively free from attack for two or three years after planting. By the time lamprey control structures are all in place, lake trout for planting should be under culture. That means we should be planning for egg sources, hatchery facilities, apportionment of various responsibilities and needed research now. Opportunities to alter the gene pool in lake trout stocks were never better. Possibilities of effecting early maturity, greater vertical distribution and other desirable hereditary attributes in the stocks should be explored. This might be done by the selection of races or the use of hybrids from crossing brook and lake trout in stocking the lakes.

PARTICIPANTS

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Vice-Chairman: A. L. PRITCHARD, Canada

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