BY THE U.S. GENERAL ACCOUNTING OFFICE

Report To The Chairman, Committee On Merchant Marine and Fisheries House Of Representatives

U.S.-Canadian Joint Effort Helps To Revitalize Great Lakes Fishery

The Great Lakes Fishery Commission was created by a 1955 agreement between the United States and Canada because of a 66 percent decline in commercial fishing harvests. The decline was due in large part to the emergence of the sea lamprey, a parasite which wounds and kills fish.

Fishery experts credit the Commission with reducing sea lampreys by an estimated 90 percent and helping to revitalize the Great Lakes fishery to a thriving resource valued at over $1 billion. Although there has been a useful exchange of information on the Great Lakes fishery emanating from the Commission's sponsored research, the results of funded projects have not always been timely, and technical experts who advise the Commission have received a significant share of research awards and dollars. GAO also noted that the Commission has retained a relatively large balance of unused funds over the past several years.

GAO recommends that the State Department take steps to seek improvements in the administration of the Commission's research program, and reductions in the amount of unused funds.

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WASHINGTON, D.C. 20548

NATIONAL SECURITY AND
INTERNATIONAL AFFAIRS DIVISION

B-217758

The Honorable Walter B. Jones
Chairman, Committee on Merchant Marine
and Fisheries
House of Representatives

Dear Mr. Chairman:

In response to your letter of May 23, 1984, we reviewed the administration and effectiveness of the U.S.-Canadian Great Lakes Fishery Commission (GLFC).

We addressed your specific questions on the extent to which GLFC activities have improved the fisheries; the timeliness and effectiveness of research studies and how research funds are awarded; the process by which U.S. positions on GLFC issues are formulated; U.S. commissioners' backgrounds, effectiveness, and attendance at meetings; and the extent to which alternates have been designated to substitute for absent U.S. commissioners. We also examined the use of unused appropriated funds and the interest earned on them.

We found the GLFC has generally carried out its responsibilities effectively and contributed significantly to improving the Great Lakes fishery. We are, however, recommending several actions to improve GLFC operations and to apply unused funds.

GLFC HAS CONTRIBUTED TO RESTORING GREAT LAKES FISH POPULATION

The United States and Canada created the GLFC in 1955 because of concern over the decline in Great Lakes fish stocks. The presence of sea lamprey--an eel-like parasite which adheres to fish and wounds or kills them by extracting their body fluids--was considered a major factor in drastically reducing lake trout and whitefish stocks. (Harvests by commercial fishermen in 1955 were down two-thirds from 1940.)

The GLFC is composed of eight commissioners--four each appointed by United States and Canada--to serve in a nonsalaried, part-time capacity. The Commission oversees programs designed to maximize the productivity of fish stocks,

eradicate sea lamprey populations, and further the knowledge of the Great Lakes fishery in general. To accomplish these goals, the GLFC brings together and helps coordinate the efforts of federal, state, provincial, and private interests that affect the Great Lakes fishery. GLFC's budget in support of its mission exceeded $7 million in fiscal year 1985; approximately $6.6 million was allocated for sea lamprey control and research and about $.7 million for administration and general research.

GLFC efforts--specifically its sea lamprey control programs--have contributed significantly to increasing Great Lakes fish stocks. Since first implemented in 1955, the GLFC's control program, carried out under contract with the U.S. Fish and Wildlife Service and Canada's Department of Fisheries and Oceans, has reduced sea lamprey populations by an estimated 90 percent. There has been a resurgence of desirable fish stocks; commercial fishing industry statistics show harvests of lake trout and whitefish in 1982 more than doubled 1962 production. While stocking fish in the lakes has contributed to this gain, U.S. and Canadian fishery experts credit the resurgence mostly to the control program. In fiscal year 1984, the GLFC spent over 90 percent of its budget on lamprey control.

Authority to manage the Great Lakes remains with the federal, state, and provincial governments. Consequently, in efforts to improve the Great Lakes fishery, the GLFC has assumed the roles of sponsor and facilitator rather than manager. GLFC meetings are attended by representatives from the United States and Canadian federal governments, eight state governments, the Province of Ontario, and recreational and commercial sectors. GLFC officials believed that because of the resulting interaction, the parties are more aware of each other's concerns and less likely to act independently. For example, officials informed us that proposals by certain interest groups to stock the Great Lakes with an exotic species of fish or with potentially diseased fish have been withdrawn because of concerns expressed by other members attending the GLFC meetings.

In addition, fishery experts believe that GLFC-sponsored research has contributed to the useful exchange of information and has had a positive impact on Great Lakes fishery management. For example, the results of GLFC research have been used to develop an integrated approach to fishery management which includes sea lamprey control, fish stocking, fishing restrictions and limits, and currently evolving methodologies such as sea lamprey sterilization, chemical attractants and repellants, and barrier dams. The GLFC has distributed the results of its financially supported fishery research directly to fishery experts in 106 cities in the United States and

Canada and in 9 other countries. The GLFC has indirectly supported fishery research by promoting publication of results in professional journals and other scientific publications.

CRITICISMS OF RESEARCH PROGRAM

The research program has been criticized by some federal, state, and provincial fishery managers and university researchers because the large number of research projects awarded to members of the GLFC's technical advisory board--the Board of Technical Experts (BOTE)--creates the impression of a conflict of interest. From 1979 through 1984, 15 of 35 research projects and 48 percent of the research funds ($281,000 of $590,000) went to BOTE members, with most of the remainder going to university affiliated and other independent researchers.

Currently, the BOTE is made up of 14 U.S. and Canadian fishery experts from universities and federal, state, and provincial agencies--some of whom are considered to be the foremost authorities in their fields. The BOTE assists the commissioners in managing the overall direction of the research program and serves as an independent expert and professional advisor to the GLFC on technical matters. As part of its responsibilities, the BOTE determines research needs, solicits and reviews research proposals, and recommends grants. Once the BOTE establishes a GLFC research requirement, it solicits a proposal either from one of its members or from an outside researcher whose expertise is known to BOTE members through their professional affiliations. In the opinion of federal, state, and provincial fishery officials and university and private sector affiliates, BOTE members are qualified to do GLFC funded research.

GLFC officials told us they usually did not issue formal requests for proposals because of the low dollar amount of the typical GLFC research award. A request for proposal was used one time, and in that instance, the award was made to a non-BOTE researcher. Research grants for the period 1979 through 1984 averaged approximately $16,800 and ranged from $1,580 to $74,000, with only 10 of 35 research grants awarded during this period exceeding $20,000.

GLFC is attempting to offset criticism by requiring that all BOTE member proposals be reviewed by at least one researcher who is not a BOTE member. However, since most BOTE member proposals are currently subjected to outside peer review, the effect of this initiative appears to be negligible.

Another criticism of the research program was the timeliness of the results. The GLFC considers a report to be

timely if it is received within 6 months of the target date; still, about one third of the projects sponsored by the GLFC between 1979 and 1984 exceeded this criterion resulting in delays in dissemination and use of the research findings. As a means to better monitor research projects, the BOTE recently decided to require researchers who miss target completion dates to submit a progress report on the status of their research as well as the estimated date to complete. These reports are not required until the project has missed the initial target date.

U.S. COMMISSIONERS' BACKGROUNDS ARE PRIMARILY GENERALIST IN NATURE

The four current U.S. commissioners include a Deputy Under Secretary of the Interior, who is a lawyer by profession; a director of a state department of natural resources with degrees in parks and recreation and public administration; an individual experienced in commercial fishing; and a fishery biologist who holds a doctorate in his scientific discipline and who has held several state level senior executive fishery management positions. The backgrounds of Canadian commissioners are more scientifically oriented toward fishery biology. U.S. commissioners told us they do not believe they are disadvantaged by these differences because of the extensive scientific and technical expertise available to them. Advisory boards and committees of scientific and technical experts within the GLFC structure serve the commissioners in both a consultative and operational role. In addition, commissioners use experts from their place of regular employment--for example, federal and state agencies--as another advisory resource. According to the Canadian commissioners, the fishery management backgrounds of U.S. commissioners, combined with their own fishery sciences backgrounds, provide a desirable blend of perspectives.

POSITIONS ON GLFC ISSUES ARE DERIVED COLLEGIALLY

U.S. and Canadian commissioners informed us that decisions are reached by group consensus rather than by separate, unified positions formulated by each country. GLFC's one vote per country[1] arrangement and the common goals of the two countries have fostered a collegial as opposed to an adversarial decisionmaking process. The GLFC functions through operating committees such as Finance and Administration, Fisheries and Environment, and Sea Lamprey, where issues are discussed

[1]Votes on GLFC issues are cast by country, not by individual commissioners. The United States and Canada each have one vote and both must be in agreement for a recommendation to gain acceptance.

and recommendations agreed upon. These are working committees at the commissioner level, with one or more commissioners representing each country. The consensus building begins at this level since agreement on issues is required before they are referred to the full body of commissioners. Commissioners could not recall an occasion where one country's representation formally voted in opposition to the other's.

U.S. COMMISSIONERS OFTEN MISS GLFC MEETINGS

U.S. commissioners have frequently been absent from GLFC meetings in recent years, primarily due to illness. At least one and as many as three U.S. commissioners were absent from all seven GLFC meetings held during 1983 and 1984. The one vote per country rule permits the GLFC to conduct its business even if less than the full complement of commissioners is present. However, the U.S. commissioners present must assume the nonvoting duties and responsibilities of absent commissioners, such as participating in meetings of the working committees.

We examined the decisions made at meetings where U.S. commissioners were absent and found no evidence that the United States was adversely affected by absenteeism. However, some U.S. and Canadian officials believed that the history of absences diminishes the U.S. image as an interested, concerned partner in GLFC matters. Also, the U.S. attendance suffers by comparison to the Canadians.

U.S. HAS NOT APPOINTED ALTERNATE COMMISSIONER

International fisheries legislation applicable to the GLFC provides for the appointment of an alternate commissioner to fill a temporary vacancy created by a commissioner's absence. The GLFC has not used this authorization because the unexpected nature of the absences (i.e., illness) did not allow enough time to request and designate an alternate. The statute requires approval of an alternate by the Secretary of State in consultation with the Secretary of the Interior.

Other international fishery commissions have used standing alternates for absent commissioners. GLFC officials questioned whether a standing alternate would be willing to attend all of the meetings but participate as a commissioner only on an as needed basis, and whether an alternate, unfamiliar with GLFC procedures, process, and the business to be conducted, could interchangeably represent the view of U.S. commissioners' sectors of the fishery community.

UNUSED FUNDS RETAINED BY GLFC

In fiscal year 1984, the GLFC had an operating budget of approximately $7 million, supplemented by about $1.1 million of unused funds, including earned interest, accumulated over the period 1979 through 1984. The unused fund balance represents about 16 percent of the 1984 annual budget.

The unused fund balance has been generated by (1) interest earned on unused funds held, (2) monies in excess of project requirements returned by implementing agencies, and (3) annual contributions by the United States and Canada that have consistently exceeded disbursements. The GLFC financial regulations, which govern the use and administration of contributions, require that unused funds or interest earned in a particular year be used to pay the following year's budgeted expenses. However, the unused funds have been retained by the GLFC and not used as its regulations require. GLFC officials said that the funds are retained as protection against unanticipated shortfalls between receipts and disbursements that may occur.

In a letter to GLFC dated November 7, 1984, the Executive Director of the Department of State's Bureau of Oceans and International Environment and Scientific Affairs suggested that unused funds be used to set up a "working capital fund"--amounting to 2 to 3 percent of the annual budget--to be available for unexpected expenses, but so far this has not been acted on. This letter was sent as a follow-up to a budget meeting attended by GLFC and State Department officials where ways to reduce the unused fund balance, except for an amount to pay for unexpected expenses, were discussed.

CONCLUSIONS

As a result of its role as sponsor, facilitator, and provider of information, the GLFC has contributed materially to restoring the Great Lakes as a thriving fishery resource. Through efforts financially supported by the GLFC, sea lamprey populations have declined and desirable fish stocks are on the increase. As coordinator of federal, state, provincial, and private interests, the GLFC has provided a forum for an exchange of ideas, and participants are more aware of each other's concerns and are more likely to act in concert.

The GLFC could improve some areas in its operations. For example, GLFC should issue a request for proposal for its larger research projects. Such an approach should provide competition for the projects as interested segments of the scientific community become more aware of GLFC research needs, and should also diminish conflict of interest allegations.

We also believe that GLFC's decision to require a progress report from researchers after they miss their target dates is a step in the right direction to improving the timeliness of research results. However, we believe that such a progress report would be more valuable if it was required of researchers at certain intervals before they miss the target date so that corrective action can be taken.

U.S. commissioners appear to work well with their Canadian counterparts in fulfilling the duties of GLFC. Their relationship is collegial rather than adversarial, and some commissioners believe that the mix of backgrounds within the two sections has worked in the GLFC's favor. Nevertheless, frequent U.S. commissioner absences due to illness has created an appearance of disinterest to some affiliated with GLFC.

The present arrangement for appointing an alternate is not practical on short notice, which has apparently been the case with most recent U.S. commissioner absences. The appointment of a standing alternate would overcome this difficulty but could create additional problems. It would, in our opinion, be an unnecessarily complicated solution for ensuring that appointed commissioners attend meetings more regularly. Availability to attend meetings should be a major consideration in appointing commissioners.

GLFC financial regulations require that any unused funds or interest earned in a particular year be used to pay for the GLFC's budgeted expenses in the following year. GLFC's practice has been to retain these funds to pay for unanticipated shortfalls in funds. To reduce some of GLFC's concerns about unanticipated shortfalls, the State Department has suggested that a working capital fund be established.

RECOMMENDATIONS TO THE SECRETARY OF STATE

We recommend that the Secretary of State instruct the Executive Director of the Bureau of Oceans and International Environment and Scientific Affairs to

- --propose to GLFC that it require (1) a request for proposal when contracting for larger research projects (a particular dollar threshold should be included in the Executive Director's proposal) and (2) progress reports from researchers at established intervals agreed upon in research agreements; and

- --renew State's efforts to have the GLFC (1) apply unused funds against the next year's budgeted expenses, in accordance with GLFC

regulations, and (2) provide for a working capital fund, based on a percentage of its annual budget, to serve as a hedge against unanticipated shortfalls in funds.

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The results of our review are discussed in more detail in appendix I. As requested by your office, we did not obtain formal agency comments on this report. We did, however, discuss the report's contents with program officials at the Great Lakes Fishery Commission in Ann Arbor, Michigan, and have incorporated their comments as appropriate. Unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days from the date of the report.

Sincerely yours,

for Frank C. Conahan
Director

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ABBREVIATIONS

BOTE	Board of Technical Experts
GLFC	Great Lakes Fishery Commission

U.S.-CANADIAN JOINT EFFORT HELPS TO REVITALIZE GREAT LAKES FISHERY

BACKGROUND

The Great Lakes has historically been a good source for desirable fresh water fish. In 1940, for example, Canadian and U.S. commercial fishermen harvested approximately 23.7 million pounds of lake trout and lake whitefish. By 1955, however, the combined harvest of these species was only about 8 million pounds--a decline of 66 percent.

This decline in fish stocks was attributed, in part, to overfishing by commercial fishermen, but the emergence of the parasitic sea lamprey was identified as a major contributing factor. The sea lamprey attaches itself to fish and wounds or kills them by feeding on their body fluids.

To combat the problems of poor fish harvests and damage to fish stocks, the United States and Canada, in 1955, entered into an agreement (formally entitled the Convention on Great Lakes Fisheries) which established the Great Lakes Fishery Commission (GLFC). The agreement was ratified by the Congress in 1956 and charged the GLFC with responsibilities to:

--formulate and coordinate research to determine the measures needed to achieve the maximum sustained productivity of fish stocks important to the United States and Canada,

--recommend appropriate measures on the basis of research findings,

--develop and implement measures to eradicate or minimize sea lamprey populations, and

--publish or authorize the publication of scientific and other information obtained in the performance of its duties.

The GLFC is composed of United States and Canadian sections, each comprised of four commissioners who serve on a nonsalaried, part-time basis. The U.S. commissioners are presidential appointees. The term of U.S. commissioners is open-ended and the usual protocol has been that a letter of resignation is submitted with the election of a new president. A secretariat comprising an executive secretary and small support staff assists the commissioners in carrying out their duties. The GLFC is also assisted in managing its research program by a Board of Technical Experts (BOTE) made up of United States and Canadian fishery experts.

The Convention of Great Lakes Fisheries stipulated that, to the greatest extent possible, the GLFC should carry out its duties through official agencies of the member countries and their states and the Province of Ontario. Consequently, the GLFC relies on numerous individuals and groups from federal, state, and provincial agencies in conducting its business. For example, the U.S. Fish and Wildlife Service and the Department of Fisheries and Oceans Canada carry out sea lamprey control operations.

The GLFC is funded through the Department of State in the United States and the Department of Fisheries and Oceans in Canada. The GLFC's budget for fiscal year 1984 was approximately $6.4 million for sea lamprey control and research and $.6 million for administration and general research. The cost of sea lamprey control and research is shared on a 69:31 ratio between the United States and Canada, respectively; cost of administration and general research is shared 50:50. The 69:31 ratio was based on average annual commercial catches of lake trout attributed to the two countries before the sea lamprey influx to the Great Lakes.

OBJECTIVES, SCOPE, AND METHODOLOGY

The Committee on Merchant Marine and Fisheries requested that we determine:

--the extent to which GLFC activities have resulted in material improvement to the Great Lakes fisheries;

--the extent to which information and studies performed for GLFC have been published and circulated in a timely manner and if such studies have resulted in changes in Great Lakes fishery management;

--the extent to which GLFC monies have been awarded to U.S. commissioners and BOTE members;

--the extent to which the experience and education of the U.S. commissioners relate to their activities and responsibilities as commissioners;

--the manner in which unified U.S. positions are formulated on GLFC decisions;

--the effectiveness and attendance of U.S. commissioners at GLFC and U.S. section meetings; and

--the extent to which alternate commissioners have been appointed by the Secretary of State, at the request of the Secretary of the Interior, in the absence of appointed commissioners at GLFC and U.S. section meetings.

Our review was performed from August 1984 to February 1985 primarily at the Great Lakes Fishery Commission in Ann Arbor, Michigan, where we interviewed the commissioners and other officials and reviewed documentation regarding GLFC achievements, operations, research procedures and awards, commissioner activities and responsibilities, and financial practices. We also interviewed individuals affiliated with the GLFC at the federal, state, provincial, university, and private sector level throughout the Great Lakes region and in Washington, D.C., to obtain information on contributions of the GLFC, effect of GLFC research awards, and the performance of the U.S. commissioners.

Our review was performed in accordance with generally accepted government auditing standards.

GLFC HAS CONTRIBUTED TO RESTORING GREAT LAKES FISH POPULATIONS

A program developed and instituted by the GLFC to fulfill its responsibility for sea lamprey control has been successful in reducing lamprey populations. Concurrently, the GLFC has sponsored research and related activities which have contributed to general fishery knowledge. These efforts by the GLFC have helped to restore the Great Lakes as a thriving fishery resource.

Sea lamprey control programs

The GLFC entered into an ongoing contractual agreement with the U.S. Fish and Wildlife Service and the Department of Fisheries and Oceans Canada to implement the sea lamprey control program. GLFC's initial control efforts were carried out by means of mechanical or electromechanical barriers designed to prevent mature sea lampreys from leaving the lakes to spawn in tributary streams. By 1958, control chemicals referred to as lampricides were developed and the barrier program was discontinued as the major control method. Spawning streams were treated with lampricides to destroy sea lamprey larvae.

The results of this program were dramatic. For example, GLFC statistics showed that sea lampreys were abundant in 1958, the first year of lampricide treatment. About 45,000 mature sea lampreys were captured at barriers on eight tributary rivers of Lake Superior. In 1962, the year after the first round of lampricide treatments was completed on these rivers, only about 7,300 mature sea lampreys were captured at the barriers. In the same year, there was some evidence of a comeback of lake trout

and whitefish populations in Lake Superior; U.S. and Canadian commercial fishermen harvested approximately one million pounds of the fish. By 1982, the harvest had increased to about two million pounds. Some of this increase can be attributed to stocking lake trout in Lake Superior. However, lake whitefish were not stocked; yet the harvest increased from .5 million pounds in 1962 to 1.3 million pounds in 1982.

In fiscal year 1984, the GLFC spent over 90 percent of its budget ($6.4 million out of a $7 million) on sea lamprey control, primarily on lampricide purchases and applications, construction of lamprey barriers, and research into lamprey control. Academicians, recreational and commercial industry representatives, and government officials we interviewed believed the money has been well spent; they ranked the sea lamprey control program results as GLFC's single greatest accomplishment. Sea lamprey populations are estimated to have been reduced by 90 percent, and in the opinion of many of these individuals, the Great Lakes would have permanently lost much of its desirable fish stock without the program. Due in large part to the control program, fish stocking efforts, and restrictions on fish catches, the Great Lakes is once again a productive fishery valued at an estimated $1.2 billion.

GLFC-sponsored research studies and exchange of fishery information

Authority to manage the Great Lakes remains with the federal, state, and provincial governments. Consequently, in efforts to improve the Great Lakes fishery, the GLFC has assumed the roles of sponsor and facilitator rather than manager. Approximately $970,000 was available in fiscal year 1984 for GLFC-sponsored fishery research. More than one-half of this amount, about $540,000, was allocated to support research at two U.S. Fish and Wildlife Service laboratories. The remainder, or $430,000, represented the current balance of funds available for independent research. These funds are awarded to individual researchers, including members of GLFC's scientific and technical advisory board (BOTE), researchers affiliated with U.S. and Canadian academic institutions, and independent researchers, and are also used to sponsor fishery related symposiums and workshops.

Research activities

In pursuing its mandate to establish effective methods to control the lampreys and restore fish stocks, the GLFC sponsors an in-house research program through agreement with two facilities of the U.S. Fish and Wildlife Service: the National Fishery Research Laboratory in La Crosse, Wisconsin, and the Hammond Bay Biological Station in Millersburg, Michigan. The $540,000 allocated by GLFC to these laboratories was for research directed towards integrated methods of sea lamprey control. The National Fish Research Laboratory was awarded

$119,000 to conduct research in such areas as improving lampricides (control chemicals), determining how contaminants affect the activity of lampricides, and ascertaining the chemical characteristics of streams selected by spawning sea lampreys. The Hammond Bay Biological Station was awarded $421,100 for research in such areas as developing environmentally acceptable sterilants for sea lampreys, testing the effectiveness of various formulations of bottom toxicants against larval sea lampreys, and providing data needed to determine physiological effects of lamprey attacks on lake trout.

Projects funded from the $430,000 allocation were on various topics including the use of hormones to control reproduction and metamorphosis in sea lampreys; assessment of sea lamprey abundance before and after control in Lake Oneida, a tributary of Lake Ontario; and identification of lake trout stocks. Funded symposiums and workshops addressed such topics as law enforcement techniques to prevent the illegal catch of lake trout, means to measure fishery stock, and methods to assess sea lamprey populations.

Exchange of information

In its role as a facilitator, the GLFC has coordinated the efforts of federal, state, provincial, and private interests that impact on the Great Lakes fishery. GLFC meetings are attended by representatives from the United States and Canadian federal governments, eight state governments, the Province of Ontario, and recreational and commercial sectors.

GLFC officials believed that because of the resulting interaction, the parties are more aware of each other's concerns and less likely to act independently. For example, officials informed us that proposals by certain interest groups to stock the Great Lakes with an exotic species of fish or with potentially diseased fish have been withdrawn because of concerns expressed by members of other sectors attending the GLFC meetings.

The GLFC publishes an annual report which includes actions taken by the GLFC at its meetings, highlights of fishery management and research activities, major changes in the status of fish stocks, the number of streams treated with lampricides, and a synopsis of GLFC publications. It also includes reports of special committees, such as the Fish Disease Control Committee, which is concerned with the spread of fish diseases, and the BOTE, which is the scientific and technical arm of the GLFC.

GLFC also disseminates research results in professional journals and other scientific literary distribution channels. The GLFC distributes information of a specialized nature on a limited basis to experts in a particular field; information with more universal application is distributed on a broader basis to fishery experts from universities, laboratories, and federal,

state, and provincial agencies located in 70 cities in 17 U.S. states, and in 36 cities in 7 Canadian provinces. In addition, fishery experts in 9 foreign countries are on the mailing list. The GLFC also encourages researchers to submit the results of GLFC-sponsored studies to professional journals for publication.

TIMELINESS AND USEFULNESS OF RESEARCH PROJECTS

GLFC-funded research conducted at the U.S. Fish and Wildlife Service laboratories has been closely monitored and target dates have been met. Conversely, most of the GLFC-sponsored research studies by BOTE members and independent and university affiliated researchers were not completed by the agreed upon target dates. Also, the GLFC has been late in publishing its annual report.

According to U.S. Fish and Wildlife Service and GLFC officials, most of the work being done at the service's laboratories involves projects that are long term (10 or more years). The laboratories, however, have segmented these projects into work units with a duration of 1 to 3 years. The laboratories are required to complete the work units within time frames established in memorandums of agreement and work plans with the GLFC. Furthermore, laboratory officials are required to submit biannual reports on the status of research work being conducted. Our review of U.S. Fish and Wildlife Service records showed that work units were being completed on schedule.

On the other hand, we found that most of the GLFC research studies awarded to BOTE and independent and university affiliated researchers between 1979-1984 were not completed by the proposed target date. Of 35 such studies valued at about $590,000, 7 were ongoing. Of the 28 projects completed at the time of our analysis, 5 were completed before or on the target date; the remaining 23 were completed after the target date. Of the 23 late projects, 14 were completed within 6 months after the target date, 4 were completed 7 to 12 months after the target date, and 5 were more than a year late.

According to a GLFC official, any project completed within 6 months after the target date is considered timely because of the uncertainty involved in scientific research. However, even using this criterion, 9 projects, or 32 percent, were late.

As a means to better monitor research projects, the GLFC has recently decided to require researchers who miss target dates to submit a progress report on the status of their research as well as the anticipated date of completion. However, these reports will not be required until the project has missed the initial target date.

GLFC's issuance of its annual report has not been timely. For example, the GLFC did not distribute its 1982 report until

January 1985 and distribution of the 1983 issue is not expected until July 1985. The GLFC executive secretary informed us that the annual report has been delayed primarily because fish stocking information from state and provincial agencies has been late. He stated that the commissioners have instructed him to publish the annual report without fish stocking data if similar delays are anticipated in the future. He believed that publishing this data in a separate report would make the annual report more timely.

The three channels used by GLFC to circulate research results add to the time it takes to disseminate information to interested parties. The GLFC executive secretary estimated that it takes approximately 2 weeks to print and mail research information on a limited basis and 4 to 5 months to print and mail information on a widespread basis. The time frames for publication in professional journals depend on the backlog of articles that a particular publisher is experiencing. Of the 28 projects completed between 1979 and 1984, the results of 12 were circulated on a limited basis; the results of 5 on a widespread basis. The remaining 11 were circulated in journals.

Impact of research results on Great Lakes fishery

According to fishery officials representing federal, state, provincial, university, and private sectors, the results generated from GLFC-sponsored research and related activities have contributed to the useful exchange of fishery information and have initiated changes in fishery management.

The GLFC senior scientist informed us that, on a project-by-project basis, the impact of GLFC-sponsored research varies. Some research, such as studies on the current value of the Great Lakes fishery or lamprey aging, has immediate impact. For example, the current value study has been referred to by agencies in budget justifications, while the lamprey aging study offers a methodology that is currently being tested by other researchers. Other research, such as a study on the development of hatchery techniques in production of whitefish, has more future application. Only one whitefish hatchery is operating at this time, and it has not adopted the techniques called for in this study. Finally, even though a research project does not provide positive results, it may contribute to general fishery knowledge by disproving a theory or methodology.

Some research such as that to combat the sea lamprey has resulted in changes to managing the control program. Barrier dams, techniques to sterilize the lamprey, and materials to attract or repel lampreys have been introduced in developing a more integrated approach, rather than reliance in a single technique.

Fishery experts' opinions were divided as to the impact of one GLFC research project versus another depending on whether they were committed to a biological or socioeconomic (for example, market value of fish harvests emphasis) in fishery research--the two major categories of GLFC sponsorship.

Some fishery experts involved with research at the laboratory level believed that biological research was more pertinent than socioeconomic research because it directly relates to the GLFC mandate to control sea lampreys and revitalize the Great Lakes fishery. Fishery experts at the university and state agency level, on the other hand, viewed socioeconomic research as a valuable tool to get public and policy-maker support for GLFC programs. From yet another perspective, Canadian federal and provincial officials favored studies related to the commercial catch of fish--the focus of their interest in use and development of the Great Lakes resource. Despite these differences in opinion, fishery experts believed that GLFC research overall has had a positive impact on Great Lakes fishery knowledge.

HIGH PERCENTAGE OF GLFC RESEARCH FUNDS SUPPORT BOTE MEMBER PROJECTS

The BOTE assists the commissioners in managing the overall direction of the research program. This includes recommending and/or approving grants to researchers. Although BOTE members are involved in awarding research grants, they are also eligible to receive such grants. In fact, during the period 1979 through 1984, members of the BOTE received nearly half of the GLFC general research funds awarded.

The purpose of the BOTE is to serve as an independent, expert, and professional advisor to the GLFC on technical matters. Currently, the BOTE is made up of 14 U.S. and Canadian fishery experts from universities and federal, state, and provincial agencies. Each member of the Board is appointed for a 2-year term with an option for reappointment. BOTE's major activity occurs in connection with the GLFC's annual meeting when most interim and final committee reports are delivered and the next year's work is allocated and scheduled. A second meeting is normally held in the fall to review progress, prepare preliminary budgets, and evaluate research proposals for possible funding by the GLFC.

The BOTE is involved in the administration of two budgets dealing with independent and university research. One budget is a commissioner-controlled budget. The second involves general research funds which the BOTE controls independently of the commissioners. During the period 1979 through 1984, approximately $590,000 in research funds was awarded to researchers from these budgets--$509,000 from the commissioner-controlled budget and $81,000 from the BOTE-controlled budget.

BOTE members[1] were the recipients of a large percentage of the GLFC research funds. Of the $590,000 awarded, approximately $281,000, or 48 percent, went to BOTE members. This involved 15 of 35 projects funded (43 percent). BOTE members received a higher percentage (51 percent) of the funds when commissioner approval was required than when only BOTE approval was required (26 percent).

During the period 1979 through 1984, only 2 of 17 research proposals made by BOTE members were rejected (12 percent rejection rate) as compared to 17 rejections of 37 research proposals (46 percent rejection rate) for non-BOTE members. One GLFC official attributed the difference in the proposal rejection rates to the fact that BOTE members are more aware of GLFC research needs and are in a better position to design proposals directed to those needs.

Fishery managers and university researchers informed us that the BOTE members are qualified to do GLFC-funded research. The current BOTE is composed of some of the foremost fishery experts in the Great Lakes representing five U.S. and Canadian universities and federal, state, and provincial agencies. Nevertheless, some of these individuals believed that awards to BOTE members gave the appearance of a conflict of interest.[2]

GLFC officials and BOTE members are aware of the appearance of a conflict of interest regarding research awards to BOTE members. As a result, they have recently extended the requirement for peer review of research proposals by at least one researcher who is not a BOTE member to include BOTE member proposals funded by the BOTE budget. Before this change, outside peer review was used only for BOTE research proposals funded through the budget that requires commissioner approval ($509,000 from 1979 through 1984). This change will have little impact since the BOTE budget to BOTE members is relatively insignificant ($81,000 from

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[1]One Canadian commissioner received a research award prior to becoming a commissioner. No commissioner received an award while serving in that capacity.

[2]BOTE members who are federal employees do not receive individual grants and federal conflict of interest laws do not apply to other BOTE members. Among other things, these laws prohibit a federal employee from participating in a matter in which he/she has a financial interest. In any event, research grant monies are not federal funds at the time grants are awarded by GLFC and, further, a BOTE member who is a candidate for a grant is disqualified from voting on that award.

1979 through 1984). BOTE members received about 50 percent of the commissioner-controlled research funds and about 25 percent of its own research budget during the period 1979 through 1984.

One official informed us that external researchers have been solicited using a request for proposal, but only once (and then the award was made to a non-BOTE researcher) because the procedure is more costly than the typical GLFC noncompetitive research award. GLFC research grants for the period 1979 through 1984 averaged approximately $16,800 and ranged from $1,580 to $74,000. Out of the 35 research grants awarded during this period, 10 were $20,000 or greater.

U.S. COMMISSIONERS' BACKGROUNDS ARE PRIMARILY GENERALIST IN NATURE

U.S. commissioners have backgrounds that cover a wide range of experiences and represent a variety of U.S. interest groups--federal, state, scientific, and commercial. With one exception, the commissioners are generalists. However, experts are available to help them deal with highly scientific/technological issues.

In carrying out their duties, the commissioners use official agencies of the two governments, their provinces or states, private or other public organizations, and various individuals. Other sources of technical assistance to the commissioners are various GLFC-established committees, including the BOTE and the Fish Habitat Advisory Board (GLFC central committees) and the Fish Disease Control Committee, Council of Lake Committees, and Lake Committees (GLFC technical committees). These committees aid the commissioners by performing the following functions:

Board of Technical Experts

Advises the commissioners on technical matters; synthesizes scientific, social, and economic opinions; examines research proposals; and makes recommendations on the value of research work for publication.

Fish Habitat Advisory Board

Works with the Lake Committees to refer environmental concerns to the appropriate agencies and pursues responses and actions.

Fish Disease Control Committee

Works with federal, state, and provincial agencies and some private hatcheries to prevent the introduction and spread of serious fish diseases within the Great Lakes.

Lake Committees

Develop studies and coordinate management efforts on transboundary fishery issues such as calculating the total allowable catch for critical species, determining minimum size restrictions, and allocating harvests among jurisdictions.

Council of Lake Committees

Addresses issues which concern more than one lake.

One U.S. commissioner is a Deputy Under Secretary of the Interior and a lawyer by profession. He acquired much of his knowledge of fisheries when he represented the Interior Department in negotiating the Indian fishing treaty rights issue in the Michigan waters of the Great Lakes. He informed us that in addition to the information gained from GLFC advisory committees, he consults with experts within the Interior Department on fishery issues.

Another U.S. commissioner is a director of a state department of natural resources. He earned degrees in parks and recreation and public administration and worked on task forces and other groups involved in such issues as tourism and recreation, marine fisheries, and water resources. He believes that many decisions made by commissioners are on policy issues, which do not require a high degree of scientific/technical expertise. When specialized knowledge is needed, he has access to the fishery expertise of staff members within his state agency.

A third U.S. commissioner has served on the GLFC since its origin and has considerable experience in commercial fishing. He operated a wholesale-retail fishery outlet, organized the Michigan Fish Producers Association, and currently publishes a trade magazine. While he acknowledges a lack of scientific background in fisheries, he believes that he brings the practical perspective of a businessman to the activities of the GLFC.

The fourth U.S. commissioner has a doctorate in fishery biology and has held senior executive fishery management positions in the state of New York. He is a member of many professional organizations, such as the American Fisheries Society, Atlantic Fishery Biologists, Wildlife Society, International Fisheries Association of New York. In addition, he received an award from the International Association of Fish and Wildlife Agencies for his outstanding contributions, and the American Fisheries Society elected him to honorary life membership.

Individuals from the federal, state, and private sector informed us that the Canadian commissioners overall had stronger fishery biology backgrounds than their U.S. counterparts. Two

are high ranking officials of federal level departments responsible for fisheries management and research; one is a university professor with primary research interests in fish and fisheries in the Great Lakes basin; and the fourth is the incumbent Provincial Fisheries Scientist in a major provincial ministry. The U.S. commissioners agree that the Canadian commissioners have more of a scientific/technical foundation than they do as a group. However, because of the scientific/technical expertise that was available to them, the U.S. commissioners do not believe they are at a disadvantage. The Canadian commissioners informed us that the mix of backgrounds has probably worked in the GLFC's favor. They believed the differences permit the GLFC to address issues from more than just a scientific/technical perspective.

POSITIONS ON GLFC ISSUES ARE DERIVED COLLEGIALLY

Canada and the United States share a common goal to restore Great Lakes fishery resources. Each country has one vote in deciding on GLFC recommendations, and both votes must be in agreement to gain acceptance. The common goal/one vote environment has resulted in a collegial, rather than adversarial, decisionmaking process.

The decisionmaking process at a typical 3-day GLFC meeting usually begins with the commissioners discussing items on the executive agenda. Two or three commissioners--one or more representing each country--then meet as members of various internal operating committees: the Finance and Administration Committee, the Fisheries and Environment Committee, and the Sea Lamprey Committee. The internal operating committees discuss and agree on recommendations to be presented to the full body of commissioners. These internal committees differ from the central and technical committees (see pp. 10 and 11) in that they are made up solely of commissioners.

The full body of commissioners then discusses the internal operating committees' recommendations. Rather than each section (U.S. or Canadian) voting on a recommendation, the commissioners, as a group, usually "show hands" if a clear consensus has not emerged from the discussion. More discussion may take place, resulting in acceptance, or the recommendation may be referred to the originating working committee, or it may be tabled. Commissioners could not recall an occasion when one section formally voted in opposition to the other.

On the second day, the commissioners hold a meeting open to the public. The central and technical committees present their respective reports. The commissioners usually meet privately on the third day to conclude any unfinished business from the first day's executive session, followed by U.S. and Canadian section meetings with representatives from their respective government agencies, commercial and recreational interests, and the public

at large appointed by the governors of the Great Lakes states. Finally, the full body of commissioners holds an open meeting to summarize what transpired in the executive session and to discuss items surfaced at the previous day's public meeting and by the section advisors. Unresolved issues become executive agenda items for the next meeting.

The executive secretary of the GLFC informed us that future public and advisory meetings will be held before the formal executive session. U.S. commissioners informed us that this input is valuable to them in making decisions.

U.S. COMMISSIONERS OFTEN MISS GLFC MEETINGS

Due primarily to illness, U.S. commissioners' attendance[3] at GLFC meetings over the past 2 years was below that of Canadian commissioners. The one vote per country rule permits the GLFC to conduct its business even if less than the full complement of commissioners is present. However, the U.S. commissioners present must assume the nonvoting duties and responsibilities of absent commissioners, such as participating in working committee meetings.

During calendar years 1983 and 1984 the GLFC held seven executive meetings. A Canadian commissioner was absent from two of these seven meetings. During the same time, at least one and as many as three U.S. commissioners were absent from all seven meetings. The reasons given for U.S. commissioners' absences were ill health (10 occasions), ill health of a family member (one occasion), and conflict with a prior agency commitment (one occasion). Despite these absences, the GLFC was able to conduct business since at least one commissioner was available to represent the United States.

We examined the decisions made at meetings where U.S. commissioners were absent and found no evidence that the United States was adversely affected due to absenteeism. For example, at one meeting when two of the four U.S. commissioners were absent, a decision was made to appoint new members to the BOTE. The United States actually gained an additional two seats previously held by Canadians. On another occasion when three U.S. commissioners were absent, a decision was made to fund a $200,000 symposium. The U.S. commissioners who were absent informed us that they were fully aware of the proposal and would have voted in favor of it had they been present.

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[3]Legislation (H.R. 4517) was introduced in the 98th Congress which would have required removal of any U.S. commissioner who missed two consecutive meetings of the GLFC or the U.S. section without good cause. Other proposals included in the bill pertained to the appointment and term of commissioners and annual reporting requirements. The bill was not acted on, and similar legislation has not been introduced in the 99th Congress.

As previously mentioned, the role of the internal committees is to discuss executive agenda matters and present recommendations to the full body of commissioners. According to one Canadian commissioner, U.S. absences from these committee meetings give the appearance that Canada is taking the lead. Also, absences place an additional burden on the attending commissioners. For example, the four U.S. commissioners serve on the three internal committees as chairmen or members. In addition, three of the U.S. commissioners also serve as alternates on internal committees. Consequently, when a regular committee member (commissioner) is absent, another U.S. commissioner may have to divide his time between two internal committees to ensure U.S. representation and to fulfill U.S. responsibilities to the committees.

U.S. commissioners informed us that since many of the topics, such as the above mentioned symposium, are discussed over several meetings before a decision is reached, missing a meeting does not mean a commissioner is uninformed or unaware of the items under consideration. They noted that all of the commissioners are provided with a briefing book by the GLFC secretariat a week to 10 days before a meeting. The briefing book provides detailed information about the items of business to be discussed. According to the commissioners, they can always make their views known by contacting commissioners who will be present.

PROVISION TO APPOINT ALTERNATE COMMISSIONER MAY BE TOO CUMBERSOME

International fisheries legislation applicable to the Great Lakes Fishery Commission provides for the appointment of an alternate commissioner to fill a temporary vacancy created by a commissioner's absence. The provision has not been used because all but one of the U.S. absences were of short notice due to illness. The procedure for appointing an alternate may be too cumbersome to be a viable option--it requires approval by the Secretary of State in consultation with the Secretary of the Interior. Finally, there is some question as to whether an alternate, unfamiliar with GLFC procedures, process, and the business to be conducted, could make a meaningful contribution. One possible solution to this dilemma could be to use a standing (permanent) alternate.

Section 201 of Public Law 92-471 specifies that to ensure appropriate representation of international fisheries commissions, including the GLFC meetings, the Secretary of State, in consultation with the Secretary of the Interior, may designate alternate U.S. commissioners. Designated alternates exercise all powers and duties of a U.S. commissioner in the absence of a duly designated commissioner at any meeting of the GLFC or the U.S. section.

Despite frequent U.S. commissioner absences, this provision to appoint alternate U.S. commissioners has not been used for a variety of reasons. The GLFC executive secretary informed us that there was not enough time to request and designate an alternate when absences are unexpected due to illness. A Department of State official informed us that the GLFC has never requested an alternate; however, he believed that one could be designated within a few days after receiving a request. He agreed that there would not be enough time in the case of sudden illness to consider candidates and designate an alternate.

The GLFC executive secretary, as well as U.S. commissioners, questioned whether an alternate appointed on an "as needed" basis could make a meaningful contribution. Not having commissioner status, they believed that an alternate would be no more than an observer unless the individual was familiar with the workings of the GLFC and the interactions of the internal operating committees and the executive sessions. A GLFC official pointed out that only the commissioners and executive secretary sit in on the executive sessions.

Another approach, one used by other commissions such as the International Pacific Halibut Commission and the International Pacific Salmon Fisheries Commission, is to appoint a standing alternate who would participate as a member of the body of commissioners but vote only in the absence of an appointed commissioner. GLFC officials questioned whether a standing alternate would be willing to attend all of the meetings but participate as a commissioner only on an as needed basis. Also, one GLFC official expressed doubts that one standing alternate could interchangeably represent the views of U.S. commissioners from the four different sectors of society.

Canadian commissioners were somewhat divided on the use of a standing alternate. One side believed it would be acceptable as long as the alternate was familiar with the issues. The other side was concerned that a standing alternate might provide a ready excuse for some commissioners to miss meetings and become lax in their commitment.

UNUSED FUNDS RETAINED BY GLFC

In carrying out our work, we determined that certain financial practices by the GLFC warranted attention. We found that the GLFC has retained a relatively large balance of unused funds over the past several years.

As illustrated below, the GLFC has accumulated monies derived from unspent funds which have grown from approximately $.8 million in 1979 to approximately $1.1 million in 1984.

UNUSED FUNDS
(Balance as of September 30
for the period 1979-84)

Year	Designated for future years' expenditures[4]	Undesignated	Total capital on hand
1979	$ 574,000	$252,457	$ 826,457
1980	200,000	461,170	661,170
1981	310,000	648,702	958,702
1982	310,000	726,412	1,036,412
1983	509,800	565,677	1,075,477
1984	1,126,900	1,902	1,128,802

These monies have come from a variety of sources:

--Funds budgeted for certain projects that were never implemented. For example, the GLFC received $260,032 during the period 1979 through 1984 for special lampricide registration studies but only spent $75,700.

--Projects completed or halted before the total amount of funding was spent. During the 1979-1984 period, the U.S. Fish and Wildlife Service and the Department of Fisheries and Oceans Canada returned approximately $.8 million in unused funds to GLFC, in most cases because unfavorable flow conditions prevented lampricide applications to some streams.

--Interest earned, primarily on barrier dam funds contributed by the United States,[5] obligated by GLFC, but never expended. Interest earned on funds earmarked for barrier dam construction and other monies which were obligated but unspent totaled $2.1 million during the period 1979 through 1984; however, the portion of the total $1.1 million unused funds as of September 30, 1984, attributable to earned interest, is indistinguishable.

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[4]Designated funds are earmarked for future year expenditures but are not an obligation to the GLFC. Both the designated and undesignated categories are unused funds.

[5]Barrier dam fund contributions are an anomaly in that the United States pays its share on a yearly basis while Canada holds its share until the dams are ready to be built. The United States contributed about $2.0 million for barrier dam construction since 1978, but only $.6 million was spent as of November 1984 because of delays in construction at the state level.

GLFC officials advised us that unused funds are retained as a hedge against shortfalls between receipts and disbursements that could occur in future years. However, a shortfall was realized only once in the past 5 years--in 1980. Receipts have been greater than expected because of interest earned on funds held by the GLFC and the U.S. and Canadian contributions which have exceeded disbursements.

Monies given by the United States to international organizations lose their character as federal funds once they are contributed; therefore, they are not subject to the usual statutory requirements and restrictions on the use of federal appropriations. Instead, the use and disposition of any unused funds and interest earned are governed by the terms of the convention and, as contemplated by the convention, any rules and regulations adopted by the GLFC in carrying out those terms. GLFC financial regulations require that any unused funds or earned interest in a particular year are to be used to pay budgeted expenses in the following year. These regulations appear to contemplate that the GLFC would not accumulate any unused or excess funds over a period exceeding one year. The question of GLFC's adherence to its own regulations has been raised in the past by U.S. and Canadian officials, but apparently no corrective action has been taken. The current unused fund balance represents monies accumulated since 1979.

Many international organizations, such as the International Pacific Halibut Commission and the International Pacific Salmon Fisheries Commission, have a working capital fund that is available for unexpected expenses. In a letter to the GLFC, the Department of State has suggested a working capital fund of 2 to 3 percent of the annual budget. In budgetary meetings, GLFC officials have suggested an amount of 2 to 5 percent. GLFC's unused fund balance represented an amount approximating 16 percent of its 1984 annual budget, substantially exceeding the recommended working fund levels.

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