

Coastlines

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Rebirth of Niagara Falls in Winter

by David Greene, Sea Grant Specialist
in East Aurora

Henry J. Kalfas, from the Society for the Promotion, Unification and Redevelopment of Niagara, Inc. (SPUR), was looking for a special event. It had to bring visitors and tourist dollars to Niagara Falls during the city's down season, winter. During the cold months, there are always a few visitors who appreciate ice sculptures the mist from the falls crafts on trees and railings near the water, but, generally, people stay away preferring a warmer climate.

An idea came from Simcoe, a city of 12,000 people in Ontario, Canada, which has held a winter carnival of lights for 22 years. Last year Simcoe attracted 400,000 visitors to its festival over a 36-day span from late November to early January.

Taking a few days off from work at SPUR, Kalfas visited the Simcoe event. It looked so good that the Niagara Falls' town-fathers wanted it for their city.

Typically, after the city decided to go ahead with the event, funding became its first obstacle. But with a \$5,000 grant from the Gannett Foundation and \$30,000 from the Maid of Mist Corporation, things started happening.

For this first year, almost all of the festival will be carried out by volunteer effort of SPUR, Niagara Falls Chamber of Commerce, U.S. Air Force, N.Y. State Dept. of Commerce, Niagara Frontier State Parks Commission, Niagara Falls School District, City Police Dept., local industries and trade unions. "There was so much in this project, we needed everyone's help," Kalfas emphasized.

Displays will include special lights along the outlines of Wintergarden, E. Dent Lackey Plaza and the Con-

vention Center; the decoration of 250 trees in Rainbow Center; and a "Fairy Tale Theme" in lights in Prospect Park. In all, 800 strings numbering 20,000 lights will be displayed. Inside Wintergarden, Niagara Fall's indoor arboretum, animated figures will be on display along with decorations on plants and trees. At night, the falls will be lit, something not usually done off-season.

Even children of Niagara Falls city schools will be involved. "We are working with schools to provide store front displays," said Lance Tlustos of SPUR. Displays will be located adjacent to Wintergarden and Prospect Park. "We'll help them plan what they do and we'll even judge and award prizes. The response of schools has been very good."

"We're now down to the nitty-gritty details," Tlustos continued. "It's winter, so we'll need coffee and other refreshments. We'll have expert advice on the placement of lights so everything's just right." Other wrappings such as souvenirs, live entertainment, and police security are also being worked out. No one's worried

about weather since the event is over 36 days long. Lasting that long, a few days lost to a winter storm won't matter.

According to Kalfas and Tlustos, the event is a natural for a city with available power and a system of underground wiring in place. Plans for the future are already in the minds of optimistic Kalfas and Tlustos. "Some day on Goat Island we'll create drive-through displays for those who can't get out of their cars, and use the mist of the falls to form lighted ice sculptures."

Those who know the beauty of ice on trees at Goat Island can appreciate the possibilities: wire frames of paper mache giving direction to wondrous ice formed by mist of the huge cataract as millions of gallons of water plunge approximately 180 feet to the rocks below. One can share their enthusiasm.

A restart of festivals held from 1925 to 1930; it all sounds like a rebirth of Niagara Falls in the winter. This free, family-oriented winter display will continue the best of Mother Nature's efforts.



An outdoor billboard announces the coming of Niagara Fall's first winter Festival of Lights.

Marina Business: Money in the Bank or Up the Stack?

by Bruce DeYoung, Program
Coordinator in Riverhead

"Saving \$1,000 in overhead is often worth as much as \$30,000 in sales to many businesses," says Sea Grant Specialist Steve Lopez. "With energy costs expected to double in the next five years, energy-conscious marina operators will benefit even more by reducing overhead."

Fortunately, experts indicate that as much as 25 per cent of those costs can be eliminated. "Marinas have more control over energy use than most believe," notes Al Towle, an energy expert. Towle works for EASI, New York's Energy Advisory Service to Industry, a program in the state's Energy Office. This service helps small businesses identify significant cost-saving opportunities for reducing energy costs.

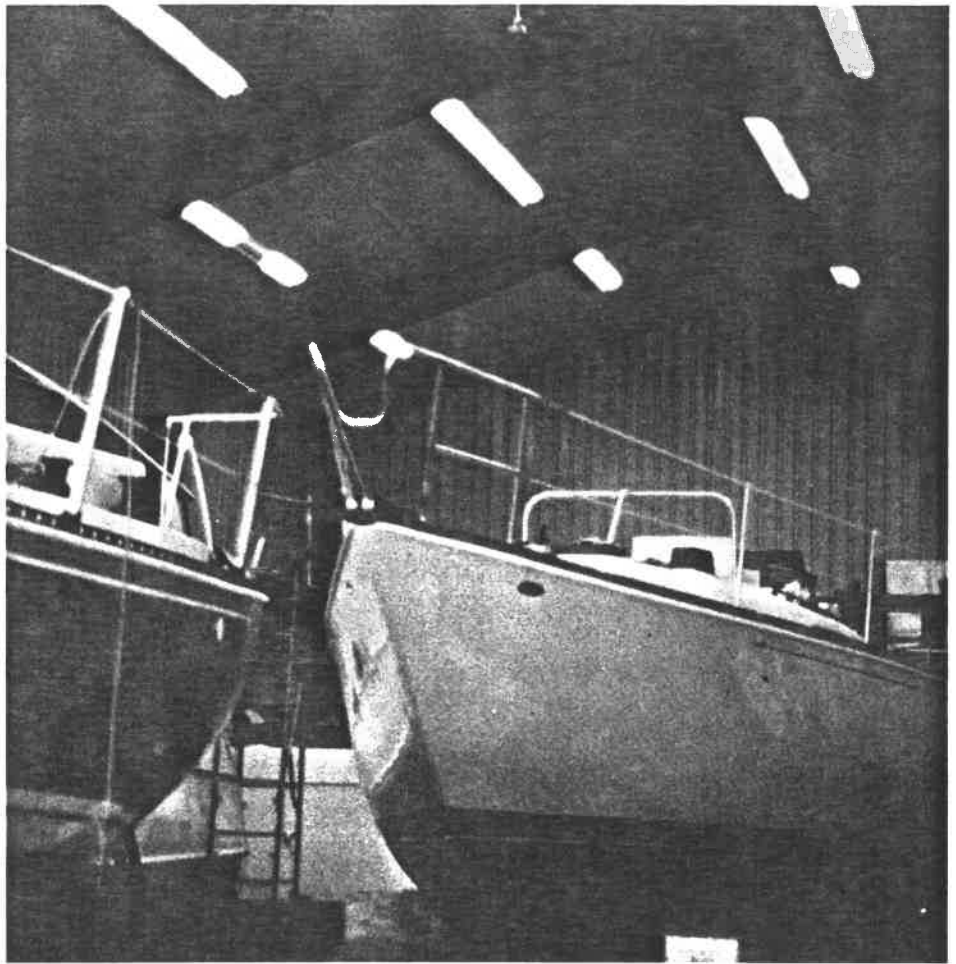
Because some marinas in New York exceed \$35,000 a year in energy costs, Sea Grant arranged for EASI experts to examine energy use at two Long Island marinas. Glen Cove Marina in Nassau County and Coecles Harbor Marina in Suffolk County were selected. Usually energy audit results are confidential, but the owners agreed to make this information public to benefit others.

Before the energy audits were completed, typical energy-use patterns for marinas were unknown. Peter Needham and "Skip" Ackerly, respective owner and operator of Coecles Harbor and Glen Cove Marinas, are now carefully reviewing auditor Towle's suggestions. In Ackerly's case, money-saving changes have already been made using hints gleaned from the auditor's report.

The audit results portray opportunities for some marinas to save as much as \$5,000 a year in energy bills. "Many savings can be realized with low cost investments," according to Sea Grant Specialist Mike Voiland, "but better management practices for energy use are also critically needed."

Money-Saving Suggestions

To fully realize cost savings, operators must account for where energy is being used in their businesses. These "cost-centers" when identified can then be evaluated in terms of profitability. Typically, a large over-



The cost of indoor lighting can be reduced by changing fixtures and introducing management strategy.

head expense for marinas is electrical usage. Of this, lighting can account for as much as one-half of electrical usage. Heating, ventilation and cooling often represent another 30 per cent of the electrical bill with miscellaneous other uses making up the balance.

Marina exterior lighting is used to insure facility security, dock safety as well as controlling pesty bugs. Indoor lighting provides assistance to those working in machine shops and office facility space. In both areas significant savings may be realized by using lower wattages of the same type of bulb or changing fixtures.

Many marinas have high outdoor lighting bills because of inefficient bulbs. By switching from mercury to sodium vapor lighting, a desirable yellow color is achieved as well as lower utility bills. In the case of Montauk Marine Basin, the saving from this strategy has proven significant. "We've saved between \$4,000-\$5,000 this year by changing our exterior lighting to sodium vapor," said owner Carl Dahrenberg, Jr. He estimated the payback period for this equipment change to be eight months!

Besides dock lighting, this type of lighting is also ideal for security and other uses where true color is not necessary.

Indoors, lighting bills can be reduced by using a task lighting strategy. That is, using lighting only in areas where work is taking place. In addition, auditor Towle suggests that fluorescent tubes be routinely replaced with energy-efficient "wattmizer" tubes and energy-saving ballasts.

By following tips of energy experts, overhead costs can be managed and profits increased. For some marina operators that may mean the difference between survival and profitability in the years ahead!

Cost-saving suggestions like these will be discussed in detail during "Marine Business Symposium, '82", a statewide conference to be cosponsored by Sea Grant in February. According to Sea Grant Program Coordinator Bruce DeYoung, "this conference will strengthen business management and engineering skills of participants." For more information, contact your area's Sea Grant office.

New York's Marine Fisheries: 1980, a Year of Contrasts

by Jon Conrad, Sea Grant Researcher in Ithaca

For the commercial fishing industry, 1980 was a year of reversal and retrenchment. The enthusiasm and investment that pervaded the industry on the east coast in the late 1970s came to an abrupt demise by June 1980. Increases in domestic landings of fresh fish were unfortunately confronted by a declining domestic demand causing a drastic drop in ex-vessel prices. Yellowtail flounder which sold for an average ex-vessel price of 51¢ a pound during 1979, for example, plummeted to 15¢ a pound in New Bedford on May 27th, closing down the fresh fish auction, temporarily.

New York fishermen were also affected by declining ex-vessel prices, and while these prices recovered in late summer and fall, the industry closed out the year with the disquieting realization that long term recovery and development requires more than simply new vessels and abundant fish. It requires expanded domestic and foreign markets which, in turn, must be based on an ability to process and deliver a quality product in a timely fashion.

In terms of landings and value, New York fared better than expected. The combined landings of finfish and shellfish equalled 39,831,686 pounds. This was a 6.2 per cent

increase over the 1979 total. The value of 1980's catch was \$44,750,724, a 15.6 per cent increase over the value of 1979. The rate of inflation during 1980, as measured by the consumer price index, was 11.2 per cent, implying that the value grew in "real" terms at 4.4 per cent. In harvesting 1980's catch, however, fishermen faced a 27.7 percent increase in the cost of diesel fuel (from \$0.90 per gallon in January 1980 to \$1.15 per

gallon in December 1980). Thus, while the value of fish and shellfish kept pace with the overall rate of inflation, it was less than the increase in fuel costs. The difference in these two rates has created a "cost-price squeeze" which has left many fisherman on the edge of economic survival.

Some of the major changes in landings and value are shown in the accompanying table.

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Landings and Value for Selected Species in 1979 and 1980				
Species	1979		1980	
	Pounds	Dollars	Pounds	Dollars
Yellowtail flounder	804,422	311,357	1,799,132	661,021
Red Hake	1,062,618	178,862	743,452	112,563
Sea Bass	123,251	120,247	204,967	221,341
Swordfish	105,545	221,815	169,541	541,237
Whiting	6,285,369	1,116,028	4,380,282	1,020,176
Lobster	661,240	1,710,786	908,778	2,786,458
Hard clams (public)	4,748,644	14,522,170	4,061,700	16,100,091
Soft clams (public)	40,600	63,910	293,100	218,093
Bay scallops	345,827	1,243,365	410,141	1,758,240
Sea scallops	535,476	1,827,199	662,698	2,465,176
Squid	1,705,793	713,405	2,589,626	963,889

New York's Commercial Fishing Industry — Peril or Hope?

by John Scotti, Sea Grant Specialist in Riverhead

Since the jurisdiction of America's fisheries was extended to 200 miles in 1977, both optimism and concern about the future of commercial fishing in New York has grown. When this boom-or-bust syndrome of the fisheries began five years ago, fishermen everywhere saw a chance for prosperity. Now they thought, foreign fishing, the cause of their industry's depression, depleted stock and limited market growth would be eliminated.

Reacting to this opportunity, fishermen let their money talk. They expanded quickly in many instances with government assistance. In New York, the active, large-vessel fishing

fleet has grown from 135 in 1977 to an estimated 225, representing a capital investment of several million dollars.

Because these replacement and new vessels are larger and better equipped, harvesting capability of the fleet is much greater than the increase suggests. Since these vessels are directed toward finfish, an increase in New York landings of finfish was realized. Finfish landings rose from 16 million pounds in 1976 to 27 million pounds in 1980 for an annual change of about 20 percent.

At first glance, these statistics seem impressive. New York's fishing fleet is harvesting more fish because of the sheer number of vessels, not because individual vessels are catching more. So if there are plenty of fish available, how come they're not catching more?

In simple terms, it's hardly worthwhile to harvest more when the market doesn't provide enough of a re-

turn to cover trip expenses, let alone earn a profit. This squeeze, caused by a 300 per cent increase in fuel cost in three years, the high cost of borrowing money and soft markets explains the fishermen's dilemma. Add to this, a weakened national and global economy caused by inflation and tight money and the result is a slump in seafood demand worldwide.

For commercial fishermen who traditionally relied on New York's domestic fresh fish market, the effects of shrinking consumer spending are being felt. And although New York is just beginning to export seafood, processing facilities for freezing, packaging and cold storage and even experience in export marketing are lacking. A lesson from New England's export activities indicates development of foreign seafood trade is long-term and does not happen overnight.

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DIOXIN CONTAMINATION Much Yet to Be Learned



by Michael Duttweiler,
Program Coordinator in Ithaca

The presence of chemical contaminants, known as dioxin, in fish from Lake Ontario and the Hudson River recently was confirmed by N.Y. State Health Dept. and U.S. Fish and Wildlife Service's Columbia National Fishery Research Laboratory. As a result, the Health Dept.'s advisory on consuming Lake Ontario fish was made considerably more stringent. This article provides an overview of the dioxin problem and its implications.

What are health advisories? U.S. Food and Drug Administration (FDA) establishes allowable amounts of chemical contamination of foods. New York may either accept FDA's standards or adopt more stringent ones. In the case of dioxin, FDA has not issued a final standard but recently suggested that 50 parts dioxin per trillion parts fish flesh (ppt) be allowed. This amount has been criticized by some health and environmental professionals as not providing adequate protection for fish consumers. The Canadian government recently established 20 ppt as the recommended maximum for dioxin in fish flesh. N.Y. State Health Dept. has established its standard at 10 ppt.

David Axelrod, Commissioner of the Health Dept. identifies three reasons for the more conservative New York standard:

- New York uses 6-8 ounces as an average meal of fish flesh. The Canadian Government assumed the average meal to be 4 ounces;
- Data produced by New York laboratories indicates that the specific dioxin identified to date has been primarily the most toxic — a form known as TCDD;

- In both the Hudson River and Lake Ontario, relatively high levels of PCBs and other contaminants in addition to dioxin raise the possibility of increased toxicity.

Based on the new dioxin findings and standard, New York's health advisories for fish from freshwater were revised as follows:

For all waters of New York State, the existing advisory remains the same and recommends "you eat no more than one meal (1/2 pound) per week of fish from any water in the state; and pregnant women, nursing mothers, infants and young children should not eat fish with elevated levels of Mirex, PCBs and/or mercury."

For the Hudson River, no specific changes have resulted from dioxin findings to date. The existing advisory recommends against eating eels from the river. Many Hudson River species have elevated levels of PCBs and should be avoided as in the statewide advisory above. Specific information can be obtained from offices of either N.Y. State Dept. of Environmental Conservation or Sea Grant.

For Lake Ontario, Commissioner Axelrod recommends lake fish exceeding 10 ppt dioxin not be consumed. Presently, data indicate that lake trout, chinook salmon, coho salmon, rainbow trout, brown trout and white perch generally exceed the 10 ppt standard. Previous advisories regarding Mirex and PCBs are still in effect and are detailed in the anglers syllabus received when a license is purchased.

For persons who still choose to eat Lake Ontario fish contaminated with dioxin, Axelrod recommends:

- trimming all fish to reduce fats during cooking;

- eating no more than one meal per month;

- populations potentially at special risk — women of childbearing age, pregnant women, nursing mothers and children under the age of 15 — should eat no Lake Ontario fish not within the 10 ppt standard.

One species available commercially from Lake Ontario — brown bullhead — is identified as **not** having elevated levels of dioxin. The Canadian Ministry of Environment, using its more liberal 20 ppt standard and average meal of 4 ounces concludes that Lake Ontario fish are safe to eat at a rate of one meal of fish per week.

What is dioxin? Dioxin is a group of 75 different chemical compounds. Four particular forms are known to be very toxic and one — known as TCDD — is one of the most toxic substances known.

There are two primary sources of dioxin. The first is an unavoidable by-product in the manufacture of herbicides and preservative known as trichlorophenol, pentachlorophenol (PCP) and 2,4,5-T. These compounds have been used extensively. A recent Cornell University report identified PCP (not to be confused with PCB) as the second most widely used pesticide in the nation. Recently, the U.S. Environmental Protection Agency withdrew compounds containing 2,4,5-T from the marketplace.

The second major source is through combustion of certain chemicals. The contribution of combustion is poorly understood and subject to considerable scientific controversy. It appears that air pollution may be a significant source of dioxins.

Specific locations identified as Lake Ontario sources are the Love Canal and Hyde Park industrial landfills in Niagara Falls. *continued on back page*

Complex Issues

Editor's Note: When U.S. Food and Drug Administration establishes a health standard for a chemical contaminant in fish that are subject to interstate commerce, it considers three factors: evidence of potential health effects; availability of monitoring techniques; and impact of the proposed standard on the economy.

In the case of a commercial fishery, economic impacts can be estimated relatively easily. But the impact of a new standard on a sportfishery is more difficult to predict and depends on whether a ban on consumption or

some other health advisory results. Presently, there is no mechanism for evaluating such impacts other than the political process.

The following article illustrates the far-reaching social and economic impact of sportfishery development — regardless of where it originates. It was written by Sea Grant Specialist Voiland who recently traveled to New Hampshire to work with the New England Marine Advisory Service on public needs resulting from the successful introduction of Pacific salmon into New England waters.

Salmon Fishing in New England and Upstate New York

by Michael Voiland, Sea Grant Specialist in Brockport

To anyone familiar with New York's Great Lakes' salmon sportfishery, drawing parallels between New York's and New Hampshire's fish restoration efforts and economic impacts is not very difficult.

For one thing, the fish involved are the same. Transplanted, hatchery-raised coho salmon, many in bright red spawning coloration and their bigger Pacific Ocean cousins, the chinooks, ascend the Lamprey River much as their counterparts make their way up Oak Orchard Creek and Sandy Creek near Rochester each fall.

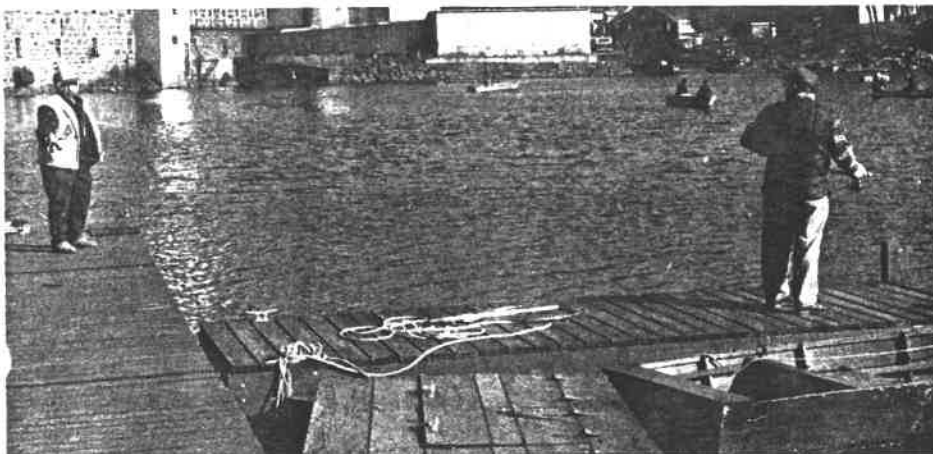
Although the numbers of salmonid species planted in New Hampshire coastal waters pale in comparison to those stocked in New York's Great Lakes, the net effect on the angling community is remarkably similar.

As if conjured up and driven by a spell cast by the returning fish, fishermen seem to appear along the banks of New Hampshire's Lamprey as they do along New York's Salmon River or the lower Genesee. Observable are many of the unique trappings that have become part-and-parcel of the Lake Ontario salmon experience: fishing lines beckoning from shore as they are cast into "perfect" fish-holding pools; gleeful shouts of "fish on!" as lucky anglers from upstate New Hampshire hook into their first salmon ever; fishermen huddled together during coffee breaks, telling and retelling stories about "that trophy chinook that busted my line". And everywhere, infectious enthusiasm for the noble and mysterious salmon and for the chance of catching a prize abounds.

Upon visiting New Hampshire's small riverside village of Newmarket, where a fish ladder permits the passage of fish upstream, there is a sense of the same activity that characterized New York's Pulaski early in Lake Ontario's salmon revival: more anglers, cars, boats, fish tackle and fish along Main Street; the critical lack of public access to the river; anglers forcing their way through the private grounds of the local shoe mills; and civic leaders wrestling with the problem of planning for tourist services and accommodations.

Angling organizations promoting the improvement of salmon fishing in the Granite State are springing up as they have in the Empire State. New Hampshire's newly formed Salmon Unlimited, Inc. has undertaken activities astoundingly like those carried out by groups in New York such as the Rochester Trout and Salmon Angler's and the Sodus Deep Trollers. Educational seminars, hotlines, derbies, trolling sweeps and handouts are but a few of the projects that are happening there as well as here.

To be sure, not every aspect of the New Hampshire and Lake Ontario salmon fishing program is the same. Fish and game officials there have not yet committed themselves to developing a large, highly visible, artificially planted fishery of national importance, as state fishery biologists have here in New York. Yet, despite this official difference, anglers in both areas now can enjoy the thrill of catching big-water salmonid species in their own backyard, thanks to the application of fishery management techniques and programs.



The salmon-stocked Lamprey River attracts anglers to Newmarket, N.H. for big-game fishing.

A Year of Contrasts

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In comparing the catch and value of these species for 1979 and 1980, one would note that:

- The landings and value of **yellow-tail flounder** each approximately doubled to 1,799,132 pounds and \$661,021 respectively.

- The landings of **red hake** declined from 1,062,618 pounds in 1979 to 743,452 pounds in 1980 while value declined from \$178,862 to \$112,563.

- The landings and value of **seabass** increased from 123,251 pounds to 204,967 pounds and from \$120,247 to \$221,341, respectively.

- The landings of **swordfish** increased by 63,996 pounds while the value more than doubled to \$541,237.

- The landings of **whiting** declined by 1,905,087 pounds to 4,380,282 pounds but the value of these reduced landings only declined by \$95,852 to \$1,020,176.

- The landings of **lobster** increased by 247,538 pounds while their value more than doubled to \$2,786,458.

- The landings of **hard clams** from public baybottom declined for the fifth year in a row to 4,061,700 pounds. Their value of \$16,100,091 exceeds last years value of \$14,522,170 and still leaves the hard clam as New York state's most valuable fishery accounting for 36 per cent of the value of all finfish and shellfish landings.

- The landings and value of **soft clams** increased to 293,100 pounds and \$218,093 which was a significant jump from the values of 40,600 pounds and \$63,910 recorded in 1979.

- The landings of **bay scallops** and **sea scallops** both increased as did their value to \$1,758,240 and \$2,465,176 respectively.

- The landings of **squid** continued to increase; up from 1,705,793 pounds in 1979 to 2,589,626 pounds in 1980, and yielding revenues of \$963,889 in 1980.

The state's shellfisheries continued to exceed finfish revenues, combining for a revenue of \$32,549,689 or about 73 per cent of the state's total catch by value. If on-shore facilities and domestic and/or foreign markets can be developed, increases in landings of butterfish, red hake, herring, scup, mackerel, and whiting are expected. These species are relatively abundant in the mid-Atlantic region but have suffered from limited domestic markets and insufficient onshore processing, namely prompt freezing to assure a quality product.

In summary, the future of the state's finfisheries appear tied to the



success of programs to stimulate processing and market development. In contrast, shellfisheries seem to depend more on resource management. Realization of the full economic potential of New York's marine fisheries will thus require planning for viable development of the finfishery, as well as improved management of valuable shellfish stocks.

Fishing Industry

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The future for New York's commercial fishing industry is not without peril or hope. New York's commercial fishing industry has received on-going, public support at virtually every level of government and industry. Problems are being met with responsive and innovative approaches. The State Dept. of Agriculture and Markets, for example, has joined the nationwide "Catch America" campaign to provide consumer education and promote seafood. Others in the state legislature and executive branch, recognizing the importance of New York's commercial fishery, now seek a policy and plan for its development. Meanwhile, in coastal districts from

Brooklyn to Montauk Point, support of the fishing industry is apparent. In Brooklyn, there are plans to establish a multipurpose seafood complex at Erie Basin. In Suffolk County where the industry's employment and landings are highest, the legislature has appropriated \$1.5 million to provide commercial dockage at Shinnecock Inlet in Southampton and in historic Greenport. In addition, a commercial fishery development council was established by the County's Dept. of Economic Development, and a fishery extension position is being considered by the county extension program. Less formal, but somewhat similar programs are also being carried out in Nassau County.

Sea Grant in New York has focused

its extension program on fuel economy and harvesting efficiency through the introduction of ever-changing technology, while its research program has emphasized developing new products such as minced fish and new methods for preserving fresh fish; understanding commercial fishery economics to help fishermen make wise decisions; and improving New York's shellfish production.

Although this list of public and private programs is hardly complete, it does demonstrate the multi-level support for New York's commercial fishing industry. This support along with the commitment of the industry itself should lead to greater use of our valuable fishery resources.

Publication Update

For those concerned about the loss of fact sheets developed by the **Great Lakes Basin Commission**, good news.

The **International Joint Commission's** Windsor office has arranged to continue distributing the series and developing new fact sheets in cooperation with Environment Canada — Ontario Region. To be placed on the distribution list, write to IJC-Great Lakes Regional Office, Information Services, 100 Ouellette Avenue, Windsor, Ontario N9A 6T3.

Avid readers of **The Communicator** can also find another source for Great Lakes information. Ask to be added to the distribution list for IJC's quarterly newsletter, **Focus on Great Lakes Water Quality**.

Lake Ontario is an aquatic playground. Its diversity is its four seasons and its recreational setting. From cold, snowy winters to sunny summers, Lake Ontario's weather is perfect for almost every outdoor activity.

To help local residents and visitors become aware of the lake's recreation opportunities and weather conditions, Sea Grant is publishing **Lake Ontario Recreational Climate Guide**. Researched and written by Sea Grant Specialist Robert Buerger, the guide was funded by the National Oceanographic Data Center.

Divided into sections that correspond to seasons, the guide describes recreation activities and gives on- and off-shore weather data. It includes special safety tips and a where-to-get-more-information section. Single copies of the guide are free. To order, see **I Want More**.

Gardening, historic preservation or neighborhood revitalization...where do you begin? What is the difference between the unincorporated association and the not-for-profit corporation? How do you 'adopt' a park... or clean up a river? What types of permits are needed to begin... and finish, the project? Where can you go for professional help?

COASTLINES is published bi-monthly by the New York Sea Grant Extension Program. This program is funded by the National Oceanic and Atmospheric Administration, the State of New York, and the New York Sea Grant Institute. Subscriptions to **COASTLINES** are free for New York residents. Two-year out-of-state subscriptions are \$4. Request **COASTLINES** from Editor Sally Willson, Sea Grant Extension Program, Fernow Hall, Cornell University, Ithaca, N.Y. 14853.

Many community and neighborhood groups are turning to property stewardship... that is, they are assuming control over underutilized or poorly used properties...to bring local sites into more productive use. A new Sea Grant publication, **Property Stewardship: Getting Involved in Community Development**, will help you analyze, plan and develop a project through property stewardship. See **I Want More**.

I Want More!

Additional information is available from New York Sea Grant. Please check the publications which interest you and send to your nearest Sea Grant Extension Office. Single copies of the following publications are free.

- _____ **Fish Contaminants: Minimizing Your Intake**, M. Duttweiler, 1981, free.
- _____ **Today's Youth in Tomorrow's Sea**, Oregon State University Sea Grant Marine Advisory Program, 1977, 12 pp., free.
- _____ **Lake Ontario Recreational Climate Guide**, R. Buerger, 1981, 20 pp., free.
- _____ **Discover Sea Grant**, 1981, 1-page fold-out, free.
- _____ **Retail Market Tests of Canned Minced Fish**, Agricultural Economics Research Bulletin 80-5, D. C. Goodrich, Jr. and D. B. Whitaker, 1980, 7 pp., free.

For the following publications, make checks payable to Cornell University.

- _____ **Cold-Water and Under-Ice Diving**, Michigan Sea Grant Program, 1979, 2 pp., \$.25.
- _____ **Cold-Water Drowning, A New Lease on Life**, Michigan Sea Grant Program, 1977, 13 pp., \$.25.
- _____ **Property Stewardship: Getting Involved in Community Development**, S. Lopez, 16 pp., \$1.75.
- _____ **Race, Income and Attitude Toward Beach Cleanliness**, Sea Grant Reprint Series, C. A. Heatwole and N. C. West, 1980, 13 pp., \$1.50.
- _____ **The Bight of the Big Apple**, Sea Grant Marine Heritage Series, D. F. Squires, 1981, 84 pp., \$3.00.
- _____ **Great Lakes Coastal Geology — Effects of Jetties**, Sodus Bay, New York, W. R. Brownlie and P. E. Calkin, 1981, 27 pp., \$2.00.
- _____ **Compliance with New York State Coastal Structures Permitting Regulations — East Hampton, N.Y.**, Marine Science Research Center Special Report 44, J. W. Snow and P. K. Weyl, 1981, 20 pp., \$2.00.
- _____ **Endemic Diseases of Cultured Shellfish of Long Island, New York**, Sea Grant Reprint Series, T. R. Meyers, 1981, 25 pp., \$1.50.
- _____ **Social Considerations Associated with Marine Recreational Fishing Under FCMA**, Sea Grant Reprint Series, C. P. Dawson and B. T. Wilkins, 6 pp., \$1.50.
- _____ **History and Management of Weakfish Fisheries**, Sea Grant Reprint Series, J. L. McHugh, 7 pp., \$1.50.

Dioxin Contaminants

continued

Why wasn't it found before? Techniques used to identify the very small amounts of dioxin in contaminated fish are very new. It has been only within the last two years that laboratory capabilities have existed in New York to measure dioxin in Lake Ontario or Hudson River fish. Analytical procedures for identifying dioxin continue to improve.

Why the concern? A variety of health effects are associated with dioxins, especially TCDD. Two effects in people exposed to dioxins during manufacturing are skin and nervous disorders. Laboratory experiments involving very low doses of dioxin given to animals have resulted in liver cancer, birth defects and reproductive problems. Serious questions are also being raised about the role of dioxin in apparent increased cancer and reproductive failures among Vietnam veterans who were exposed to the defoliant Agent Orange.

In sum, TCDD and the other dioxins are highly toxic and have the potential to produce dramatic health effects at very low doses.

How widespread is the problem? An honest answer is that we simply do not know. The newness of appropriate analytical techniques and cost of each analysis (up to \$1,000) means we don't have a good picture of the distribution of dioxin.

To date, dioxin has been found at significantly high levels in fish from Lake Ontario, the Hudson River and Saginaw Bay on Lake Huron as well as several smaller lakes or streams. According to Health Dept. data, levels in Lake Erie fish appear to be significantly lower than in Lake Ontario. Amounts in Lake Erie samples analyzed to date were mostly nondetectable and always less than 3 ppt.

What is the outlook? There are two reasons for cautious optimism. Researchers in the Canadian Wildlife Service who have been monitoring dioxin levels in herring gull eggs collected from the Lake Ontario area over the past 10 years have observed

a marked decline in dioxin residues. Since lake fish comprise a significant portion of their food, the gulls may reflect downward trends in Lake Ontario.

Second, TCDD is less stable than other environmental contaminants such as PCBs. Therefore, it should break down relatively rapidly. This suggests that levels in fish should decline once primary sources are controlled.

The last point is key. Major sources of dioxin must be identified and controlled. This process will be costly and difficult at best. If the polluting of air through combustion of chemical compounds turns out to be a primary source, controlling dioxin contamination will be a hard task.

For more information on this subject, contact the author, Michael Duttweiler, at our Ithaca office. A free pamphlet entitled **Fish Contaminants: Minimizing Your Intake** is also available on request.

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