Shinnecock Mariculture Project Adopts Energy-saving Design

by Christopher Smith, Sea Grant Specialist in Riverhead

One of this year’s most exciting and unique shellfish mariculture projects became reality at the Shinnecock Tribe Reservation in Southampton. The Shinnecock project incorporates passive and active solar and waste heat recovery energy-saving techniques to heat incoming saltwater. By using these methods, significant energy savings can be realized by reducing the amount of fuel oil normally needed for water heating purposes.

The project passed its first big hurdle back in 1979 when, with Sea Grant’s help in developing the proposal, $495,000 in EDA (Economic Development Administration) and MBDA (Minority Business Development Agency) funds were committed to the hatchery’s construction. Since that time thorough investigation of appropriate solar technologies and building designs has occurred. In 1980, a building design drawn up by architects Johnson Erlewine Associates was chosen; however, the search for a solar design continued. In February of last year, a solar design by AIDA (Aid to Indian Development Administration) of Washington and Scott Morrison of Santa Fe, N.M. was chosen.

Sixty solar panels will make up the building’s active solar energy system. Passive solar heating has also been incorporated into the building design. The southern exposure wall of the building is constructed of Kal Wall to heat building air space and water in storage tanks.

According to Project Director Brad Smith, “The system is designed to produce an estimated 50 million shellfish seed. Our operation is designed to produce oyster seed which we will grow to market size in our field operation. Although our primary species will be oysters, we also plan to diversity into production of hard clams and scallops and provide seed to other mariculture efforts.” The Shinnecock Tribe’s staff is presently overseeing construction of the hatchery which will be completed and in operation by February 1982. More information concerning this project can be obtained from Brad Smith, Box 670, Southampton, N.Y. 11968.
Management of the Hard Clam Resource in Great South Bay

by Jon M. Conrad, Sea Grant Researcher in Ithaca

The hard clam, (Mercenaria mercenaria) is the most valuable commercial fishery in New York state. In 1980 the combined value of public and private landings was estimated by the National Marine Fisheries Service (NMFS) to be $18,841,860 or 42% of the total value of commercial finfish and shellfish landings in the state.

Great South Bay on the southern edge of Long Island has historically produced 80-90 per cent of the hard clams landed within the state. Within the last five years, however, the stock of hard clams in Great South Bay has been reduced to the point where it can no longer support the yields that were once achieved in the early and mid 1970s. From a peak harvest of 700,465 bushels in 1976, yield has declined to 338,839 bushels in 1980. The number of commercial permits issued by the towns of Babylon, Brookhaven, and Islip peaked at 6,517, also in 1976, and declined to 4,275 in 1980.

Permit numbers are not a precise measure of claming effort. A better indicator would be the number of days spent clamming by baymen working Great South Bay. In spite of its shortcomings, yield per permit might be taken as a rough index of the clam stock. With the exception of a brief and minor upturn from 1976 through 1978, the yield or catch per permit has declined from 146.4 in 1970 to 79.3 in 1980. This decline is symptomatic of overfishing.

The hard clam is marketed in three commercial categories: littlenecks, the smallest; cherrystone, the next largest; and chowders, the largest. With a legal minimum size limit of one inch (or 25.4 mm) shell thickness as measured at the hinge, littleneck harvests are typically comprised of three- to five-year-old clams. Cherrystones are usually six or seven years of age, while chowders are eight years and older.

One of the factors contributing to overfishing is the premium price paid for littlenecks. For example, on October 1, 1980 the price per bushel for littlenecks, cherrystones, and chowders was respectively $64.00, $22.50, and $11.00 in New York’s Fulton Market. While the price of hard clams varies throughout the year, the relative price difference between commercial classifications remains about the same.

Given the relative prices for the different commercial classes, the commercial clammer has little incentive to leave a harvestable littleneck in Great South Bay. Yet collectively all baymen would benefit if a larger number of littlenecks were permitted to “pass through” to the more productive (fecund) cherrystone and chowder year classes.

If the resource could be brought under strict management, one might ask, “What would be the optimal age structure and what would be the yield and net revenue obtainable from the managed fishery?”

Based on preliminary results from a research project supported by the New York Sea Grant Institute, the gains from optimal management would appear considerable. * Optimal harvest calls for the almost exclusive harvest of the more valuable littleneck stocks, while cherrystones and chowders are left to “specialize” in reproduction. Cherrystones and chowders are more valuable in the bay than in the market. Depending on the carrying capacity in Great South Bay, sustainable net revenues of $26 to $54 million could be generated from adherence to the optimal harvest policy. Net revenues of this magnitude may seem unrealistic when compared to the aforementioned gross revenue of $18.8 million recorded in 1980. One should keep in mind, however, that the current fishery has been depleted and harvests are a mixed bag of littlenecks, cherrystones, and chowders. Further, recorded landings undoubtedly underestimate actual landings.

The principal conclusion of this research is that perpetuation of the current uncontrolled fishery has an opportunity cost in the form of foregone net revenues. Achieving a managed state is also not without its cost. Great South Bay is a shallow and highly accessible body of water. Baymen regard their right of access to the hard clam as God given and inalienable. To achieve the potential management gains may require quotas or landing taxes, and a prohibition on the taking of cherrystone and chowder cohorts. Institution and enforcement of the necessary quotas or taxes will not be popular among the baymen. But, given the widely held notion that stocks are depleted, and that a total collapse of the fishery is a possibility, state and town officials and the baymen themselves, may be ready to consider controls which, while entailing sacrifices today, could lead to a more profitable fishery tomorrow.

* A technical report which presents a detailed discussion of the hard clam management model, parameter estimates, solution procedure, and results is available upon request by writing to the author at 310 Warren Hall, Cornell University, Ithaca, NY 14853.
Do Sea Lampreys Need to Be Controlled on Lake Erie?

by Christine Hagerman, Sea Grant Specialist in Fredonia

With the advent of cleaner streams and the stocking of salmon and trout, living conditions are improving in Lake Erie for sea lampreys, a primitive parasitic fish.

When the author heard the above news, she decided to survey fisheries biologists and lamprey management officials to confirm or dispute it.

The first source she turned to was Jim Winter, a fishery biologist partially funded by Sea Grant at the Environmental Resources Center of SUNY-Fredonia. Winter and his students have been gathering samples of sea lampreys for two years under contract to the U.S. Fish and Wildlife Service.

The author met with Winter several times. He told her that Cattaraugus Creek, which flows into Lake Erie at Silver Creek, N.Y., has been suspected of being a lamprey spawning area for many years. He was conducting his research because of the concern felt by both fishermen and government officials that lampreys are preying upon new hatchery-stocked salmon and trout populations. By using large portable traps, he and his assistants capture adult lampreys at the base of the Springville dam, 25 miles upstream from the creek’s mouth.

Besides gathering biological information on individual lampreys, Winter’s research team totaled the number caught. In the spring spawning run of 1980, over 1200 sea lampreys were caught. In the spring 1981, over 1400 were caught. Compared to other spawning streams on the Great Lakes, Winter believes this sample may indicate a large spawning run.

The author was then shown a contradictory finding. It was a lamprey specimen from Cattaraugus Creek which was a record-breaking size for any lamprey caught in the Great Lakes. Winter explained that the larger the lamprey, the fewer there actually are. In other words, when there are fewer lampreys, more food is available for each, making it possible for each to become good-sized.

Winter related this finding to Lake Erie’s small number of tributary streams having good lamprey living conditions. Lake Erie’s Cattaraugus Creek, for example, with its large gravelly sections upstream and its soft mud downstream provides good living conditions for both the spawning adult and the non-parasitic larva.

As a result, lampreys of the Cattaraugus have all the fish being stocked into the lake by New York, Pennsylvania, American and Canadian fisheries units to themselves. So there’s plenty of food to grow jumbo-size lampreys.

Later, the author discussed some of Winter’s findings with Herbert Johnson, a biologist for the Canadian Sea Lamprey Center. Johnson responded by saying only four streams in the Province of Ontario provide modest living conditions for lampreys in Lake Erie and that last year’s trapping sample of all four streams amounted to only 416 lampreys.

At another meeting with Winter, the author learned about the concern over the number of lamprey attack wounds appearing on salmon and trout caught in the last few years. The wounds are caused by the sucking mouth of the lamprey as it feeds on salmon or trout. The author discussed this with Bill Shepherd, the New York Department of Environmental Conservation (DEC) Region IX fisheries manager. Shepherd indicated the concern was justified because a DEC sampling in 1980 of 55 Lake Trout showed a 20 percent fresh wounding rate. Data for 1981 has not been analyzed yet, but according to DEC fishery biologist, Jim Griswold, the wounding rate is likely to be as high or higher than that for 1980.

Despite these findings, Shepherd pointed out that Lake Erie does not have a sea lamprey control program yet. The control program, operated by the Great Lakes Fishery Commission (GLFC), usually consists of applying a prescribed amount of the chemical commonly referred to as TFM on lamprey larvae stream beds every few years.

The primary reason for no control to date on Lake Erie is because substantial numbers of lamprey attacks have been documented formally for only two years. Before then, the water quality and bottom conditions of Lake Erie feeder streams, such as the Cattaraugus, were too poor for sea lamprey reproduction. Also, 18-inch-long salmon and trout were not available then for lampreys to feed on. The 18-inch size is what lampreys prefer.

To determine whether or not expensive lampcide treatment is needed, data will continue to be collected by both Shepherd’s and Winter’s research teams. In the meantime, an experimental sea lamprey management plan is being developed by a Lake Erie Work Group of the GLFC to be presented before the full Commission this year. These efforts will help determine the future of lamprey control for Lake Erie.
The Value of Recreational Fishing along New York's Marine Coast

by Chad P. Dawson, Sea Grant Researcher in Ithaca

Recent estimates by the National Marine Fisheries Service (NMFS) indicate that there are 15 to 20 million recreational saltwater anglers in the United States whose combined harvest account for 30 to 35 per cent of the total U.S. finfish harvest used for food. These recreationally-caught fish represent a substantial contribution to the diet of many Americans. According to NMFS figures, in 1979 the average American consumed three to four pounds of recreationally-caught fish and shellfish compared to 13.2 pounds caught by commercial fishermen.

In New York in 1979, approximately 1.3 million sport and 9-12,000 commercial fishermen fished for the same marine fish resources off the coast of New York. During this time period, recreational anglers reportedly brought ashore 29.6 million pounds of edible finfish not including sharks or skates, while commercial fishermen landed 25.1 million pounds of finfish. In other words, this recreational catch accounted for approximately 54 per cent of the total harvest of finfish for New York.

The 1979 dockside value of New York’s commercial finfish catch was estimated at $10.3 million. Since the fish caught by marine anglers also include highly valued edible finfish species, the recreational catch can be estimated for comparative purposes at the same dockside value as the commercial catch.

Saltwater anglers made nearly 7.5 million fishing trips from New York in 1979 at an average cost of $13.80 per trip for a total of $103.5 million. These expenditures, however, do not include such items as gas which represents a significant cost since the average angler traveled 43 miles one-way on a typical trip. Other costs not included are expenses for fishing-related equipment such as boats, motors, trailers, rods, reels, etc. as well as costs incurred for maintenance, insurance, dockage, etc. Thus, out-of-pocket trip expenses represent only a fraction of the total spent by New York’s marine anglers.

Presently, the contribution of these angler expenditures to New York’s varied local, state and regional economies has not been assessed. But preliminary data from Florida suggests that the contribution of recreational fishing to the economy of Florida exceeds that of the commercial fishing industry.

Judging from the distribution of New York’s harvest and Florida’s...
Economics of Recreation

Experience, it seems there may be similarities between the contribution of recreational and commercial fishing to New York's economy. Such a comparison illustrates the importance of marine recreational fishing within the state and nation as a whole. The intent of focusing on this comparison also serves to elevate recreational fishing to a similar position of prominence as occupied by the commercial fishing industry.

Experts Predict Recreational Growth on New York's Great Lakes

by Mike Voiland, Sea Grant Specialist in Brockport

A survey of experts and opinion leaders involved with recreation and tourism suggests that leisure-based development will grow and prosper along New York's Great Lakes.

According to a study conducted by Francis Domoy of Rochester Institute of Technology's Center of Management Study, the future of Lakes Ontario and Erie as recreational resources will be bright. “On the basis of future scenarios offered by over 100 opinion leaders, the next 20 years will see the growth of a water-based recreation economy, steeped in sportfishing, supported by private investment, propped by increased consumer participation and played against the backdrop of improved water quality,” said Domoy.

Study results indicate an increase in private sector development and the tapping of regional and international tourist markets should occur by 1985 and continue to the end of the century. Increases in group travel and packaged vacationing, and the extension of the traditional tourist season are also expected to take place over this period.

“In the context of physical setting, the opinion leaders strongly agreed that the water quality picture would improve, leading to the construction of multiple use recreational facilities,” said Domoy. “It was felt that the strongest growth sector, however, would be sportfishing.

Along with the positive forecasts involving investment and economic growth, study results suggest that significant problems would occur or continue. Higher energy costs would likely remain as barriers for the leisure industry to overcome. Also, increased recreational participation and development could induce conflicts among recreationists competing for limited land and water uses and accessibility.

Domoy, a faculty member of R.I.T.'s School of Food, Hotel and Tourism Management, explained that opinion leaders were surveyed using a technique designed to reach consensus while minimizing the bias of group or individual persuasion. “We’re satisfied that the results tap, as objectively and systematically as possible, the Great Lakes recreation ‘futurescape’ existing in the minds of recreation industry experts,” stated Domoy.

The study was supported by a grant from the New York Sea Grant Institute to assist in its targeting of educational programs. For more information, contact Mike Voiland at our Brockport office, or Francis Domoy at the Department of Food Administration and Tourism, 1 Lomb Memorial Drive, R.I.T., Rochester, NY 14623.

Photo captions: top left, fishing off Montauk Point; center, recreational boats lining Buffalo’s marina; top right, water-based recreation on Lake Ontario. Photos from New York State Department of Commerce.
Learning the Trades of Recreational Boating

by Stephen Brown, Sea Grant Specialist in Potsdam

The Thousand Islands and recreational boating are almost synonymous. The area is one of the most popular boating sites in the northeast and has an almost unparalleled variety of boats in daily use — tour boats, skiffs and power boats of bygone eras, sailboats, houseboats, yachts, fishing guide boats, and a plenitude of small pleasure crafts.

To meet the needs of boaters, a large and diverse boatyard and marina industry has developed. Skills and knowledge associated with the industry traditionally have been handed down by on-the-job training. Now, however, a marine trades training program has been established to offer a variety of learning experiences for those persons interested in the boatyard and marina industry.

The marine trades program is being offered via a collaborative effort of the School of Hospitality and Tourism — Retailing, at Jefferson Community College in Watertown and the Boat School at the Shipyard Museum in Clayton. The program provides credit and non-credit courses for individuals in the marina industry who want to hone their skills, for those seeking jobs in the field either as a skilled tradesman or manager, and for hobbyists who want to learn how to do their own work. Completing the course work can lead to a two-year associate’s degree or a one-year certificate in marine trades.

For those interested in becoming a skilled tradesman, the program offers courses in boat restoration, small boat building, marine engine repair, and fiberglass application and repair. Students learn by working under the tutelage of instructors in small classes. The philosophy of teaching as stated by Jeremy Taylor, director of education for the Shipyard Museum, is that, “you can understand by watching but you only learn by doing. Sometimes the littlest trick can save hundreds of hours of work.”

In the boat building course this semester, for example, students will build a cedar canoe and learn by doing. These courses are popular because often times the students have the opportunity to receive guidance in building, repairing, or restoring their own craft or engine.

Boatyard and marina management courses are designed to help operators run their businesses effectively and profitably. Course work combines lectures and discussions with on-site tours, talks by guest lectures, readings from books and handout materials, and on-the-job experiences. Courses offered this spring are: marina service management, property management and maintenance, and marina sales management. These courses are designed for individuals planning to enter a family business or aiming towards management positions. One important dividend students get from the courses according to Bo Collings for River Marine Inc., who is an instructor, is that students gain a new perspective on the industry and learn to evaluate alternate modes of operation.

A course entitled “Great Lakes’ Rules of the Road and Boat Handling” is also being offered. This course is designed to help people attain a captain’s license. The captain’s license allows an individual to become a tour boat captain, fishing guide, charter boat captain, or construction barge operator.

Students in the program also take courses at Jefferson Community College. Courses at the college are wide ranging and can be molded to meet individual needs. For example, a student who plans on working for a resort which has a marina can also learn the fundamentals of restaurant, hotel, and retail store management through a variety of course offerings.

Courses cost $99 each and are taught in Watertown and at the Shipyard Museum in Clayton.

The Shipyard Museum is on the St. Lawrence River and has six buildings which contain a museum collection, workshops, library, offices and classroom space. The museum houses one of the largest collections of antique pleasure boats and outboard motors in the United States and is the forefront of the antique boat movement. This setting helps set the tone for the program.

For additional information contact: Vincent Dee, chairman of the Department of Hospitality and Tourism, Jefferson Community College, Coffeen Street, Watertown, New York 13601; or phone: 315-782-5250.
Fish Fondue:
A Great Idea after Winter Outings

When the poor Swiss Mountaineer put his leftover cheeses, bread and wine in a pot over the fire, few would have believed the concoction would become an international culinary masterpiece.

And now, after taking the fondue way of cooking seriously, many New Yorkers, thanks to Sea Grant, can learn how to adapt their fondue to fish.

According to one reliable source, “Fish and shellfish lend themselves very well to fondue because they cook quickly and friends won’t become impatient preparing one morsel at a time.” The fact that fish is low in calories and high in food value is also appreciated by most friends these days.

If you want to relax and enjoy your friends, why not try a fish fondue after a winter outing? Just follow the pointers and recipes here. And remember, if a would-be dunker loses a piece of fish while dunking into the pot, a kiss for someone special is due!

Did the mountaineer invent that too?

Some General Rules.
- Your fondue pot should be metal, not ceramic. The ceramic types tend to crack with high temperatures.
- Be extremely careful when handling hot oil. Preheat it on the stove first. Add a teaspoon of salt to reduce spattering.
- Fresh fish is preferred over frozen varieties because of its firmness on the fork. If oysters are served, drain them for an hour and coat with flour to minimize spatters.

Ingredients for Fish Fondue

Enough fresh shrimp, finfish, and oysters to allow 1/3 to 1/2 pound per person; 7 or 8 slices of bacon; cooking oil, approximately 1 quart; 1 teaspoon salt; sauces as desired.

Peel shrimp, leaving on last shell segment and tail section. Cut fish into strips or bite-size pieces. Drain oysters well, roll in flour, and wrap each in 1/3 slice of bacon. Secure with a wooden pick. Refrigerate all seafood until 1/2 hour before serving.

Pour oil into fondue cooker to 2-inch depth or no more than 1/2 capacity of pot. Heat to 375°; add salt.

Spear fish with fondue fork; fry in hot oil until lightly browned. Shrimp require a minute or less to cook; fish need a bit more time, depending on size of piece. For easier handling, transfer to dinner fork; dip in sauce. Suitable sauces: cocktail, tartar, sweet-sour, herb butter, curry.

For Cheese- Crab Fondue

8 ounces fresh blue crab meat, lump or special; 1 can (10 ounces) frozen condensed cream of shrimp soup; 1/4 cup milk or half & half cream; 1/2 cup shredded process American or Cheddar cheese; 2 teaspoons lemon juice; dash paprika; dash white pepper; 2 tablespoons sherry, optional.

Drain crab meat and remove any remaining shell or cartilage. Thaw shrimp soup and combine with milk in fondue pot. Cover, heat over direct moderate flame, stirring often. Fold in remaining ingredients except sherry. Adjust heat to low flame. If desired, stir in sherry just before serving.

Use as an appetizer with Melba toast or as a luncheon dish on toast points or in patty shells. Add more milk if a thinner mixture is desired. Makes approximately 2 3/4 cups.

Note: These fondue recipes and ideas are adapted from a Texas Department of Parks and Wildlife publication entitled, Fondue Fun with Fish.

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. Make checks payable to Cornell University.

- The Urban Waterfront and Low-Income Community: Potential for Local Recreational Usage, Sea Grant Report, Warren Gran, 1981, 46 pp., $2.00.
Update: New York Loses a Friend

by Chuck O'Neill, Jr., Sea Grant Specialist in Brockport

New York and other Great Lakes states have lost a good friend. As of September 1981, the Great Lakes Basin Commission stopped functioning. No funding was provided for it in the 1982 federal budget.

Created in 1967 by President Johnson at the request of the Great Lakes states, the commission had four areas of responsibility: planning, coordination, technical studies and research, and public education.

In its 14-year-old history, the commission carried out the Great Lakes Basin Framework Study and implemented a plan for the basin area. State and federal agencies involved with the Great Lakes were brought together jointly by the commission to eliminate duplication of cost and effort. Through its committees, the commission coordinated research and development programs, interstate coastal zone management activities, and state requests for federally funded water resource projects. It also provided a forum for discussion of common issues by agencies.

More specifically, the commission examined the benefits of phosphate detergent bans, studied how to improve the lakes' fisheries resources, mapped environmental features, and indexed nearshore water quality. During the last three years, the Great Lakes Environmental Planning Study was the commission's major effort.

Public educational activities by the commission included publishing the Great Lakes Communicator, fact sheets and annual reports. A library of 35,000 volumes was also developed.

In its last months, the commission undertook projects on PCB disposal, winter navigation, hazardous waste management, and won approval of its wetlands plan, and the coastal flooding and erosion plan.

Coastlines is published quarterly 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.

With the demise of the commission, New York has lost an able ally. And although Sea Grant in Michigan inherits the commission's library and records, and the International Joint Commission in Windsor, Canada will be publishing fact sheets, no single agency or group has come forward to assume the commission's coordinating function.

The New York Sea Grant Extension Program provides equal opportunities in employment and programs.

SEA GRANT
Fernow Hall
Cornell University
Ithaca, New York 14853
Tel: (607) 256-2162