

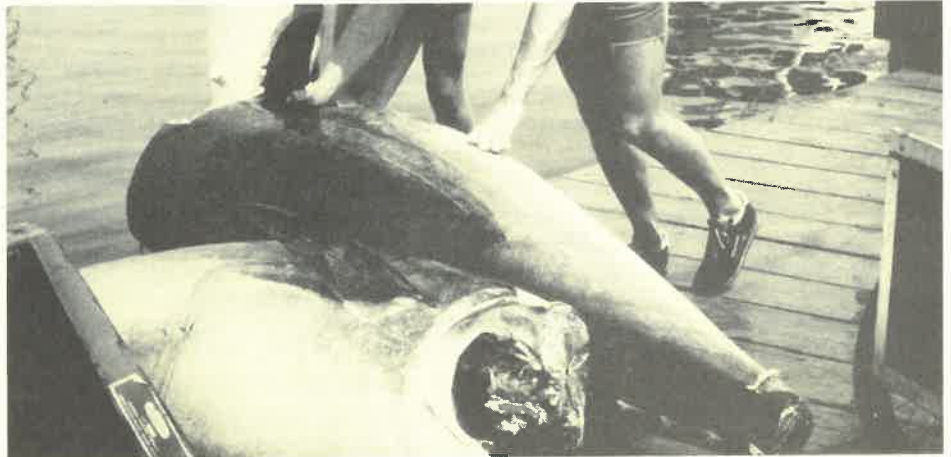
Tuna Handling Tips

by Chris Smith, Riverhead

Case #1: Three anglers from Rochester depart from a Long Island boat basin on a small charter boat for a day sportfishing for tuna. The day's trip yields 60 pounds of tuna and bonito that are placed as large chunks of fish on ice in a cooler and transported back to Rochester. The trip back to Rochester took eight hours after which the fish was placed in a refrigerator. Thirteen friends came over for dinner the following night, and although the fish tasted well, eight of thirteen became sick with some combination of the following symptoms: red blotchy skin, rash, bloodshot eyes, swollen throat, heart palpitation, difficulty in breathing and sweating. These symptoms lasted from several hours to 1½ days.

Case #2: A Long Island housewife purchased a 60 pound tuna from a vendor at a local boat basin. The fish was brought home, cut up and placed in the freezer on the same day. Three days later a single piece of the fish was defrosted and served to a family. Approximately ½ hour after consuming the fish symptoms of hot flashes, heart palpitations, headache, diarrhea and cramps ensued.

Although the above cases are not very common, they can be prevented at sea by correct handling of large fish. Tuna, mackerel, bonito and skipjack belong to the scombroid family of fishes. One of the characteristics of scombroid fish is that they often contain large amounts of free histamine, a chemical in the muscle which in poorly handled fish can be converted by bacterial action to toxic compounds such as the chemical histamine, a small molecule associated with allergic reactions.



Tuna on the dock at Montauk.

By rapidly processing the fish after it is caught and cooling it quickly to an internal temperature of 45°F or lower internal flesh temperature, histamine production can be minimized. The following procedure is recommended for handling large fish on small charter boat type vessels.

It has been formulated with health market requirements in mind. Because of differences in time available, vessel size and layout, personality, equipment and sea conditions, completion of all the following steps may not be possible. Do what you can!

Step #1 — Getting the fish in the boat: Retrieve the fish as quickly as practical. If possible allow the fish to cool in the water for approximately one hour while tail roped to a buoy or cleat. When boating the fish take care not to unduly bruise the flesh. With large active fish do the best you can keeping safety considerations top priority.

Step #2 — Handling and Processing: Bleed the fish immediately after boarding (see Figure on page 5). Bleeding is important because if oxygen from the blood remains in contact with warm, oily flesh the oil will become rancid. Bleeding is accomplished by

making one or two cuts. One is a stab cut with the point of a knife two inches deep on both sides of the fish, one hand width from the base of the pectoral fin. If necessary, an additional cut across the side of the fish at the tail between the second and third finlet can be made. Bleeding should take five to ten minutes.

Step #3 — Gilling and Gutting: Free the gill covers but do not remove them. Remove gill arches and gut contents via the gill cover opening.

Step #4 — Chilling the fish: If the vessel is large enough and properly equipped, chill the fish for one hour by submerging it in an ice-seawater slurry with two parts ice to one of seawater. If this is not possible or following this type of chilling, the belly cavity should be well packed with ice through the gill cover opening. The fish should then be completely iced over if at all possible. Icing might be possible on smaller vessels by placing the fish in commercially produced or homemade insulated containers or body bags. See I WANT MORE to order copies of a brochure detailing handling techniques for tuna offshore.



Eastern Long Island's Recreational Climate

Eastern Long Island is paradise for marine recreation activities. Surrounded by saltwater, the region's climate and culture is influenced by marine resources. The diversity of four distinct seasons creates a setting for a wide variety of recreational pursuits year-round!

The real secret of Eastern Long Island is its summer beauty, as well as natural splendor during other less crowded seasons. In autumn, long after the last of the summer residents have packed up and gone home, the natives are enjoying the Indian Summer sponsored in part by the slow-cooling waters that bathe the "Eastern End." There are plenty of fair weather days to enjoy a solitary stroll along the miles of ocean beaches.

The good weather and color provided by spring is a photographers paradise in this region of quaint fishing villages and rustic country charm. During the spring, Long Island lies in the prevailing westerlies of the mid-latitudes; weather generally moves from west to east. Temperatures and winds are variable and subject to more dramatic change than in summer. In spring, rain is more likely but the days are warm enough to picnic, take a ferry ride or visit museums. Daytime temperatures frequently climb into the 70's by mid-May. This period of pleasant weather is enjoyed by residents and savvy visitors alike, since facilities are uncrowded.

An introductory guide to Eastern Long Island's marine recreation opportunities "Eastern Long Island's Recreational Climate" has been published by Sea Grant. This provides sources of information to assist those special interests. Travel routes and directions to the region are provided inside this guide's back cover. Public

recreation areas are indicated on a location map.

Single copies of this pamphlet are available at no charge; multiple copies \$.50 each (payable to Cornell University) from our Riverhead Office.

—Contact B. DeYoung, Riverhead

Contaminants in Hudson River Fish

The Hudson River supports a unique ecosystem with extensive biological resources. Diverse fish populations exist throughout its fresh, estuarine, and marine waters. However, commercial and recreational fisheries have become restricted due to the presence of contaminants, such as PCBs (polychlorinated biphenyls).

PCB contaminants were introduced into the Hudson River primarily as industrial wastes from construction of electrical transformers and capacitors from 1947 to 1975. These compounds cause a variety of health effects in humans at high exposure levels, are suspected of being carcinogenic and break down slowly in the environment. Originally bound in upriver sediments, some of these persistent compounds are still being distributed downriver.

Various fish throughout the river have concentrated PCBs in their fat, tissues and organs. As a result, certain commercial fisheries such as the striped bass, carp, and American eel were closed to avoid distribution of potentially harmful fish to consumers.

A healthy advisory has been issued by the New York State Department of Health for all species, suggesting that individuals consume no more than one meal per week of any fish caught from the Hudson River (note: *no* eels should be eaten). An ongoing controversy concerns the actual concentration of PCBs in these fish, and the acceptable concentration at which these commercial fisheries could be reopened.

In addition to concern for reestablishing commercial fisheries in the Hudson River, there is concern over the consumption of fish caught by recreational and subsistence fishermen. Along with the striped bass, several popular recreational species have been found to contain concentrations of PCBs which the U.S. Food and Drug Administration considers

unsafe for unlimited consumption. Although an advisory exists, fish such as the white perch, white catfish, and American eel are caught and eaten regularly by some individuals along the Hudson.

The public health implications of eating contaminated fish from the Hudson River have recently been addressed by Sea Grant Extension. Two activities were targeted to improve an understanding of this problem and change eating habits of consumers of these fish. In February 1984, Cooperative Extension Home Economists, Foods and Nutrition Agents and Program Aides from six lower Hudson Valley counties and Long Island participated in a Seafood Utilization Workshop. This workshop emphasized the importance of extending information on minimizing contaminant intake. Agents and aides were provided materials and training to aid in performing this task. This included a set of consumer booklets developed by Glenna Ryan, an Extension Associate at Cornell Nutritional Sciences, to explain the techniques available to minimize personal risks when eating potentially contaminated fish. (See I WANT MORE! to order).

As a result of the workshop, some agents plan to survey communities near the river to reveal actual fish consumption habits and subsequently develop appropriate educational programs.

Another activity designed to improve awareness of contaminants in Hudson River fish is through educational displays at fish derbies and waterfront festivals planned in 1984. Cold Spring (Putnam County) and Kingston (Ulster County) are two locations where folks will gather to experience sportfishing, along with cultural and environmental educational exhibits. Sea Grant Extension has been active in planning and participating in these events at which the need for being aware of contaminants in Hudson River fish is emphasized. Another anticipated forum for extending education on Hudson River fish contaminant issues will be through upcoming establishment of 4-H Youth Sportfishing Clubs in counties fronting the river.

— Contact: J. Overton, New City

Research in Short



Izaak Walton in the Big Apple: Sportfishing in N.Y.C.

To most people, sportfishing in marine and Great Lakes waters conjurs up images of a sleek, sophisticated center console fishing boat, a surf-caster plying his trade on a windswept strand, or a party boat with railings lined by happy anglers in the midst of a bluefish blitz. These images reinforce the historic association of fishing with those parts of our environment far removed from the sights, sounds, and influence of modern

urban society. While this may be the setting for most recreational fishing in the 1980's, recreational fishery managers are becoming more aware of the significance of angling in America's major urban areas, a phenomenon with implications for urban waterfront revitalization and public health.

In 1981, Sea Grant and NOAA's Office of Marine Pollution Assessment began a study of shore-based fishing in New York City. Information on this fishery was needed to effectively incorporate angling access into waterfront redevelopment projects, to gauge the potential risks to public health, and to assess the extent to which the angling population, or parts thereof, were fishing for subsistence or recreational purposes. Clarification on this last point is desirable if an equitable marine recreational fishing license is ever to be instituted in New York State. The study, carried out by Professors Charles Heatwole of Hunter College and Niels West of the University of Rhode Island, had several objectives:

- develop a socioeconomic profile of the angling population
 - determine the size and nature of the fishery, including number of anglers, average catch, location and characteristics of fishing sites
 - determine species most frequently caught and the disposition of the catch
- Teams of student interviewers

were sent out to survey anglers at sites identified as popular fishing spots by local officials and sportsmen (see map on page 4). Fishermen are generally a talkative bunch and the response to the interviews was very positive; 85% of those approached agreed to be interviewed. While the data collected are still undergoing analysis, a preliminary description of shore-based angling in New York City is now possible.

Roughly 62% of New York City shore-based anglers are whites, 22% are black, 13% Hispanic, the remainder mostly Oriental. In a City in which the majority of the population is believed to be non-white, the investigators attribute this anomalous distribution to the superior access whites have to the most popular angling spots, many of which are located near white neighborhoods or can only be reached by car.

Fifty percent of the anglers are in the 21-40 age bracket, although the range was from pre-school to over 70. Approximately one-half have total annual household incomes of between \$10,000 and \$24,999 and hold blue collar jobs. A surprising one-third of the anglers reported total annual household income of \$25,000 or greater. Extrapolating from the sample population, it is estimated that the total number of shore-based anglers in the City is 50,000-75,000, most of whom go fishing from the City's waterfront at least 10 times each year.

Fishing usually isn't that good for

Continued on page 4.

I Want More!

Please check the publications which interest you and send to your nearest Sea Grant Extension Office (addresses on last page). Make checks payable to Cornell University.

_____ **Fish Consumption Advisory Booklets.** (Set includes: **Who's at Risk and Why?**, **Trimming Fish Step-by-Step**, and **Cooking Fish**) 1984. Glenna J. Ryan. 36 pp. Free.

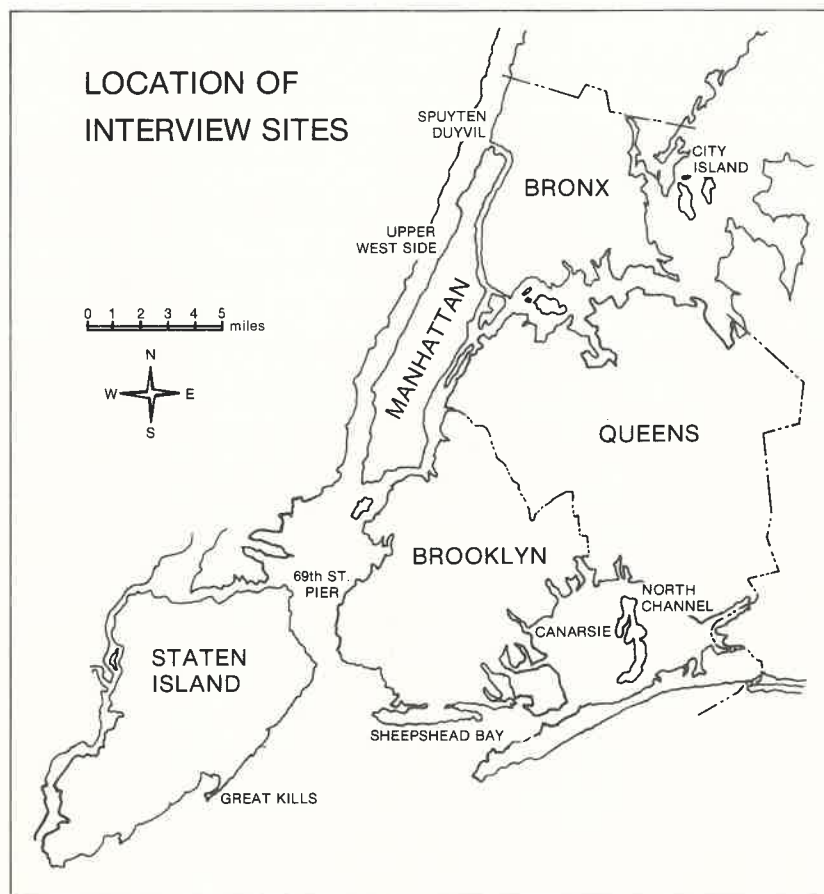
_____ **Eastern Long Island's Recreational Climate.** 1983. Bruce R. DeYoung and Richard DeAngelis. Pamphlet. 32 pp. First copy free.

_____ **Tuna Handling Tips.** 1983. Christopher Smith and Richard Groh. Fact Sheet. 7 pp. \$1.00.

shore-based fishermen in New York City—many anglers spend several hours to catch a single fish. There also appears to be widespread recognition that fish harvested from these waters are likely to be contaminated. At the time they were interviewed, less than 32% of those interviewed had caught anything they chose to keep and only 21% indicated that the catch was to be consumed. Upon statistical analysis, age, income, and occupation did not appear to effect catch success or level of consumption. On the other hand, ethnicity does seem to play a role. Although they had lower catch rates than whites, minority groups generally consumed a greater proportion of the fish they did catch. This was particularly true for Hispanics and Orientals.

Some level of fishing occurs wherever it is physically possible to get to the shore in the 5 boroughs. The most popular sites appear to be those that are most accessible. Virtually all anglers indicated they had driven or walked to the site. Public transportation was rarely used. Lower average catches by minorities reflect their difficulty in gaining access to locations where fishing is particularly good, most of which are not located near minority neighborhoods and require a car to reach. Predictably, the study found that the distribution of racial groups was not randomly distributed across all areas sampled. Blacks, Hispanics and whites tend to congregate at particular fishing locations.

For the general angling population, the health risk associated with fishing from the New York City waterfront appears small, due to the poor catch rates and the low rate of catch consumption. However, for particular groups who frequently catch bottom dwelling, non-migratory species and consume a relative large percent of the catch, such as Hispanics and Orientals, the health risks may become significant. Based on the data collected in the surveys, it is now possible to identify those angling locations frequented by these sub-groups. Heatwole and West are now using information on contaminant body burdens of various finfish species from the waters around the City to refine their estimates of the relative magnitude of this risk.



Popular sportfishing spots in New York City.

These preliminary findings were discussed with Federal, state, and local officials involved in waterfront redevelopment and public health. The Hudson River Foundation is currently supporting a study similar to this in New Jersey waters of the Hudson-Raritan estuary. With the information developed through such investigations, urban waterfront revitalization in New York City can proceed in a fashion that accommodates the needs of recreational fishermen. At the same time, the identification of those parts of the angling public most at risk from participating in the fishery will help health officials to target additional studies to more fully document the nature of this risk and target more precisely educational efforts aimed at reducing it.

MAREP: Mariners Helping Mariners

Starting this summer, mariners on New York's marine and Great Lakes waters will be helping the National Weather Service, other boaters and themselves by participating in local MAREP weather reporting networks.

The Mariner Report Program (MAREP) utilizes timely observations from trained commercial and recreational boaters to help update NOAA marine forecasts.

Lack of adequate observation along the nearshore marine coastline and on the Great Lakes makes weather forecasting for these areas difficult. MAREP programs in other states have helped resolve the lack of observations resulting in more accurate forecasts.

The system in New York is to be set up by Sea Grant and will work through MAREP volunteers who report weather and sea conditions observations to a local shore-based relay stations. A relay station can be located anyplace where someone can monitor a VHF radio. Marinas, fishing stations, fisherman co-ops and even waterfront bars and restaurants have served as relay stations.

When a boater sends a MAREP report, the relay station receives it, and then sends it on (usually by telephone) to the nearest National Weather Service Office. MAREP reports are used by the weather services to issue immediate weather

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MAREPS (from page 4)

warnings or prepare the next regularly scheduled forecast.

No special equipment beyond a radio is necessary to participate in the program. A single MAREP report can mean the early detection of a sudden storm. Observations might include anything from a simple estimate of wind velocity or wave height, to a full report, including atmospheric pressure, temperature, winds and sea conditions. Whether you work or play on the water, accurate weather information can safeguard your life and vessel.

— Contact Bob Buerger, Oswego

SPORTFISHING EXHIBITION

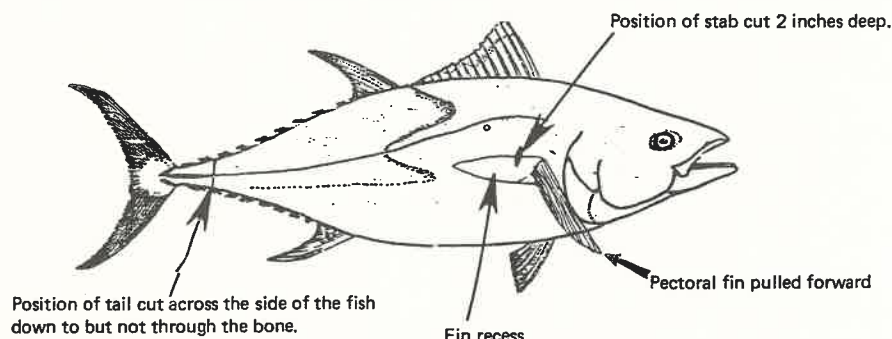
Last year's success of the first annual Eastern Lake Ontario Sportfishing Exhibition has prompted organizers to expand this year's edition. This year, over 60 exhibitors will showcase the latest in sportfishing tackle equipment, boats, and techniques. Along with the displays will be continuous educational seminars and demonstrations which will provide attendees with updated information on the Lake Ontario sportfishery. "How To" advice on the use of specific equipment and techniques, and safe boating and fishing advice also will be featured.

The 2nd Annual Eastern Lake Ontario Sportfishing Exhibition will take place on April 14 and 15 at Romney Fieldhouse located on the campus of the State University of New York College at Oswego. Nine local organizations including Sea Grant are working together to insure another successful Sportfishing Exhibition.

—Contact Bob Buerger, Oswego.

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 Sea Grant Extension Program, Fernow Hall, Cornell University, Ithaca, N.Y. 14853.

Tuna Tips (from page 1)



National Youth World of Water Awards

The following announcement is for the National Youth World of Water Awards and Youth Marine/Aquatic Conference for pre-college and undergraduate students. The Sea Grant Association has endorsed this effort sponsored by the National Marine Education Association.

ANNOUNCEMENT

NATIONAL WORLD OF WATER PRE-COLLEGE (Grades 7-12) AWARDS

Winners of local, state and regional science fairs and national and international competitions are invited to submit their marine/aquatic science projects for judging. Twenty students selected by a team of marine and aquatic scientists and educators will receive National Youth World of Water Awards. These students will be invited to make poster presentations of their marine science projects at the NMEA Youth Conference on Marine and Aquatic Science and the OCEANS '84 Conference and Exposition on an expense paid trip to Washington, DC, September 10-11, 1984.

NATIONAL WORLD OF WATER UNDERGRADUATE AWARDS

Undergraduates who have completed original research in 1983-84 in the areas of marine/aquatic science are invited to submit an abstract and manuscript of their research. Five award winners and ten runners-up will be selected by a panel of distin-

guished ocean scientists. Finalists will receive a trip to Washington, DC to present their paper at the National Marine Education Association Youth Conference on Marine and Aquatic Science and/or the OCEANS '84 Conference and Exposition. Runners up will receive Certificates of Award.

BASIC CRITERIA FOR JUDGING NATIONAL YOUTH WORLD OF WATER AWARDS FOR PRE-COLLEGE CATEGORY

Review of the project by a team of experts from the marine/aquatic sciences focusing on: theme, method, organization, thoroughness, clarity and creativity. For the undergraduate category, originality, observations, methodology, communication and relevance also are considered.

WHEN TO SUBMIT: Entries for both Pre-College and Undergraduate competition must be received by June 1, 1984.

WHERE TO SUBMIT:

Mr. James O'Connor, Associate Professor

Department of Environmental Science Building 44, Room 203

University of the District of Columbia 4200 Connecticut Avenue, NW Washington, DC 20008

PRE-COLLEGE CATEGORY

Who is Eligible: Students in grades 7 through 12 during the academic year and who were winners in local, state, national and international science fair competitions.

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Awards (from page 5)

What to Submit:

1. A copy of the official entry form obtained from the Science Fair at which the student won recognition.
2. Certification of award from the cognizant Science Fair Director.
3. Project summary describing the research in 1,000 words or less: Include title, objective of project, hypothesis, methodology, results, conclusions and a 50 word abstract together with a photograph of the project, and a passport type photograph of student.

UNDERGRADUATE CATEGORY:
Who is Eligible: Undergraduates who have completed original research in 1983-84 in the area of marine/aquatic science are invited to submit an abstract and manuscript of their work.

What to Submit: Submission in duplicate, should be typed, double-spaced with the author's name on each page and include:

1. A one page abstract of research including problem, methodology and conclusion.
2. A manuscript, in a format acceptable for publication, of less than 10 pages, excluding bibliography. Problem, description, background, methodology, data results and relevance must be covered.
3. A letter from a supervising faculty that this research was completed by the individual and was not the result of team or class effort.

The National Marine Education Association is sponsoring a National Youth Conference on Marine and Aquatic Science at the University of the District of Columbia, Washington,

DC from 10 to 12 September 1984. OCEANS '84, the annual conference and exposition of the Marine Technology Society and the Oceanic Engineering Society of the Institute of Electronics and Electrical Engineers also will take place at that time. At these conferences, distinguished scientists and engineers will present their latest findings and program plans. The presentations will be of interest to precollege and undergraduate students and their teachers. Twenty precollege and five undergraduate recipients of NMEA's National Youth World of Water Awards will present their research projects. Conference attendees will tour the scientific and technical exhibits at OCEANS '84.

— Contact David Greene, East Aurora

Home Ports

New York Sea Grant Institute
37 Elk Street
Albany, New York 12246
Tel. (518) 473-8002

Sea Grant Extension Program
Fernow Hall
Cornell University
Ithaca, New York 14853
Tel. (607) 256-2162

Great Lakes

Sea Grant Extension Program
405 Administration Bldg.
SUNY/Brockport
Brockport, New York 14420
Tel. (716) 395-2638

Sea Grant Extension Program
Farm & Home Center
21 South Grove Street
East Aurora, New York 14052
Tel. (716) 652-5453

Sea Grant Extension Program
Cooperative Extension Regional Office
412 E. Main Street
Fredonia, New York 14063
Tel. (716) 672-2191

Sea Grant Extension Program
52 Swetman Hall
SUNY/Oswego
Oswego, New York 13126
Tel. (315) 341-3042

Sea Grant Extension Program
512 Raymond Hall
SUNY/Potsdam
Potsdam, New York 13676
Tel. (351) 267-2131

Hudson River

Sea Grant Extension Program
Cooperative Extension
62 Old Middletown Road
New City, New York 10956
Tel. (914) 425-5500

Marine Coast

Sea Grant Extension Program
Cooperative Extension
111 Broadway — 17th Floor
New York, New York 10006
Tel. (212) 587-0722

Sea Grant Extension Program
Nassau County Cooperative Extension
Plainview Complex, Building J
1425 Old County Road
Plainview, New York 11803
Tel. (516) 454-0900

Sea Grant Extension Program
Cornell University Laboratory
39 Sound Avenue
Riverhead, New York 11901
Tel. (516) 727-3910

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South Campus, Building H
SUNY/Stony Brook
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Fernow Hall
Cornell University
Ithaca, New York 14853
Tel: (607) 256-2162