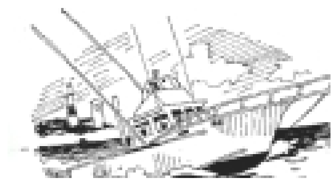
Sea Grant New York

SPORT FISHING INDUSTRY NEWS



Newsletter of the Angling and Charter Boat Community Fall/Winter 2000

Self-recruitment in Fish Populations

Where Do Fish Come From?

Scientists continue to research the larval stages of fish because this represents an important, yet poorly understood phase in the life cycle. Little is known about larvae, as they float and reside in plankton. These early stages hold the answers to the questions concerning recruitment in fish population – whether it is an open system with young fish moving in and out over great distances; or closed with juveniles settling in the areas where they were born. For many years, scientists believed larval dispersion to be driven by marine population dynamics. However, recent studies have shed light in several aspects on how larvae can return to their origin, and how a population retains its offspring.

How are scientists able to trace larvae origin? Much of the work is focused on using bony structures especially the ear bones (otoliths) that is comprised of many layers of calcium carbonate deposits. Otoliths act like the recorders of growth and life history of fish because they are formed

continued on page 2

INSIDE THIS ISSUE

1 *Self Recruiting in Fish Populations*

1 *Settlement and Nursery Habitat in Offshore Areas*

2 *Being in the Right Place at the Right Time*
Karin Limburg

4 *Recreational Marine Fishing Regulations*

5 *Marine Protected Areas – 2020 Oceans Campaign*

5 *Angler Access Protection Bill*

6 *Bluefin Tuna Migration*

6 *Water Quality Monitoring Report for Long Island Sound*

7 *Community News*

Settlement and Nursery Habitat in Offshore Areas

Scientists investigated the habitat requirements for juveniles in offshore areas, such as the New York Bight. Previous studies on the nurseries of groundfish have been limited to nearshore habitats including estuaries and other coastal areas where they are accessed easily. The importance of the Mid-Atlantic Bight in fish production should not be underscored, its rich geological diversity including the gently sloping continental slope, Hudson River Canyon and the myriad of sediment types ranging from fine sand to gravel, make the New York Bight an excellent nursery ground for juvenile fish. The changes in the water column throughout the year also contributes to its productivity; these changes include inshore movement of cold water during the winter, and stratification that occurs during the summer that forms pockets of cold water that become trapped at the bottom. There is also seasonal fluctuation in the salinity, especially in the nearshore areas.

In this study, the researchers investigated the habitat requirements for juvenile settlement and nursery areas. The study was conducted by sampling for juvenile groundfish using a 2-m beam trawl, throughout the year; data were also collected across different depths at a total of 21 stations. The most abundant species found were yellowtail flounder (*Pleuronectes ferrugineus*) and silver hake (*Merluccius bilinearis*). Settlement was most frequent during the summer and fall for most fish species.

The New York Bight is comprised of three regions: inner shelf waters, middle shelf (cold pool), and outer shelf, and each region features unique environmental conditions. The data analyses suggested settlement and nursery habitats occurred across the continental shelf, and they are delineated by depth, temperature and time of year. The three zones across the shelf exhibited distinct juvenile fish assemblages, with certain zones being dominated by a few species. Not all species displayed cross-shelf movement between and within the settlement and nursery areas, and movement can also be in the direction of lower depths.

What makes for a good nursery area? This is difficult to define, but one researcher described a nursery habitat as

continued on page 3

continued from page 1

at birth and new layers of calcium carbonate are deposited daily as discernible bands, similar to the growth rings in trees. A chemical marker (e.g., tetracycline, Alizarin) is used to stain the otoliths; analysis of trace elements is another technique that is often used in these types of studies. In two unrelated studies to investigate recruitment, different techniques and geographic sites were used, but the conclusions were similar.

One study was conducted on the Great Barrier Reef in Australia, where damselfish (*Pomacentrus amboinensis*) embryos were marked at different sites and over 10 million developing embryos were released. The results estimate between 15-20% of the juveniles may be returning to their natal population (self-recruitment), and the authors have challenged the assumption that long-distance dispersal is the norm for reef fish. Although most marine organisms have a 'dispersive' planktonic larval stage in the early stages before entering adult habitat, it is unknown how far these juveniles travel from their natal origin. Sufficient recaptures were observed to allow the researchers to estimate the approximate number of recruits that returned to the study site, and the data suggest that self-recruiting is a much more significant component of the replenishment process than was previously thought. The level of self-recruitment that was estimated suggests dispersion is not a passive action, but instead, it is possible a majority of the larvae have the ability to maintain its position within the proximity of their natal origin.[1]

The second study was conducted off St. Croix using otolith trace-element analyses in blue wrasse (*Thalassoma bifasciatum*). Trace-element analyses generate environmental signatures, and element from seawater can replace the calcium and become permanently incorporated into the otolith. Five elements were considered and their relative proportion analyzed through mass spectrometry, to pinpoint larvae natal origin. Trace-element signatures can be used to identify stocks and nursery habitats. Constant recruitment patterns were observed for this species, historically. However the level of recruitment that was observed on the island's coasts (i.e. leeward versus windward), differed. The scientists hypothesized that recruitment was influenced by physical oceanographic factors, and the importance of larval dispersion versus local retention to patterns of recruitment may vary across windward and leeward reefs. There was a significant difference in both growth history and otolith trace-element signatures among larval populations of bluehead wrasse recruiting to each of the island's coast. The results suggest recruiting larvae experienced different environmental histories throughout the early life stages.

In conclusion, both studies have implications for fisheries management and marine reserve design, because rates of dispersion between marine populations – and thus recruitment to exploited populations, could be much lower

continued on page 3

Being in the Right Place at the Right Time

What it takes to survive as a larva in the Hudson River

Karin Limburg

Most anglers are familiar with the bold patterns on the side of a striped bass, and many might also recognize its cousin the white perch. Both species belong to the genus *Morone*, of the temperate bass family, and both are important players in estuaries of the Eastern Seaboard. But few anglers are familiar with the early life stages of these fish.

With a maximum size reaching over 65 pounds, it is difficult to believe that the mighty striper begins life as a 4 mm hatchling, weighing about as much as a small postage stamp. White perch begin life even smaller, at 3 mm. Both are endowed with a yolk sac from which they derive nourishment for the first few days of life, although the striper's yolk sac is larger and longer lasting (Figure 1).

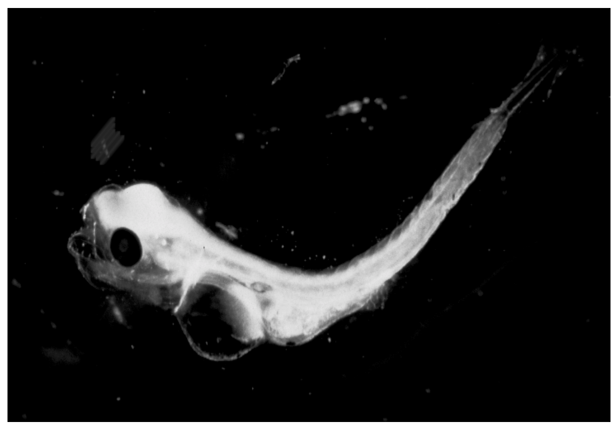


Figure 1. A striped bass larva, app. 1 week old and app. 4.5 mm long. Its teeth, eye, and oil-filled yolk sac are visible. The bulge just to the right of the yolk sac is a copepod in the gut of the larva. (photo: K. Limburg)

The tiny larvae must learn to feed quickly, and must develop the means to spot, target and capture prey. At the same time, they must avoid being eaten by larger predators. In this microscopic world, the larval phase is the riskiest life stage for any fish, and many die before growing into juveniles. In my post-doctoral research at the Institute of Ecosystem Studies, we wanted to know whether survival of these larvae was related to feeding on an intense "bloom" of a zooplankton species called *Bosmina*.

We sampled the Hudson near Kingston, New Hamburg, and Haverstraw Bay. We collected fish larvae by towing twin nets through the water column. We collected zooplankton by pumping up seawater and filtering out the tiny creatures; the samples were analyzed in the

continued on page 3

continued from page 2

laboratory. I learned how difficult it can be to distinguish striped bass and white perch larvae, and at certain sizes they are virtually indistinguishable on the basis of external morphology, and special techniques must be used to investigate skeletal elements. The study was used to observe the taxonomic characteristics and diet. We also removed tiny structures called otoliths (literally, “ear-stones”) from their heads – they comprise the hearing and balance system, and they grow by a very small amount each day (Figure 2).

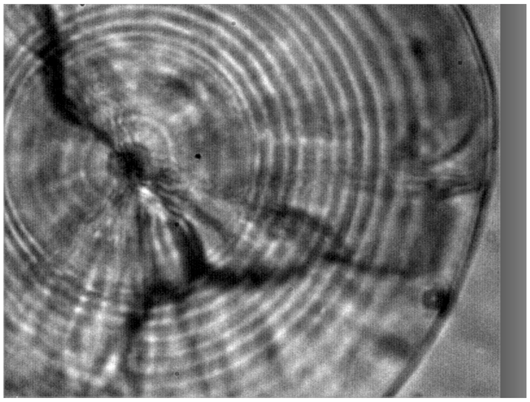


Figure 2. A photo-micrograph of an otolith from a striped bass larva (radius = 0.05 mm). Each ring represents one day’s growth. (photo: K. Limburg)

The otoliths were removed using a fine pin to tease out of the fish’s skull, under a microscope. Then, under high magnification, we were able to count the daily growth rings and determine the age and growth rates of the larvae.

The results of our study were surprising. Although the *Bosmina* water fleas were consumed during the peak of their abundance, the fish larvae preferred a different type of microcrustacean - the copepod. Not only were copepods less abundant than the water fleas, but also as our study progressed, we noticed they composed a large proportion of the larvae’s diet. We calculated the energy costs and gains of feeding within and outside of the zooplankton bloom. Before the bloom, food was scarce and the water was cold, and there was little energy available to the larvae for growth. During the bloom and afterwards, the energy costs and benefits were equal. Was there really any advantage, then, for the larvae that co-occurred with the plankton bloom?

The answer came with the help of a second study later in the summer season. We obtained juvenile striped bass from the NYS Department of Environmental Conservation’s fisheries monitoring survey – these fish were survivors from the cohorts of larvae we’d studied earlier. By counting the daily rings in the otoliths of these older fish, we could back-estimate their birth dates and also determine when they began to feed. In accordance with our energy cost-benefit analysis, we found that very few fish had survived prior to the zooplankton bloom – although there were larvae around, there wasn’t much food, and most of the larvae presumably starved to death. On the other hand, we also found *fewer*

continued in next column

continued from previous column

than expected survivors from the “post-bloom” larvae, and *more* of the fish whose first feeding coincided with the bloom, even though the energy cost-benefit analysis indicated no differences. We concluded that the later group of larvae, although feeding and growing well, were also exposed to more predators, and hence more of them suffered untimely deaths. As is true so often in this world, survival for these fish larvae was a matter of being in the right place at the right time. There were many other wrinkles that we were unable to investigate at that time, so many questions still wait to be answered. ❖

Karin Limburg is a fishery biologist at SUNY College of Environmental Science & Forestry in Syracuse, NY.

Further reading:

Limburg, K.E., M.L. Pace, D. Fischer, and K.K. Arend. 1997. Consumption, selectivity, and utilization of zooplankton by larval Morone spp. in a seasonally pulsed estuary. Transactions of the American Fisheries Society 126:607-621.

Limburg, K.E., M.L. Pace, and K.K. Arend. 1999. Growth, mortality, and recruitment of larval Morone spp. in relation to food availability and temperature in the Hudson River. Fishery Bulletin 97:80-91.

continued from page 1

being an area where the scope for growth is enhanced for settled juveniles. Nursery habitats are species-specific, and there is a high degree of overlap between species (i.e. two or more species may share an area). Settlement and nursery habitats may occur in the same area, which is the case that was observed for the study area. Many commercially and ecologically important species settle in the New York Bight on the continental shelf, and in some cases settlement densities are comparable to nearshore and estuarine species. ❖

Source: Steves, Brian P., Cowen, Robert K and Malchoff, Mark H., 1999. Settlement and nursery habitats for demersal fishes on the continental shelf of the New York Bight. Fish. Bull. 98:167-188 pp.

continued from page 2

than currently assumed. The assumption that larvae disperse away from their natal population so that local populations operate as ‘open’ systems, being driven by recruitment of larvae from other sub-populations may not be as ‘cut-and-dry’ as previously believed. ❖

Source: [1]Jones, G.P., M.J. Millicich, M.J. Emslie and C. Lunow, 1999. Self-recruitment in a coral reef fish population. Nature Vol 402:16. 802-804 pp. [2]Swearer S.E., J.E. Caselle, D.W. Lea and R.R. Warner, 1999. Larval retention and recruitment in an island population of a coral-reef fish. Nature Vol 402:16. 799-802 pp.

Recreational Marine Fishing Regulations

The following table lists the revised regulations for marine recreational fishing that were posted in the October 4 Edition of the NYS Registry. The changes were necessary to maintain New York State's compliance with Atlantic States Marine Fishery Commission Fishery Management Plans (FMP). Note: *The regulations are summarized for your convenience. Neither New York Sea Grant nor Cornell Cooperative Extension assumes liability associated with the reproduction and summary of this information. Anglers are urged to consult official DEC documents or call 1-800-REGS-DEC or visit the website at http://www.dec.state.ny.us/website/dfwmr/swflaws.htm for up-to-date information.*

Species	Min. Size Limit (ins)[a]	Open Season	Daily Rec. Bag Limit
American Eel	6	All Year	None
American Shad	None	All Year	6 fish per day
Atlantic Sturgeon	MORATORIUM	MORATORIUM	
Black Sea Bass	10	All Year	None
Bluefish	None	All Year	10 fish per day
Cobia	37	All Year	None
King Mackerel	23	All Year	3 fish per day
Monkfish (Goosefish)	17 & 11 (tail length)[b]	All Year	None
Pollock	19	All Year	None
Red Drum	14	All Year	2 fish (>32 inches) per day
Spanish Mackerel	14	All Year	10 fish per day
Striped Bass	28 (marine district) 18 (North of GWB)	May 8-Dec 15	1 fish per day
Summer Flounder	15 ½	May 10-Oct. 2	8 fish per day
Tautog	14	All Year	1 fish per day (June 1-Oct 6) 10 fish per day (Oct. 7-May 31)
Weakfish	16 10 (fillet) 12 (dressed)	All Year	6 fish per day
Winter Flounder	11	3rd Sat. in March- June 30 Sept 15-Nov 30	15 fish per day
Yellowtail Flounder	13	All Year	None

[a]Length refers to Total Length (TL), unless stated otherwise. Total length is obtained by measuring the distance between the tip of the snout and the tail, after the lobes are squeezed together.

[b]Tail length is the distance between the tip of the tail and the fourth cephalic dorsal spine (all spines remaining intact).

[c]George Washington Bridge.

[d]Fillet length is the distance between the ends of the fleshy portion of the fish, measured lengthwise; fillet must have the skin intact.

[e]Dressed length is the distance between the anterior part of the fish, with the head removed, and the tip of the tail when both lobes are squeezed together.

Marine Protected Areas

2020 Oceans Campaign

In May 2000, President Clinton signed an Executive Order (13158) on Marine Protected Areas (MPA) that requires NOAA to develop a formal framework to manage MPA systems. A Federal Advisory Committee on MPAs is being coordinated under NOAA to implement the Executive Order. In October, the Secretary of Commerce announced the opening of a new federal fisheries research facility in Santa Cruz, California, which will also include the National Science Center for Marine Protected Areas. These actions resulted in part, from the global 2020 Oceans Campaign initiative being spearheaded by marine ecologists and conservationists. What is the 2020 Oceans Campaign? In a nutshell it is an effort to designate 20% of the world's ocean as marine reserves by the year 2020. These reserves would be declared 'no-take' zones rendering them closed to all recreational and commercial fishing activities. Where did the 20% figure originated from? This figure has appeared in academic papers since the mid-1990s, and the details are presented in the book *Fully Protected Marine Reserves: A Guide* by Callum Roberts and Julie Hawkins, World Wildlife Fund and University of York (publ.).

In summary, the main arguments include: (1) this figure can be justified on the basis of the best biological information currently available; (2) such closures are expected to provide significant economic benefits to fisheries; and (3) it is a realistic figure to implement. However, we shouldn't look upon 20% as a fixed goal, but rather as an average, with some areas habitats needing less protection and others needing more."

Other biologists argue for protecting 10% of the sea, this estimate is considered to be conservative, traditional and more achievable. Regardless of the target, more countries have adopted this approach to conservation – marine reserves are being proposed in every region. Marine reserves hold different meanings for the stakeholders, and for some groups they are something being taken away, while other groups view them as something being set aside. Arguments from anglers have been presented by various sport-fishing organizations (*The Fisherman* June 29, 2000 & July 13, 2000). ❖

Source: MPA News Vol. 1, No 8, May 2000. School of Marine Affairs, University of Washington

Angler Access Protection Bill Introduced in Congress

The Freedom to Fish Act

A Bill was introduced recently, in an attempt to address the growing concerns of anglers regarding access to fishing in the oceans and along the coasts. The Freedom to Fish Act (S. 3234) was introduced in Congress in late October, by Senators John Breaux (LA) and Kay Bailey Hutchinson (TX), and it is part of an initiative being spearheaded by the American Sportfishing Association (ASA). The Bill seeks to protect the public's ability to fish for sport, and for other purposes.

"Free and easy access to places to fish is the single most important element of recreational fishing", explained ASA President Mike Hayden. "That principle is canonized in the Freedom to Fish Act".

Open access for recreational anglers is a concept embraced on virtually all federal lands and waters including wildlife refuges, national parks, wilderness areas, and the Exclusive Economic Zone. This extensive record clearly demonstrates that access can be maintained for recreational anglers under other appropriate science-based regulatory schemes that include seasons, size-limits, bag limits and other regulations. Such management practices have proven themselves to be highly effective in maintaining healthy fisheries.

However, some environmentalists advocate a policy whereby 20% of U.S. coastal waters should be delineated as marine protected areas in an effort to restore depressed fish stocks and degraded habitat. "While I support the goal of healthy marine fisheries", stated Senator Breaux, "I believe that restricting public access to those waters is not the appropriate vehicle for accomplishing that goal in most cases." In response, the Freedom to Fish Act would establish guidelines and safeguards to preserve the publics' right to use and enjoy the marine resources.

According to the legislation, only in cases where recreational fishing has demonstrable adverse effects could a specific, well-defined area be closed. Further, once established targets were achieved, that area would reopen immediately to recreational anglers. "Restricting public admission to our coastal waters should not be our first course of action, but rather our last", concluded Senator Breaux. ❖

Source: American Sportfishing Association Press Release. 10/27/00

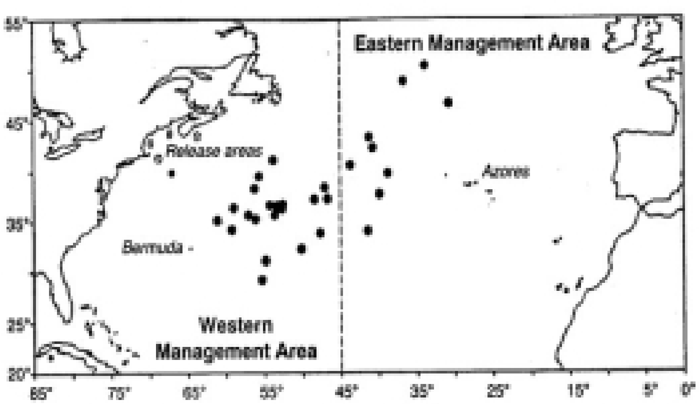
continued previous column

Bluefin Tuna Migration

Satellite Tags Generates Useful Data

In less than three years, satellite tagging programs in the US and Canada have grown to a point where dozens of sophisticated pop-up archival tags are being used to provide information on migration route that the fish travels over months and years. This new technology allows scientists to determine the full migration paths of tagged fish. The results so far have been impressive and consistent, giving clear evidence that a significant percentage of bluefin tuna migrate from western Atlantic to the east and northeast Atlantic. The tagging work has also raised intriguing hints of a central Atlantic spawning area.

While scientists are reluctant to draw conclusions until much more work is done, US bluefin people see the results of the tagging work as crystal clear. One thing industry and researchers agree on for the most part is that the tagging results should convince the International Commission for the Conservation of Atlantic Tunas (ICCAT) to revamp its scientific and management assumptions, which, according to industry reps, could and should eventually lead to more quota for western Atlantic countries. In the meantime, bluefin researchers are calling for more tagging studies to better pin down migration and spawning behavior. The ability of ICCAT to manage and rebuild populations throughout the North Atlantic depends on it, they say.



Jettison locations for pop-up satellite tags deployed on giant bluefin tuna in the Northwest Atlantic, 1998-1999. From Lutcavage et al., ICCAT Coll. Vol. Sci. SCRS/99/104, in press.

In addition to recording lat/long readings that are transmitted to the satellite, oceanographic information is also recorded to be overlaid on the tag data which will allow the scientists to map out the path the fish traveled since the time the tag was attached. Here's a brief update of the study: US/Canada: In a joint study in 1999, 21 archival tags (5 in Canada and 16 in New England) were deployed, along with 9 single-point pop-ups; 7 single-point pop-up have resurfaced as scheduled.

continued in next column

Carolinas: Tag A Giant (TAG) is a research program between Stanford University, Duke University, and National Marine Fisheries Service (NMFS). This program deployed 85 pop-up tags since 1997, with 72 tags being deployed in Carolina and the Gulf of Mexico; tags resurfaced in the Gulf Stream, intermittently, throughout the year. Gulf of Mexico: A total of 15 tags were deployed, with 1 scheduled resurface.

Scientists can also learn whether bluefin fish return annually to the Gulf of Maine, or if there are longer cycles. The results have been impressive to date, and the evidence suggests a significant proportion of bluefin tuna migrate from Western Atlantic to the east and northeast Atlantic. Although it is premature to draw conclusions, the evidence being generated is giving rise to the hypothesis of a possible central Atlantic spawning ground. For the most part, these results may convince the International Commission for the Conservation of Atlantic Tunas (ICCAT) to reinvestigate its scientific and management assumptions, which may work in the favor of western Atlantic countries. ❖

Source: Lorelei Stevens, Commercial Fisheries News, Section B, June 2000.

News from the Long Island Sound

Water Quality Monitoring Report Released

Many stakeholders in the Long Island Sound (LIS) are aware of the Water Quality Monitoring Program that is conducted by the Connecticut Department of Environmental Protection (CTDEP) on a year-round basis. The program monitors water parameters in the LIS, including dissolved gases (e.g., oxygen and nitrogen), particulate matter (silica, nitrogen, chlorophyll) and other suspended solids. LIS experiences low oxygen levels in the bottom layers, each summer – a phenomena that is referred to as *hypoxia*. Fish requires oxygen to survive, and significant reductions in dissolved oxygen will cause stress that often leads to die-off.

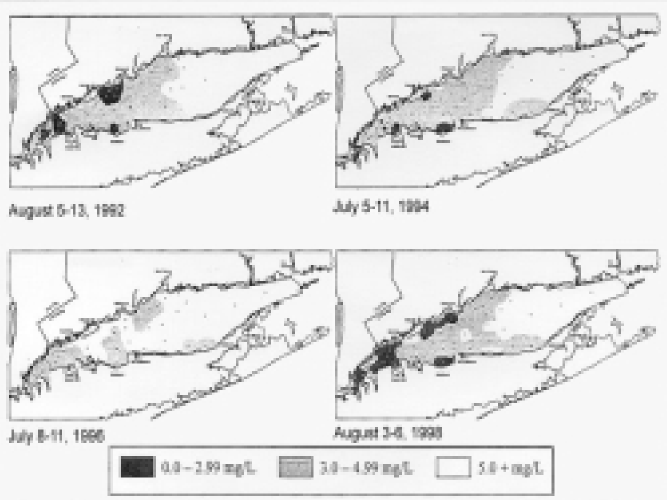
The CTDEP prepared a report that reviewed the data between 1991-1998, in order to determine the trends in summer dissolved oxygen concentrations. The analyses did not include data collected in earlier years (prior to 1994) due to the difference in sample design. A total of 1752 stations were sampled over eight years.

Dissolved oxygen exhibited distinct seasonal patterns in LIS. Maximum dissolved oxygen concentrations were observed during the winter months and minimum

continued on page 7

continued from page 6

concentrations were observed during the summer throughout the Sound. There was a noticeable difference in bottom water dissolved oxygen between the western and eastern Sound. The western Sound (The Narrows) was found to possess higher dissolved oxygen during the winter/early spring, when production was generally at its peak, and contained significantly lower dissolved oxygen than the east-



Areas of Long Island Sound affected by low dissolved oxygen concentrations during four individual cruises from four different years showing typical patterns. Source: Long Island Sound Ambient Water Quality Monitoring Program : Summer Hypoxia Monitoring Survey 1991-1998 Data Review, CTDEP, September, 2000

ern Sound (The Eastern Basin) during the summer months. This pattern was repeated in each year of the study. During the winter months, concentrations of dissolved oxygen in both surface and bottom waters were nearly or above 100% saturation. During the summer months, percentage saturation generally declined, especially in the bottom waters of the western and central sound.

In general, dissolved oxygen concentrations were lowest in the bottom waters of The Narrows and Western Basin, improving eastwards for the deep-water portion of the LIS. The shallower areas frequently had lower dissolved oxygen concentrations during the summer period, especially in the Central Basin. ❖

Source: Long Island Sound Ambient Water Quality Monitoring Program: Summer Hypoxia Monitoring Survey 1991-1998 Data Review. Connecticut Department of Environmental Protection, September, 2000.

Sport Fishing Education Center for Long Island

Kudos to the New York Fishing Tackle Association (NYFTTA) for the progress made to construct a new Sport Fishing Education Center in Babylon. NYFTTA is coordinating the project, through partnership with other angler organizations and the local legislature, over $1.3M was secured to support the venture. The Center will serve as a focal point in the Metropolitan New York area to promote and develop conservation and angling ethics, and promote fishing to a diverse population who may not otherwise be afforded the opportunity to explore the sport. A wide array of programs will be offered at the Center and details may be obtained from Lenora Daniel, Outreach and Extension Coordinator at (631) 968-5362.

Angler's Resource Kit

This year marks the 50th Anniversary since the signing of the Sport Fish Restoration Act, which was a major landmark in natural resources restoration and conservation in the United States. Several fishing organizations have joined efforts to promote the sport and encourage people to "step outside and enjoy fishing", as part of the yearlong celebration. NYSG is taking steps to participate in this national initiative at the local level through its Extension Program. We are working to develop an Angler's Resource Kit to provide information for fishing in the marine district.

The Kit is available in an electronic format, and it may be viewed at our website. It features information on the biology, life history, distribution, management and regulation for species that are targeted by our avid sport fishers. Users will find hints to improve their fishing skills including angling tips, rigging, knot tying, hook selection, angling etiquette, releasing techniques. A directory for locating bait and tackle suppliers is also available. The information is designed for beginners and persons with less experience in fishing, and persons involved in youth education programs.

Note from the Marine District Coordinator - Staff Changes

Many of our stakeholders in the marine district who are acquainted with Mark Malchoff, might have heard of Mark's transfer to the Lake Champlain Sea Grant. Mark worked with the angling community from 1988 to 1999, and he was successful in fostering partnerships with several charter boat and recreational fishing groups during his tenure. We extend our best wishes to Mark in this exciting frontier, and we welcome the new fisheries specialist - Antoinette Clemetson. Antoinette came onboard in May, and she has begun to work with several stakeholder groups in the recreational sector. ❖

New York Sea Grant is part of a national network of universities meeting the challenging environmental needs of the coastal ocean and Great Lakes region. This is unique among the 30 Sea Grant programs nationwide because it has both marine and Great Lakes shorelines. New York Sea Grant engages in research, education and technology transfer to promote the understanding, sustainable development, utilization, and conservation of our diverse coastal resources. NYSG facilitates the transfer of research-based information to a great variety of coastal user groups that include businesses, federal, state and local government, decision-makers, managers, the media and the interested public. Visit our web site at: http://www.seagrant.sunysb.edu

Editor: Antoinette Clemetson
Design: Eileen Brennan

This newsletter is provided to anglers, bait and tackle dealers, charter/party fishing vessel operators, and other businesses as part of the outreach and educational activity of *New York Sea Grant Extension Program*. Cornell University is an equal opportunity, affirmative action educator and employer. *Sport Fishing Industry News* is published on the principle that no discrimination or endorsement is intended or implied by New York Sea Grant, Cornell Cooperative Extension, or any of the sponsoring associations of products, brand names or commercial services. Please direct all questions, comments and concerns to the Editor at New York Sea Grant Extension Program, Cornell University Laboratory, 3059 Sound Avenue, Riverhead, New York 11901-1098.

Editor's Note:

Hi! I'm Antoinette Clemetson, and I am your new fisheries extension specialist. I started working in May, 2000 and it's been an exciting experience so far. As you can see, our staff worked together to give our newsletter a facelift and we welcome comments to improve the contents in future. Feel free to contact me with any information requests, comments and questions.

New York Sea Grant Extension
3059 Sound Avenue
Riverhead, NY 11901

NONPROFIT ORG
U.S. POSTAGE
PAID
RIVERHEAD, NY
PERMIT NO. 91

ADDRESS CORRECTION REQUESTED