Habitat Hotline Atlantic
Issues of Concern for Atlantic Marine Fish Habitat
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Sand Mining for Beach Nourishment:

Investigating Fisheries Impacts

As America's coasts become ever more popular as vacationing and relocation destinations, pressure on local municipalities to maintain attractive coastal resources continue to mount. Almost by definition, one of these resources is "the beach." Whether the result of poorly planned development compounded by Mother Nature, or the natural processes of Mother Nature alone, Atlantic beaches frequently experience changes in size and morphology which can impact attractiveness to tourists and residents, and endanger manmade structures.

A common practice for enlarging beaches that have been reduced in size is called beach nourishment, which involves physically pumping or placing additional sand back on the impacted beach. Fish habitat can be affected by beach nourishment projects primarily in two ways. The first is the deposition of sand used for nourishment over existing fish habitat. Impacts to habitat in this manner have been documented to be short term in nature, although further studies have been called for. The second issue, removal or mining of sand from offshore areas to be used as a sand source for beach nourishment, is the issue we will investigate further here.

Sand located in nearshore ocean waters is the most common source of sand for beach nourishment projects, providing as much as 95% of the material required nationwide. Although estuarine locations could provide a more cost-effective source of sand because of the shorter distance required for sand transportation and the ease in dredging afforded by protected estuarine locations, frequently the high abundance of fine sediment is unsuitable for use as beach sand; when coupled with the sensitive nature of estuarine habitats, their use as a sand source is often precluded.

Physical changes are often studied immediately following dredging in order to determine the amount of material removed, but the long term physical alterations to nearshore habitats used as sand sources for nourishment projects has not been well documented. Since 1950, only eleven studies have investigated the biological impacts of sand mining at all, and of these only a single study investigated the impacts to organisms other than those living directly in the disturbed sediments. Two of the most recent studies occurred in South Carolina waters, and investigated the physical changes occurring in borrow areas, impacts to benthic organisms, and estimated effects on economically important fish and shrimp species.

In 1990, two borrow areas off Hilton Head, South Carolina were used to replenish Hilton Head beaches. An 18 month study undertaken by the South Carolina Department of Natural Resources (SCDNR) found that sediments which replenished one of the borrow sites were similar in nature to the ones removed; however, sediments that filled in the second site were muddy in character and resulted in a change in the benthic (*continued on p.2*)

community primarily small crustaceans to mollusk dominated. Although changes in the faunal composition of the borrow sites were also evident at the first site, these changes were relatively short lived in nature, while the changes at the second site persisted for the study duration. Investigators recommended that the study site that experienced the change in sediments be resampled to determine the impact duration, and that future borrowing in the area avoid long-term alterations in sediment characteristics and benthic communities.

When considering the diets of economically important finfish and crustaceans found in the area, the investigators theorized that direct impacts to these species as a result of dredging-induced changes to the benthic community were minor if they occurred at all, since most of their diets were composed of non-benthic organisms. However, study director Robert Van Dolah of the South Carolina Department of Natural Resources points out, "The ecological impacts of dredging for beach nourishment have been largely overlooked. Several studies, including those undertaken in South Carolina, have documented substantial changes in the compostion of bottom communities following dredging, but the consequences of these changes in terms of the trophic function of benthic resources on fish and other predators is poorly understood."

The investigators found that planktonic larvae of economically important species were present in the area and were probably entrained or dredged up during sediment removal, the impacts were considered insignificant when compared to the tremendous number of larvae spawned per season for each species under consideration.

The second South Carolina study looked at impacts to an estuarine borrow site in the Folly River after nourishment of the shoreline at Folly Beach in 1993. After dredging, sediments in the borrow zone and adjacent areas had a substantially higher proportion of silt and clay, which suggests a change in sediment processes. Changes in the faunal community as a result of sediment composition changes were similar to those that occurred in the offshore study, with a shift from crustaceans to mollusks. As with the offshore study, the ecological consequences of changes to the benthic community could not be determined, but previously conducted food habit studies of economically important species found in the area indicated that benthic organisms were not important prey items.

A review of beach nourishment issues conducted by the National Academy of Sciences found that the consequences of long-term alterations to borrow areas are not well understood, especially with respect to food chain impacts. The review suggests that additional monitoring be conducted, and that borrow areas be limited to those that would only undergo short term impacts, until conclusive studies are available. Studies underway include a three-year investigation off Tampa, Florida evaluating the recovery of benthic communities after sand mining.

References:

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Outer Continental Shelf Sand Mining Operation to Restore Florida Beaches

The city of Jacksonville, Florida recently completed the first negotiated agreement with the Department of the Interior's Minerals Management Service (MMS) to mine sand from federal waters (3 miles to 200 miles offshore) for nourishment of Atlantic, Neptune and Jacksonville Beaches. In the past, a competitive leasing system was in effect for accessing offshore federal minerals, and was a hinderance to the use of these resources by states and local municipalities. A 1994 law changed the competitive requirements and now allows the use of negotiated agreements for access to offshore sand, gravel and shell resources. As a result of the modified law, this is the first beach nourishment project approved by MMS to use an offshore sand source.

A study to determine how quickly marine organisms recolonize the area after dredging is planned by MMS, while environmental studies to ensure that dredging is conducted in a sound matter are already underway. Negotiated agreements for similar projects are currently being developed with the states of South Carolina and Louisiana, and the U.S. Navy. *For further information, contact Barney Congdon, 504/736-2595.*

Protecting Fish Habitat in New Jersey

Fisherman Bill Sheehan promotes the Hackensack River Estuary

"Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever does — Margaret Mead." The cover of the brochure advertising the Hackensack Estuaries and River Tender (H.E.A.R.T.) Corporation's Eco Tour clearly depicts the central theme of the organization's campaign: educating local residents about the beauty of the Hackensack estuaries, urban as they may be, in order to inspire a love and appreciation that will result in citizen action. The above quote by Margaret Mead is included on the brochure, and provides the call for citizen involvement.

Fisherman and Eco-Tour leader Bill Sheehan reflects the warmth embodied by the organization's acronym every time he describes the estuary's natural assets, or thanks a participant in one of the many H.E.A.R.T sponsored activities. Captain Bill formed H.E.A.R.T. during the fall of 1994 because of his love for fishing on the estuary, and in order to address the environmental degradation he had witnessed over the years. "I was always in or on the water," said Sheehan, who has spent most of his life in northern New Jersey. "My activities now are an outgrowth of my interest in fishing." Sheehan is also an active member of the Hudson River Fisherman's Association.

In May of 1995 Captain Bill initiated the Eco Tour program. Four days a week during summer and fall, Captain Bill is out on the estuary, revealing its beauty to citizens and local officials, and educating them about the importance of wetlands for flood control, filtration, and fisheries habitat. The touring platform is the Captain's own Queen Mary "E," a pontoon vessel especially equipped for shallow water travel. From the saltmarsh grasses emerge herons, egrets, and muskrats. Sheehan inquires of his audience, "Can you believe you're only fifteen minutes from Manhattan?" Nobody can.

Under Sheehan and Executive Director Troy Noble's guidance, H.E.A.R.T. has been very vocal about the impacts of the proposed Hackensack Meadowlands Special Area Management Plan (SAMP), which will guide future development in the area. Along with environmental groups such as the New Jersey Audubon Society and NY/NJ Baykeeper, H.E.A.R.T. opposes the parts of the SAMP that would compromise existing wetlands.

As a member of the fishing community, Captain Bill has recognized the importance of making the connection between abundant habitat and abundant fisheries. For more information on H.E.A.R.T., write Hackensack Estuaries and River Tender Corporation, P.O. Box 1397, Secaucus, NJ, 07096.

Resources

Managing Cumulative Coastal Environmental Impacts - The Coastal Ocean Program of the National Oceanic and Atmospheric Administration (NOAA) recently published a compilation of resources for managing cumulative coastal impacts, entitled *Methodologies and Mechanisms for Management of Cumulative Coastal Environmental Impacts*. The document was co-authored by the Marine Law Institute and National Marine Fisheries Service (NMFS) Habitat staff. Part I of the document includes an overview of the legal and policy issues associated with cumulative impacts assessment, including an extensive annotated bibliography. Part II describes two approaches developed by the NMFS Habitat staff for evaluating cumulative coastal environmental impacts. *To obtain a copy, contact Isobel Sheifer, NOAA Coastal Ocean Program, 301/713-3338 or write NOAA Coastal Ocean Program (NCOP), 1315 East West Highway, Room 15140, Silver Spring, MD 20910.*

Watershed Events **Newsletter** - A newsletter published by EPA reviewing national watershed events. For a subscription, write EPA, Office of Wetlands, Oceans and Watersheds (4501F), 401 M St, SW, Washington, DC 20460.

Nonpoint Source News Notes - A newsletter sponsored by EPA and produced by the Terrene Institute about polluted runoff. To access the newsletter on-line: http://www.epa.gov/OWOW/NPS/npsie.html. For a subscription, write or fax: Terrene Institute, 1717 K St., NW, Suite 801, Washington, DC, 20006, FAX 202-296-4071.

Watershed '96 - A conference concerning all aspects of managing watersheds, sponsored by the Environmental Protection Agency (EPA), private groups, and other federal agencies is scheduled for June 8 -12 in Washington, D.C. Specific program information is available by writing orfaxing Watershed '96, c/o WEF, 601 Wythe Street, Alexandria, VA 22314-1994, FAX 703-684-2475. On-line address http://www.epa.gov/OWOW click on "What's New."

Protecting Coastal and Wetland Resources: A guide for local governments - The policies of local municipalities can impact the status of coastal resources such as wetlands and fisheries. This guide, published by the Environmental Protection Agency, outlines the ways in which local policies can help protect these resources. To obtain a free copy, request document # EPA 842-R-92-002 from NCEPI, 11029 Kenwood Rd., Bldg 5, Cincinnati, OH 45242, FAX 513-489-8695.

ASMFC
Habitat Managers Workshop Postponed

New date to be announced in late March

The Atlantic States Marine Fisheries Commission's Habitat Managers Workshop, originally scheduled for March 11-14, 1996, has been postponed. The Commission is hoping to set a new date for the workshop by the end of March; however, the status of the federal budget crisis remains a critical factor.

The Habitat Managers Workshop was developed in order to facilitate cooperation between fishery and habitat managers on the management of fish habitat, and heighten the consideration if impacts to fisheries during habitat management deliberations. Although the connection between healthy fish populations and habitat quantity and quality are generally appreciated by fishery and habitat managers alike, coordinated efforts to protect fish habitat are needed. The workshop has been designed to specifically address these needs.

The Commission optimistically expects that the relative federal budget issues will be ironed out by March, when a new date for the workshop will be announced. Executive Director John H. Dunnigan stated, "Fish habitat remains an important issue for the Commission. We are committed to convening this workshop as soon as we are able." *For further information, contact Dianne Stephan, Habitat Coordinator, at 202/289-6400, ext. 309.*

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