

Pollution Effects on Marine Fish Populations

National Marine Fisheries Service report reviews scientific literature on the effects of pollution on Striped Bass, Menhaden and Winter Flounder populations.

In a report recently released by the Northeast Fisheries Science Center of the National Marine Fisheries Service entitled *Quantitative Effects of Pollution on Marine and Anadromous Fish Populations*, author Carl Sindermann discusses the difficulties involved in assessing the impacts of pollution on marine fish populations. The author points out that the large natural variability in the size of fish populations from year to year, and the often inseparable impacts of mortality due to fishing, predation or other causes including pollution are confounding factors. In concert with the sublethal effects of pollution on reproduction and heredity, it seems impossible to thoroughly understand the population level impacts of pollution on marine fish.

In this report, the author reviewed the scientific literature available describing the effects of pollution on three species: menhaden, striped bass and winter flounder. Although the available literature on these issues was sparse for the most part, important information was summarized for each species and recommendations were made on the type of studies needed for improved evaluation in the future.

Extreme variability in the size of menhaden year classes was determined to hinder the possibility of detecting pollution effects on menhaden populations. One study found that because of the statistical effect of the variability in menhaden abundance from year to year, a reduction in the menhaden stock of 50% or less, whether it was because of a catastrophic pollution event or fishing pressure, could easily go undetected.

The decline of striped bass in the Chesapeake region from the mid-1970s through the mid-1980s has generally been attributed to overfishing and reduced survival of larvae because of chemical contaminants. It is believed that the effects of

contaminants on striped bass larvae during this time period were significant because of the reduced ability of the already depleted stock to compensate. The present time finds the striped bass stock at much greater abundance, and it is anticipated that larval toxicity will not have as severe an impact.

Winter flounder are estuarine dependent for spawning, juvenile growth and adult overwintering, and remain in close contact with the estuary bottom. Toxins often accumulate in the sediments with which winter flounder are closely associated, thus many studies have investigated the effects of pollution on this species, especially early life stages. The most significant findings from a population standpoint are the negative impacts of toxins (especially chlorinated hydrocarbons) on larval survival. However, the author reports that quantifying the impacts on population size has yet to be accomplished.

In the *Fishery Management Plan for Inshore Stocks of Winter Flounder* (ASMFC Fisheries Management Report No. 21, 1992), the authors specifically addressed the impacts of the loss of habitat quality on winter flounder stocks. They found that although the relationship between habitat quality and production of young winter flounder is not well understood and hasn't been quantified, analyses show that investing in habitat restoration programs which increase production of young winter flounder would result in longer term benefits to the fishery than simply containing fishing mortality. Improvements in habitat in conjunction with a well managed fishery would allow managers to gradually increase fishery yield from managed populations.

As pointed out by Mr. Sindermann, the scientific evidence available does not explain the population level impacts of pollution on marine fish. Roland Schmitten, director of the National Marine Fisheries Service has written, "The loss of
(continued on p. 2)

The population level effects of pollution are very difficult to detect.



Delaware Habitat Workshops Fuel New Alliances

Holiday cheer wasn't the only thing on the minds of Delaware fishermen and environmentalists as they met last December to discuss local marine fish habitat issues. Over 50 individuals took time out from busy holiday schedules to focus on preserving coastal fisheries through habitat protection.

The Commission sponsored workshops, held in Dover and Lewes, gave fishermen, environmentalists and the general public an opportunity to learn more about marine fish habitat issues, and network with others having common concerns. Dr. JoAnn Burkholder of North Carolina State University gave an excellent overview of water quality and habitat issues affecting marine fish,

with examples from her own research on seagrasses and toxic algae. Individuals involved in local habitat programs including Sea Grant, Delaware Estuary Program, Delaware Inland Bays Estuary Program, and Sierra Club discussed their programs and identified ways in which interested individuals could participate.

The big success of the workshop was not only the integration of new information, but the forging of new lines of communication among participants. By the end of the Lewes workshop, members of the Delaware Mobile Surf Fishermen's Association were already strategizing with Sierra Club members. With new found allies, protectors of Delaware marine fish habitat have the opportunity to reach out to a broader range of citizens and fortify their position. Protecting Delaware marine fish habitat is a step towards ensuring the future of Delaware fisheries.

Pollution and Fish

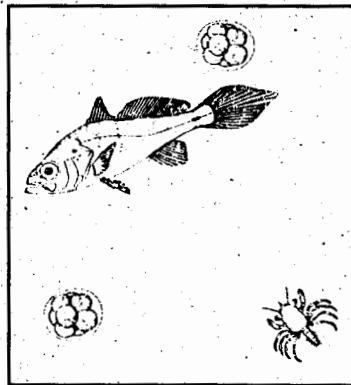
Populations(continued from p. 1) nearshore ocean and estuarine fishery habitat is probably the greatest long-term threat to fisheries productivity." Yet, without the numbers that show how pollution and habitat loss specifically impact fisheries, managers are left with little upon which to base their decisions. Perhaps the best way to proceed while considering habitat in fisheries management issues is to implement the precautionary principle adopted by the Second International Conference on Protection of the North Sea, which "requires action to reduce pollution even in the absence of soundly established scientific proof for cause and effect relationships."

To obtain a copy of the NMFS report, write the Information Services Unit, NEFSC, 166 Water Street, Woods Hole, MA 02543-1026 and request NOAA Technical Memorandum NMFS-F/NEC-104. For a copy of ASMFC's winter flounder plan, call (202) 452-8700.

Environmental Impacts of Powerboats:

The EPA seeks to reduce hydrocarbon emissions while scientists explore other vessel impacts.

The environmental impacts of powerboats have come under increased consideration of late. Reasons for closer scrutiny include, but are not limited to, loss of seagrass habitat in south Florida and Chesapeake Bay, deaths of federally endangered manatees, and air and water pollution resulting from engine emissions.



A study to determine the impact of nonroad emissions was completed by EPA in 1991, and found that an outboard

motor could generate as many volatile organic compounds in one hour of use as a car driven 800 miles. Studies have also shown that up to one third of the gasoline and lubricating oil used by an outboard motor is expelled into the water unused.

Last Fall, the EPA announced it had reached an accord with marine-engine manufacturers to cut smog-producing hydrocarbon emissions by 75%. The rules are expected to become finalized towards the end of this year, and will be phased in from 1998 to 2006.

The new rules will require manufacturers to change the design of outboard motors, although specifics will be left up to the individual manufacturers. Experts anticipate the gradual replacement of two-stroke models with four-stroke engines, similar to the engines found in cars. Outboard Marine Corporation, the maker of Johnson and Evinrude

(continued from p. 2) engines, plans to introduce its first cleaner running models later this year.

In addition to effects on air and water quality, physical disturbances to the environment were also discussed by scientists, environmentalists, and industry representatives at the Boating Impacts Workshop, held at the Woods Hole Oceanographic Institute late last year. Physical impacts discussed included photosynthesis-limiting turbidity, loss of seagrass beds due to accidental and intentional propeller-dredging, and the possible effects of blender-like propeller action on larval and juvenile fish and other plankton. Workshop coordinator and fisheries consultant Nils Stolpe likens the saltwater intake and propeller churning of vessels to power plant cooling water intakes, which can be strictly regulated.

Some regulatory actions have already been taken because of these impacts. For example, speed limits, wake limits, and boating prohibited areas are a few of the restrictions imposed in Maryland waters to protect sensitive areas or species. "That's something all fishermen should be thinking of," said Stolpe.

Additional regulations may be coming down the pipe as states with coastal zone management programs (all Atlantic states except Georgia) put the finishing touches on their coastal nonpoint source pollution control plans, which are required to be submitted to EPA and the National Oceanographic and Atmospheric Administration (NOAA) by July 1995. Included in the list of "best management practices" drafted by the federal agencies to help guide the states' planning efforts is the "restriction of boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat."

Further information on the effects of motorboating can be found in Andre Mele's book "Polluting for Pleasure" (W.W. Norton, 1993) or by contacting the Clean Water Trust of Boat U.S. at (703) 823-9550 x-3369. The Boating Impacts Workshop proceedings will be published by the Woods Hole Oceanographic Institute and should be available in early Spring. For copies, contact the Atlantic States Marine Fisheries Commission's Habitat Education Program at (202) 452-8700.

Along the Coast

Maine - The Federal Energy Regulatory Commission (FERC) has issued an order requiring the installation of interim fishways for Edwards Dam, which is the first inland blockage to anadromous fish spawning runs on the Kennebec River. Edwards Dam is the subject of a highly contentious relicensing proceeding in which many federal agencies, the State of Maine, and a coalition of environmental groups are advocating denial of a new license and dam removal in order to restore the condition of fish habitat. The relicensing process is expected to take several years, so interim fishways were ordered until the license is resolved. Interim fishways will allow passage for river herring, shad, and salmon but not for striped bass, rainbow smelt, Atlantic sturgeon, or the endangered shortnose sturgeon.

New Jersey - New Jersey Governor Christine Todd Whitman appointed a task force six months ago to develop solutions to the dredging and contaminated sediment disposal problems facing the Port of New York-New Jersey. In early February the task force released its recommendations, which include the end to ocean disposal of contaminated sediments, and are fully endorsed by Governor Whitman. Short term actions (to take place in the next three years) include permit prioritization, volume reduction, and upland disposal. In a letter sent earlier this month, ASMFC joined other fishing and environmental groups in applauding Governor Whitman's support of these recommendations. For further information on the task force's recommendations, contact Clean Ocean Action at (908) 872-0111.

Delaware - Public meetings on the draft management plan for the Delaware Estuary have been scheduled throughout the region. The plan includes actions related to land management, water use management, habitat protection, toxics, education, management of available data and information on the estuary, and monitoring. Copies of the plan and information on the public meetings may be obtained by calling the Delaware Estuary Program at 1-800-445-6435.

North Carolina - The US Fish and Wildlife Service (USFWS) is investigating the removal of Quaker Neck Dam, which would restore access to historical spawning habitat in the mainstem Neuse River and its tributaries for American shad and river herrings. The dam was constructed by the local electric utility near Goldsboro, NC, and the outfitted fish passage device has proven ineffective. The proposed project will include demolition of Quaker Neck Dam and installation of a weir dam which will not affect anadromous fish movement.

Washington - According to a decision rendered by the U.S. Supreme Court involving the city of Tacoma and the State of Washington Department of Ecology, states have the right to place conditions on water quality certificates issued pursuant to section 401 of the Clean Water Act that are designed to protect the biological integrity of a body of water. Washington Attorney General Christine Gregoire stated that this was a landmark ruling. "We were joined by 45 states in our position. Now states can play a major role in the process of licensing and relicensing hydroelectric dams and will be able to ensure water quality and the fishery resource are protected in that process." For further information, contact Jay Manning, Senior Assistant Attorney General for the State of Washington at (206) 459-6158. (Excerpted from *Coastlines*, Vol. 5, No. 1.)

DREDGING PLAN RELEASED:

**Environmentalists
disappointed with
unbalanced approach**

During late December, the Maritime Administration's (MARAD) final report *The Dredging Process in the United States: An Action Plan for Improvement* was released. The plan was an interagency undertaking addressing the dredging process, including permitting and disposal of dredged materials.

The plan was sanctioned by President Clinton and Transportation Secretary Federico Pena after a number of harbor dredging projects were delayed because of public outcry over ocean disposal of dredged sediments containing toxins such as polychlorinated biphenals, heavy metals and dioxin.

Environmentalists were very disappointed with the final action plan, citing its failure to pay significant attention to the

environmental issues associated with dredging, or identify proactive strategies for reducing or remediating sediment contamination.

Environmentalists pointed out several times during the public comment period that their main concern was disposal of the contaminated sediments, not the dredging process itself.

After completion of the draft document, a number of environmental groups met with MARAD staff to request postponement of the document release, and petitioned officials of the Environmental Protection Agency (EPA) to withdraw their support of the document, but to no avail.

As proposed by the action plan, national and regional dredging teams co-chaired by EPA and the Army Corps of Engineers, will be convened to implement the plan. *Copies of the report may be obtained from MARAD by calling (202) 366-5807. For further information on environmental concerns about the document, contact the Coast Alliance (202) 546-9554.*

Clean Water Act Reauthorization

The Clean Water Act Reauthorization bill (H.R. 961) has been introduced into the House Transportation and Infrastructure Committee and has been referred to the Subcommittee on Water Resources and the Environment.

The Clean Water Network reports that H.R. 961 would weaken many of the current protections afforded by the Clean Water Act. Some of these include the loss of enforceable requirements to reduce polluted runoff in coastal areas, loss of wetlands protection, and increases in point source discharges.

In addition, current problem areas which the Clean Water Network has sought to strengthen, such as enforcement and citizen right-to-know, strengthening the National Estuary Program, phasing out of toxic chemicals, and controlling polluted runoff, remain unaddressed.

Hearings on the bill are currently underway. Subcommittee markup is scheduled for March 29-31, with full Committee markup scheduled for April 3-7.

To find out more about Clean Water Act reauthorization, contact Robyn Roberts at the Clean Water Network (202) 624-9357. For more information on the importance of clean water to fishermen and fisheries, call the Commission's F.I.S.H. Habitat Education Program at (202) 452-8700.

NMFS STRENGTHENS NATIONAL HABITAT PROGRAM

The National Marine Fisheries Service (NMFS) recently announced that it will soon unveil sweeping changes to its coastal habitat program to better protect the nation's fisheries and marine wildlife. Habitat Program officials will present the proposed changes and seek comment at a series of nationwide workshops scheduled for February through March.

"Current policy does not allow us to effectively halt the continued loss of marine habitat that is so vital to maintaining a viable fishing industry and nursing many endangered species back to health," said NMFS director Rollie Schmitt. These concerns echo the findings outlined in reports by the Department of Commerce Office of the Inspector General and the National Fish and Wildlife Foundation, among others.

Efforts to improve the NMFS Habitat Program began last fall when officials met with several constituent groups to discuss options for a more effective program. After constituent meetings and

internal deliberations, NMFS is contemplating expanding relationships with constituents to protect habitats through watershed initiatives, and putting a higher priority on issues such as dredged material management, habitat restoration, and anadromous fish.

The new program considerations are now ready for broader public review. A series of eight workshops has been scheduled to obtain input from more than 20 key constituent representatives per workshop. Atlantic coast workshops will be held in Boston, Charleston, New York and Annapolis.

The ASMFC is working to strengthen its relationship with the habitat Protection Program of NMFS. A majority of the most important fisheries habitat lie within state waters. It is vital that the Commission coordinate with federal agencies, as well as state and local habitat protection agencies, in order to conserve these important resources. The Commission will continue to work closely with NMFS as it seeks to fortify its Habitat Protection Program.

RESOURCES

Organizing for Power and Empowerment - Learn how to build a powerful community organization. This book, written by Jacqueline Mondros and Scott Wilson, gives advice on all dimensions of organizational life from planning and implementing strategy to structuring and funding social action groups. To order call Columbia Press 1-800-944-8648.

State by State review of "Leaks" in the Clean Water Act - How many pounds of toxins were released into the surface waters of your state? What percentage of original wetlands remain? For the answers to these and other questions, get the Clean Water Network's Fact Sheet on the state of your choice by calling the network at (202) 624-9357.

Putting the Lid on Dioxins - a joint report by Physicians for Social Responsibility (PSR) and the Environmental Defense Fund which concurs with EPA's recently released assessment of dioxin's toxic effects. The report also details a national policy proposal for dioxin. For copies, contact PSR, 1101 14th St., NW, Suite 700, Washington, DC, 20005 or call (202) 698-0150.

National Estuary Program (NEP) - Protecting and restoring the health of the nation's estuaries is what the NEP is all about. Get your copy of the full color brochure describing the program and how it works to achieve its goals. The good work of the NEP was also highlighted in a back issue of *Habitat Hotline*. For free copies of either document, contact the Commission's F.I.S.H. Habitat Education Program at (202) 452-8700.

Upstream Solutions to Downstream Pollution - This 127 page citizen's guide was developed by the Natural Resources Defense Council and Coast Alliance to help activists with water pollution prevention. For a copy, contact the NRDC at (202) 783-7800 or the Coast Alliance at (202) 546-9554.

Stemming the Tide of Coastal Fish Habitat Loss - The complete proceedings of the National Coalition for Marine Conservation's influential symposium to promote fish habitat protection. Papers and discussions cover the importance and status of critical habitat areas, major environmental threats, critiques of federal law, and an agenda for strengthening the nation's habitat conservation program. For a copy, send a check for \$22.00 to NCMC, 3 West Market Street, Leesburg, VA 22075 or call (703) 777-0037.

Delaware River Fish Consumption Advisory List - The Delaware Riverkeeper Network has prepared a toxic fish alert, listing all health advisories for fish species in the Delaware River from Trenton Falls to Delaware Bay. The list also includes freshwater fish advisories for NJ, PA, and DE, as well as tips for reducing contaminants in fish. For a copy of the list, call 1-800-8-DELAWARE. (Excerpted from *Clean Ocean Advocate*, December 1994.)

F.I.S.H. Initiates Flights for Fishermen

The Fishermen Involved in Saving Habitat (F.I.S.H.) Education Program of the Pacific States Marine Fisheries Commission has joined forces with Lighthawk to launch the 'Flights for Fishermen' Watershed Action Program. Commercial and recreational fishermen and environmental activists will be provided with the opportunity to view watershed alterations from the air, in order to develop a more complete understanding of the cumulative impacts of habitat destruction.

Flight participants are provided with background on the ecology of the watershed, including the habitat needs of fish and shellfish. During the flight, interpreters point out the impacts of wetland loss, point and non-point source pollution, dams, agriculture,

etc. as participants witness it first hand. Participants also receive information about agencies involved in land use policies, and suggestions about ways to become involved in policy development. Follow up opportunities to put these ideas to use are also discussed.

The project is being piloted in Washington State, and if successful will expand to other west coast states. LightHawk is a non-profit organization which uses the power of flight to further public education. Since 1979, it has been using its flights to research and monitor land use activities and inform key policy makers and the public about environmental issues such as loss of tropical forests, coral reef protection and industrial pollution. For further information on the 'Flights for Fishermen' Watershed Action Program, contact Fran Recht at (503) 765-2229. For more information on LightHawk, contact Cyndi Lewis, (206) 624-5339.

Action Items

■ Find out more about Clean Water Act Reauthorization and become part of the process by expressing your views to your elected representatives (p.4)

■ Delaware, Pennsylvania, and New Jersey Fishermen - attend the Delaware Estuary draft management plan public meeting near you (p.5)

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