New York Sea Grant

Celebrating 40 Years of

Ensuring the health of New York's ecosystems and coastal economies

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What is New York Sea Grant?

Established in 1966, the National Oceanic and Atmospheric Administration's National Sea Grant College Program is a network of 32 joint Federal/State university programs in every U.S. coastal and Great Lakes state and Puerto Rico.

New York Sea Grant, now in its 40th year, is a cooperative program of the State University of New York (SUNY) and Cornell University, with administrative offices at Stony Brook University's School of Marine and Atmospheric Sciences, extension administration at Cornell University in Ithaca, and extension staff throughout the state.

New York State, with 3,400 miles of varied coastlines, is the only State in the nation bordering both the Great Lakes and the ocean. Today more than 85 percent of the State's population of 19 million people lives in one of those coastal regions. New Yorkers depend on our coastal ports and marinas for trade and recreation, and their contributions to economic sustainability.

New York Sea Grant: Economics — Environment and — Education

New York Sea Grant is a statewide network of integrated research, education, and extension services promoting coastal economic vitality, environmental sustainability and citizen awareness and understanding about the State's marine and Great Lakes resources. These three elements — economics — environment, and education — are the foundation of our Strategic Plan. New York Sea Grant has been "Bringing Science to the Shore" since 1971.

Through New York Sea Grant's efforts, the combined talents of university scientists and extension specialists help transfer science-based information to many coastal user groups — businesses and industries, federal, state and local government decision-makers and agency managers, educators, the media and the interested public.

Bringing Science to the Shore
Sea Grant New York
Celebrating 40 Years 1971-2011

NOAA
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

New York Sea Grant Supports High Quality Research

New York Sea Grant (NYSG) supports high-quality, university-based, natural and social science research which takes an unbiased look at priority questions. It combines scientific rigor a with real-world stakeholder view. Our technical peer-review process is very thorough and provides the foundation for NYSG's scientific credibility. As a Federal/State matching funds program, NYSG is accountable to its Federal source of funding, NOAA in the US Department of Commerce, as well as to the State of New York.

Since its start in 1971, NYSG has provided over $120 million for university research, education, and outreach projects; sponsored conferences, seminars and workshops on vital coastal issues; and made it possible for hundreds of graduate students to get advanced degrees.

New York Sea Grant is currently "making a difference" by supporting about 40 important research and outreach projects on issues such as shoreline protection, aquatic invaders, fisheries, and water quality. NYSG has been at the forefront of lobster, hard clam and brown tide research initiatives.

BRINGING SCIENCE TO THE SHORE
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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

Heavy Metal in the Food Chain

Cadmium, copper, lead, mercury, nickel, silver and zinc are metals that can be toxic to the living things of our air, land and sea...particularly when they occur in concentrations typical of urban environments like New York City. A research team from the College of Staten Island led by Dr. William G. Wallace and Sea Grant Scholar Daisuke Goto looked at how metals move up the trophic levels of a food chain.

Students from the College of Staten Island, under the direction of Dr. William G. Wallace, collecting invertebrates such as worms and clams from Great Kills Harbor for use in their studies examining the trophic transfer of metals in marine food chains.

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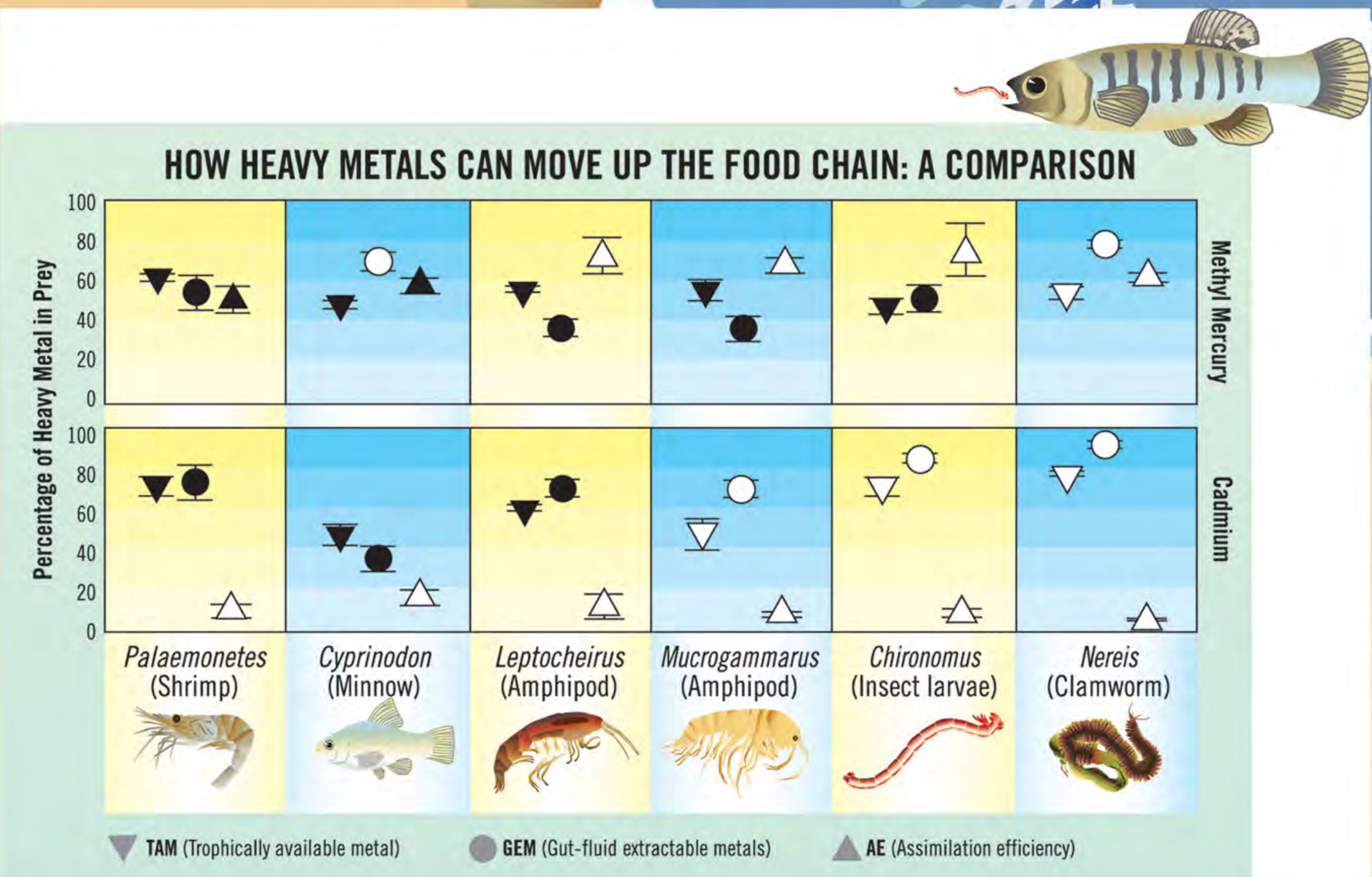
Heavy Metal in the Food Chain (cont'd)

The chart compares how two kinds of metal (methyl mercury and cadmium) are transferred to fish (mummichogs) after they consumed a variety of prey. Metal transfer occurs in three steps: 1. Metal is bound to the TAM of prey (percentage shown by an upside down triangle). 2. Metal is released into the gut fluid of the predator (circle) and is free to be assimilated. 3. Then, if the conditions are right for transfer across the gut lining, the metal is indeed assimilated by the predator (triangle). When a fish consumes a shrimp, the percentages of mercury available in the tissue, released into gut fluid, and assimilated by the predator are similar in value; these similarities are indicated by the darkened symbols. The results are quite different for cadmium; although there is available metal in the tissue and in the gut fluid, very little metal is assimilated.



Sediment transport in the Hudson River

Researchers from Stony Brook University's School of Marine and Atmospheric Sciences conducted the first-ever modeling of size-resolving sediment tracking in the Hudson River. Drs. Fanghua Xu (former Sea Grant Scholar), Nicole Riemer, Dong-Ping Wang, and Roger Flood created a workable model that predicts where along the river contaminated sediments are most likely to have settled. This dynamic model can be used to better focus any sediment sampling efforts by scientists charged with evaluating how the release of contaminants from river dredging (such as PCBs) impacts fish and wildlife.

Fresh water from mountains to the north meets salt water coming from the ocean to the south in the area of Cornwall Bay forming the Hudson River's salt wedge.

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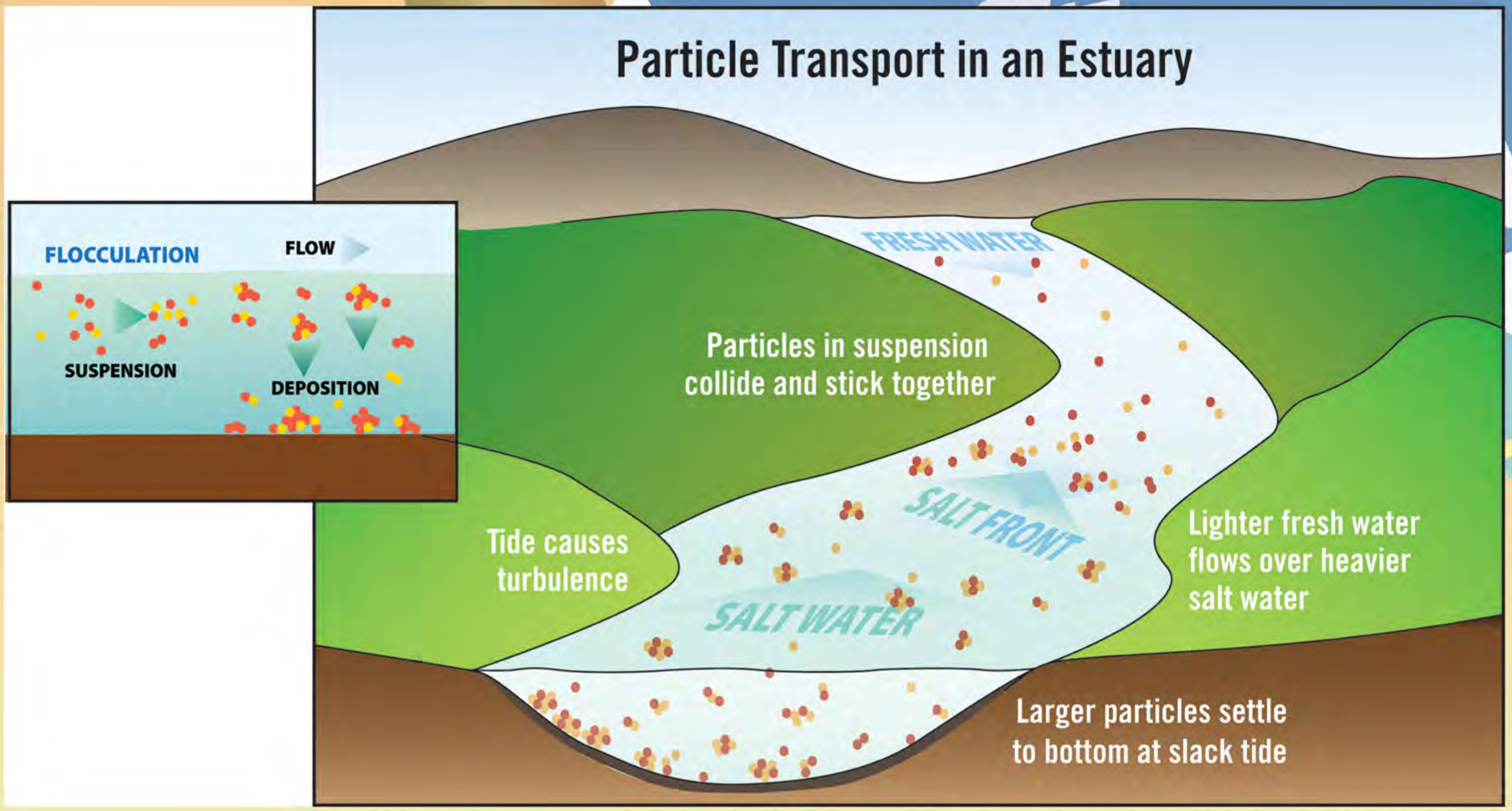
Sediment transport in the Hudson River (cont'd)

The smaller the particle, the longer it stays suspended in the water column. The bigger the particle, the faster it sinks. Generally, the more concentrated the particles, the more they will collide, form larger particles, then sink to the bottom. The larger particles tend to capture the smaller ones as they fall through the water column, usually during slack tide. When the water slows down, large particles are no longer buoyed by the swirling water and the particles settle to the bottom—sometimes in very predictable locations. Using the model, the team can predict where PCBs are likely to settle in a section of the upper Hudson.



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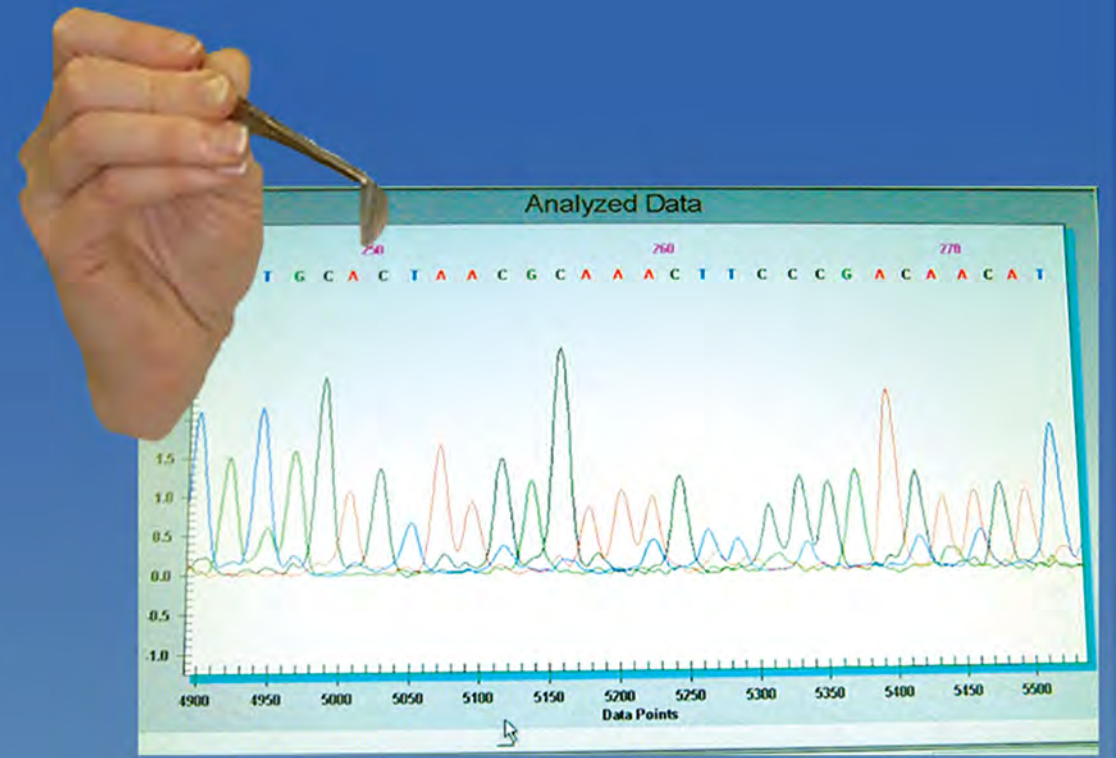
Identifying Sturgeon Populations: From Fin Clip to DNA Snip



Several sturgeon species or some population segments are threatened or endangered. Techniques developed by Dr. Isaac Wirgin of New York University School of Medicine are helping to rebuild sturgeon populations. His lab can tell whether a sturgeon comes from the Hudson, the Chesapeake or the Savannah estuary–all from a tiny clip from the fish's fin.

Determining what population a fish belongs to is done by genetic markers on a sturgeon's mitochondrial DNA. Once the 600 to 700 base DNA sequence is determined, it's sent back to a hatchery or agency where managers can decide if they have viable broodstocks that could be mated to repopulate that distinct sturgeon population segment.

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