

# What Do FISH Tell Us?

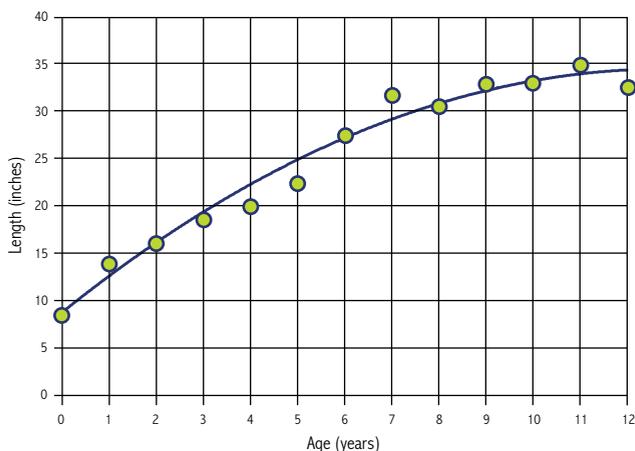
By Peter Clarke, New Jersey Coordinator, Atlantic Coastal Cooperative Statistics Program

One of the key elements to fisheries stock assessments is the comprehensive biological data collection including age, length, weight, and sex information for each species studied. As the importance of stock assessments grew and the lack of biological data loomed, New Jersey developed wide-ranging biological sampling programs through funds dedicated to help manage state fisheries and which were provided by the Atlantic Coastal Cooperative Statistics Program. The New Jersey sampling program focuses on port as well as at-sea sampling of the commercial fishing industry using age data collected for both recreational and commercial management.

Commercial port sampling encompasses age, length, and weight data for weakfish, American shad, American eel, Atlantic croaker, and Atlantic menhaden. At-sea observer coverage for American lobster and tautog includes length and sex information for both species, additional weight measurements for tautog while a sub-sample of tautog are retained for aging.

In light of current weakfish management revisions in New Jersey, a step-by-step case study of the stock assessment process is worth reviewing. The following case study for weakfish focuses on the commercial landings and biological samples collected through New Jersey's sampling program. The same type of information is also collected and analyzed from the recreational fishery. This process is commonly used for all species listed above although some technical details do vary.

Weakfish Length at Age Key



## Case Study: Weakfish

Multiple steps are required between the time the fishing vessels catch and harvest the fish to the time the data is used for stock assessment models and management.

- Weakfish commercially harvested by gillnets, otter trawl, and pound nets are landed at a commercial dock for sale to the public. Landings (in pounds) are reported through an online electronic reporting system by dealers.
- When landings occur, Atlantic Coastal Cooperative Statistics Program staff in New Jersey arrive at commercial docks and collect random samples of the day's catch. Generally 100 samples per trip are collected. Measurements taken include weight and length of each fish. Fish ear bones (otoliths) are removed for aging, processed, then aged like counting the rings of a tree trunk's cross-section.
- The age and all other physical data collected are combined into the state biological characterization database.
- All age, length and weight data is provided to Fish and Wildlife's stock assessment biologists for inclusion in the coastwide stock assessment. This assessment combines biological data from all east coast states that sample for weakfish including Rhode Island, New Jersey, Delaware, Maryland, Virginia and North Carolina. The stock assessment looks at the data in a multitude of ways such as by region, state, year, gear type and season. Landings are converted from total pounds landed to total number of fish landed by age. This type of analysis is called an *age structured stock assessment* and helps biologists estimate fishing mortality, biomass, recruitment and the overall status of the stock by individual age classes of the fish.
- Once the stock assessment models are completed, the findings are sent for peer review through an independent scientific organization.
- If the peer review finds the assessment is sound in its approach, the findings are presented to the Atlantic States Marine Fisheries Commission Weakfish Management Board (the Board).
- The Board accepts the assessment and discusses the findings to determine if a management strategy change is appropriate. If necessary, the Board sends the decision back to the Weakfish Technical Committee, which must create management options such as trip limits, bag limits, seasons and/or size limits.
- Once the management options are approved by the Board, the options are presented for public comment. The Board considers all public comment when making final management decisions. The new management strategy is then communicated to all east coast states for agency implementation.
- States are required to implement the new management strategy and the associated actions. If failure to implement occurs on the state level, that state is found to be out of compliance and the state's fishery is closed. See page 6 for more on the 2010 New Jersey weakfish management plan.



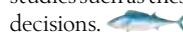
Otolith from a 30-inch weakfish.



Cross-section of otolith prepared for aging.

Peter Clarke, NJACCSP

Chris Chambers, NWFS



## ▶▶ WARNING: WILDLIFE HAZARD

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## Keep Our Waters Clean - Use pumpouts for boat holding tanks and portable toilets.

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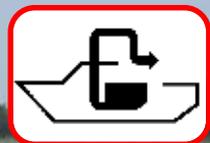
- \* Name TBD – Serving Raritan/Sandy Hook Bays
- Royal Flush – Serving Navesink/Shrewsbury Rivers and Sandy Hook Bay
- Bay Saver – Serving northern Barnegat Bay
- Water Warrior – Serving the Silver Bay Area
- Circle of Life – Serving central Barnegat Bay
- \* Name TBD – Serving Manahawkin Bay and Northern Little Egg Harbor Bay
- Waste Watcher – Serving Little Egg Harbor area

\* Note - Operation is pending for 2010



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contact the Marine Trades Association of New Jersey at (732) 292-1051 or [info@mtanj.org](mailto:info@mtanj.org)



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# Identifying the Chinese Mitten Crab

By Linda Barry, Assistant Fisheries Biologist



The non-native and invasive Chinese mitten crab first appeared on the Atlantic coast of the United States in 2006 when a male crab was caught at the mouth of Maryland's Patapsco River. Since then these crabs have been observed in the Chesapeake Bay, Delaware Bay, New Jersey coastal waters and the Hudson River. Last year, thanks to the vigilance of commercial and recreational fishermen, fifty specimens of the Chinese mitten crabs were collected from New Jersey waters. Of these crabs, 28 were male and 22 were female, four of which had egg masses.

The locations spanned the state's coastline from the lower Hudson River and Raritan Bay to Delaware Bay, and included sightings in Belford, Matawan and Cheesequake creeks, the Navesink, Shrewsbury and Manasquan rivers plus Barnegat Bay. The vast majority of the crabs (39) were caught in Raritan Bay and its surrounding waters.

To help identify these invasives, listed below are identifying characteristics of the mitten crab as well as those for two New Jersey common crabs often mistaken for mitten crabs.



Peter Clarke, NJ ACCSP State Coordinator

## Chinese Mitten Crab (*Eriocheir sinensis*)

- Smooth, round carapace, olive green to brown in color
- Four spines with a deep, central notch between the eyes, and four spines along the margin to the side of each eye (last spine is very small)
- Thick, furry "mittens" covering equal-sized claws with white tips protruding.
- No swimming legs and eight long, slender, sharp-tipped walking legs
- Size to 4-inch carapace width.

## Spider Crab (*Libinia dubia* and *Libinia emarginata*)

- Teardrop-shaped, globular brown carapace covered with many small spines and tubercles, pointed rostrum extending outward between the eyes
- Six (*L. dubia*) or nine (*L. emarginata*) prominent spines progressing along the midline of the back, and six spines to the side of each eye
- Very fine, very short fibers on carapace and legs
- Small, white-tipped claws
- No swimming legs and eight very long, spindly, walking legs giving the crab a spider-like appearance
- Size to 4-inch carapace length



Chris Fitzsimmons—Seasonal Technician, NJ Div. Fish and Wildlife

## Green Crab (*Carcinus maenas*)

- Finely grained, hexagonal or fan-shaped carapace with a blotched or mottled pattern of olive to dark green to brown above, tinted yellow to red below
- Three small, rounded spines between the eyes without a central notch, and five spines to the side of each eye
- Equal-sized, hairless claws with small black spots on the palm and black stripes in the grooves
- Last pair of legs slightly flattened
- Size to 3.5-inch carapace width



Linda Barry, Assistant Biologist, NJ Div. Fish and Wildlife

New Jersey Division of Fish and Wildlife thanks those anglers who reported sightings of the Chinese mitten crab and asks all who fish and crab New Jersey's waters to continue reporting each observation of this invasive species. If a mitten crab is caught, **do not release it!** Contact the Nacote Creek Marine Fisheries office at (609) 748-2020. Fish and Wildlife continues to work with the Smithsonian Environmental Research Center, the lead investigator documenting and analyzing Chinese mitten crab occurrences along the Atlantic coast. Information about the crab's whereabouts and the collection of specimens for genetic analysis is crucial in establishing their status on our shores. More information on the Chinese mitten crab can be found on Fish and Wildlife's Web site at [NJFishandWildlife.com/news/2009/mittencrab09.htm](http://NJFishandWildlife.com/news/2009/mittencrab09.htm).

## ACCESSIBILITY

### Accessible Fishing Sites



For people with disabilities, visit: [www.NJFishandWildlife.com/sites.htm](http://www.NJFishandWildlife.com/sites.htm)

An Accessible Fishing Sites list is available to assist anglers whose mobility is impaired.

All sites are wheelchair-accessible except for the Musconetcong River in Morris County, where vehicle access is to the shoreline.

## EMAIL LISTS

### Get On The Lists!

The Marine Fisheries and Shellfish e-mail lists, that is. This free service provides the latest information about Fish and Wildlife events, public hearings and other matters related to marine resources. And there are six other lists to help you get the most out of New Jersey's fish and wildlife resources. Sign up today.

Visit Fish and Wildlife's Web site: [NJFishandWildlife.com/lstsub.htm](http://NJFishandWildlife.com/lstsub.htm)