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NOAA FISHERIES

NORTHEAST FISHERIES SCIENCE CENTER
COOPERATIVE RESEARCH

Cooperative Connections

Groundfish Conversion Factor Study

Fishery scientists and managers use processed weight to whole weight conversion factors to estimate the total weight of a species removed from a population during fishing. Inaccurate conversion factors can lead to the over or underestimation of fish removed, and there is some uncertainty over how and when current conversion factors were calculated and if they are still appropriate.

The Northeast Fisheries Science Center's (NEFSC) Cooperative Research Branch began its Groundfish Conversion Factor Study in 2010 at the request of Population Dynamics scientists who were interested in examining the accuracy of current conversion factors, sources of variability, and determining if a model-based approach is more appropriate.

Aboard commercial fishing vessels, Cooperative Research staff can randomly sample commercially targeted groundfish species. Thus far, efforts have focused on Atlantic cod, haddock, pollock, white hake, monkfish and skate. Individual fish are measured, weighed, processed to commercial standards, weighed again and when possible, sex and maturity stage are recorded. To- date 3,074 fish have been processed: 1,288 cod, 646 monkfish, 688 haddock, 288 pollock, 66 skate, and 98 white hake. These data have been supplemented with data collected from the NEFSC bottom trawl survey.

Initial analysis indicates that conversion factors estimated using these data differ from current conversion factors for some species. Furthermore, some sources of the variability in the conversion factors were identified. For example, conversion factors for cod can vary up to 6.5% depending on processing method, and conversion factors for monkfish can vary up to 20% by season. Further investigation into model-based conversion factors is also underway.

For more information on the Groundfish Conversion Study, please contact Dominique.St.Amand@noaa.gov

Captain's Quarters

Operator:
Jamie McCavanagh
Vessel: F/V Determination
Fisheries: Squid, fluke, whiting, scup
Years participating with CRB : 3
Famous Words:
"I love FLDRS! It makes my life much easier, there is no paperwork involved and I record everything tow by tow. At the end of the trip, everything is transmitted electronically.
I use the logbook to record both kept and discard fish. This information helps me make good fishing decisions and it helps Cooperative Research."

NEFSC Fish - Reproduction and Condition Program Makes Good Use of Industry Provided Samples

The reproductive dynamics of fishes result from characteristics that are known to vary in time and space, including their size and age at maturation, number of eggs produced (fecundity) and frequency of spawing.
To better understand these reproductive dynamics, and the underlying factors that drive their variation, scientists at the NEFSC monitor maturity and fecundity of selected speces. While size at maturity is best estimated from survey gears that captrue a wide range of sizes, the estimation of egg production requires sampling at specific stages before spawning starts, but many fishe species spawn during limited times of the year which may not coincide with regular resource surveys. Collaborative projects with industry including the Cooperative Research Study Fleet and Cooperative Gulf of Main Longline Survey have been able to provide over 20,000 samples from more areas, season and specific habiats to help increase these data. Samples are used for the reproductive studies, and also for measuring the energetic condition of the fish, which helps our understanding of how fish condition can vary between years and populations, and relates to their reproductive output.

This enhanced biosampling has led to insights into the reproductive potential of yellowtail flounder including annual variation, variation between stocks, and the effects of female body condition on egg production . Sampling of winter flounder has shown variation between areas in maturity, spawning seasonality, skipped spawning and egg production. Recently published work on the body condition of flatfish (winter, yellowtail and summer flounder) identified the factors best suited for tracking changes in condition in these species, and how these are related to factors such as reporductive strategies, growth and maturity. Ongoing work is attempting to understand the environmental and energetic drivers of reproductive potential in these and other commercially important groundfish.

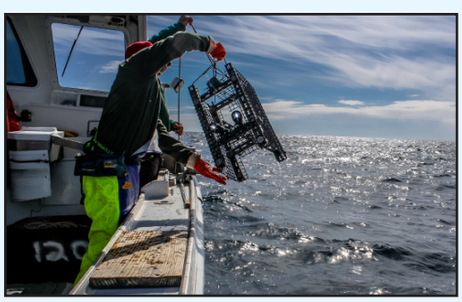
While the long-term (2009-present) monitoring efforts have focused on flatfishes, industry-based collaboration has also provided samples of additional species for focused shorter-term studies. Herring samples have been obtained to evaluate skipped spawning and the proportion of fish that spawn in the spring or the fall. Haddock samples are being examined to better understand the reproductive dynamics in the Gulf of Maine and on Georges Bank, where extreme fluctuations in reproduction occur. Recent efforts have also targeted sampling for data poor species such as cusk and wolffish, for which limited life history information is available in the western North Atlantic. Given the challenges with data poor species, industry-based sampling can be especially valuable, and increased data obtained from commercial catches of these species will help fill data gaps and improve the information avaailabe to resource mangers and stock assessment biologists.

For more information on the Enhanced Biosampling program, please contact Mark.Wuenschel@noaa.gov

An adult female winter flounder in the pre-spawning condition ideal for sampling fecundity.
Photo credit: NEFSC

Simple Video System Reveals Bottom Habitat

As part of the ongoing Bottom Longline Survey, Cooperative Research is deploying GoPro Cameras to capture footage from the bottom at the survey locations. The selection of the survey stations utilizes an algorithm that predicts the bottom type based on elevation changes across an area. To confirm the reliability of this method, the drop camera system was designed with low cost and easy handling in mind. The team assembled a galvanized steel cage and attached a camera case and lights rated for depths of around 900 feet. At each survey station, after the gear is set, the camera is deployed over the side of the commercial vessels and retrieved 10 minutes later with the hydraulic hauler. The average depth sampled is around 600 feet. After the survey, the footage is reviewed and each station is classified as hard or soft bottom and compared with the predicted value. In addition, any observed fish or invertbrates are identified, furthering our understanding of the communities the staff are sampling.



Left:
CRB GoPro camera during the 2016 BLL survey.
Photo credit: C. Alexander/ CRB

Right:
Sea anemone from the 2016 BLL survey.
Photo credit: GoPro/ G.Gianesin/CRB

Meet CRB Staff: Michael Morin

Michael Morin received his Bachelor's (Marine & Freshwater Biology) and Master's (Fisheries Ecology) degrees from the University of New Hampshire. His graduate research, an early Cooperative Research funded project, involved conducting a mark and recapture project to examine Atlantic Cod movements in the western gulf of Maine rolling closures. The project involved working with commercial fisherman to tag cod and other groundfish species. Prior to graduate school, Mike worked as a Fisheries Observer in Alaska, monitoring vessels in the groundfish and Alaskan pollock fisheries. After completing his graduate degree, he moved to Galveston Texas and worked as a Coastal Fisheries Technician for Texas Parks and Wildlife, monitoring the Galveston Bay ecosystem. Since joining the Cooperative Research Branch , Mike has focused his skills to data management and software development in support of fisheries research, gaining proficiency with a variety of programming languages through Study Fleet data analysis and web based application development. Mike currently manages the NEFFC's Fisheries Logbook and Data Recording Software (FLDRS) application used by regional commercial fishers to record and submit data to the NEFSC. When Mike is not working, he enjoys spending time with his family, distance running and curling.

Working Together to Understand and Improve Fisheries Data

www.nefsc.noaa.gov/coopresearch/

Questions? Contact Calvin.Alexander@noaa.gov

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