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Assessment and Monitoring of Sciaenid Stocks, with Particular Reference to the Weakfish, *Cynoscion regalis*

Presented by

Herbert M. Austin

at the

Annual Meeting of the

Atlantic States Marine Fisheries Commission

Charleston, South Carolina

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Virginia Marine Resources Report #81-10

I want to talk briefly about what is going to be involved with regard to population survey and monitoring requirements if a weakfish management plan is written.

As Bill Gordon said earlier this morning, interstate management needs are going to focus on fisheries information. Information on the stock itself, both in terms of spawning and nursery ground production, the input to the stock; and on catch and effort of the adult fishery, the output from the stock. Or, as Mr. Wilk mentioned, the "removal" from the stock. Now is not a particularly good time to start expanding already restricted state programs, but it is going to be necessary to enhance existing monitoring programs.

Weakfish spawn throughout their range, but it is primarily in the southern mid-Atlantic Bight and south of Hatteras where substantial spawning occurs and provides recruitment to the stock that migrates into the northern states. I am going to focus on activities north of Cape Hatteras. Joe Smith is going to talk about south of Hatteras.

There are dramatic interannual fluctuations in abundance of weakfish as you saw from Mr. Wilk's slides, the changes in the commercial landings have been dramatic over the last 40 or 50 years and it is this type of interannual fluctuation that suggests that a management plan be flexible enough to take into account natural fluctuations. It does not take into consideration, at this point, the results of pollution or man's other alterations of the estuarine environment. We are

going to need a management plan that is supported by a monitoring program of the annual production of the juveniles on their nursery grounds. Traditionally, we have gone out and sampled egg and larvae abundance, but so many events transpire between the time that we count egg and larval abundance and the time they are recruited to the commercial stock that we now recognize this is probably not an acceptable way of estimating recruitment to the population.

We have in Virginia monitored juvenile abundance in the Chesapeake Bay and its tributaries for several years (Figure 1). Generally fluctuations in stock abundance (Figure 2) as indicated by commercial landings, are reflected by juvenile abundance, not by egg or larvae; in this case the young-of-the-year in the estuary. In most cases observed fluctuations in the stock are preceded by the abundance fluctuations in the juvenile stock one to two years earlier. The figure shown here is of the Atlantic croaker, Micropogonius undulatus for which we have a more complete analysis (Norcross and Austin, 1981). These are the type of data that are going to be needed. The solid line represents the commercial landing of croaker in Virginia, and the dotted line, the indices of juvenile abundance from our trawl surveys. The Virginia catch is much higher than the juvenile index would suggest during the 50's as croaker were being taken by trawl not just in Virginia, but off of Maryland and North Carolina. This requires additional interpretation of the data. To aleviate the problem we are going to look at fish taken only in the Chesapeake Bay by gill or pound net.

The pound net, an inshore stationary piece of gear can monitor the catch as the fish pass by. A catch and effort monitoring program using pound and gill net landings would not require an extensive program and would reflect an index of state-by-state landings. Further by monitoring pound net catches we take not only the large fish but also smaller fish. Of all of the commercial gear it would probably give us the best representative sample of the stock, and allow us a look at both age and size composition of the stock, both those extant and removed.

These programs will have to be maintained at individual state expense. You have heard today that Federal money will not be available, or if it is, it will be in block grants, and conceivably the Governors will want to put the money in other areas. At any rate, and more so than in the past, if we develop a management plan for the weakfish, other sciaenids, and the alosines (shad and river herring), more and more of the responsibility for the stock assessment and monitoring, both in terms of the juvenile recruitment, and the adult removal, is going to fall on the states at a time when it is getting more expensive.

Statistics programs in several states are being cut back, and yet, it is a time when we need to enhance these programs. I would suggest that based upon some of the discussions we held in the sciaenid monitoring workshop mentioned earlier, we are going to need more interstate cooperation. Maryland and Virginia are going to need to more closely coordinate

surveys in the Chesapeake Bay. New Jersey and Delaware will have to do the same thing in the Delaware Bay, and Connecticut and New York in Long Island Sound. We are going to have to see an inshore expansion of the type of assessment programs currently conducted by NMFS offshore where they monitor the stocks with their groundfish surveys, offshore with the Albatross and nearshore with the Delaware. As these vessels become unavailable or are laid up, as they are suggesting, it is going to be even more important that we, the states, look at the inshore waters. This is going to require that we either continue or initiate beach seine or trawl surveys. You are familiar with Maryland's young-of-the-year monitoring for striped bass where they use a beach seine, and because of the migratory pattern of the stock, it is possible to predict the New York-New England landings by simply looking at juvenile indices produced in Maryland.

It may not be necessary for all states to conduct extensive juvenile monitoring programs, but certainly the nursery areas must be examined, and in the case of the weakfish, areas such as the Chesapeake Bay and Pamlico Sound will have to be monitored. Fortunately we already have programs of this nature under way.

Catch statistics programs will need to be expanded in each state however; and we need to begin a collection of biological data, primarily the size and age composition of the catch in order to develop any kind of production or mortality models.

In short then, the states, if they want to initiate an interstate management program for weakfish, or any other sciaenids, must carry the responsibility for monitoring both the production and removal of the stocks at their own expense.