Perspective on Fishery Changes from a Veteran of the Industry: Kevin Wark

-by Anthony Himes, Virginia Sea Grant OA Fellow

As our climate continues to change and the oceans warm, commercial fishermen have a unique perspective to share about changes they have observed in the coastal ocean environment. Whether from increased water temperatures, ocean acidification, or declining dissolved oxygen, they are seeing shifts in both the range and abundance of many commercially fished species. Captain Kevin Wark, a 40-year veteran of the New Jersey fishing industry, provides a first-hand account of the shifting patterns he has seen over the course of his career. He also poses some tough research questions for the scientists. What follows is a summary of our conversation.

Fish on the Move

One of the most distinctive changes Capt. Wark has observed over the past four decades is the shift in species ranges both in latitude and depth in the water column. Several key commercial species in NJ, including bluefish and fluke, have shifted north. Core abundance maps for both these species since the 1970's can be viewed on the Mid-Atlantic Regional Council on the Ocean's Data Portal[1], and corroborate the observation of northward shifts of fluke and bluefish. Bluefish used to be abundant in inshore environments, but are now found in deeper waters at the shelf break, at a depth of 20-30 fathoms. Mackerel and skipjack have also made a similar shift out to deeper water, and in an extreme case, whiting have all but left the region entirely. Capt Wark is also concerned about how these shifts are affecting juvenile fish and how that will impact recruitment long-term as there is now a much larger migration for these once inshore species to return to their coastal nursery grounds.

Captain Kevin Wark pictured with a large cobia he caught off the coast of New Jersey. Photo Credit: Kevin Wark

As fish move into more northern waters, or deeper waters offshore, the market profitability of commercially fished species is decreasing. Not only is more fishing time required to catch similar amounts of fish that are less abundant in local waters, but longer trips are required to catch fish that have moved offshore. Capt. Wark also noted that at greater depths, certain gear types can become less effective and sharks chewing through nets becomes much more frequent, resulting in loss of catch and a greater investment in gear repair for fishermen. While a few species, such as menhaden, have been unaffected or even have become more abundant, Capt. Wark remarks that overall these shifts have been detrimental to the fishing industry. For example, weakfish stocks dropped over a decade ago and even with

[1] To learn more, you can view animated map layers on the MARCO Ocean Data Portal showing core abundance changes over time of 18 fish species since the 1970's, and projected ranges through 2100. (Click the "Marine Life" data category, and scroll down to "Fish Species Through Time" to view historical data, and "Fish Species Future Projections" to view projected ranges through 2100.) Additionally, the Portal also has map layers showing ocean acidification monitoring locations in the region (housed under the "Water Quality" data category).

more oversight the fishery has not rebounded as expected. This could potentially be due to changing water conditions, which Capt. Wark has also observed coinciding with these range shifts.

Changing Water Quality

One of the most notable changes in water quality Capt. Wark has observed while fishing has been in the nearshore environments. In the Mid-Atlantic Bight, "inshore waters in spring and early summer in some areas now look bright green, like anti-freeze, which certainly isn't normal." Capt. Wark notes that these regions often coincide with outfall pipes, which helps to illustrate the impacts human runoff and eutrophication can have on coastal fisheries. Regions with decreased oxygen levels are also affecting catch of commercial fish species. Capt. Wark has observed that fish in these regions are very lethargic, even during the warmest times of the year when these same species used to dart past his vessel in decades past. All of these changes taken together have Capt. Wark concerned for what the state of fisheries could look like in another 10 years, but he has seen his fellow commercial fishermen be open to working with researchers to protect their industries and their livelihoods long-term.

Research Needs

To maintain a vibrant commercial fishing industry in the Mid-Atlantic region in the face of changing environmental conditions, several key areas for research are apparent to Capt. Wark. The first is on the impacts of ocean acidification and continued climate change on larval and juvenile fish. Many species are understudied, but work done on some pelagic fish has indicated that there can be negative impacts on commercial species. Any negative impact, such as decreased survival or recruitment, will have negative downstream effects for the commercial markets as less juveniles will translate to less market size adults. Another key research area of interest to the commercial fishing industry is how future climate conditions will influence the range shifts already occurring. Clear and dramatic shifts have already been observed so it's of great concern how these shifts will continue with commercially valuable species. Lastly, Capt. Wark noted the need to understand what environmental changes are most impactful to commercial species, whether its predominantly temperature, or acidification, or a combination of many factors. Having a clear understanding of which factor or factors are most important helps to create a clear target for future actions to curb further environmental shifts that negatively impact commercial fisheries. Capt. Wark now serves as a member of the MACAN steering committee where he hopes his decades of experience observing species regime shifts and what impacts they have on commercial industry can be used "to make connections with the general public between the science of regime shifts and the important impacts these have in the region."