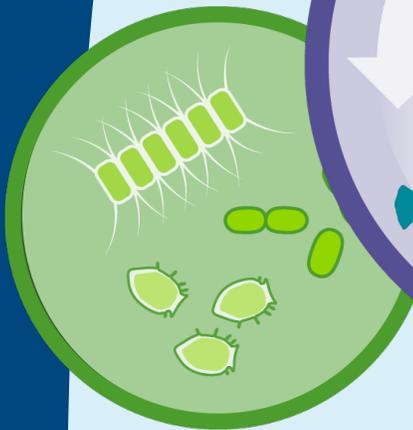
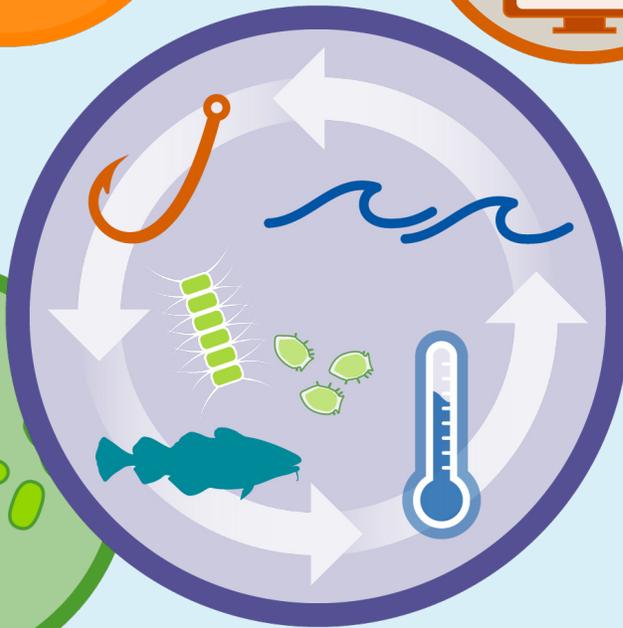
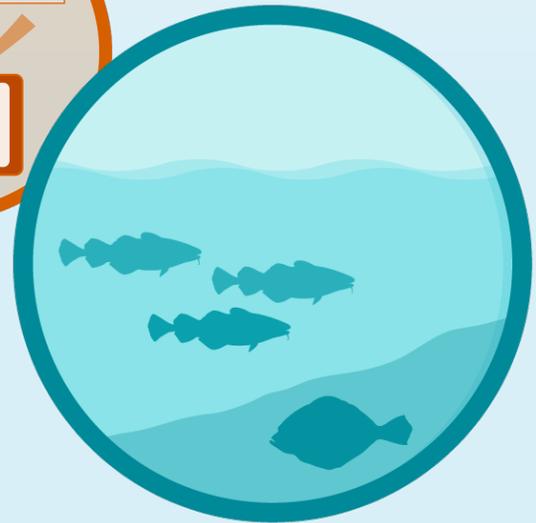
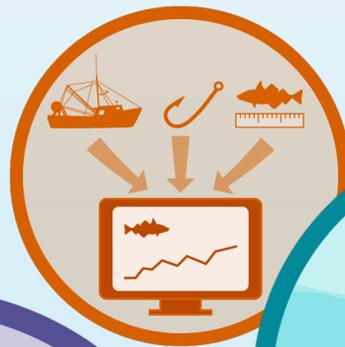


2021 State of the Ecosystem

Mid-Atlantic



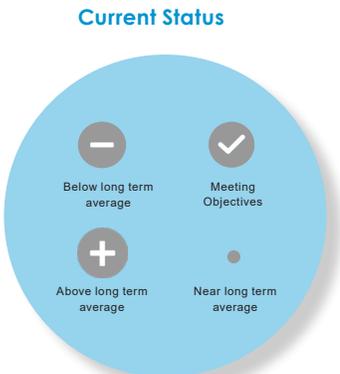
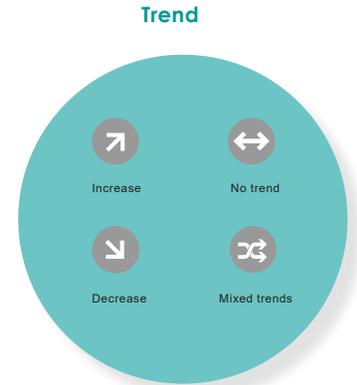
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Performance Relative to Fishery Management Objectives

Trends and status of indicators related to broad, ecosystem-level fishery management objectives, with implications for the Mid-Atlantic Fishery Management Council (MAFMC)

OBJECTIVE (INDICATOR)	Seafood production (total and MAFMC managed landings)	Commercial profits (MAFMC managed revenue)	Recreational opportunities (effort and fleet diversity)	
TREND			Effort:	Fleet diversity:
CURRENT STATUS			Effort:	Fleet diversity:
IMPLICATIONS	<p>Surfclam/ocean quahog landings driving commercial landings decline; likely market driven. Recreational harvest is declining due to different drivers.</p> <p>Overfishing does not seem to be the driver as ecosystem overfishing appears unlikely, most stocks are not overfished, and system biomass trends are stable.</p> <p>Recommend monitoring climate indicators as they continue trending toward uncharted territory, which affects stock distributions and will generate other ecosystem changes. Should also monitor the declining fishery engagement.</p>	<p>Primarily surfclams/ocean quahogs revenue driving patterns. Recent declines in prices contributed to falling revenue as quantities landed did not increase enough to overcome declining prices. Falling prices were likely due to market dynamics.</p> <p>Monitor climate risks to surfclams and ocean quahogs.</p>	<p>Recreational effort is near long-term average, but fleet diversity is decreasing due to a shift away from party/charter to shore-based fishing, decreasing the range of recreational fishing opportunities. Shore-based anglers will have access to different species/sizes of fish than vessel-based anglers.</p>	



OBJECTIVE (INDICATOR)	Stability (fishery and ecosystem diversity maintained over time)	Social vulnerability (community fishery engagement, reliance, and vulnerability)	Protected species (coastwide bycatch, population numbers, mortalities)	
TREND	Fishery: Ecosystem:	Fewer highly engaged communities (2020 report)	Bycatch:	Population NARW:
CURRENT STATUS	Fishery: Ecosystem:	Range of individual community status shown as baseline	Bycatch:	Population NARW:
IMPLICATIONS	<p>Fishery: Commercial fleet diversity metrics suggests stable capacity to respond to the current range of fishing opportunities. Recreational species catch diversity has been maintained by a different set of species over time.</p> <p>Ecosystem: While larval and adult fish diversity indices are stable, a few warm-southern larval species are becoming more dominant. Increasing zooplankton diversity is driven by declining dominance of an important species, which warrants continued monitoring.</p>	<p>Highlighted communities may be vulnerable to changes in fishing patterns due to regulations and/or climate change. When any of these communities are also experiencing social vulnerability, they may have lower ability to successfully respond to change. These indicators may also point to communities that are vulnerable to environmental justice issues.</p>	<p>Bycatch trends are related to fishery management, shifts in population distribution combined with fishery shifts, and population increase for seals.</p> <p>Population drivers for North Atlantic Right Whales (NARW) include combined fishery interactions/ship strikes, distribution shifts, and copepod availability.</p> <p>Unusual mortality events continue for 3 large whale species, harbor and gray seals.</p>	

Risks to Meeting Fishery Management Objectives

Climate and Ecosystem Productivity Risks

Climate change, most notably ocean warming, continues in the Mid-Atlantic and is affecting the ecosystem in various ways:

- Surfclams and ocean quahogs drive trends in Mid-Atlantic commercial revenue, but are vulnerable because of their sensitivity to warming ocean temperatures and ocean acidification. New observations show that acidification in surfclam summer habitat is approaching, but not yet at, levels affecting surf clam growth.
- Warmer-than-average 2020 winter water temperatures in Chesapeake Bay likely helped blue crabs, but hurt striped bass numbers.
- New habitat climate vulnerability analysis links black sea bass, scup, and summer flounder to several highly vulnerable nearshore habitats from salt marsh through shallow estuarine and marine reefs.

- The Mid-Atlantic had frequent ocean heatwaves in 2020.
- Increased primary productivity in summer continues, but is from smaller species that are less likely to increase fish productivity.
- Temperature and zooplankton changes impact fish condition for different species, impacts to fisheries and markets are under investigation.
- Apex predator populations are stable (sharks) to increasing (gray seals).

Other Ocean Uses: Offshore Wind Risks

More than 20 offshore wind development projects are proposed for construction over the next decade in the Northeast, covering more than 1.7 million acres by 2030. The development of multiple offshore wind sites in the Mid-Atlantic pose a number of risks and impacts to fisheries including:

- If all sites are developed, 2-24% of total average revenue could be displaced for major Mid-Atlantic species in lease areas.
- Displaced fishing effort can alter fishing methods, which can in turn change habitat, species (managed and protected), and fleet interactions.
- Right whales may be displaced, and altered local oceanography could affect distribution of their zooplankton prey.
- Current plans for rapid buildout in a patchwork of areas spreads the impacts differentially throughout the region.
- Scientific surveys collecting data for ocean and ecosystem conditions, fish, and protected species will be altered, potentially increasing uncertainty for management decision-making.

COVID-19 affected both fisheries and data collection in 2020 (see the [NOAA Fisheries economic assessment of COVID-19 effects on the U.S. fishing and seafood industry report](#)). We will continue to evaluate the impacts in the Northeast for future SOE reports.

