



## 2017 ISSUE #3

### Diet of Atlantic salmon highly variable



Atlantic salmon (part of NOAA's Species in the Spotlight initiative) are an economically valuable species. Despite being well-studied in freshwater environments, only limited information exists on their life history in marine environments. Better understanding the marine phase of their life cycle is particularly important given recent declines in marine survival rates associated with a changing climate and prey species dynamics. Stable isotopes and gut content analysis were used to assess small and large-scale spatial and temporal differences in marine feeding of Atlantic salmon off the coast of West Greenland. Dominant prey items included capelin, hyperiid amphipods, juvenile boreoatlantic armhook squid, and sand lance, but the relative contributions of each of these to diet was highly variable across sites, and temporal variability was only evident at one site. While Atlantic salmon exhibited both generalist and specialist feeding strategies off the coast of West Greenland, they are best described as opportunistic generalist predators.



Photo courtesy of NEFSC

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### The potential for ship strikes and fisheries interactions with Gulf of Mexico Bryde's whales

Bryde's whales are the only year-round resident baleen whales in the Gulf of Mexico and are currently under consideration by NOAA Fisheries for listing under the Endangered Species Act. The reasons for their rarity and restricted distribution are unknown, but industrial activities in the Gulf of Mexico could be a contributing factor. Soldevilla et al. used data from ship-based surveys, satellite tagging, and kinematic tagging to assess the geospatial overlap of the whales with commercial shipping and fisheries activities. They found that the whales' distribution was restricted to a small region along the northeastern Gulf of Mexico shelf-break. In addition, a kinematic-tagged whale made deep dives during the day to forage and spent the majority of its night time (88%) near the surface. If the rest of the population has similar dive behavior, near-bottom foraging during the day suggests that entanglement in longline fishing gear could pose a threat. Further, their tendency to remain near the surface at night could also increase the risk of ship strikes.



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### An increasing risk of gas embolism in sea turtles

Getting caught in fishing gear is a major threat to sea turtle populations. When sea turtles are incidentally captured in fishing gear (bycatch) and that gear is rapidly brought to the water's surface, rapid decompression can cause gas bubble formation in the blood stream (embolism) and tissues of the turtles. Gas embolism (GE) can injure and impair organs, or even cause death. Fahlman et al. used existing data from turtles that were incidentally captured in trawls and gillnets to assess what variables (capture depth, temperature, body size, etc.) may influence the severity of GE. They found a direct relationship between depth and the risk and severity of GE, which has not been shown previously for breath-hold diving species. Findings from this study suggest that sea turtle mortality associated with fishing activities may be significantly underestimated as the risk of mortality associated with GE has not been considered.



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### Use of skeletochronology to estimate the age and size of Kemp's ridley sea turtles

There have been recent declines in the nesting population of the endangered Kemp's ridley sea turtle in the Gulf of Mexico. Understanding the cause of this decline is important for implementing appropriate recovery measures. There are different factors that could be contributing to the decline, and better characterizing baseline life-history, demographics, and vital rates could help isolate critical factors. Given the difficulty in acquiring this information from sea turtles, Avens et al. used skeletochronology to acquire comprehensive age and growth data over long time scales. They found long-term, significant decreases in somatic growth in both juveniles and adults in the Gulf of Mexico, which could potentially influence recruitment to the reproductive population.



Photo courtesy of SEFSC

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This newsletter is intended to summarize the latest research on protected species from scientific publications that include one or more NOAA Fisheries authors. It will be distributed quarterly with alternate issues highlighting research from the East and West Coasts centers and offices.

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