Workshop Report: Diadromous fish as marine prey

Over the past 20 years, efforts to restore diadromous fish in Maine’s river systems have led to significant increases in run size for many species, namely river herring. As the abundance of river herring populations have increased, it has become more pertinent to understand role of river herring as prey for marine predators in the Gulf of Maine (GoM). To assess our current understanding of this ecological connection, we organized a workshop for scientists who are actively researching the role of diadromous fish as prey in the GoM. Over two days, scientists shared current research and preliminary results to foster discussion on the “state of the science”. Preliminary results from Maine Department of Marine Resources trawl survey and traditional diet sampling indicate that river herring abundance is variable at spatial and temporal scales in the nearshore GoM, with indications of overall increased abundance in recent years. Despite the perceived increases in river herring abundance, river herring detection in diets has been relatively low among the small number of sampled marine predators. Of these sampled marine predators are Atlantic cod (Gadus morhua), a groundfish with low abundance and truncated size distribution. However, river herring have recently been detected for the first time in the diet of Atlantic Bluefin tuna (Thunnus thynnus) sampled in the GoM. Further, stable isotope analysis is proving to be a powerful tool for detecting the presence of freshwater prey contributions to the diets of marine predators at a broader temporal scale than traditional diet sampling. Participants discussed potential synergies within these investigations and committed to a future meeting to explore these topics further and formalize connections by coordinating sample collection, comparing methodologies, and sharing results. This suite of studies is slated to continue and therefore strengthen our understanding of the role of diadromous fish, especially river herring, as marine prey.