

Summary of Stock Structure Information for Level 3 Species

All MAFMC managed species currently designated as level 3 stocks are managed as a unit stock over the geographic range of the species.

Summer flounder (from SAW 47)

For assessment purposes, the previous definition of Wilk et al. (1980) of a unit stock extending from Cape Hatteras north to New England has been accepted in this and previous assessments (e.g., NEFSC 2002). The Mid-Atlantic Fishery Management Council (MAFMC) and the Atlantic States Marine Fisheries Commission (ASMFC) Fishery Management Plan (FMP) define the management unit for summer flounder as extending from the southern border of North Carolina, northward to the U.S.-Canadian border. A recent summer flounder genetics study, which revealed no population subdivision at Cape Hatteras (Jones and Quattro, 1999), is consistent with the definition of the management unit. Recent consideration of summer flounder stock structure incorporating new tagging data concluded that evidence supported the existence of stocks north and south of Cape Hatteras, with the stock north of Cape Hatteras possibly composed of two distinct spawning aggregations, off New Jersey and Virginia-North Carolina (Kraus and Musick, 2003). The conclusions of Kraus and Musick (2003) are consistent with the current assessment stock unit.

Abstract from Kraus and Musick (2003)

*Summer flounder, *Paralichthys dentatus*, are managed as a single stock along the Atlantic coast from the U.S.–Canada border to the southern border of North Carolina. Justification of the single-stock approach is based on lack of genetic evidence for multiple stocks and the difficulty presented by managing the species from Cape Hatteras to the U.S.–Canada border. In this review, we present an interpretation of various morphometric, meristic, biochemical, and tagging studies, published and unpublished, that indicate the presence of two, or possibly three, distinct stocks in the management area. In addition, we have included new data from a tagging study that was conducted on juveniles from Virginia that aids in defining the stock(s) north of Cape Hatteras. Summer flounder, overfished for the past two decades, is recovering, and reconsideration of proposed stock structure could have direct implications for management policy decisions.*

Ocean quahogs (from SAW 48)

The US stock is almost completely within the EEZ at depths of 25-95 m. Dahlgren et al. (2000) found no genetic differences between samples taken along the US coast from Maine to Virginia based on mitochondrial cytochrome b gene frequencies. However, research recommendation # 17 from SAW 48 states investigate model formulations that accommodate spatial heterogeneity.

Surfclams (from SAW 49)

Atlantic surfclams in the US Exclusive Economic Zone (EEZ) are considered a single stock for management purposes, though state and federal stocks are not biologically distinguishable. There are, however, substantial regional differences in biological properties and population dynamics.

Spiny dogfish (from SAW 43)

*Spiny dogfish (*Squalus acanthias*) are distributed in Northwest Atlantic waters between Labrador and Florida, are considered to be a unit stock in NAFO Subareas 2-6, but are most abundant from Nova Scotia to Cape Hatteras. Seasonal migrations occur northward in the spring and summer and southward in the fall and winter and preferred temperatures range from 7.2 to 12.8 C (Jensen 1965). In the winter and spring, spiny dogfish are located primarily in Mid- Atlantic waters but also extending onto southern Georges Bank on the shelf break. In the summer, they are located further north in Canadian waters and move inshore into bays and estuaries. By autumn, dogfish have migrated north with high concentrations in Southern New England, on Georges Bank, and in the Gulf of Maine. They remain in northern waters throughout the autumn until water temperatures begin to cool and then return to the Mid- Atlantic.*

Research recommendation 4) Conduct tagging and genetic studies of spiny dogfish in U.S. and Canadian waters to clarify current assumptions about stock structure.