Habitat Survey of Historical Nearshore Cod-fishing Grounds  
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Atlantic cod were historically key ecological and economic components to Gulf of Maine ecosystems and communities. Highly productive nearshore cod stocks that have been depleted since World War II have failed to recover despite decades of zero-fishing pressure. The failure of nearshore cod recovery may be strongly linked to the parallel collapse of anadromous river herring that served as an enormous forage base for cod. Adult river herring entering the river in the spring and juvenile river herring moving offshore in the fall provided a dependable forage source in consistent locations. With an incipient recovery of river herring populations there is potential for the recovery of related nearshore cod fishing grounds, but little is known about the status of cod habitat within these grounds. Biogenic habitat like kelp beds identified as important to various life stages of cod have undergone significant changes in range and composition due to trophic cascade effects brought on by overfishing. The drastic reduction in the abundance of cod allowed cod prey populations like those of the sea urchins to explode, resulting in overgrazing of kelp. Additionally, little is known about the effects bottom trawling has had on benthic habitats in the nearshore Gulf of Maine. Bottom trawling often results in extensive damage to benthic habitats that can take years to recover. Habitat characteristics will be surveyed along several transects using an underwater video camera and fish sounder. Images from the camera will be used to confirm the identity of the sonar signatures on the fish sounder and proved the ability to identify specific taxa. The resulting information will be used to map and analyze the condition of habitat in historical nearshore cod fishing grounds.

Data was gathered for several other multi-year projects throughout the summer. Information on the abundance, size, and composition of fish species was gathered on a weekly basis at two locations (Abby Point on Merrymeeting Bay and the Eastern River) using a beach seine. Three tows of the beach seine were conducted at each site and a variety of water parameters were measured during each sampling day. The presence and size of juvenile river herring as the summer progressed was of particular interest because it may shed light on the growth and movements of juveniles in the river-estuary system.

The location and size of submerged aquatic vegetation beds in Merrymeeting Bay were mapped for the finalization of a project begun last summer. Since the introduction of clean water legislation, submerged aquatic plants have begun to recover and recolonize large extents of Merrymeeting Bay. This recovery is significant because aquatic vegetation is key habitat for nearly all fish and macro-invertebrates in Merrymeeting Bay. Initial qualitative observations from the beach seine suggest significantly higher abundances of fish of all species from tows through vegetated transects than bare bottom transects. Bed size and location were mapped on foot during low tide using sub-meter accuracy GPS. Large submerged aquatic vegetation beds were present in the Eastern half of the bay leading up the Androscoggin River, but no substantial beds were found in the Androscoggin beyond the river mouth.

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