

Energetics of Surf Scoters Wintering on Chesapeake Bay : Foraging Values of Changing Diets



- **The Challenge:** Populations of Atlantic coast surf scoters (*Melanitta perspicillata*) have declined readily over the past 20 years. One of the key wintering areas for surf scoters is the Chesapeake Bay, where the ducks prey on two food items primarily, the hooked mussel (*Ischadium recurvum*) and dwarf surfclam (*Mulinia lateralis*). Mussels have declined over the last 50 years with the decrease in hard substrate previously provided by oyster reefs (*Crassostrea virginica*). The decline in mussels may induce surf scoters to switch to a more opportunistic food item, the dwarf surfclam. Can scoters wintering in Chesapeake Bay meet their daily energy requirements eating dwarf surfclams alone, if the hooked mussel were completely extirpated?



- **The Science:** Information is needed: 1) To determine the comparative nutrient composition of mussels and surfclams; 2) To evaluate the energy assimilated by surf scoters from these prey items; 3) To determine the functional responses of scoters foraging on different ecologically relevant densities of each prey item; 4) To model the foraging value (energetic costs of capture – benefits of eating) of both prey items for surf scoters.



- **The Future:** Despite the higher ash content and harder shell, which would partly offset the apparent energetic advantages of *I. recurvum*, the greater foraging value of *I. recurvum* than *M. lateralis* provides a more beneficial prey item for wintering surf scoters. Therefore, wintering surf scoters must adapt in order to maintain their daily energy requirement. If by using the most advantageous and available prey they are forced to feed primarily on *M. lateralis*, it may not be sufficient to maintain the wintering surf scoter populations in the Bay. In order to better manage the wintering population of waterfowl in the Bay the connection between the habitat changes, prey resources, and waterfowl utilization needs to be calculated.