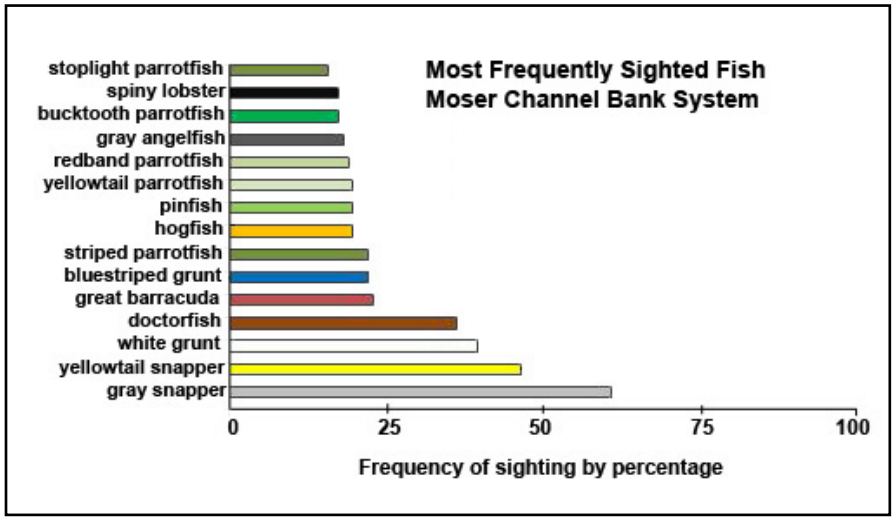
SHALLOW BANK SYSTEMS ACT SIMILARLY TO CORAL REEFS

Research Project Description: Clusters of shallow banks and their associated channels known as bank systems are conspicuous features on the Gulf side of the Middle Keys, within the Florida Keys National Marine Sanctuary. The banks themselves are mounds of calcareous material (primarily coral rubble) covered with a veneer of seagrass, and support various species of algae, invertebrates, and fish. The shallowness of these banks makes them susceptible to impacts from boating activities. Aerial surveys show that many banks have been badly damaged by boat groundings and most have multiple propeller scars. To assess the ecological importance of bank systems, NOAA scientists conducted a four-year study of Moser Channel, Bamboo Channel and Channel Key bank systems. Surveys of fish and bottom-dwelling plant and animal life in these three areas were compared to similar data from nearby deeper basins. Research results focused on fishes due to their ecological and economic importance in the Florida Keys.

Close-up image of a banktop community with finger coral, several types of algae and two species of seagrass.

Research Results: Study results show that bank systems provide ecological services that in many respects are the same as those provided by coral reefs. Banks are structurally complex, shelter high diversity (number) of marine species, and high biomass (a measure of the amount of living matter). Many fish species in bank systems are also found in reef habitats, including snappers, grunts and parrotfish (see graph below). Certain species, such as gray snapper, find temporary shelter and foraging grounds on shallow banks as they transit through tidal passes and out to the coral reef. These ecologically diverse habitats also serve as nurseries for many juvenile fish species. Fish occur in greater numbers and more species on bank systems have high relative abundance as compared to surrounding deeper basins, indicating that banks actually concentrate fish. Snapper, grunt and other nocturnal carnivores utilize bank systems as they would a coral reef, resting there during the daytime and leaving to feed in surrounding areas at night. Despite the importance of this overlooked habitat, boat groundings and propellers pose a serious threat to the ecological and structural integrity of bank systems. Once damaged, banks can be further eroded by tidal currents, making natural recovery less likely.



Frequency of sighting for most commonly observed fish species in the Moser Channel Bank System. Gray snappers were observed over 50 percent of the time.
Figure: NOAA Center for Coastal Fisheries and Habitat Research

Reference: J. S. Burke *et al*., NOAA Center for Coastal Fisheries and Habitat Research.
Biodiversity and Ecosystem Function of Shallow Bank Systems within Florida Keys National Marine Sanctuary (FKNMS).
Marine Sanctuaries Conservation Series ONMS-12-03. 2012.