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NOISE-PRODUCING ORGANISMS IN CHESAPEAKE BAY

The most widespread of all noises of biological origin in the sea is a crisp, high-frequency, crackling noise caused by snapping shrimp. The species of two genera, Crangon (Alpheus), and Synalpheus are capable of vigorous snapping. These are bottom-living animals, living mainly below zero tide level. They seek concealment in crevices and holes provided by coral, stones, shells, and other solid objects. This makes collecting very difficult, and the animals are more abundant, therefore, than is generally realized. Most of the species have been found in water of 30 fathoms or less. They are confined to coastal or shallow water throughout the tropical and subtropical regions. In general, the 11°C winter surface isotherm marks the approximate northern and southern limits of their continuous range. Both genera occur in Virginia waters, and they are known to be quite abundant at Beaufort, N. C.

Shrimp noise has its strongest components in the higher frequencies. Above 2000 cycles per second shrimp noise completely overrides the usual water noise. Above 10,000 cycles per second it is some 30 db. above the noise of a state 1 sea. When the state of the sea is low, the transmitted shrimp sound is appreciable to a distance of over a mile from the boundary of the shrimp bed.

No seasonal variation in shrimp noises has been detected, but small diurnal variations exist. At night the levels are 2 to 5 db. higher than in the daytime. There are also slight peaks shortly before sunrise and after sunset.

Certain other crustacea are known to make noises similar to those of snapping shrimp. The genera to which these belong, however, are not present in Chesapeake Bay.

The larger crabs have been observed to make noises sounding like the individual crack produced by snapping shrimp. This noise is incidental to the cracking of brittle shells of small clams, and other shellfish used as food. It is probable that the feeding activities of the blue crab (Callinectes sapidus) in Chesapeake Bay may produce some noise, but this should be a rather small contribution to the ambient noise.

Barnacles and perhaps other larger crustacea cause faint noises that may be detected when the hydrophone is very close.

Several species of fishes common in Chesapeake Bay are known to produce sounds. The most abundant group, and the one containing the most species, is the family Sciaenidae, the croakers and drum. The following species in this family are abundant in the Chesapeake Bay:

FAMILY Sciaenidae

Leiostomus xanthurus. - "Spot". The male makes a croaking or drumming sound. Because the drumming muscles are feeble, the sound is not loud. Furthermore, this species is less inclined to school than is the croaker, hence the sound produced is likely to be intermittent. This species is caught in the Bay from April to November, with the largest catches in September and October.

Sciaenops ocellatus. - "Drum", "Red drum".

Caught in the Bay from May to October. Probably most abundant in spring and fall.

Bairdiella chrysura. - "Sand perch". Very abundant. Fished from April to November, most abundant in October. Decreases in abundance from mouth to upper Bay.

Microgogon undulatus. - "Croaker". Usually the most abundant croaker in the Bay. The adults, caught from March to October, make strong drumming noises; the young, although they make feebler sounds, live in the Bay throughout the year. The adults move up-Bay in spring and out to the sea again in fall.

Pogonias cromis. - "Black drum". Caught from April to December. Most common in May and November.

FAMILY Otolithidae - weak fishes

Cynoscion nebulosus. - "Spotted weakfish", "Spotted trout".

An important food fish in Chesapeake Bay. Caught from March to December.

Cynoscion regalis. - "Weakfish", "Gray trout". The male only makes a croaking sound. Also a valuable food fish in the Bay. Fishing season extends from April to November.

FAMILY Pomadasidae - grunts

Orthopristis chrysopterus. - "Pig fish", "Hogfish". Relatively common in the lower Bay, but not often caught in Maryland waters. Fishing season extends from April to October.

FAMILY Batrachoididae - toadfishes

Opsanus tau. - "Toadfish". Comparatively abundant, and remains in the Bay throughout the year.

FAMILY Ariidae - sea catfishes

Felichthys felis. - "Gaff-topsail catfish", "Sea catfish".

Not abundant in Chesapeake Bay, but a few are taken in spring and summer.

FAMILY Triglidae - sea robins or gurnards

Prionotus evolans. - "Sea robin". Occurs in lower part of Chesapeake Bay.

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Prionotus carolinus. - "Sea robin". Very common in the Bay.

Seasonal movements not well known. Both sea robin species make chirping sounds.

FAMILY Scombridae - mackerels

Scomber scombrus. - "Common mackerel". The mackerels are said

to make noises by means of their pharyngeal teeth. The common mackerel occurs in some abundance in the ocean, but is not common inside the Chesapeake Bay.

MAMMALS

Porpoises are known to make distinct chirping and grunting sounds. These animals sometimes appear in some numbers in the lower Chesapeake Bay and the lower parts of the estuaries, especially in summer.

SUMMARY

Several species of crustacea and fishes known to produce noises occur in the Chesapeake Bay. Many of these are present in rather large numbers, especially during the warmer months. In contrast to the noise produced by shrimp, which is made up of high-frequency sounds, and varies little, if at all, with season, fish noises lie in the low frequency range and are markedly seasonal and diurnal. In general, fish noises would be expected more often in summer, and since many of the species are migratory, a definite progression in the production and amount of noise might be expected, beginning at the mouth of the Bay in spring, progressing up-Bay in summer, and receding toward the mouth again in fall.

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