

are released on the sea bottom within 5 to 15 min from the time the unit enters the water, depending on the size of the salt block.

The release tube (Fig. 8), intended for use in shallow water, consists of two telescoping aluminum pipes, each about 3 m (10 ft) long. To release shrimp, the outer pipe is lowered to the bottom and shrimp are poured from a pail into the funnel. After each pail of shrimp is poured into the unit, the apparatus is flushed with several pails of water to insure that shrimp do not remain in the tube. The pouring and flushing of one pail of shrimp usually take about 1 min.

The new equipment described herein and the improved techniques for staining and tagging described by Neal (1969) enabled us to hold,

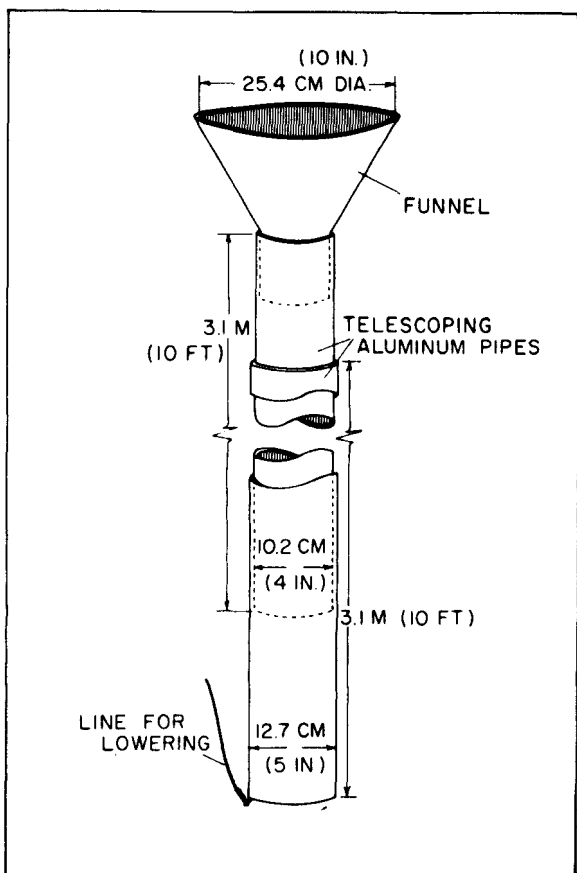


FIGURE 8.—Release tube used to place marked shrimp on the bottom.

mark, and release large numbers of shrimp. We can now process between 1,500 and 3,000 shrimp per day, depending on the type of mark used.

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AN ADULT BLUEFIN TUNA, *Thunnus thynnus*, FROM A FLORIDA WEST COAST URBAN WATERWAY¹

The bluefin tuna, *Thunnus thynnus* (Linnaeus), is a wide-ranging pelagic species occurring in most tropical and temperate seas (Gibbs and Collette, 1966: 119). In the Gulf of Mexico exploratory and commercial catches have been limited to the northern, western, and central parts, from waters beyond the continental shelf. The collection of a large adult from the Florida west coast represents a new record for the Florida shelf.

The specimen, a female, was captured by local fishermen with harpoons in a waterway at Hudson, Fla., (lat 28°21'24" N, long 82°42'42" W) on 10 May 1970. It weighed 239 kg (525 lb.), was 244 cm (96 inches) in fork length and 168 cm (66 inches) in girth, and appeared to be in healthy but lean condition, characteristic of post-spawning fish in May on the Bahama Banks (Rivas, 1955: 139).

Histological examination of gonadal tissue sectioned at 6 μ and stained with Harris hematoxylin and Eosin Y showed early and late atretic

¹ Contribution No. 154.

body formations, indicating recent spawning. The stomach contained a mussel, *Brachidontis recurvus* (Rafinesque), a piece of marl (no doubt ingested accidentally), and a digenetic trematode; gills and other tissues were free of parasites.

The fish had entered the waterway through a shallow navigation channel from the adjacent grass flats. The waterway, a network of channels cut through marl, consists of several 161 m by 15 m "fingers" branching from a 1370 m by 22 m central channel, with depths averaging less than 5 m at low tide. Surface salinity in the waterway, tested at a subsequent low tide, was 27.0 ‰; surface temperature in the adjacent Gulf was 26° C.

This occurrence, although admittedly irregular, may help to fill a gap in our emerging picture of the origin and distribution of Gulf of Mexico bluefin tuna stocks.

Bluefin tuna are taken from the Greater Antilles in spring, with substantial numbers of large adults being reported from the Windward Passage in April (Bullis, 1955: 6). During May they begin their dramatic migration through the Straits of Florida toward the summer feeding grounds (Rivas, 1954, 1955).

The occurrence of large bluefins at Grand Cayman and east of Cozumel in April (Bullis and Mather, 1956: 9) suggests that at least a component of these Caribbean stocks may undertake a similar northward movement through the Yucatan Straits and into the Gulf of Mexico. The occurrence of ripe or nearly ripe females in the Gulf in May and of small juveniles (less than 8 cm) in the northern Gulf in late May and early June (Mather, 1962: 5) implies that these stocks spawn in the Yucatan Straits or in the Gulf of Mexico proper. Our spent female on the Florida shelf could be from the Caribbean stock or from a stock wintering in the Gulf (Bullis, 1955: 13; Wathne, 1959: 16).

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by U.S. Fish and Wildlife Service vessels in the Gulf of Mexico and Caribbean, to Alice Gennette for preparing histological sections, and to Frank J. Mather, III for critically reviewing the manuscript.

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