

Discovery of Deep-Water Crabs (Geryon spp.) at Bermuda -
A New Potential Fishery Resource

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ABSTRACT

The discovery of two species of deep water crabs (Geryonidae) at Bermuda in 1984 is documented. The first species is Geryon fenneri (Manning and Holthuis, 1984) while the second, smaller species is undescribed. Preliminary data on the size frequency distribution of G. fenneri as well as the sex ratio and presence of ovigerous females is presented.

In July 1984, a local trap fisherman John P. (Sean) Ingham set a small number of traps (up to three) off the edge of the Bermuda platform to do some exploratory fishing. These traps yielded two different species of Geryon crabs one of which is presently fished commercially in the Gulf of Mexico. This finding prompted further investigation to determine the extent of the resource and the possible development of a small, specialized fishery.

MATERIALS AND METHODS

The traps used for this exploratory fishing are Antillian arrowhead traps of the type presently employed for catching reef fish and spiny lobsters in inshore waters. Several different trap sizes have been tested ranging in size from 3 x 3 x 1.5 feet (91 x 91 x 46 cm) to 8 x 8 x 4 feet (244 x 244 x 122 cm). Both vertically- and horizontally-oriented elliptical funnel openings are being tested. The traps are constructed of 2 inch (5 cm) hexagonal mesh wire, either galvanized or vinyl-coated. The frames are made principally of steel reinforcing rod with some stick supports. Traps are baited with various species of chopped reef fish which are attached with wire to the bottom of the trap. Traps are set individually in areas of muddy substrate as detected by a Furuno chromoscope depth recorder. The traps have been fished over a wide depth range to the west and south of the Bermuda platform. Soak times have ranged from 3 to 14 days, with adverse sea conditions and strong currents often limiting the frequency of haulings. Once established on a commercial scale, soak times will probably need to be shortened to 2-3 days to reduce the escapement of crabs which is thought to occur during prolonged soak times.

Geryon crabs are highly perishable and may rapidly undergo autolytic and bacterial decomposition when brought to the surface (Otwell et al., 1984). Onboard handling was kept to a

minimum as crabs were immediately placed in mesh bags and stored in refrigerated seawater wells at 0 to 2 degrees C. Crabs remained alive at this temperature for 2-3 days.

RESULTS AND DISCUSSION

Two species of crabs have been taken in this exploratory program to date. The first species is Geryon feneri described by Manning and Hothuis (1984) from the Gulf of Mexico. It has been taken in Bermuda in the depth range 430-800 fathoms (786-1462 m) with one specimen, which might have been this species, from 1550 fathoms (2833 m). The second species is new. It is a smaller, red crab closely related to a newly described species G. gordonae (Ingle, 1985) from the Northeast Atlantic Ocean (Manning, pers. comm.). It has been taken over the depth range of 430-1900 fathoms (621-3473 m) but usually only in small numbers. Several specimens of shrimps have been caught incidentally in these traps including Plesiopenaeus edwardsianus (550 fathoms or 1005 m depth) and Heterocarpus oryx (400 and 730 fathoms or 731 and 1334 m, respectively).

The size-frequency distribution for all samples of G. feneri pooled from October to December 1984 (Fig. 1) clearly shows the size segregation by sex with females dominating the smaller size classes of the distribution. The sex ratio in this pooled sample (N = 244) is approximately 1:1. Ovigerous females were taken in early October and again in late December. In October, 15 of 23 females (65%) were ovigerous while in December the number was 70 of 103 (68%). The eggs were deep purple in color. The smallest ovigerous female was 10.8 cm in carapace width.

The average catch per trap haul, for all hauls in which G. feneri was present, was 43.6 lbs (19.8 Kg)/trap (range 10-100 lbs or 4.5-45 Kg). However, this figure is based on only 21 individual trap hauls and catches for all trap sizes are pooled together. Ongoing data collection will allow the determination of the effects of pot size, soak time and depth on catch rates.

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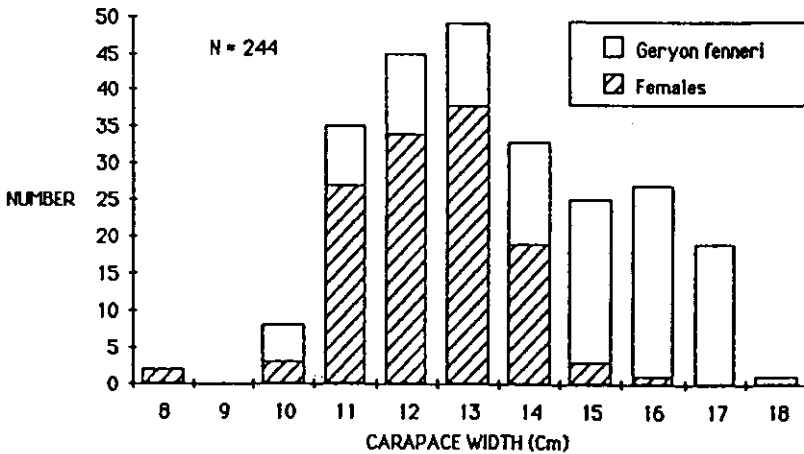


Figure 1. Size frequency distribution of Geryon fenneri.