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Species separation of Loligo squid (L. pealei and L. plei)
during NMFS bottom trawl surveys.

by

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Introduction

There are two species of squid of the genus Loligo (L. pealei and L. plei, Figure 1) which are taken in significant quantities in the NMFS, NEFC bottom trawl surveys. Loligo pealei, the common long-finned squid, is found throughout the range of these surveys (Figure 2), but primarily in the area south of the Gulf of Maine, to Cape Hatteras. Loligo plei, the arrow squid, is found only in the southern strata covered by these surveys, primarily south of Cape Hatteras, but to some extent north of that area, rarely to southern New England (Fischer (ed.) 1978). Careful inspection of Loligo sp. catches in the area of overlap of these two species is therefore necessary. The purpose of this paper is to summarize the major characteristics which may be used to distinguish between these two species in a field situation.

Methods and Materials

The "FAO: Species Identification Sheets for Fishery Purposes; Western Central Atlantic", Volume VI, provides a key to the distinguishing characteristics of L. pealei and L. plei. Frozen specimens, taken during the summer, 1979 NEFC bottom trawl survey, were examined to determine which characteristics would be most useful in the field situation.

Results and Discussion

The most obvious external characteristic, differentiating L. pealei and L. plei, is a series of longitudinal stripes on the ventral surface of L. plei (Figure 1). However, these stripes may only be distinct in mature males, (though some females and immature males may exhibit striping, to some extent) and are also present in some L. pealei (Cohen, 1976).

Also, L. plei may appear to be more acutely pointed at the anterior end of the mantle (ventrally, where the fin attaches), and generally narrower, than L. pealei, but this is very subjective, and unless both species are present for comparison, may not be useful.

The most consistent differentiating characteristic for any size or sex of these two species appears to be the shape and texture of the pen (Pers. comm., Ann Cohen, Smithsonian Institute, Washington, DC). Therefore, the squid should be opened ventrally, the viscera discarded (or pushed aside), and the pen removed (or examined in situ). The relative proportion of the stem (rachis, anterior part of pen) width, to the vane width (widest part of pen) can then be used to determine species (Figure 1). The ratio of these widths, vane: stem, is about 3:1 for L. pealei and about 2:1 for L. plei (see Figure 1). If the possibility exists that both species are present, a representative sample should be examined to determine the distribution, in size and number, of those species.

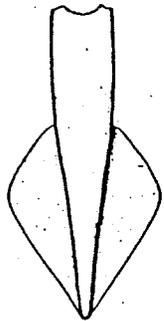
Literature Cited

- Cohen, A. 1976. The systematics and distribution of Loligo (Cephalopoda, Myopsida) in the western North Atlantic, with descriptions of two new species. *Malacologia* 15(1): 299-367.
- Fischer, W. (ed.). 1978. *FAO Species Identification Sheets for Fishery Purposes; Western Central Atlantic*. FAO, Rome.

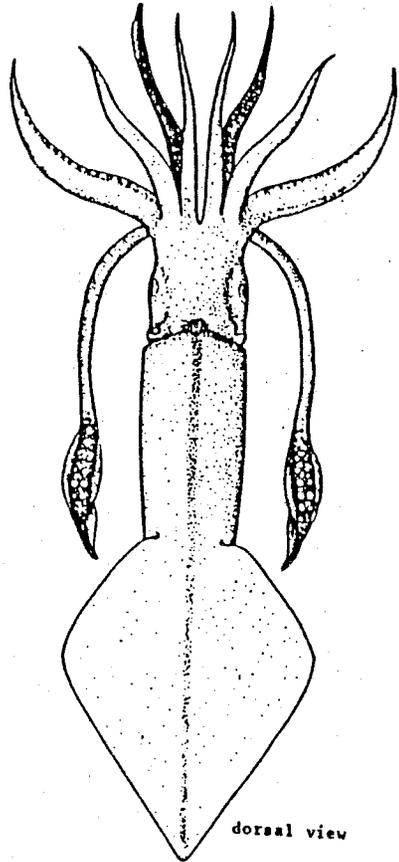
Figures

1. Dorsal and ventral views and diagrams of pens, of Loligo pealei and Loligo plei, illustrating differentiating characteristics of the two species.
2. Standard survey strata (A) and general areas (B) of NEFC bottom trawl surveys (excluding those areas south of Cape Hatteras).

Loligo pealei

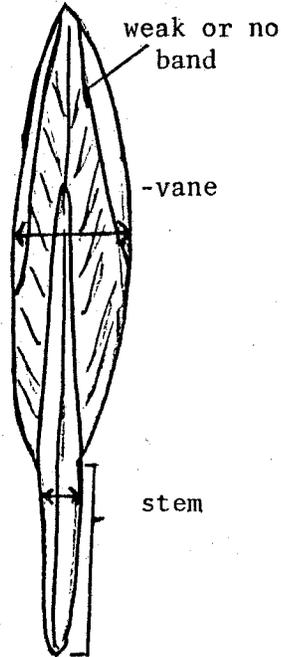


ventral view

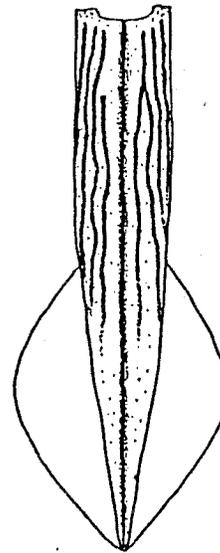


dorsal view

vane:stem
3:1

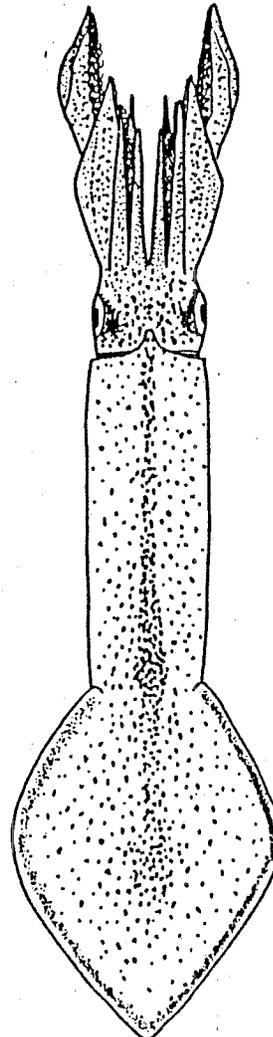


Loligo plei



ventral view

vane:stem
2:1



dorsal view

strong
band



male

weak band



female

