Chapter 9
Ecology, Distribution, and Population Characteristics of Nautilus

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1. Introduction

Until recently, knowledge of the ecology of Nautilus was largely based on trapping results, observations of captured animals held in shallow water, and speculation and hearsay. Despite the limitations imposed by such sources, a considerable amount of information regarding the depth range, diet, and geographic distribution of Nautilus had been assembled by the turn of the century. This was ably summarized by Henryk Stenzel (1957), in a short contribution that includes an excellent annotated bibliography, in the Treatise on Marine Ecology and Paleoecology. This was followed a few years later by the excellent chapter by Stenzel (1964) in the Treatise on Invertebrate Paleontology. The latter is a concise synthesis of almost everything known about Nautilus at that time.

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During the more than two decades since Stenzel’s 1964 chapter was published, considerable effort has been expended on *Nautilus*, as this volume attests. A wealth of new data has been assembled; this chapter comprises a synthesis of the published knowledge available at present as well as new information on various aspects of the ecology of *Nautilus*.

2. Habitat, Depth Range, and Distribution

In the past, knowledge of the habitat of *Nautilus* has been derived largely from such conventional approaches as trapping results, scuba-assisted observations, and aquarium studies. In recent years, a number of new techniques have been used to study the animal and its deep-water habitat, e.g., deep-water remote cameras (Saunders, 1984b, 1985; Hattori et al., 1985), sonic tracking (Carlson et al., 1984; Ward et al., 1984), and stable radioisotope analysis of shell material (Cochran et al., 1981; Oba and Tanabe, 1983; Taylor and Ward, 1983). There follows a summary of these results, plus new information, on the range and distribution of *Nautilus*. For convenience, it is arranged by topic and by locale, including the major sites at which studies of *Nautilus* have been undertaken.

2.1. Trapping and Photosequence Data

The results of deep-water trapping efforts have provided most knowledge of the depth range of the various species of *Nautilus*. However, the accuracy of such data varies, depending on technique, slope, currents, and the means of depth measurement; Bashford Dean (1901), for example, noted that *Nautilus* trapping depths of 450–750 m claimed by fishermen in Tànon Strait, the Philippines, differed considerably from maximum depths (200 m) recorded on hydrographic charts for this region. Overall, however, the general agreement of trapping data from many sites suggests that they are a fairly reliable index of depth distribution.

2.1.1. The Philippines

The first information available on *N. pompilius* in the Philippines was provided in the excellent account by L. E. Griffin (1900) of the anatomy of *N. pompilius*, which was based on 66 specimens stated to have been caught at a depth of 550 m off the southeastern coast of Negros Island by the Menage Expedition, from the Minnesota Academy of Sciences. Griffin (1900, p. 104) quoted a communication from D. C. Worcester, which stated that the natives obtained as many as four or five animals per night at depths of 185–250 m. Bashford Dean (1901) reported that native fishermen regularly obtained specimens in Tànon Strait, located between the islands of Cebu and Negros, at depths that he estimated to be approximately 100–200 m. Talavera and Faustino (1931) provided a brief and general account of *Nautilus* trapping in the Philippines, but included little specific information on depth.

The accounts by Norine Haven (1972, 1977a,b) of *N. pompilius* in Tànon