

**Guide to the Lobsters
and Lobster-like Animals
of Florida, the Gulf of
Mexico and the Caribbean Region**

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**Lee Opresko, Dennis Opresko
Ronald Thomas and Gilbert Voss**

**Edited and Illustrated by
Frederick M. Bayer**

**UNIVERSITY
OF MIAMI
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Foreword

The University of Miami Sea Grant Field Guide Series is published to make available to the commercial and sports fishermen, the general public, and fisheries and conservation personnel easily usable, non-technical, well-illustrated guides for the identification of the marine life of the area. Every means has been used to avoid technical terms where possible. When these must be used to avoid confusion, they are carefully explained and often illustrated. Glossaries are included when thought necessary.

But the guides go further than just identification. Where such knowledge is available, information is given on geographical distribution, depth distribution, abundance, time of spawning, present utilization, means of harvesting and mariculture methods, besides other useful information when known.

The format is uniform in the series for greater ease of use. Actual photographs are used where possible but when greater clarity is required, drawings are used. In general we have attempted to illustrate each species but in cases where two or more species are very similar, this is noted, a single illustration is used, and distinguishing characters are given in the text.

The principle used in selection of species has been not whether the species are now commercially exploited but whether the animal or plant is of sufficient size and occurs in large enough numbers to make it potentially capable of exploitation. In some cases species are included that are known to be harmful or poisonous. This is done to draw attention to their presence and to avoid their mistaken use as food.

The Sea Grant office, University of Miami, will appreciate comments from users of this series for the betterment of the guides, for the inclusion in future printings of species possibly overlooked by the compilers, and especially for suggestions concerning other groups of organisms for which guides are desired. Your comments are solicited.

To Users of the Guide Series

The purpose of field guides is to make possible identification of animals or plants in the "field" without the need for other reference works, dictionaries, microscopes or dissecting equipment. Most field guides fall short of these objectives mainly because of the use of nonexplained technical terms and reference to characters not discernable to the naked eye.

In this guide we have attempted to use no term not in general use; where a technical word is necessary, it is explained at its first use and is illustrated in the introduction. No character is used that is not visible to anyone having normal vision.

We suggest that users first read the introduction in order to find the scope of the guide-area covered, kind of species included, characters used, and to familiarize themselves with the words used in the descriptions and keys.

There are two ways to use this guide. One is to simply thumb through the pages looking at the illustrations until one is found that matches the animal in front of the reader. When this, or a series of species illustrations, is found, the descriptions should then be read in search of further identifying remarks, paying attention to the notes on distribution, depth of capture and type of bottom. If all of these fit reasonably well, there is a high chance that your animal belongs to that species.

The second method is to use the key first and when a reasonable match is found, to then turn to the page number given in the key and check the animal out as described in the paragraph above. In using the key one must be aware that species not covered in this guide may be apparently identified by the key. This is why it is essential that when an animal is identified by the key, the illustrations and descriptions must be used also. If the name given in the key does not correspond to the species illustration and description, either your use of the key was wrong and another alternative is correct or the species is not considered to be potentially valuable and is not included in this guide. If key, illustrations and descriptions agree, you may reasonably expect that your identification is correct.

When using the keys, always be sure to read both alternatives and choose the one most fitting your specimen before going to the next set of choices. In closely related species, each choice will be somewhat fitting to your animal but only one will fit it correctly.

Finally, do not expect your animal to be exactly similar to the illustration, especially in the exact number and position of spots, bands, spines, ridges, and other characters. No two human beings are exactly alike except identical twins. Marine species have similar ranges of differences between individuals.

If at last you are unable to identify your animal from this guide but you are certain that it belongs to the group of animals included in it, your final recourse is to bring or send it to a specialist for his identification made from original, technical scientific source books.

Frederick M. Bayer

Gilbert L. Voss

G U I D E T O T H E
LOBSTERS AND LOBSTER-LIKE ANIMALS

OF

FLORIDA, THE GULF OF MEXICO AND THE CARIBBEAN REGION

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Introduction

This manual is intended to provide the non-specialist with the means of identifying in the field, both the shallow-water and deep-water lobsters which either are already fished commercially or might be fished if sufficient stocks could be discovered through exploratory trawling. To accomplish this end, a key is given together with explanatory illustrations of the important features used for identification. Preference has been given to conspicuous external characters such as shape, coloring, and sculptural features.

We must emphasize that this key is a guide to the identification of only those species included in the manual. A number of other species, considered to be too rare, too small or to have insufficient meat to be of even marginal potential, are found in the geographical region under consideration but have been omitted from this manual. The American Lobster is included for comparative purposes even though it does not occur in our geographical range.

The known geographical distribution of the various species is included in the descriptions, along with known depth ranges. Insofar as known, growth rates, spawning times, temperature and bottom conditions, and other pertinent data are given.

Studies have shown that several species of spiny lobster are found in Florida waters. One of these, Panulirus guttatus, is smaller than the common commercial species, Panulirus argus, and usually has a carapace length of less than 3 inches. Therefore, P. guttatus would be excluded from the catch by the legal size limit for spiny lobsters. Should this species prove to be sufficiently abundant in our waters, it might be necessary to establish a separate size limit for it in order to permit its exploitation. In this regard, it is important for commercial fishermen to be aware of the various species that occur in our area, and of the differences between them.

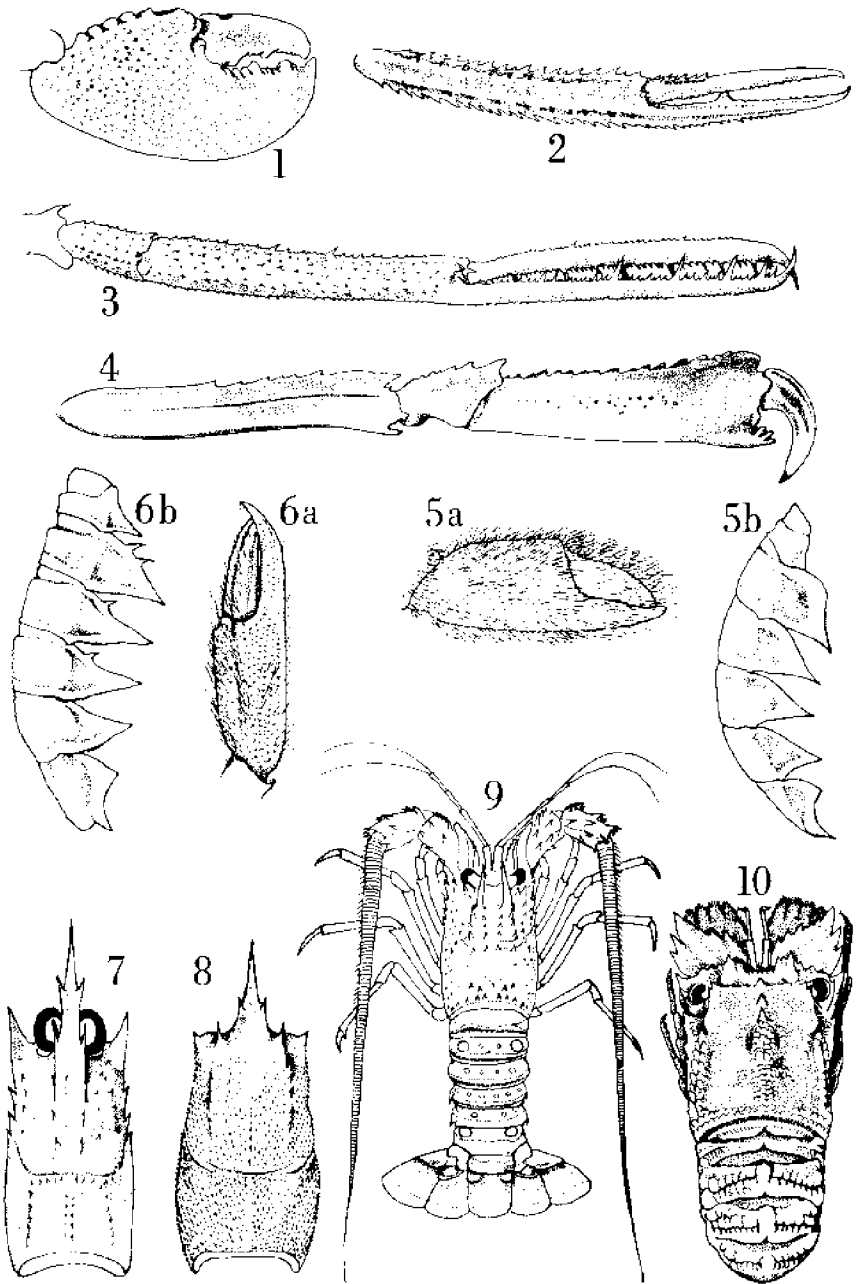
Finally, we have provided such information as is available on the present fisheries, size of catch and species taken, as well as the gear used in the fishery and suggestions for the modification or improvement of commercial gear wherever it seems pertinent.

The lobsters that are found in waters of shallow and moderate depths can be divided into two major groups. All the species of the first group have a shape generally like that of the common spiny lobster (Panulirus argus). Four of these occur in Florida and Caribbean waters, and a fifth is known exclusively from Brazil. The second major group contains species having a distinctly flattened body and two conspicuous, flat flaps in front of the eyes instead of the long, whiplike "feelers" or antennae seen in the typical spiny lobsters. These animals are commonly called spanish lobsters, slipper lobsters, or shovel-nosed lobsters.

Some of the deep-sea lobsters can be confused with shrimps because they look very shrimp-like. In the lobsters, however, the first pair of legs is longer and more robust than the following pairs, and bears characteristic claws, which is not the case in the shrimps.

Key for Identification

1. First pair of legs are large claws or claw-like structures (Key Figs. 1-4), stouter than the following four pairs of walking legs: 2
1. First pair of legs not claws or claw-like: 7
2. The claw-like first pair of legs are long, narrow but strong, and end in a movable hook, not a true pincer (Key Fig. 4): Justitia longimanus
2. The first pair of legs are true claws, with a movable finger that closes against a prominent fixed finger (Key Figs. 1-3): 3
3. Claws smooth, neither spiny nor hairy, very broad, large and strong (Key Fig. 1): Homarus americanus
3. Claws either hairy or spiny, usually long and rather narrow: 4
4. Claws with hairs, but not spiny (Key Figs. 5a, 6a): 5
4. Claws with prickles and spines, not hairy (Key Figs. 2, 3): 6
5. Claws with dense hair, appearing conspicuously furry (Key Fig. 5A); surface texture of cape smoothly granular. Ends of tail segments 2-6 project downward along sides of tail, each forming a single, broad, sharp point (Key Fig. 5b): Nephropsis aculeata
5. Claws with sparse hair, not appearing furry (Key Fig. 6a); surface texture of cape closely and sharply granular. Points formed by ends of tail segments 2, 3 and 4 have one or two sharp spines on the front edge (Key Fig. 6b): Nephropsis agassizii
6. Eyes distinctly visible, large and well developed; body with sharp spines arranged in several rows, but not prickly all over (Key Fig. 7); claws long, distinctly squarish rather than cylindrical, with rows of sharp spines along the angles, fixed finger with one large spine and both fingers with several smaller teeth on the cutting edge (Key Fig. 2). Color pink with bright red stripes and bars. Nephrops binghami
6. Eyes not visible; body densely covered with fine prickles (Key Fig. 8); claws very long, almost cylindrical, prickly, both fingers armed with several large sharp spines and many smaller teeth on the cutting edges (Key fig. 3). Color pink. Neophoberus caecus
7. Body not strongly flattened, but typical spiny-lobster shape, with conspicuous long "feelers" or "whips" (Key Fig. 9). 8
7. Body distinctly flattened, with two large, flat flaps in front of the eyes but no long, conspicuous "feelers" (Key Fig. 10): 10



Key Figures 1-10

Body greenish purple, more or less mottled, commonly ranging into tans, browns, reddish, bluish, or greenish; tail with four conspicuous, large yellowish spots, one on each side of the 2nd and 6th tail segments, in addition to several smaller and less conspicuous spots; also about four darker cross bands (Key Fig. 11). Walking legs with longitudinal stripes of lighter and darker ground color; flaps on underside of tail striped yellow and black.

..... Panulirus argus

Tail more or less spotted, but not with four large yellowish spots 9

Animal dark purplish or reddish brown, tail mostly dark olive green, covered with many creamy or yellowish spots (Key Fig. 12). Walking legs spotted near body, next to last segment from tip with 2 pale tan or cream longitudinal stripes . . . Panulirus guttatus

Animal dark mahogany to dark blue, with spots of various sizes on body; tail brownish, with cream spots small and inconspicuous except on the pointed sides of the tail segments, where they are larger, and one is especially prominent near the articulations of the 2nd through 6th segments (Key Fig. 13). Legs tan with broad longitudinal stripes of olive green.

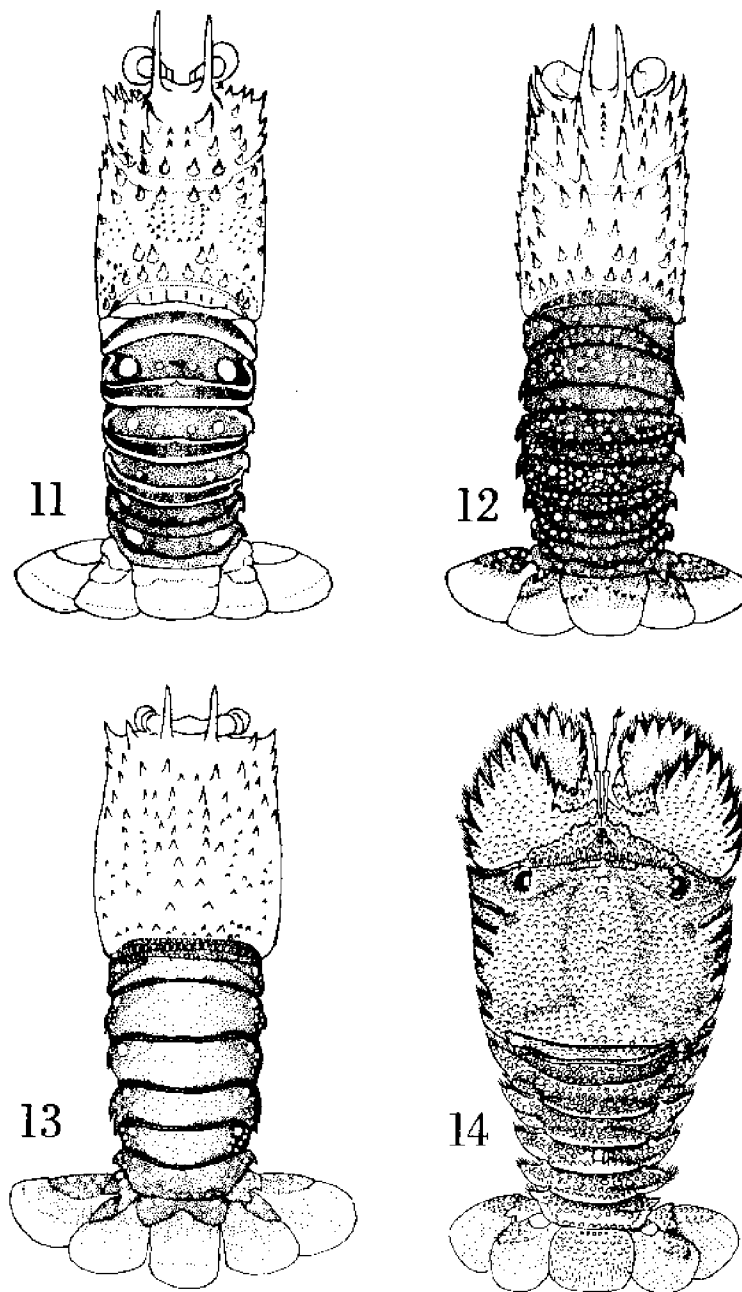
..... Panulirus laevicauda

Body broad and rounded, very flattened, expanded into a thin, toothed edge (Key Fig. 14). Parribacus antarcticus

Body more elongate and nearly straight-sided, flattened but without thin projecting sides: 11

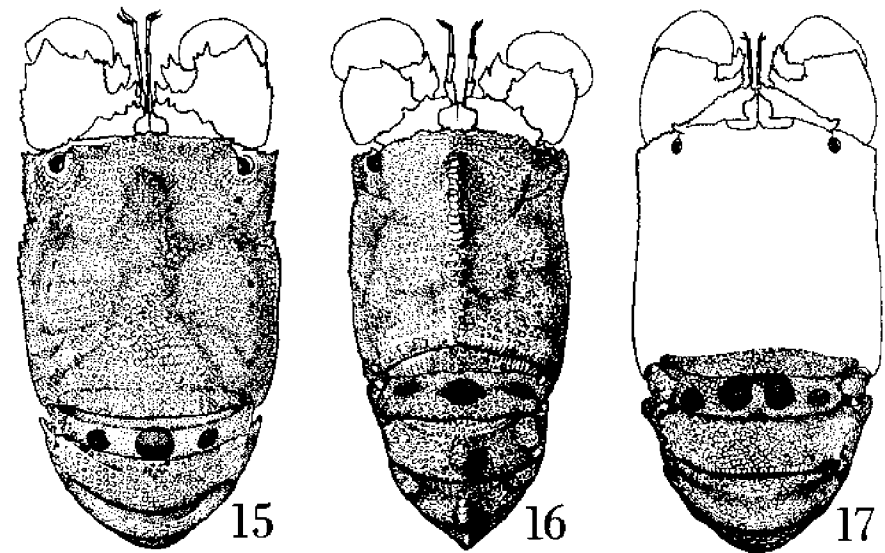
Tail without conspicuous spots on first segment. About three sharp spines in midline of body between the eyes, decreasing in size toward the front, and a few spines behind the eyes; rear margin and sides of body with flattened sculpture having an almost scale-like appearance; tail segments grooved (Key Fig. 10). Scyllarus nearcticus

First segment of tail with large reddish spots. Surface of body pebbly but not spined (Key Figs. 15-17): 12



Key Figures 11-14

12. Three oval or roundish spots on the first segment of the tail, the middle one biggest (Key Figs. 15-16): 13
12. Apparently four spots on first segment of tail, two on each side of midline (middle two are actually the exposed ends of a U-shaped mark) (Key Fig. 17). . . . Scyllarides aequinoctialis
13. Animal with a ridge along midline of body, tail segments with raised ridge in the midline, especially strong on the 4th segment (Key Fig. 16). Scyllarides nodifer (Stimpson)
13. No ridge on midline of body and tail, both regularly curved (Key Fig. 15). Scyllarides delfosi Holthuis



Key Figures 15-17

Homarus americanus Milne Edwards
American Lobster
Fig. 1

Recognition Features.--The large, oval, smooth claws, generally smooth body and tail, and small claws on the second and third pairs of walking legs make this animal unmistakable. It is variable in color, with differences due to age, time since molting, habitat, etc., but in general has a yellow or orange ground color mottled and spotted with green or blue; color is darkest on the back and upper surface of the tail and claws, and the yellow ground color is more pronounced on the sides and lower surfaces.

The American lobster has been described and illustrated many times, and is included here for the convenience of those working in more southerly regions where it does not occur, who may wish to compare it with the various clawed lobsters of deeper waters. (See Rathbun, 1884; Herrick, 1896.)

Geographic Range.--Labrador southward to Virginia; south of Delaware probably only as strays.

Depth Range.--Low-tide mark down to a depth of about 150 meters.

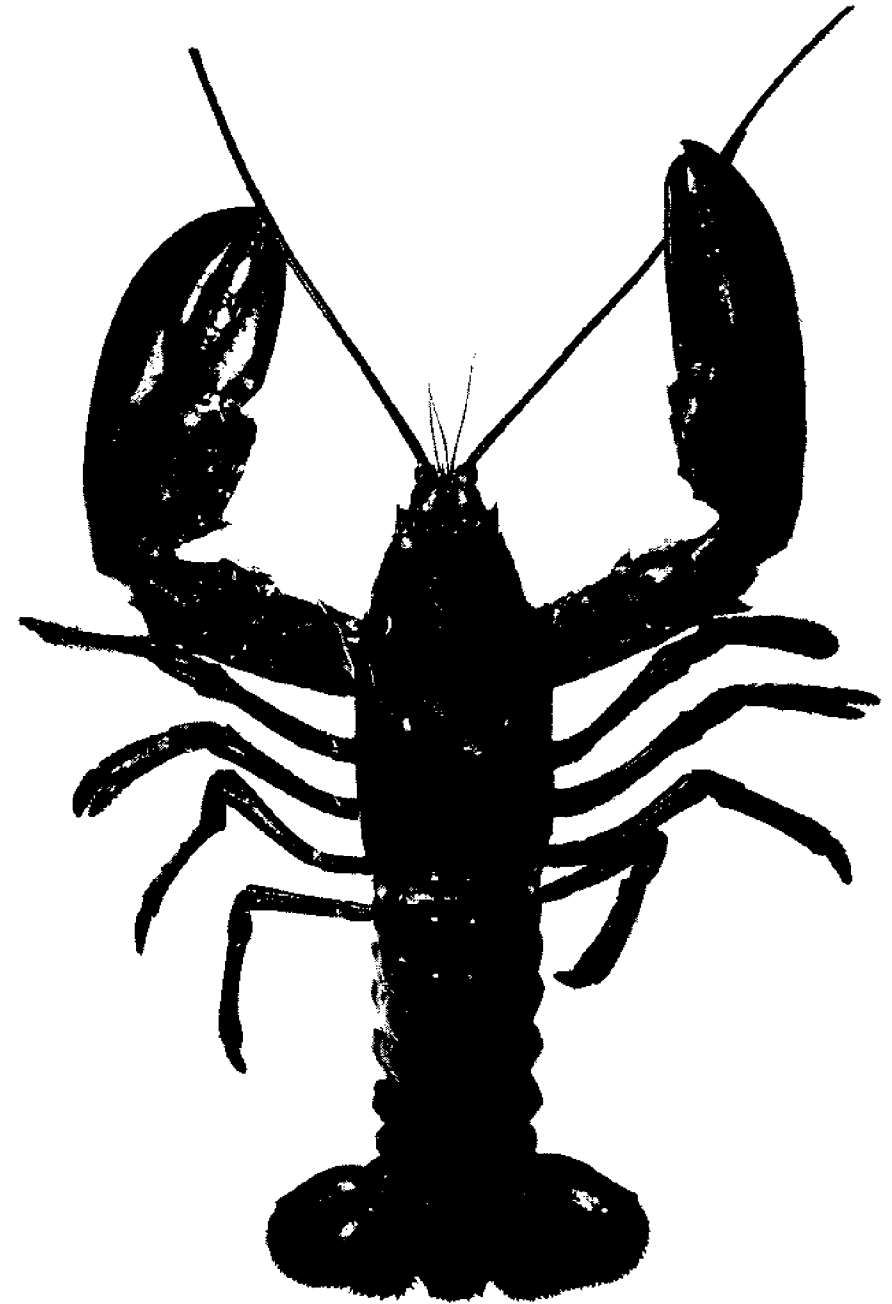
Age and Size.--Most lobsters marketed are under 2 pounds in weight, but the maximum weight of very old individuals may exceed 40 pounds. An animal that weighed 35 pounds was 4 feet long overall. Eight to 15 inches (excluding claws) is the more usual size range.

Spawning.--Individuals as small as 8 inches in length (excluding claws) have been found in breeding condition, but 10-1/2 to 11 inches is the usual size at which lobsters begin to breed. Spawning occurs throughout the year, but mainly from March to September.

Commercial Fishing Gear.--Traps or "pots;" a small number (about 13% of the total catch) is taken by otter trawl (Everett, 1972).

Mariculture.--

Figure 1



Justitia longimanus (Milne Edwards)

Long-armed Spiny Lobster

Fig. 2

Recognition Features.--Shape as in a typical spiny lobster, but with first pair of legs extremely long and well developed into claw-like appendages; tail segments each with four or five transverse grooves; body with strong scale-like sculpturing. Color of tail brick red with yellowish spots and stripes; long first legs with wide dark red cross bands.

Geographic Range.--Bermuda and Florida throughout the Antilles; Mauritius; Reunion; Hawaii (Holthuis, 1946; Monod and Postel, 1968).

Depth Range.--From about 30 m to over 300 m (Monod & Postel, 1968).

Size.--Cape length 35-60 mm (Monod & Postel, 1968).

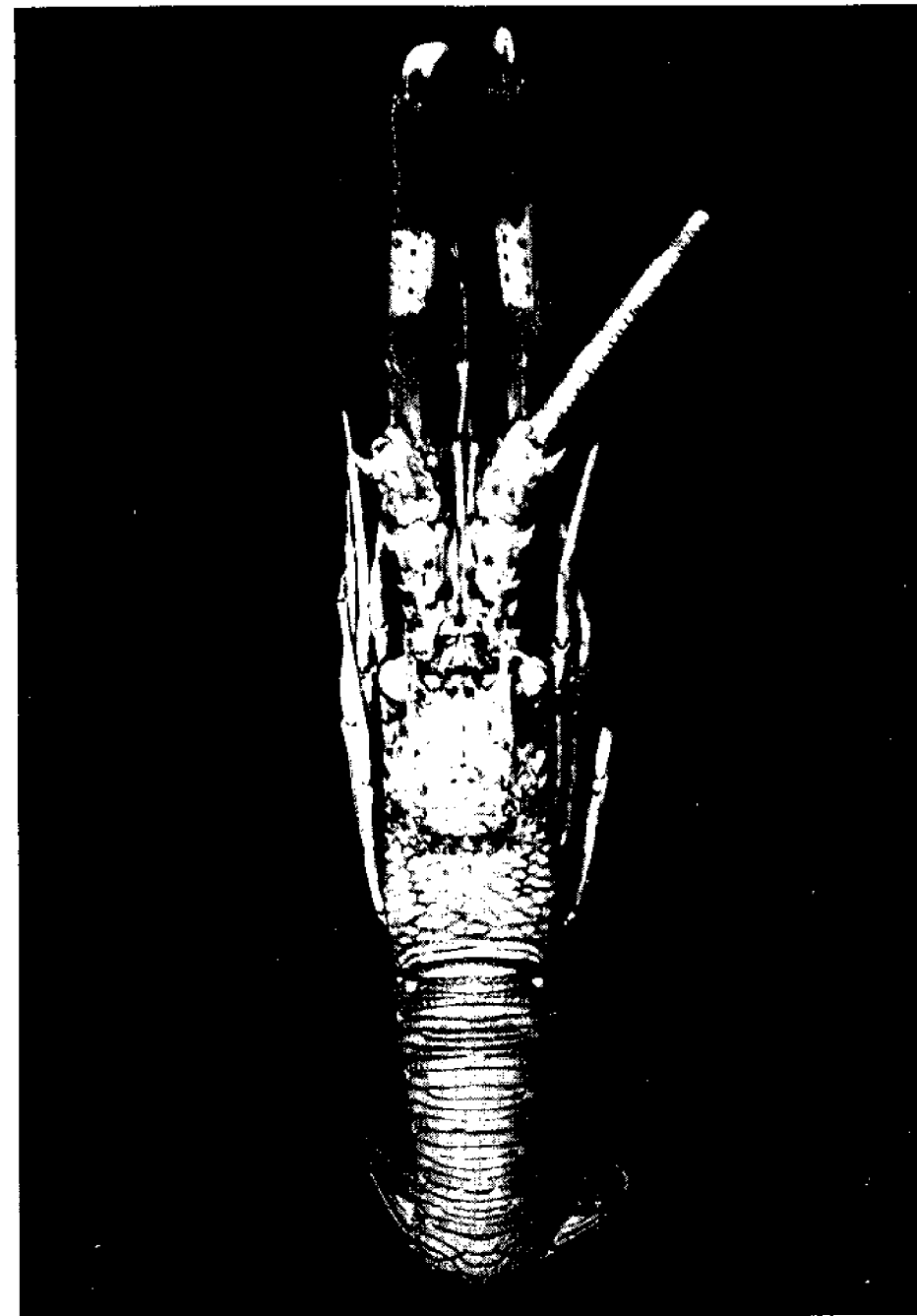
Spawning.--Not known.

Commercial Fishery.--None. The small size and rarity of this species would preclude its commercial use (Chace and Dumont, 1949).

Mariculture Potential.--Not determined.

Other Scientific Names.--Palinurus longimanus Milne Edwards (Holthuis, 1946).

Figure 2



Nephropsis aculeata Bouvier

Florida Lobsterette

Fig. 3

Recognition Features.--Eyes greatly reduced; surface of cape finely and smoothly granular; claws abundantly hairy, with a furry appearance; points formed by sides of tail segments without spines along front edge.

Geographic Range.--Off Cape Cod, Massachusetts (Smith, 1880), Bermuda (Bouvier, 1925), east coast of Florida, Gulf of Mexico and along the coasts of Central America and northeastern South America (Bouvier, 1925; Roe, 1966).

Depth Range.--Found in depths from 130 to 1450 m, but most commonly taken from 180-450 m (Roe, 1966).

Size.--Total body length up to 10 cm.

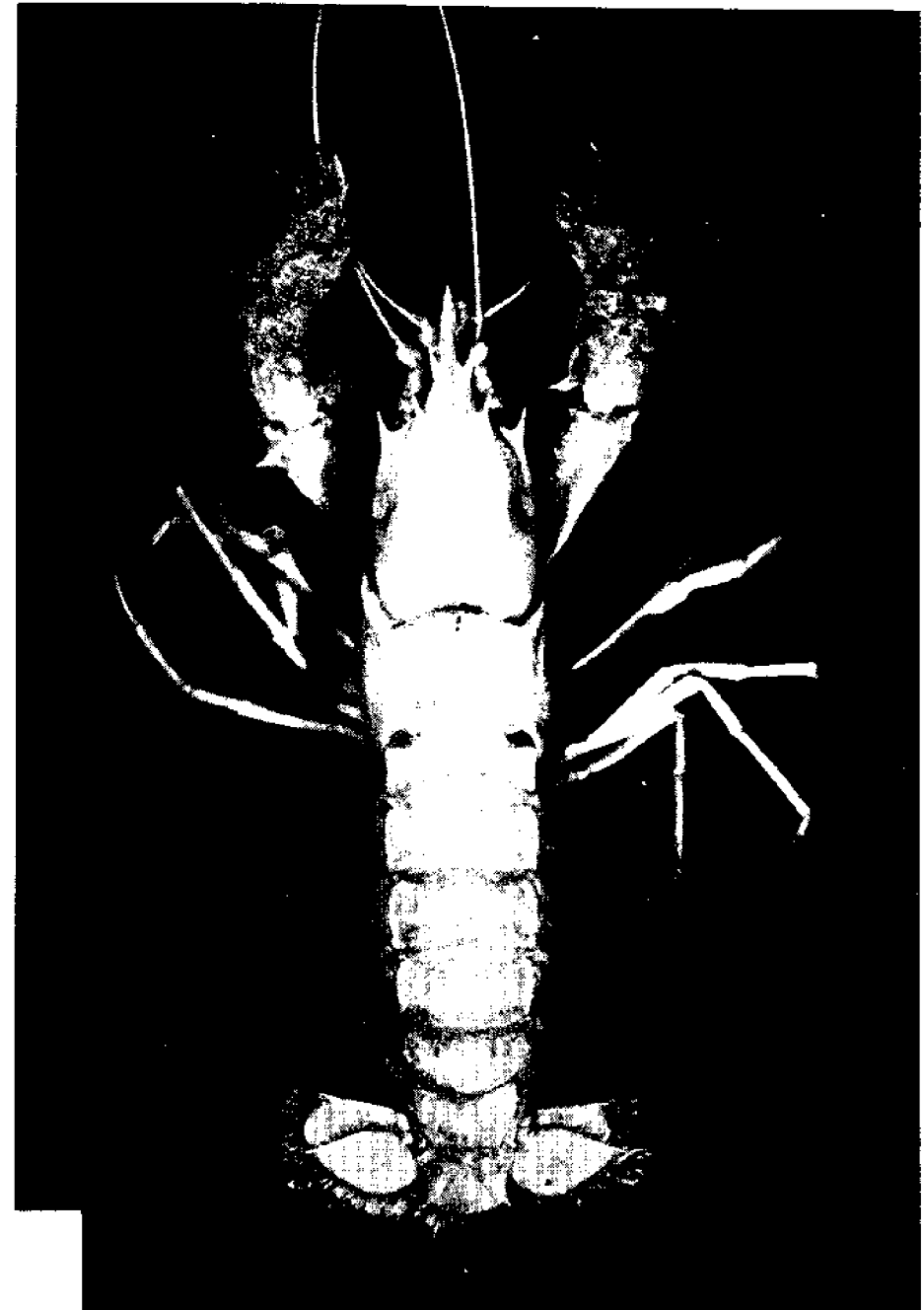
Spawning.--Females in berry found throughout the year; 100-300 eggs per female; egg size ranges from 1.5-2.5 mm.

Commercial Fishery.--None at present, but large catches have been made by exploratory fishing vessels seeking royal red shrimp off the east coast of Florida in depths of 280-440 m and off the Mississippi River Delta in depths of 400-440 m. Catches range from 2-10 pounds per hour (heads-on) with 40-foot trawls and 2.5-80 pounds per hour (heads-on) with 65-foot trawls. The lobsterettes averaged 18 to a pound (Roe, 1966).

Mariculture Potential.--Very poor, considering the depth range of the species and the probable existence of a planktonic larval stage.

Other Scientific Names.--Nephropsis rosea Bate (Bouvier, 1925: 409).

Figure 3



Nephropsis agassizi (A. Milne-Edwards)
Prickly Lobsterette
Fig. 4

Recognition Features.--Eyes greatly reduced; claws hairy but not furry as in N. aculeata; surface of cape sharply granulated or very finely prickly; points formed by ends of tail segments have 1 or 2 sharp teeth on the front edge, except for the last two.

Geographic Range.--Taken in the Gulf of Mexico and Straits of Florida (Bouvier, 1925; Roe, 1966).

Depth Range.--Generally thought to be in depths of 720-3600 m (Roe, 1966).

Size.--Reaches an overall length of about 12 cm.

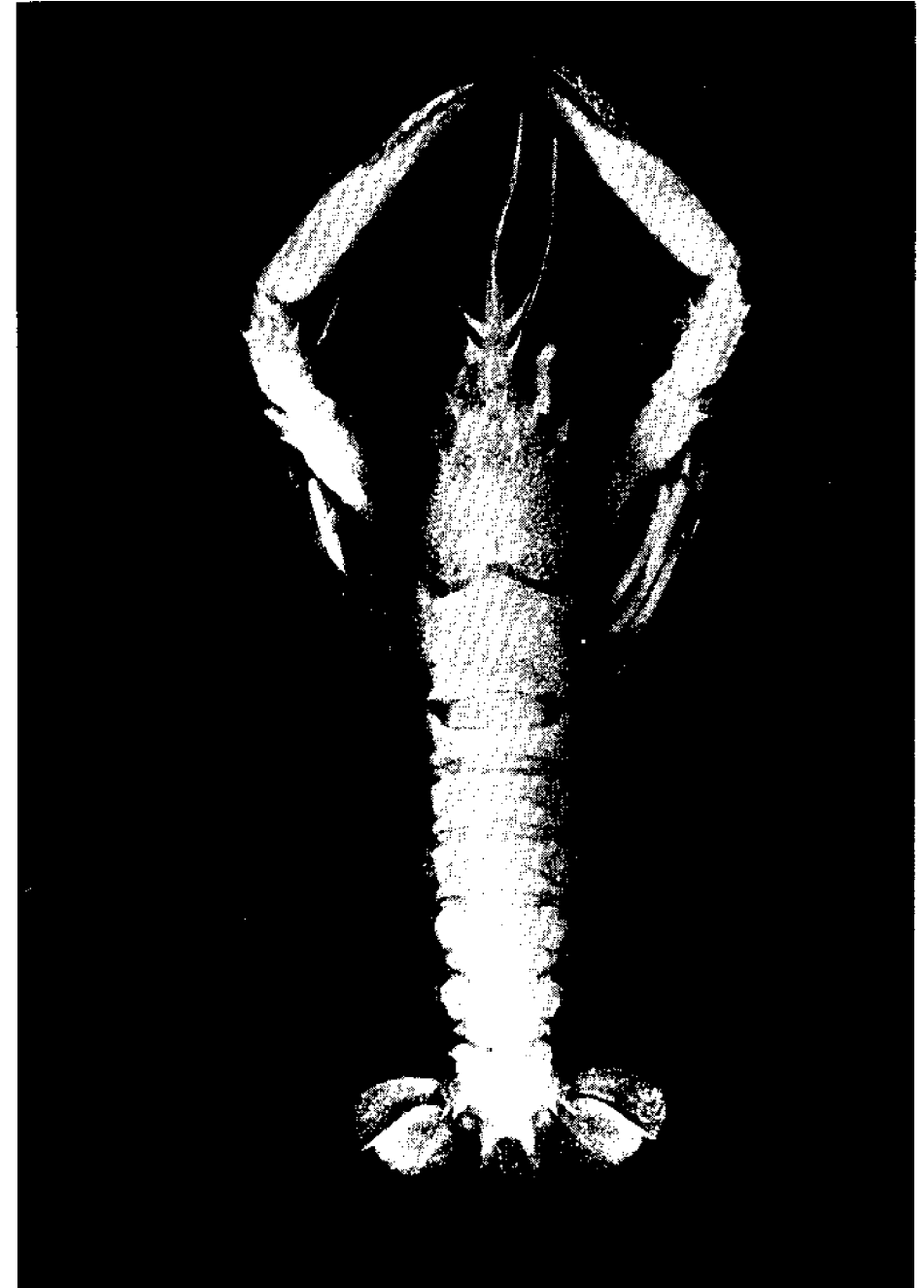
Spawning.--Not known.

Commercial Fishery.--None. Existing records suggest that this species is less abundant than N. aculeata.

Mariculture Potential.--Unlikely candidate for mariculture because of its depth range.

Other Scientific Names.--None.

Figure 4



Nephrops binghami Boone
Caribbean Lobsterette
Fig. 5

Recognition Features.--Eyes large, well developed, black; claws long and slender, squarish in cross section, with rows of sharp spines along the angles; body with lateral stripes of red and white.

Geographic Range.--Straits of Florida, off the north coast of Cuba, and off the coasts of Central America and northeastern South America (Roe, 1966).

Depth Range.--Not definitely established, but generally from 225 m to 900 m corresponding to a temperature range of 43-65°F (Roe, 1966).

Size.--Cape length up to 65 mm, average length 35-50 mm (Roe, 1966).

Spawning.--Probably occurs throughout the year; females carry from 100 to 300 eggs, each of which is 2.0-3.0 mm in diameter (Roe, 1966).

Commercial Fishery.--None at present, but exploratory fishing indicates a commercial potential. Catches off Nicaragua and Colombia in 290-350 m averaged 20 pounds (heads-on) per hour with 40-ft. flat trawls.

Mariculture Potential.--Not determined.

Other Scientific Names.--Holthuis (1946: 72) mentions that Glassell (1934: 454) considered N. binghami to be a synonym of Nephrops rubellus Moreira, but these are treated separately by Roe (1966).

Figure 5

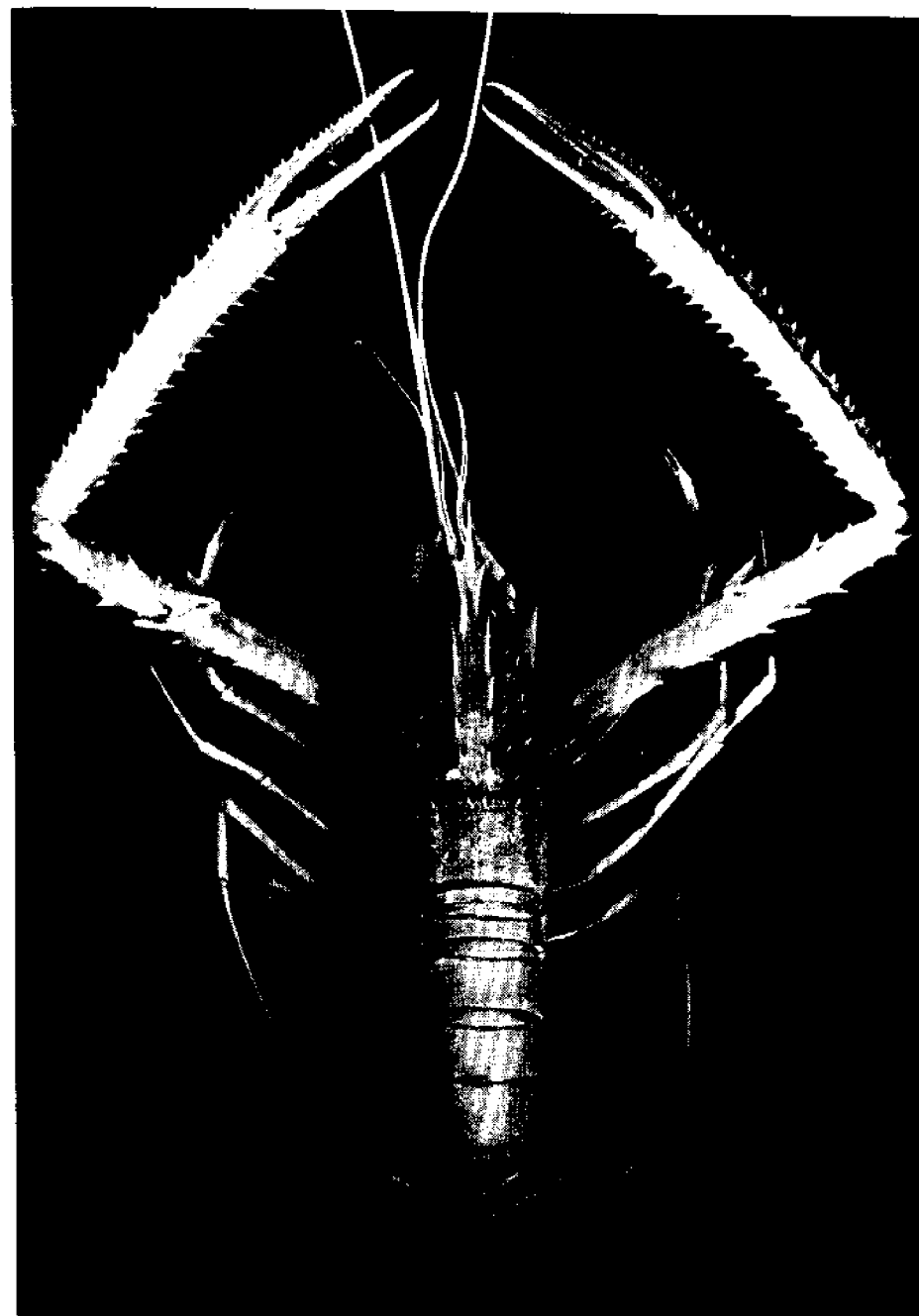


Figure 6

Neophoberus caecus (Milne Edwards)
Blind Deep-Sea Lobster
Fig. 6

Recognition Features.--Eyes reduced; animal large and deep-bodied; cape and exposed parts of tail segments covered with sharp prickles. Claws longer than the combined length of the body and tail, cylindrical, covered with sharp needle-like spines; the fingers are flattened, and their cutting edges have a row of interlocking, long sharp teeth separated by groups of shorter teeth. Color pink.

Geographic Range.--In deeper waters of the Atlantic Ocean and Caribbean Sea; also Pacific (Bouvier, 1925).

Depth Range.--Generally not less than 700 m (Agassiz, 1888).

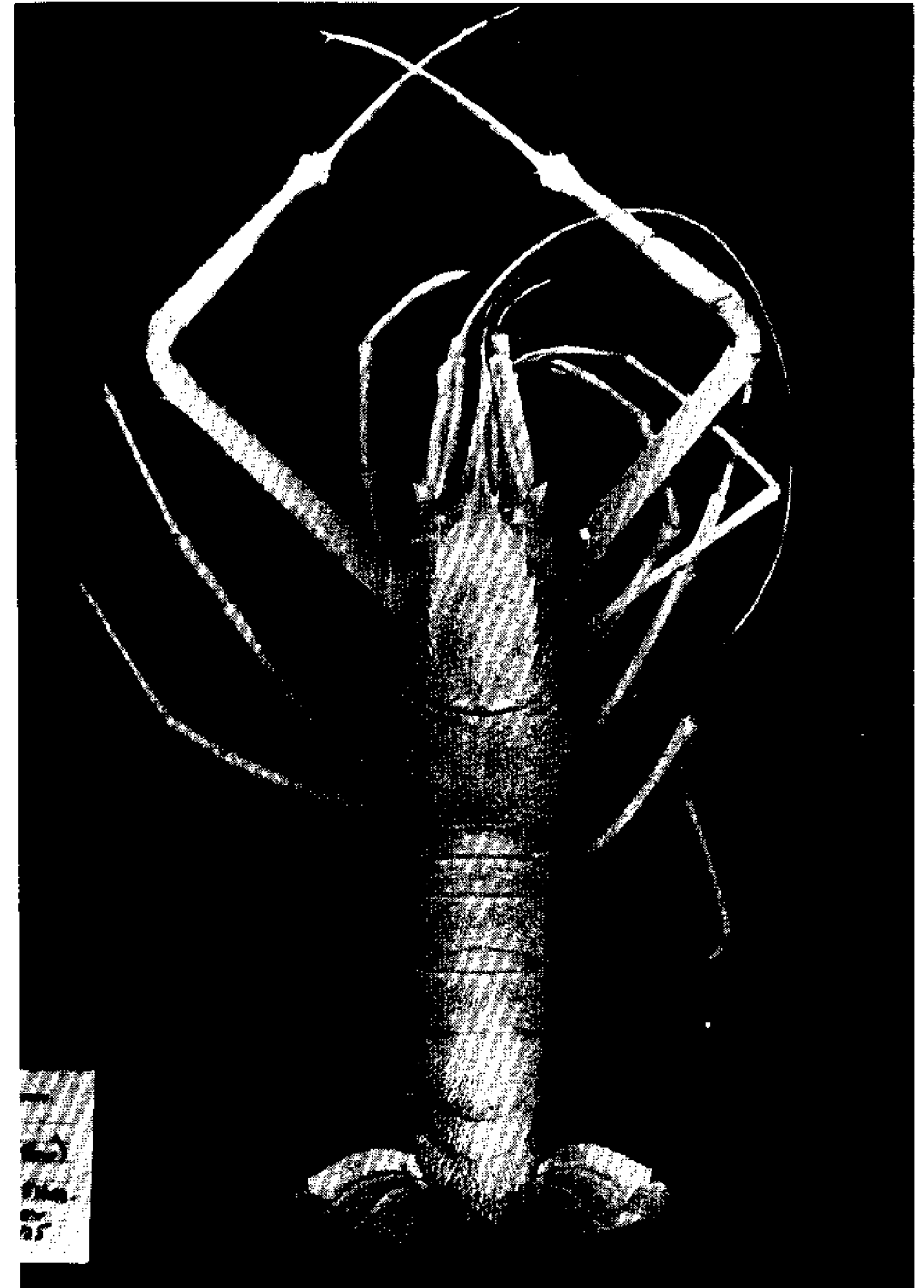
Size.--Carapace up to 17 cm long. The entire animal from the end of the tail to the tip of the outstretched claws may be 70 cm long. (Agassiz, 1888).

Spawning.--Not known.

Commercial Fishery.--Unlikely, due to the depth distribution of the species. The animal lives in burrows in the soft bottom, making it difficult to capture by trawl.

Mariculture Potential.--Not promising.

Other Scientific Names.--Phoberus tenuimanus Bate (Bouvier, 1925).



Panulirus argus (Latreille)
Common Spiny Lobster; "Crawfish"
Fig. 7

Figure 7

Recognition Features.--Color of body ranging from gray and shades of tan through brown, brownish blue, olive green to dark mahogany red, more or less mottled, tail with four conspicuous yellow spots, one on each side of the 2nd and 4th tail segments, and numerous smaller spots; tail fan crossed by bands of orange, yellow and black, fringed with white; legs longitudinally striped with lighter and darker bluish green; paddle-like flaps on underside of tail yellow or orange with a black patch. Color varies with age of the animal, habitat, and locality; darker individuals are generally found in deeper water.

Geographic Range.--Bermuda and the Bahamas through the Antilles; east coast of America from North Carolina to Brazil, including the Gulf of Mexico and Caribbean.

Depth Range.--From low-tide line to depths of 90 m (Williams, 1965). Smaller individuals tend to occur in shallower water (Sutcliffe, 1952).

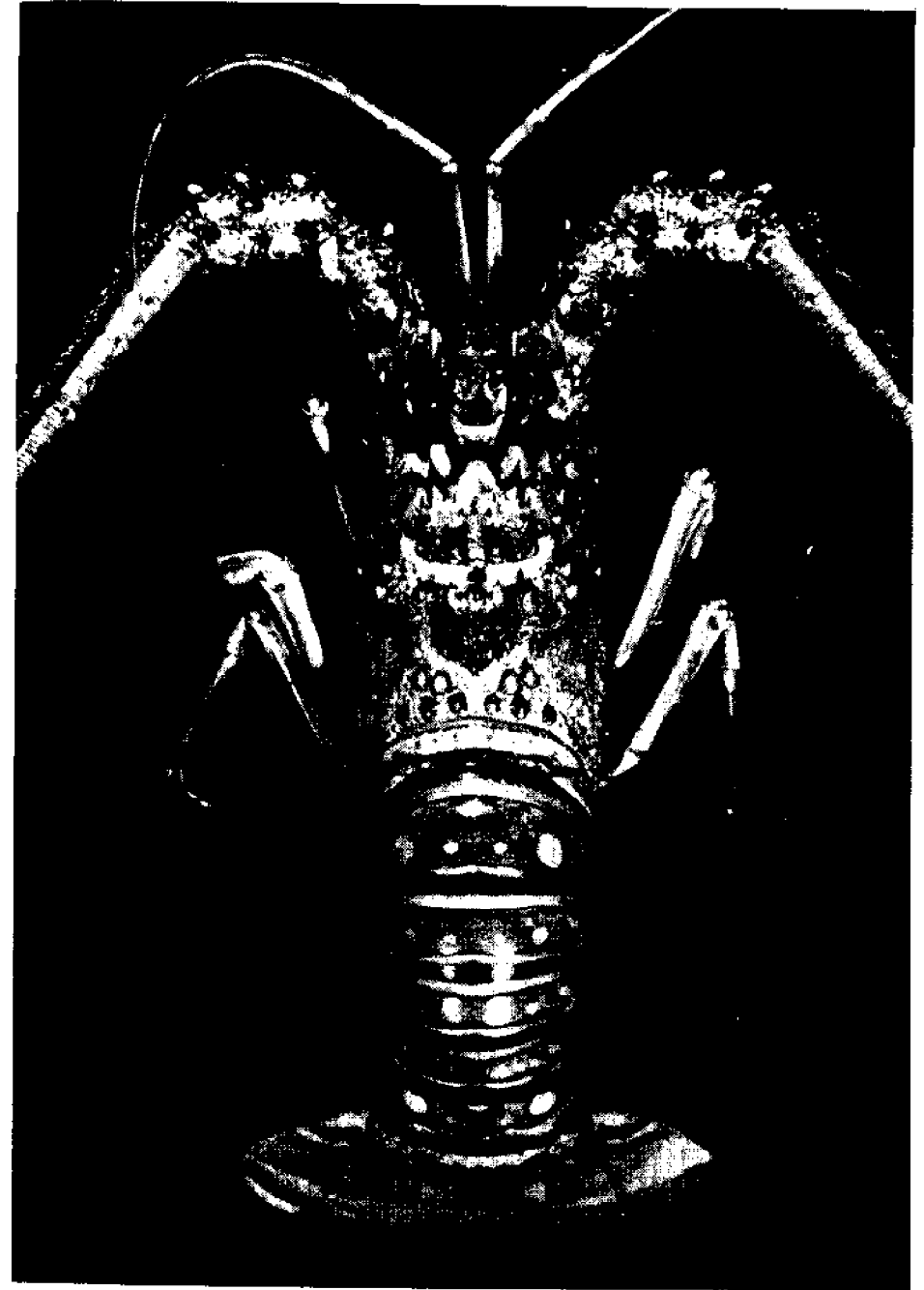
Age and Size.--Growth rates vary with geographic locality. Females mature at a length of about 15 cm, but females in berry under 20 cm are rare (Crawford & de Smidt, 1922; Williams, 1965). In Florida, the average size of lobsters caught is 22-28 cm, with a weight of 1-2 pounds. Individuals up to 45 cm long and 6 pounds in weight occasionally are found in unfished areas (Smith, 1958). In the first year, animals reach a length of about 2 inches, and grow about 1 inch per year thereafter; adults 16 inches long are approximately 16 years old. Males reach a somewhat greater length than do females (Williams, 1965).

Spawning.--In Florida, March through June, mostly April. Spawning migrations have been observed in various localities. Eggs hatch into transparent, flattened, leaf-shaped larvae; eleven stages are passed in the plankton, over a period of six months (Williams, 1965).

Commercial Fishing Gear.--Lobster traps or "pots," bully nets, hand spears, trammel nets (Smith, 1948; Dawson & Idyll, 1951; Siebenaler, 1955; Sundstrom, 1957; Smith, 1958; Cope, 1959; Buesa Mas, 1960). Local regulations controlling fishing gear vary.

Mariculture Potential.--Very doubtful at present (Smith, 1958; Sims, 1965a; Provenzano, 1969) because of the long and complicated life history. Scientific knowledge of feeding requirements and various environmental factors are too scanty at present to permit development of workable rearing techniques. Larva may be biologically unadaptable to artificial culture.

Other Scientific Names.--Palinurus americanus H. Milne Edwards; P. ricordi Guerin Meneville (Holthuis, 1946:110).



Panulirus guttatus (Latreille)
Spotted Spiny Lobster; Guinea Lobster
Fig. 8

Recognition Features.--Background color dark green, purplish blue, or purplish brown with numerous small white or cream spots on the body and tail. Legs spotted except for next-to-last segment, which is longitudinally striped.

Geographic Range.--Bermuda and Florida southward throughout the West Indies to Brazil and St. Paul's Rock (Holthuis, 1946).

Depth Range.--In shallow water, generally in depths less than 1 m; found on the outer reef (Sutcliffe, 1953) and on rocky jetties (Caillouet et. al., 1971).

Size.--Length of carapace usually not greater than 90 mm (Caillouet, et. al., 1971).

Spawning.--Maximum spawning occurs in June (Caillouet, et. al., 1971). Unlike P. argus, this species does not seem to perform any noticeable migration.

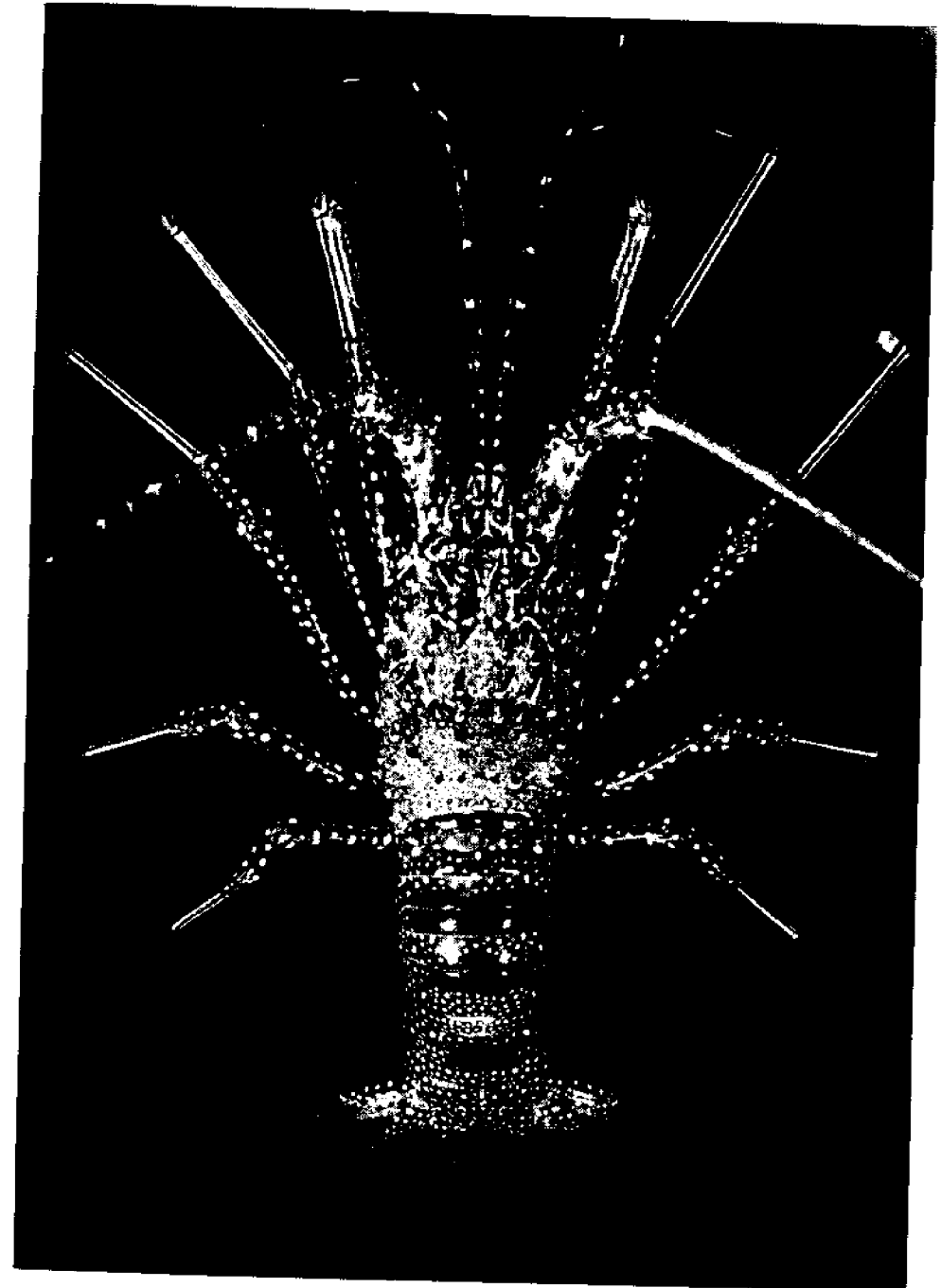
Commercial Fishery.--The small size of this species excludes it from commercial collecting in Florida despite its abundance (Sims, 1966). In Bermuda twenty P. argus are caught for every P. guttatus (Sutcliffe, 1953).

Mariculture Potential.--Not determined, but appears unpromising because of complex life history.

Other Scientific Names.--Palinurus inermis Pocock.

Remarks.--A closely similar species from Brazil, long considered identical with P. guttatus, has now been recognized as a distinct species (Holthuis, 1961). This is Panulirus echinatus Smith, 1869, which differs from P. guttatus chiefly by having the transverse grooves crossing tail segments 2 to 5 interrupted in the middle. There are other differences, clearly described by Holthuis (1961). P. echinatus has not been included in this manual because of its apparent scarcity, and its occurrence exclusively outside the range here considered. From a marketing standpoint, P. echinatus would probably not be separable from P. guttatus.

Figure 8



Panulirus laevicauda (Latreille)
Smooth tailed Spiny Lobster
Fig. 9

Figure 9

Recognition Features.--Body yellowish with a purplish tinge, becoming more purplish in the middle region and more reddish along the anterior edge, sides of the carapace with a whitish streak and distinct white spots, especially near the edge; horns over the eyes red with yellowish markings and four incomplete white rings; strong spine, placed obliquely behind each horn, encircled by a dark red ring; tail segments with inconspicuous, minute spots except at the sides, where the projecting point and adjacent area is dark purple or red, with prominent white spots; the rear edge of the tail segments has a narrow dark band with a single row of small pale spots; legs with alternating whitish and purplish longitudinal streaks on the upper surface. No transverse grooves on tail segments.

Geographic Range.--From Florida (Moore, 1962) and the Gulf of Mexico (Smith, 1954) south through the Antilles (Holthuis and Zaneveld, 1958) to Brazil (Coelho, 1962).

Depth Range.--29-46 m (Holthuis, 1959).

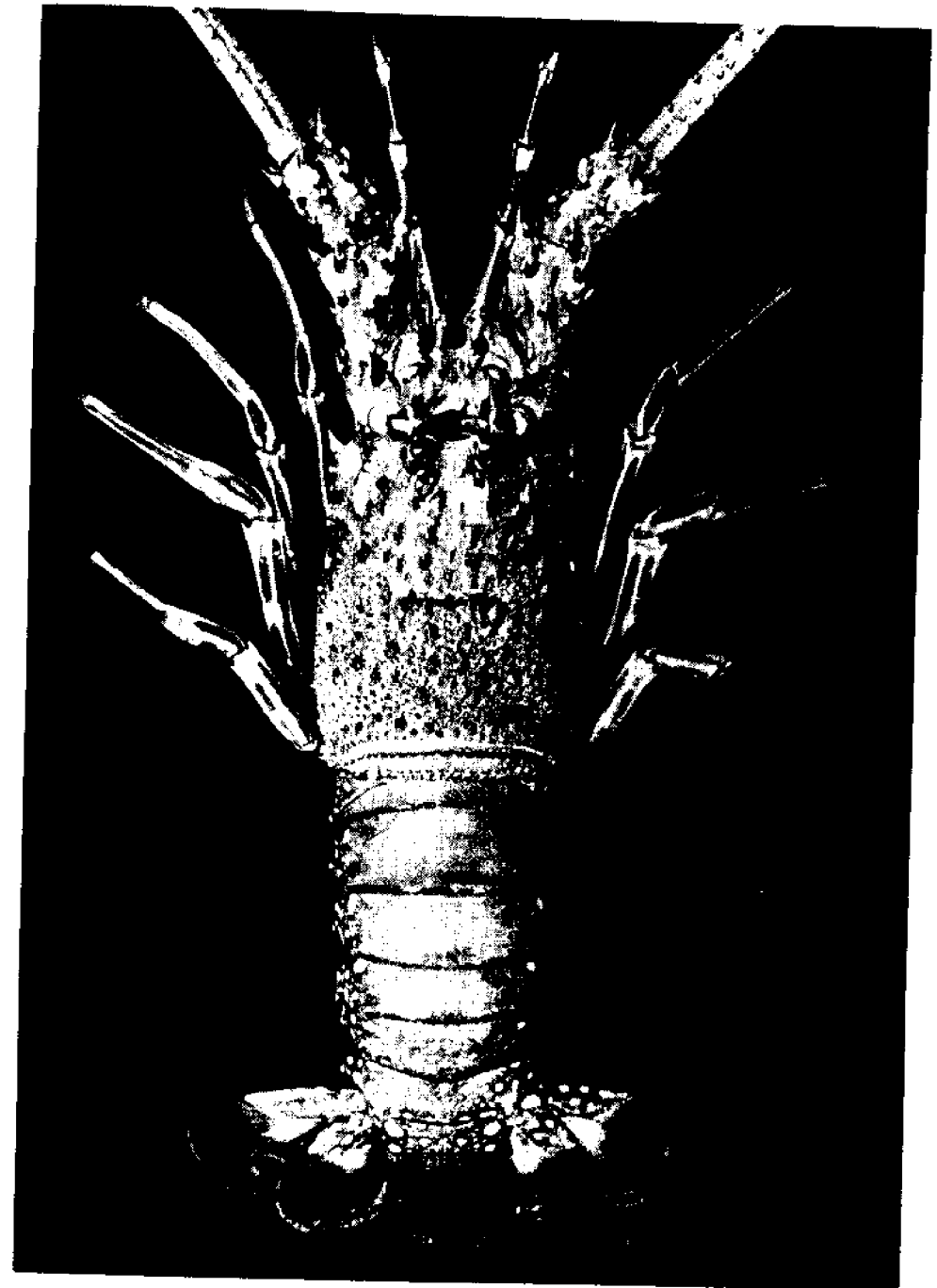
Size.--Total length of 215 mm or more, excluding antennae (Holthuis, 1959).

Spawning.--Probably in the spring and early summer.

Commercial Fishery.--Fished commercially in Brazil (Smith, 1958) where it is very common (Holthuis, 1959; Coelho, 1962).

Mariculture Potential.--Not determined, but probably not promising because of the complex life history.

Other Scientific Names.--Panulirus ornatus Pocock, 1890.



Parribacus antarcticus (Lund)
Slipper Lobster
Fig. 10

Recognition Features.--Body strongly flattened, projecting along the sides as a thin edge cut into sharp, tooth-like projections; movable flaps in front of eyes also with sharp marginal points. Surface of body and tail with pebbly and scale-like sculpture. Color tan with brown and reddish mottling.

Geographic Range.--Tropical western Atlantic from Florida south to Brazil; also Indo-Pacific (Holthuis, 1946).

Depth Range.--Generally deeper than 10 m.

Size.--Total length about 200 mm (Holthuis and Zaneveld, 1958).

Spawning.--Probably from April to August (Sims, 1965c).

Commercial Fishery.--None. Although this species reaches a large size, it has not been found commonly in the Caribbean area.

Mariculture Potential.--Not promising. Twelve larval stages have been described for this species (Sims, 1965c), but no attempts have been made to rear the larvae in the laboratory. First stage reported to be 18 days long (Saisho, 1962).

Other Scientific Names.--Cancer (Astacus) ursus major (Herbst); Parribacus ursus, Stebbing; Ibacus Parrae Milne Edwards, Parribacus papyraceus Rathbun (Holthuis, 1946). The generic name has been misspelled "Páribacus," "Parribaccus" and "Paribaccus" in the literature.

Figure 10



Scyllarus nearctus Holthuis
Scaled Slipper Lobster
Fig. 11

Figure 11

Recognition Features.--Body flattened, with two flattened, shovel-like flaps with deeply scalloped front edges (actually the antennae) in front of the eyes. Body with a scale-like pattern of flattened sculpturing along the sides, across the rear edge, and in middle of back; three blunt spines in the midline roughly between the eyes. Tail segments with a branching pattern of grooves extending from edges toward midline. Color cream or pale tan with darker mottling. No red spots on first tail segment.

Geographic Range.--North Carolina to São Paulo State, Brazil (Holthuis, 1960).

Depth Range.--55-180 m (Holthuis, 1960).

Size.--Females with berry reported to be 75 mm long (Williams, 1965).

Spawning.--Females with berry taken in June off North Carolina (Williams, 1965).

Commercial Fishery.--None. Trawling would be necessary for exploitation of any large stocks that might be found.

Mariculture Potential.--Not determined.

Other Scientific Names.--This species is incorrectly called Scyllarus arctus (Linnaeus) in literature before 1960. S. arctus (Linn.) is a European species.



Scyllarides aequinoctialis (Lund)
Spanish Lobster; Slipper Lobster; Shovel-nosed Lobster
Fig. 12

Recognition Features.--Body generally reddish-brown, dull orange-brown or terra-cotta colored above, more or less mottled with orange and with a lighter orange-red along the edges; first tail segment bright orange, often mottled with purple, and marked by four round spots of bright reddish-purple, the two middle ones larger and joined together anteriorly under the edge of the carapace; other tail segments dull orange to brick red; legs orange and covered with small, round dark purplish-blue spots. Large specimens are darker and duller in color.

Geographic Range.--From Bermuda south through the Florida Keys and West Indies to Brazil (Holthuis and Zaneveld, 1958).

Depth Range.--From 10 to 180 m.

Size.--Grows to over 30 cm in total body length (Smith, 1958).

Spawning.--Probably occurs in the spring (Robertson, 1969).

Commercial Fishery and Gear.--Small quantities sold commercially in Puerto Rico. They are caught in traps on sandy bottom (Smith, 1958).

Mariculture Potential.--Larval life of 8-9 months may make it unfeasible to culture this species in the laboratory. Only the early larval stages have been raised in the laboratory (Robertson, 1969).

Other Scientific Names.--None.

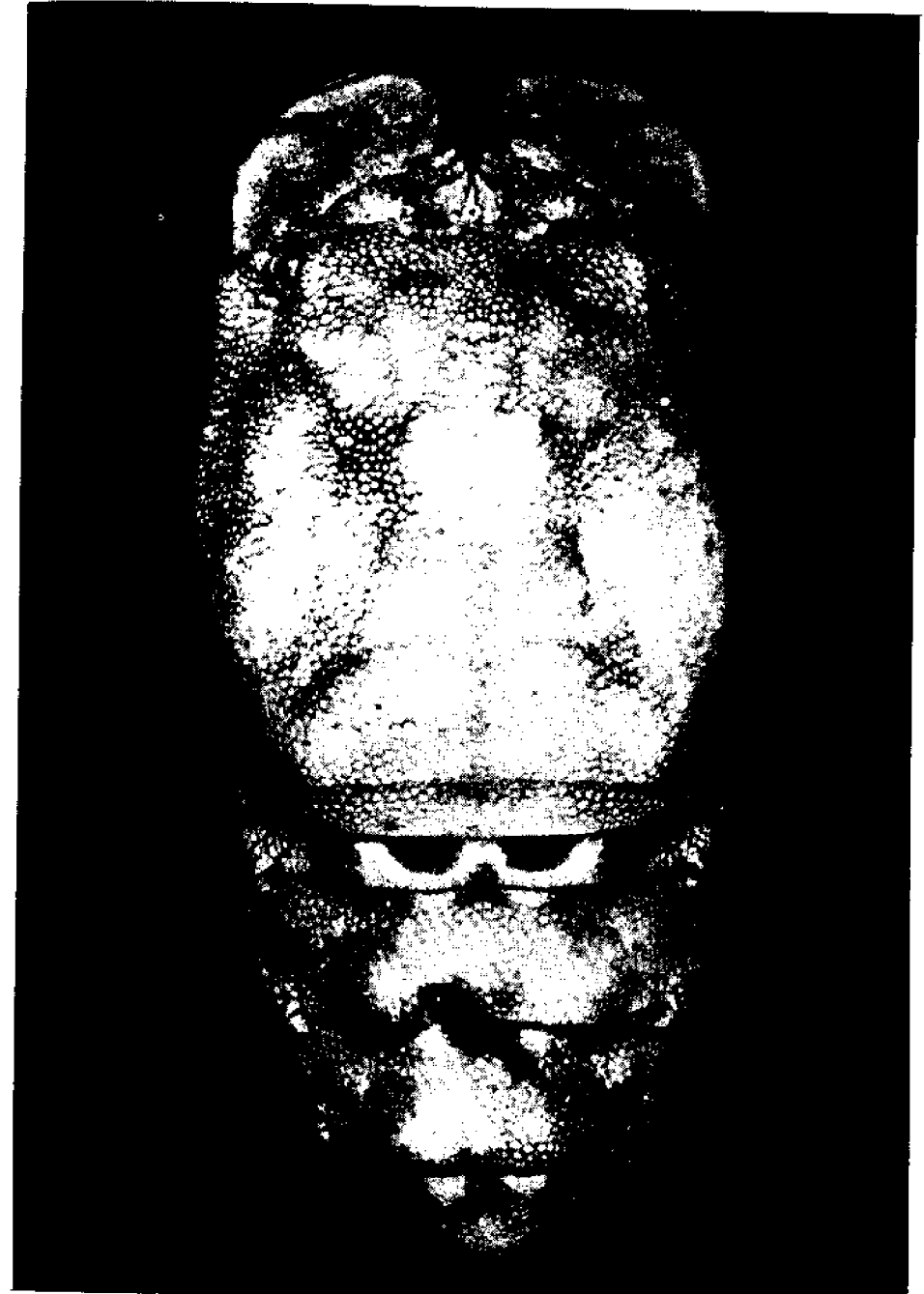


Figure 13

Scyllarides nodifer (Stimpson)
Ridged Slipper Lobster; Spanish Lobster
Fig. 13

Recognition Features.--Body with a ridge covered by large granules and hairs extending down the middle of the back; second to fifth tail segments with a raised ridge along the midline, weak or obscure on sixth segment. Body covered with irregular, small brown spots on a greyish-brown to yellowish brown background; orange-red tubercles and darker red spots occur around the edges and on the anterior part of the body; first tail segment with large, rounded red spot in the midline, flanked on each side by a smaller, elongated red spot; legs bright red, each segment banded with yellow at both ends (Verrill, 1922).

Geographic Range.--Bermuda (Verrill, 1922), Cape Lookout, North Carolina (Williams, 1965), Gulf of Mexico (Springer, 1956), Surinam (Holthuis, 1959).

Depth Range.--From 30-75 m on shell mud, coral or sand bottoms (Williams, 1965).

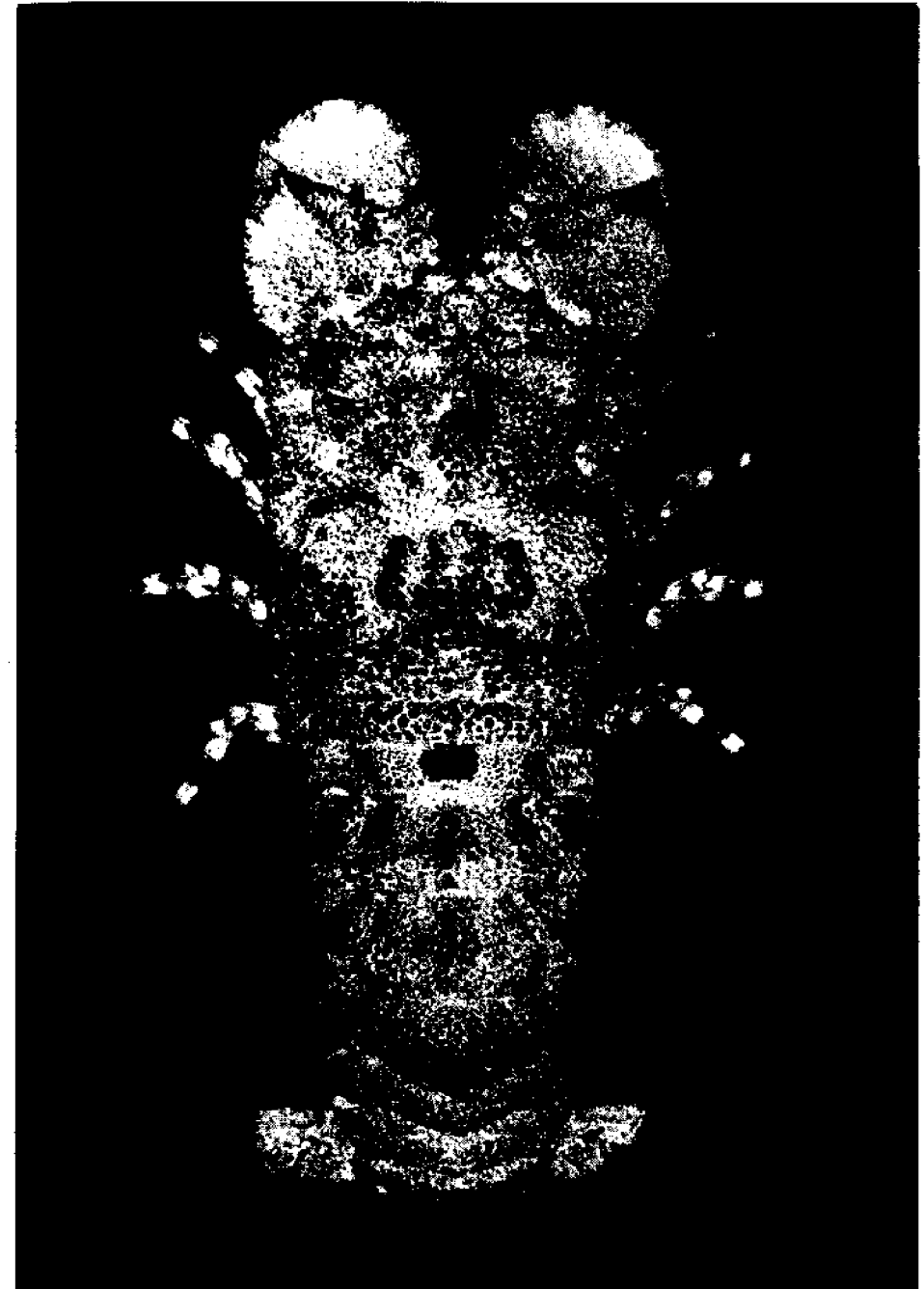
Size.--Body (excluding tail) in excess of 127 mm (Williams, 1965)

Spawning.--Probably from June to August (Robertson, 1969). Larval life about nine months (Sims, 1965b). Post larvae found in Florida in February and March (Robertson, 1969).

Commercial Fishery.--Although there is no specific fishery for this species, it is sometimes used for food and bait (Williams, 1965).

Mariculture Potential.--Possibly prohibited by the large planktonic larval life.

Other Scientific Names.--Scyllarides americanus Verrill (Holthuis, 1960).



Scyllarides delfosi Holthuis
Three-spot Slipper Lobster; Spanish Lobster
Fig. 14

Recognition Features.--First segment of tail with three rounded red spots, the middle one largest; no prominent raised ridge along midline of back and on tail segments. Color tan or brown, with darker brown and reddish tubercles on body.

Geographic Range.--Off the coast of Guyana and Surinam, north-eastern coast of South America (Holthuis, 1960).

Depth Range.--40-80 m (Holthuis, 1960).

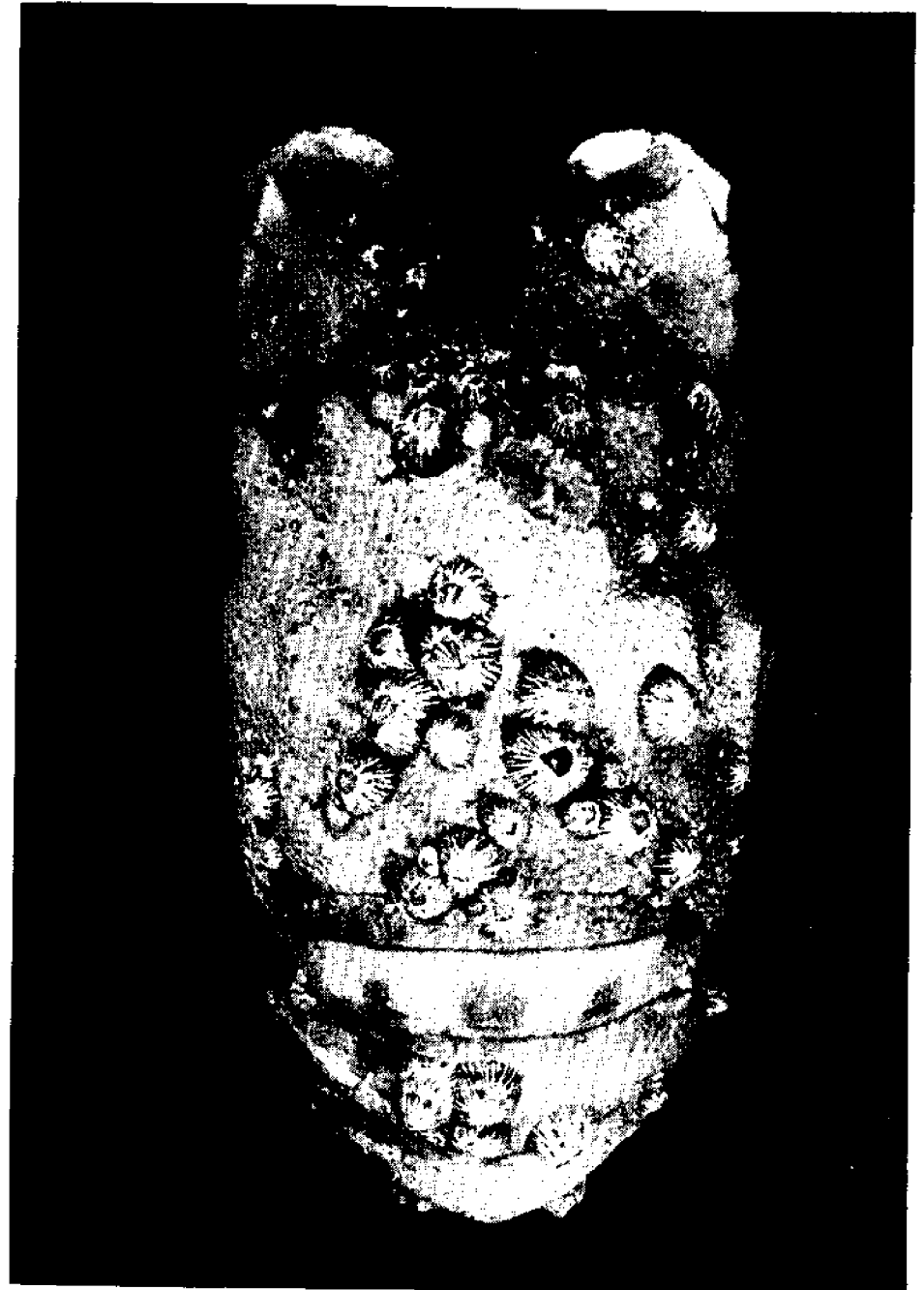
Size.--Reaching 250 mm or more in total length.

Spawning.--Unknown.

Commercial Fishery.--None. The species probably could be taken commercially by either trawl or trap if sufficient populations are found.

Mariculture Potential.--Not determined, but unpromising.

Other Scientific Names.--Originally figured and discussed under the name Scyllarides americanus Verrill by Holthuis (1959), who considered the identification doubtful. True S. americanus is actually S. nodifer.



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