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THE CRUSTACEA DECAPODA MACRURA (THE ALPHEIDAE EXCEPTED) OF EASTER ISLAND

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With two text-figures and two plates

So far the Crustacean fauna of Easter Island has received but very little attention. In most early narratives of expeditions visiting the island no mention is made of any Crustacean. Behrens (1908: 135) who accompanied Jacob Roggeveen on the voyage during which, in 1722, the island was discovered, stated in his diary that "No animals were met with, as far as we penetrated on this occasion, except sundry species of birds". Cornelis Bouman, captain of the ship "Tienhoven" of Roggeveen's expedition, did not mention any Crustacean from Easter Island, even though in his narrative he shows a great interest in marine life, as is clearly demonstrated by his account of the expedition's visit to Juan Fernandez (24 February to 17 March 1722) in which he repeatedly mentioned the presence of "delicaete creeften" (delicious lobsters) at that island (cf. Mulert, 1911: 123-127, 134-144). Also Cook, Laperouse, Beechey, and other early explorers, who visited the island do not report the presence of Crustacea. Only Hervé (1908: 122) in his account of Gonzalez's 1770 voyage reported "small crabs" from the outer of the small islets at the S.E. tip of Easter Island. The first positive mention of the occurrence of macrurous Decapods on the island seems to be by Gana (1870). In early 1870 Ignacio L. Gana, captain of the corvette "O'Higgins" of the Chilean navy, made an 8 days visit to Easter Island. He was charged by his government to make a scientific description of the island, which study was published by him in 1870. A french translation of this report was given by De Lapelin (1872). F. T. de Lapelin, vice-admiral of the French Pacific fleet visited Easter Island in the "Flore", anchoring off Hanga Roa on 3 January 1872. Through circumstances he was only able to verify a great part of the information provided by previous visitors but "elle ne nous a cependant pas permis d'y ajouter quelque chose de nouveau" (p. 106). This was also the reason that instead of providing an original report on the island

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Division of Crustacea

he preferred to give a translation of Gana's report. In the present paper the French version is referred to, as the original Spanish edition is unavailable to me.

De Lapelin (1872: 534) and thus also Gana (1870) mentioned the presence of spiny lobsters ("langoustes") at the island. Nineteen years later Thomson (1891) reported a species of "crayfish" to be abundant at the island, while Cooke (1899) described the catch of those "crayfish" by the natives. William J. Thomson was paymaster and George H. Cooke surgeon with the U.S. Navy both serving on board U.S.S. "Mohican", who visited Easter Island from 18 to 31 December 1886. Gana's langouste and the crayfish of Thomson and Cooke all probably belonged to *Panulirus pascuensis* Reed, though there is a possibility in Thomson and Cooke's case that *Parribacus perlatus* is meant. Bürger (1902: 707) reported the presence at Easter Island of Palinuridae, which evidently also are *Panulirus pascuensis*; since Bürger did not see actual specimens his statement may be based on Gana's account. Also later authors mentioned crayfish or lobsters, but the true spiny lobster (*Panulirus pascuensis*) received its proper scientific name only as late as 1954, while the two species of slipper lobster were recently described as new. To my knowledge no other *Macrura* have ever been mentioned from the island.

The present report deals mainly with the Decapoda *Macrura* (the Alpheidae excepted) collected between 30 December 1964 and 5 February 1965 by Messrs. Ian E. Efford and Jack A. Mathias during the 1964-1965 Medical Expedition to Easter Island. Their collection consists of 6 species in 11 specimens, and is now preserved in the Rijksmuseum van Natuurlijke Historie at Leiden.

In order to make this report as complete as possible, also the Easter Island *Macrura* of the following expeditions were studied:

1. The 1904-1905 "Albatross" Expedition to the eastern tropical Pacific under the leadership of Alexander Agassiz, which was an almost purely zoological expedition. It stayed at Easter Island from 15 to 22 December 1904. The macrurous Decapoda of the expedition consist of three species (one spiny lobster and two Alpheids). The crabs collected were dealt with by M. J. Rathbun (1907), a general narrative was provided by A. Agassiz (1906). Rathbun's (1907: 29) record of a specimen of *Leptograpsus variegatus* (Fabr.) collected on December 21, 1899 on Easter Island by the 1899-1900 "Albatross" Expedition, must be erroneous, since that expedition did not touch Easter Island; the date evidently being a lapsus for 21 December 1904. The material of the expedition is preserved in the U.S. National Museum, Washington, D.C.

2. The 1934-1935 Franco-Belgian Archaeological Expedition to Easter Island. The French archaeologists Charles Watelin and Alfred Métraux together with their Belgian colleague Henri Lavachery left Lorient, France, in 1934 for Easter Island on the French cruiser "Rigault de Genouilly" on a trip around Cape Horn; Watelin died on the way out. The party arrived at Easter Island on 27 July 1934. Later in the year 1934 the schoolship "Mercator" of the Belgian merchant marine was sent out to assist and bring home these scientists and to ship some of the giant statues of Easter Island to Europe. The "Mercator" went via the Panama Canal and stayed at Easter Island from 12 December 1934 to 2 January 1935. A narrative of the "Mercator" cruise was provided by A. de Bock (1945), while Lavachery (1935) and Métraux (1941, 1957) gave an account of their archaeological and ethnological investigations. The zoological material collected by the French archaeologists is now in the Muséum National d'Histoire Naturelle in Paris, France. Gravier (1936: 254-256) published on a Stomatopod from this material, which as Dr. J. Forest of the Paris Museum kindly informed me contains no Decapoda Macrura. The zoological collections made by the "Mercator" are now housed in the Institut Royal des Sciences Naturelles de Belgique at Brussels, and include two spiny lobsters.

3. The 1955-1956 Thor Heyerdahl Archaeological Expedition to Easter Island was specially fitted out for archaeological investigations and stayed at Easter Island from 27 October 1955 to 6 April 1956. The leader of the expedition, Thor Heyerdahl, published a popular narrative entitled "Aku-Aku" in Norwegian; this narrative has been translated in a great number of different languages. The zoological material of the expedition was donated to the Zoological Museum at Oslo, Norway; one crab and 2 lobsters were obtained at Easter Island.

Also included in the present report is material obtained from Mr. E. P. Reed, chief of the Department of Biology of the Dirección general de Pesca y Ganza of the Ministerio de Agricultura of Chile, at Valparaiso, Chile.

In February 1969 Dr. John E. Randall, of the Hawaii Institute of Marine Biology, visited Easter Island to collect fishes. The shrimps then obtained by him were kindly placed at my disposal and are also treated here. The collection proved very valuable and contains a most interesting species of *Rhynchocinetes* not before known from the island. This material now forms part of the collections of the Rijksmuseum van Natuurlijke Historie.

The scarcity of species of Crustacea in Easter Island is quite remarkable, and evidently it not only due to the fact that no intensive collecting had so far been carried out. Already the old explorers were struck by the small number of animals encountered by them.

Zoogeographically the macruran fauna is definitely Polynesian, although it shows some endemism.

In the following text the abbreviation tl. is used to indicate the total length of the animals, cl. stands for carapace length (including the rostrum).

I have tried to incorporate in the present paper all references to macrurous Decapoda found in the older literature. Due to the fact that I am not well acquainted with the ethnological and archaeological literature of the island, part of which was not available to me, I am sure that I may have overlooked several records. However, it was thought useful to give here all the information known to me.

Acknowledgements. — It is a great pleasure to thank Dr. Efford, who entrusted me with the study of the material of the 1964-1965 Medical Expedition and who provided me with information on the collection. Dr. A. Capart of the Brussels Museum, Dr. Nils Knaben of the Oslo Museum and Dr. Raymond B. Manning of the U.S. National Museum were kind enough to send me Easter Island material preserved in the collections under their care. Dr. Isabella Gordon of the British Museum and Dr. J. Forest of the Paris Museum, also checked their collections for Easter Island Macrura, but without success. I am much indebted to all these colleagues for their cooperation. Dr. Thor Heyerdahl provided me with valuable information on the Easter Island lobsters and their catch, for which I wish to express him my deep gratitude. To Dr. John E. Randall, and Dr. and Mrs. A. H. Banner, of the Hawaii Institute of Marine Biology, I am most thankful for material and information.

MACRURA NATANTIA

PALAEMONIDAE

Pontiinae

Harpiliopsis beaupresii (Audouin, 1826)

Material examined. — Hanga-piko, southern part of the west coast of Easter Island, 2 February 1965; leg. Norma; 1964-1965 Medical Expedition, Sta. 5. — 1 ♂ cl. 6 mm, tl. 15 mm, 1 ovigerous ♀ cl. 7 mm, tl. 19 mm.

The two specimens both unfortunately lack the second pereopods; in the remaining characters, however, they show such a close resemblance to Audouin's species that there can be little doubt that they belong to it. The rostral formula in both specimens is $\frac{0) 5 + 0}{3}$. In both the pleura of the fourth and fifth abdominal somites end in a distinct sharp tooth. The situation of the antennal and hepatic spines, the shape of the third maxilliped and the pereopods is as described by Kemp (1922) for Indian specimens.

Harpiliopsis beaupresii is a commensal of madreporan corals and has a wide distribution in the Indo-West Pacific region, it is known from the Red Sea, S.E. Africa, the Western Indian Ocean, the Andaman Islands, the Malay Archipelago, Queensland, the Marshall Islands and the Hawaiian Archipelago. The present record greatly extends the known range to the east. The closely related species *Harpiliopsis depressus* (Stimpson), which is also a madreporal commensal, has about the same distribution as the present species, but is remarkable by that its range extends all the way to the Pacific coast of America (from Lower California to Colombia) besides occurring at Clipperton Island and the Galapagos Archipelago.

Palaemoninae

Brachycarpus biunguiculatus (Lucas, 1846)

Material examined. — Subtidal area near camp at Hanga Roa, southern part of the west coast of Easter Island; 5 February 1965; 1964-1965 Medical Expedition, Sta. F. 102. — 1 ♀ cl. 12 mm, tl. 30 mm.

Off south end of Hanga Roa; in 40 feet water, bottom rock, coral and sand; 10 February 1969; J. E. Randall. — 1 ♀ cl. 14 mm, tl. 34 mm.

The specimen from Sta. F 102 lacks all the legs except the left first, but it is sufficiently complete to make its identity certain. The other specimen is complete. The two branches of the upper antennular flagellum are fused for 7 segments in the first, for 10 segments in the second specimen.

Brachycarpus biunguiculatus is a pantropic species. It is known from the eastern Atlantic (Mediterranean and West Africa), the West Indies (Bermuda to Curaçao), the Eastern Pacific (Gulf of California to Colombia; Clipperton Island, Revillagigedo Islands, Cocos Island, Galapagos Archipelago), while there are also a few records of the species from the Indo-West Pacific area (Red Sea, Ceylon, Wake Island, Hawaiian Archipelago, Tuamotu Islands). The occurrence of the species on Easter Island therefore is not unexpected.

HIPPOLYTIDAE

Lysmata trisetacea (Heller, 1861)

Material examined. — One mile beyond Rano Raraku, eastern part of south coast of Easter Island; 8 January 1965; 1964-1965 Medical Expedition, Sta. F. 72. — 1 ovigerous ♀ cl. 9 mm, tl. 26 mm.

Vaihu, south coast of Easter Island; tide pool; 3 January 1965; 1964-1965 Medical Expedition, Sta. no. 7. — 1 ovigerous female cl. 9 mm, tl. 24 mm.

Vinapu, western part of south coast of Easter Island; in 6 to 10 feet of water, rotenone collection; 25 January 1965; 1964-1965 Medical Expedition, Sta. F. 94. — 1 ovigerous ♀ cl. 9 mm, tl. 26 mm.

Off south end of Hanga Roa; in 40 feet water, bottom rock, coral and sand; 10 February 1969; J. E. Randall. — 1 ♂ cl. 8 mm, tl. 21 mm, 2 ovigerous ♀♀ cl. 8 and 9 mm, tl. 22 and 26 mm.

The rostral formula of the present specimens is $\frac{2-3}{2}4-5$, usually $\frac{2}{2}5$. The rostrum reaches to or slightly beyond the end of the basal segment of the antennular peduncle. The posterior ventral tooth is placed before the anterior dorsal one.

The fused part of the two branches of the upper antennular flagellum is about 0.5 to 0.7 times as long as the free part of the shorter ramus. The fused part consists of 10 articles, the free part of 11 to 13 articles.

The number of segments in the carpus of the second pereopod is 25 to 27.

Chace (1962: 614-616) discussed the variability of the various characters in this species. The present Easter Island material differs from his Clipperton Island specimens in having (except in one case) 5 dorsal rostral teeth, the third of which is placed slightly before or just over the orbit. In Chace's material only 4 dorsal teeth are present with only two behind the orbit. In this respect the present specimens agree better with Kemp's (1914: 110, pl. 6 figs. 1-4) description of material of this species from the Kermadec Islands, which he named *Lysmata chiltoni* and which shows 5 dorsal teeth. Material from Indonesia and the Red Sea reported upon by myself (Holthuis, 1947: 65, 66; Holthuis, 1958: 33) has 4 dorsal rostral teeth, while Balss (1915: 25) mentioned that in his Red Sea material the number of dorsal teeth as a rule was 4, but that specimens with 5 teeth were not rare. Later Balss (1925: 292) reported upon a specimen from the western Indian Ocean with 6 dorsal teeth. In the position of the ventral rostral teeth in advance of the anterior dorsal tooth, our Easter Island specimens agree with Kemp's (1914) specimens and with Chace's Clipperton Island material, but differ from the specimens from the Hawaiian Islands dealt with by Chace (1962), where the posterior ventral rostral tooth is placed behind or below the anterior dorsal. In my Indonesian specimens the posterior ventral tooth is practically below the anterior dorsal, sometimes being a fraction more in front or behind. The same is true for a specimen from the Gulf of Aqaba reported upon by myself in 1958, which I could re-examine.

In the relation between the length of the fused and free parts of the shorter ramus of the upper antennular flagellum the Easter Island specimens resemble most those from Clipperton Island where "the fused portion is at most little more than half as long as the free portion and it may be no more than a third as long", while in the Hawaiian specimens the fused portion is "not much shorter than the free portion" (Chace, 1962: 616); in Kemp's (1914: 111)

Kermadec Islands specimen "the two branches are fused basally for a distance equal to half the length of the shorter ramus". In my Indonesian specimens the relation between the lengths of the free and fused part is variable, the smaller specimens having the fused part 0.6 to 0.8 times the length of the free part. In my specimen from the Gulf of Aqaba the fused part is 0.7 times as long as the free part.

In the high number of carpal segments of the second pereopods (25-27) the Easter Island material differs from that of Clipperton Island (19-24) and resembles more that from Hawaii (21-25), the Kermadec Islands (25-26), or Indonesia (24-26).

These characters seem to vary independently from each other and the study of a more extensive material is necessary to find out whether any subspecies should be recognized within this species. In most cases the material from a single locality is too small to permit one to form a good idea of the variation within the local population. Therefore we must be grateful for the thorough way in which Chace (1962) dealt with his extensive series from Clipperton Island.

Lysmata trisetacea is known from the Red Sea, the western Indian Ocean, Indonesia, Micronesia, the Kermadec Islands, the Hawaiian Archipelago, and Clipperton Island; it is now reported for the first time from Easter Island.

RHYNCHOCINETIDAE

Rhynchocinetes balsi Gordon, 1936

Material examined. — Off south end of Hanga Roa; in 40 feet water, bottom rock, coral and sand; 10 February 1969; J. E. Randall. — 1 ♂ cl. 13 mm, tl. 29 mm.

The specimen agrees well with Gordon's (1936) description and figures. The upper margin of the movable part of the rostrum bears five distal teeth which are placed close together just before the tip, and two proximal teeth, one placed at the base of the movable part and one in the middle. The lower margin of the rostrum bears 13 teeth, the last being very small and placed at the base of the tip of the rostrum which is curved downward. The second and third ventral teeth of the rostrum are partly fused, this evidently is an abnormality.

The antennal spine is strong and placed a short distance below the triangular lower orbital angle. The pterygostomian tooth is small but distinct.

The pleura of the fourth abdominal somite are distally rounded with a small apical tooth. In the fifth somite the pleura are pointed.

The present specimen is a juvenile male and has both the stylocerite and the antero-lateral tooth of the basal segment of the antennular peduncle reaching about to the end of the second segment.

No arthrobranchs are present at the bases of the second to fifth pereopods.

Colour. — Slight traces of the original colour pattern are still visible. A longitudinal broad red band extends over the movable part of the rostrum, leaving the basal dorsal tooth and the ventral part of the basal half untouched. On the carapace a narrow red line extends from the pterygostomian spine backward along the anterior part of the lateral margin. A second line, above and parallel to it, reaches the lateral margin slightly behind the posterior end of the first line. Four parallel oblique bands extend over the posterior branchial region, being placed almost perpendicular to the posterior part of the lateral margin of the carapace. The posterior two of these bands are connected at their ends closest to the margin. Two very indistinct parallel longitudinal lines may be seen in the posterior part of the carapace just above the oblique lines of the branchial region.

On the first three abdominal somites oblique lines of red colour can be seen, running about parallel to the oblique branchial lines. The postero-dorsal part of the third somite shows a large red spot. Over the last three abdominal somites some longitudinal red lines are seen, which continue onto the tailfan.

The distal two segments of the third maxilliped are red. A few red chromatophores are also present on the palm of the first cheliped and more on the carpus; the merus of the cheliped shows two transverse red bands. The walking legs (pereopods 3 to 5) have the propodus and carpus red, and the merus with three or four transverse bands.

Distribution. — The type locality of *Rhynchocinetes balsi* is Juan Fernandez. It has also been reported from New Zealand and Lord Howe Island. The recorded depths of capture are 25, 80 and 128 m.

MACRURA REPTANTIA

PALINURIDAE

Panulirus pascuensis Reed, 1954

"Langouste" De Lapelin, 1872: 534; Stephen-Chauvet, 1935: 31; Lavachery, 1935: 119; Métraux, 1941: 61, 154-155.

"Crayfish" Thomson, 1891: 458; Cooke, 1899: 699; Brown, 1924: 28, 184, 185; Heyerdahl, 1961: 33.

"Lobster" Thomson, 1891: 524, 550; Routledge, 1920: 182, 232; Brown, 1924: 184; Heyerdahl, 1958: 93, 203, 270, 274, 279; Skjölsvold, 1961: 369.

"Prawn" Thomson, 1891: 550.

Palinurus frontalis p.p. Bürger, 1902: 707; p.p. Bürger, 1904: 7.

"Langosta" Brown, 1924: 184; Helfritz, 1953: figs. 26-29.

"Languste" Helfritz, 1953a: figs. 26-29; Métraux, 1957: 57, 147-148, pl. 13.

"Langouste" Mazière, 1965: 111, 131, 195, 196; Castex, 1966: 192, 193; Villaret, 1970: 174, 181.

Panulirus pascuensis Reed, 1954: 131, 136, figs. 1-9; Holthuis & Villalobos, 1962: 252, map; George & Holthuis, 1965: 17, text-fig. 1c, col. pl. 3.

"Hummer" Heyerdahl, 1957: 88, 200, 276, 281.

"Krebs" Métraux, 1957: 147, fig.

"Languster" Heyerdahl, 1957: 200, 272.

Material examined. — Easter Island; 21 December 1904; 1904-1905 "Albatross" Expedition to the eastern tropical Pacific. — 1 ♀ cl. 75 mm.

Easter Island; 12 December 1934-2 January 1935; 1934-1935 "Mercator" Expedition. — 1 ♂ cl. 81 mm.

Cook Bay (= Hanga-Roa), west coast of Easter Island; 20 December 1934; 1934-1935 "Mercator" Expedition. — 1 ♀ cl. 95 mm (with spermatophore).

Easter Island; received 12 February 1954; E. P. Reed. — 2 ♀♀ cl. 80 and 95 mm.

200 m N. of camp at Hanga-Roa, west coast of Easter Island; gill net; 5 m deep; 23 December 1964; 1964-1965 Medical Expedition, Sta. M. 4. — 1 ovigerous female cl. 87 mm.

Remarks. — The specimen collected by the 1964-1965 expedition agrees very well with the other material and with the description and figures given by George & Holthuis (1965). None of the abdominal grooves is interrupted in this specimen. The anterior dorsal part of the body bears many small



Fig. 1. Stylized figure of a spiny lobster, found as an ornament on the head of an Easter Island wooden figure. From Métraux (1957, fig. 26) after Lehmann (1907).

Serpulid worms, which are much less frequent on the rest of the body. On the abdomen, and less frequently so on the rest of the body, small white patches, presumably made by Foraminifera, are visible. The oral appendages and the distal parts of the first three pereopods are thickly beset with small lepadid cirripeds.

Economic importance and fishery. — De Lapelin (1872) already remarked of this species "Les habitants les recherchent", while Thomson (1891: 458) stated that the species is "an important article of food". This also may be concluded from the rôle that the lobster plays in the native mythology (see below). The way in which these animals are caught is described by De Lapelin (1872: 534) who stated that they are taken "en plongeant", also Thomson (1891: 458) gave the method as "by diving into the pools among the rocks", and Routledge (1920: 232) as "diving for lobsters under water". Brown (1924: 184) remarked of the species: "It is one of the commonest sights

along the coasts to see the naked fishermen disappear below the water and in two or three minutes appear with a huge crayfish in each hand”, and (p. 28): “They were expert divers; one sees their naked bodies disappear for minutes at a time and reappear, crayfish or cuttlefish in hand.” Brown (1924: 184) specially remarks that no traps or nets are used to fish the crayfish. A more elaborate account is given by Cooke (1899: 699), who described the lobster fishery as follows: “That evening, after dark, the natives remaining with us entertained us with an exhibition of their manner of capturing the crayfish. Stripped to the skin and holding aloft in the left hand a huge lighted torch composed of loose fagots, they would jump from rock to rock and boulder to boulder with the agility of monkeys. Peering into the depths below, and having discovered their prey, they would leap into the water, often to their necks, deftly seize the crustacean and pass it to a companion who, with an-

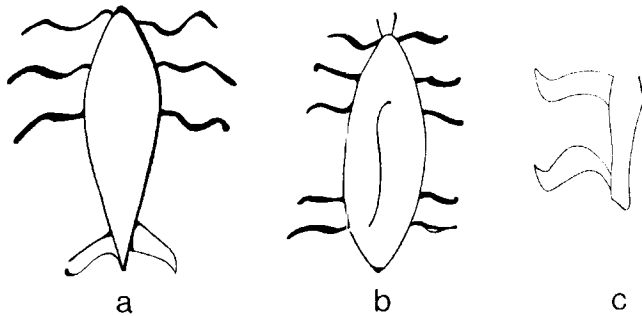


Fig. 2. Figures of the Easter Island ideographic script. a, b, *ura* = lobster; c, *ura oho* = walking lobster. After Stephen-Chauvet, 1935.

other burning torch, attended them for the purpose. Again they would sight their game in a cleft, or under a submerged overhanging rock, and swiftly inserting the hand, would rarely fail to bring forth a captive. For an hour or more the sport continued. The sight was a strange, weird, savage and interesting one, and the array of *ura* (Rapa Nui for crayfish), which at the termination of the hunt they proudly spread before us gave ample testimony to their dexterity”. Métraux (1941: 61) remarked: “On s’adonne parfois aussi aux joies de la pêche aux langoustes. Les indigènes les attrapent soit de nuit, à la lucur des torches, soit de jour, en plongeant à la recherche de rochers dans les interstices desquels ces bêtes se dissimulent”. Also Mazière (1965: 195, 196) gave a vivid description of the fishing for lobsters at night with “torches de cannes à sucre” by the natives, “danseurs de feu, sautant sur les roches que recouvre brusquement le ressac, ou s’insinuant dans des grottes sousmarines, qui, par leurs anfractuosités laissent échapper le brusque

reflet des torches. Eblouies, les langoustes orange et violette se laissent deviner et saisir dans ces bulles de lave que la mer ne cesse de découvrir". From the legend concerning the end of the statues as told to Métraux (see Mythology, below) it is clear that the spiny lobster usually is caught by diving and that only rarely a net is used. Spears are not used according to the explanation of pl. 13 of the 1957 German edition of Métraux's work, where it says: "Die grossen Langusten werden mit der Hand gefangen, Fische dagegen harpuniert". Also Helfritz (1953, 1953a, figs. 26-28) indicated that the lobsters are caught by hand. The method of catching spiny lobsters at night with torches is common all over the tropics, but in most places the animals are speared and not taken with bare hands, the sharp spines on the carapace and the sharply pointed abdominal pleura, namely, can easily inflict painful wounds. See also under *Parribacus perlatus* (p. 48, 49). Castex (1966: 192), who also described the nocturnal fishery for spiny lobsters at Easter Island, remarked in his account that one of the natives "a piqué sa première langouste", which seems to indicate that a spear or harpoon was used. This possibly is a recent development in this fishery, which judging by Castex's account otherwise was carried out exactly as described by previous authors.

In recent times the fishery for lobsters seems to have become a tourist attraction at Easter Island, at least Villaret (1970: 174) remarked: "On y organise . . . aussi des pêches nocturnes à la langouste qui font bien rire les insulaires, car ils m'ont avoué qu'on leur commande de disposer le long de la plage — juste avant la pêche — des langoustes expirantes que les touristes n'ont plus qu'à ramasser à la lueur romantique des flambeaux . . .".

The preparation of the lobsters for food is described by Métraux (1941: 154, see below under Mythology) as being done in an oven ("four"). Helfritz (1953, 1953a, figs. 27-29) described and figured the lobsters as being roasted in a hole in the beach over hot stones and covered with earth and grass.

The lobster meat is used also as bait for catching fish as Villaret (1970: 180-181) reported: "ici, comme à Rapa iti, on appâte très souvent les hameçons et les nasses avec des morceaux de langouste, dont la chair est plus commune que celle du poisson".

Mythology. — Routledge (1920: 182) told the following Easter Island legend in which the spiny lobster plays a rôle: "There was a certain old woman who lived at the southern corner of the mountain (Rano Raraku) and filled the position of cook to the image-makers [i.e. the stone cutters who made the giant rock images still present on the island]. She was the most important person of the establishment, and moved the images by supernatural power (mana), ordering them about at her will. One day, when she was away, the workers obtained a fine lobster, which had been caught on the west coast,

and ate it up, leaving none for her; unfortunately they forgot to conceal the remains, and when the cook returned and found how she had been treated, she arose in wrath, told all the images to fall down, and thus brought the work to a standstill", a story also mentioned by Heyerdahl (1957: 88; 1958: 93) and by Skjölsvold (1961: 369). Métraux (1941: 154-155) gave a more elaborate version of the legend as told to him by the natives: "Les travailleurs de la carrière envoyaient de tous côtés des hommes pour leur pêcher du poisson et des langoustes. Ces hommes s'en furent et arrivèrent à Kikirimariu. Ils plongèrent dans le trou de la langouste. C'est là qu'étaient son corps, sa queue, ses pattes. Le plongeur sortit et dit à ceux qui étaient restés sur le rivage: "Cette grande langouste ne peut être prise, elle est trop grande." D'autres hommes vinrent et plongèrent. Ils moururent. Les jeunes gens qui avaient trouvé la langouste s'en retournèrent, s'en furent à l'endroit où ils pêchaient d'habitude, attrapèrent des langoustes et les distribuèrent aux sculpteurs. Ils firent ensuite un grand filet pour cette langouste. Ils l'achevèrent.

Six hommes et encore six hommes étaient morts à cause de cette langouste, de cette langouste à la grande queue. Les jeunes gens s'en furent à leur tour. Les gens leur répétaient: "Attention, six, puis six encore sont venus et ils sont morts." Les jeunes gens répondaient: [p. 155] "Oui, mais nous, nous tuerons la langouste." Les trois jeunes gens entrèrent dans la mer, ils nagèrent jusqu'au-dessus du trou où se tenait la langouste. Là ils disposèrent leur filet. Un des jeunes gens dit: "Je plongerai le premier, vous me suivrez et rabattrez la langouste dans le filet." Ils firent comme ils avaient dit. Le plus jeune arriva le premier, il ouvrit le filet et les autres le rejoignirent. Ils rabattirent la langouste dans le filet où ils la firent entrer. Ils saisirent le filet, ils tirèrent et le firent sortir en surface. Ils étaient trois avec la langouste quatre . . . En abordant sur la plage ils poussèrent un grand cri: "*Eeeee, ko tetu, ko te ura rarapc nuu*" (Eeeee, comme elle est longue, la langouste à la grande queue). Ils prirent la langouste et les gens vinrent l'admirer. Ensuite ils la chargèrent et l'apportèrent aux sculpteurs.

Les ouvriers appelèrent une vieille magicienne et lui dirent: "Allume le four pour cuire la langouste, car elle est grande, la langouste à la grande queue." La vieille alla allumer le feu. Elle mit à cuire aussi des patates qui sont bonnes à manger avec la langouste. Elle dit ensuite aux hommes: "Quand tout sera cuit, retirez la nourriture du four, mais laissez-moi un morceau." "C'est bien", dirent les sculpteurs.

La vieille se rendit chez son frère, où elle resta à parler. Pendant ce temps la langouste fut à point. Les sculpteurs ouvrirent le four et la mangèrent tout entière. Ils ne pensaient plus à la vieille et l'oublièrent tout à fait. Ils dévorèrent la langouste, distribuèrent ses restes et s'en retournèrent travailler.

Tokanga était le nom de la statue à laquelle ils travaillaient alors. Ils en avaient déjà sculpté les mains, le visage et le cou et ils allaient la détacher pour l'emporter sur l'*ahu* Matairai, à Vinapu.

La femme revint vers son four d'où l'on avait retiré la langouste. Il n'en restait plus que la carapace. Elle s'écria: "Ma langouste, où est-elle?" Les hommes répondirent: "Il n'y en a plus, elle est finie. On t'a oubliée et voilà pourquoi il n'en reste plus rien". La vieille magicienne fit un charme. Elle dit: "Statues qui êtes debout, tombez! C'est la faute de la grande langouste, de la langouste à grande queue dont on n'a rien laissé pour moi, vous ne volerez plus jamais ma nourriture. Statues, immobilisez-vous pour toujours!" Toutes les statues tombèrent, car le sein de la magicienne était plein de colère". This long story is cited in full not only because of the interest of the tale itself, but also because it clearly shows that with "langouste" a *Palinurid* is meant, while the story also gives indications about the capture of the species and its preparation for food. Also Brown (1924: 184, 185) in his paragraph "The king and the crayfish" told the legend of the capture of the enormous crayfish, but did not include the last part dealing with the old witch. Mazière (1965: 131) also briefly referred to it.

Native art. — Heyerdahl (1957: 200, 272; 1958: 203, 279) described small stone statues representing spiny lobsters, which were found among ancient sculptures that he discovered on the island: "a very realistic sculpture of a lobster, or to be more correct, a Pacific langouste with its legs drawn under as in nature and its feelers stretched flat along its back". These statues were said to "give power to the lobster, so that they multiply along the coast" (Heyerdahl, 1958: 203). The mention of the antennae that are stretched back along the body makes it clear that *Panulirus* and not one of the *Scyllarids* is meant. Also in the art of woodcarving the motif of the spiny lobster is used by the Easter Islanders. Métraux (1957: 147, fig. 26) figured such a lobster motif found on the head of a wooden statue; this figure, which is reproduced here as text-fig. 1, was evidently first published by Lehmann (1907) whose work I have not been able to consult. Brown (1924: 185) mentioned crayfish figures made of bark-cloth: "That the crayfish had terrors for Easter Islanders is shown by the fact that they used to make one of bark-cloth and paint it red; this *ura* having an *akuaku* in it was placed at the door to scare off trespassers".

Native name. — According to the field notes, accompanying the specimen collected by the Medical Expedition, the species is called "ura" in the Rapa Nui language of Easter Island. Thomson (1891: 550) in his vocabulary of the Rapa Nui language gave the word "ura" as meaning lobster as well as prawn, while Cooke (1899: 699) also indicated "ura" as the name of the

crayfish. Stephen-Chauvet (1935, fig. 174) in reproducing the symbols of the Easter Island hieroglyphic script gave two figures for "*Ura. Ecrevisse*" and one for "*Ura oho. Ecrevisse marchant.*" (text-fig. 2). Heyerdahl (in litt., 26 August 1965) also mentioned "ura" as the native name for lobster in general. It would be interesting to know whether the word "ura" for lobster has any connection with the word "ura-ura" which in Rapa Nui means "vermillion" (see Thomson, 1891: 547, 551).

Occurrence at Easter Island. — The early reports mentioning the presence of "crayfish" or "lobsters" at Easter Island probably refer to the present species, although there is a possibility that *Parribacus*, which also occurs rather frequently, may have been meant by some.

The first record of the occurrence of *Macrura* on Easter Island evidently is that by Gana (1870), of whose paper I only saw De Lapelin's (1872) French translation, the latter being cited here. De Lapelin (1872: 534) gave the following information about the species: "Dans les eaux qui baignent le promontoire Sud, on trouve en abondance des langoustes aussi grandes que celles de Juan Fernandez; elles sont revêtues de couleurs vives, et portent sur la partie dorsale des épines aiguës. Elles n'ont pas de grosses pattes armées de fortes pinces". This description leaves not the least doubt that a Palinurid lobster is meant and thus must refer to the present species.

Thomson (1891: 458, 524, 550), in the account of his visit to Easter Island, stated (p. 458): "A species of crayfish classified by Dr. Philippi, of Chili, as "paparchalu" is abundant. These are caught by the natives by diving into the pools among the rocks, and form an important article of food". That Thomson really meant the present species becomes more probable through his reference to "paparchalu". In a letter of 12 October 1965, namely, Dr. Nibaldo Bahamonde of Santiago de Chile was so kind to inform me that "Anteriormente el Dr. R. A. Philippi empleó para esta especie [*Panulirus pascuensis*] el nombre específico de *paschalis*, pero no me fué posible encontrar la descripción". Philippi's manuscript name "*P. paschalis*" probably was misread by Thomson, who perhaps sent material for identification to Philippi, as "Paparchalu".

Cooke (1899: 699) published somewhat later his account of the island and added interesting information about the way "crayfish" were caught by the natives (see above, p. 38). Cooke reported the species from the eastern part of the south coast of Easter Island, S.E. of Rano Raraku.

Bürger (1902), when dealing with an abnormal specimen of *Jasus frontalis* (H. Milne Edwards) remarked casually that "*Palinurus frontalis* ... soll sich auch bei den Osterinseln finden, aber es dürfte fraglich sein, ob hier nicht bereits Formen mit *lalandii*-Charakteren leben". Evidently he did not

see specimens and his remark may be based on Gana's (1870) account; Bürger's identification of the species with *Jasus frontalis* (H. Milne Edwards) or *J. lalandii* (H. Milne Edwards) therefore must be considered a mere guess. the island with her husband during a private archaeological expedition from Easter Island, it seems most probable that Bürger's record refers to it. Bürger's (1904) paper is a Spanish translation of his 1902 publication.

Mrs. Routledge (1920: 182, 232), like Métraux (1941, 1957), Heyerdahl (1957, 1958) and Skjölsvold (1961), discussed the rôle of the spiny lobster in the mythology of the island (see paragraph Mythology above). She visited the island with her husband during a private archaeological expedition from 29 March 1914 to 18 August 1915, and gave a few references to lobsters in her book, which of course is mainly dealing with the archaeology of the island.

John Macmillan Brown (1924: 184), who lived for five months at Easter Island, wrote that "the coasts of Easter Island, like those of Juan Fernandez, abound in gigantic crayfish, which are usually called in Spanish *langosta*, or lobster".

Lavachery (1935: 119) mentioned "des langoustes bleues et rouges [qui] dressent vers nous un buisson de pattes et de pinces"; these "langoustes" were obtained as food by the natives when he was camping in 1934 at Vai-tarakai-ua on the east coast of the northern promontory of the island. Métraux (1941: 61, 154-155; 1957: 57, 147-148, pl. 13), who worked together with Lavachery also made mention of "langoustes" and in the 1957 German edition of his work even a very well recognisable photographic illustration of the species is given. There cannot be any doubt about the identity of their material with the present species.

Stephen-Chauvet (1935: 31), who did not visit Easter Island himself, in a compilation of the known information concerning the island gave the following account of the Crustacea: "Autour de l'île, surtout aux environs du promontoire sud, se rencontrent, en abondance, des langoustes de grande taille; elles ont des couleurs vives et des épines sur la région dorsale, et par contre, sont démunies des grosses pinces dont les langoustes d'Occident sont pourvues. On rencontre, aussi, des oursins des crabes et divers coquillages". His description evidently is mainly based on De Lapelin's account; the large size and spiny body of his "langoustes" show that they indeed belong to the present form and not to *Parribacus*.

Hel Fritz (1953, 1953a, figs. 26-29) showed photographs of the capture of these lobsters and their preparation as food.

In 1954 Reed recognized the Easter Island Spiny Lobster as a distinct species and described it as *Panulirus pascuensis*. He remarked that the species is "muy abundante" on the island.

In a revision of the *japonicus*-group of the genus *Panulirus*, George & Holthuis (1965) gave a redescription and illustration of the species, partly based on the material cited in the present paper.

In recent descriptions of the island (Mazière, 1965; Castex, 1966; Villaret, 1970) the spiny lobster is mentioned, but little new information added.

The species is abundant and seems to occur all around the island. De Lapelin (1872: 534) mentioned it from the coast of "le promontoire Sud", Cooke (1899: 699) reported his "crayfish" from the eastern part of the south coast, Routledge (1920: 82) mentioned it from the west coast. According to Stephen Chauvet the lobsters occur all around the island but mostly so in the south. Lavachery's (1935: 119) specimens in all probability came from the N.E. of the island. Métraux (1941: 154) reported it from the coast near Kikirimariu, without indicating the position of this locality; as his specimen is the same specimen that figures in the legend reported upon by Mrs. Routledge it is probable that this locality is on the west coast. George & Holthuis (1965) dealt with a specimen from Hanga-Roa on the west coast, while the present report deals with the same and another specimen from the same locality. The other records found in the literature only mention Easter Island without a more precise indication of the locality.

Ecology and Biology. — The species inhabits rather small depths as indicated by the fact that it is taken by native divers; the only accurate depth recorded so far is that of the specimen collected by 1964-1965 Medical Expedition, which was taken at a depth of 5 m. As usual with Palinuridae they seem to inhabit crevices and holes in the rocks. Hardly anything is known about the biology of the species. An ovigerous female was collected by the 1964-1965 Medical Expedition in December, while a female collected by the "Mercator" Expedition, likewise in December, is provided with a spermatophore.

Mazière (1965: 196) remarked on the stridulating sound produced by the species: "Les main chargées de langoustes qui, tout en se débattant, émettent un son étrange, si étrange dans ce silence...".

Distribution. — So far, the species is only known from Easter and Pitcairn Islands (vid. George & Holthuis, 1965).

SCYLLARIDAE

***Parribacus perlatus* Holthuis, 1967 (pl. 1)**

"Languster" Heyerdahl, 1957: 272.

"Hummer" Heyerdahl, 1957: 276.

"Lobster" Heyerdahl, 1958: 270, 274.

Parribacus perlatus Holthuis, 1967: 305.

Material examined. — La Perouse Bay, northeast coast of Easter Island; 16 March 1956; 1955-1956 Thor Heyerdahl Expedition. — 2 ♀ cl. 44 and 48 mm.

Anakena, north point of Easter Island; in sand among rocks; 30 December 1964; leg. Korike Palte; 1964-1965 Medical Expedition. Sta. M 7. — 1 ♂ cl. 40 mm, 1 ♀ cl. 43 mm.

Easter Island; 19 January 1965; I. E. Efford and Jack A. Mathias; 1964-1965 Medical Expedition, Sta. F. 90. — 1 ♀ cl. 53 mm (holotype).

Description. — The carapace is far rougher than in the closely related species *P. scarlatinus* Holthuis and *P. calcedonicus* Holthuis. The squami-form tubercles on the dorsal surface of the carapace are not rounded and appressed, but are more pointed and more erect. The rostrum shows a very distinct sharp dorsal tooth. In the midline of the carapace behind the rostral tooth there are four more teeth before the cervical groove, the last three of these are placed rather close together. The cardiac tooth is distinct, erect and rather sharp, behind it there are four groups of two submedian teeth, which are somewhat blunter and sometimes not very distinct. The teeth on the orbital margin are sharply pointed. The distance between the orbits is 2.4 to 2.5 times as great as the distance between each orbit and the nearest anterolateral angle of the carapace.

The posterior of the two lateral teeth of the carapace, that are placed before the cervical incision, is only slightly less strong than the anterior. Behind the cervical incision the lateral margin bears 6 large teeth.

The posterior marginal groove of the carapace is rather narrow, behind it there are numerous rounded squamae, which are placed in two transverse rows of bigger ones in between which smaller squamae or tubercles are scattered. The smaller squamae are more numerous and less different in size from the larger than in *P. scarlatinus*.

The first abdominal somite is smooth dorsally in the middle, with rather distinct semi-circular impressions, some of which even may carry fringes of short setae. Actual tubercles are present along the transverse groove in the lateral part of the somite. In the second to fifth somites, the anterior part, which disappears under the previous somite when the body is fully stretched, bears several flattened tubercles. The posterior of these are largest and give the posterior margin of this part of the tergum a crenulated appearance. The anterior tubercles are much smaller; some have a fringe of short hairs. The groove between the anterior and the posterior parts of the second to fifth abdominal somites is narrow and entirely filled with short hairs and tubercles. The median carina of these somites is low and practically flush with the surface of the rest of the somite, only in somites 2 and 3 the anterior part of the carina is elevated and is acute in lateral view. The tubercles of the somite are as in *P. scarlatinus*, only the small tubercles are relatively more

numerous and larger. The hairy fringes around the larger tubercles are rather long and they entirely cover the transverse grooves of the posterior part of the somites.

The distal segment of the antenna bears 8 large sharply pointed distal teeth and one inner tooth; at the outer margin 3 small teeth are present. The distal teeth are less slender than those of *P. scarlatinus*. The inner margin of the fifth (= penultimate) segment of the antenna ends in two distinct teeth, the posterior of which is almost as strong as the anterior. The outer margin of the fourth segment bears six teeth (the antero-lateral tip of the segment not included), while the anterior margin shows two or three teeth. The upper surface of this segment bears scattered flattened tubercles which anteriorly end in a sharp tip that is pointed obliquely upward.

The anterior margin of the epistome bears 6 to 9 teeth, of which the median and external pairs are the largest.

The pereopods are definitely less slender than those of *P. scarlatinus* and resemble those of *P. caldonicus*.

The sternum shows at the posterior margin of the sternites of the second and third pereopods a very distinct median pearly tubercle, which is sharply set off from the rest of the sternum. These tubercles are far more conspicuous than in the other species of the genus. Between the sternites of the fourth and fifth pereopod there is the usual deep pit. The sternite of the fifth pereopod is peculiar in that it shows two distinct submedian tubercles in the middle of its length; these tubercles are much smaller than the median tubercles in the anterior part of the sternum. Furthermore there is one tubercle in each lateral part of the last thoracic sternite, which with the two submedian tubercles form a single transverse row; the lateral tubercles are often continued anteriorly as a short carina. The tubercles of the sternum are found both in the male and female. In the male the sternite of the fifth pereopod is narrower than that of the fourth, but the difference is less conspicuous than in *P. scarlatinus*.

The pleopods are of the normal type: the first abdominal somite bears no appendages in either sex. In the male the pleopods of the second to fifth somites have an elongate endopod and exopod; they diminish strongly in size from the second to the fifth. The pleopods of the second abdominal somite of the female have a large foliaceous endo- and exopod, without appendices. In the following somites the pleopods are smaller, but the endopod bears a narrow appendage at the top.

The female of Sta. F. 90 bears a large transverse dark mass, evidently the spermatophore, which covers practically the whole of the first abdominal sternite.

Colour. — All the specimens examined are preserved in alcohol. Though they have been preserved for periods of different length (since 1956 and 1965) the general impression of the colour is the same. The whole body has a brownish red to red colour with paler (yellowish white) spots. The carapace is more brownish red because of the brown pubescence. The tips of the lateral teeth of the carapace are whitish. On the carapace there are irregular pale areas in which, because of the pubescence, especially the tubercles that break through the pubescence are conspicuously whiter than the rest. The posterior area behind the marginal groove is red with a few whitish tubercles. The first abdominal somite shows five large reddish spots in the posterior half, touching the posterior margin. The anterior part of the segments bears about 8 to 10 smaller spots, which are irregular and partly fused with each other and with the posterior spots. These spots are not sharply delimited and set off from each other as in *P. holthuisi* Forest. The following somites are red with whitish spots. About four not sharply defined pale spots are present in the anterior half of the somites, while 5 to 8 small pale spots are to be found along the posterior margin of each tergite. The tips of the pleura are white. The distal segments of the antenna are red, also the teeth are red, although the tips are paler. A sharply defined whitish spot is present at the base of the inner five distal teeth of the last segment and of the distal 5 lateral teeth of the fourth segment. Irregular whitish spots are present on the rest of the upper surface of the fourth and sixth segments. The lower surface of the sixth (= distal) segment shows a large spot in the inner part; small pale spots are present here also at the bases of the teeth of the fourth and sixth segments. The legs are banded. The dactylus has the base red, the tip horn-coloured, with a whitish band in between. The propodus has a basal red band, which is inconspicuous or absent in the last legs, and a broad red band over the middle. The carpus has a broad red band and the merus has two, the distal of which is the more distinct. Heyerdahl (1958: 270) described the animals as "big red fellows".

Size. — The carapace length of the examined females ranged between 43 and 53 mm. The largest female is the holotype, it bears a spermatophoric mass. The only male examined has cl. 40 mm.

Remarks. — The species differs from *P. scarlatinus* in the rough and spinulose carapace, the tubercular anterior half of the abdominal somites, the elevated anterior part of the median dorsal carinae of the second and third abdominal somites, in the less slender teeth of the distal segment of the antenna, in the less slender legs and in the ornamentation of the sternum. From *P. caledonicus* it likewise differs in the scabrous carapace and the carina of the second and third abdominal somites, further by having only

six lateral teeth on the fourth segment of the antenna, and by the shape of the sternum.

Economic importance and fishery. — The fishery for this species by the natives of Easter Island has been described by Heyerdahl (1958: 270) as follows: "Some of our men had been out by moonlight the night before with native girl friends catching rock lobsters. This was one of the island's great delicacies: it is really a big lobster without claws. Our frogmen could often spear it in underwater caves, but the simplest way was to wade breast-high in the water along the shore at night with flaming torches. The native vahines (girls) were very skilful at this. They trod on the great creatures and held them fast with their toes till they could plunge down to pick them up and put them in a sack. That evening the cook had twenty-one big red fellows in his pot . . ."

Dr. Heyerdahl (in litt., 26 August 1965) informed me that "The "ura" was caught by the natives both at night and in plain sunlight, nearly always by the native stepping on the animal with one foot and then picking it up by grasping the body with his hand. Sometimes the "ura" was caught in deep water by divers swimming along the cliffs grasping into the recesses in small submarine caves where they can be quite common. At night the "ura" is caught with the aid of torches, and the native men or women then usually go together in pairs, one carrying the torch and stepping on the crayfish which is attracted by the light, while the other picks it up and puts it in his container, usually a sack. According to the natives the best time for catching crayfish is when the wind turns against the shore. If this is correct or merely superstition, I cannot say from my short experience".

Brown (1925: 28, 184, 187) made a clear distinction between the capture of crayfish by diving by the men, evidently in the day time, and the collecting of "a different kind of crustacean" at night by the women, for which the latter carry small baskets. It seems possible that apart from crabs (see Brown, 1924: 187), the "different kind of crustacean" also include *Parribacus*.

It is possible that some of the older records of lobster fishery dealt with in the present paper under *Panulirus pascuensis* actually concern, though perhaps partly, *Parribacus*.

Native name. — According to field notes made by Dr. I. E. Efford the species is named "Rape Rape" in the Rapa Nui language of Easter Island. This term, however, clearly indicates Scyllaridae in general as it is also given to *Scyllarides roggeveeni*. The Spanish name given to the species at Easter Island according to Dr. Efford is Lancotina, which possibly is derived from the Spanish Langostino, a word used by Spanish speaking people all

over the world to indicate large macruran Crustacea, although it is given to different species in different areas: in Spain it is used for *Nephrops*, in Argentina for *Hymenopenaeus*, in Chile for *Cervimunida*. Heyerdahl (in litt., 26 August 1965) stated that "the Easter Island lobster, frequently referred to as "crayfish" in English and always as "langosta" in Spanish, is termed by the local natives as "ura raperape" or simply "ura".

Occurrence at Easter Island. — It seems that of the three species of lobster known so far from Easter Island, *Parribacus perlatus* is the one which comes closest inshore and therefore is commonly caught by the natives. During the Medical Expedition *Panulirus* was caught with a gill net and *Scyllarides* with a trap, while at least 2 of the 3 *Parribacus* were caught by Easter Islanders. Dr. Heyerdahl (in litt., 26 August 1965) informed me that "As far as I can recall I did only see one kind of lobster on Easter Island, i.e. the *Parribacus* with the indented edges but few and modest, if any, spines on its back". The species of which the native fishery was described by Heyerdahl (1957: 272; 1958: 270) also is this species, as is clear by the fact that it is caught by stepping on it with bare feet, something not easily done with *Panulirus*. The specimens collected by Heyerdahl for the Oslo Museum came from La Perouse Bay in the N.E. part of the island. The material collected by the 1964-1965 Medical Expedition also originates from the N.E. of the island, namely from Anakena.

***Scyllarides roggeveeni* Holthuis, 1967 (pl. 2)**

Scyllarides roggeveeni Holthuis, 1967: 306.

Material examined. — Hanga-piko, southern part of the west coast of Easter Island; in trap; 3 January 1965; 1964-1965 Medical Expedition, Sta. F. 64. — 1 ♂ cl. 111 mm.

Description. — The carapace is quadrangular, it is 1.07 times as long as wide. The rostrum is T-shaped, with the anterior margin crenulate. The inner orbital margin shows three low and blunt teeth, which are larger than the tubercles of the margin. The teeth are angular; only the anterior is somewhat pointed, it is the smallest of the three. The lobe at the inner orbital angle is rounded and crenulate. The intercalated plate is large, it closes the anterior opening of the orbit entirely and extends beyond the outer angle of the orbit, which it covers anteriorly. The pregastric and gastric elevations are distinct, though blunt and rather low; they are far more conspicuous than in *S. astori* Holthuis. The tubercles on these elevations are of about similar size. The cervical, branchial and post-cervical grooves are very distinct, they are deep and wide. The marginal groove is sharp and narrow, it shows as a

smooth sunken line. The anterolateral angle of the carapace is formed by a single tooth, which is distinctly surpassed by the anterior margin, the anterolateral angle thereby is rather inconspicuous. The cervical incision of the lateral margin is shallow; though it is not very distinct, it is clearly discernible. The tubercles on the upper surface of the carapace are rounded and somewhat flattened, they are surrounded by very short stiff hairs, which do not obscure the tubercles at all.

The first abdominal somite is smooth except for the lateral parts of the posterior half where some flattened tubercles are visible. The smooth area shows in each lateral part a distinct circular red spot, in the middle there is an indication of a very irregular third spot. The pleura of the first abdominal somite are short and bilobed; the anterior lobe is broad and rounded, the posterior lobe is narrow and triangularly pointed. The posterior half of the second to sixth somites has a tuberculation similar to that of the carapace. The anterior half, i.e. the part that disappears under the previous somite in the fully stretched animal, is also tuberculate, but the tubercles are smaller and flatter. In the second to fourth somites the median part of the tergite is formed to a blunt but distinct elevation, which is highest in the fourth, and lowest in the second somite. In the fourth somite it is hump-like, dropping down rather abruptly at the posterior end. In the presence of these elevations the present species differs conspicuously from *S. astori*. The fifth somite has a blunt median posterior tubercle which is preceded by the indication of a median carina. The pleura of the second somite end in several large anterior teeth, the posterior teeth are much smaller; in the basal half of the posterior margin of these pleura there is a large blunt tooth, distally of which the margin is concave. In the pleura of the third somite the anterior margin is concave and minutely crenulate, the top shows a few shallow blunt teeth, while the posterior margin has a number of distinct narrow teeth. In the fourth and fifth somites the anterior and posterior margins of the pleura are almost straight or slightly convex; the anterior margin is slightly crenulate, the posterior shows more distinct teeth.

The end of the second segment of the antennular peduncle reaches to the distal margin of the fifth segment of the antenna.

The distal (= 6th) segment of the antenna has the angles very widely and shallowly rounded, the anterolateral tooth is hardly noticeable. The inner margin of the fifth segment shows two large teeth, as does also that of the fourth segment; these teeth are curved vertically upwards. The anterior margin of the fourth segment bears one distinct tooth in the inner part, between it and the tip of the segment the margin is crenulate. The outer margin shows one or two very inconspicuous teeth.

The lateral teeth of the epistome are large and triangular, a deep and wide triangular incision separates them from the still larger submedian teeth.

The propodus of the first pereopod has a distinct and sharp dorsal carina. The carpus shows a dorsal longitudinal groove, which is not flanked by carinae. A small blunt antero-dorsal tooth is present. The merus bears a high wing-like carina which ends distally in a sharp tooth. At either side of the base of this carina the anterior margin of the merus bears a triangular lobe. The outer antero-ventral angle of the merus is bilobed, the lower lobe forming a large blunt tooth. The propodus of all following legs bears a distinct dorsal carina. A double carina is present on the carpi of the second to fifth pereopods, those of the posterior legs being more distinct than those of the anterior. In all legs the merus has a high wing-shaped dorsal carina which anteriorly ends in a tooth; this carina is highest in leg 2 and diminishes in height towards the fifth leg. The meri of legs 4 and 5 have a distinct longitudinal carina along the lower edge of the outer surface; in the fifth leg there is a blunt tooth on this carina. The coxae of legs 4 and 5 bear a distinct external process; in leg 4 this is a simple lobe, in leg 5 it is tridentate with a longitudinal median carina.

The sternum is narrow, it is deeply sunken in the anterior part of the sternites. A strong dark-topped tubercle is placed near the base of each leg.

The pleopods of the second abdominal somite are well developed with the two branches large and lamellar. In the following somites the endopod is reduced to a short process; the exopod in somite 3 is much shorter than and about half as wide as that of somite 2, in the following somites the exopod becomes smaller and in somite 5 it is practically as large as the endopod. The sternite of abdominal somite 2 is regularly serrated without a deep median incision.

Colour. — The colour of the preserved specimen is pale reddish brown mottled with yellowish brown. Two distinct red spots are placed behind the cervical groove just to the inside of the branchial grooves. The colour of the first abdominal somite has already been described above. The eyestalks are red with faint indications of narrow longitudinal pale lines.

Remarks. — This species finds its closest ally in *Scyllarides astori* from the Galapagos Archipelago. It differs from that species in the first place by the distinct hump on the fourth abdominal somite and the smaller humps on the second and third. Furthermore by the rougher carapace, the more pronounced pregastric and gastric elevations, and the deeper grooves of the carapace. The cervical incision of the lateral margin of the carapace is more pronounced. Also the colour pattern of the first abdominal somite is different; in *S. astori* there are many smaller spots between the two large

lateral ones, these smaller spots are rather uniformly distributed over the area between the larger, while there is furthermore a faint indication of a large reddish median spot which is superimposed over the smaller spots in the median area. In *S. roggeveeni*, between the lateral spots there are no red spots except for an irregular median one and 5 or 7 small ones along the posterior margin of the somite.

Native name. — According to information on the field label, the vernacular name of this species in the Rapa Nui language of Easter Island is "Rape Rape", being the same as that for *Parribacus perlatus* Holthuis. The name therefore evidently is one for slipper lobsters in general.

Scientific name. — The present species is named after Mr. Jacob Roggeveen (born January 1659 in Middelburg, died February 1729 also in Middelburg), a lawyer from Middelburg, province of Zeeland, Netherlands, who at the age of 62 undertook the command of an exploring expedition for the Dutch West India Company and on Easter Sunday, 5 April 1722, discovered the island which he named Paasch Eyland (= Easter Island).

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Plate 1

Parribacus perlatus Holthuis, holotype ♀. 1, dorsal view; 2, ventral view.
× 1.3.

Plate 2

Scyllarides roggeveeni Holthuis, holotype ♂. 1, dorsal view; 2, lateral view. × 0.5.

