

## NOTES ON LOBSTERS FOUND IN

### TAIWAN (FORMOSA)

by

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The systematic study of lobsters of Taiwan was only found in Maki and Tutiya's "Illustrated Description of the Taiwan Decapods, Report of Agriculture Bureau of Taiwan., No. 3. 1923." Five species in a single genus of Family Palinuridae were presented. The present author in his study of Taiwan edible crustaceans took several collecting trips to Keelung, Su-ao and Tung kang from April to August, 1964. Among the specimens he collected, *Panulirus longipes*, and *Linuparus trigonus* are new to Taiwan.

The author wishes to express his grateful thanks to Professor Johnson T.F. Chen for his guidance and encouragement throughout this study. He also is indebted to Mr. Li Ming-liang and Mr. Yang Wen-chung for their help in measuring and drawing figures of the specimens.

#### *Panulirus ornatus* (FABRICIUS)

Carapace usually cylindrical and spiny. Supraorbital spine strong, colored with six or seven white cross bands. Frontal plate between basal segment of second antennal peduncles with two pairs of prominent spines, much smaller than those in *P. versicolor*. Cervical suture and groove on posterior margin of carapace very distinct, but narrower than those in *P. versicolor*. Abdominal tergum without transverse groove. Third maxilliped without exopodite, second maxilliped with exopodite, its tip without flagellum.

Walking legs strong, first pair shortest but robust, third pair longest.

Ground color grey brown. Walking legs decorated with yellow spots of various size. First antenna with six transverse light colored bands on inner flagellum and four on outer flagellum. Abdomen with dark band from second segment to fifth segment on dorsal surface; its lateral margin with two light colored patches from second to fourth segments, only one found on remaining segments. The largest species, usually reaching 2 kg., may attain 6 kg.

Distribution: Tung kang, Pescadores and along the east coast from Su-ao to Keelung.

Seasons: All year round. Caught by trawl net or diving. Most abundant from March to October.

Retail price: Cheaper than other species, its flesh coarser and containing less oil.  
From NT\$ 20 to NT\$ 40 per kg.

*Panulirus ornatus* (FABRICIUS)

Sex	♂
Body length	24.3 cm
Length of carapace	10.2
Breadth of carapace	6.0
Length of abdomen	14.1
Length of telson	4.7
Walking legs: first pair	11.2
second pair	12.5
third pair	15.2
fourth pair	13.7
fifth pair	12.5
First antennal peduncle	7.5
Second antennal peduncle	7.2
Second antennal flagellum	34.4

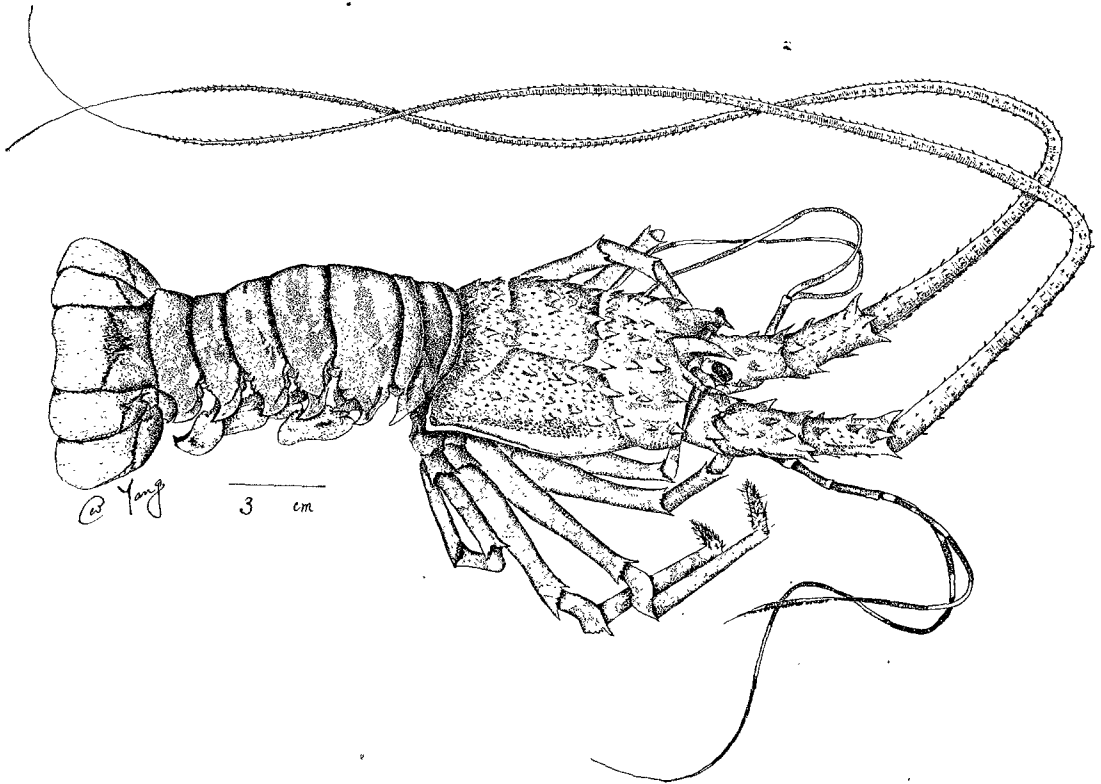


Fig. 1. *Panulirus ornatus* (FABRICIUS)

*Panulirus versicolor* (LATREILLE)

Carapace cylindrical, armed with various sizes of spines, its tip black. Supraorbital spine stronger and more curved than any other species of same genus found in Taiwan. Frontal plate armed with two pairs of spines, the anterior one slightly larger. Cervical suture and groove found on posterior margin of carapace deep and broad. Surface of infero-lateral margin smooth. Tergum of abdomen without transverse furrow on each somite.

Third maxilliped without exopodite. Exopodite of second maxilliped with flagellum. Walking legs strong, first pair most robust, third pair longest.

Ground color reddish, decorated with purplish blue patch and irregular white line. Dorsal surface of abdomen colored with central white band and marginal dark blue on posterior margin of each segment. Peduncle of first antenna, walking leg and swimmeret also with longitudinal white lines.

Distribution: Most abundant species in Taiwan. Along the east coast from Su-ao to Keelung, Tungkang and Pescadores.

Seasons: All year round. Most abundant in spring.

Retail price: NT\$ 40 to NT\$ 60 per kg. during spring and summer. NT\$ 60 to NT\$ 90 in the fall.

Sex	♂	♀	♀	♀
Body length	27.3 cm	29.5 cm	18.7 cm	16.1 cm
Length of carapace	11.6	12.1	7.9	7.0
Breadth of carapace	7.1	7.9	4.9	4.2
Length of abdomen	15.7	17.4	10.8	9.1
Length of telson	5.2	6.3	4.2	3.4
Walking legs: first pair	15.7	14.9	9.6	7.7
second pair	17.6	15.9	11.5	9.3
third pair	21.6	19.5	15.8	10.6
fourth pair	18.5	17.9	12.4	10.1
fifth pair	16.3	15.1	10.2	8.8
First antennal peduncle	10.2	9.7	6.8	6.1
Second antennal peduncle	9.3	9.2	6.2	5.4
Second antennal flagellum	55.6	41.0	39.5	41.3

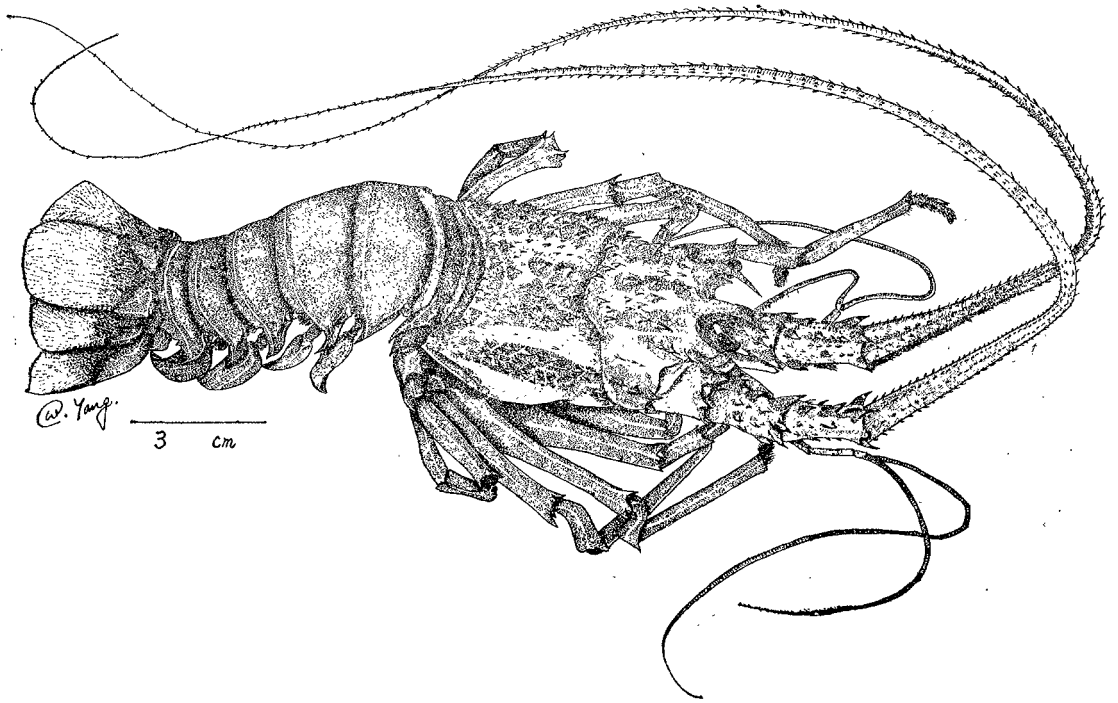


Fig. 2. *Panulirus versicolor* (LATREILLE)

*Panulirus longipes* (A. MILNE EDWARDS)

Carapace cylindrical, covered with spines of various sizes. Small spines fringed with cluster of short hairs. Inferolateral margin granulated and defined by white line. Frontal plate above armed with one pair of large spines and seven pairs of smaller ones, of which, one pair located at antero-central margin, second pair at antero-lateral angle, remainder found behind largest pair of spines. Lower side of frontal plate armed with three larger spines and about fourteen smaller spines. Spine on infero-interior border of first segment of second antennal peduncle located next to larger spine on lower surface of frontal plate. This characteristic only found in this species and *P. penicillatus*. Similar case in *P. japonicus* forms rounded tubercle instead of sharp spine. Peduncle of first antenna very long, its first segment almost reaching peduncle of second antenna. Abdominal tergum with straight transverse furrow on each segment. Both second and third maxillipeds with exopodite having long flagellum. First pair of walking legs strongest and second pair longest.

Carapace grey brown, dorsal surface of abdomen dark purple and green, scattered with many small spots of orange color. Walking leg grey purple with three to four orange longitudinal threads, of which one on dorsal surface most prominent.

Distribution: Along the east coast between Su-ao and Fu-lung, Keelung, Tungkang, Pescadores.

Seasons: A rather rare species, usually caught by trawl net and diving. More abundant from March to October.

Retail price: NT\$ 40 to NT\$ 60 per kg. in spring, NT\$ 60 to NT\$ 90 per kg. in late summer.

Sex	♂	♂	♂
Body length	21.5 cm	19.3 cm	17.0 cm
Length of carapace	8.8	8.1	7.1
Breadth of carapace	5.3	4.7	4.1
Length of abdomen	12.7	11.2	9.9
Length of telson	4.0	3.9	3.3
Walking legs: first pair	15.1	11.8	9.6
second pair	18.5	14.2	11.3
third pair	17.3	14.0	11.8
fourth pair	14.2	12.0	10.2
fifth pair	12.1	10.2	9.1
First antennal peduncle	6.6	7.1	5.7
Second antennal peduncle	6.5	6.0	4.8
Second antennal flagellum	31.3	31.1	31.0

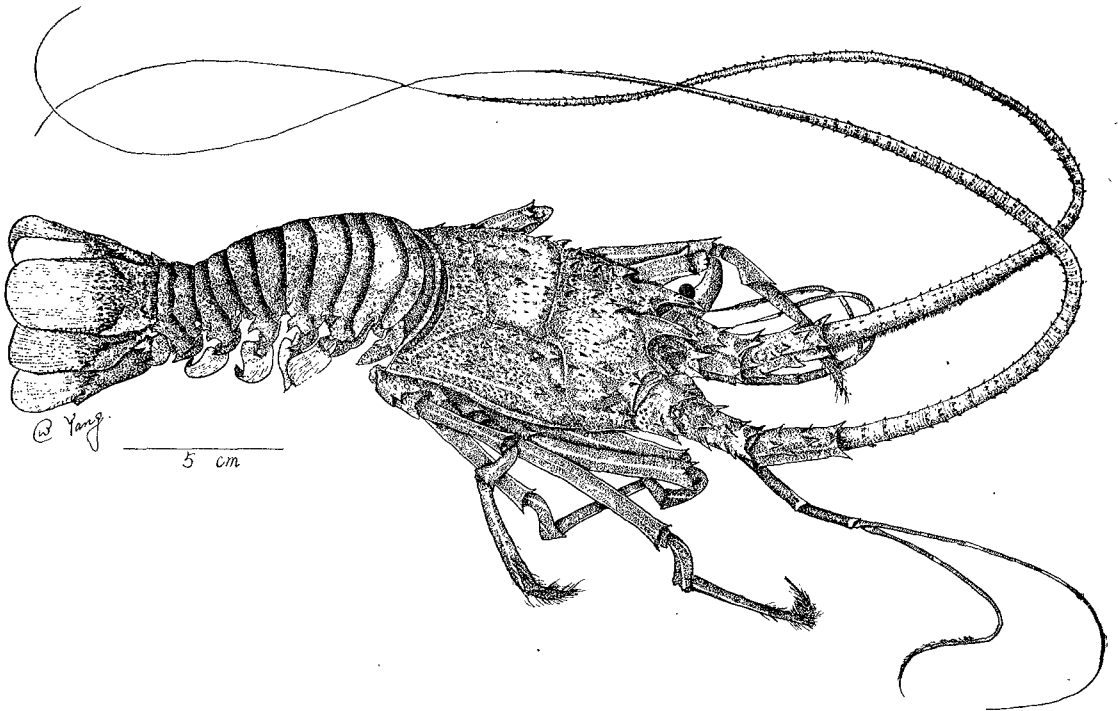


Fig. 3. *Panulirus longipes* A. MILNE EDWARDS

*Panulirus dasyopus* (LATEILLE)

Carapace surface covered with spines and clusters of short hairs, more crowded on lateral region just above branchial region. Branchial region smooth and naked. Frontal plate above with two pairs of large spines and two to three pairs of very small spines at central region and its lower side armed with three spines on free margin, one to three small tubercles between central and lateral spines, fewer in females. Abdominal tergum relatively rough marked with many small pits scattered around transverse furrow; margin of furrow dentate. No exopodite on third maxilliped. Exopodite of second maxilliped without flagellum. Third pair of walking legs longest.

Carapace decorated with reddish brown and green. Posterior margin of each abdominal tergum more green, its lateral border with white circular spot. First antennal spine with six light colored cross bands.

Body weight around 1.5 kg.

Distribution: A common species at Su-ao.

Seasons: All year round, most abundant from March to October.

Retail price: NT\$40 to NT\$60 per kg. in spring and summer. NT\$60 to NT\$90 per kg. in late summer and in the fall.

Sex	♂	♂	♀	♂
Body length	21.6 cm	21.0 cm	19.8 cm	10.4 cm
Length of carapace	9.5	9.1	8.1	5.6
Breadth of carapace	5.5	5.1	4.9	3.4
Length of abdomen	12.1	11.9	11.7	4.8
Length of telson	4.0	4.0	4.3	2.8
Walking legs: first pair	10.0	9.5	8.5	5.8
second pair	11.6	10.4	10.0	7.0
third pair	14.4	12.6	11.5	8.0
fourth pair	12.8	11.7	11.0	7.2
fifth pair	10.5	9.3	8.5	5.8
First antennal peduncle	6.1	5.5	5.4	3.8
Second antennal peduncle	6.2	5.3	5.4	3.7
Second antennal flagellum	4.70	4.60	4.10	—

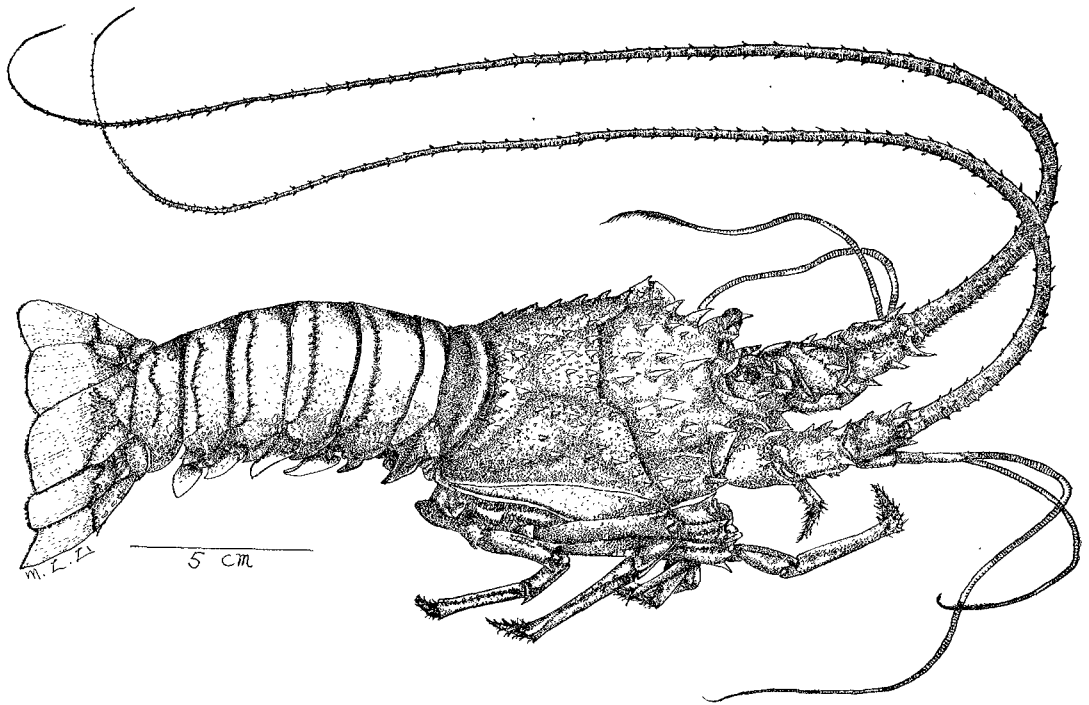


Fig. 4. *Panulirus dasyopus* (LATREILLE)

*Panulirus penicillatus* (OLIVIER)

Carapace cylindrical, spiny clusters of hairs around smaller spines. Frontal plate armed with four spines above, very close together at base and on lower surface with three larger spines and three to four smaller spines on anterior margin. Spine found on inferointerior surface of first segment of second antenna as in case of *P. longipes*. Lateral margin tuberculated but smooth on foremost anterolateral region. First antennal peduncle shorter, as long as second antennal peduncle, its joint between first and second segments directed outwards. Abdominal tergum grooved. Third maxilliped with exopodite, its tip with short flagellum. Second maxilliped also with exopodite having very long flagellum on its tip. Third pair of walking legs slightly longer than second pair.

Body reddish brown, dorsal surface of abdomen darker. Lateral margin of carapace and first antennal peduncle with two longitudinal light colored lines; walking legs with four such lines. Body length attains 20 cm.

Distribution: Keelung, Anping, Tungkang, Pescadores, and the east coast from Su-ao, Ta-li, to Fulung.

Seasons: All year round, most abundant from March to October. It is easily caught in fine weather.

Retail price: NT\$ 40 to NT\$ 60 per kg. during spring and summer. NT\$ 60 to NT\$ 90 in the fall.

Sex	♂
Body length	14.9 cm
Length of carapace	8.0
Breadth of carapace	5.1
Length of abdomen	6.9
Length of telson	3.4
Walking legs: first pair	9.2
second pair	9.9
third pair	11.4
fourth pair	9.7
fifth pair	8.2
First antennal peduncle	4.1
Second antennal peduncle	4.9
Second antennal flagellum	27.0

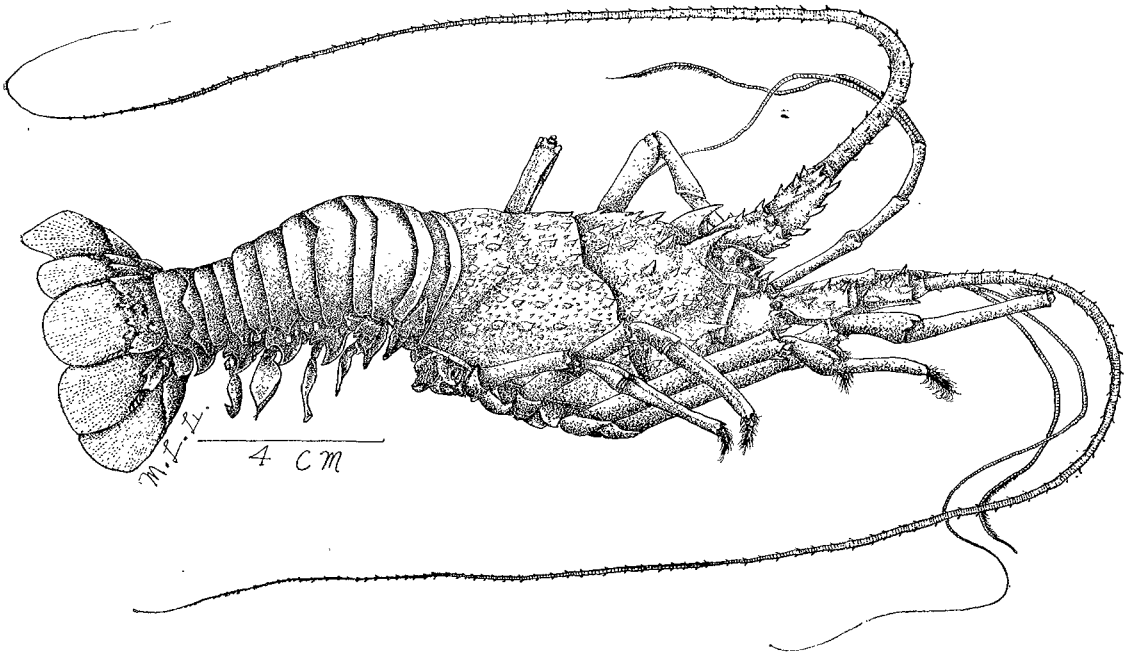


Fig. 5. *Panulirus penicillatus* (OLIVIER)



*Panulirus japonicus* (VON SIEBOLD)

Carapace covered with spines and cluster of hairs. Spines more slanted than other species of same genus found in Taiwan. Frontal spines with one large pair and one smaller pair anterior to it. Lower surface of frontal plate armed with usual three larger spines and four smaller ones. Lateral margin of carapace covered with crowded small tubercles. A transverse furrow found on each segment of abdominal tergum, its margin entire. First antennal peduncle very long, its first segment not beyond second antennal peduncle. Both third and second maxilliped with exopodite and long flagellum on its tip. Second pair of walking legs longest.

Body color dark brown or dark purple. Second antennal flagellum and walking leg decorated with longitudinal lighter colored lines.

Body length from 20cm to 30cm.

Distribution: Keelung, Tungking, Pescadores and on the east coast from Su-ao to Fulung.

Seasons: All year, most abundant from March to October.

Retail price: NT \$45 to NT \$65 per kg. in spring and summer, more expensive in the fall, sometimes the price up to NT \$100 per kg. This species having thinner carapace, its flesh most delicious.

Sex	♂
Body length	26.6 cm
Length of carapace	11.0
Breadth of carapace	6.4
Length of abdomen	15.6
Length of telson	4.1
Walking legs: first pair	12.7
second pair	22.3
third pair	18.0
fourth pair	14.5
fifth pair	11.7
Second antennal peduncle	6.0
Second antennal flagellum	35.0
First antennal peduncle	8.1

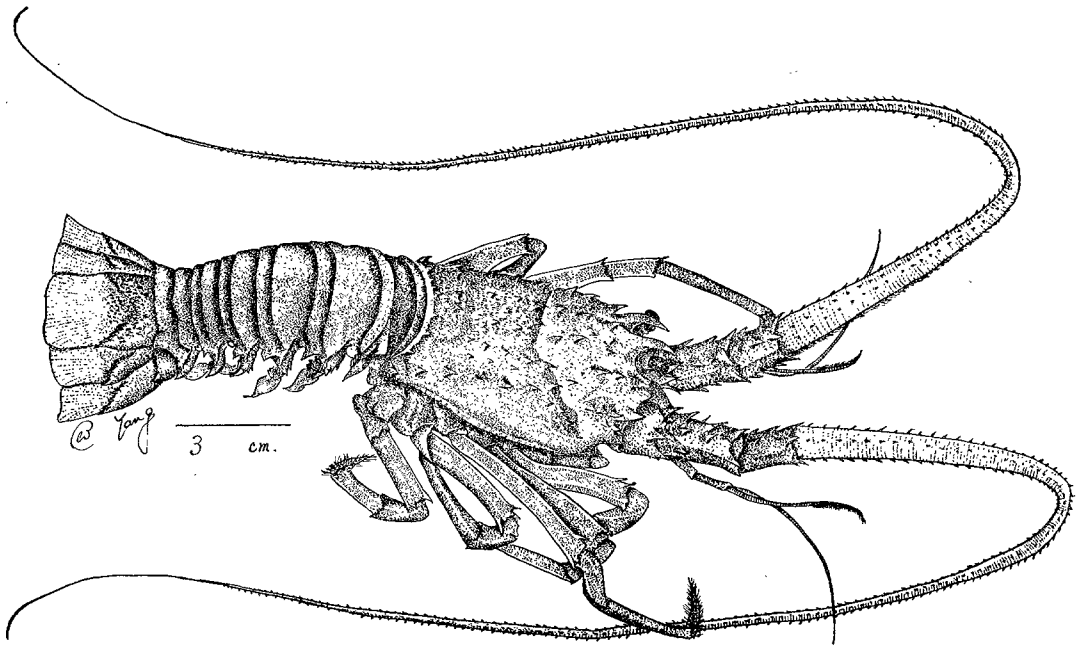


Fig. 6. *Panulirus japonicus* (VON SIEBOLD)

*Linuparus trigonus* (VON SIEBOLD)

Surface of body entirely covered with granules and tubercles. Cephalothorax of carapace rectangular, clearly divided into cephalic and thoracic parts by V-shaped cervical suture. Cephalic part of carapace uneven, and marked with about seventeen tubercles: series of four on either side beginning from base of rostral spine running posteriorly to cervical suture, three transverse tubercles located somewhat behind rostral spines, central one followed by two longitudinal ones, remaining four located posterior region in pairs. Anterior margin each armed with two teeth and lateral margin of cephalic carapace armed with three teeth including antero-lateral angle. Thoracic carapace margin forming clear angle which differs from *Panulirus* genus, its surface with triangular elevation. Three rows of tubercles on thoracic carapace, central row consisting of three to nine tubercles and lateral rows, each with nine to ten tubercles. Front narrow, armed with two triangular spines, each spine further cut into three small teeth. Peduncle of first antenna, not exceeding peduncle of second antenna, its flagella very short. Second antenna very strong, first segment of peduncle expanded and contacting each other on inner surface; flagella with groove on upper and lower surface and furnished with dense hairs in inner margin. Eye stalk robust, cornea beamshaped, small.

First four pleonic somites with central keel, transverse groove and two spines on each tergum, except first somite having only one spine. Sixth pleonic segment grooved. Pleuron armed with three spines on lower free margin.

Distribution: Ta-li, Shih-chen, Tungkang. More abundant at Tungkang.

Seasons: Very rare species, occasionally found during spring and summer.

Retail price: About NT \$10 per kg. Cheaper because of coarse flesh, thick shell and slender body.

Sex	♀	♂
Body length	27.2 cm	46.6 cm
Length of carapace	12.2	17.5
Breadth of carapace	6.1	8.1
Length of abdomen	15.0	29.1
Length of telson	4.8	7.8
Walking legs: first pair	12.6	18.4
second pair	14.6	21.2
third pair	14.6	19.9
fourth pair	14.0	17.7
fifth pair	11.2	18.3
First antennal peduncle	6.1	8.9
Second antennal peduncle	6.9	9.8
Second antennal flagellum	—	—

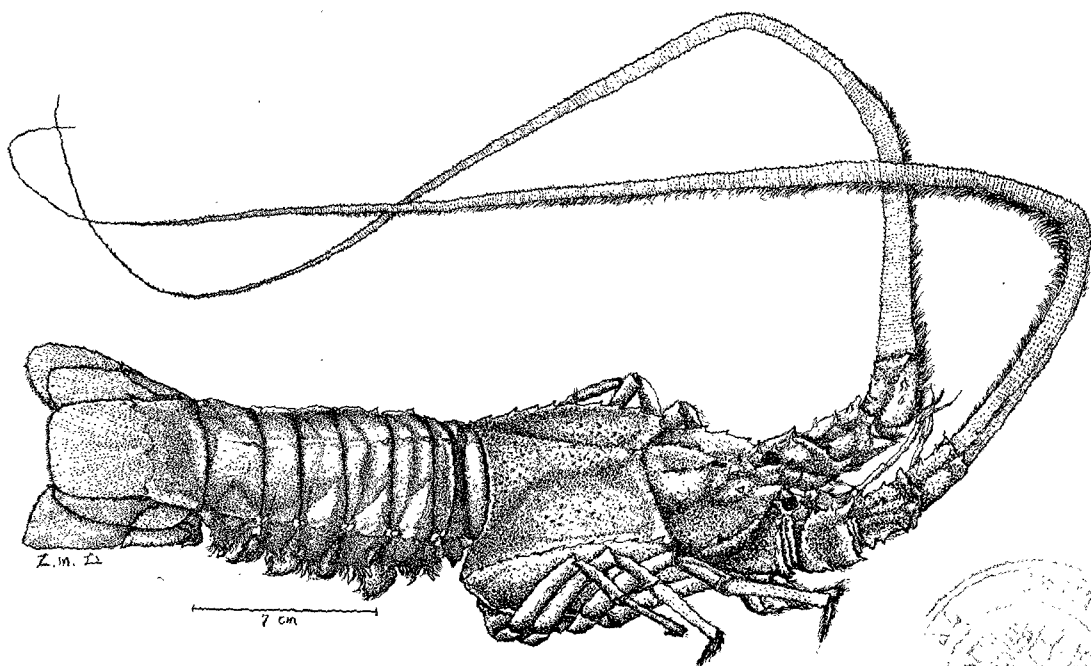


Fig. 7. *Linuparus trigonus* (VON SIEBOLD)



## 臺灣產龍蝦科報告

張正明

日人牧茂市郎與土屋寬在其「臺灣產十脚類圖說」中記載臺灣產龍蝦五種。筆者於民國五十三年四月至八月調查臺灣食用蝦蟹類時，計採得龍蝦七種，其中 *Panulirus longipus* 與 *Linoparus trigonus* 爲新記載種。