

**REVISION OF THE INDO-PACIFIC *SPHENOCARCINUS* WITH A SINGLE ROSTRUM AND DESCRIPTION OF TWO NEW SPECIES (CRUSTACEA, DECAPODA, BRACHYURA, MAJIDAE)**

*by*

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ABSTRACT

Two species of the genus *Sphenocarcinus* A. Milne Edwards 1876, with a single rostrum exist in the Indo-Pacific and they are principally only known by their original description: *S. cuneus* (Wood-Mason 1891) and *S. aurorae* Alcock 1899. Each species is herewith redescribed, based on the examination of the types. Two new species are established. *S. difficilis* sp. nov., represented by numerous specimens from Madagascar (ORSTOM collection), proved to be an intermediate species between *S. cuneus* and *S. aurorae*. *S. pinocchio* sp. nov., (collected in the Makassar Strait, Indonesia (mission Corindon II), is characterized by its very long and strongly curved rostrum. One male specimen, also collected in the Makassar Strait, probably modified by a sacculinid parasite, and with a more curved, snub rostrum, can be regarded as an unusual form of *S. pinocchio* sp. nov. A key of the four Indo-Pacific *Sphenocarcinus* with a single rostrum is presented.

RESUME

Le genre *Sphenocarcinus* A. Milne Edwards 1875 n'est connu dans l'Indo-Pacifique que par deux espèces à rostre simple, principalement représentées par la description originale: *S. cuneus* (Wood-Mason 1891) et *S. aurorae* Alcock 1899. Chacune de ces deux espèces est ici redécrite et figurée d'après l'examen de spécimens types. Deux espèces nouvelles sont décrites. *S. difficilis* sp. nov. établie grâce à un abondant matériel provenant de Madagascar (collection ORSTOM), apparaît comme intermédiaire entre *S. cuneus* et *S. aurorae*. *S. pinocchio* sp. nov. du détroit de Makassar, Indonésie (mission Corindon II) se distingue par un rostre très allongé et fortement incurvé; provenant également du détroit de Makassar, un individu mâle parasite par une Sacculine présente un rostre encore plus "retroussé" et ne peut pour l'instant qu'être supposé représenter une forme anormale de *S. pinocchio*. Une clef des quatre espèces indo-pacifiques de *Sphenocarcinus* à rostre simple est proposée.

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## INTRODUCTION

While studying the Indonesian material we came across to several specimens from Madagascar that proved to be another new species. We thought therefore it would be necessary to reexamine all the species belonging to single-rostrum group of the Indo-Pacific *Sphenocarcinus*. Genus *Sphenocarcinus* A. Milne Edwards, 1875.

The genus *Sphenocarcinus* A. MILNE EDWARDS (1875: pi. 17, fig. 5; 1878: 135) is represented by: 1) two American species: *S. corrosus* A. Milne Edwards 1875, the type-species, and *S. agassizi* Rathbun 1895, two "analogous species on opposite sides of the continent" (RATHBUN 1925: 187); both are characterized in having a rostrum formed of two long contiguous spines; 2) eleven Indo-Pacific species, into which we have just added three new species, which means that a total of 14 species are known from this area (cf. GUINOT & RICHER DE FORGES *in press*).

Regarding the Indo-Pacific Species, only two, very rare species, have a single rostrum: *Sphenocarcinus cuneus* (Wood-Masoi, 1891) and *S. aurorae* Alcock 1899; the rest of the Indo-Pacific species has a bifurcated rostrum, with spines more or less long and divergent (we notice that *S. auritus* Rathbun 1916, has a rostrum with two short flattened lobes, separated [by a narrow silt (cf. GRIFFIN, 1976: 211, fig. 10b). *S. auneus* is known by the original record's, from the Andaman Sea, and by two other records in the Western Indian Ocean (Providence I., Mombasa), *S. aurorae* is only known from the Travancore coast, first by the original report (ALCOCK 1899: 84), then by KEMP & SEWELL (1912: 30); both were collected-by the "Investigator" in two different surveys.

The recent discovery of Indo-Pacific *Sphenocarcinus* with a single rostrum is therefore interesting. The type material of *S. cuneus* and *S. aurorae*, deposited in the Zoological Survey of India, Calcutta, was made available through the kindness of Dr. Maya Deb, Curator of Crustacea in this Institution, which enables us to redescribe and figure these two nice-looking species. This examination also allowed us to describe as a new species, *S. difficilis* sp. nov., a *Sphenocarcinus* from Madagascar represented by numerous samples, which seems to be intermediate between *S. cuneus* and *S. aurorae*. On the other hand, the discovery of *Sphenocarcinus* in the Makassar Strait lead us to establish a new other species, *S. pinocchio* sp. nov. In a station, *S. pinocchio* (one holotype, two paratypes) has a very long rostrum, especially in the male; in another station of Makassar Strait, a sacculinized male speci-

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men has a very curious curved rostrum: probably the sacculinid may have modified this individual, the rostrum has then become (? abnormally) feminized? A such supposition requires further confirmation.

Key to the Indo-Pacific species of *Sphenocarcinus*  
with a single Nostrum

- A1. The single rostrum not extremely long neither very curved.
  - B1. Cardiac plate triangular, touching the gastric plate. Rostrum moderately long.....  
..... *S. cuneus* (Wood-Mason): Andaman Sea,  
? Providence I., Mombasa.
  - B2. Cardiac plate not triangular, well separated from the gastric plate.
    - C1. Rostrum very short, even in the male. All the plates widely separated; preocular plate with angular borders externally; cardiac plate heart-shaped .....  
..... *S. aurorae* Alcock: Travancore coast
    - C2. Rostrum long. Plates less widely separated. Preocular plate with rounded angles. Cardiac plate transversely sub-circular .....  
..... *S. difficilis* sp. nov.: Madagascar
- A2. The single rostrum extremely long and curved in the male. Cardiac plate with postero-lateral expansions .....  
postero-lateral expansions .....  
..... *S. pinocchio* sp. nov.: Makassar Strait, Indonesia

*Sphenocarcinus cuneus* (Wood-Mason 1891)  
(Figures 1A-D, 6 A-B; pi. I, figures A-B)

*Oxypleurodon cuneus* Wood-Mason, in: Wood-Mason & Alcock, 1891:  
261; Andaman Sea.

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*Sphenocarcinus cuneus*, Alcock, 1895: 193. Alcock & Anderson, 1896, Illust. "Invest.", pi. 21, figs. 1, 1a — Alcock 1899: 50; Andaman Sea — ? Rathbun 1911: 249; Providence I. — ? Griffin 1974: 29; E. of Mombasa.

#### *Material examined*

Andaman Sea, between N. and S. Sentinel Is., sta. 56, 24-25-IV-1889, "Investigator" Marine Survey: "type", ♂ 15 X 11 mm (rostrum only: 8 mm) (Zoological Survey of India, Reg. n°143-6/7, 3186/9).

#### *Remarks*

*Sphenocarcinus cuneus* (Wood-Mason) (*in*: WOOD-MASON & ALCOCK 1891: 261) has been established for a sample containing two males and one ovigerous female, collected in the Andaman Sea (sta. 56, 220-240 fath.); a female individual (after the legend) is figured in *Illustr. "Investigator"* (ALCOCK & ANDERSON 1896, pi. 21, figs. 1, 1a). ALCOCK (1895: 193; 1893: 50) described the species with more details, from the Andaman Sea (is it the same material ?) and indicated "161 to 250 fath."

We could examine a specimen indicated "type" from the Andaman Sea, a male measuring 15 X 11 mm (rostrum only: 8 mm). This male type (Fig. 1 A-D, pi. I, Figs. A-B) resembles very much the female figured in the *Illustr. "Investig."* (*loc. cit.*) in having the same disposition of the plates on the dorsal surface, as follows: an elongate-oval gastric plate; a triangular cardiac plate (Fig. 1D), the anterior angle of which is touching the posterior border of the gastric plate; the preocular plate with the internal border salient (PL 1 fig. B) and with rounded angles; the branchial plate somewhat semilunar and very produced laterally. All the plates are strongly raised and separated by deep but not very wide channels. The surface of the plates is punctate, each puncture containing a very short spherical seta. The rostrum, of the male type seems to be a little longer than in the female of the *Illustr. "Investig."*; it is enlarged at its base and bears short setae; it is distinctly bifid at the tip. Some hook-shaped setae are present on the branchial lateral borders, on the gastric region (not on the gastric plate) and in the frontal basal region. A small tuft of hairs stands on each side of the cardiac plate.

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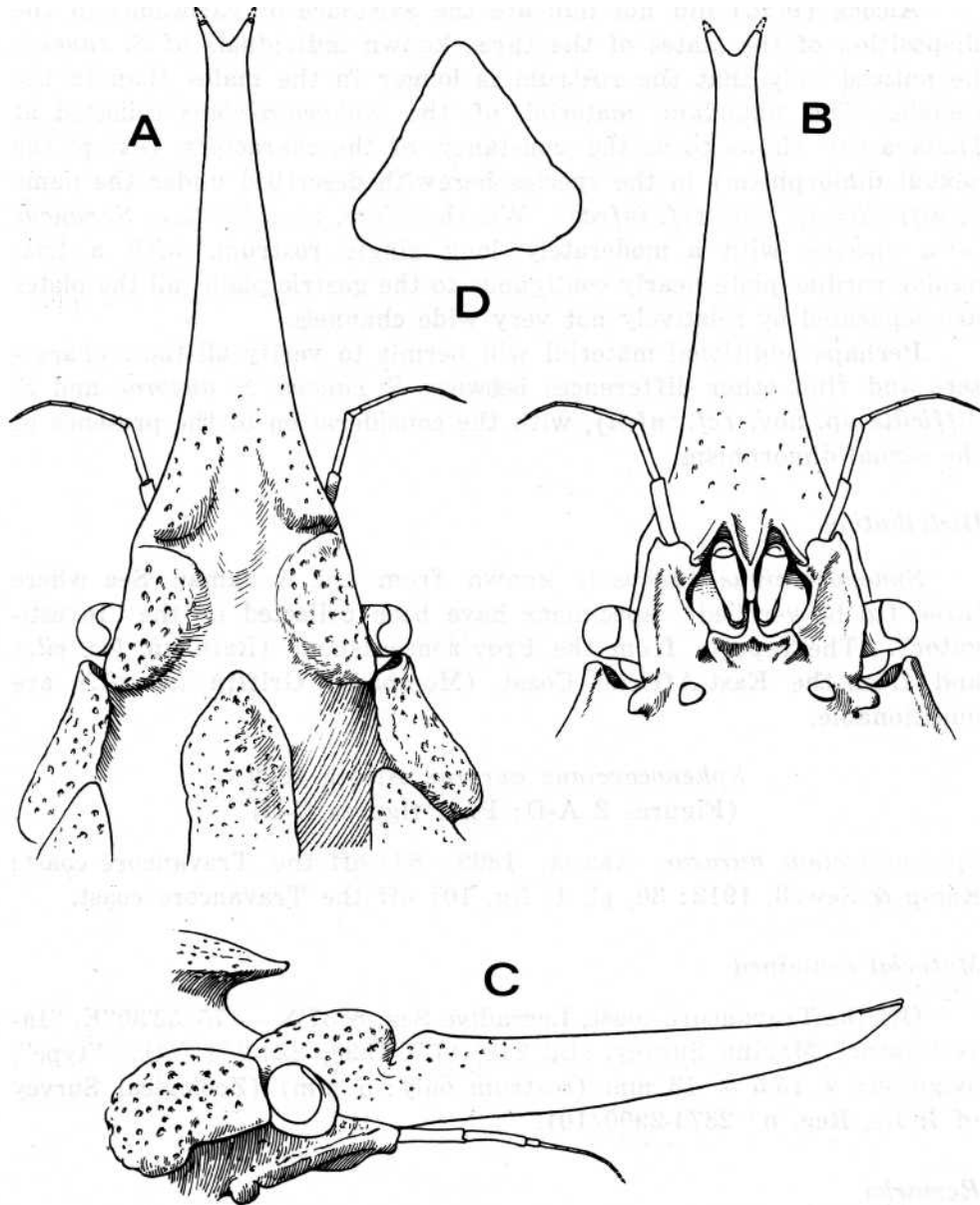


Figure 1. *Sphenocarcimis cuneus* (Wood-Mason), type, ♂ 15 X 11 mm (rostrum only: 8 mm), Andaman Sea, "Investigator" Marine Survey (Zool. Survey India, Reg. 143-5/7, 3186/9): A, anterior region, dorsal surface; B. *id.*, ventral surface; C, side face; D, cardiac plate on the dorsal surface. (All X 10).

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Alcock (*ibid.*) did not indicate the existence of variations in the disposition of the plates of the three known individuals of *S. cimeus*; he noticed only that the rostrum is longer in the males than in the female. The abundant material of the *Sphenocarcinus* collected at Madagascar shows to us the constancy of the characters (except the sexual dimorphism) in the species herewith described under the name *S. difficilis* sp. nov. (*cf. infra*). We, therefore, consider that *S. cuneus* is a species with a moderately long single rostrum, with a triangular cardiac plate nearly contiguous to the gastric plate; all the plates are separated by relatively not very wide channels.

Perhaps additional material will permit to verify all these characters and find other differences between *S. cuneus*, *S. aurorae* and *S. difficilis* sp. nov. (*cf. infra*), with the consideration of the presence of the sexual dimorphism.

#### *Distribution*

*Sphenocarcinus cuneus* is known from the Andaman Sea where three (to be verified) specimens have been collected by the "Investigator". The reports from the Providence Island (Rathbun, *loc. cit.*) and from the East-African Coast (Mombasa: Griffin, *loc. cit.*) are questionable.

*Sphenocarcinus aurorae* Alcock 1899  
(Figures 2 A-D; PL I figures C-D)

*Sphenocarcinus aurorae* Alcock, 1899: 84; off the Travancore coast: Kemp & Sewell, 1912: 30, pi. 1, fig. 10; off the Travancore coast.

#### *Material examined*

Off the Travancore coast, Laccadive Sea, 8°37'N — 75°52'30"E. "Investigator" Marine Survey, sta. 248, 17-X-1898, 224-284 fath.: "type", ovigerous ♀ 15.5 x 13 mm (rostrum only: 5 mm) (Zoological Survey of India, Reg. n° 2874-2900/10).

#### *Remarks*

In the same work where we provided an extensive description of *Sphenocarcinus cuneus* (Wood-Mason 1891), ALCOCK (1899: 50) gave an addendum where he established, without a sketch, an additional species (*ibid.*: 84) originating "from off the Travancore coast, 224-284

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fath.", *S. aurorae*, which closely resembles *S. cuneus*". Alcock had at his disposal 27 specimens of *S. aurorae* to compare with three specimens of *S. cuneus* and recognized several particulars separating the two species. Shortly after, KEMP & SEWEEEL (1912: 30, pi. 1, fig. 10) mentioned 12 males and 15 females collected by the "Investigator" during the survey season 1910-1911., alt ,sta. 391, 9°14'10"N — 75°45'E, 260 fath. (about the same area than Alcock and the same number of specimens) and gave a drawing of a male *S. aurorae*. *S. uarorae* has not been hitherto reported.

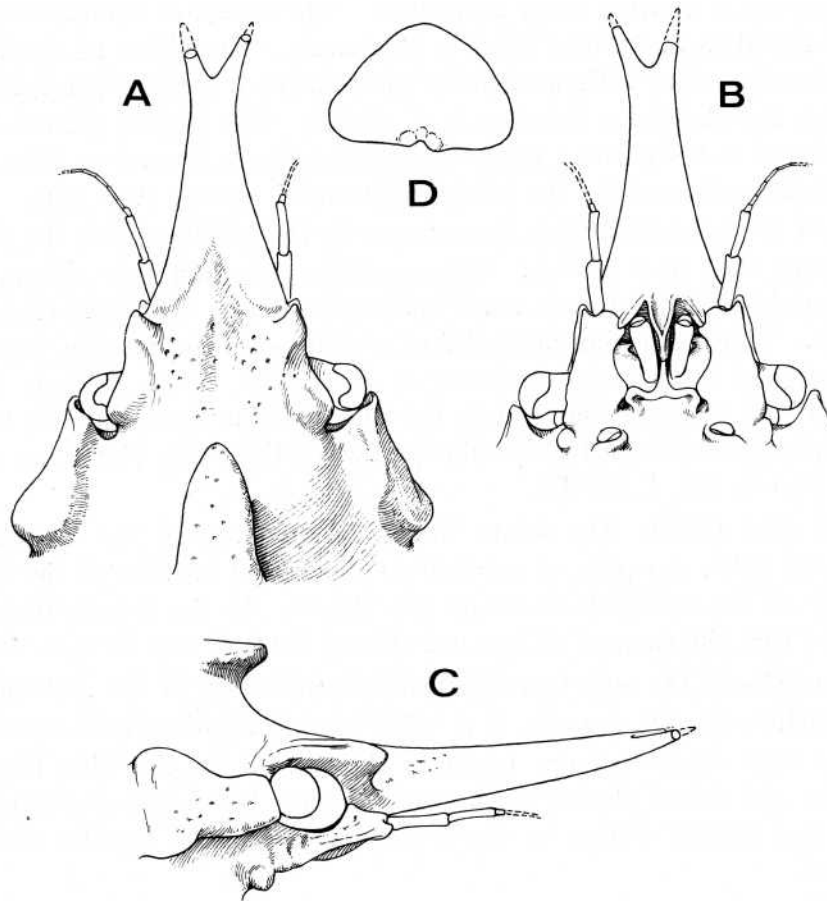


Figure 2. *Sphenocarcinus aurorae* Alcock, "type", ovigerous ♀ 15,5 X 5 mm (rostrum only: 5 mm), sta. 248, 224-284 fath. (Zool. Survey India, Reg. 2874-2900/10): A, anterior region, ventral surface: B, *id.*, ventral surface; C, side face; D, cardiae plate on the dorsal surface. (All X 8.5).

We could examine one specimen of the original Indian 'material indicated "type", an ovigerous female measuring 15.5 x 13 mm (rostrum only: 5 mm). This female apparently is identical by all characters with the male illustrated by KEMP & SEWELL. We believe that *S. aurorae* is a valid species. We are able to compare it with *S. cuneus*, also- one of the types, a male (*cf. supra*, Fig. 1 A-D, PL I figs. A-B). In *S. aurorae* (Fig. 2 A-D, PL I figs. C-D) the length of the single rostrum, distinctly bifid at the tip is more related in the male than in the female (relatively shorter in the female for both species); in the female type the rostrum is swollen in its basal part. The carapace is more enlarged and inflated in *S. aurorae* than in *S. cuneus*: The plates on the dorsal surface are smaller with much wider channels in *S. aurorae* (PL I, fig. C), whereas the plates are close-set in *S. cuneus*. The cardiac plate is heart shaped and well separated from the gastric plate in *S. aurorae* (Fig. 2D), triangular and touching the gastric plate in *S. cuneus* (Fig. 1D). In *S. aurorae*, the branchial plate is narrower in the middle and in the lateral expansion than in *S. cuneus*. The preocular plate, not very salient, ends sub-acutely and therefore is much more spine-like in *S. aurorae* than in *S. cuneus*. The postocular plate offers a wide posterior margin, extended internally in *S. aurorae*, narrower in *S. cuneus*. In *S. aurorae* (PL I fig. D), the pterygostomial plate has an irregular border and is widely separated from the postocular plate, whereas these two plates are closer in *S. cuneus* (PL I fig. B).

ALCOCK (1899: 84) wrote about *S. aurorae* that "as regards the male sex only: the pair of carinae on the dorsal surface of the carpopodites of the chelipeds and legs are blunt". In the female types, we observe that the carinae of legs are strong, more or less as in *S. cuneus*.

In spite of the only two specimens examined by us for each species, we conclude that *S. aurorae* is a valid species, characterized especially: by the very short rostrum (even in the male) ; by the wide channels between the raised plates; by the cardiac plate heart-shaped and remote from the gastric plate; by the preocular plate with angular external borders.

#### *Distribution*

Known only from the coast of Travancore.

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*Sphenocardnus difficilis* sp. nov.  
(Figures 3 A-D; Pl. I figures E-H)

*Material examined*

1) *Type material*

Madagascar, chalutage 123, 12°41'7"S — 48°14'5"E, 310-315 m, Crosnier coll., 11 Octobre 1974: holotype, ♂ 18.5 x 19.5 mm (MP-B8819), paratype, ♂ 27 x 17.5 mm., 3 paratype ♀ 24 x 16 mm (2 spec), 21.5 x 15.5 mm (ovigerous females) (MP-B7977).

2) *Other paratypes*

Madagascar, chalutage 1, 12°52'S — 48°10'3"E, 420—428 m, Crosnier coll., 4 March 1971: 1 ♂ 12 x 9 mm (MP-B7976).

Madagascar, chalutage 3, 12°52'3"S — 48°10'4"E, 415-403 m, Crosnier coll., 4 March 1971; 2 ♂ 12 X 8.5 mm, 10 x 8 mm, 3 ♀ 17 x 12 mm, 15.5 x 12 mm, 13.5 x 10.2 mm, 1 2 ovig. 17.5 x 13 mm (MP-B7975).

Madagascar, chalutage 6, 12°42'7"S — 48°12'8"E, 444-435 m, Crosnier coll., 4 March 1971: 1 ♀ 18 x 12 mm (MP-B7973).

Madagascar, chalutage 10, 12°43'S — 48°15'E, 300—348 m, Crosnier coll. 14 April 1971: 1 ♂ juv. 8.2 x 6.1 mm, 1 ♀ 21.5 x 15 mm (MP-B7969).

Madagascar, chalutage 11, 12°39'8"S — 48°15'2"E, 375-385 m. Crosnier coll., 14 April 1971: 1 ♀ ovig. 20 x 13 mm (MP-7974).

Madagascar, chalutage 13, 12°41'3"S — 48°16'E, 308-314 m, Crosnier coll., 15 April 1971: 1 ♀ 19 x 14 mm (MP-B7971).

Madagascar, chalutage 28, 12°42'9"S — 48°12'1"S, 445-455 m, Crosnier coll., 12 September 1972: 1 ♂ 18 x 12 mm (MP-B7972).

Madagascar, chalutage 40, 12°46'4"S — 48°11'5"E, 405-410 m, Crosnier coll., 15 September 1972: 1 ♀ 24 x 16.5 mm, (MP-B7970).

*Description*

Carapage elongate subpentagonal. A long tapering cylindrical single rostrum, longer in the adult male (Pl I figs. E-F) than in the female (Pl. I fig. G) and in the juvenile (Pl. I fig. II), emarginate at the tip and not curved (Pl. I fig. F). Dorsal surface symmetrically ornamented with raised punctate islets, separated by moderately wide channels; these channels covered with short setae; some hook-shaped setae on the postero-lateral borders, on the anterior gastric regions and

on the base of the rostrum. The raised plates as follows: one elongate-oval on the gastric region; one transversely isubcircular on the cardiac region, very well separated from the gastric plate and sometimes with a tubercle on each side; this cardiac plate never with latero-posterior expansions (Fig. 3D); one (intestinal) in the shape of a Cupid's bow along the posterior border one on the branchial region, wide and extending laterally; one postocular plate (fused with the hepatic plate) a little wider at its base; a preocular plate not very raised but flattened and with rounded angles (except in some juveniles where it ends subacutely: Pl. I fig. H); one elongate plate on the subbranchial region; a pterygostomial plate moderately separated from the postocular plate (Pl. I Fig. F).

Antennular and antennal region: Fig. 3B.

Sternum plate setose, deeply channeled.

Male abdomen with seven segments.

Chelipeds stouter in the male (Pl. I fig. E) than in the female (Pl. I fig. G), smooth: the carpus with a double cerst.

Ambulatory legs cylindrical, shorter and more carinated in the male than in the female; the merus more widened and more crested in the female.

#### Remarks

The preliminary identification of the material and the first glance suggested that this material <of Madagascar would be *Sphenocarcinus cuneus* (Wood-Mason). The comparison of the numerous Madagascar specimens with the figure in the *Illustr. "Investig."* (1896, pi. 21, figs. 1, 1a), and then with a male type of *S. cuneus* and with a female type of *S. aurorae* Alcock showed several differences: we found necessary to establish a new species, *S. difficilis* sp. nov. The encountered difficulties were compensated by the fine and various material collected by A. Crosnier in the north of Madagascar.

Through the examination of these numerous samples from Madagascar we are able to present the following remarks about the variations within the species.

In some male juveniles the rostrum; is extremely short and thick, pubescent, namely of the female type, and even it can show a base very enlarged, with a deeply bifid (PL I fig. H: ♂ 8.2 x 6.1 mm, chalutage

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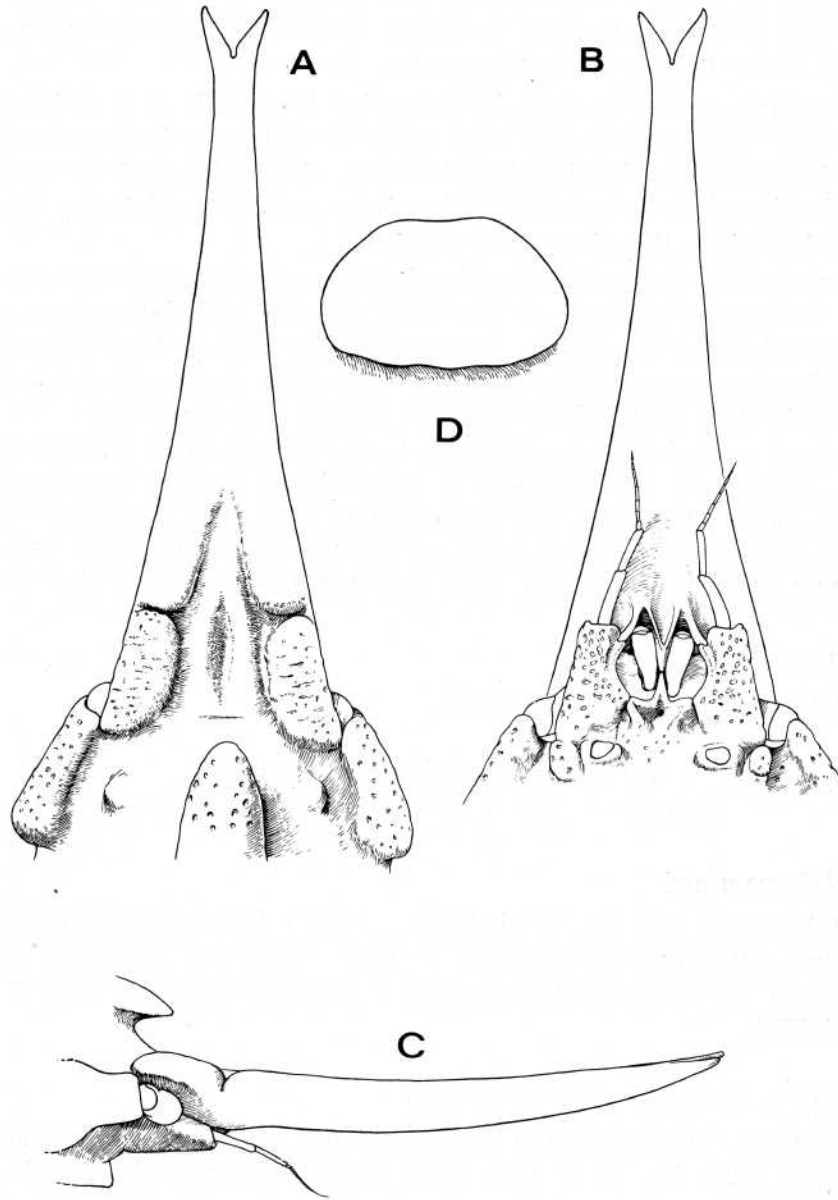


Figure 3. *Sphenocarcinus difficilis* sp. nov., holotype, ♂ 28.5 X 19.5 mm, Madagascar, 12°41'7"S — 48°14'5"E, chatulage 123, 310-315 m (MP-B8819): A, anterior part, dorsal surface; B, *id.*, ventral surface; C, side face; D, cardiac plate on the dorsal surface. (All X 6).

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10). In the same male juveniles with a very short rostrum, the plates are spaced by much wider channels and the preocular plate ends subacutely with a little spine-like anterior process, as ALCOCK (1899; 84) pointed it for *S. aurorae* of larger size.

In other specimens, even in the males (especially in a male of the "chalutage" 28 measuring 18 x 12 mm) the plates on the dorsal surface have the punctures furnished with short, close setae and the rostrum is distinctly pubescent; generally the plates seem to be glabrous, smooth, but perhaps it is the effect of a brushing.

Summarily, the male juveniles have a rostrum relatively shorter, thick, sometimes widened at the base, and the ambulatory legs more carinated than in the adults. The females (PL I fig. G) have the rostrum distinctly shorter and wider than the males, the plates punctated, often pubescent; their ambulatory legs are shorter and carinated.

In our material, the uniformity in the arrangement and the shape of the plates on the carapace is remarkable (except sometimes the channels more widened). The cardiac plate (Fig. 3D) are always transversely oval — shaped and does not touch the gastric plate; the subbranchial plate is prominent, with rounded borders (PL I fig. F).

#### *Distribution*

Only known from Madagascar.

*Sphenocatnrviois pinocehio*<sup>1)</sup> sp, nov.

(Figures 4 A-D, 6 EF; Pl. II figures A-D)

#### *Material examined*

Makassar Strait, sta. 267, holotype, ♂ 38 x 15.5 mm (rostrum only), 23.5 mm (MP-B8749) ; paratype ♂ 11.5 x 11,5 mm (rostrum broken at its base), paratype ♀ ovigerous 19.5 x 11.5 mm (rostrum only: 11 mm (MP-B8750).

#### *Description (holotype and paratypes)*

Carapace triangular: the single rostrum very long and slender in the males, (Fig. 4A, PL II figs. A-B) much shorter in the female (Pl.

<sup>1)</sup> . The specific name is referred to Pinocchio, the hero of a child's book written by the Italian writer Collodi from the 19th century: the long and "turned-up" rostrum of this species recall to mind the long and snub nose of the mischievous Pinocchio.

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II figs. C-D), and with an extremely deeply bifid in the males, only emarginate in the female (to be verified); the rostrum much more incurved in the males (Fig. 4C, PL II fig. B) than in the female (PL II fig. D).

Dorsal surface (PL II figs. A, C) with several raised islets or plates arranged as follows: one elongate-oval and not very large on the gastric region; a single and elongate branchial plate, the external part extending laterally behind the line of the carapace; one pentagonal plate on the cardiae region (Fig. 4D), with an anterior border truncate and with two characteristic expansions on each side of the hinder part in the males as in the female; one plate in the shape of a Cupid's bow along the posterior border; one postocular-hepatic plate, narrower in the part close to the eye than in the basal part: a preocular plate not very prominent (Fig. 4A) ; a narrow plate on the postero-lateral border; below, a sub-branchial plate which is small and not very prominent (PL II figs. B,, D); a plate on the pterygostomial region small, with an irregular shape and an eroded aspect.

Surface of the plates punctate, without; setae (but the specimens perhaps have been brushed); the punctures much well-marked in the female. The surface between the plates almost glabrous (? brushed) except in the place of the hooked setae which are located on the external side of the branchial plate, on the anterior gastric region and along the rostrum in the basal part.

Rostrum with small, short and triangular setae, more numerous in the female (PL II figs, C-D), diminishing on the distal part in the males (PL II, figs. A-B) ; on the bifid extremity, setae a little longer (Fig. 4A).

Orbito-antennal region: Fig. 4B.

Sternal plate clothed with a short, close tomentum and deeply channeled by grooves, especially along the sutural lines. Male aperture coxal.

Male abdomen with seven somites.

Chelipeds stout in the males (PL II fig. A), smooth and unarmed; only some punctures; margins of the triangular merus blunt; carpus with two blunt crests above. Fingers elongate, meeting only at the tips. In the female, chelipeds slender, weaker and pubescent; merus carinated especially on the upper border.

Ambulatory legs with a strong sexual dimorphism: in the males (PL II fig. A) elongate and cylindrical, except the carpus which is

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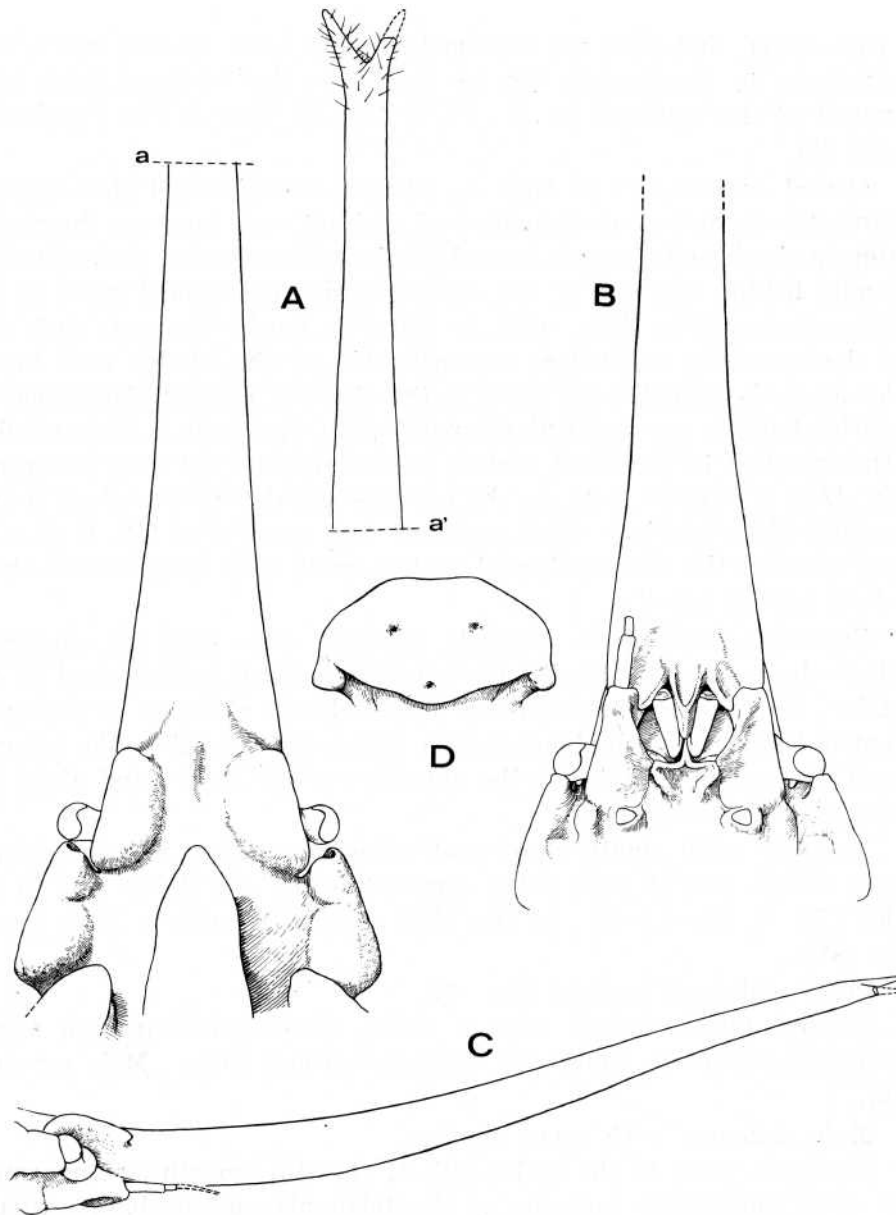


Figure 4. *Sphenocarcinus pinocchio* sp. nov., holotype, ♂ 38 × 15.5 mm (rostrum only: 23.5 mm), Makassar Strait, sta. 267 (MP-B8749): A, anterior region, dorsal surface, with the very long rostrum drawn in two parts (a' continues a) (× 6); B, *id.*, ventral surface (× 6) C, side face (× 4); D, cardiac plate on the ventral surface, with the characteristic lateral expansions (× 6).

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bluntly carinated and flattened. P4 and P5 shorter, with the merus reduced and faintly carinated. In the female (Pl. II fig. C), ambulatory legs much shorter, with all the articles (except the dactylus) wide and thick; merus strongly carinated on p2-p5, the paired carinae on the carpus more pronounced than in the 'males.

*Remarks*

There are now three known Indo-Pacific species of the genus *Sphenocarcinus* with a single rostrum: *S. cuneus* (Wood-Mason 1891), *S. aurorae* Alcock, 1899, and a new species & *difficilis*, which has close resemblances with the two preceding species. From *S. difficilis*, to which are assigned numerous samples from Madagascar (*cf. supra*, Fig. 3 A-D, Pl. I figs. E-H), *S. pinocchio* differs in several seemingly constant characters which in our opinion necessitate the recognition of a new species. *S. pinocchio* differs from *S. difficilis* mainly in the following characters :

1) the rostrum is relatively much longer and also more curved in *S. pinocchio* (Fig. 4A-C, PL II figs. A-B) than in *S. difficilis* (Fig. 3 A-C, PL I figs. E-H), these two characters being less marked in the female of both species (*S. pinocchio* ♀ : PL II figs. C, D; *S. difficilis* ♀ : Pl. I fig. G);

2) the cardiac plate has two latero-external expansions in *C. pinocchio* (Fig. 4D); it is subcircular and without lateral expansion in *S. difficilis* (Fig. 3D), where there is sometimes a tubercle on each part of this plate but always well separated.

3) the latero-posterior plate, situated ventrally below the branchial plate, is oval, distinctly prominent, with regularly, rounded borders in *S. difficilis* (Pl. I fig. F), narrow and with an eroded aspect in *S. pinocchio* (PL II figs. B, D);

4) the postocular-hepatic plate (a single plate) is more prominent laterally, at least in the male, in *S. difficilis* (Fig. 3A, Pl. I figs E, H) than in *S. pinocchio* (Fig. 4A, PL II figs. A, C);

5) the basal antennal article, with a longitudinal groove in *S. pinocchio* (Fig. 4B), without a groove in *S. difficilis* (Fig. 3B).

The first male pleopod is more or less similar in both species (*S. difficilis*; Fig. 6 A-B; & *pinocchio*: Fig. 6 C-D).

The ohelipeds are about the same in both species (*S. pinocchio*: PL II fig. A; *S. difficilis*, PL I fig. E). A strong sexual dimorphism affects the ambulatory legs of *S. pinocchio*: the legs are shorter and

more car mated in the female (Pl. II fig. C) than in the male (PL II fig. A), perhaps more than in *S. difficilis* (Pl. I figs. E-G) (to be verified).

We wish that these differences could be further verified on a more complete material especially that of *S. pinocchio*. Anyway of the significant characters of *S. aurorae* Alcock are better known, we can with certainty compare *S. aurorae* to *S. pinocchio* sp. nov.. *S. aurorae* (cf. supra, Fig. 2 A-B, PL I figs. C-D) can be immediately distinguished by the short rostrum even in the adult male with stout chelipeds, as opposed to the very long rostrum of *S. pinocchio* sp. nov.

*Description of a saccidmized male individual with a well curved rostrum ("turned-up rostrum")*

(Figures 5 A-C: PL II figures E-F)

A single specimen (MP-B8751) collected in the Makassar Strait at the station 273 shows a particular character of the rostrum which is extremely curved (Fig. 5 A-C, PL II figs. E-F). It is a male carrying a *Sacculina* sp. under the abdomen: it measures 27 x 15 mm, the length of the rostrum being about 15 mm; several balanids are attached to the carapace.

In several respects, this individual resembles greatly *S. pinocchio* sp. nov., especially in the arrangement of the plates, but differs in:

1) the rostrum (Fig. 5C: PL II fig. F), relatively shorter and much more curved than in the male holotype of *S. pinocchio* which is about of the same size (Fig. 4 A-C; PL II figs. A-B); in both species, the rostrum has the tip weakly bifid;

3) the ambulatory legs (PL II fig. E) less cylindrical and with articles more carinated than in the male holotype of *S. pinocchio* (Pl. II fig. A); on the other hand, the chelipeds are stout and thick, analogous to those of the male holotype of *S. pinocchio*.

Only one individual being at our disposal, moreover infected with a *Sacculina* sp., we question the value of these peculiarities. The ambulatory legs (PL II fig. E) are of the female type (Pl. II fig. C), namely shorter and carinated: we can suppose that they became feminized. The chelipeds, completely developed, have the normal male type; the pleopods are present but both are broken at the place where the *Sacculina's*

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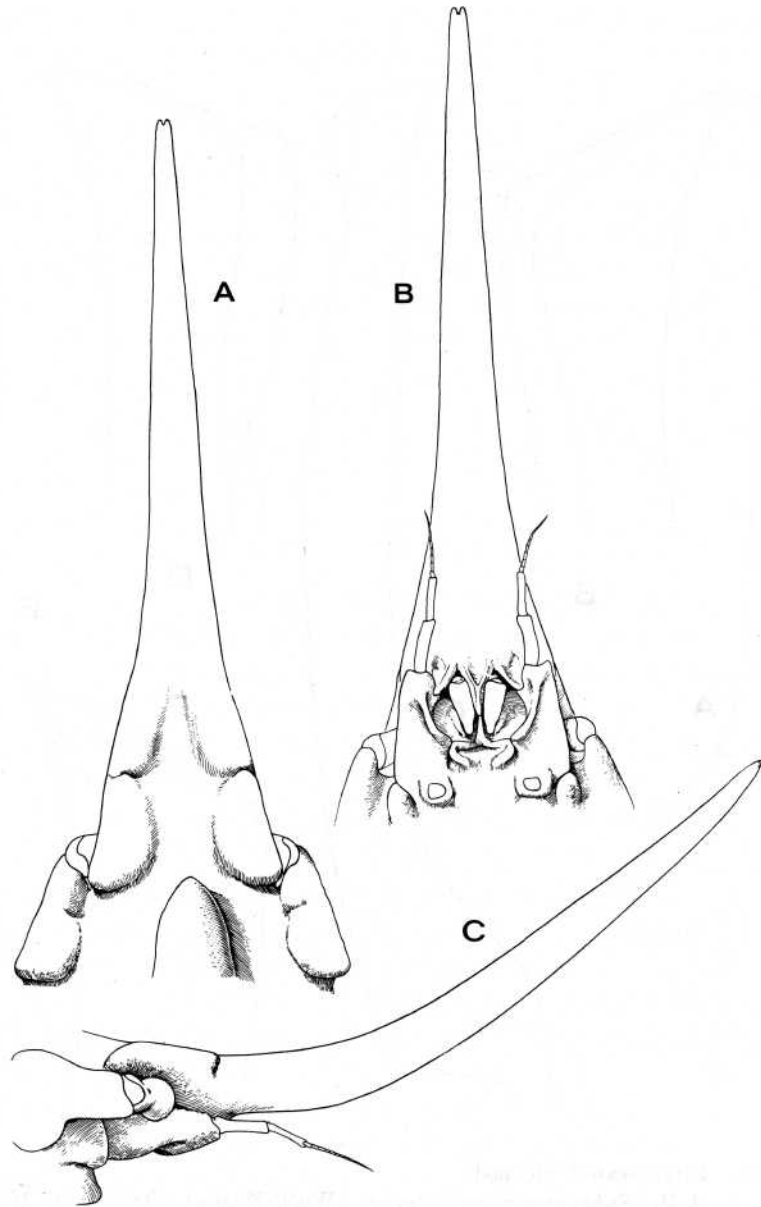


Figure 5. *Sphenocarcinus pinocchio* sp. nov., ? abnormal specimen with a sacculinid parasite, ♂ 17 × 15 mm (rostrum only, very curved: 15 mm), Makassar Strait, sta. 273 (MP-B8751): A, anterior region, dorsal surface; B, *id.*, ventral surface; C, side face with the extremely "turned-up" rostrum (All × 6.5).

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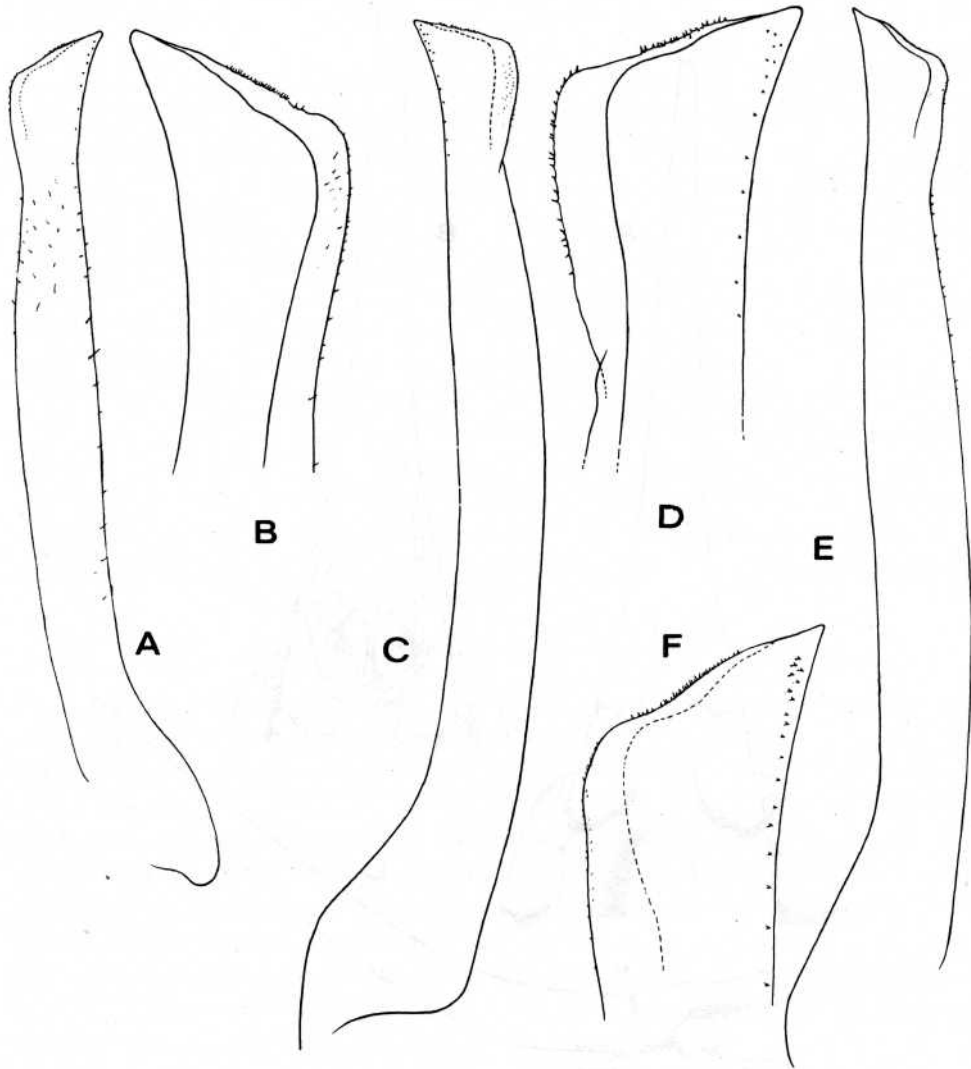


Figure 6. First sexual pleopod.

A-B, *Sphenocarcinus cuneus* (Wood-Mason), "type", ♂ 15 × 11 mm, Andaman Sea, "Investigator" Marine Survey (Zool. Survey India, Reg. 143-5/7, 3186/9): A, pl I (× 42); B, *id.*, apex (× 102).

chalutage 123, Crosnier coll. (MP-B8819): C, pl. I (× 33); D, *id.*, apex (× 85).

C-D, *S. difficilis* sp. nov., holotype, ♂ 28.5 × 19.5 mm, Madagascar, sta. 267 (MP-B8749): E, pl. I (× 33); F, *id.*, apex (× 85).

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sac forms a wide knob under the abdomen and turns out the pleopods from the sterno-abdominal cavity. It seems that is it neither feminization of the chelipeds nor of the pleopods.

The question is whether the rostrum, as the ambulatory legs, could be feminized: that would explain the shortened rostrum, with a tip less bifid? The pronounced curvature (PL II fig. F) could be the result of an "abnormal" transformation because of the infection by a parasite, inasmuch as the rostrum of the male holotype of *S. pinocchio* (Fig. 4 A-C, PL II figs. A, B) is longer and more curved than in the female paratype (PL II figs. C, D).

We are very interested by the shape of the cardiac plate of the male individual parasitized with *Sacculina* sp. having a similar form to that of the non parasitized *S. pinocchio* (Fig. 4D, PL II figs. A, C), namely in the expansion on each side at the base of the plate.

For lack of material and furthermore the fact that the single specimen bears a parasite which produces probably a feminization, we leave it in *S. pinocchio* sp. nov. It was collected more or less in the same locality with other specimens of *S. pinocchio*, and in similar depths.

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Plate I

Figure A-B. *Sphenocarcinus cuneus* (Wood-Mason), "type", ♂ 15 × 11 mm, Andaman Sea, sta. 56, "Investigator" (Zool. Survey India no. 143-5/7, 3186/9): A, entire animal; B, side face.

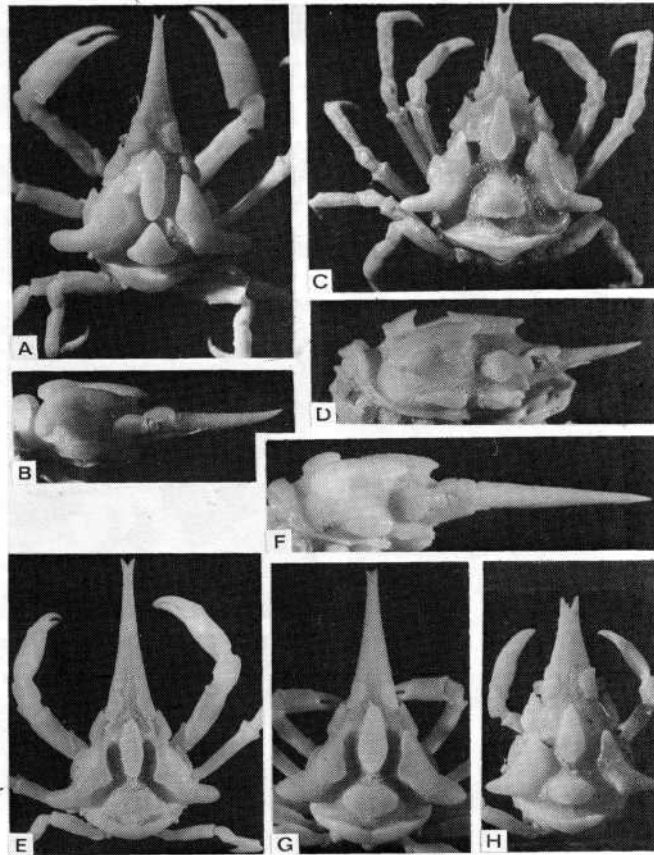
Figure C-D. *S. aurorae* Alcock, "type", ovigerous ♀ 15.5 × 13 mm, off the Travancore coast, Laccadive Sea, sta. 248, "Investigator" (Zool. Survey India no. 2874-2900/10): C, entire animal; D, side face.

Figure E-H. *S. difficilis* sp. nov.

E-F holotype, ♂ 28.5 × 19.5 mm, Madagascar, chalutage 123 (MP-B8819): E, entire animal; F, side face.

G, paratype, ♀ 24 × 16 mm, Madagascar, chalutage 123 (MP-B7977): dorsal surface; the rostrum is shorter than in the male.

H, paratype, ♂ juv. 8.2 × 6.1 mm, Madagascar, chalutage 10 (MP-B7969): dorsal surface; at this size, the rostrum is very short in the male.



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Plate II

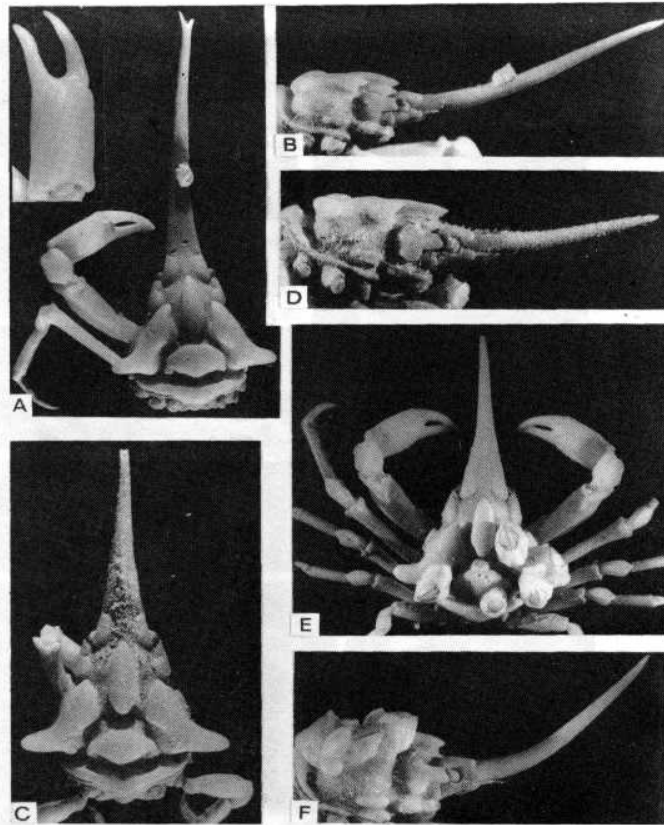
Figure A-C. *Sphenocarcinus pinocchio* sp. nov., holotype and paratype, Makassar Strait, sta. 267, 186-134 m.

A-B, holotype, ♂ 38 × 15.5 mm (MP-B8749): A, entire animal, with, in the corner on the left, the chelar propodus B, side face (a balanid is attached on the rostrum).

C-D, paratype, ovigerous ♀ 19.5 × 11.5 mm (MP-B8750): C, carapace; D, side face with the rostrum curved but weakly (rostrum only: 23.5 mm).

Figure E-F. ? *Sphenocarcinus pinocchio* sp. nov., ? abnormal specimen, Makassar Strait, sta. 273, 200-120 m, ♂ with a sacculinid parasite, 17 × 15 mm

(several balanids are attached on the carapace) (MP-B8751): E, entire animal; F, side face: we can observe the very curved, "turned-up" rostrum (rostrum only: about 15 mm).



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ADDENDUM

After this manuscript went to the printer, Dr. M. K. Moosa forwarded to us representative of two other samples of *Sphenocarcinus* with a single rostrum from the Moluccas Archipelago, off Halmahera Island, Corindon IV.

1) Corindon IV, sta. COP. V/1, 03°28,8'N — 128°23'E, 14-4-1981: 2 ♀ ovigerous 25 X 18 mm (rostrum broken), 19 x 13 mm, 1 ♀ sacculinized 22 x 15 mm (MP-B9488).

These three female individuals are near of *S. pinocchio* but principally differ by the shape of the cardiac plate more transversally elongate and with smaller postero-lateral expansions. The rostrum of the small female is similar to that of *S. pinocchio* ovigerous female of analogous size 19,5 x 11.5 mm (*cf.* Pl. II fig. C-D); the rostrum of the larger female is more widened at its base and is distally broken. The sacculinized female has a very short and wide rostrum.

2) Corindon IV, sta. COP. V/2, Bay of Piru, 15-4-1981: 1 ♂ 20.5 x 16.5 mm (MP-B9489).

This male presents a very short rostrum, a gastric plate very narrow and elongate, a cardiac plate with horizontal expansions. These characters are different from those of all another species.