Cherax (*Astaconephrops) boesemani*, a new species of crayfish (Crustacea: Decapoda: Parastacidae) from the centre of the Vogelkop Peninsula in Irian Jaya (West New Guinea), Indonesia

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A new species, *Cherax (Astaconephrops) boesemani* spec. nov., from the Amajaru Lakes, in the Kais River Drainage in the centre of the Vogelkop Peninsula, West Irian Jaya, Indonesia, is described, figured and compared with related species.

Introduction

Over the last years, crayfish species have been introduced by wholesalers to the European, Japanese and USA pet market. Some of these species are collected in Irian Jaya and come to Germany as well. These species were compared with crayfish from Irian Jaya stored in the Nationaal Natuurhistorisch Museum in Leiden, the Netherlands. These crayfish were described and reported upon by Holthuis in various publications (1949, 1956, 1968, 1982, 1986, and 1996). The result of this examination leads to the conclusion that some of the species are new to science. One of the newly introduced species was compared with specimens of an undescribed species collected by Dr M. Boeseman at the shorelines of the Ajamaru Lakes, in the Kais River Drainage in Western Irian Jaya, Indonesia in 1955 and stored in the Rijksmuseum van Natuurlijke Historie (= National Museum of Natural History, Leiden). The specimens perfectly match with this species introduced on the pet market.

The new species, *Cherax (Astaconephrops) boesemani*, differs from all other crayfish of this subgenus in the shape of its rostrum, the shape of its chelae and also in its coloration. Furthermore, no other crayfish from this subgenus have been described from this region.

Abbreviations used: RMNH = Rijksmuseum van Natuurlijke Historie (= National Museum of Natural History, Leiden). OCL = Occipital Carapace length.

Cherax (*Astaconephrops*) *boesemani* spec. nov.

(figs 1-5)

Material examined.— Holotype male, RMNH D 51759: Indonesia, Western Irian Jaya, Kais River Drainage, at the shorelines of the Ajamaru Lakes; march 1955; collected by M. Boeseman.— Allotype female and 9 male and 18 female paratypes, RMNH D 51758: same data as holotype.

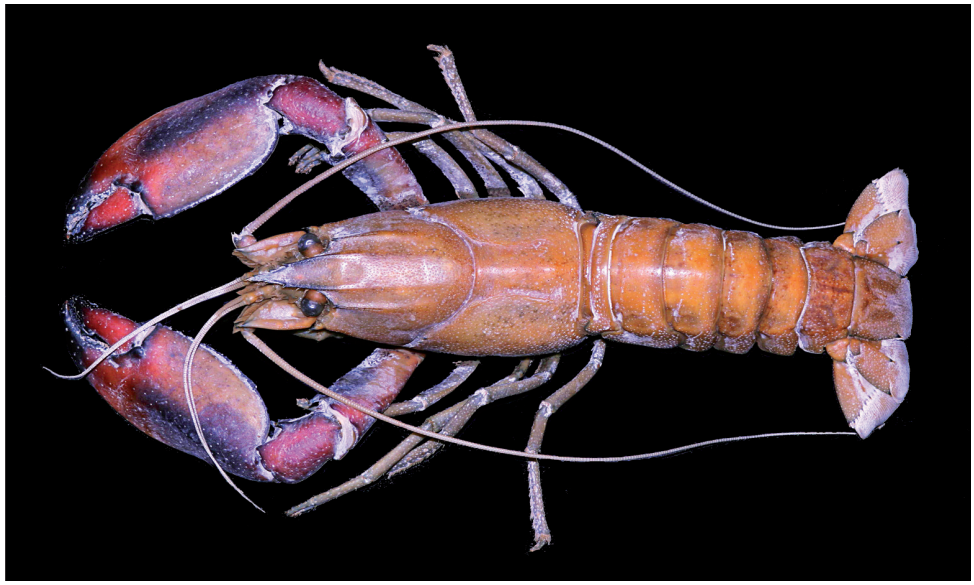

Fig. 1. *Cherax (Astaconephrops) boesemani* spec. nov., holotype male, cl. 57 mm, RMNH D 51759.

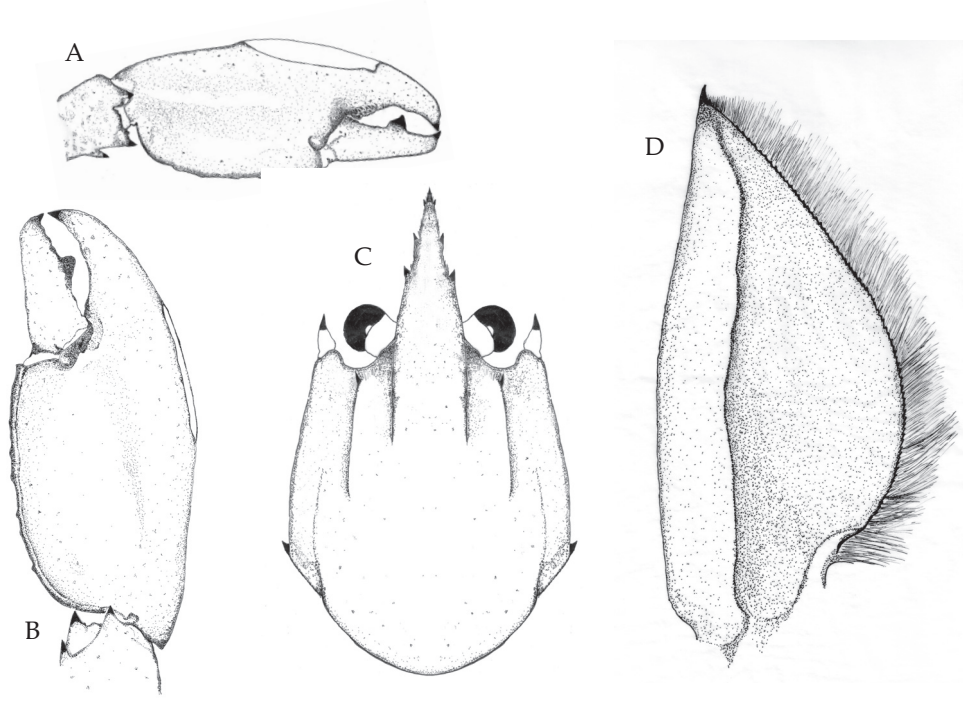

Fig. 2. *Cherax (Astaconephrops) boesemani* spec. nov., holotype male, cl. 57 mm, RMNH D 51759. A, dorsal view chelae; B, ventral view chelae; C, dorsal view carapax; D, scaphocerite.

Description of male holotype.— Body and eyes pigmented. Eyes not reduced. Body subovate, laterally slightly compressed. Pleon narrower then cephalothorax (22 mm and 27 mm respectively).

Rostrum slender, reaching about to end of ultimate antennular peduncle and about twice as long as wide at base (6 mm at base, 13 mm long). Upper surface smooth, without hairs; lateral margins of rostrum almost straight in basal part, distally rather strongly tapering towards apex. Margins strongly elevated continuing in rostral carinae on carapax. Each lateral margin bearing 3 prominent teeth in its distal half, few short hairs present on outer margins. Rostral carinae extending as slight elevation posteriorly on carapax, fading just before reaching cervical groove. Postorbital ridges well developed terminating in slightly upturned corneus spines anteriorly, fading at ⅔ of OCL posteriorly. Scaphocerite broadest at midlength, convex in distal part becoming narrower in basal part; thickened lateral margin terminating in large corneus spine. Right antennal scale 13 mm long and 6 mm broad. The antennulae and antennae normal in shape. Mouthparts typical.

Eyes rather large; cornea globular, darkly pigmented, about as long as eyestalk; eyestalk slightly narrower than cornea.

Epistome broadly triangular, anteriorly becoming lance-shaped; lateral surface with some small tubercles; central part smooth, excavate. Coxocerite of antennal peduncle with acute tooth anteriorly; basicerite with strong lateral spine.

Cervical groove distinct, non setose. Carapace anterior of this groove smooth, just posterior to this groove, at level of antennae, 3 anteriorly directed, rathere closely set spines present.

Areola twice as long (18 mm) as broad (9 mm at the narrowest part). Lenght of areola 31.6% of total length of carapax.

First legs of male equal in form and size. Chelae 5.4 times as long as high, 2.45 times as long as deep, strongly compressed. Fingers shorter than palm (dactyl 16 mm), slightly gaping. Dactylus broad at base, tapering slightly towards tip, becoming about half as broad as at base. Tip with sharp, corneus, hooked tooth pointing outwards aat an angle of 45°.

Cutting edge of dactyl with rather small granular teeth in posterior part and one large prominent tooth at about middle of cutting edge. Ventral and dorsal surface of movable finger with scattered punctuation. Fixed finger triangular, merging gradually into palm, ending in sharp, corneus, hooked tooth, standing almost perpendicular to axis of finger. Upper surface of palm practically smooth, slightly pitted, more densely pitted at margins. No hairy parts on chelae except for ventral cutting edge of fixed fingers. Hairs short, present only in posterior part. First cheliped of adult male with soft, decalcified swollen area in distal part of the lower margin which is characteristics for this subgenus. Soft area extending from middle or distal third of fixed finger to about middle of palm. Mesiolateral part of carpus with slightly elevated part forming slender serrated ridge with row of 9 small spines. Ventral surface smooth and pitted but with median portion elevated into a low, broad ridge. Dorsal surface of merus smooth, with slight excavation in middle part. Dorsolateral margin with 2 corneus spines, anteriormost spine largest and more acute. Ventral surface with 2 large corneus spines; 3 small granules at ventrolateral margin. Ischium smooth with single spine on dorsal surface; row of 3 spines on ventral surface and a row of 10-11 small granules on

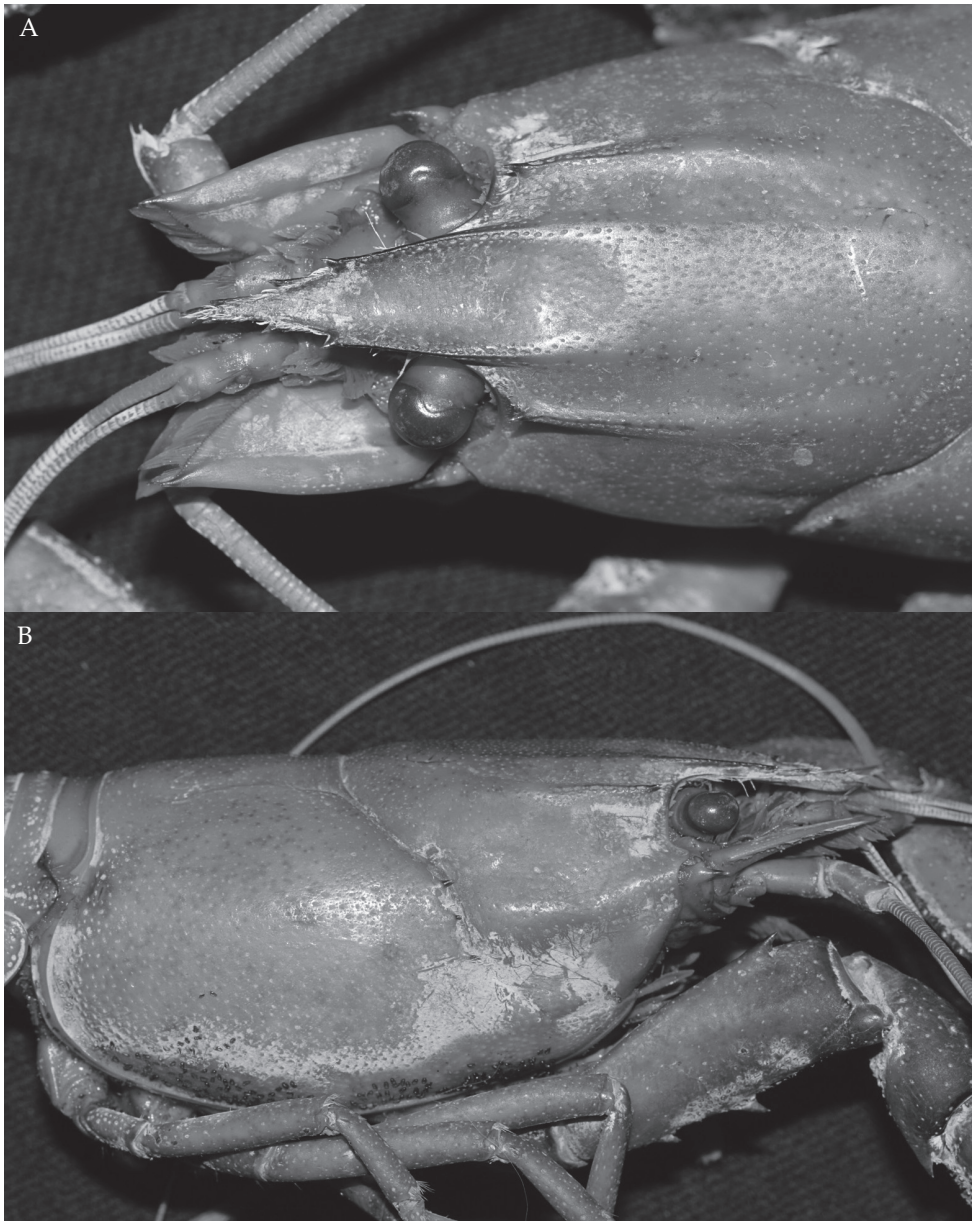

Fig. 3. *Cherax (Astaconephrops) boesemani* spec. nov., holotype male, cl. 57 mm, RMNH D 51759. A, dorsal view of the rostrum; B, lateral view of the carapax;

ventrolateral margin. Basis with single spine on ventrolateral margin.

Second leg reaching about to end of scaphocerite. Fingers about as long as palm, of same height. Carpus slightly longer than palm. Merus about 1.5 times longer than carpus. Ischium about half as long as merus.

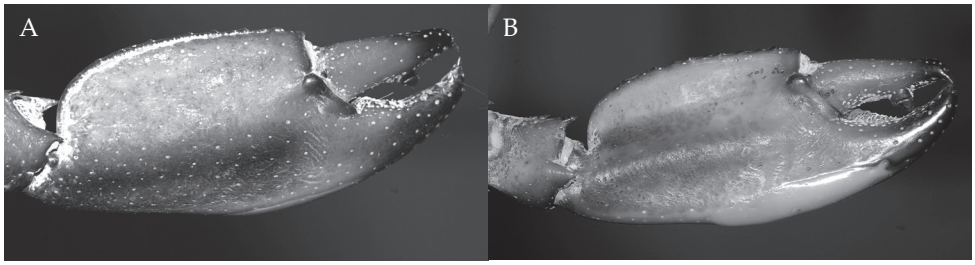

Fig. 4. *Cherax (Astaconephrops) boesemani* spec. nov., holotype male, cl. 57 mm, RMNH D 51759. A, right first chela, dorsal aspect; B, left first chela, ventral aspect.

Third legs reaching farther than second. Fingers shorter than palm.

Fourth legs almost reaching distal margin of scaphocerite. Dactylus ending in corneous tip. Propodus more than twice as long as dactylus, about 1.5 times as long as carpus; somewhat flattened, carrying many bristles on lower margin. Merus just slightly longer than propodus.

Fifth legs similar to fourth, somewhat more slender and shorter.

Dorsal surface of pleon smooth in median region; pleura smooth, densely pitted; telson with two spines in caudolateral corners. Endopod of uropod with 2 well defined spines. One distal spine on mesial lobe; with prominent median rib ending in a spine in middle of uropod. Exopod of uropod with transverse row of small spines ending in distal spine on mesial lobe.

Description of allotype female.— Chela of first pereiopods equal, somewhat more then 2.5 times as long as broad (31 mm and 12 mm respectivly), and show no decalcified areas on lower margin. Mesiolateral part of carpus slightly elevated, forming slender serrated ridge with row of 14 small spines. Cutting edge of dactyl with rather small granular teeth in posterior part and one slightly larger tooth in about middle of cutting edge. Cutting edge of fixed finger with small granules and two slightly larger granules. Small short hairs visible along ventral cutting edge of chela, more dense in posterior area. Cervical groove distinct, non setose. Carapace anteriorly of this groove smooth, just behind this groove, at level of antenna, two weakly developed anteriorly directed spines present. Pleon just slightly narrower than cephalothorax (20,5 mm and 21 mm respectively).

Remarks.— In young males, the first chela resembles those of the female or are slightly broader. A young male of 78 mm total length has the decalcified area small, in the process of developing and present just on one chela; a male of 80 mm has the decalcified areas already clearly visable and about 0,5 mm long.

Many of the crayfish have the egg capsules of Themnocaphala attached to their body. These egg capsules are placed in a more or less irregular way mainly on the ventral side of the chela, pleon and the telson, but also ventrolaterally on the carapax.

In the jar with *Cherax (Astaconephrops) boesemani* spec. nov. collected by Dr M. Boeseman at the shorelines of the Ajamaru Lakes, we also found one animal that differed from all others. This crayfish is obviously a young male of *Cherax (Cherax) holthuisi* Lukhaup & Pekny, 2006, described from the shorelines of the Aitinjo Lake situated about 25 km southeast of Ajamaroe.

Size.— The males examined have a carapax length of 25-57 mm, and a total length of 55-123 mm (n = 10); the females have a carapax length of 26-46 mm and a total length of 55–103 mm.(n = 19). Size of eggs: 3 mm long, 2 mm wide. One female (96 mm total length) had a total of 74 eggs. According to Dr Boeseman, the female with eggs has been collected between the 3rd and 6th of March.1955.

Coloration.— Spirit specimens (fig. 1) are pale yellowish brown with chelipeds slightly grey bluish and black tips. Sometimes the first walking legs are reddish black with black tips. The uncalcified part of the chelae of the first pereiopods is yellowish or pale to white.

The living animals (fig. 5) were noted by Dr M. Boeseman to be coloured as follows: "beige, beige olivaceous, brown olivaceous, green olivaceous, reddish brown, purplish red. Distal margin of tail-fan pale orange. Legs (except for 1st pair) bright blue, first pair variable in colour, pale blue with orange-yellow or blue-green with orange-yellow, sometimes purple with orange-yellow, blue with pinkish purple with dark purple legs of purplish brown individuals".

Systematic position.— The presence of decalcified areas on the lower margin of the chelae of the first pereiopods in adult males shows that the new species belongs to the subgenus *Astaconephrops.* The known New Guinean species of this subgenus so far number five: *Cherax (Astaconephrops) lorentzi* J.Roux, 1911 with subspecies *aruanus* J. Roux, 1911; *C. (A.) monticola* Holthuis, 1950; *C. (A.) misolicus* Holthuis, 1949; *C. (A.) albertisii* (Nobili, 1899); and *C. (A.) minor* Holthuis, 1996.

C. (*A.*) *boesemani* spec. nov. differs from *C. (A.) lorentzi* in the shape of the rostrum and chelae. The chelae in *C. (A.) lorentzi* are 2.1 to 3.33 times as long as broad while 2.3 to 2.4 times in the new species. The rostral carinae are strongly developed in *C. (A.) lorentzi* while more week in the new species. In *C. (A.) lorentzi* each lateral margin of the rostrum bears 2 strong spines whereas 3-4 are present in the new species. The patch in *C. (A.) lorentzi* is red whereas in the new species it is pale yellow or white. The species also differ in coloration.

The new species differs from *C. (A.) monticola* in the shape of the chela and rostrum. At each side of the rostral margins in *C. (A.) monticola,* 1-2 (seldom 0 or 3) small but distinct lateral teeth are present in the ultimate third or quarter of the rostrum. In the new species the spines are stronger and each side of the rostral margin bears 3-4 teeth. The chelae of the adult males of *C. (A.) monticola* are 2.3 times, and in the adult females 2.3-2.7 times as long as broad. *C. (A.) monticola* seems to occur only in the Ibele River and the Balim River east of Habbema Lake at an altitude of 1700-3300 m while the new species is reported only from the Ajamaru Lakes Region. The coloration of *C. (A.) monticola* is more greenish or brown to dark brown while the new species has a variety of different colour patterns.

The new species differs from *C. (A.) misolicus* in the shape of the rostrum, chelae and in the spination on the lateral side of the carapax. While *C. (A.) misolicus* has just a few (7-8) bumps on the lateral side of the carapax, the new species has 1-3, sometimes 4, prominent spines there. Each lateral margin of the rostrum bears 2-3 large teeth in *C. (A.) misolicus,* while 3-4 large teeth are present in the new species. The chelae of *C. (A.) misolicus* are 2.00-2.43 times as long as broad. *C. (A.) misolicus* is reported only from Misool Island.

Fig. 5. *Cherax* (*Astaconephrops*) *boesemani* spec. nov. A, adult male from pet shop; B, immature male from pet shop.

C. (A.) boesemani differs from *C. (A.) albertisii* in the shape of the chelae and rostrum. In *C. (A.) albertisii* the rostral carinae are very strongly developed and continue backwards as far as the posterior end of the postorbital ridges. Each of the lateral margins bears 3 large teeth. The chelae are 5.0-5.8 times as long as broad while 2.3-2.4 times in

the new species. While the patch in *C. (A.) albertisii* is red, in the new species it is pale yellow or white. *C. (A.) albertisii* is reported from the Fly River and the Katau River.

C. (A.) boesemani differs from *C. (A.) minor* in the shape of the rostrum and chelae. In *C. (A.) minor* the chelae are less then twice as long as high and much more compressed, its depth being less then a fourth of its length. The eyes are small in *C. (A.) minor* while distinctly larger in the new species. In *C. (A.) minor* no teeth are present on the lateral margins of the rostrum except for 2-3 small subapical denticles on either side.

Etymology.— The new species, *Cherax (Astaconephrops) boesemani*, is named after Dr M. Boeseman, honouring him for his contributions to our knowledge of freshwater crayfish of the genus *Cherax* in Irian Jaya (West New Guinea), Indonesia and as collector of the type specimens.

Habitat (fig. 6).— A description of the habitat is provided by Boeseman (1963) in his publication on the fishes of Western New Guinea. He describes the Ajamaru Lakes as follows: "Actually widened parts of the west-east streaming Ajamaroe River, situated about in the centre of the Vogelkop peninsula. From west to east the first lake, called Jow, has a length of 7 km and a width of 2 km; the second, Semitoe or Maroemega, a length of 2 and a width of 1.5 km: the third, Jate or Hain, a length of 3 and a width of even not 1 km. The lakes are surrounded by a low marshy plain of varying width and, beyond the plain, by hills and mountains reaching heights up to about 1500 m, covered with forest. Several small streams enter the lakes which have an altitude of about 250 meters above sea level, a depth of rearly more than 3 meters, clear water almost stagnant exept near entering rivers and outlets, pH approximately 6.4, a soft muddy bottom mostly covered with rich aquatic vegetation, while the low shores and costal plains are usually covered with secondary vegetation consisting primarily of grasses and low

Fig. 6. The Ajamaru Lakes Region (by Gerry R. Allen).

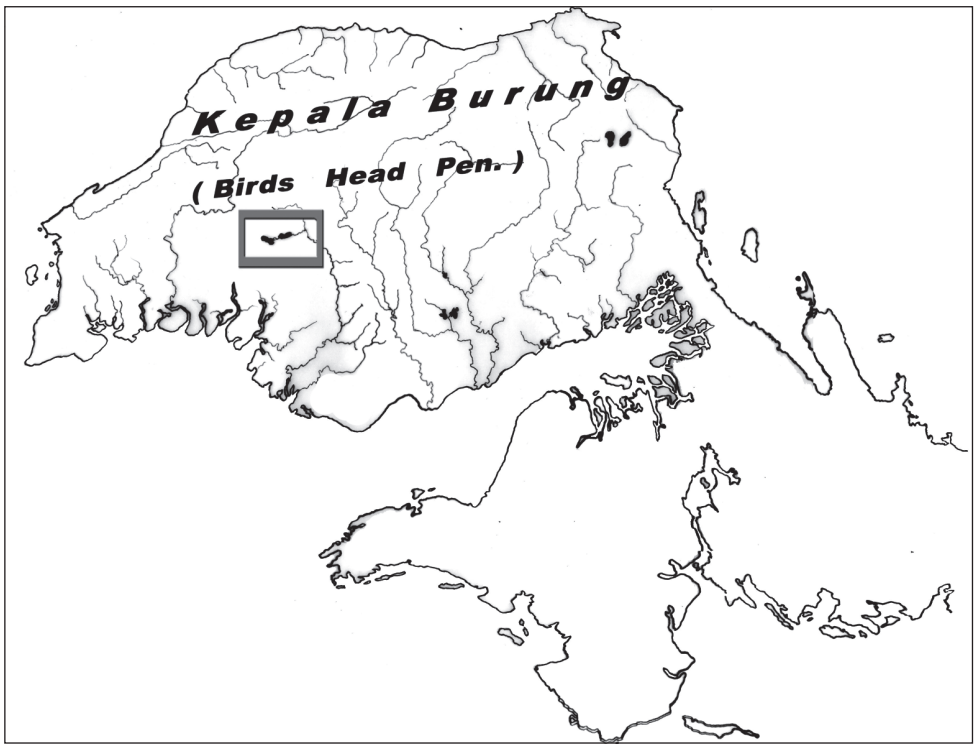

Fig. 7. The Vogelkop Peninsula with the location of the Ajamara Lakes indicated.

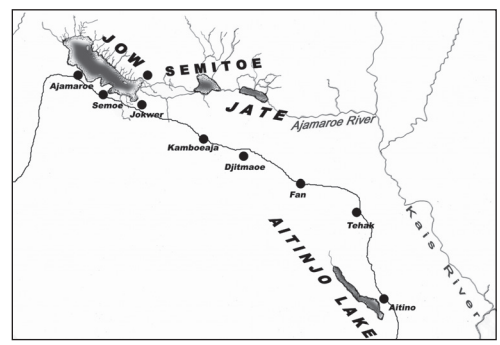

Fig. 8 The Ajamaru Lakes Region

shrubs. The whole complex belongs to the Kais River drainage system, which empties on the southwestern coast of the peninsula into the Ceram Sea."

Distribution (figs 7, 8).— Known only from the Ajamaru Lakes and the Ajamaru River, which belongs to the Kais River drainage. To improve the knowledge of the distribution of the species more collecting trips are necessary.

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