The occurrence of freshwater crabs (Crustacea: Decapoda:
Pseudothelphusidae, Trichodactylidae) in the Rio Xingu, Amazon
Region, Brazil, with description of a new species
of Pseudothelphusidae

by

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Abstract
A new species of pseudothelphusid crab, genus Kingsleya ORTMANN, 1897, is described from Rio Xingu,
a southern tributary of the Amazon River, in the state of Pará, Brazil. The new species, Kingsleya junki,
is distinguished by the morphology of the first male gonopod’s apical plate, which shows a rudimentary
proximal lobe and an enlarged distal lobe with a partially indented mesial margin. The occurrences of
Kingsleya ytupora MAGALHÃES, 1986 (Pseudothelphusidae), Sylviocarcinus devillei H. MILNE-EDWARDS,
1853, Sylviocarcinus pictus (H. MILNE-EDWARDS, 1853), and Trichodactylus ehrhardtii BOTT, 1969
(Trichodactylidae) are also recorded from this river.
Keywords: Freshwater crab, Amazon region, new species, Trichodactylidae, Pseudothelphusidae, Rio
Xingu.

Resumo
É descrita uma nova espécie de caranguejo Pseudothelphusidae, gênero Kingsleya ORTMANN, 1897, do
rio Xingu, tributário da caña da do rio Amazonas, no estado do Pará, Brasil. A nova espécie, Kingsleya
junki, é caracterizada pela morfologia da lâmina apical do gonopódio, a qual exibe um lobo proximal
rudimentar e um lobo distal alargado, com sua margem mesial parcialmente endentada. São também
registradas as ocorrências de Kingsleya ytupora MAGALHÃES, 1986 (Pseudothelphusidae), Sylviocarcinus
devillei H. MILNE-EDWARDS, 1853, Sylviocarcinus pictus (H. MILNE-EDWARDS, 1853) e Trichodactylus
ehrhardtii BOTT, 1969 (Trichodactylidae) para o mencionado rio.

Introduction
A thorough picture of the specific diversity and distributional limits of the Pseudothelphusidae and
Trichodactylidae of the Amazon Basin seems to be far from being achieved, in spite of the recent contributions of RODRIGUEZ (1982, 1992), MAGALHÃES

*Dedicated to Prof. Dr. Wolfgang J. Junk on the occasion of his 60th anniversary.

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(1986, 1990), MAGALHÃES & TÜRKAY (1986, 1996a, b), and MAGALHÃES & RODRIGUEZ (2002). The available records are usually concentrated in the vicinities of the most populated areas or scattered along the Amazon River and the lower course of some of the main rivers, such as Rio Negro, Rio Madeira, Rio Tapajós and Rio Tocantins. Many large Amazonian river systems are still poorly surveyed for their crustacean fauna. In the Rio Xingu basin, which is 1,450 km long with an area of 531,250 km², nothing is known about the composition and distribution of its decapod crustacean fauna, except for a single record of *Sylviocarcinus pictus* from its mouth (see MAGALHÃES & TÜRKAY 1996a).

Recent ichthyological and entomological expeditions to the middle and lower Rio Xingu have produced some collections of freshwater crabs that can contribute to improve our knowledge about this group in the Amazon region. In this paper I will report on the taxonomic results of the examination of these collections.

The specimens are deposited at the Instituto Nacional de Pesquisas da Amazônia, Manaus (INPA) and Museu Paraense Emílio Goeldi, Belém (MPEG). The following abbreviations were used in the new species description: carapace breadth (cb), measured across the carapace at its widest point; carapace length (cl), measured along the midline, from the frontal to the posterior margin; carapace height (ch), the maximum height of the cephalothorax; frontal breadth (fb), the breadth of the front measured along the upper border. For the other species, only the carapace breadth and carapace length are given after the number and sex of the specimens examined. Measurements are in millimeters. Other abbreviations used are: ov. = ovigerous; P = peripods; s = thoracic sternite. The word gonopod, when used alone, refers to the first male gonopod. Terminology for describing the gonopod morphology followed the criteria established by SMALLEY (1964) and RODRIGUEZ (1982).

**Taxonomic part**

*Family Pseudothelphusidae RATHBUN, 1893*  
*Tribe Kingsleyini BOTT, 1970*  
*Genus Kingsleya ORTMANN, 1897*

**Kingsleya junki** n.sp. (Fig. 1A-G)

**Material.** - Holotype, ♀ (MPEG 777), Brazil, Pará, Rio Xingu, Vitória do Xingu (02°53’S 52°01’W), left bank of Rio Xingu, pitfall in terra firme area, 3.xii.2000, leg. R. SANTOS, C. MACIEL & J.O. DIAS.

**Diagnosis.** - First male gonopod with a large apical plate; its proximal lobe poorly developed, rounded, partially overreaching the distal lobe in an oblique position, but much shorter than the distal lobe; distal lobe much enlarged, its lateral margin broad and uniformly rounded, apex narrow and rounded, mesial margin with two distinct projections in cephalic direction: the distal one slightly bilobed, the proximal one indented.

**Description of the holotype.** - Carapace outline ellipsoid, widest at the middle (cb/cl 1.58); dorsal surface smooth, regions ill defined. Pair of gastric pits very close to each other, barely visible on metagastric region. Cervical grooves distinct, narrow, almost straight; their extremities ending near anterolateral margin. Postfrontal lobules low, small; median groove wide and shallow between postfrontal lobules, absent near frontal margin. Surface of carapace between front and postfrontal lobules smooth and slightly inclined anteriorly and medianly. Upper border of front marked by faint papillae, slightly convex in dorsal view, but straight in the median part; median notch absent; lower border carinate, sinuous in both frontal and dorsal view, and a little more projected anteriorly than the upper one, except in the middle. Lower and upper orbital margins marked by a row of very faint papillae; exorbital angle low, lacking
tooth. Anterolateral margin of carapace with a very shallow depression just behind exorbital angle, fringed by small papillae before cervical groove, and followed by a set of very low tubercles ending by the middle of the lateral margin; posterolateral margin smooth and rounded. Epistome narrow; epistomial tooth triangular, deflexed, borders carinate and slightly granulated. Suborbital and subheptic regions of carapace sidewall smooth; pterygostomial regions smooth, only with a few small setae close mainly to the outer border of the third maxillipeds.

Endopod of third maxilliped with outer margin of ischium slightly convex, inner margin straight. Exopod of third maxilliped short and narrow, approximately 0.3 times the length of endopod ischium outer margin. Aperture of efferent branchial channel wide, subquadrate.

First pereiopods moderately heterochelous, right cheliped larger than left. Larger cheliped with merus subtriangular in cross section; superior margin rounded with faint granules; medial margin lined by a longitudinal row of rounded, low teeth, slightly increasing in size distally; inferior lateral margin marked by a row of faint tubercles, smooth distally; distal margin arched and smooth laterally, straight and marked by a row of faint tubercles mesially. Carpus with inner margin granular proximally, with a prominent median spine, and smooth distally; outer margin rounded, smooth. Palm relatively narrow (length/breadth 1.56), smooth on both sides. Fingers not gaping, tips not crossing; both fingers with large triangular teeth, smaller distally; dactylus with smaller teeth sometimes interspersed with larger ones. Dactylus slightly arched, longer than palm (dactylus/palm 1.25, measured dorsally), upper and outer surface of dactylus with longitudinal rows of minute granules. Propod finger with smooth surfaces. Pereiopods 2-5 slender, ratios dactylus/propodus and dactylus/merus, respectively, as follows: P2 = 1.74 and 1.97; P3 = 1.56 and 1.70; P4 = 1.55 and 1.66; P5 = 1.74 and 1.69. P2 to P5 with dactylus bearing five longitudinal rows of sharp, cornaceous spines, increasing in size distally.

Thoracic sternites of the third maxillipeds and first pereiopods completely fused, except for small notches at lateral edges of sternum; sternal sulci s4/s5, s5/s6 and s6/s7 distinct, failing to reach midline of thoracic sternum by a short distance; sternal sulcus s7/s8 reaching midline. Midline of thoracic sternum marked by a deep groove between sternites VII and VIII.

All abdominal segments free. Lateral margins of the male telson slightly concave, tip rounded.

First male gonopod with a slight constriction at middle, enlarged distally, bearing a well developed mesial process and an apical plate. Marginal suture situated on the mesial side, bearing several setae proximally. Mesial process large and rather long (ca. 25 % of gonopod length), roughly retangular, bearing a sharp spine distally, pointing in mesial direction. Marginal process short, broad, extending to the lateral side, but not projected distally over the spine field area. Mesial process clearly separated from the apical plate, both structures juxtaposed in an arrangement of ca. 90° angle. Apical plate large; proximal lobe poorly developed, rounded, partially overreaching the distal lobe in an oblique position, but much shorter than the distal lobe; distal lobe much enlarged, its lateral margin broad and uniformly rounded, apex narrow and rounded, mesial margin with two distinct projections in cephalic direction: the distal one slightly bilobed, the proximal one indented. Field of apical spines small, longitudinally narrow, situated caudolaterally at the base of the apical plate, not extending distally beyond the apex of the apical plate’s proximal lobe, surrounded by the mesial and lateral borders of the apical plate, and distally opened by a deep notch at the apex of the apical plate’s proximal lobe.

Second male gonopod shorter than the first one (ca. 0.8 times the length of the first gonopod), flagellum slender, tapering, tip compressed.

Size. - Holotype male: cl 33.4 mm, cl 21.2 mm, ch 13.9 mm, fb 9.9 mm.

Distribution. - Brazil, Rio Xingu. Up to now, the species is known only from the type locality.

Remarks. - The present new species was assigned to the genus *Kongsleya* ORTMANN, 1897, as the state of some of the gonopodal characters agree with those that are diagnostic for the genus. The gonopod of *K. junki* has the marginal process distally broadened and not overreaching the field of apical spines, the mesial process is clearly salient from the cephalic side of the gonopod and not continuous with the apical plate, the apical spines area is distally divided by a deep terminal notch, and the apical plate presents two lobes.

*K. junki* is distinguished from the other species of the genus by the very distinctive apical plate of the
gonopod. The apical plate has a rudimentary proximal lobe and is clearly shorter than the distal lobe. The distal lobe itself is very enlarged, with an irregular mesial margin bearing two distinct prominences, the proximal one being lined with indentations. This arrangement has no similarity with those of the other four species currently known to the genus. In K. latifrons (RANDALL, 1840), K. stolli BOTT, 1967 and K. yutora MAGALHÃES, 1986, the proximal lobe of the apical plate is well developed and just a little shorter than the distal lobe; in addition, the distal lobe is narrow and subtriangular in the former two species, and somewhat broad and rounded in the latter one. In K. besti MAGALHÃES, 1990, the proximal lobe is also well developed, although it involves the lower part of the distal lobe, which has a narrow apex. In all these four species the apical plate is rather narrow and the mesial margin is uniform, bearing no prominences or indentations.

K. junki can also be distinguished from K. besti by the marginal and the mesial processes of the gonopod. In K. junki, the marginal process is not projected upwards as it is in K. besti, and the mesial process is large and subrectangular in the former species, while subtriangular in K. besti. Concerning these characters, the present new species is similar to K. latifrons, K. stolli and K. yutora.

However, possible affinities between K. junki and Brasiliobothropsa tapajoense MAGALHÃES & TÜRKAY, 1986, can be inferred based on the morphology of the gonopod’s apical plate. In K. junki, the distal lobe is quite enlarged, with an irregular, indented mesial margin; in B. tapajoense, the apical plate is also expanded, though thicker distally and with a mesial margin smooth and bearing a single spine. In addition, the lateral border of the apical plate is slightly twisted in K. junki, while it became highly twisted in B. tapajoense, leading to the characteristic U-shaped outline of this border shown by the latter species (MAGALHÃES & TÜRKAY 1986: 374, fig. 2d).

Whether or not the present new species represents an intermediate form between Kingsleya and Brasiliobothropsa is still unclear. As the pseudothelphusids from southern Amazonia are poorly known, I would rather leave it as Kingsleya until a more comprehensive knowledge of the crab fauna from that region is acquired and a better understanding of the southern Amazonian Kingsleyi genera relationships is possible.

Etymology. - The species has been named for Dr. Wolfgang J. Junk, of the Max-Planck-Institute for Limnologie, Working Group in Tropical Ecology, Plön, Germany, for his outstanding contribution to Tropical Ecology, and as a personal recognition for his support and incentive during my first steps as a carcinologist in the Amazon region.

**Kingsleya yutora MAGALHÃES, 1986 (Fig. 2A-C)**


Remarks. - The male first gonopods of specimens from Rio Xingu exhibit the broad, rounded apical plate characteristic to K. yutora. In addition, all specimens of both sexes show a row of irregular, sharp teeth in the distal half of the inner border of the cheliped merus. These two characters are diagnostic for this species and distinguish it from K. latifrons, which has a gonopod with a narrow, subtriangular apical plate and the inner border of the cheliped merus devoid of teeth (MAGALHÃES 1986).
MAGALHÃES (1986) pointed out that K. yatopa is typically found in rapids and waterfalls. This is corroborated by the above collections, all of them made in this kind of habitat. The present records extend this species range to a more eastern region in the lower Amazon and suggest that it could have a wider distribution in those Amazonian rivers coming from the Guyana and the Central Brazilian Shield.

**Family Trichodactylidae H. MILNE-EDWARDS, 1853**

**Subfamily Diocarcininae PRETZMANN, 1978**

**Sylviocarcinus devillei H. MILNE-EDWARDS, 1853 (Fig. 2D)**


Remarks: - Only remains of dead specimens (carapace, chelipeds and legs) were found, usually among the rocks at rapid and water fall zones. However, the specimens could be positively identified to this species by the typical spined frontal margin of the carapace.

**Sylviocarcinus pictus (H. MILNE-EDWARDS, 1853)**


Remarks: - In spite of the fact that only immature males are available, the gonopod clearly shows the typical morphology of this species.

**Trichodactylus ehrhardtii BOTT, 1969 (Fig. 2E)**

Material: - Brazil, Pará, Rio Xingu: 3 ♂♂, 6.6:5.2 - 8.0:7.1 (INPA 1275), cachoeira Kaituká, 03°33′47″S 51°53′20″W, 9.x.1990, leg. J. ZUANON.

Remarks: - In spite of being females, the above specimens were identified as T. ehrhardtii by the presence and situation of the carapace dentition. They have only two widely spaced, sharp teeth on the anteriorlateral margin of the carapace; in addition, an obsolecent tooth is barely visible on the posterolateral margin of the carapace. Such a disposition of the carapace teeth could be similar from that of Trichodactylus faxoni RATHBUN, 1905, with which they could be confused if male specimens are not available. In the latter species, only the teeth of the anterolateral margin of the carapace are present, and they are usually very small, reduced, and sometimes even absent; the carapace outline tends to be more rounded in shape as well. In T. ehrhardtii, the carapace outline tends to be more hexagonal, the first two anterolateral teeth of the carapace are distinct and sharp, and usually shows 1-2 minute, sometimes obsolescent teeth on the posterolateral margin of the carapace.

**Zoogeography**

The records presented in this paper are shown in figure 3. Both Sylviocarcinus devillei and S. pictus have extensive distributional range in the Amazon Basin and are among the most frequent and common species of trichodactylid crabs (RODRIGUEZ, 1992; MAGALHÃES & TÜRKAY 1996a; MAGALHÃES 2002); S. pictus also occurs in the coastal river basins of the Atlantic Guianas and Northeastern Brazil (MAGALHÃES & TÜRKAY 1996a). However, the former species has not yet been recorded to the rio Xingu, and the latter has a single record from its mouth (MAGALHÃES & TÜRKAY 1996a). Trichodactylus ehrhardtii was only known to the Central Amazon region (BOTT 1969). The record above greatly extends the distributional range of the species,
indicating that it can encompass a larger portion of the Eastern Amazon region.

The genus *Kingsleya* currently has four species assigned to it. The widest distribution is shown by *K. latifrons*, which occurs along most of the Guyana Shield region, encompassing Atlantic Guianas river basins and northern tributaries of the Amazon River in the states of Roraima, Amazonas and Pará (RODRIGUEZ 1982; MAGALHÃES 1986). *K. sioli* also exhibits a Guayana Shield distribution, although more restricted to upper course of rivers coming from the mountain ranges (Serra Acarai and Serra Tumucumaque) along the border between Brazil (state of Pará) and Guyana and Suriname (RODRIGUEZ 1982; MAGALHÃES 1986). *K. ytupora* occurs in Brazil, in the rapids and water fall zone of rivers running from both the Guayana and Central Brazilian Shields, in the states of Amazonas and Pará (MAGALHÃES 1986; this paper).

The presence of another *Kingsleya* species in right bank tributaries of the Amazon River indicates that this genus has a wider distribution towards southern Amazonia. The affinities of *K. junki* with *B. tapajoense* would also suggest that the pseudothelphusid crabs may have had a complex evolutionary history within the Amazonian portion of the Central Brazilian Shield. Similar to Rio Xingu, all other river basins draining the Central Brazilian Shield are poorly surveyed for decapod fauna, especially for the Pseudothelphusidaceae. A few and scattered records were offered by MAGALHÃES (1986), but they are all inconclusive concerning specific identification (MAGALHÃES & RODRIGUEZ 2002).

As mentioned by MAGALHÃES & TÜRKAY (1986), the evolutionary history of the Kingsleyina in the Amazon basin is still dependent upon a better knowledge of the decapod fauna from the southern Amazonian region. However, the southern and eastern Amazonia are highly vulnerable regions under strong pressure due to increasing human activity caused by invading agrobusiness frontier and infrastructural projects (KOHLHEPP 2001). Systematic and comprehensive faunistic surveys in the tributaries draining the Central Brazilian Shield, particularly in their headwaters, are therefore urgent for gaining data to be used either for scientific or for conservation purposes.

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Fig. 1: 
*Kingsleya junki* n. sp., holotype, MPEG 777: A: dorsal view; B: first left gonopod, caudal view; C: same, detail of distal part, caudolateral view; D: same, caudomesial view; E: same, cephalic view; F: opening of left efferent branchial chamber, external view; G: left third maxilliped, external view; ap, field of apical spines; dl, distal lobe of apical plate; lb, lateral border of apical plate; ma, marginal process; mb, mesial border of apical plate; mp, mesial process; pl, apical plate. Scale bars: A = 10 mm, B-F = 1 mm, G = 2 mm.
Fig. 3:
Distribution of the freshwater crabs in the middle and lower course of Rio Xingu, state of Pará, Brazil.
Symbols: ● = *Kingsleya junki* n. sp.; ▲ = *Kingsleya yutupora*; ◆ = *Sylvioarcinus devillei*; ♦ = *Sylvioarcinus pictus*; ★ = *Trichodactylus ehrhardtii*.