Ianiropsis derjugini

An asellid isopod

Phylum: Arthropoda, Crustacea

Class: Multicrustacea, Malacostraca, Eumalacostraca

Order: Peracarida, Isopoda, Asellota

Family: Janiroidea, Janiridae

Taxonomy: In 1952, Menzies characterized *I. kincaidi* and *I. derjugini* as subspecies of *I. kincaidi* based on morphology and habitat. However, due to a lack of evidence of genetic introgression, most researchers consider them different species (e.g. Wilson and Wagele 1994; Brusca et al. 2007).

Description

Size: Up to 4 mm in length (Menzies 1952). Figured specimen (from Charleston, Coos Bay) was 3 mm long.
Color: White with brown chromatophores.
General Morphology: Isopod bodies are dorso-ventrally flattened and can be divided into a compact **cephalon**, with eyes, two **antennae** and **mouthparts**, and a **pereon** (thorax) with eight segments, each bearing similar **pereopods** (hence the name “isopod”). Posterior to the pereon is the **pleon**, or abdomen, with six segments, the last of which is fused with the telson (the **pleotelson**) (see Plate 231, Brusca et al. 2007). The Isopoda can be divided into two groups: ancestral (“short-tailed”) groups (i.e. suborders) that have short telsons and derived (“long-tailed”) groups with long telsons, *I. derjugini* groups among the former (see Plate 233C, Brusca et al. 2007). The suborder, Asellota is considered one of the ancestral isopod groups (see Fig. 7, Brandt and Poore 2003) and members are some of the most diverse isopods and are most successful in deep sea habitats (Brusca et al. 2007; e.g. *Jaera*, Linse et al. 2014).
Cephalon: Without rostrum or anteriorly projecting anterolateral angles (Fig. 1) (compare to *I. k.* kincaidi, Miller 1975).

Eyes: Well-developed and reniform (Fig. 1).

Antenna 1: The first antenna is quite short and has a flagellum with 8–10 articles (Fig. 2) (10 articles in males, Richardson 1905).

Antenna 2: The second antenna is with "squama", or scales, on third article of the base (Fig. 3) (Miller 1975) and is about $^2/_3$ length of body. The flagellum is with many segments and fine setae and the peduncle has six articles (Hatch 1947).

Mouthparts: Maxilliped palps with articles two and three much wider than endite (not figured) (Miller 1975).

Rostrum: Absent.

Pereon:

Pereonites: Seven thoracic segments with variably shaped epimera (Fig. 1) and no lateral spines.

Pereopods: The interior edge of the propodus is smooth, not serrated, on proximal third of the first pereopod (Fig. 4) (Miller 1975).

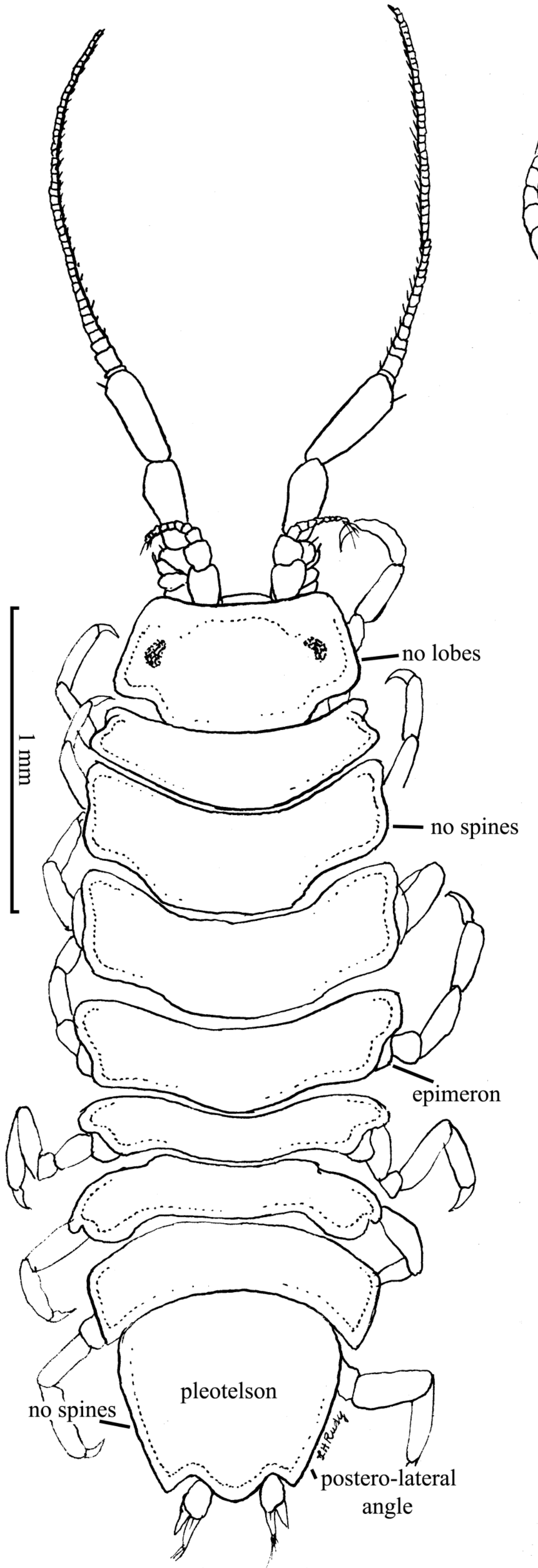
Pleon:

Pleonites:

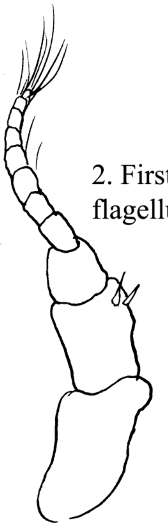
Pleopods:

Uropods: Biramous with inner branch a little longer than the outer branch. The total uropod length is less than ½ the pleotelson (Miller 1975) (Fig. 5).
Pleotelson: Shield-like with spineless lateral borders spineless (Fig. 1) and at postero-lateral angles at insertion of uropods (Fig. 1) (Miller 1975) (no other *Ianiropsis* has this character). Three posterior segments not differentiated (Hatch 1947).
Sexual Dimorphism: Males have a second pleopod with modified copulatory morphology

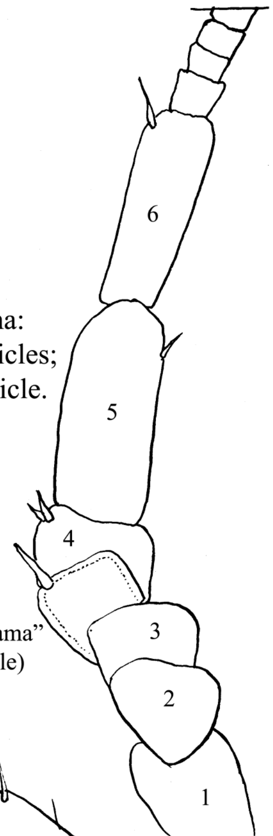
Ianiropsis derjugini



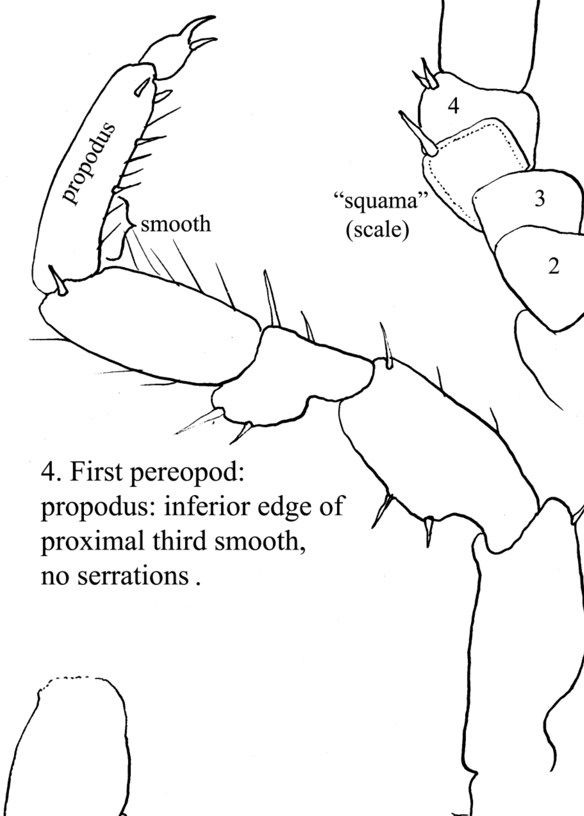
1. *Ianiropsis derjugini* (L: 3mm) x50:
head without lobes or rostrum;
thoracic epimera, pleotelson without spines;
second antenna 2/3 body length.



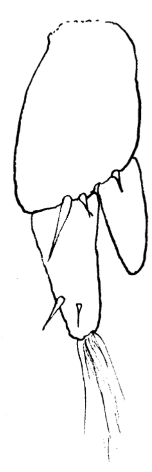
2. First antenna: short;
flagellum: eight articles.



3. Second antenna:
peduncle: six articles;
scale on third article.



4. First pereopod:
propodus: inferior edge of
proximal third smooth,
no serrations .



5. Right uropod:
two branches: inner longer;
length: less than pleotelson.

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(enlarged protopod and knee-like endopod) (Brusca et al. 2007).

Possible Misidentifications

The order Isopoda contains 10,000 species, 1/2 of which are marine and comprise 10 suborders, with eight present from central California to Oregon (see Brusca et al. 2007). Among isopods with elongated telsons (with anuses and uropods that are subterminal), there are several groups (i.e. suborders) including Flabellifera, Anthuridea, Gnathiidea, Epicaridea and Valvifera.

The suborder Asellota is characterized by uropods that are styliform (Brandt and Poore 2003) and terminal, pleonites 3, 4 or 5 fused with the pleotelson, and 1–3 forming an operculum over those posterior and pereonites without coxal plates. Thirty-eight species comprising nine families are reported from central California to Oregon, but only 18 species are intertidal (Brusca et al. 2007).

The family Janiridae (174 species, 23 genera worldwide, Linse et al. 2014) is a non-monophyletic isopod family (Wilson 1994) that have 2–3 claws on the dactyls of pereopods 2–7, antennae with long flagella, and well developed uropods. There are 13 species locally and seven are in the genus *Ianiropsis,* all of which are found in the intertidal or shallow subtidal (Brusca et al. 2007). The remaining genera include *Caecianiropsis*, *Caecijaera*, *Iais* (each with one local species) and *Janiralata* (three local species).

Both *Ianiropsis kincaidi* and *I. derjugini* were formerly subspecies of *I. kincaidi* and thus, are most morphologically similar. *Ianiropsis kincaidi* has longer uropods, almost half to as long as pleotelson. Its first antennae are elongate and it lacks the postero-lateral angles of *I. derjugini*. Habitats of the two subspecies are different*:* *I. kincaidi* lives in small pools created by wave splash and is subject to wide temperature variation (Menzies 1952). On the other hand, *I. derjugini* is more common under rocks that are covered by algae (Brusca et al. 2007).

Ianiropsis analoga, I. epilittoralis and *I. tridens* have spine-like serrations on the sides of the pleotelson (Miller 1975). *Ianiropsis analoga* occurs from Marin County, California northward, *I. epilittoralis* can be found from Marin County south to San Luis Obispo, California in the high intertidal and *I. tridens* has a large range from San Juan Island, Washington to Monterey County, California as well as northern Chile. *Ianiropsis minuta* and *I. montereyensis* lack these serrations, however *I. minuta* can be recognized by evenly rounded head margins and the lack of the postero-lateral angles of the telson and *I. montereyensis* has uropods that are longer than the telson. The former species is reported from Marin County, California while the latter occurs from Marin to Monterey Counties in the intertidal and shallow subtidal zones (Brusca et al. 2007).

Ecological Information

Range: Type region is the Bering Sea. Known range from Komandorskie Islands, Bering Sea to Monterey County, California (Miller 1968).

Local Distribution: Coos Bay distribution at the Charleston small boat basin.

Habitat: Under rocks of middle and lower intertidal zones (Menzies 1952), on buoys from the surface to 1.8 m (Miller 1968). The figured specimen was collected from a within a decayed float with the shipworm, *Bankia setacea*.

Salinity: Collected at a salinity of 30.

Temperature: Apparently not adaptable to extreme temperatures (compre to *I. k. kincaidi* Miller 1968).

Tidal Level: Middle and lower intertidal zones (Menzies 1952) ranging from surface to 1.8 m deep (Miller 1968). The figured specimen was collected near the water line.
Associates: The shipworm, *Bankia setacea* and harpactacoid copepods.
Abundance: Fairly common in wood debris with *Bankia setacea*.

Life-History Information

Reproduction: Most isopods have separate sexes (i.e. dioecious, Brusca and Iverson 1985) (although protogynous and protandric species are known, Araujo et al. 2004; Boyko and Wolff 2014). Reproduction proceeds by copulation and internal fertilization where eggs are deposited within a few hours after copulation and brooded within the female marsupium (Brusca and Iverson 1985). The biphasic molting of isopods allows for copulation; the posterior portion of the body molts and individuals mate, then the anterior portion, which holds the brood pouch, molts (Sadro 2001). Embryonic development proceeds within the brood chamber and is direct with individuals hatching as manca larvae that resemble small adults, with no larval stage (Boyko and Wolff 2014). Ovigerous *I. derjugini* were collected in February, May and June (northern California, Menzies 1952).
Larva: Since most isopods are direct developing, they lack a definite larval stage. Instead this young developmental stage resembles small adults (e.g. Fig. 40.1, Boyko and Wolff 2014). Most isopods develop from embryo to a manca larva, consisting of three stages. Manca larvae are recognizable by lacking the seventh pair of pereopods, but otherwise resemble small adults. They usually hatch from the female marsupium at the second stage and the molt from second to third manca produces the seventh pair of pereopods and sexual characteristics (Boyko and Wolff 2014). Isopod development and larval morphology can vary between groups (e.g. Gnathiidae, Cryptoniscoidea, Bopyroidae, Cymothoidae, Oniscoidea) (see Boyko and Wolff 2014). Parasitic isopods, for example, have larvae that are morphologically dissimilar from adults (Sadro 2001). Isopod larvae are not common members of the plankton, with parasitic larvae most likely to be observed. Occasionally, suspended benthic juveniles or pelagic species are collected in plankton samples, but these can be differentiated from larvae by their larger size (Sadro 2001).
Juvenile:
Longevity:
Growth Rate: Growth among isopods occurs in conjunction with molting where the exoskeleton is shed and replaced. Post-molt individuals will have soft shells as the cuticle gradually hardens. During a molt, arthropods have the ability to regenerate limbs that were previously autonomized (Kuris et al. 2007), however, isopods do not autotomize limbs as readily as other groups (Brusca and Iverson 1985). Compared to other arthropods, isopods exhibit a unique biphasic molting, in which the posterior 1/2 of the body molts before the anterior 1/2 (Brusca et al. 2007).
Food:
Predators: Isopods play a significant role as intermediate food web links, like amphipods, (e.g. see *Americorophium salmonis*, this guide) that are consumed by more than 20 species of marine fish (Welton and Miller 1980; cabezon, Best and Stachowicz 2012) and whales (Brusca et al. 2007).
Behavior:

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