



Research Paper

A new species of the Aak grasshopper genus *Poecilocerus* Serville, 1831 (Orthoptera: Pyrgomorphae) from India

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Abstract: *Poecilocerus geniplanus* sp. nov. is described from Raipur, Chhattisgarh, India. A key to the species of the genus *Poecilocerus* known from globally is provided.

Keywords: Orthoptera, Pyrgomorphae, Pyrgomorphidae, Barnawapara Wildlife Sanctuary, Chhattisgarh, India, new species, taxonomy.

INTRODUCTION

The family Pyrgomorphidae, commonly known as 'gaudy grasshoppers' is identified by the presence of acute conical head and fastigial furrow; foveolae of vertex contiguous, superior and forming the extremity of the fastigium, stridulatory mechanism absent. The genus *Poecilocerus* (Serville, 1831) is characterized by the large and robust body, subfusiform; pronotum with median carina indistinct, lateral carinae absent, dorsum crossed by three transverse sulci; wings usually developed, generally

surpassing the abdomen, mesosternal interspace open and external apical spine of hind tibia present. Kirby (1914) reported 5 species from the India viz., *P. tessellatus* Bolivar (1904) from India: Chennai, Bellary; *Poecilocerus* sp. from North India; *P. pictus* (Fabricius, 1775) from Baluchistan: Quetta; Sindh: Karachi; India: Chennai.; *P. punctiventris* Seville, 1839 from India: Bombay; Egypt; *P. (?) ornatus* Burmeister, 1838 from India.

Subsequently, *P. tessellatus*; *P. punctiventris* and *P. ornata* are synonymized with *P. pictus*; *P. bufoniusvittatus* and *Taphronota ferruginea ferruginea* respectively Kevan et al. (1972), Popov and Kevan (1979) and Kumar et al. (2014). Presently, the genus *Poecilocerus* includes 4 species and 2 subspecies globally (Eades et al. 2016) including one species *Poecilocerus pictus* from India (Fabricius, 1775, Shishodia et al. 2010).

The present paper describes a new species of the genus *Poecilocerus* from India with a

MATERIAL AND METHODS

Study area: The survey was carried out in Barnawapara Wildlife Sanctuary, Raipur district, Chhattisgarh state during 2011, lies between latitudes 21°18'45" to 21°30'N and longitudes 82°22'30" to 82°37'30"E, with an area of about 244.66 sq. km. The specimen was collected by sweeping over host food plant *Calotropis procera* (Aiton) family Apocynaceae near Keduvanala by using insect net and killed by benzene vapor in killing jar. The specimen was pinned and dry preserved. Specimen images were captured by using Sony Digital Camera DSC-HX9V. The specimen was studied under Leica stereozoom Microscope (Leica M205 A) and photographs were taken using the software Leica Application Suite (LAS V3.8). All the measurements are given in millimeters. The type specimen is deposited in Central Entomological Laboratory (CEL) of the Zoological Survey of India, Kolkata.

Taxonomy

Poeciloceris geniplanus sp. nov. (Figs. 1–2; 5,7,8,11,13,15,17)

Type material. Holotype: ♂, INDIA: CHHATTISGARH, Raipur district, Barnawapara Wildlife Sanctuary, Keduvanala, N 21°24'57", E 82°26'500" 318.2 m., 09.vii.2011, coll. S. K. Gupta, Reg. No.14964/H5.

Diagnosis: Body large, robust, light brownish-yellow shining, antennae light brown, 17-segmented, pronotum with light yellow buff and without maculations, tegmina and wings extended beyond abdomen; male supra anal plate triangular with deep Y shaped mark in middle; ventral margin of subgenital plate plane.

Description. Male (holotype) (Fig.1–2): Body large, robust. Head two times as short as pronotum; vertex without longitudinal carina in middle, length of fastigium before

anterior margin of eyes 1.7 times as short as longitudinal diameter of eyes; front acute in lateral view; frontal carinae slightly sinuated between antennae and almost parallel diverging towards the clypeus (Fig. 5). Antennae, 17-segmented (Fig. 17), extended to base of mid femora or beyond hind margin of pronotum, placed; below lateral ocellus; eyes longitudinal 1.8 times as long as horizontal one, prominent, slightly elongated in dorsum profile.

Anterior margin of pronotum truncate and posterior margin of pronotum slightly arcuate (Fig.7). Pronotum usually punctuate, with light reddish, yellowish buff, anterior margin undulated, prozona with dots and rugulae, metazona with dense dots and rugulae, the length of prozona about as long as the length of metazona; median carina slightly distinct in metazona and indistinct in prozona without lateral carinae (Fig. 13), three transverse sulcus; anterior transverse sulcus only seen in dorsum, posterior sulcus placed about the middle; posterior lower angle of lateral lobe of pronotum acute angulated, prosternal tubercle conical, apex acute, lateral lobe front angle obtuse and hind posterior-ventral angle obliquely truncate, mesosternal interspace about tetragonal (Fig. 15).

Tegmina: Tegmina and wings well developed, broad apex reaching beyond abdomen. Posterior margin of 10th abdominal tergite deeply attenuated and excised in middle. Supra-anal plate triangular with deep Y shaped mark in middle. Cerci slightly incurved, apically expanded, apices truncated, reaching up to one third posterior margin of supra-anal plate (Fig. 8).

Legs: All the femora smooth and slender. Length/width ratio of fore femora 2.6, mid femora 2.5, hind femora 5.5, slender, with upper basal lobe as long as lower basal lobe, tip of hind femora without spine on the genicular hood, fore tibiae and hind tibiae

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 with outer margin 5 spine and inner margin 4 spine, hind tibiae with 6 outer spines and inner 7 spines, with one pair apical outer spurs and one pair inner apical spurs. Ventral margin of subgenital plate plane (Fig. 11).

Colour: Body light brownish; shining. Antennae unicolour. Head and pronotum light brown, yellow with reddish buff

colour; eyes hyaline, whitish; episternum dark brown, tegmina light brownish with yellowish, fore, mid and hind femora light reddish brown, knee dark, hind tibiae light yellow, with inner and outer surfaces light brownish spots; abdomen dark yellowish, with transverse brown bands; hind tibiae light yellow, spine yellow tip dark black.

Table 1. Comparison of *P. geniplanus* sp. nov. and *P. pictus*

Characters	<i>P. geniplanus</i> sp. nov.	<i>P. pictus</i>
Body colour	light brownish (Fig. 1–2)	blue yellowish (Fig. 3–4)
Head and Pronotum	slightly yellow buff and without maculations (Fig. 7,13)	yellow and blue buff with maculations (Fig. 10,14)
Supra-anal plate	supra-anal plate triangular with deep Y shaped mark in middle. (Fig. 8)	supra-anal plate triangular with deep V shaped mark in middle. (Fig. 9)
Tegmina and wings	tegmina and wings 1.5 times longer than abdomen.	tegmina and wings about as long as abdomen.
Compound eyes	in dorsum, slightly elongated.	in dorsum, ovate.
Antennae colour	light brownish	dark blue with yellow
Sub-genital plate	ventral margin plane (Fig. 11)	ventral margin with a constriction (Fig. 12)
Frontal ridge	sinuated in between antenna grooves then less widened parallel below up to clypeus (Fig. 5)	sinuated above antenna grooves then widened more parallel below up to clypeus (Fig. 6)

Keys to the genus *Poeciloceris*

1. Frontal ridge between antennae strongly compressed.....*P. arabicus*
- Frontal ridge between antennae slightly compressed.....2
2. Yellow maculations on the head and pronotum weaker and smaller.....3
- Yellow maculations on the head and pronotum absent.....6
3. Antenne unicolour..... *P. bufonicus bufonicus*
- Antennae with black and yellow colour.....4
4. Tegmen with black- purple points.....*P. calotropides*
- Tegmen without black-purple points.....5
5. Pronotum flat or very slightly siliform, yellowish buff with fine bluish or purplish marking and speckling, antennae dark black with distinct yellow*P. bufonicus hieroglyphicus*
- Pronotum slightly concave, yellowish buff with dark brown marking, antennae with dark brown ring without yellow colour.....*P. bufonicus vittatus*
6. Antennae ringed with dark blue and dark yellow, subgenital plate ventral margin with a constriction*P. pictus*
- Antennae ringed light brown, subgenital plate ventral margin plane... *P. geniplanus* sp. nov.

DISCUSSION

We examined differences between *P. geniplanus* sp. nov. and *P. pictus*.

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Significant differences were found in 1) body colour 2) frontal ridge morphology 3) head and pronotum 4) compound eye 5) antenna 6) tegmen length 7) supra anal plate and subgenital plate morphology. After comparison of body colour *P. geniplanus* sp. nov. is light yellowish and reddish brownish. Head and pronotum with slightly reddish brown buff. Supra-anal plate triangular with deep Y shaped mark in middle *P. geniplanus* sp. nov. while supra-anal plate triangularly with deep V shaped mark in middle *P. pictus*. We thus consider that the *P. geniplanus* sp. nov. is separate evolutionary units, as new to science is presented. In the present paper, a new species is described from India. A key to 7 species and subspecies of the genus *Poekilocerus* is presented including new species.

Measurements Male: Body length 48.2; antenna length 17.585, antennal groove length 0.604, width 0.984, scapes length 0.525, mid segment length 1.347; head length 5.326, width 5.836; fastigium of vertex 3.10; compound eye length 2.469, width 1.358; interocular distance 2.340; Pronotum length 10.945, width 9.333; prozona length 5.282, width 6.416; metazona length 5.665, width 8.893; mesosternal lobe length 2.706, width 1.709; tegmina length 36.88; Abdomen length 23.644, width 5.583; subgenital plate length 3.887, supra anal plate length 2.391, width 1.970, cerci length 1.597, width 0.506; Fore leg: femur length 4.56, width 1.754; tibial length 6.698, width 1.22; tarsus length I 1.044, II 0.387; III 2.793; claws Ist length 1.136, IInd 0.917; arolium length 0.769; Mid leg: femur length, 4.721 width 1.830; tibiae length 6.443, width 1.160; length tarsus I, 1.619, II 0.645, III 0.2795; claw I length 1.11, iind 0.722; Hind leg: femur length 17.313, width 3.428; tibial length 13.630, width 0.750; length tarsus I, 2.700, II 1.231, III 3.473; hind tibial outer spurs I length 0.672, II 0.820; inn spur I length 1.851.

Etymology. The name of the species given after the character of the subgenital plate ventral margin plane.

Distribution. Known only from the type locality, Chhattisgarh (India).

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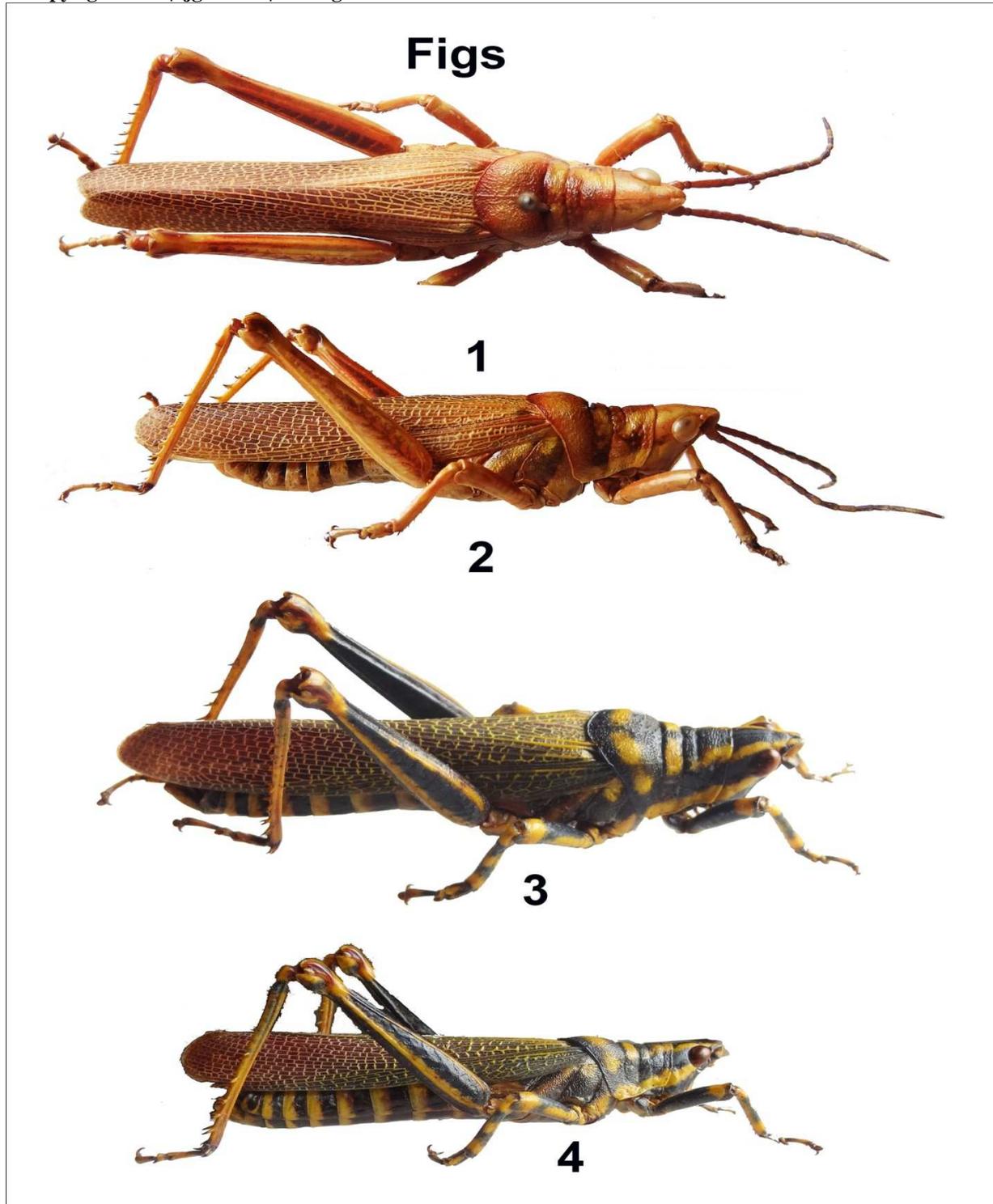


Figure 1-4. 1, *P. geniplanus* sp. nov. male, dorsal view; 2, lateral view; 3, *P. pictus* dorsal view; 4, lateral view.

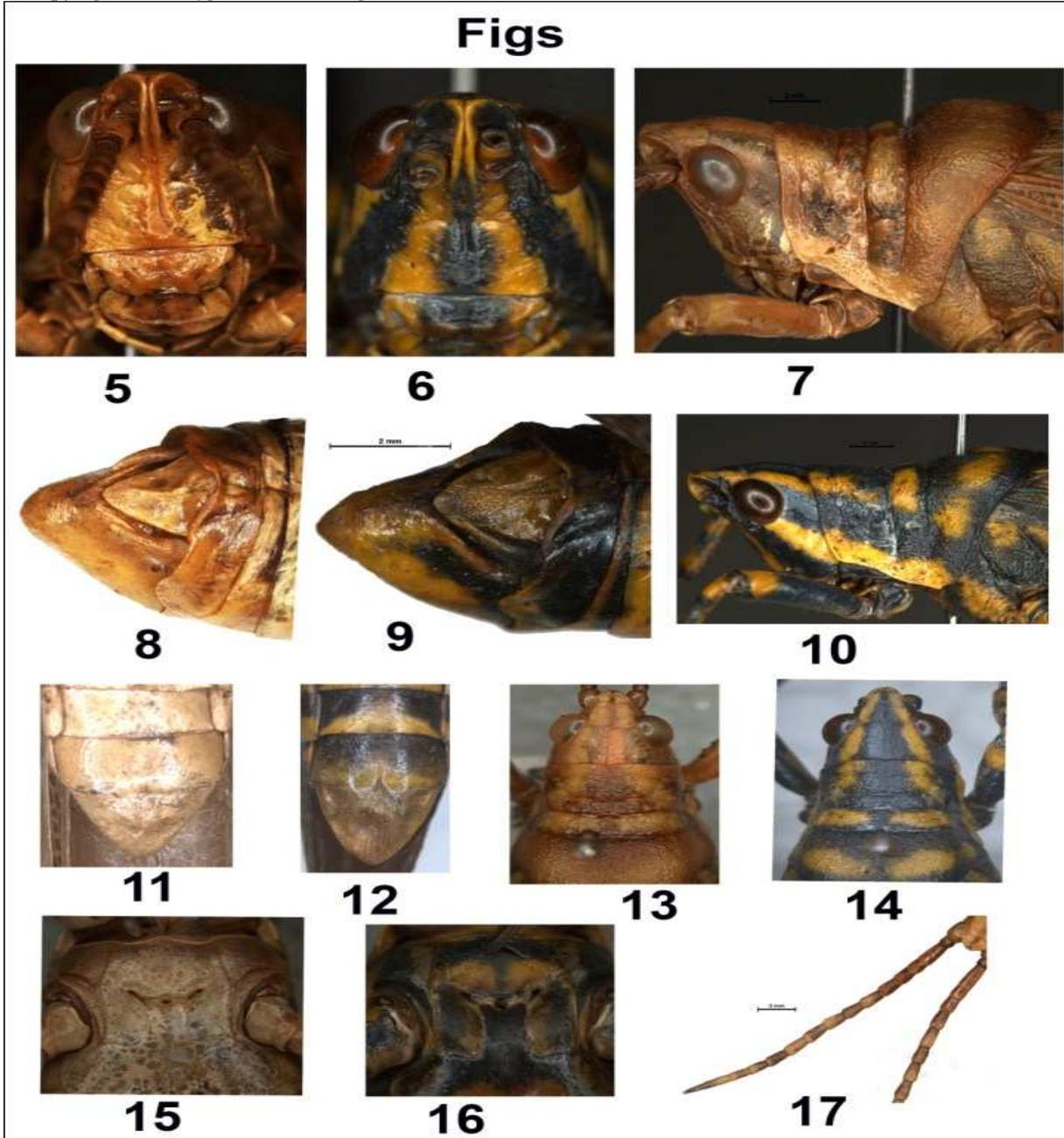


Figure 5-17. 5, *P. geniplanus* sp. nov. Frontal ridge (frontal view); 6, *P. pictus* Frontal ridge (frontal view); 7, *P. geniplanus* sp. nov. pronotum (lateral view); 8, *P. geniplanus* sp. nov. supra-anal plate (dorsum view); 9, *P. pictus* supra-anal plate (dorsum view); 10, *P. pictus* pronotum (lateral view); 11, *P. geniplanus* sp. nov. subgenital plate (ventral view); 12, *P. pictus* subgenital plate (ventral view); 13, *P. geniplanus* sp. nov. pronotum (dorsum view); 14, *P. pictus* pronotum (dorsum view); 15, *P. geniplanus* sp. nov. mesosternum lobe; 16, *P. pictus* mesosternal lobe; 17, *P. geniplanus* sp. nov. antenna.

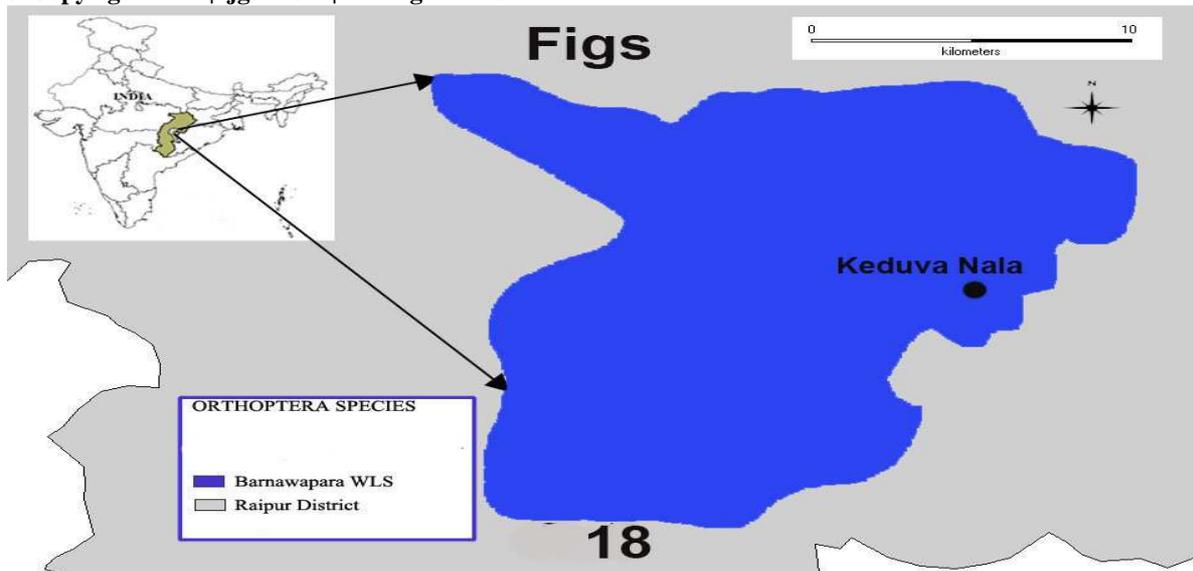


Figure 18. Distribution map of *P. geniplanus* sp. nov. India; coloured area denotes Chhattisgarh state; Barnawapara Wildlife Sanctuary, the sphere mark denotes the distribution of *P. geniplanus* sp. nov.