

ORIGINAL ARTICLE

# Three new species of genus *Pylaemenes* Stål (Phasmatodea: Heteropterygidae: Dataminae) from Vietnam

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**Abstract** This study provides descriptions of three new species of the genus *Pylaemenes* Stål, 1875 from Vietnam, namely *P. abramovi* sp. nov., *P. konchurangensis* sp. nov. and *P. konkakinhensis* sp. nov..

**Key words** Stick insects, Datamini, Vietnam, new species, key.

## 1 Introduction

The subfamily Dataminae consists of eight genera including *Dares* Stål, 1875, *Epidares* Redtenbacher, 1906, *Hainanphasma* Ho, 2013, *Orestes* Redtenbacher, 1906, *Planispectrum* Rehn & Rehn, 1939 [= *Platymorpha* Redtenbacher, 1906; = *Platyphasma* Uvarov, 1940], *Pylaemenes* Stål, 1875 [= *Datames* Stål, 1875], *Spinodares* Bragg, 1998 and *Woodlarkia* Günther, 1932. In Vietnam, three genera and four species, *Orestes mouhotii* (Bates, 1865), *Planispectrum cochinchinensis* (Redtenbacher, 1906), *P. pusillus* (Redtenbacher, 1906) and *Pylaemenes guangxiensis* (Bi & Li, 1994), are recognized (Redtenbacher, 1906; Zompro, 2004; Otte & Brock, 2005; Ho, 2013a, b; Brock *et al.*, 2018). The author recently examined the Vietnamese *Pylaemenes* and found three new species. After these additions, four species are currently attributed to the Vietnamese *Pylaemenes*.

## 2 Materials and methods

The examined material including the types and non-types were dried and pinned. Morphological terms refer to Bragg (1998, 2001), Zompro (2004) and Bradler (2009). All measurements are given in millimetres (*mm*). The materials are deposited in Hong Kong Entomological Society, Hong Kong, China (HKES) and The Manchester Museum, The University of Manchester, U.K. (MMUE), respectively.

## 3 Taxonomy

### *Pylaemenes* Stål, 1875

*Pylaemenes* Stål, 1875: 51, 93 (= *Datames* Stål, 1875; = *Pyloemenes* Bradley & Galil, 1977). Type-species: *Phasma (Pachymorpha) coronatum* Haan, 1842: 137, pl. 14, figs 4–5 (= *Pylaemenes coronatus*), by subsequent designation of Kirby, 1904: 400.

Diagnosis. Medium to large Dataminae. Apterous. Body robust and thick-built. Head oval. Occiput of head conically

elevated with a short crest. Antennae distinctly longer than profemora, surpassing apices of protibiae. Scapus with short tubercles on outer edge. Pronotum nearly square or trapezoidal. Mesonotum rectangular or trapezoidal, more than twice as long as pronotum, carinate medially. Metanotum longer than wide or as long as wide, longer than median segment. Abdomen cylindrical or subcylindrical in female, cylindrical in male. Seventh sternum with or without praeopercular organ on posterior area in female. Cerci flattened, small and short. Profemora indistinctly curved basally. Anterodorsal and posterodorsal carinae of mesofemora and metafemora with small blunt teeth. Anteroventral and posteroventral carinae of mesofemora and metafemora with or lacking blunt teeth near apices.

Distribution. China, Indonesia, Japan, Malaysia, Singapore, Thailand, Vietnam.

Remarks. Currently, four species of *Pylaemenes* are recognized in Vietnam. A key to the females of the genus is provided. The female of *P. abramovi* **sp. nov.** is unknown and not sufficiently provided in the key. A key to the males of the genus is not provided because the males of *P. konkakinensis* **sp. nov.** and *P. quangxiensis* (Bi & Li, 1994) are unknown.

#### Key to females of *Pylaemenes* Stål, 1875 from Vietnam.

1. Posteromedial area of seventh abdominal sternum lacking praeopercular organ ..... *P. quangxiensis*  
Posteromedial area of seventh abdominal sternum with a hump-like praeopercular organ ..... 2
2. Scapus of antennae with a short tubercle on outer edge ..... *P. konchurangensis* **sp. nov.**  
Scapus of antennae with two short tubercles on outer edge ..... *P. konkakinensis* **sp. nov.**

#### *Pylaemenes abramovi* **sp. nov.** (Figs 1–4, 14–15)

Diagnosis. *Pylaemenes abramovi* **sp. nov.** is an extraordinary species that can be easily separated from most other species in the genus by distinctly expanded posterolateral areas on mesonotum and metanotum. *P. abramovi* **sp. nov.** is related to *P. trapezius* Ho, 2016, but can be separated by 23 antennal segments, unarmed metanotum and serration-like armature on legs in male.

Male (Figs 1–4, 14–15). Small Dataminae. General colouration of body and legs brown. Body stout. Head rounded. Vertex with 2 pairs of spine-like tubercles between compound eyes, anterior pair longer than posterior pair. Occiput elevated with a short crest, V-shaped dorsally, surface rough; dorsal carina armed with 2 anterior spines and a few short tubercles. Posterior margin of head with 6 small granule-like swellings. Compound eyes small and rounded. Antennae densely covered with short bristles, with 23 segments; scapus triangular in cross section, median longitudinal carina indistinct, longer than third segment, elevated with 2 short tubercles on outer edge, anterior one placed near apex and posterior one placed at middle area; pedicellus oval in cross section, shorter than third segment. Pronotum square, with 4 short tubercles placed before transverse sulcus, also with 2 short tubercles on posterior margin, median longitudinal sulcus indistinct. Mesonotum 2 times as long as pronotum, longer than combined length of metanotum and median segment, posterolateral area expanded and elevated as an apically spinose lamella; sparsely covered with a few small granules, lateral margins interspersed with a few short tubercles; median longitudinal carina elevated, anterior and posterior ends raised and armed with short tubercles. Metanotum square, posterolateral areas elevated and expanded as an apically spinose lamella. Abdomen slender and cylindrical. Median segment narrow, broader than long. Fourth to fifth tergites with paired humps posteriorly. Ninth tergum as long as eighth tergum, with a hump posteriorly. Anal segment longer than ninth tergum, with a small emargination on posterior margin. Poculum cup-shaped, with granulations, posterior margin rounded. Cerci small and flattened, apices rounded. Legs short, sparsely covered with minute bristles. Vomer (Fig. 4) almost symmetrical, constricted apically, apex pointed. All femora thicker than corresponding tibiae, with a mediodorsal serration-like spine apically. Profemora weakly curved basally, anterodorsal and posterodorsal carinae weakly waved, anteroventral and posteroventral carinae unarmed. Anterodorsal carina of mesofemora and metafemora weakly waved, posterodorsal carina with 2 small serrations (Fig. 1), anteroventral and posteroventral carinae with 2 small teeth near apices. Protibiae and mesotibiae weakly waved, posterodorsal carina of metatibiae with a small blunt tooth medially.

Measurements (♂). Body length 31.0 mm; antennae 10.0 mm; head 2.0 mm; pronotum 2.5 mm; mesonotum 5.0 mm; metanotum 3.0 mm; median segment 1.0 mm; profemora 6.0 mm; mesofemora 5.0 mm; metafemora 6.0 mm; protibiae 6.0 mm; mesotibiae 5.0 mm; metatibiae 6.0 mm.

Material examined. Holotype ♂, Vietnam, Gia Lai, c. 40 km N of K' Bang Town, Kon Chu Rang Nature Reserve (14°30'19"N, 108°32'28"E; elev. 1020 m), 24 May–2 June 2016, Abramov, A.V., F3476.30 (MMUE).

Distribution. Vietnam.

Remarks. Female is unknown. Further material collected from the type-locality is necessary to confirm its relationship with other species in the genus.

Etymology. It is named in honour of Alexei V. Abramov (Russia) who discovered this new species.

***Pylaemenes konchurangensis* sp. nov.** (Figs 5–10, 16–19)

**Diagnosis.** *Pylaemenes konchurangensis* sp. nov. is similar to *P. guangxiensis* (Bi & Li, 1994), but can be separated by the more cylindrical and slenderer body, only a tubercle on outer edge of first antennal segment, weakly swollen pre-medially abdomen and elongate and apically emarginated crest on ninth abdominal tergum in female. The male of this new species is similar to *P. japonicus* Ho, 2016, but can be separated by the slenderer body, long anterior spines on the dorsal carina of occipital crest, 19 antennal segments and elongate and robust mesothorax.

**Female** (Figs 5–7, 16–17). Small Dataminae. Similar to male, but distinctly larger and more robust. General colouration of body and legs brown. Body cylindrical and slender. Head oval. Vertex with 2 pairs of granule-like tubercles between compound eyes, anterior pair slightly larger than posterior pair. Occiput elevated with a short crest, V-shaped dorsally, surface rough and rugose, with granulations. Posterior margin of head with 6 small swellings. Compound eyes small and rounded. Antennae sparsely covered with short bristles, with 25 segments; scapus triangular in cross section, with distinct median longitudinal carina, outer edge with a short tubercle near apex (Fig. 7); pedicellus oval in cross section, roughly as long as third segment. Thorax rough, with very sparse and small granulations, also interspersed with a few enlarged granules. Pronotum square, with a few small granules along each side of longitudinal sulcus, anterior margin curved inwards. Mesonotum almost parallel-sided, slightly expanded posteriorly after post-medial area, longer than combined length of metanotum and median segment; median longitudinal line indistinct, anterior and posterior margins elevated. Metanotum square, distinctly longer than median segment, median longitudinal line indistinct. Mesopleurae and metapleurae with a very few tubercle-like granules. Abdomen rough, with short wrinkles, with very sparse and small granulations, also interspersed with a few enlarged granules. Fourth tergum with a distinct posterolateral granule. Fourth to seventh tergites with an X-shaped carina medially, indistinct on sixth and seventh tergites. Second and third tergites parallel-sided, fourth tergum broadened posteriorly, fifth and sixth tergites narrowing posteriorly. Seventh tergum with a hump-like praeopercular organ posteriorly. Ninth tergum with an elongate crest-like structure posteromedially, apex distinctly emarginated. Anal segment as long as eighth tergum, longer than ninth tergum, with small granules and short tubercles, lateral margins also with a distinct tubercle medially, posterior margin with 3 small emarginations, posterolateral angles gently elevated. Subgenital plate scoop-shaped, with enlarged granules, median longitudinal carina distinct, posterior margin rounded and reaching posterior margin of anal segment. Cerci small, flattened and apices rounded. Legs sparsely covered with short bristles. All femora thicker than corresponding tibiae, with a short mediodorsal tubercle apically. Profemora curved basally, anterodorsal and posterodorsal carinae wavy. Anterodorsal and posterodorsal carinae of mesofemora, metafemora, mesotibiae and metatibiae with 2 small blunt teeth. Anteroventral and posteroventral carinae of mesofemora and metafemora with 2 small blunt teeth near apices, also with 2 small blunt teeth medially and post-medially.

**Male** (Figs 8–10, 18–19). Small Dataminae. General colouration of body and legs brown. Body slender, distinctly smaller and slenderer than female. Head rounded. Vertex with 2 pairs of short tubercles between compound eyes, anterior pair longer than posterior pair. Occiput elevated with a short crest, V-shaped dorsally, surface rough and rugose; dorsal carina armed with 3 short medial tubercles and 2 anterior spines. Posterior margin of head with 6 small granule-like swellings. Compound eyes small and rounded. Antennae sparsely covered with short bristles, with 19 segments, apices of terminal segments not surpassing apices of protarsi; scapus triangular in cross section, with indistinct median longitudinal carina, as long as third segment, outer edge with a short tubercle near apex; pedicellus oval in cross section, shorter than scapus. Pronotum square, with a few small indistinct granules along each side of indistinct median longitudinal sulcus, transverse sulcus short, anterior margin strongly curved inwards, posterior margin rounded. Mesonotum broadly emarginated medially, with very few small granules, longer than combined length of metanotum and median segment, distinctly longer than profemora or metafemora; median longitudinal carina indistinct, anterior and posterior ends raised; lateral margins with a few small punctuations, posterolateral angles elevated. Metanotum rectangular, longer than wide. Abdomen slender and cylindrical, with inconspicuous granulations. Median segment narrow, broader than long. Third to eighth tergites with small and indistinct humps posteriorly, distinct on fifth tergum. Ninth tergum as long as eighth tergum, with a small crest posteriorly. Anal segment longer than ninth tergum, with 2 median elevations forming 3 small emargination on posterior margin. Poculum cup-shaped, with granulations, posterior margin nearly truncate. Cerci small and flattened, apices rounded. Legs slender, sparsely covered with short bristles. Vomer (Fig. 10) almost symmetrical, constricted apically, apex pointed. All femora thicker than corresponding tibiae, with a short mediodorsal tubercle apically. Profemora weakly curved basally, posterodorsal, anterodorsal, anteroventral and posteroventral carinae wavy. Posterodorsal carina of mesofemora and metafemora with 2 small and indistinct blunt teeth, anterodorsal carina wavy; posteroventral and anteroventral carinae with 2 small blunt teeth near apices, also with 2 small elevations medially and post-medially. Tibiae indistinctly wavy.

**Measurements.** Body length, ♀ 51.0–57.0 mm, ♂ 41.0 mm; antennae, ♀ 13.0–15.0 mm, ♂ 12.0 mm; head, ♀ 4.0 mm, ♂ 3.0 mm; pronotum, ♀ 3.0–3.5 mm, ♂ 3.0 mm; mesonotum, ♀ 11.0–12.0 mm, ♂ 10.0 mm; metanotum, ♀ 4.5–5.0 mm, ♂

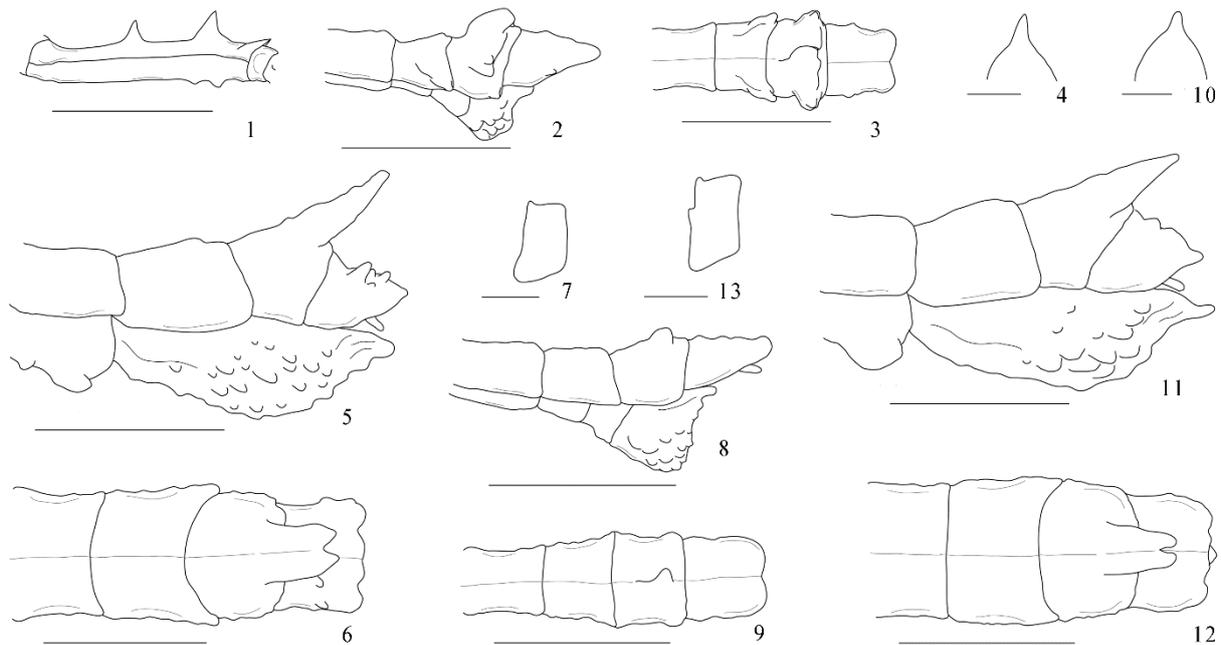
4.0 mm; median segment, ♀ 1.5 mm, ♂ 1.0 mm; profemora, ♀ 7.0–8.0 mm, ♂ 6.5 mm; mesofemora, ♀ 6.0 mm, ♂ 5.5 mm; metafemora, ♀ 7.0–8.0 mm, ♂ 6.5 mm; protibiae, ♀ 6.5–7.0 mm, ♂ 6.5 mm; mesotibiae, ♀ 5.0–6.0 mm, ♂ 5.0 mm; metatibiae, ♀ 6.5–7.0 mm, ♂ 6.5 mm.

Material examined. Holotype ♀, Vietnam, Gia Lai, c. 40 km N of K' Bang Town, Kon Chu Rang Nature Reserve (14°30'19"N, 108°32'28"E; elev. 1020 m), 27 September 2011, Abramov, A.V., F3476.11 (MMUE). Paratypes. 1♀1♂, same data as holotype, F3476.12, F3476.10 (MMUE & HKES).

Distribution. Vietnam.

Remarks. Egg is unknown.

Etymology. The specific epithet of this new species is derived from the type locality, Kon Chu Rang Nature Reserve in Gia Lai of central Vietnam.



Figures 1–13. *Pylaemenes* spp. 1–4. *P. abramovi* sp. nov. 5–10. *P. konchurangensis* sp. nov. 11–13. *P. konkakinhensis* sp. nov. 1. Male left mesofemur, lateral view. 2, 8. Male end of abdomen, lateral view. 3, 9. Male end of abdomen, dorsal view. 4, 10. Male vomer, ventral view. 5, 11. Female end of abdomen, lateral view. 6, 12. Female end of abdomen, dorsal view. 7, 13. Female left antenna, dorsal view. Scale bars: 1–3, 5–6, 8–9, 11–12=5 mm; 4, 7, 10, 13=1 mm.

***Pylaemenes konkakinhensis* sp. nov.** (Figs 11–13, 20–21)

Diagnosis. *Pylaemenes konkakinhensis* sp. nov. is similar to *P. konchurangensis* sp. nov., but can be separated by more robust body, two tubercles on outer edge of first antennal segment, lacking posterolateral granules on fourth abdominal tergum, apically pointed abdominal subgenital plate and comparatively less distinct armature on legs in female.

Female (Figs 11–13, 20–21). Small Dataminae. General colouration of body and legs brown with light brown markings. Body cylindrical and slender. Head oval. Vertex with 2 pairs of granules between compound eyes, anterior pair larger than posterior pair. Occiput elevated with a short crest, V-shaped dorsally, surface rough and rugose, with inconspicuous granulations. Posterior margin of head with 6 small swellings. Compound eyes small and rounded. Antennae sparsely covered with short bristles, with 25 segments; scapus triangular in cross section, with distinct median longitudinal carina, elevated with 2 short tubercles on outer edge (Fig. 13), anterior one placed near apex and posterior one placed at middle area; pedicellus oval in cross section, shorter than scapus, as long as third segment. Thorax rough, with very sparse and small granulations, also interspersed with a few enlarged granules. Pronotum square, lacking row of granules along each side of longitudinal sulcus, anterior margin curved inwards. Mesonotum almost parallel-sided, slightly expanded posteriorly after post-medial area, longer than combined length of metanotum and median segment; median longitudinal line indistinct, anterior and posterior margins weakly elevated. Metanotum rectangular, longer than wide, longer than median segment, median longitudinal line indistinct. Abdomen rough, with short wrinkles, with very sparse and small granulations, also



Figures 14–21. *Pylaemenes* spp. 14–15. *P. abramovi* sp. nov. 16–19. *P. konchurangensis* sp. nov. 20–21. *P. konkakinhensis* sp. nov. 14, 18. Male habitus, lateral view. 15, 19. Male habitus, dorsal view. 16, 20. Female habitus, lateral view. 17, 21. Female habitus, dorsal view. Scale bars = 5 mm.

interspersed with a few enlarged granules. Fourth tergum lacking posterolateral granule. Fourth to seventh tergites with an X-shaped carina medially, indistinct on fourth tergum. Second to fourth tergites broadened posteriorly, fifth and sixth tergites narrowing posteriorly. Seventh tergum with a swollen hump-like praeopercular organ posteromedially. Ninth tergum with an elongate crest-like structure posteromedially, apex distinctly emarginated. Anal segment as long as eighth tergum, longer than ninth tergum, with small granules, lateral margins with a tubercle medially, posterior margin with 2 obscure median elevations forming 3 small emarginations, posterolateral angles gently elevated. Subgenital plate scoop-shaped, with enlarged granules, median longitudinal carina distinct, posterior margin pointed and distinctly surpassing posterior margin of anal segment. Cerci small, flattened and apices rounded. Legs sparsely covered with short bristles. All femora thicker than corresponding tibiae, with a short mediodorsal tubercle apically. Profemora curved basally, anterodorsal and posterodorsal carinae wavy. Anterodorsal and posterodorsal carinae of mesofemora, metafemora, mesotibiae and metatibiae with 2 small blunt teeth. Anteroventral and posteroventral carinae of mesofemora and metafemora with 2 small blunt teeth near apices.

Measurements (♀). Body length 47.0 mm; antennae 14.0 mm; head 3.5 mm; pronotum 3.0 mm; mesonotum 10.0 mm; metanotum 4.0 mm; median segment 2.0 mm; profemora 7.0 mm; mesofemora 6.0 mm; metafemora 7.0 mm; protibiae 6.5 mm; mesotibiae 5.0 mm; metatibiae 6.5 mm.

Material examined. Holotype ♀, Vietnam, Gia Lai, Mang Yang District, 42 km NE of Pleiku, W-part of Kon Ka Kinh National Park (14°12'12"N, 108°18'54"E; elev. 900 m), 10–21 May 2016, Abramov, A.V., F3476.99 (MMUE).

Distribution. Vietnam.

Remarks. Male and egg are unknown. Further material collected from the type-locality is necessary to confirm its relationship with *Pylaemenes konchurangensis* **sp. nov.**

Etymology. The specific epithet of this new species is derived from the type locality, Kon Ka Kinh National Park in Gia Lai of central Vietnam.

## 4 Discussion

In Vietnam, four species of *Pylaemenes* are recognized. The discovery of *P. abramovi* **sp. nov.**, *P. konchurangensis* **sp. nov.** and *P. konkakinensis* **sp. nov.**, further extends the genus to the central-southern Vietnam. Each of these taxa can be well distinguished from others by their unique traits. Although *P. abramovi* **sp. nov.** is only known from male, the characters of expanded posterolateral areas on mesonotum and metanotum and serrated armature on legs warrant its uniqueness in the genus. *P. konchurangensis* **sp. nov.** is similar to *P. guangxiensis*, but can be easily separated by more cylindrical body. *P. konchurangensis* **sp. nov.** is also similar to *P. konkakinensis* **sp. nov.**, but can be diagnosed by one tubercle on outer edge of the first antennal segment and distinct armature on legs in female. To conclude, further study including specimens collecting in the type-locality should be conducted for achieving a clear view of the different taxa of the genus in Vietnam.

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