INTRODUCTION

To date, there are more than 3,454 pseudoscorpion species known globally (Harvey, 2011); according to our survey, it seems that there is a higher diversity in tropical and subtropical regions than other cold regions. Research into the pseudoscorpions of Laos has been neglected in the past; Beier was the first (and only) expert to report nine pseudoscorpion species from Laos, four of which were new to science (Beier, 1951). Comparison to adjacent regions can be made, thus 43 species belong to 13 families in Thailand, 62 species belong to 13 families in Vietnam, and 15 species belong to 9 families in Cambodia. Considering the high diversity of the tropical and subtropical regions, the number of pseudoscorpions (9 species) represents only a fraction of the true diversity in Laos. Therefore, further investigations into pseudoscorpions of Laos are required.

The symposium “Spiders of the Greater Mekong Region”, organized by Peter Jäger (Germany), was held in Pakse, the capital of Champasak Province, southern Laos. This symposium aimed at promoting the research of Arachnida in this region and acted as a platform for the foundation of the Asian Society of Arachnology. We collected some pseudoscorpion specimens from Pakse and after examining, one species was recognized as new to science, *Tyrannochthonius etu* sp. nov., and the other five species are recorded from Laos for the first time.

MATERIALS AND METHODS

All specimens were collected and preserved in 75% alcohol and deposited in the Museum of Hebei University (MHBU), Baoding City, China. Microscopic examination and drawings were carried out with a Leica M165c stereomicroscope with a drawing tube. Photographs were taken with a Leica M205a stereomicroscope, which was also used for the measurements. Detailed examination was carried out with an Olympus BX53 general optical microscope. Temporary slide mounts were made in glycerol. The term “rallum” (for flagellum) follows Judson (2007). The pattern of description and terminology follow

PSEUDOScorpions FROM LAOS: DESCRIPTION OF A NEW SPECIES AND NEW RECORDS
(ARACHNIDA: PSEUDOScorpIONES)

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Abstract — Pseudoscorpions collected from southern Laos, Champasak Province, are described. One new species of the family Chthoniidae Daday 1888 is identified and illustrated under the name of *Tyrannochthonius etu* sp. nov. Five species belonging to five family are reported from Laos for the first time: *Apocheiridium pelagicum* (Redikorzev, 1938), *Lagynochthonius tonkinensis* (Beier, 1951), *Geogarypus longidigitatus* (Rainbow, 1897), *Nhatrangia dawydoffi* Redikorzev, 1938, *Indolpium funebrum* (Redikorzev, 1938).

Key words: Taxonomy, pseudoscorpions, new species, Laos

family Chthoniinae Daday 1888, and it is a highly diversified genus in Chthoniidae.

To date, no species belonging to Chthoniidae has been recorded from Laos. Here two species are reported, *Lagynochthonius tonkinensis* (Beier, 1951) and *Tyrannochthonius etu* sp.nov.

*Lagynochthonius tonkinensis* (Beier, 1951)

(Figs. 3–4)

_**Material examined**_ – 3 males (Ps.LA-12122101-12122103), 3 females (Ps.LA-12122104-12122106), 2 juveniles (Ps.LA-12122107-12122108): Laos, Champasak Province: Pakse, Tad Fane (N 15°10'53.2", E 106°7"), alt. 968 m, litter layer, Zhizhong Gao leg., 21 November 2012. 1 male (Ps. LA-12121601), 1 female (Ps. LA-12121602) Tad Etu (N 15°11', E 106°6"), alt. 909 m, litter layer, Chao Zhang leg., 16 November 2012.

This species was reported from Vietnam (Beier, 1951), and later known from China (Schawaller 1995) and Thailand (Schawaller 1994). It is a common species in the Oriental Region, and we presume that it is widely distributed in Southeast Asia. First record for Laos.

*Tyrrannochthonius etu* sp. nov.

(Figs. 5–7)

_**Type material**_ – Holotype male (Ps.LA-12122109), Laos, Champasak Province, Paske, Tad Etu, near to the waterfall (N 15°10'53.2", E 106°7"), alt. 968 m, 21 November 2012, Zhizhong Gao leg. Paratypes: 4 males (Ps.LA-12122110–12122113), 7 females (Ps. LA-12122114–12122120) and 3 juveniles (Ps.LA-12122121–12122123), with same data as for holotype. 1 male (Ps.LA-12121901) and 2 females (Ps. LA-12121902-12121903), Champasak Province, Paske, Western Tad Etu, (N 15°11', E 106°6"), alt. 1027 m, 19 November 2012, Zhizhong Gao & Chao Zhang leg. 1 juvenile (Ps.LA-12121502), Champasak Province, Paske, Phou Salao, leaf litter (N 15°5', E 105°49"), alt. 180 m, 15 November 2012, Feng Zhang leg.
Fig. 1. *Apocheiridium pelagicum* Redikorzev, 1938, habitus.

Fig. 2. *Apocheiridium pelagicum* Redikorzev, 1938, a. carapace (dorsal view); b. left palp (dorsal view); c. left chela (lateral view); d. leg I (lateral view); e. leg IV (lateral view); f. genital (ventral view).
Fig. 3. *Lagynochthonius tonkinensis* (Beier, 1951), habitus.

Fig. 4. *Lagynochthonius tonkinensis* (Beier, 1951), a. carapace (dorsal view); b. left palp (minus chela, dorsal view); c. left chela (lateral view); d. teeth of left chelicerae (dorsal view); e. tip of cheliceral moveable fingers (dorsal view); f. leg I (lateral view); g. leg IV (lateral view). Scale bars: 0.10 mm (d, e); 0.20 mm (a–c, f–g).
Diagnosis – The new species is characterized by the following combination of characters: small size, four moderate eyes, anterior pair one diameter away from the posterior pair; carapace with a somewhat indistinct shield-shaped structure, slightly constricted posteriorly; chelal teeth homodentate.

Etymology – The specific name refers to the type locality.

Description – Carapace dark-grayish brown, chelicerae and pedipalps pale reddish brown, abdomen yellowish.

Carapace slightly constricted posteriorly, with a somewhat indistinct shield-shape structure, broader than long, 18 setae, with 4 on anterior and 2 on posterior margins 4-2, 18; epistome present; with 4 eyes, anterior pair well developed and posterior pair with flattened lenses, anterior pair one diameter away from the posterior pair; setae P 4, I 2, II 3, III 4, IV 5; coxae I with finger-like apical projection, coxae II each with 8-9 terminally incised coxal spines.


Chelicera. Palm with 5 setae, ventrobasal seta shorter than others. Palm with moderate hispid granulation interiorly and laterally. Movable finger with one medial seta. Fixed finger with 6-8 teeth, distal tooth larger than others; movable finger with 9-10 teeth. Spinneret absent. Rallum consisting of 7 blades, anterior one finely dENTICULATE, other blades bipinnate, the last blade shorter than others. Serrula exterior with 16 lamellae.

Pedipalp. Femur and chelal palm possessing rounded whitish patches, chelal palm with a single row of 4 chemosensory setae between trichobothria esb and ib/isb. Trichobothria ib and isb situated close together, submedially on dorsum of chelal palm; eb, esb and ist forming an oblique row sublaterally at base of fixed chelal finger; dx situated distal to et; trichobothrium sb situated nearer to st than to b; b and t situated submedially. Chelal finger teeth heterodentate, fixed finger with 16-19 macrodenticles, intercalary microdenticles absent, and movable finger with 9-11 pointed teeth in the distal half, without intercalary microdenticles.
Fig. 6. *Tyramnochthonius etu* sp. nov., a. carapace (dorsal view); b. coxal spines on leg II (ventral view); c. left chelicerae (dorsal view); d. left palp (minus chela, dorsal view); e. left chela (lateral view); f. tip of cheliceral moveable fingers (dorsal view); g. leg I (lateral view); h. left coxa of leg I (ventral view); i. leg IV (lateral view). Scale bars: 0.10 mm (b, f, h); 0.20 mm (a, c, d–e, g, i).
Legs typical. Leg I femur 1.70-1.80 times longer than patella, tarsus 1.70-1.80 times longer than tibia. Leg IV tibia with one submedial tactile seta; tactile setae present on metatarsus (TS= 0.31–0.32) and tarsus (TS= 0.32–0.33); subterminal tarsal setae simple and smooth.

Dimensions (mm): Male. Body length 0.90. Carapace 0.30/0.32–0.33 (0.91–0.94). Chelicera 0.25/0.14 (1.79), movable finger length 0.14. Pedipalps: femur 0.30–0.31/0.08 (3.75–3.88), patella 0.15/0.08 (1.88), chela 0.46–0.48/0.10–0.11 (4.18–4.80), palm length 0.18–0.19 (1.73–1.80), movable finger length 0.29 (1.53–1.61×length of palm). Leg I: femur 0.17–0.18/0.05 (3.4–3.6), patella 0.10–0.05 (2.00), tibia 0.10/0.03–0.04 (2.50–3.33), tarsus 0.170–0.180/0.03 (5.67–6.00). Leg IV: femur+patella 0.30/0.14–0.15 (2.00–2.14), tibia 0.20–0.21/0.06 (3.33–3.50), metatarsus 0.09–0.11/0.03–0.04 (2.75–3.00), tarsus 0.18–0.195/0.03 (6.00–6.33).

Female. Body length 1.06–1.29. Carapace 0.37–0.39/0.33–0.35 (1.06–1.18). Chelicera 0.31/0.17 (1.82), movable finger length 0.17–0.18. Pedipalps: femur 0.35/0.09 (3.89), patella 0.17–0.18/0.10 (1.70–1.80), chela 0.51–0.52/0.13 (3.92–4.00), palm length 0.22 (1.69), movable finger length 0.31–0.32 (1.41–1.45×length of palm). Leg I: femur 0.19/0.05–0.06 (3.17–3.8), patella 0.11/0.05 (2.20), tibia 0.11/0.04 (2.75), tarsus 0.18–0.20/0.03 (6.00–6.67). Leg IV: femur+patella 0.32/0.15 (2.13), tibia 0.22/0.06 (3.67), metatarsus 0.10–0.11/0.05 (2.00–2.20), tarsus 0.19–0.20/0.03–0.04 (5.00–6.33).

**Distribution** – Laos (Champasak Province).

**Geogarypidae Chamberlin, 1930**

**Geogarypus longidigitatus** (Rainbow, 1897)  
(Figs. 8–10)

**Material examined** – 7 males (Ps.LA-12121503-12121509), 7 females (Ps.LA-12121510-12121516), 1 juvenile (Ps.LA-12121517): Laos, Champasak Province: Pakse, Phou Salao (N 15°5’, E 105°49’), alt. 180m, litter layer, Zhizhong Gao & Feng Zhang leg., 15 November 2012. 1 female (Ps.LA-12121801), Tad Etu, litter layer, Shuqiang Li leg., 18 November 2012.

This species has a relatively wide distribution in the world, and was collected by sieving leaf litter. According to our experience in collection, it seems that a relatively dry environment is suitable for them in rainy areas. First record for Laos.
Fig. 8. Geogarypus longidigitatus (Rainbow, 1897), a. habitus of male; b. habitus of female

Fig. 9. Geogarypus longidigitatus (Rainbow, 1897), a. carapace (dorsal view); b. left palp (dorsal view); c. genital of male (ventral view); d. coxae of male (ventral view); e. genital of female (ventral view);
Ideoroncidae Chamberlin, 1930

*Nhatrangia dawydoffi* Redikorzev, 1938
(Figs. 11–12)

*Material examined* – 1 male (Ps.LA-12121518), 3 females (Ps.LA-12121519-12121521), 1 juvenile (Ps. LA-12121522): Laos, Champasak Province: Pakse, Phou Salao (N 15°5', E 105°49'), alt. 180m, litter layer, Zhizhong Gao & Chao Zhang leg., 15 November 2012.

Carapace with 2 well-developed eyes; 4 setae each on anterior and posterior margin; tergites incompletely divided; femur and patella of palp distinct granulation on prolateral face; fixed finger with 42-44 pointed teeth, movable finger with 7-8 distal teeth, followed by some rudimentary teeth; 4 tri-
chobothria on distal lateral face of hand; chelicera with 7-8 setae on hand; galea simple and slender; serrula exterior with 23-24 blades; rallum with 4 anteriorly dentate setae; telotarsus IV with a basal tactile seta; arolia undivided, longer than the simple claws; subterminal setae with 3 apical teeth. First record for Laos.

Olpiidae Banks, 1895

Indolpium funebrum (Redikorzev, 1938) (Figs. 13–15)


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Fig. 13. *Indolpium funebrum* (Redikorzev, 1938), a. habitus of male; b. habitus of female.

Fig. 14. *Indolpium funebrum* (Redikorzev, 1938), a. carapace (dorsal view); b. left palp (dorsal view); c. coxae of male (ventral view); d. left chela (lateral view); e. genital of male (ventral view); f. left chela (ventral view).
REFERENCES


