



## NEOPERLA OF UNUSUAL SIZE FROM VIETNAM (PLECOPTERA: PERLIDAE)

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### ABSTRACT

Two large female specimens, representing a possible undescribed Vietnamese *Neoperla* species, are described under informal designation and compared to known Vietnamese congeners.

**Keywords:** Plecoptera, Perlidae, *Neoperla*, Vietnam, unusual size

### INTRODUCTION

Recently, two large perlid specimens belonging to the Smithsonian Institution collection were forwarded to us by a colleague. When casually observed in the vial, these specimens have the general appearance and size of typical *Kamimuria* or *Paragnetina*. Surprisingly, both specimens proved to be unusually large *Neoperla* females, or *Neoperla* of unusual size (NOUSes), reminding the senior author of *The Princess Bride* reference to “rodents of unusual size”. Currently, the known Vietnamese *Neoperla* fauna includes 27 named species and two informally designated species known from female specimens (Cao et al. 2007; Stark & Sivec 2008). Most have female forewing lengths in the 10-14 mm range, and the largest are female specimens of *N. tamdao* Cao & Bae (20.5 mm forewing length), *N. yentu* Cao & Bae (18.4 mm forewing length), *N. nebulosa* Stark & Sivec (18 mm forewing length) and *N. spinaloba* Stark & Sivec (17.5 mm forewing length) (Cao et al. 2007; Stark & Sivec 2008). Because forewing lengths for the new specimens are larger at 23 mm, and the genitalic and egg features differ from known Vietnamese *Neoperla*, we are providing a description, under informal designation, in order to call attention to this species. All specimens are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM).

### RESULTS AND DISCUSSION

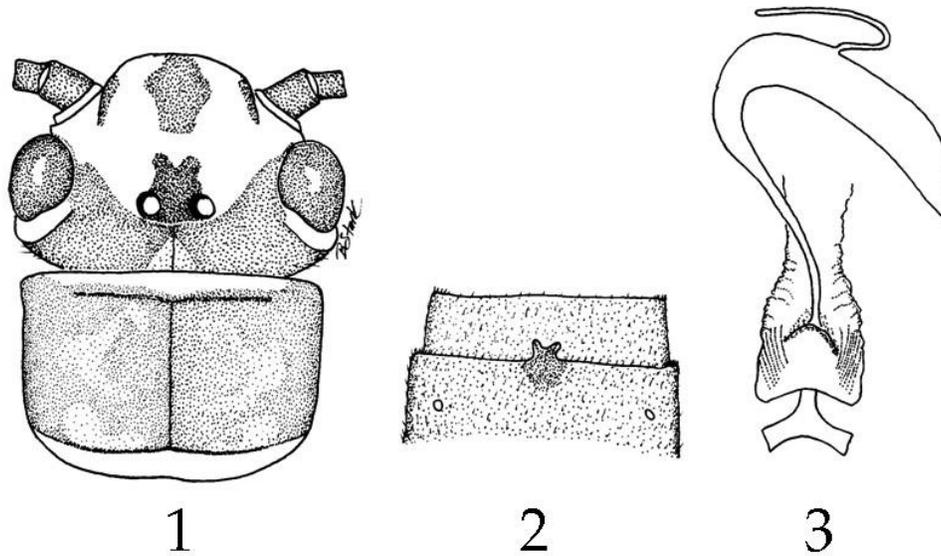
#### *Neoperla* Vn-C (Figs. 1-7)

**Material examined.** Vietnam, Cao Bang Province, Phja-Den environs, 948 m, Sante Canopy Malaise traps, 22° 32.433' N, 105° 52.012' E, 25 May-5 June 2011, S.W. Lingafelter, 2♀ (USNM).

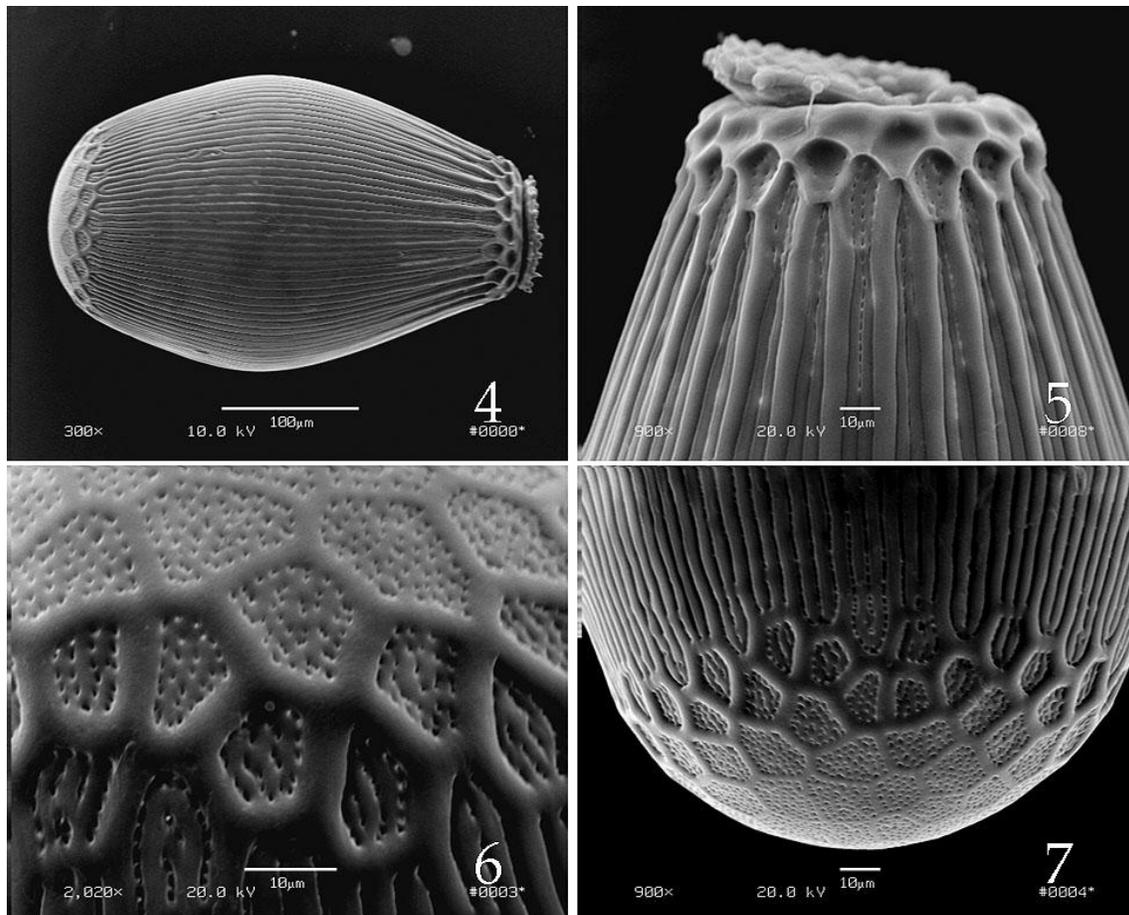
**Adult habitus.** Biocellate. Head patterned with small, dark pigment spots over ocelli and central frons near anterior margin (Fig. 1); occiput, lappets and antennae dark. Pronotum dark brown; femora banded with pale basal third and dark apical region, tibiae and tarsi dark brown. Wing membrane and veins dark brown to black, except pale costal margin and crossveins.

**Female.** Forewing length 23 mm. Subgenital plate a small, apically notched, sclerotized, median projection (Fig. 2). Vagina relatively long and slender, slightly wider anteriorly (Fig. 3); Spermathecal stalk slender, expanded into a hook shaped chamber.

**Egg.** Barrel shaped (Fig. 4). Length ca. 325-340 µm; collar width ca. 66-72 µm; equatorial width ca. 206-216 µm. Collar sessile without flange and surrounded by two rows of irregular follicle cell impressions; anchor flat, disc shaped with irregular



Figs. 1-3. *Neoperla* Vn-C female structures. 1. Head and pronotum. 2. Subgenital plate. 3. Vagina and spermatheca.



Figs. 4-7. *Neoperla* Vn-C egg structures. 4. Entire egg. 5. Collar detail. 6. Follicle cell impression detail on lid. 7. Lid detail.

margin. Most of chorionic surface covered with closely packed slender striae in groupings of four (Figs. 4-5, 7); outer striae of each group slightly thicker and significantly raised at collar end (Figs. 5, 7); width of strial groupings ca. 16.9-18.3  $\mu\text{m}$  near lid. Lid bears two distinct rows of follicle cell impressions near juncture with striae, and ca. 3 progressively less distinct follicle cell impression rows (Figs. 6-7); follicle cell impression floors filled with minute punctations. Micropyles subequatorial. **Diagnosis.** Spermathecal structure indicates this species is a member of the *Montivaga* Group as designated by Zwick (1983, 1986). This group includes 16 of the known Vietnamese species and all those in which female forewing length exceeds 16 mm. The subgenital plate of this species is generally similar to those of *N. idella* Stark & Sivec, 2008, *N. mnong* Stark, 1987 and *N. yao* Stark, 1987, and the egg is similar to those of *N. hubleyi* Stark & Sivec, 2008, *N. idella* and *N. spinaloba* Stark & Sivec, 2008. Although this species shares several characters with *N. idella*, the two differ, particularly in lid chorionic surface (Figs. 6-7), where *N. idella* has an irregular row of large pits surrounding the lid along the strial margin, and no conspicuous follicle cell impressions occur on the lid (see Fig. 102 in Stark & Sivec 2008).

**Comments.** Based on similarities in size, color pattern and proximity these large females may represent the unknown female stage for *N. dao* Stark & Sivec 2008, a species described from Tam Dao Hill Station, Vihn Phu province. Male forewing length for *N. dao* is 16 mm which might be compatible with the 23 mm forewing length of the new specimens. However, we hesitate to make the association until co-occurrence is established.

#### ACKNOWLEDGMENTS

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