A NEW SPECIES OF *PERLESTA* (PLECOPTERA: PERLIDAE) FROM NORTH CAROLINA WITH ADDITIONAL RECORDS FOR NORTH CAROLINA AND VIRGINIA

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ABSTRACT

The male of *Perlesta beatyi* n. sp. is described from Robeson County, North Carolina, U.S.A. and is distinguished by truncate paraproct apices with a small obscure tooth. New species records for *Perlesta* of North Carolina and Virginia are also given with comments on the distribution of the species in this area.

Keywords: Plecoptera: Perlidae, *Perlesta*, new species, U.S.A., new records, North Carolina, Virginia

INTRODUCTION

Twenty-eight species of Nearctic *Perlesta* are currently recognized (Stark 1989, 2004; Kondratieff et al. 2006, 2008; Grubbs and DeWalt 2008, Grubbs and DeWalt 2011, Kondratieff and Myers 2011). Interestingly, but needing confirmation, *Perlesta* has been recently recorded from Central America (Gutiérrez Fonseca and Springer 2011). Continued collecting and study of *Perlesta* from North Carolina by the authors revealed one additional undescribed species. Ten species of *Perlesta* currently have been recorded from North Carolina (Stark 1989, 2004, Kondratieff et al. 2006, 2008, Grubbs and DeWalt 2008). Additionally, new *Perlesta* species records are given for Virginia. The terminology used in the description of the male adult follows Stark (1989, 2004).

RESULTS

*Perlesta beatyi* sp. n. Kondratieff, Zuellig & Lenat (Figs. 1-7)


Male. Forewing length 12 mm. General body color light yellow to yellow-brown. Head yellow except for brown quadrangular area over ocelli and brown


triangular area forward of median ocellus, prothorax brown with a slight dark sutural line (Fig. 1). Wings light amber, veins brown. Femora with a distinct apical black transverse band. Abdomen yellowish with brown posterior patches. Tergum 10 mesal sclerite brown, not divided, sensilla basiconica sparse (Fig. 2). Paraproct broad of medium length, with small tooth obscure in lateral view (Figs. 3), in caudal view,
medium length, truncate at apex with the tooth at upper lateral margin (Figs. 4, 5). Penis tube + sac long, caeca small, wider than long; lateral sclerite weakly developed; dorsal patch broad basally covering most of tube surface (Figs. 6, 7).

**Female.** Unknown.

**Egg.** Unknown.

**Etymology.** The patronym honors Steven R. Beaty, Environmental Biologist, North Carolina Division of Water Quality. His on-going efforts to associate the adult and immature stages of North Carolina aquatic insects are noteworthy.

**Diagnosis.** The male of the new species can be immediately distinguished from all other known described *Perlesta* by the broad truncate paraprocts with a small lateral tooth (Figs. 2-5). The authors were reluctant to describe this species because of the lack of positively associated females with mature eggs, but the male paraprocts are so distinctive that the males cannot be confused with any other described North American species.

**North Carolina and Virginia New Records**


**North Carolina**

*Perlesta puttmanni* Kondratieff & Kirchner 2003


Kondratieff et al. (2006) reported *P. puttmanni* from the Little River (Harnett/Cumberland Co., Little River, Hwy 401, Lillington, 18 May 2004), as a new state record for North Carolina. Re-examination of this material indicated that the specific status of these *P. decipens* complex specimens is uncertain requiring study of the entire complex. Such a study is outside the scope of this paper. However, the Lee/Chatham Co., Deep River specimen is clearly *P. puttmanni* validating the occurrence of this species in North Carolina.

*Perlesta roblei* Kondratieff & Kirchner 2003


Kondratieff et al. (2006) previously reported *P. roblei* from Edgecombe Co., North Carolina.

*Perlesta shawnee* Grubbs 2005


Grubbs and DeWalt (2008) reported *P. shawnee* (originally described from Illinois and Indiana) from North Carolina based on our material. The above records indicate that this species is apparently a common summer-emerging species in western North Carolina.

*Perlesta shubuta* Stark 1989


This species was originally described from Mississippi and subsequently recorded from Arkansas, Illinois, Missouri, and Oklahoma (Stark 2004).
Virginia

Perlesta browni Stark 1989


This record is an apparent substantial range extension for a species previously reported from Arkansas, Missouri, and Oklahoma (Stark 1989, Poulton and Stewart 1991). The Virginia material appears indistinguishable from typical P. browni from the Ozarks, although this species was considered an “endemic to the region” by Poulton and Stewart (1991). Further studies, especially of the eggs of this disjunct Virginia population may help resolve the status of this taxon. The type locality for P. cranshawi Kondratieff and Kirchner, 2006 is from this same site on the Nottoway River.

Perlesta nelsoni Stark 1989

Amherst Co. Otter Creek, above culvert, Blue Ridge Parkway, 17-18, July 2007, C.R. Parker, 2♂, 4♀ (CSUC); Floyd Co., Blue Ridge Parkway, MP 146.0, 18-19 July 2007, C.R. Parker, 2♀ (CSUC); Patrick Co. Little Rock Castle Creek, Blue Ridge Parkway, MP 165.3, 18-19 July 2007, C.R. Parker, 3♀ (CSUC).

Originally described from North Carolina, South Carolina, and Tennessee (Stark 1989), P. nelsoni is apparently a widespread species of the higher Appalachians and has been recorded as far north as New York (Myers et al. 2011).

DISCUSSION

The distribution of Perlesta species in North Carolina and Virginia is affected by ecoregion, stream size, and emergence period. The most obvious difference is the separation by ecoregion, with six species confined to the mountain (M) and Piedmont (P) areas: P. frisoni (Banks 1948) (M), P. nelsoni (M), P. shawnee (M), P. lagoi (M), P. placida (M, P), and P. puttmanni (P). An additional seven species are confined to the sandhills (SH) and coastal plain (C) regions: P cranshawi (C), P. roblei (C), P. durfeei (C), P. bjostadi (SH, C), P. georgiae (SH), P. leathermani (SH), and P. beatyi (SH). Of particular interest, here is the surprising number of species largely confined to the sand hills ecoregion. Only one species, (P. shubuta) has been collected in both mountain and coastal plain regions.

There is still insufficient evidence to make firm conclusions about the influence of stream size, largely due to the relatively few collections in small streams. Many species, however, seem to show some preference for stream size. For example, P. cranshawi, P. bjostadi, P. placida, P. nelsoni and P. shawnee are more likely encountered in rivers than in smaller streams. Furthermore, in the Lower Little River system (NC sand hills), P. leathermani dominated an upstream site, while P. bjostadi dominated a downstream site. Emergence time also may separate species where some appear confined to emergence in May while others continue to emerge well into July. It is not clear if there are any differences due to habitat, but we have observed that Perlesta nymphs are most abundant in leaf packs in smaller streams, but are also found in submerged aquatic macrophytes (mostly Podostemum ceratophyllum Michx.) and on wood in larger streams and rivers. Typically, only 1-2 Perlesta species were collected at a single site. In the mountain and piedmont, the second species was usually P. placida, but species pairs were less predictable in sand hills and coastal plain drainages.

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REFERENCES


