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SCIENTIFIC NOTE

NOTES ON *PTEROSTICHUS PUNCTIVENTRIS* (CHAUDOIR) (COLEOPTERA: CARABIDAE) IN ARKANSAS, WITH A NEW STATE RECORD

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Gastrosticta Casey is one of the most poorly known subgenera of *Pterostichus* Bonelli in North America (Bousquet 1992). All species are uncommonly collected, and little is known about their ecology (Bousquet 1992), although Ball (1960) suggested they are collected more frequently in arid coniferous forests. Ten species of *Gastrosticta* occur in the United States east of the Rocky Mountains (Bousquet 1992), four of which have been recorded in Arkansas: *Pterostichus punctiventris* (Chaudoir), *Pterostichus sayanus* Csiki, *Pterostichus tumescens* LeConte, and *Pterostichus ventralis* (Say).

Pterostichus punctiventris (Figs. 1–3) has been recorded throughout the southern United States; its known range includes Alabama, Arkansas, Georgia, Missouri, Mississippi, Oklahoma, and Texas (Bousquet 2012). In Arkansas, this species was reported only from Blanchard Springs State Park in Stone County (Bousquet 1992). Two separate studies conducted in 2013 and 2014–15 across several locations in northwestern Arkansas (Fig. 4) resulted in the collection of a number of *P. punctiventris*. A subsequent search of the University of Arkansas Arthropod Museum (UAAM) uncovered additional, previously unidentified and misidentified specimens of *P. punctiventris*.

The first study took place at a 4-ha site at Steel Creek in Buffalo National River in Newton County (36.03781°N, –93.34056°W). Among a variety of other collection methods, 17 pitfall traps were run continuously and collected approximately every two weeks and 10 leaf litter samples were collected when pitfall traps were serviced. Leaf litter samples were processed using modified Berlese-Tullgren extractors. Pitfall collections were made during April 2013 through November 2013 and leaf litter samples were collected during April 2013 through December 2013. See Skvarla *et al.* (2015) for additional details on collecting methodology and site descriptions.

The second study took place from April 2014 through March 2015 at Lake Wedington (Ozark-St. Francis National Forest, 485,600 ha) (36.10223°N,

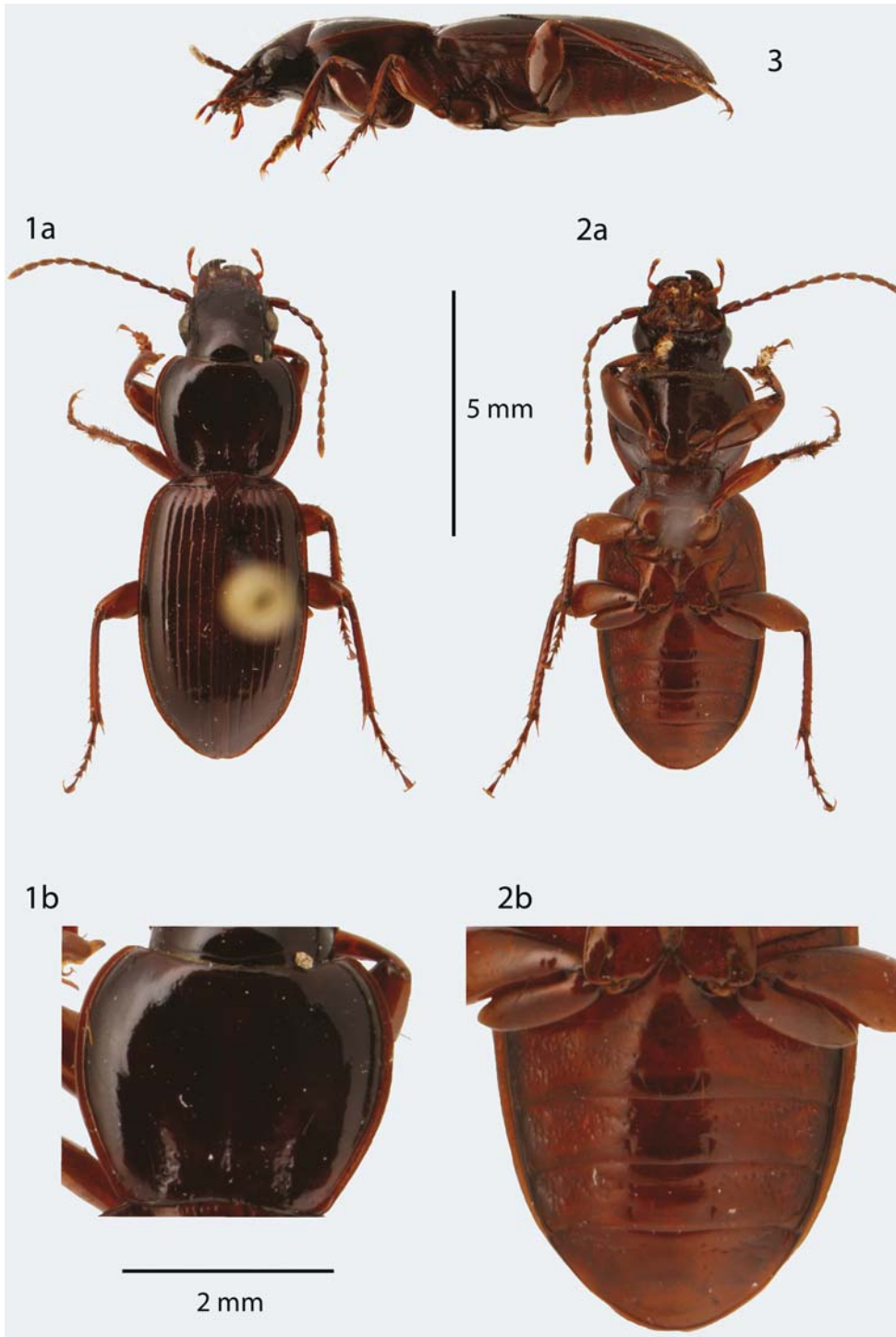
–94.39165°W) and Lake Wilson (Fayetteville city park, 109 ha) (35.99816°N, –94.13709°W), both of which are located in Washington County, and two different areas at Withrow Springs State Park (318 ha) (36.16453°N, –93.72259°W and 36.16593°N, –93.72405°W) in Madison County. Ten leaf litter samples were collected monthly at the Lake Wedington and Lake Wilson sites, and 20 samples were collected monthly at the Withrow Springs sites (40 samples total). All samples were processed using modified Berlese-Tullgren extractors. Ten pitfall trap samples were collected approximately every two weeks at the Lake Wedington and Lake Wilson sites; pitfall trap samples collected when leaf litter samples were not collected were not sorted nor specimens from them included herein. See Hamilton (2015) for additional details.

Forty-three *P. punctiventris* (29 females, 14 males) were collected between both studies. Most specimens (30/43) were collected at Lake Wedington, where the study area is characterized as having dense canopy cover, rocky soil, and a mixture of glade and forested habitat. The majority of specimens were collected in pitfall traps between November and April, even though one of the studies did not continue through the winter (Figs. 5, 6).

Although individuals of *P. punctiventris* have been seldom collected and rarely reported in the literature (Bousquet 1992), this species appears to be relatively more abundant in the Ozark Mountain region of Arkansas based on our collections and the specimens in the UAAM.

Pterostichus punctiventris has been previously noted as having a ferruginous coloration and the tibiae being darker in color than the femora (Bousquet 1992). However, some of the specimens that we collected have bodies that are dark brown and others with no distinct contrast in color of the leg parts (Fig. 1a).

Finally, specimens of *Pterostichus* (*Gastrosticta*) *subacutus* (Casey) were discovered among the unidentified and unsorted *Pterostichus* in the UAAM collection and represent a **new state record** for Arkansas.



Figs. 1–3. *Pterostichus punctiventris*. **1a)** Dorsal habitus; note the lack of distinct contrast in color of the tibiae and femora; **1b)** Pronotum. **2a)** Ventral habitus; **2b)** Abdomen, ventral view; note the lateral punctures that are distinctive of *Gastrosticta*; **3)** Lateral habitus. Scale = 5 mm for Figs. 1a, 2a, and 3; scale = 2 mm for Figs. 1b and 2b.

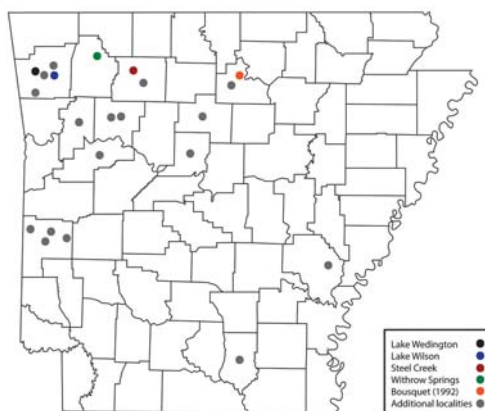
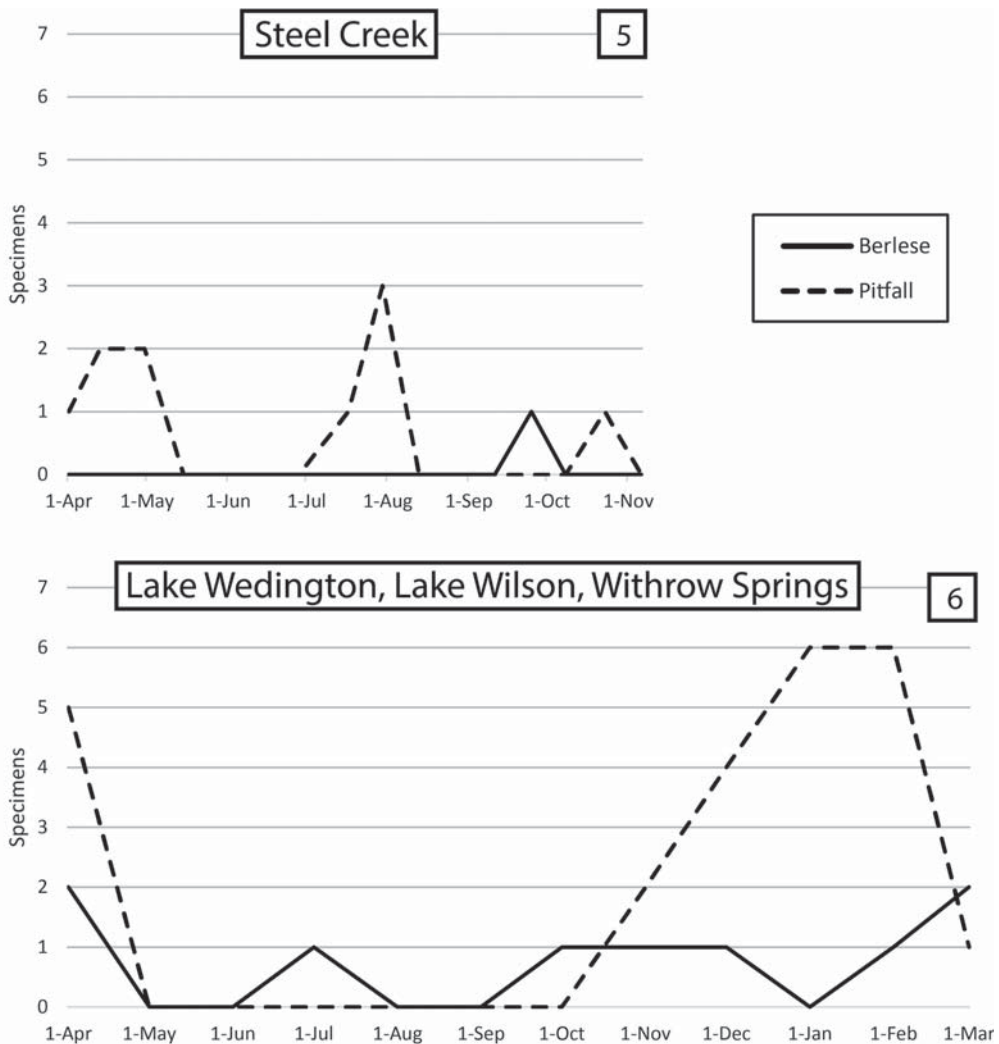


Fig. 4. Collection locations of *Pterostichus punctiventris*. Specimens in this study were collected at Steel Creek (Newton County), Lake Wedington (Washington County), Lake Wilson (Washington County), Withrow Springs (Madison County), and additional localities throughout Arkansas. One locality record is from Bousquet (1992).

Specimens Examined. *Pterostichus (Gastrosticta) punctiventris*: 139 adults. **ARKANSAS** • **Arkansas Co.:** 1 m, White River National Wildlife Reserve, 21 July 1968, pitfall trap in woodland, col. Brown & Underwood • 1 f, White River National Wildlife Reserve, pitfall trap, February 1972 • **Bradley Co.:** 1 f, 5 June 1963 • 1 f, 19 June 1963 • **Conway Co.:** 1 f, under stones, 6 June 1963 • **Franklin Co.:** 1 m, under stone, 19 January 1959, col. W. Whitcomb • **Johnson Co.:** 1 m, 25.3 mi. west Inters. Hwy. 21 & 1003, pitfall trap, 28 June 1973, col. D. Carlyle • 2 f, 25.3 mi. west Inters. Hwy. 21 & 1003, pitfall trap, 12 July 1973, col. D. Carlyle • 1 m, 25.3 mi. west Inters. Hwy. 21 & 1003, pitfall trap, 26 July 1973, col. D. Carlyle • 1 m, 4.4 mi. west Inters. Hwy. 21 & 1003, pitfall trap, 26 July 1973, col. D. Carlyle • **Logan Co.:** 1 m, Mount Magazine State Park, ex oak/hickory litter using Berlese-Tullgren extraction, 25 May 2013, col. J.R. Fisher & M.J. Skvarla • 1 f, Mount Magazine State Park, ex paw-paw/sassafras litter using Berlese-Tullgren extraction, 22 September 2014, col. A.P.G. Dowling • **Madison Co.:** 1 f, Withrow Springs State Park, oak/hickory forest, Berlese-Tullgren extraction of leaf litter, 12 April 2014, col. F.B. Hamilton • 2 f, Withrow Springs State Park, oak/hickory forest, Berlese-Tullgren extraction of leaf litter, 11 March 2015, col. F.B. Hamilton • **Newton Co.:** 1 f, 4.4 mi. south of St. Judea, pitfall trap, 27 June 1974, col. Heiss, Howard, & Chenowith • 1 m, 4.4 mi. south of St. Judea, pitfall trap, 11 July 1974, col. Heiss, Howard, & Chenowith • 1 f, Buffalo National River, Steel Creek, oak/hickory forest, ex pitfall, 1 April 2013, col. M.J. Skvarla • 1 f, 1 m, Buffalo National River, Steel Creek, oak/hickory forest,

ex pitfall, 13 April 2013, col. M.J. Skvarla • 1 f, 1 m, Buffalo National River, Steel Creek, oak/hickory forest, ex pitfall, 30 April 2013, col. M.J. Skvarla • 1 m, Buffalo National River, Steel Creek, oak/hickory forest, ex pitfall, 17 July 2013, col. M.J. Skvarla • 1 f, 1 m, Buffalo National River, Steel Creek, oak/hickory forest, ex pitfall, 30 July 2013, col. M.J. Skvarla • 1 f, Buffalo National River, Steel Creek, oak/hickory forest, Berlese-Tullgren extraction of leaf litter, 25 September 2013, col. M.J. Skvarla • 1 f, Buffalo National River, Steel Creek, ex pitfall, 23 October 2013, col. M.J. Skvarla • **Polk Co.:** 1 f, 1 m, 4 mi. south of Wilhelmina State Park, Hwy. 88, under rocks, 27 June 1972, col. R. T. Allen • 1 f, 0.8 mi. southeast Inters. Hwy. 88 & 272 on 88, pitfall trap, 5 June 1973, col. R. Chenowith • 1 f, 0.8 mi. southeast Inters. Hwy 88 & 272 on 88, pitfall trap, 21 August 1973, col. R. Chenowith • 1 m, Carney Creek Wildlife Area, 3.5 mi. north of Bard Springs, ex maple/beechness litter, 28 September 1991, col. Carlton & Robison • 1 m, Carney Creek Wildlife Area, 3.5 mi. north of Bard Springs, ex deciduous litter, 24 March 1992, col. Carlton & Robison • 1 f, Ouachita National Forest, hand collected, 16 October 2014, col. M.J. Skvarla • 1 f, Ouachita National Forest, Berlese-Tullgren extraction of leaf litter, 16 October 2014, col. M.J. Skvarla • **Stone Co.:** 1 f, 33.1 mi. west Inters. Hwy. 65 & 27, pitfall trap, 19 April 1973, col. D. Carlyle • **Van Buren Co.:** 1 m, 3.5 mi. east Inters. Hwy. 65 & 16, pitfall trap, 28 June 1973, col. R. T. Allen • **Washington Co.:** 1 f, 14 April 1954 • 5 f, 2 m, Cove Creek Valley, 1955–56, col. Maxine Hite • 1 f, 1 m, under rocks, 5 June 1960 • 1 f, ground, 1 October 1960, col. S. Shaw • 1 f, 2 October 1960, col. S. Shaw • 1 m, 23 March 1962 • 2 m, 30 March 1962 • 1 m, 8 June 1962 • 2 m, 22 June 1962 • 1 f, 29 June 1962 • 1 m, 6 July 1962 • 2 f, 14 July 1962 • 1 f, 2 m, 20 October 1962 • 1 m, 22 October 1962 • 2 m, 27 October 1962 • 1 f, 2 m, 10 November 1962 • 4 f, 1 m, 17 November 1962 • 2 f, 2 m, 24 November 1962 • 1 f, 2 m, 1 December 1962 • 1 f, 3 m, 8 December 1962 • 1 f, 2 m, 15 December 1962 • 2 m, 22 December 1962 • 1 f, 28 December 1962 • 4 f, 2 m, 12 January 1963 • 1 f, 23 February 1963 • 1 f, 2 March 1963 • 1 f, 9 March 1963 • 1 m, 23 March 1963 • 1 f, University of Arkansas Experiment Station, pitfall trap in pines, 11 February 1972, col. Thompson & Carlyle • 1 f, University of Arkansas Experiment Station, 11 January 1973, col. Thompson & Carlyle • 1 m, University of Arkansas Experiment Station, pitfall trap in pines, 18 February 1973, col. Thompson & Carlyle • 3 f, 2 m, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, ex pitfall, 11 April 2014, col. F.B. Hamilton • 1 f, Ozark-St. Francis National Forest,



Figs. 5–6. Phenology of *Pterostichus punctiventris*. **5)** *P. punctiventris* collected at Steel Creek during April 2013 through December 2013. **6)** *P. punctiventris* collected at Lake Wedington, Lake Wilson, and Withrow Springs during April 2014 through March 2015.

Lake Wedington, oak/hickory forest, Berlese-Tullgren extraction of leaf litter, 11 April 2014, col. F.B. Hamilton • 1 f, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, Berlese-Tullgren extraction of leaf litter, 2 July 2014, col. F.B. Hamilton • 1 f, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, Berlese-Tullgren extraction of leaf litter, 4 October 2014, col. F.B. Hamilton • 2 f, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, ex pitfall, 8 November 2014, col. F.B. Hamilton • 1 f, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, Berlese-Tullgren extraction of leaf litter, 8 November

2014, col. F.B. Hamilton • 4 f, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, ex pitfall, 7 December 2014, col. F.B. Hamilton • 1 m, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, Berlese-Tullgren extraction of leaf litter, 7 December 2014, col. F.B. Hamilton • 4 f, 2 m, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, ex pitfall, 16 January 2015, col. F.B. Hamilton • 2 f, 4 m, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, ex pitfall, 7 February 2015, col. F.B. Hamilton • 1 m, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, Berlese-Tullgren extraction of leaf litter,

7 February 2015, col. F.B. Hamilton • 1 f, Ozark-St. Francis National Forest, Lake Wedington, oak/hickory forest, ex pitfall, 11 March 2015, col. F.B. Hamilton • 2 f, 2 m, University of Arkansas Experiment Station, no date • 1 f, Univ. of Ark. student coll., no other information

Pterostichus (Gastrosticta) subacutus: Two adults: 1 f, 1 m, **ARKANSAS • Logan Co.:** 9 mi. N. of Paris on Hwy. 309, Lot No. 73-610, small pond, under leaf debris, 27 June 1973, col. R.T. Allen & R. Chenowith. **New state record.**

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