

**NOTES ON *STENOTUS* AND *NESTOTUS*  
(ASTERACEAE: ASTEREAE)**

**GUY L. NESOM**

2925 Hartwood Drive  
Fort Worth, Texas 76109  
guynesom@sbcglobal.net

**ABSTRACT**

The genus *Nestotus* is enlarged to three species with the addition of *Stenotus lanuginosus*, as *Nestotus lanuginosus* (A. Gray) Nesom, **comb. nov.** and *Nestotus lanuginosus* var. **andersonii** (Rydb.) Nesom, **comb. nov.** *Stenotus pulvinatus* is maintained as a member of *Stenotus* sensu stricto, a genus of three species (also including *S. acaulis* and *S. armerioides*). Illustrations of habit and diagnostic details are provided for species of each genus.

Molecular studies by Roberts (2002) and Roberts and Urbatsch (2003, 2004) showed that *Stenotus* as previously circumscribed (Rydberg 1900; Nesom 1989 and Morse 1998, as 6 species) is not monophyletic. *Stenotus acaulis* (the type) and *S. armerioides*, as sister species in the analyses, together are most closely related to *Petradoria* (1 or 2 species) and *Toiyabea* (monotypic). *Stenotus stenophyllus* and *S. macleanii* show as sister species and were segregated by Roberts et al. (2005) as the genus *Nestotus*. Curiously, in the cladogram published by Brouillet et al. (2009), it is *S. stenophyllus* and *S. macleanii* that show as sister to *Petradoria* and *Toiyabea*, and the positions of *S. acaulis* (Baja California) and *S. armerioides* (western USA and Saskatchewan) are unresolved.

The relationships of *Stenotus lanuginosus* and *S. pulvinatus* were not resolved in the molecular analyses by Roberts and colleagues (or by Brouillet et al.), but Roberts et al. (2005) maintained them within *Stenotus*. For the FNANM treatment, *Stenotus* was regarded as a genus of 4 species (Morse 2006), *Nestotus* as a genus of 2 (Urbatsch et al. 2006). The taxonomic positions of *S. lanuginosus* and *S. pulvinatus* are considered here.

**1. STENOTUS LANUGINOSUS**

A close similarity between *Nestotus* (*Stenotus*) *macleanii* (A. Gray) Urbatsch et al. and *Nestotus* (*Stenotus*) *stenophyllus* (Brandeg.) Urbatsch et al. was observed by Morse (1998), who placed *Stenotus lanuginosus* close to these, based on the common production of thin, stipitate-glandular leaves and stipitate-glandular, thin-herbaceous phyllaries of equal or subequal lengths in 2 series. All three species also have a mat-forming habit with solitary, yellow-rayed heads and narrow leaves, and *N. stenophyllus* and *S. lanuginosus* both produce at least small amounts of cobwebby vestiture.

Molecular analyses (Roberts 2002; Roberts & Urbatsch 2003, 2004; summarized by Roberts et al. 2005) place *Nestotus macleanii* and *Nestotus stenophyllus* as sister species but suggest that *Stenotus lanuginosus* is basal to a clade comprising *Chrysothamnus*, *Amphipappus*, *Acamptopappus*, *Tonestus*, *Eastwoodia*, *Oreochrysum*, and *Lorandersonia*. Only in a single morphological feature, however, is *S. lanuginosus* excluded from the generic description given by Roberts et al. (2005, 2006) for *Nestotus* — the linear leaves of *N. macleanii* and *N. stenophyllus* are 1-nerved, while the slightly wider leaves of *S. lanuginosus* are 3-nerved.

Molecular data may suggest that the evolutionary origin of *Stenotus lanuginosus* involved hybridization or introgression, perhaps apart from *Nestotus macleanii* and *N. stenophyllus*, but the strong morphological similarity among these three species supports a hypothesis of close common ancestry, and the third species is added here to *Nestotus*.

***Nestotus lanuginosus*** (A. Gray) Nesom, **comb. nov.** *Haplopappus lanuginosus* A. Gray in C. Wilkes et al., U.S. Expl. Exped. 17(2): 347. 1874 (as *Aplopappus*). *Aster pickeringii* Kuntze (nom. nov.), Revis. Gen. Pl. 1: 316. 1891. *Stenotus lanuginosus* (A. Gray) Greene, Erythea 2: 72. 1894. **TYPE: USA. Washington.** [Chelan Co.?]: Upper Columbia, early Jun 1841, C. Pickering & W.D. Brackenridge 1050 (holotype: US image!, fragment GH image!).

a. ***Nestotus lanuginosus*** (A. Gray) Greene var. **lanuginosus**

b. ***Nestotus lanuginosus*** var. **andersonii** (Rydb.) Nesom, **comb. nov.** *Stenotus andersonii* Rydb., Bull. Torrey Bot. Club 27: 615. 1900. *Haplopappus lanuginosus* subsp. *andersonii* (Rydb.) H.M. Hall, Publ. Carnegie Inst. Wash. 389: 172. 1928. *Haplopappus lanuginosus* var. *andersonii* (Rydb.) Cronq., Vasc. Pl. Pacif. N.W. 5: 219. 1955. *Stenotus lanuginosus* (A. Gray) Greene var. *andersonii* (Rydb.) Morse, Sida 21: 2093. 2005. **TYPE: USA. Montana.** [Broadwater Co.]: Belt Mountains, on open hills, 14 Jul 1886, F.W. Anderson 3561 (holotype: NY image!).

### Key to the species of *Nestotus*

1. Leaves linear-oblongate, 3-nerved, mostly 1.5–5 mm wide, longer, surfaces sparsely to moderately lanate ..... ***Nestotus lanuginosus***
1. Leaves mostly linear-oblong to linear-oblongate, 1-nerved, mostly 1–1.5 mm wide, shorter, surfaces glabrous or hirsute to hirsutulous.
  2. Leaf surfaces glabrous, eglandular, margins usually ciliate with short, stiffly spreading hairs ..... ***Nestotus macleanii***
  2. Leaf surfaces hirsute to hirsutulous, often stipitate-glandular, margins eciliate ..... ***Nestotus stenophyllus***

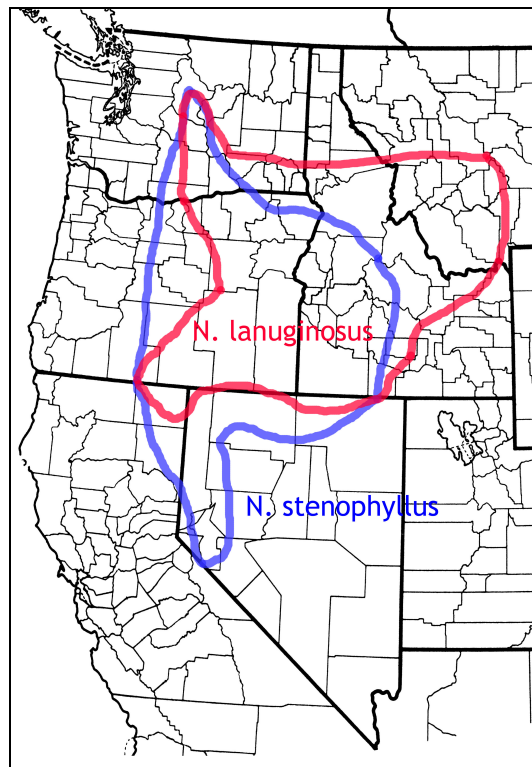


Figure 1. Generalized distributions of *Nestotus* species. *Nestotus macleanii* is endemic to central Yukon.



Figure 2. *Nestotus stenophyllus*, representative plants and heads. Above, photo by Paul Slichter, 20 Apr 2011, Washington.





Figure 3. *Nestotus stenophyllus*, representative plants.





Figure 4. *Nestotus stenophyllus*, leaf vestiture. Photo G.D. Carr, 2010. WTU



Figure 5. *Nestotus stenophyllus* involucre. Photo by Richard Spellenberg, 24 May 2015, California.



Figure 6. *Nestotus stenophyllus*, characteristic involucre morphology.





Figure 7. *Nestotus macleanii*. Photo by Syd Cannings, iNaturalist, 28 May 2011, Yukon Territory.



Figure 8. *Nestotus macleanii*. Characteristic habit.





Figure 9. *Nestotus macleanii*. Characteristic vestiture, stiffly ciliate leaf margins.



Figure 10. *Nestotus lanuginosus*. Photo by Paul Slichter, 28 June 2008, northeastern Oregon.





Figure 11. *Nestotus lanuginosus* Characteristic habit.



Figure 12. *Nestotus lanuginosus*, involucre. Photo by Paul Slichter, 2 June 2012, Steens Mountain, Oregon.





Figure 13. *Nestotus lanuginosus*, characteristic involucre morphology. Note similarity with that of *Nestotus stenophyllus*, Fig. 6.

## 2. STENOTUS PULVINATUS

*Stenotus pulvinatus* is an endemic of the Sierra de San Pedro Mártir in Baja California, where it grows in rocky habitats at 7500–9200 feet elevation. It has a mat-forming habit (from a taproot and woody, multicapital caudex, often with long branches), narrow, coriaceous leaves with stipitate-glandular vestiture, rayless, solitary heads on peduncles no longer than the basal leaves, and oblong-lanceolate phyllaries with acute apex, slightly thickened, in 3–4 series strongly graduate in length. The phyllaries have a herbaceous apical patch and white-indurate base. All of these features except the lack of ray flowers and consistently foreshortened peduncles are similar to those of at least some forms of *Stenotus acaulis*; peduncles of *S. acaulis* vary greatly in length.

No other North American species of Astereae beside *Stenotus acaulis* closely resembles *S. pulvinatus* and it seems a reasonable hypothesis that now-isolated *S. pulvinatus* originated as a variant of a once more widely distributed *S. acaulis*. *Stenotus acaulis* itself includes numerous formally named variants (Morse 2006). The genus *Stenotus* — including three species, *S. acaulis*, *S. armerioides*, and *S. pulvinatus*, excluding *Nestotus* [*Stenotus*] *lanuginosus* — is a morphologically and geographically coherent group.

***Stenotus pulvinatus*** (Moran) Nesom, *Phytologia* 67: 113. 1989. *Haplopappus pulvinatus* Moran, *Trans. San Diego Soc. Nat. Hist.* 15: 161, fig. 7. 1969. **TYPE: MEXICO. Baja California.** Sierra de San Pedro Mártir, E slope of Cerro "2828," on E rim, near 31° 02' N, 115° 27' W, scarce, in crevices of N- and E-facing rocks and cliffs, 2800 m, 5 Jul 1968, *R. Moran 15262* (holotype: SD image!; isotypes: CAS!, GH image, K image, KANU as cited, MEXU image!, RSA!, UC!, US image!).

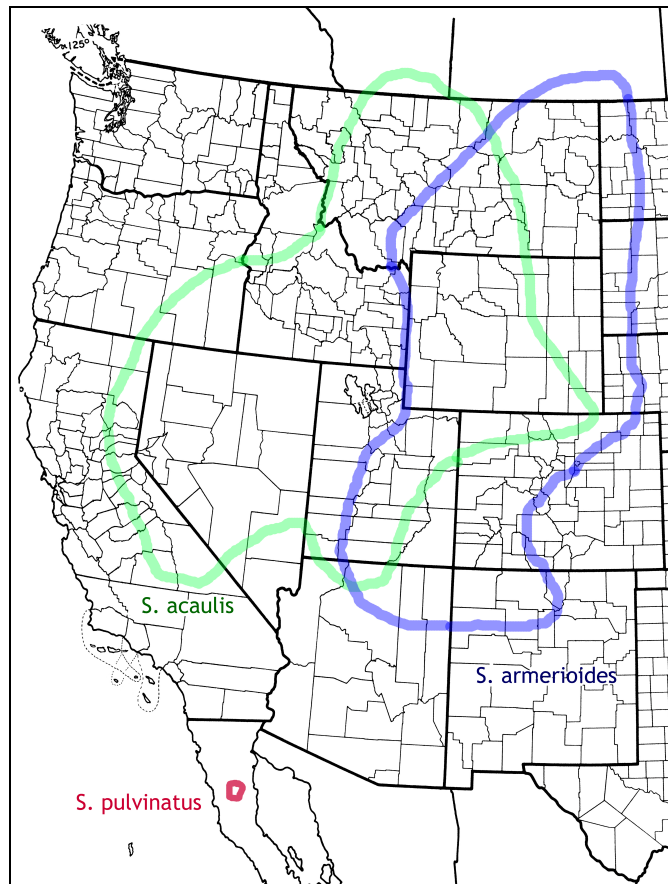


Figure 14. Generalized distribution of *Stenotus* species.



*Slichter 2012*



Figure 14. *Stenotus acaulis*. Above: photo by Paul Slichter, Steens Mountain, Oregon, 2 June 2012, Saskatchewan. Below: photo by Steve Matson, Mono Co., California, 18 May 2008.



Figure 15. *Stenotus acaulis*. Top left: photo by Steve Matson, California, 2005. Top right: photo by Gary Monroe, Nye Co., Nevada, May 13, 2006.





Figure 16. *Stenotus armerioides*. Above, photo by Al Schneider, 4 May 2005, Utah. Below: Representative plants with details of involucre.





Figure 17. *Stenotus armerioides* involucre. Above, photo by Glen Lee, Saskatchewan. Below: photo by Al Schneider, 4 May 2005, Utah.





Figure 18. *Stenotus pulvinatus*. Above, photo by Jon Rebman, 12 Jun 2016, Sierra San Pedro Mártir. Below: Representative plant with short peduncle.





Figure 19. *Stenotus pulvinatus* involucres. Left, photo by Jon Rebman, 12 Jun 2016.

#### LITERATURE CITED

- Brouillet L., T. Lowrey, L. Urbatsch, V. Karaman-Castro, G. Sancho, S. Wagstaff, and J.C. Semple. 2009. Phylogeny and evolution of the Astereae (Compositae or Asteraceae). Pp. 449–490, in V.A. Funk, A. Susanna, T. Stuessy, and R. Bayer (eds.). Systematics, Evolution, and Biogeography of the Compositae. IAPT, Vienna.
- Moran, R. 1969. Five new taxa of *Haplopappus* (Compositae) from Baja California, Mexico. Trans. San Diego Soc. Nat. Hist. 15: 149–164.
- Morse, C.A. 1998. Systematics and taxonomy of *Stenotus* Nutt. (Asteraceae: Astereae). M.A. thesis, Univ. of Kansas, Lawrence.
- Morse, C.A. 2006. *Stenotus*. Pp. 174–177, in Flora of North American North of Mexico, Vol. 20. Oxford Univ. Press, New York and Oxford.
- Nesom, G.L. 1989. A new combination in *Stenotus* (Compositae: Astereae). Phytologia 67: 113–144.



- Roberts, R.P. 2002. Phylogeny of *Ericameria*, *Chrysothamnus* and related genera (Asteraceae: Astereae) based on nuclear ribosomal DNA sequence data. Ph.D. diss., Louisiana State Univ., Baton Rouge.
- Roberts, R.P. and L.E. Urbatsch. 2003. Molecular phylogeny of *Ericameria* (Asteraceae, Astereae) based on nuclear ribosomal 3' ETS and ITS sequence data. *Taxon* 52: 209–228.
- Roberts, R.P. and L.E. Urbatsch. 2004. Molecular phylogeny of *Chrysothamnus* (Asteraceae, Astereae) based on nuclear ribosomal 3' ETS and ITS sequence data. *Syst. Bot.* 29: 199–215.
- Roberts, R.P., L.E. Urbatsch, and K.M. Neubig. 2005. *Nestotus* and *Toiyabea*, two new genera of Asteraceae: Astereae from the western United States and Canada. *Sida* 21: 1647–1655.
- Rydberg, P.A. 1900. Studies on the Rocky Mountain Flora.—III. Some smaller genera of Composites. *Bull. Torrey Bot. Club* 27: 614–636.
- Urbatsch, L.E., R.P. Roberts, C.A. Morse, and K.M. Neubig. 2006. *Nestotus*. Pp. 169–170, in *Flora of North American North of Mexico*, Vol. 20. Oxford Univ. Press, New York and Oxford.