



**Nomenclatural Rearrangements in *Antennaria Neodioica* and *A. Howellii*  
(Asteraceae: Inuleae: Gnaphaliinae)**

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NOMENCLATRURAL REARRANGEMENTS IN *ANTENNARIA*  
*NEODIOICA* AND *A. HOWELLII*  
(ASTERACEAE: INULEAE: GNAPHALIINAE)

RANDALL J. BAYER

Bayer, Randall J. (Department of Botany, University of Alberta, Edmonton, Alberta T6G 2E9, Canada). Nomenclatural rearrangements in *Antennaria neodioica* and *A. howellii* (Asteraceae: Inuleae: Gnaphaliinae). *Brittonia* 41: 396–398. 1989. — The circumscription of the *A. neodioica* polyploid complex to include *A. howellii* as a subspecies necessitates a change in the name of the complex to the *A. howellii* polyploid complex. The *A. howellii* species complex contains four subspecific taxa, requiring three new combinations, *Antennaria howellii* subsp. *canadensis* (Greene) Bayer, *A. howellii* subsp. *neodioica* (Greene) Bayer, and *A. howellii* subsp. *petaloidea* (Fern.) Bayer.

The *A. neodioica* Greene polyploid complex was initially delimited as containing three subspecies (Bayer & Stebbins, 1982), namely *A. neodioica* subsp. *neodioica*, *A. neodioica* subsp. *canadensis* (Greene) Bayer & Stebbins, and *A. neodioica* subsp. *petaloidea* (Fern.) Bayer & Stebbins. These subspecies are found primarily in eastern North America, but *A. neodioica* subsp. *neodioica* and *A. neodioica* subsp. *petaloidea* also occur infrequently in western North America. As a consequence of my expanded taxonomic studies on western species of *Antennaria*, I decided that *A. howellii* should be included in the complex as a fourth subspecies, and created the new combination *A. neodioica* subsp. *howellii* (Greene) Bayer (Bayer, 1984). *Antennaria neodioica* subsp. *howellii*, however, is an incorrect combination because *A. howellii* was published 54 days before *A. neodioica*, a fact that I, regrettably, had earlier overlooked. With the broader circumscription of the complex, the priority of *A. howellii* over *A. neodioica* necessitates a switch in the species epithet. Therefore, new combinations under *A. howellii* must be made to accommodate the previously correct names, *A. neodioica* subsp. *canadensis*, *A. neodioica* subsp. *neodioica*, *A. neodioica* subsp. *petaloidea*, as well as the incorrect combination *A. neodioica* subsp. *howellii*.

Nomenclature

Three new combinations, as well as the subspecific autonym, *A. howellii* subsp. *howellii*, formally recognize the broader circumscription of the complex as recognized herein. Complete lists of taxonomic synonyms for subsp. *canadensis*, *neodioica*, and *petaloidea* can be found in Bayer and Stebbins (1982). Two taxonomic synonyms for *A. howellii* subsp. *howellii* and three newly disclosed ones for *A. howellii* subsp. *petaloidea* are presented here.

1. *ANTENNARIA HOWELLII* Greene subsp. *HOWELLII*

*Antennaria howellii* Greene, Pittonia 3: 174. (27 May) 1897. *A. neglecta* var. *howellii* (Greene) Cronq., Leaflet W. Bot. 6: 43. 1950. *A. neglecta* subsp. *howellii* (Greene) Hultén, Ark. Bot. 7: 136. 1968. *A. neodioica* subsp. *howellii* (Greene) Bayer, Syst. Bot. 9: 81. 1984. TYPE: U.S.A. OREGON: "St. Helens," according to the label, 20 May 1887, *T. Howell s.n.* (LECTOTYPE (chosen from among syntypes by Bayer, 1984): NDG-058217!; ISOLECTOTYPE: MO-2868230!).

*Antennaria callilepis* Greene, Ottawa Naturalist 17: 201. 1904. TYPE: CANADA. BRITISH COLUMBIA: "Steep slopes, Alt. 4000 ft., N. of Chilliwack River," according to the label, 8 Aug 1901, *J. M. Macoun 26186* (HOLOTYPE: NDG-57982!; ISOTYPE: CAN-105177!). Greene's original description reads "at 3,500'," but the collector's number and date agree with those cited in the original description.

*Antennaria exima* Greene, Ottawa Naturalist 20: 71. 1906. TYPE: CANADA. BRITISH COLUMBIA:

"Borders of thickets, Lake House, Skagit River," according to the label, 12 Jul 1905, *J. M. Macoun 69338* (HOLOTYPE: NDG-58111!; ISOTYPE: CAN-105192!).

## 2. *Antennaria howellii* subsp. *canadensis* (Greene) Bayer, comb. nov.

*Antennaria canadensis* Greene, *Pittonia* 3: 275. 1898. *A. neodioica* subsp. *canadensis* (Greene) Bayer & Stebbins, *Syst. Bot.* 7: 309. 1982. TYPE: CANADA. NEW BRUNSWICK: "Rocky places, Campbellton," according to the label, 8 Jul 1876, *R. Chalmers 11299* (LECTOTYPE (chosen from among syntypes by Bayer & Stebbins, 1982): CAN-105166).

## 3. *Antennaria howellii* subsp. *neodioica* (Greene) Bayer, comb. nov.

*Antennaria neodioica* Greene, *Pittonia* 3: 184. (20 Jul) 1897. *A. neodioica* subsp. *neodioica*, *Syst. Bot.* 7: 309. 1982. TYPE: U.S.A. PENNSYLVANIA: "Bus[h]kill," according to the label, 1 Jun 1897, *E. L. Greene s.n.* (LECTOTYPE (chosen from among syntypes by Bayer & Stebbins, 1982): NDG-058397!).

## 4. *Antennaria howellii* subsp. *petaloidea* (Fern.) Bayer, comb. nov.

*Antennaria neodioica* var. *petaloidea* Fern., *Proc. Boston Soc. Nat. Hist.* 28: 245. 1898. *A. petaloidea* (Fern.) Fern., *Rhodora* 1: 73. 1899. *A. neodioica* subsp. *petaloidea* (Fern.) Bayer & Stebbins., *Syst. Bot.* 7: 310. 1982. TYPE: U.S.A. NEW HAMPSHIRE: "Near the Town Hall, Jaffrey," according to the label, 31 May 1897, *E. L. Rand & B. L. Robinson 428* (LECTOTYPE (chosen from among syntypes by Bayer & Stebbins, 1982): GH!).

*Antennaria pedicellata* Greene, *Pittonia* 3: 175. (27 May) 1897. TYPE: U.S.A. OREGON: "Alpine Blue Mtns.," according to the label, in 188[?], *Cusick 1522* (LECTOTYPE—here designated: NDG-058505!). Greene's handwriting on the specimen identifies it as part of the type material, although his designation of it as a type was not clearly indicated.

*Antennaria stenolepis* Greene, *Ottawa Naturalist* 17: 201. 1904. TYPE: CANADA. BRITISH COLUMBIA: "On a small grass plot among trees, Alt. 2000 ft. Chilliwack River," according to the label, 30 Jun 1901, *J. M. Macoun 26187* (HOLOTYPE: NDG-58644!; ISOTYPE: CAN-105196!).

*Antennaria concolor* Piper, *Contr. U.S. Natl. Herb.* 11: 604. 1906. TYPE: U.S.A. OREGON: "Mt. Scott, near Portland," according to the label, 6 Jun 1904, *C. V. Piper 6189* (HOLOTYPE: US-528821!).

It seems appropriate at this time to defend my recognition of these taxa as a distinct species, rather than including them as infraspecific taxa under *A. neglecta*, as has been done by Cronquist (1945; 1950) and, in part, Hult n (1968). All the members of the *A. howellii* complex are polyploid gametophytic apomicts of multiple hybrid origin from among several sexual diploids including *A. neglecta*, *A. plantaginifolia* (L.) Richardson, *A. racemosa* Hook., and *A. virginica* Stebbins. These relationships have been demonstrated using cytology, morphometrics, and enzyme electrophoresis (Bayer & Stebbins, 1981; Bayer, 1985; Bayer & Crawford, 1986). Including these hybrid apomicts within a single sexual diploid, in my opinion, distorts the relationship because many of the apomicts are genetically more closely related to one of the diploids other than *A. neglecta* (Bayer, 1985; Bayer & Crawford, 1986). It would be just as reasonable to group them with *A. racemosa*, which *A. neglecta* var. *howellii* resembles more closely than it does *A. neglecta*. Consequently, I presently recognize this group of apomicts as a separate species because they are distinct from their sexual progenitors and should not be more closely allied to any single one of them. The evolutionary history of the group seems best reflected by the classification presented herein.

### Acknowledgments

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*A. howellii* has priority over *A. neodioica*. I thank Dan Nicolson and John Pruski for their helpful comments on an earlier version of this manuscript.

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### BOOK REVIEW

**Fungi in Biological Control Systems.** Edited by M. N. Burge. St. Martin's Press, 175 Fifth Ave., New York, NY 10010. ISBN 0-7190-1979-6. 1988. 269 pp. \$80 (cloth).

The increasing alarm over the use and overuse of chemical pesticides and their detrimental effect on the environment has been increasing over recent years. This has led to interest and research on the potential use of biological control agents, particularly fungi. Each year more and more advertisements in agricultural and horticultural journals and catalogues for living organisms to be used as control agents appear. This book, by sixteen experts, summarizes current knowledge and progress on research and development in biological control. Use of fungi to control economically important insect pests in greenhouses, in the garden, and in the field, mass production of entomogenous fungi for control, control of weeds with fungal pathogens, control of soil-borne and air-borne plant pathogens, control of fungous pathogens by mycoparasites, and control of nematodes by fungi are covered in detail. Failures, partial successes, and (rarely) good control are reported. Throughout the book optimism prevails that more and better control is attainable and will be forthcoming with additional research. The book will be of interest to all concerned about pest control in horticulture and agriculture as well as specialists in microbiology, mycology, plant pathology, genetics, and biotechnology. — CLARK T. ROGERSON, New York Botanical Garden.