***Senecio flaccidus* Less.** threadleaf groundsel
ASTERACEAE

Synonyms: *S. douglasii* DC.

General Description.—Threadleaf groundsel is also known as threadleaf butterweed, Douglas groundsel or ragwort, felty groundsel, sand wash groundsel, comb butterweed, old man, yerba cana, squawweed, creek senecio, and cenicillo (Elmore 1976, Epple 1995, Stubbendieck and others 1997). This species commonly reaches heights of 80 to 130 cm and under ideal conditions may reach 2 m. It is probably best classified as a subshrub. It forms woody stems to a meter or so but often dies back to less than 50 cm from the ground-line. It tends to become somewhat straggly as branches may lean over in different directions, some becoming almost decumbent. The leaves are alternate, pinnately compound (sometimes not divided), narrow and thread-like, up to 12 cm in length, and usually covered with whitish hairs giving the plant an obvious grayish color (Carter 1997, Ivey 1995, Kearney and others 1951, Martin and Hutchins 1980-81). It may have some tendencies to be evergreen in the southern portion of its range.

Taxonomy.—There has been a profusion of taxonomic names and varietal subclassifications attached to this species, making for a complicated taxonomy. The oldest specific name applied to this species complex is now known to be *Senecio flaccidus* Lessing (Turner and Barkley 1990). Three varieties are recognized with the following synonymies (Allred 2002, Kartesz 1994). Variety 1: *S. flaccidus* Less. var. *flaccidus*, with four synonyms; *S. douglasii* DC var. *longilobus* (Benth.) L. Benson, *S. filifolius* Nutt., *S. flaccidus* Nutt. var. *jamesii* Torr. & Gray, and *S. longilobus* Benth. This variety tends to be more uniformly white hairy with the column of the flower head narrower (8 to 10 mm wide at summit). Variety 2: *S. flaccidus* Less. var. *douglasii* (DC) B. Turner & T. Barkley, with two synonyms; *S. douglasii* DC var. *douglasii*, and *S. warnockii* Shinners. This variety is not white hairy throughout and the heads are wider (10 to 15 mm). Variety 3: *S. flaccidus* Less. var. *monoensis* (Greene) B. Turner & T. Barkley, with two synonyms; *S. douglasii* DC var. *monoensis* (Greene) Jeps., and *S. monoensis* Greene. This variety is generally hairless throughout, more herbaceous, and has a more comb-like leaf, the linear lobes curling upward.

Range.—Threadleaf groundsel occurs from western Texas, west through New Mexico, Arizona, to California, north to Wyoming and Nebraska, Utah, and Nevada, and south into northern Mexico. It is a wide ranging species occurring in a variety of soil types and elevations from about 760 to 2,440 m.

Ecology.—This species grows in short grass prairies of the southwestern Great Plains and a wide variety of scrubland and grassland habitats in the Southwest. It has been considered a diagnostic or climax species for desert grassland (Dick-Peddie 1993). It tends to become more abundant in disturbed habitats and overgrazed rangelands and often grows in washes. It is a taprooted plant that grows relatively quickly and tends to be a short-lived perennial shrub to subshrub. Oxygen flux, as it relates to photosynthesis, from leaves and twigs was constant with increasing drought stress, up until leaf drop occurred (Ehleringer and Cooper 1992). Twigs may serve to maintain some photosynthesis through drought periods when new foliage cannot easily be produced, such as during dry springs and early summers. Threadleaf groundsel was one of several shrub and subshrub species, studied in Mojave and Sonoran desert areas that generated substantial net carbon gains from twig photosynthesis (Comstock and others 1988).

Reproduction.—Threadleaf groundsel generally blooms in the late summer and fall but will bloom

earlier in the summer if sufficient moisture is available. It produces numerous yellow flower heads with eight to 17 ray florets, the rays 10 to 15 mm long (Carter 1997, Martin and Hutchins 1980-81). Seeds (fruits) are wind-borne with a white fluffy pappus.

Growth and Management.—Threadleaf groundsel is a fast growing, short lived perennial. Plants may live 3 to 6 years or more. It increases in rangelands as a result of overgrazing pressure. Its abundance may be controlled through proper grazing management and careful use of herbicides. Spraying with 2,4-D has been used to control this species.

Benefits and Disadvantages.—Because this species will colonize open disturbed areas, it helps achieve a quick ground cover in a natural succession process. The perennial nature of the plant further helps stabilize soil for longer-lived perennials to eventually become established. Direct human uses are minimal, but it was once used medicinally by Native Americans. It is a poor forage plant for cattle and horses and is known to be toxic (Gay and Dwyer 1998, Stubbendieck and others 1997, Warnock 1974) and causes liver damage when consumed in large quantities (Kirkpatrick 1992). All parts of the plant are poisonous, younger leaves more so, and poisoning is more of a problem on drier range conditions. Symptoms in cattle may include a dry scaly nose, a rough coat, and continuous walking with no direction (Phillips Petroleum Company 1963). Because it has low palatability, it tends to be avoided except during long droughts or in heavily overgrazed areas where it may increase in abundance (USDA 1937). Toxicity of threadleaf groundsel may be attributed to the pyrrolizidine alkaloids (PA). About 50 percent of all identified PA are toxic, and some are carcinogenic in rodents (Stegelmeier and others 1999). Threadleaf groundsel contains the pyrrolizidine alkaloids: senecionine, seneciphylline, florosenine, otonecine-based florosenine, and retrorsine (Cooper and others 1996). As with many toxic plants, concentration and preparation are critical factors. For example, the Navajo would boil entire plants and drink the mixture to assist the voice and singing during some ceremonial songs (Elmore 1976). The Navajo would also use the flower heads to clean cactus fruits of their spines.

References

Allred, K.W. 2002. A Working Index of New Mexico Vascular Plant Names. New Mexico State University. http://web.nmsu.edu/~kallred/herbweb/ [not paged].

Carter, J.L. 1997. Trees and Shrubs of New Mexico. Johnson Books, Boulder, CO. 534 p.

Comstock, J.P., T.A. Cooper, and J.R. Ehleringer. 1988. Seasonal patterns of canopy development and carbon gain in nineteen warm desert shrub species. Oecologia, Berlin 75(3): 327-335.

Cooper, R.A., R.J. Bowers, C.A. Beckham, and R.J. Huxtable. 1996. Preparative separation of pyrrolizidine alkaloids by high-speed counter current chromatography. Journal of Chromatography 732(1): 43-50.

Dick-Peddie, W.A. 1993. New Mexico Vegetation: Past, Present and Future. University of New Mexico Press, Albuquerque, NM. 244 p.

Ehleringer, J.R. and T.A. Cooper. 1992. On the role of orientation in reducing photoinhibitory damage in photosynthetic-twig desert shrubs. Plant Cell and Environment 15(3): 301-306.

Elmore, F.H. 1976. Shrubs and Trees of the Southwest Uplands. Southwest Parks and Monuments Association, Tucson, AZ. 214 p.

Epple, A.O. 1995. A Field Guide to the Plants of Arizona. Falcon Publishing Inc., Helena, MT. 347 p.

Gay, C. W., Jr. and D. D. Dwyer. 1998 Reprint. New Mexico Range Plants. Cooperative Extension Service Circular 374. Revisions by: C. Allison, S. Hatch, and J. Schickedanz. New Mexico State University, Las Cruces, NM. 84 p.

Ivey, R.D. 1995. Flowering Plants of New Mexico, 3rd Edition. Published by the author, NM. 504 p.

Kartesz, J.T. 1994. A Synonymized Checklist of the Vascular Flora of the United States, Canada, and Greenland, Vol. 1, 2nd Edition. Biota of North America Program of the North Carolina Botanical Garden. Timber Press, Portland, OR. 622 p.

Kearney, T.H., R. Peebles, and Collaborators. 1951 with 1960 supplement. Arizona Flora. University of California Press, Berkeley, CA. 1,085 p.

Kirkpatrick, Z. M. 1992. Wildflowers of the Western Plains. University of Texas Press. Austin, TX. 240 p.

Martin, W.C. and C.E. Hutchins. 1980-1981 (reprinted 2001). A Flora of New Mexico. Vol. 2. Bishen Singh Mahendra Pal Singh (India) and Koeltz Scientific Books (Germany). p. 1,277-2,591.

Phillips Petroleum Company. 1963. Pasture and Range Plants. Phillips Petroleum Co., Bartlesville, OK. 176 p.

Stegelmeier, B.L., J.A. Edgar, S.M. Colegate, D.R. Gardner, T.K. Schoch, R.A. Coulombe, and R.J. Molyneux. 1999. Pyrrolizidine alkaloid plants, metabolism and toxicity. Journal of Natural Toxins 8(1): 95-116.

Stubbendieck, J., S.L. Hatch, and C.H. Butterfield. 1997. North American Range Plants, 5th Edition. University of Nebraska Press, Lincoln, NE. 501 p.

Turner, B.L. and T.M. Barkley. 1990. Taxonomic overview of the *Senecio flaccidus* complex in North America, including *Senecio douglasii*. Phytologia 69(1): 51-55.

U.S. Department of Agriculture, Forest Service. 1937 (1988 Dover edition). Range Plant Handbook. Dover Publications Inc., New York. 816 p.

Warnock, B.H. 1974. Wildflowers of the Guadalupe Mountains and the Sand Dune Country, Texas. Sul Ross State University, Alpine, TX. 176 p.

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