New Combinations in *Dendrosenecio* (Asteraceae)

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Abstract. *Dendrosenecio* (Hauman ex Hedberg) B. Nord. comprises 11 species of giant-rosette plants that grow on tropical mountains in east and central Africa. Commonly known as giant senecios or giant groundsels, the size of these plants makes all herbarium specimens inherently fragmentary, and their recent, rapid, adaptive radiation means that scant DNA variation was detected in the original molecular systematic study. The provisional 1993 classification adopted a conservative approach for two taxa. In this paper, the new combinations of *D. adnivalis* (Stapf) E. B. Knox subsp. *petiolatus* (Hedberg) E. B. Knox and *D. elgonensis* (T. C. E. Fr.) E. B. Knox subsp. *amblyphyllus* (Cotton) E. B. Knox emend that treatment to more accurately reflect the evolutionary history of these plants.

Key words: Kenya, Mount Elgon, Rwenzori, Uganda.

The giant senecios and giant lobelias comprise the "charismatic megaflora" of tropical African mountains. Previous research produced a taxonomic revision of *Dendrosenecio* (Hauman ex Hedberg) B. Nord. (Knox, 1993), its placement within Senecioneae Cass. (Knox & Palmer, 1995a), and a molecular systematic analysis and biogeographic reconstruction of its adaptive radiation (Knox & Palmer, 1995b), with a subsequent treatment in the *Flora of Tropical East Africa* (Knox, 2005). Additional fieldwork, combined with advances in DNA sequencing technology (which also make herbarium tissue usable), have provided an opportunity to revisit the evolution of *Dendrosenecio* in much greater detail. The DNA-based phylogenetic analysis will be presented elsewhere, but two taxonomic changes are needed to establish correct names for presentation of this new research.

The fragmentary nature of *Dendrosenecio* herbarium specimens resulted in an early proliferation of named species, which has since been corrected, but my previously conservative interpretation of morphological features in two instances can now be refined based on unambiguous DNA evidence. One instance involves the alpine species *D. adnivalis* (Stapf) E. B. Knox, which, as the name indicates, occupies the highest reaches of the Rwenzori Mountains along the border of Uganda and the Democratic Republic of the Congo (formerly Zaire). The other instance involves plants growing along stream courses at the lower elevational limit of *Dendrosenecio* on Mount Elgon, which straddles the border of Uganda and Kenya.

The giant senecios only flower episodically (with flowering events separated by decades or longer), and when flowering does occur, most mature individuals in a population will flower synchronously. The factors that control flowering are not known, and individual plants that flower out of sync with their populations produce "hollow" achenes that lack embryos, presumably due to a lack of cross-pollination. As a result, vegetative morphology and ecological habitat are important attributes for understanding the biology of recently evolved infraspecific taxa.

1. Dendrosenecio adnivalis (Stapf) E. B. Knox subsp. **petiolatus** (Hedberg) E. B. Knox, comb. et stat. nov. Basionym: *Senecio adnivalis* Stapf var. *petiolatus* Hedberg, Symb. Bot. Upsal. 15: 233. 1957. *Dendrosenecio adnivalis* (Stapf) E. B. Knox var. *petiolatus* (Hedberg) E. B. Knox, Contr. Univ. Michigan Herb. 19: 243. 1993. TYPE: Uganda. Rwenzori Mtns., *C. W. L. Fishlock & G. L. R. Hancock 84* (holotype, K!).

Senecio stanleyi Hauman, Rev. Bot. Zool. Africaines 28: 52. 1935. *Senecio adnivalis* Stapf var. *stanleyi* (Hauman) Hedberg, Symb. Bot. Upsal. 15: 233. 1957. TYPE: Democratic Republic of the Congo. Rwenzori Mtns., *L. Hauman 472* (holotype, BR!; isotype, K!).

Notes. Groundsel Gully is a dense forest of giant senecios one encounters when hiking up from the Bujuku Valley to Scott Elliot Pass (14,350 ft. = 4375 m). These *Dendrosenecio adnivalis* plants have leaves with one of two forms: the broad lamina narrows continuously to the leaf base versus being constricted to the thick midvein (forming a pseudopetiole) before flaring again at the leaf base. The latter "*petiolatus*" form has scattered distribution throughout the Rwenzori valleys, but the typical "*adnivalis*" form is more common and grows in more continuous populations, with intermediate phenotypes rarely encountered. It was not previously possible to determine if these were minor genetic variants or evolutionary lineages, so the conservative decision was to treat them as named varieties. New DNA evidence indicates that they are not simply genetic variants and warrants treatment as sympatric subspecies. Hauman's (1935: 54) publication of "*Sene-*

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cio petiolatus Cotton" was based on an annotated herbarium label and lacked a Latin diagnosis. Hedberg (1957) and Mabberley (1973) regarded this designation as not properly published, although Hedberg (1957) used "*petiolatus*" as a new varietal name.

2. Dendrosenecio elgonensis (T. C. E. Fr.) E. B. Knox subsp. **amblyphyllus** (Cotton) E. B. Knox, comb. et stat. nov. Basionym: *Senecio amblyphyllus* Cotton, Bull. Misc. Inform. Kew 1932: 473, as "*amblyophyllus*," corr. Cotton & Blakelock in Bull. Misc. Inform Kew 1937: 368. TYPE: Kenya. Mt. Elgon, *G. Fairbairn 2678* (holotype, K!; isotype, EA!).

Notes. The type locality for *Senecio amblyphyllus* is at 11,100 ft. (= 3383 m) along a small stream of the Kassowai River on the Kenyan side of Mount Elgon, with the site noted as "wet and shady." Mount Elgon is large, its rivers are long, and small streams are numerous, but this plant was collected at the lower end (2750–3400 m) of the *Dendrosenecio* distribution on Mount Elgon, where plants are occasionally found because streams provide light-gaps in the upper montane forest. The six specimens of *Fairbairn 2678* at Kew comprise branches of the inflorescence plus two partial leaves (missing the leaf base), but Cotton (1932) and Cotton and Blakelock (1937) provide more extensive descriptions of this plant. The previous concern was that the features of this forest form (atypical leaf morphology and internode elongation), which distinguish it from the typical form of *D. elgonensis*, might be ecophenotypic consequences of growing in partial shade, so the conservative decision was to treat *S. amblyphyllus* as a synonym of *D. elgonensis* subsp. *elgonensis*. New DNA evidence links low-elevation plants collected along separate river drainages on the south and east sides of Mount Elgon, as opposed to plants growing higher up on each slope, which warrants their treatment as a separate subspecies.

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