

Assembling Germplasm Collections of Nuttall's Povertyweed [*Monolepis nuttalliana* (Schult.) Greene] and Other Spinach (*Spinacia oleracea* L.) Allies

David M. Brenner¹, Grace Kostel², Mark P. Widrlechner³, Candice A. Gardner³

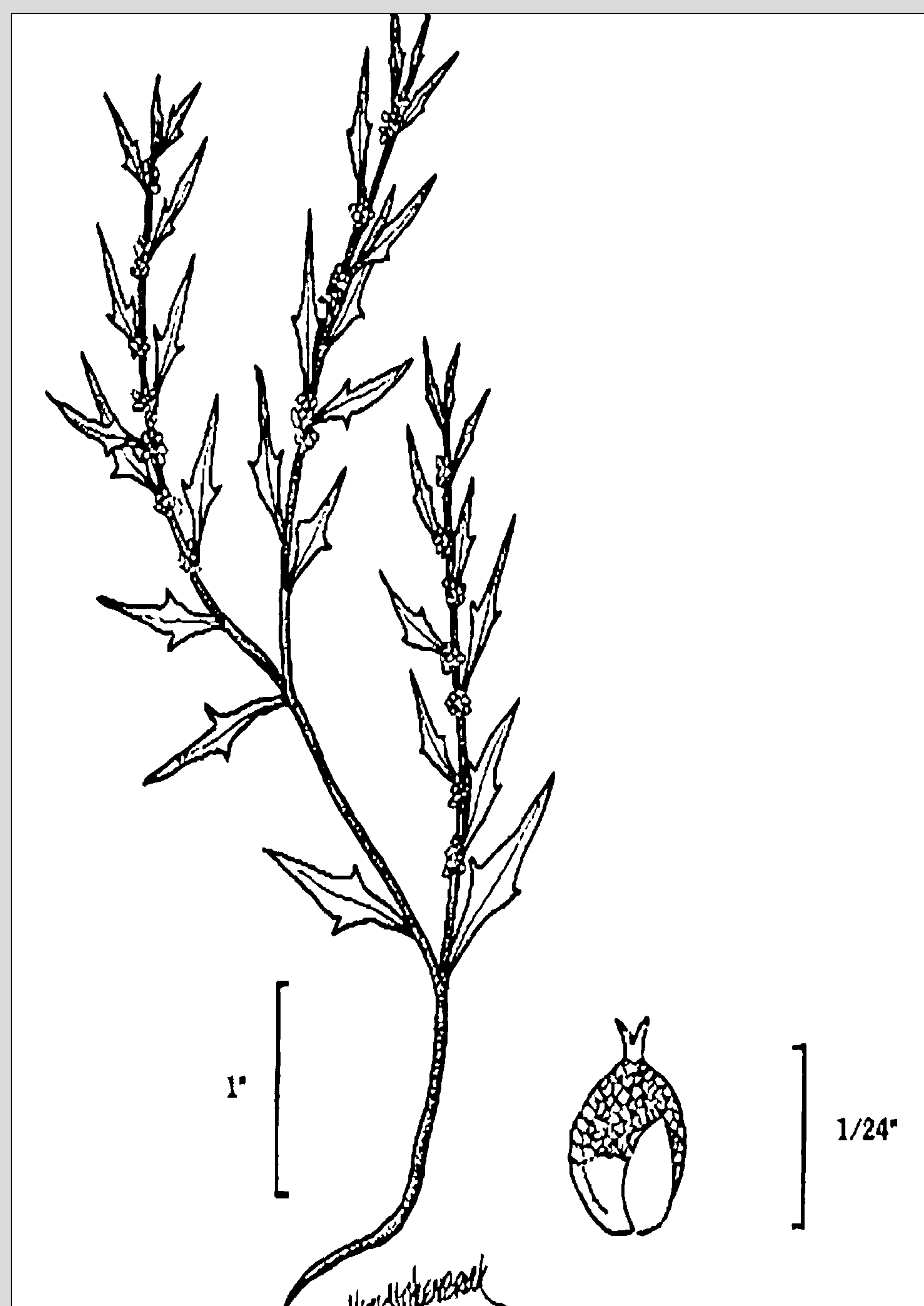
(1) Plant Introduction Station, Iowa State University Agronomy Department, Ames, IA, (2) Black Hills State University, Spearfish, SD, (3) USDA-ARS North Central Regional Plant Introduction Station, Ames, IA

Introduction

We are acquiring the wild relatives of cultivated spinach as part of our investment in crop germplasm. Some of these relatives are native in the United States, and thus should be readily accessible for collecting. We intend to aid research by conserving and distributing seeds of these plants. Three genera of North American spinach relatives are briefly described below. The germplasm should be useful to study phylogenetic relationships, the host ranges of pathogens and pests, stress tolerance, and many other topics.

Classification of Genera

Monolepis, *Micromonolepis*, and *Suckleya* are in the family Chenopodiaceae classified near to other genera that are more economically important, especially *Atriplex*, *Chenopodium*, and *Spinacia*, based on bract and perianth characteristics (Flores and Davis, 2001; Kühn, 1993). Acquiring new germplasm will facilitate study of their generic affinities using new molecular methods.



Monolepis nuttalliana plant and fruit image from: USDA-NRCS PLANTS Database / USDA NRCS. *Wetland flora: Field office illustrated guide to plant species*. USDA Natural Resources Conservation Service.

Monolepis

A genus of three or four species, two of which are native in the United States (Holmgren, 2003). Other species are native in Asia and South America (Kühn, 1993). The common name for the genus is "povertyweed". The roots, foliage, and seeds are reported to be used as human food (Harrington, 1967; Moerman, 1998). In our observation of one accession, the roots were not fleshy enough for food use; however, there may be fleshy, edible roots in other populations or under different growing conditions.

Monolepis nuttalliana (Schult.) Greene is found from Alaska into Mexico in the Great Basin and High Plains; it is found infrequently farther east. It is most common on moist, alkaline clay soils.

Monolepis spathulata A. Gray has a more restricted distribution in the western Great Basin, centered on Nevada. It also is adapted to moist, alkaline clay soils.



Monolepis nuttalliana growing as a weed in Boone, Iowa (above and left). This species is infrequent in Iowa, but this population was discovered by Mr. Jimmie Thompson of Ames, Iowa. Seeds of this population are accessioned in the U.S. National Plant Germplasm System at the USDA-ARS North Central Regional Plant Introduction Station, Ames, Iowa, as Ames 29996.

Micromonolepis

Micromonolepis pusilla (Torr. ex S. Watson) Ulbr. is an annual herb of alkaline flats in the western Great Basin of the United States (Holmgren, 2003). It has distinctive dichotomous branching. Some authors include this in *Monolepis* based on similar floral morphology (Kühn, 1993). We find no common name for the species. The National Plant Germplasm System has no germplasm of this monotypic genus; we intend to acquire representative accessions.

Suckleya

Suckleya suckleyana (Torr.) Rydb. is an annual succulent herb of the North American High Plains most often growing in mud near alkaline ponds (Chu et al., 1991). The common name "poison suckleya" is based on the observation that it can be poisonous to grazing animals (Thorp et al., 1937). It has been classified near to *Spinacia* by Kühn (1993) and by Flores and Davis (2001). The National Plant Germplasm System has no germplasm of this monotypic genus. The authors intend to collect seeds of it in western Nebraska in August 2009.

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