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Further examination of the geographic range of *Eriogonum corymbosum* var. *nilesii* (Polygonaceae, Eriogoneae)

MARK W. ELLIS[1,5], PAUL G. WOLF[1,4], SHANNON BARDOT[2], JAMES A. WALTON[2], CAROL A. ROWE[1], SARAH KULPA[3] & KAREN E. MOCK[2,4].

[1]*Department of Biology, Utah State University, Logan, UT, 84322, U.S.A.*

[2]*Utah State University, S.J. & Jessie E. Quinney College of Natural Resources, Wildland Resources Department, Logan, UT, 84322, U.S.A.*

[3]*Nevada Fish and Wildlife Office, 1340 Financial Boulevard, Suite 234, Reno, NV, 89502, U.S.A.*

[4]*Ecology Center, Utah State University, Logan, UT, 84322, U.S.A.*

[5]*Author for correspondence: mark.ellis@usu.edu.*

Abstract

The wild buckwheat *Eriogonum corymbosum* is widely distributed throughout the southwestern United States, forming a complex of eight varieties. *E. corymbosum* var. *nilesii* is a predominantly yellow-flowered variant reported primarily from Clark Co., Nevada. A previous genetic study by our research group found that var. *nilesii* is genetically distinct from other *E. corymbosum* varieties, based on a limited number of populations. Here, we assess genetic variation in 14 newly sampled yellow-flowered populations from southern Nevada, southern Utah, and northern Arizona, and compare them to genetic variation in six populations of previously determined *E. corymbosum* varieties. Of the new populations, we identified four as var. *nilesii*, four as var. *aureum*, three as var. *glutinosum*, two as apparent hybrids involving vars. *aureum* and *nilesii*, and one as a more distantly related admixture involving *E. thompsoniae*. Our results extend the range and area of *E. corymbosum* var. *nilesii* considerably from that traditionally stated in the literature. However, this extended range is confined to the Mojave Desert region of southern Nevada, and the number of known populations remains limited.

Key words: conservation genetics, *Eriogonum*, population genetics, U.S.A.

Introduction

Eriogonum corymbosum Bentham (1856: 17) (Polygonaceae Juss., Eriogoneae Dumort.) is a wild buckwheat species native to and widely distributed throughout the southwestern United States. Across its range, these woody shrubs vary in size, leaf shape and surface structure, flower color, overall habit, and ecology, forming a complex of eight varieties (Reveal 2002, 2005, 2014). Three varieties—var. *nilesii* Reveal (2004: 128), var. *aureum* (M.E. Jones [1895: 718]) Reveal (1982: 293), and var. *glutinosum* [M.E. Jones (1895: 719)] M.E. Jones (1903: 14)—are predominantly yellow-flowered, and these have historically been confused with one another (Reveal 2002). *E. corymbosum* var. *nilesii* (Niles's wild buckwheat) has traditionally been viewed as having a patchy distribution confined to Clark Co., Nevada (Reveal 2004), mainly in and around Las Vegas, while var. *aureum* was thought to be confined to a single population in Washington Co., Utah (Reveal 2005, 2012, 2013), and var. *glutinosum* was considered widely distributed throughout southern Utah and northern Arizona (Reveal 2002, 2005, 2009, 2012, 2013).

Concerns about the potential rarity of *E. corymbosum* var. *nilesii*, with its patchy distribution and limited known range in southern Nevada, along with questions about whether phenotypically similar populations in northwestern Arizona and southwestern Utah were var. *nilesii*, led to a study by Ellis *et al*. (2009). Genetic markers were used to examine populations of the six varieties and closely related species. The results of that study suggested that var. *nilesii* was relatively distinct genetically and (based on the populations tested) confined to the Mojave Desert in Clark Co., Nevada. Data from Ellis *et al*. (2009) also supported the separation of the three predominantly yellow-flowered *E. corymbosum* varieties described by Reveal (2005) as var. *glutinosum*, var. *aureum*, and var. *nilesii*.

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Conclusion

Until now, the known range of *Eriogonum corymbosum* var. *nilesii* was limited to Clark Co., Nevada populations in and around Las Vegas and in White Basin (a single population west of the northern extension of Lake Mead). In this study, we identified four additional populations as var. *nilesii* (Fig. 4). Two of these four newly sampled populations (P10 and P12) extend the known geographic range of var. *nilesii* further south into the Muddy Mountains and White Basin region west of the Virgin River and Lake Mead, while the other two populations (P13 to the northwest in Clark Co. and P11 to the northeast in Lincoln Co.) extend the range considerably further north (Fig. 1). Although large in area, this expanded range for var. *nilesii* remains confined to the Mojave Desert region of southern Nevada, and there are fewer than ten known populations outside of Las Vegas Valley, each of which is limited in area. With the few remaining sites of *E. corymbosum* var. *nilesii* in and around Las Vegas at risk of extirpation by development, the taxon appears to be vulnerable. Without additional and well-planned field surveys of the region bounded by these populations, *E. corymbosum* var. *nilesii* should be considered rare.

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