

NOTES ON THE BIOLOGY OF *ERIGERON PALOSVERDENSIS* (ASTERACEAE) OF SOUTHWESTERN CALIFORNIA

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ABSTRACT

Erigeron palosverdensis Uelman (Asteraceae) is a newly recognized Californian species of the *Erigeron foliosus* complex. One of its defining characteristics is production of subterranean rhizomes, which are not otherwise evident in the complex, leading to the formation of large patches. The rhizome structure of *E. palosverdensis* and the ecology of the species are described in this paper.

Species of *Erigeron* exhibit a diverse array of subterranean rooting structures (Nesom 1992, 2006, 2012). Those of the *E. foliosus* Nutt. complex characteristically form woody taproots with elongate, above-ground caudex branches or leafy stems arising directly from the roots (Nesom 1992, 2006, 2012). The overall growth form of *E. foliosus* is typically bowl-shaped, with up to a 65 cm lateral spread (Nesom 2006). *Erigeron palosverdensis* Uelman (Uelman 2022), however, produces a taproot with subterranean, apparently adventitious rhizomes from the main taproot. These rhizomes spread horizontally, colonizing large areas (Figs. 3, 7), with some patches measuring 3.5 m x 3.5 m. The rhizomes are long-creeping, slender (2–3 mm in diameter) and scale-leaved, and root at the nodes (Fig. 1). New stems originate at the rhizome nodes. New rhizomes are often whitish pink (Fig. 1) and older rhizomes are lignescent (Fig. 2). The rhizomes are found at a depth of 15–40 cm below the soil surface.

Associated species and ecology

Erigeron palosverdensis is found within canyons usually along north-facing slopes. Species associated with *E. palosverdensis* are *Artemisia californica*, *Rhus integrifolia*, *Toxicodendron diversilobium*, *Elymus condensatus*, *Rubus ursinus*, and *Symphoricarpos mollis*. These species cover large areas on slopes, and shoots of *E. palosverdensis* can often be seen growing up through these other species (Fig. 4, 7). It appears that the rhizomatous habit of *E. palosverdensis* allows it to compete well with these other species.

On a canyon slope where a large patch of *Erigeron palosverdensis* occurs, a landslide covered the patch in boulders after a heavy rain. The patch appeared to be gone, but by spring new shoots were seen coming up through gaps among the boulders (Fig. 6).

Cultivation

To observe rhizome development, fertile cypselae of *Erigeron palosverdensis* were germinated and grown in 1-gallon pots. First-year plants initially produce a slender taproot, but by the beginning of year 2, plants begin to produce subterranean rhizomes (Fig. 1). Year 2 plants were outplanted and by year 3, new shoots are emerging from the soil 30 cm out from the parent plant (Fig. 8). Rhizome segments were also removed from plants and repotted — each segment successfully rerooted and began to grow a new plant.



Figure 1. *Erigeron palosverdensis*. 1. New rhizome segment. 2. Rhizome with scale leaf. 3. Rhizome rooting at nodes. 4. 2-year-old plant showing growth of new rhizomes.



Figure 2. *Erigeron palosverdensis*. 1. Older rhizomes. 2. Older rhizomes exposed from a trail cut and measuring at a depth of 30 cm below soil surface. 3. Older, lignescent rhizome.



Figure 3. *Erigeron palosverdensis*. 1, 2, 3, 4. Formation of large rhizomatous patches. 5. Dormant patch.



Figure 4. *Erigeron palosverdensis*. 1. Shoots from clump of *Elymus condensatus*. 2. Close-up of shoot emerging from *Elymus condensatus* clump. 3. Shoots emerging from surrounding vegetation in canyon.



Figure 5. *Erigeron palosverdensis*. A typical canyon habitat of *E. palosverdensis*, with dense vegetation and competition for space.



Figure 6. *Erigeron palosverdensis*. 1. Shoots emerging through gaps in boulders after being completely buried by rockslide. 2. Shoots flowering.



Figure 7. *Erigeron palosverdensis*. 1. Large patch showing competition with surrounding canyon vegetation. 2. Close-up of patch showing flowering shoots emerging through surrounding vegetation of *Toxicodendron diversilobum* and *Rubus ursinus*.



Figure 8. *Erigeron palosverdensis*. 1. New shoot emerging 30 cm away from parent plant. 2. Same shoot two months later.

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