

**Comments on “Species Report for the San Fernando Valley Spineflower
(*Chorizanthe parryi* var. *fernandina*)”**

The report presents a misleading representation of the threat of Argentine ant invasion into the areas planned for development by the Newhall Land Company and inadequate information regarding the pollination biology of the SFVS (San Fernando Valley Spineflower). For these reasons, my professional opinion, which is based on over 20 years of experience studying the Argentine ant in the field in California, is that additional research would have to be conducted to assess how the planned developments would impact the Santa Clarita populations of SFVS.

In the sections of the report dealing with Argentine ant invasion, several points require clarification.

(1) In the interior portions of southern California, the Argentine ant is limited by soil moisture and tends to occur primarily in riparian woodlands and irrigated areas, which can include urban, suburban and agricultural environments. That said, all of the isolated patches of SFVS in Santa Clarita, if exposed to the development illustrated in Figure 4 of the report, would likely be vulnerable to Argentine ant invasion given that they would be surrounded either by urban development or by the Santa Clarita River riparian corridor. Planned urban and suburban developments would affect (and mostly increase) soil moisture levels in unexpected ways by changing impermeable surface cover, storm water run off, flood control measures, irrigation, and landscaping. These changes will increase the risk that isolated SFVS reserves will become invaded by the Argentine ant but will likely do so in ways that are not easy to predict.

(2) Published experimental data clearly show that elevated levels of soil moisture increase the ability of the Argentine ant to spread in southern California. In addition to the Menke & Holway (2006) study cited in the report, it’s worth noting an additional publication that investigates abiotic limitations to spread in additional detail: Menke, S.B., R.N. Fisher, W. Jetz & D.A. Holway. 2007. Biotic and abiotic controls of Argentine ant invasion success at local and landscape scales. *Ecology* 88:3164-3175. In neither of these studies, however, is the case ever made that a ***particular minimum level*** of soil moisture prevents Argentine ant spread. The exact manner in which soil moisture governs spread depends on numerous additional factors other than soil moisture itself; these factors include soil type, spatial scale and heterogeneity, vegetation associations, ambient climate, and landscape factors.

(3) Although it is the case that physiological limitations prevent the Argentine ant from advancing into dry areas in southern California, arguments presented in point (1) suggest that it would be extremely difficult to isolate SFVS reserves from environmental changes that are favorable to the Argentine ant without instituting a considerably larger buffer than that proposed in the report.

(4) The report discusses monitoring Argentine ant encroachment and control once it spreads into SFVS habitat. Monitoring would require constant vigilance and post-invasion control that would necessitate repeated, broadcast use of pesticides. Both strategies would entail substantial and permanent financial costs. Moreover, I am aware of no such strategy ever being implemented, let

alone successfully. The Argentine ant eradication program currently underway on Santa Cruz Island and that is briefly discussed in the report differs fundamentally from any planned mainland control effort in that it targets isolated and relatively small infestations on islands where risk of reinvasion is minimal.

Based on the descriptions presented in the report, the pollination biology of SFVS appears inadequately studied. I will emphasize a two points here.

(1) The study lists insects present on SFVS flowers, but frequency of visitation does not equate to those visitors being effective pollinators (i.e., from the plant's perspective). In particular, the numerical dominance of ants and non-native honey bees on SFVS flowers does not prove that those species are important pollinators.

(2) Given point (1), it seems unclear how Argentine invasion would affect the pollination biology of SFVS. The Argentine ant does displace native ants (*Dorymyrmex inasanus*, *Solenopsis xyloni*) recorded on SFVS flowers, but do these native ants really serve as the key pollinators for this plant? There is no evidence that I am aware that shows that the Argentine ant effectively pollinates any plant species, but it does commonly visit flowers, primarily to obtain floral nectar.