

Potential for *Castilleja levisecta* and *Castilleja hispida* Hybridization in a Restoration Setting

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Rare plants, pollinators, pollen, and petals

Introduction:

The endangered prairie flower *Castilleja levisecta* (golden paintbrush) has been shown to hybridize successfully with the common *Castilleja hispida* (typically orange to red) when forced to cross pollinate. But both species would be useful in Puget Sound prairie restoration, especially for the endangered Taylor's checkerspot butterfly.

Do they hybridize in the field, via pollinators?

Methods:

Plots set up by fellow student Eric Delvin, with either both species mixed or one species alone, were mapped, pollinator behavior recorded, and then seeds harvested at the end of the growing season. Those seeds are germinated and planted until blooming, when the flower characteristics and pollen tests can be done to determine number of hybrids if any.

Germination tests were also conducted using gibberellic acid in an attempt to speed germination, which can take 12 weeks on average for these *Castilleja* species. Two concentrations were used plus a control (soaked in water).

Neither *Castilleja* species responds to GA3 treatments for seed germination, though poster germination effects varied significantly with GA3.



Ultimately driven by pollinator activity, hybridization may be affected by distance between the two species, color morphs of *C. hispida*, and timing.



Flower characteristics are the best method to test for potential hybrids in the F1 generation.



C. Levisecta seeds germinated, without GA3.



Two pollinator types have been officially recorded on both flower species.-
Bombus californicus and
Lasioglossum spp.



Yellow morph *C. hispida*,
Glacial Heritage Rest. Site



Wild *C. levisecta*,
and wild *C. hispida*,
Scatter Creek

