

Added to List 1B.1 on 8/16/2010

**Rare Plant Status Review: *Helianthus inexpectatus*
Proposed New Add to List 1B. 1, G1 S1**

Aaron Sims (CNPS) and Roxanne Bittman (CNDDDB)

July 12, 2010

Changes made since the original status review appear in blue.

Background

Helianthus inexpectatus is a newly described perennial herb in the Asteraceae endemic to a small area of Los Angeles Co., California. It was first collected by Parikh and Gale Sanders (with Elvin) on the 25th of June, 2002, is described by David Keil and Mark Elvin in *Aliso*, 28: 59-62 (2010), and is included in the *Jepson Manual*, 2nd Edition (available online at <http://ucjeps.berkeley.edu/tjm2/review/treatments/compositae.html#91902>).

Helianthus inexpectatus is morphologically very similar to *H. nuttallii* ssp. *nuttallii* and *H. californicus* as well as the presumed extinct Los Angeles sunflower, *H. nuttallii* ssp. *parishii*. In 2003, Soza evaluated the chromosomes of *H. inexpectatus* (then referred to as *H. "Newhall Ranch"*) and found it had a unique ploidy level, intermediate between *H. californicus* and *H. nuttallii*. Two years later, Porter and Fraga (2005) found the pollen of *Helianthus inexpectatus* to be significantly different in many ways from *H. nuttallii* ssp. *parishii* and *H. californicus*, and also report that *H. inexpectatus* is tetraploid, whereas *H. californicus* and *H. nuttallii* ssp. *nuttallii* are diploid. A later molecular phylogenetic analysis by Timme et al. (2007) placed *H. inexpectatus* and *H. nuttallii* in an entirely different clade than *H. californicus*. Finally, a recent in-depth review by Keil and Elvin (2010) revealed that "the Newhall sunflower is not *H. nuttallii* subsp. *parishii*, which is probably indeed extinct" and clarified that *H. inexpectatus* is expected to be both geographically and reproductively isolated from *H. californicus* and *H. nuttallii* ssp. *nuttallii*, and propose its recognition as a new species. *Helianthus inexpectatus* is currently being tracked as *H. nuttallii* ssp. *parishii* in the CNDDDB and flowers in late summer from August to October.

Helianthus inexpectatus is known from less than 10 individuals, clustered in three to five clumps, in a shallow seep surrounded by willow woodland. It grows in a wet, mucky area of the seep at approximately 305 meters in elevation.

Helianthus inexpectatus was surveyed for up and down the Santa Clara River by Parikh and Gale (2002, 2004) in October of 2002 and in the spring and summer of 2004 with no additional occurrences observed.

The seep in which *H. inexpectatus* occurs is approximately 1 acre in size and runs along the Santa Clara River near Newhall in Los Angeles County. It is perennially wet with water flowing through it year round, and appears to be fed by at least three springs emerging at the toe of a slope below a dirt farm road, on the outer edge of the floodplain of the Santa Clara River base of a ridge. The location of the seep has been referred to as "Castaic Springs" by Keil and Elvin

(2010) and referred to as “Middle Canyon Spring” in environmental documents regarding plans by Newhall Land and Farming Company (see Keil and Elvin (2010) for detailed occurrence information).

The seep in which *H. inexpectatus* occurs is directly adjacent to lands set up for development of an estimated 20,000+ homes, and within 200 feet ~~400 meters~~ of a proposed bridge installation. Potential threats to *Helianthus inexpectatus* from this development include ~~shading from the bridge~~, hydrological alterations, habitat alteration, non-native plants, foot traffic by humans, and edge effects (Keil and Elvin 2010). *Furthermore, H. inexpectatus may be threatened by urban runoff, air pollution, habitat disturbance and loss, and by a potential reduction in pollination due to adverse affects on pollinators and an increase in fugitive dust* (Mary Meyer, pers. comm. 2010).

Helianthus nuttallii ssp. *parishii* (currently included on CNPS List 1A, plants presumed extinct in California) was evaluated as a proposed list change since its potential rediscovery in 2002. At that time, questions were raised as to whether the finding was actually *H. nuttallii* ssp. *parishii*, misidentifications of the more common taxa *H. nuttallii* ssp. *nuttallii* and *H. californicus*, or a new taxon entirely. Following the discovery, specimens were sent to various herbaria for taxonomic review, but identifications were inconclusive, and its true identity waned until genetic analysis could be performed. Since then, a quantitative examination of pollen variation transpired followed by a phylogenetic analysis, resulting in the acceptance of the taxon as a new species. The available information on *H. inexpectatus* indicates that it is indeed a rare taxon and with a high potential of threat.

Based on this information CNPS and CNDDDB recommend that *H. inexpectatus* be added to CNPS List 1B.1.

Recommended Actions

CNPS: Add to CNPS List 1B.1

CNDDDB: Add to CNDDDB as G1 / S1

Please review the draft CNPS Inventory record below, respond Yes or No on the proposal to add this species to the Inventory and CNDDDB, and provide any edits/comments. If responding No, please provide supporting information.

Draft CNPS Inventory Record

Helianthus inexpectatus D.J. Keil and Elvin
Newhall sunflower
Asteraceae

Sent to SW, David Keil, and Ruth Timme on July 12, 2010

List 1B.1

Los Angeles

Newhall (138A) 3411845

Marshes and swamps (MshSw), Riparian woodland/freshwater, seeps; elevation 305 meters.

Perennial herb from rhizome. Blooms Aug-Oct.

Known from a single occurrence of fewer than 10 individuals. Potentially threatened by development, hydrological alterations, habitat alteration [and loss](#), [urban runoff](#), non-native plants, [recreational activities](#), and foot traffic. [Also possibly threatened by air pollution and pollination reduction](#). See *Aliso* 28:59-62 (2010) for original description.