Deleted from California Rare Plant Rank 1B.1 of the CNPS Inventory on July 10, 2019

Rare Plant Status Review: *Juglans hindsii*
Proposed Deletion from California Rare Plant Rank 1B.1, G1 / S1
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Background

Juglans hindsii is a deciduous tree in the Juglandaceae formerly recognized as a California endemic that was known from only five natural occurrences in Contra Costa, Lake, Napa, Sacramento, and Solano counties (CNDDB 2019). While included in the CNPS Inventory as a California Rare Plant Rank (CRPR) 1B species for 45 years (CNPS 2019), the conservation status of *J. hindsii* has been a long-standing source of significant confusion and controversy. Part of the confusion stems from the fact that *hindsii* rootstock and hybrid *hindsii* rootstock (Paradox) were used to grow commercial English walnuts in California and elsewhere. To help elucidate the controversy, Potter et al. (2018) conducted a genetic study of presumably pure stands of *J. hindsii* in relation to widely naturalized, cultivated, and hybridized trees. Their results found that at least 71.5% of the putatively wild *J. hindsii* represent genetically pure members of that species. Remaining trees showed evidence of past hybridizations with one or more of the other North American species of black walnut, and only one sample showed evidence of introgression of *J. regia* (English walnut) into *J. hindsii* beyond first-generation Paradox hybrids. Their results suggest that widespread planting of *J. regia* is not a significant threat to genetic purity of *J. hindsii*. They also found no evidence of geographically based genetic structuring within *J. hindsii* across the areas sampled.

Potter et al. (2018) sampled a total of 249 trees for their study, 167 of which were new field collections from localities in Jackson County, southern Oregon (13 trees) and 10 California counties (Alameda [n = 1], Contra Costa [n = 64], El Dorado [n = 5], Los Angeles [n = 4], Napa [n = 66], Orange [n = 3], San Bernardino [n = 2], San Diego [n = 5], Santa Clara [n = 1], and Sonoma [n = 3]). 158 of the trees were identified as *J. hindsii* at the time of collection based on morphology. Fifteen trees were collected from two of the putative original native populations included in the CNDDB (5 from Circle Oaks Drive at the Capell Creek/Wooden Valley, Napa County [EO 1], and 10 from Las Trampas Creek, Contra Costa County [EO 2]). They also included seven trees identified as Paradox hybrids and two samples from Los Angeles County that were identified as *J. californica*. Voucher specimens were deposited in the herbarium of the Center for Plant Diversity at UC Davis (DAV). Additionally, Potter et al. (2018) included 10-20 standards for each of the five North American black walnut species plus six standards for *J. regia*. Microsatellite marker genotypes suggested that 11 of the 82 species standards gathered did not represent genetically pure members of the species to which they were assigned; those individuals were excluded from final analyses, and thus Potter et al. (2018) analyzed the genotypes of 238 trees (71 species standards plus 167 field collected trees).

As exposed by Potter et al. (2018), *Juglans hindsii* is now known to be natively common throughout the Inner North Coast Ranges, Sacramento and San Joaquin Valleys, and San Francisco Bay Area of California, as well as southern Oregon. The results of Potter et al. (2018) indicate that individual trees of *J. hindsii* should not be considered rare or imperiled. However, the study also indicated that *J. californica* (CRPR 4.2) showed higher levels of genetic diversity among their samples, and may be more seriously threatened due to extensive urbanization in

southern California; signifying that a thorough study of the conservation status of *J. californica* is needed.
Based on the available information, CNPS and CNDDB recommend deleting *Juglans hindsii* from California Rare Plant Rank 1B.1 of the CNPS Inventory as being too common. If knowledge on the distribution, threats, and rarity status of *J. hindsii* changes in the future, we will re-evaluate its status at that time.

Recommended Actions
CNPS: Delete *Juglans hindsii* from CRPR 1B.1
CNDDB: Delete *Juglans hindsii* from G1 / S1

Current CNPS Inventory Record
Juglans hindsii (Jeps.) Jeps.
Northern California black walnut
Synonym: *Juglans californica* var. *hindsii*
Juglandaceae
CRPR 1B.1
Contra Costa, Lake?, Napa, Sacramento*, Solano*, Yolo*
Las Trampas Ridge (465D) 3712271, Isleton (480A)* 3812125, Rio Vista (480B)* 3812126, Florin (496B) 3812144, Clarksburg (497A) 3812145, Courtland (497D) 3812135, Capell Valley (499B) 3812242, Napa (500D)* 3812233, Jericho Valley (532C)? 3812274
[* Presumed extirpated; ? Uncertain about distribution or identity]
Riparian forest, riparian woodland; elevation 0 – 440 meters.
Perennial deciduous tree. Blooms Apr-May.
Only one confirmed, native occurrence appears viable as of 2003. Sizes and sites of trees in occurrences on quad 532C indicate they are historical; however further study is needed to determine native status. Reported as possibly present in BUT Co. (575C), but native status questionable. Widely naturalized in cismontane CA. Threatened by hybridization with orchard trees, urbanization, and conversion to agriculture. Formerly cultivated as rootstock for *J. regia*, with which it hybridizes readily. A synonym of *J. californica* var. *hindsii* in TJM (1993). See *Flora of California* 1(2):365 (1909) by W.L. Jepson for original description, and *Madroño* 17(1):1-32 (1963) for discussion of origin.

Draft Revised CNPS Inventory Record
Juglans hindsii (Jeps.) Jeps.
Considered But Rejected. Changed from 1B.1 to CBR: Too common. Formerly recognized from only 5 natural occurrences and thought to be widely naturalized, cultivated, and hybridized with orchard trees and with *J. regia*. See *Madroño* 63(3):131-140 (2018) for study indicating that genetically pure representatives of *J. hindsii* are common throughout CA and southern OR.

Literature Cited
[CNDDB] California Natural Diversity Database. 2019. RareFind 5 [Internet]. California Department of Fish and Wildlife [Government Version, May 2019].

[CNPS] California Native Plant Society, Rare Plant Program. 2019. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 16 May 2019].

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Thomsen, H. H. 1963. *Juglans hindsii*, the central California black walnut, native or introduced? *Madroño* 17(1): 1-10.

Wilken, D. H. 1993. *Juglans*. P. 709 *in* Hickman, J. C. (ed.), *The Jepson manual: higher plants of California*. University of California, Berkeley.