

*greenei* can be found in the final rule to list the species (62 FR 14338).

#### *Orcuttia pilosa*

Robert Hoover (1941) described *Orcuttia pilosa* (hairy Orcutt grass) from specimens he collected in Stanislaus County in 1937. *Orcuttia pilosa* grows in tufts consisting of numerous stems. The stems are decumbent or erect and branch from only the lower nodes. Almost the entire plant is pilose or hairy, giving it a grayish appearance. The spikelets near the tip of the inflorescence are crowded together, whereas those near the base are more widely spaced.

*Orcuttia pilosa* is known from 28 extant occurrences at widely scattered sites in the southern portion of the Sacramento Valley and the southern Sierra foothills (Keeler-Wolf *et al.* 1998). In the Sacramento Valley, Butte County has one occurrence, Glenn County has six occurrences, and Tehama County has nine occurrences. In the Southern Sierra Foothills Vernal Pool Region, the remaining 12 occurrences of the species are found in widely scattered locations in Stanislaus, Madera, and Merced Counties (Hoover 1941; Crampton 1959; Reeder 1982; Stone *et al.* 1988; CNDDDB 2002). Nineteen of those occurrences have been confirmed as existing within the past decade (CNDDDB 2002).

This species is found within vernal pools formed on high or low stream terraces and alluvial fans (Stone *et al.* 1988). The median size of occupied pools measured in the late 1980s was 4.2 ac (1.7 ha), with a range of 0.8 to 617.5 ac (0.34 to 250 ha) (Stone *et al.* 1988). At the Vina Plains, *Orcuttia pilosa* was found growing only in pools that held water until May, June, or July in 1995, not in those that dried in April (Alexander and Schlising 1997). This species is known from elevations of 85 ft (26 m) in Glenn County to 405 ft (123 m) in Madera County (CNDDDB 2002).

*Orcuttia pilosa* is found on both acidic and saline-alkaline soils, in pools with an iron-silica cemented hardpan or claypan. In Tehama and Butte Counties, pools supporting *O. pilosa* occur on the Anita and Tuscan soil series (Stone *et al.* 1988; CNDDDB 2002). At one pool in the Vina Plains that spans both Anita clay and Tuscan loam soils, *O. pilosa* was found growing primarily on the Anita clay (Alexander and Schlising 1997). At the Sacramento National Wildlife Refuge, *O. pilosa* occurs on the Willows and Riz soil series, whereas in the Southern Sierra Foothills Vernal Pool Region it occurs on the Cometa, Greenfield, Hanford, Meikle, and Whitney soil series (Stone *et al.* 1988).

Further discussion on the life history and habitat characteristics of *Orcuttia pilosa* can be found in the final rule to list the species (62 FR 14338).

#### *Orcuttia viscida*

Robert Hoover (1941) first described *Orcuttia viscida* (Sacramento Orcutt grass) as *Orcuttia californica* var. *viscida* based on the type specimen he collected from in Sacramento County. John Reeder (1980) determined that the differences in morphology, seed size, and chromosome number were sufficient grounds to elevate it to the species level as *Orcuttia viscida*.

*Orcuttia viscida* grass resembles other members of the tribe and genus. Although all members of the Orcuttieae produce a sticky exudate, *O. viscida* is particularly sticky even when young. The plants are densely tufted, bluish green, and covered with hairs. The stems are erect or spreading, 1 to 4 in (3 to 10 cm) long, and do not branch. The inflorescence occupies the upper one-third to one-half of the stem and consists of between 5 and 15 spikelets. The spikelets are closely spaced, and although distichous (arranged in two opposing rows), they are oriented towards one side of the stem.

*Orcuttia viscida* is endemic to the southeastern Sacramento Valley (Keeler-Wolf *et al.* 1998) and always has been restricted to Sacramento County. From 1990, this species was known from a total of seven natural occurrences and one introduction (Stone *et al.* 1988; CNDDDB 2002). Within the past decade, *O. viscida* has been discovered at one new site in Sacramento County within the previously known range. However, one entire occurrence and a portion of another have been extirpated. Thus, eight of the nine occurrences are still in existence. Five occurrences, comprising more than 70 percent of the occupied habitat, are concentrated into a single small area east of Mather Field. Two other occurrences are adjacent to each other: Phoenix Field Ecological Reserve and the introduced occurrence at Phoenix Park. The eighth existing occurrence is near Rancho Seco Lake (Stone *et al.* 1988; Cochrane, in litt. 1995a; CNDDDB 2002).

*Orcuttia viscida* has been found in Northern Hardpan and Northern Volcanic Mudflow vernal pools (Sawyer and Keeler-Wolf 1995). It occurs on high terrace sites (Stone *et al.* 1988) at elevations of 150 to 270 ft (46 to 82 m) (CNDDDB 2002). Occupied pools occur in blue oak woodland and annual grassland (Crampton 1959; Griggs 1977; CNDDDB 2002). Among occupied pools discovered prior to 1988, the median area was 0.69 ac (0.28 ha) and ranged

from 0.25 ac (0.1 ha) to 2.03 ac (0.82 ha). *Orcuttia viscida* grows are acidic with an iron-silica hardpan (Stone *et al.* 1988), and the pools contain numerous cobbles (Crampton 1959; Stone *et al.* 1988). Four of the known occurrences are on soils in the Redding series, two are on Red Bluff-Redding complex soils, two are (or were) on Xerarents-urban land-San Joaquin complex, and one is on Corning complex soils.

Further discussion on the life history and habitat characteristics of *Orcuttia viscida* can be found in the final rule to list the species (62 FR 14338).

#### *Orcuttia inaequalis*

Robert Hoover (1936b) described *Orcuttia inaequalis* (San Joaquin Valley Orcutt grass) based on a collection from "Montpellier [sic], Stanislaus County." Robert Hoover (1941) subsequently reduced this taxon to a variety of *californica*, using the combination *Orcuttia californica* var. *inaequalis*. Based on differences in morphology, seed size, and chromosome number, John Reeder (1980) restored the taxon to species status.

Mature plants of *Orcuttia inaequalis* grow in tufts of several erect stems. Plants of this species appear grayish-green due to the long hairs on the stem and leaves and produces exudate. *Orcuttia* plants grow underwater for 3 months or more and have evolved specific adaptations for aquatic growth (Keeley 1998a).

Of the 49 occurrences of *Orcuttia inaequalis* reported in CNDDDB (2002), 28 occurrences are presumed extant; 18 are certainly extirpated and three others are possibly extirpated because the habitat has been modified (CNDDDB 2002). However, only 12 of the occurrences presumed still in existence have been revisited within the past decade, so even the most recent information is outdated. Of the 28 occurrences of *Orcuttia inaequalis*, Fresno County has two, Madera County has seven, Merced County has 18, and Tulare County has one occurrence. This species has been completely extirpated from Stanislaus County (Stone *et al.* 1988; Skinner and Pavlik 1994; CNDDDB 2002).

*Orcuttia inaequalis* occurs on alluvial fans, high and low stream terraces (Stone *et al.* 1988), and tabletop lava flows (Stebbins *et al.* 1995; CNDDDB 2002). This species has been reported in Northern Claypan, Northern Hardpan, and Northern Basalt Flow vernal pools (Sawyer and Keeler-Wolf 1995) within rolling grassland (Crampton 1959). Occupied pools range in surface area from 0.05 to 12.1 ac (0.02 to 4.9 ha), with a median area of 1.54 ac (0.62 ha)