

Vascular Plants of the Llano Seco Unit

Sacramento River National Wildlife Refuge



**U.S. Fish & Wildlife Service
Sacramento National Wildlife Refuge Complex**

**VASCULAR PLANTS OF THE
LLANO SECO UNIT
SACRAMENTO RIVER NATIONAL
WILDLIFE REFUGE**

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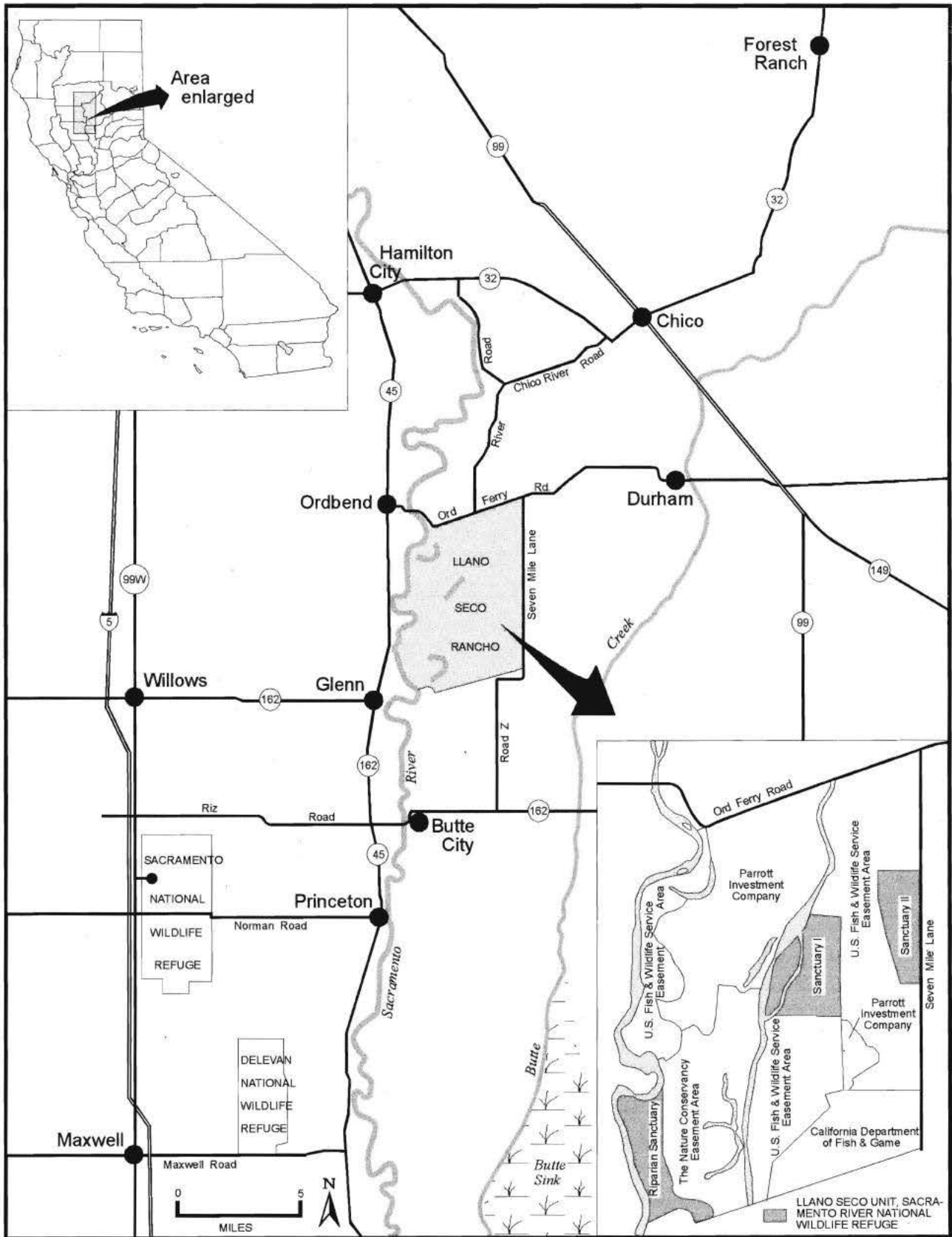


FIGURE 1. Location of the Llano Seco Unit, Sacramento River National Wildlife Refuge.

INTRODUCTION

The Sacramento River National Wildlife Refuge (Sacramento River NWR) presently consists of seventeen riparian and agricultural parcels (8,270 acres) along the Sacramento River between Red Bluff and Butte City. When complete, the refuge has a planned goal of 18,000 acres of riparian lands extending from Red Bluff to Colusa.

The Llano Seco Unit of the Sacramento River NWR is the largest acquisition to date and consists of three separate sanctuaries with approximately 2,638 acres (4.1 square miles) of land within the historic Llano Seco Rancho, which is located between the Sacramento River and Seven Mile Lane about 10 miles southwest of Chico, California (figure 1). Llano Seco Rancho was originally granted to Sebastian Keyser by the Mexican Government in 1845. The ranch was purchased by John Parrott, a San Francisco newspaper publisher, in 1861. Upon his death, Parrott Investment Company was established to manage the ranch. In 1991, the U.S. Fish & Wildlife Service acquired by Fee Title certain parcels of the ranch for the Llano Seco Unit of the Sacramento River NWR. Additional acreage in the southeast corner of the ranch was purchased by the Wildlife Conservation Board, State of California, and is being managed by the California Department of Fish & Game. At the same time, the U.S. Fish & Wildlife Service and The Nature Conservancy set in place deed restrictions on sizable easement areas to protect and enhance significant natural features of the ranch (inset, figure 1). Public use of the Llano Seco Unit is restricted to interpretive facilities and two wildlife viewing platforms connected by a short hiking trail, which can be accessed from Seven Mile Lane (figure 2).

Llano Seco Rancho lies on the flood plain of the Sacramento River mostly within Butte County. The Butte-Glenn County boundary originally followed the center of the Sacramento River channel. Changes in the river channel have resulted in small portions of Glenn County ending up on the east side of the river, and by agreement these areas became a part of Llano Seco Rancho (figure 3).

Topography of the ranch is relatively flat to gently sloping with elevations ranging from 120 feet at the intersection of Ord Ferry Road and Seven Mile Lane to 80 feet on the Sacramento River at the southwest corner of the ranch. Little Chico Creek and Comanche Creek drainages, together with Angel Slough, enter the ranch on the north. Angel Slough leaves the ranch at the south boundary, and Little Butte Creek originates from wetlands in the southeast corner of the ranch. These waterways eventually flow into Butte Sink on the west side of Sutter Buttes.

Sanctuaries I and II, except for bands of riparian woodland and fresh-water marsh along Angel Slough, were intensively farmed or used for pasture. Soils have a high clay content, and leveled fields were used for rice, irrigated alfalfa, and irrigated pasture. Unleveled land was used for non-irrigated pasture or planted to alfalfa or wheat. Leveled land formerly in rice and alfalfa is now managed as permanent ponds, seasonal marshes, and watergrass units of the wildlife refuge (figure 2).

The Riparian Sanctuary (figure 3) consists of mixed riparian woodland along sloughs and on the bank of the Sacramento River. Over half of the acreage of the sanctuary, which was previously cultivated and planted to wheat, is now fallow and weedy. Riprap protects the bank of the river at the north end of the sanctuary, and a small island of questionable ownership is also located here. The island is in the sandbar willow stage of succession.

TABLE 1. Numerical analysis of the vascular flora of the Llano Seco Unit, Sacramento River NWR.

FAMILIES	GENERA	SPECIES	VARIETIES	TOTAL TAXA	NON-NATIVE	CNPS LISTED
65	187	300	3	303	143 (47.2%)	3

The survey forming the basis for this report was conducted from the middle of March to early October, 1996 (20 visits). Although the survey area was for the most part restricted to the three sanctuaries of the refuge, a few plants found on closely adjacent easement areas, and which might reasonably be expected to occur on the refuge, will also be found in the annotated plant list. During the study, 303 species and varieties of vascular plants distributed among 187 genera in 65 families were documented (table 1). No study of this type is ever complete—additional plants are still to be found at the refuge. This is particularly true for the Riparian Sanctuary, which is so overgrown with impenetrable vegetation that it could not be adequately surveyed.

Non-native species, which typically flourish in disturbed habitats, make up nearly half of the flora of the refuge. The weedy nature of the flora is correlated to prior and continuing land use and other human activities at the ranch and on the refuge. A survey of the Butte Sink Unit of Gray Lodge Wildlife Area, formerly a portion of the Schohr Ranch in southwest Butte County, recorded an almost identical (47.8%) weedy component in the flora (Oswald, 1989).

Three species of plants growing on the Llano Seco Unit are listed in the *CNPS Inventory of Rare and Endangered Vascular Plants of California* (table 2). The most significant of these is Ferris' milk-vetch (*Astragalus tener* var. *ferrisiae*), an annual legume in List 1B of the *Inventory*. Ferris' milk-vetch was thought to be extinct when it was described

from herbarium specimens in 1990, but a small colony had actually been relocated in 1989 in adobe soil of a weedy and marshy fallow rice field at the Butte Sink Wildlife Area (Oswald, 1989). It has since been found in another fallow rice field in Butte County and along drainages in alkali meadow at the Sacramento NWR. During our survey, a population in excess of 180 plants was found in Tract 7 of Sanctuary II, leveled land that was formerly irrigated pasture but is now fallow. Fox sedge (*Carex vulpinoidea*, List 2) is locally common along a canal and on the edge of Tract 6, a permanent pond, in Sanctuary I. Square-stemmed spike-rush (*Eleocharis quadrangulata*, List 2) grows in several large colonies along the south edge of Tract 3.1, a permanent pond in Sanctuary II. Thus, all of the inventory plants on the Llano Seco Unit seem to be prospering in habitats that have either been made or modified by man. California hibiscus (*Hibiscus lasiocarpus*, currently List 2) is locally abundant along several of the sloughs on the ranch, but it has not been located within any of the refuge sanctuaries.

The flowering interval is indicated for most plants. Each month is divided into three parts: early (day 1 through 10), mid (day 11 through 20) and late (day 21 onward), and the onset of flowering is indicated accordingly. The end of the flowering period is indicated only by the last month in which flowers were noted. In a few groups, e.g., grasses,

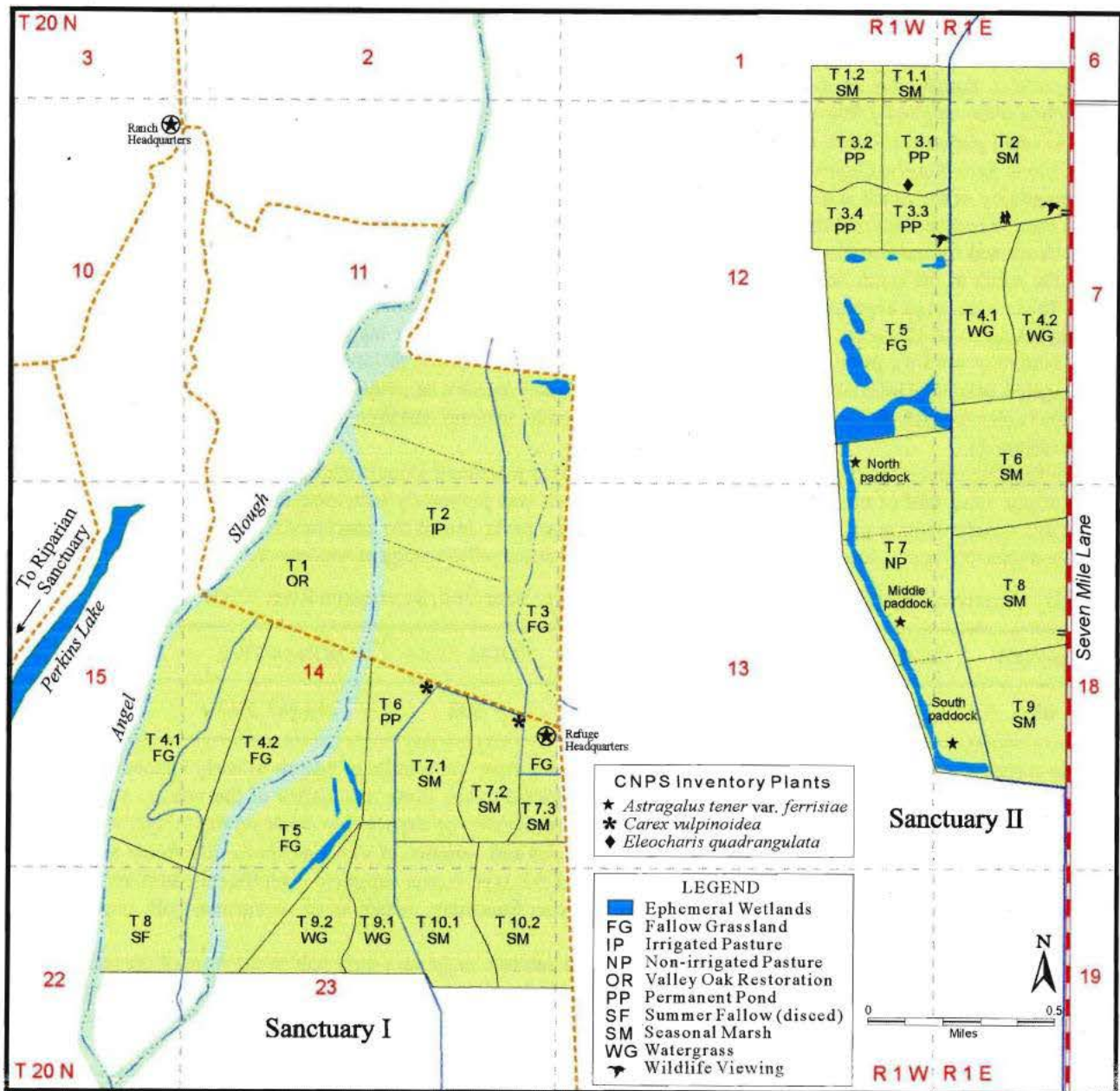


FIGURE 2. Land management and rare plants at Sanctuaries I and II, Llano Seco Unit, Sacramento River NWR.

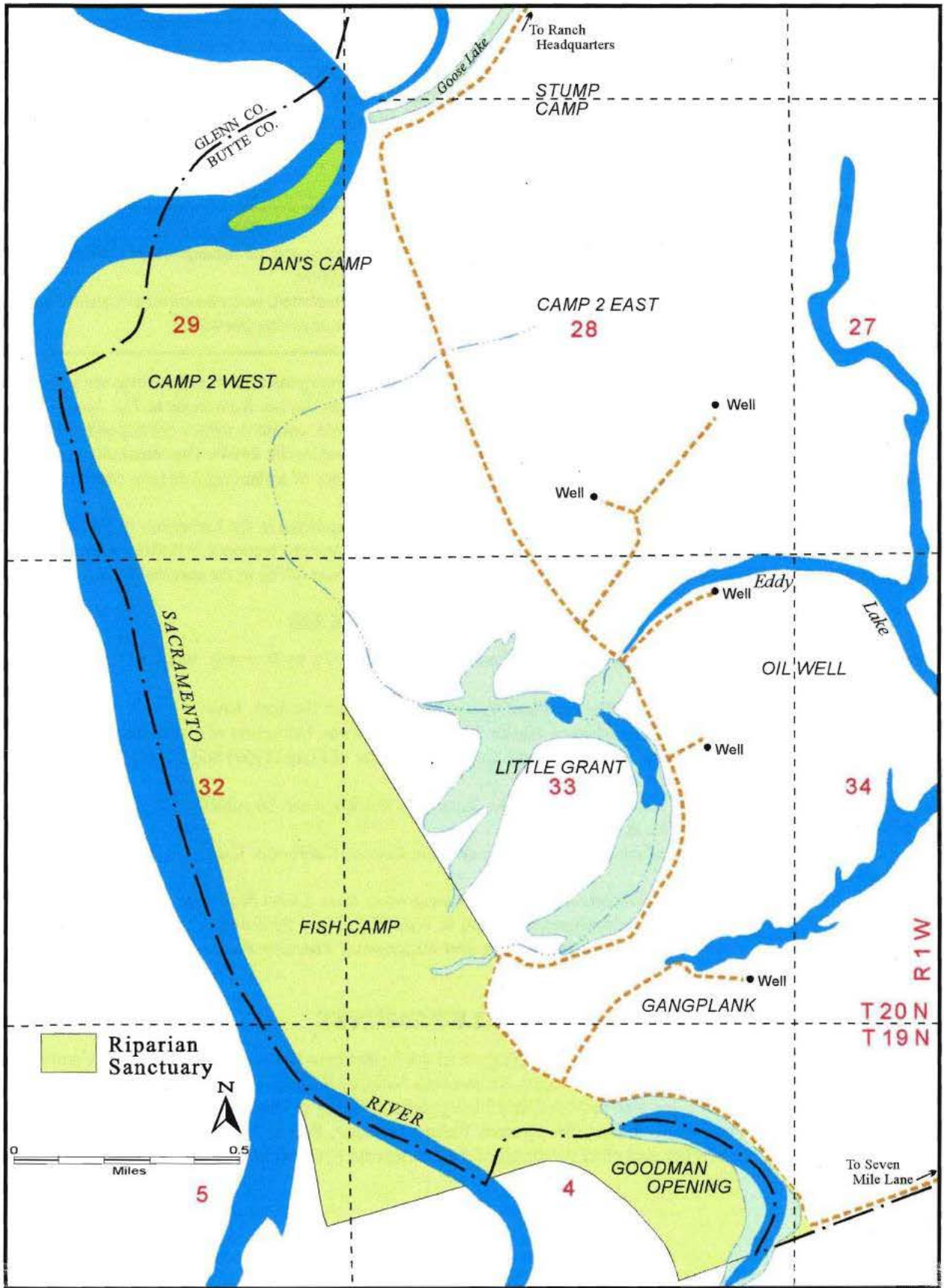


FIGURE 3. The Riparian Sanctuary, Llano Seco Unit, Sacramento River NWR.

sedges, and rushes where anthesis is not always obvious, the date indicates the presence of a well-developed inflorescence. Flowering intervals are based upon limited observations and should be considered to be positive but not necessarily inclusive statements, i.e., additional field work would certainly show that some plants bloom earlier or later than indicated. Variations can also be expected from year to year, depending upon the amount and distribution of rainfall during the growing season. Many of the plants flowering in October on our last visit will probably continue to bloom into autumn (indicated Oct... in the annotated plant list).

TABLE 2. Rare plants at the Llano Seco Unit, Sacramento River NWR.

	CNPS LISTS
<i>Astragalus tener</i> A.Gray var. <i>ferrisiae</i> Liston, List 1B.	1B Rare, threatened, or endangered in California and elsewhere.
<i>Carex vulpinoidea</i> Michx., List 2.	2 Rare, threatened, or endangered in California, but more common elsewhere.
<i>Eleocharis quadrangulata</i> (Michx.) Roem. & Schult., List 2.	

Nomenclature is based on *The Jepson Manual* (Hickman 1993). Some synonyms used in older floras are indicated in brackets. Author abbreviations follow Brummitt and Powell (1992) and may deviate from those in *The Jepson Manual*. There are no accepted standards for common plant names. When available, common names correspond to those in *The Jepson Manual* and in the 5th edition of the *CNPS Inventory* (Skinner and Pavlik 1994). The remaining common names are mostly those of Abrams (1923-60). Words describing the abundance of a plant such as rare, common, abundant, etc. are entirely subjective.

Voucher specimens of many of the plants found during this study are deposited in the herbarium of California State University, Chico (CHSC), with a similar set in the herbarium of the Sacramento National Wildlife Refuge Complex. They are indicated by collector(s) and collection number (e.g., *Oswald & Ahart 8076*) in the annotated plant list.

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ANNOTATED PLANT LIST¹

FERN ALLIES

EQUISETACEAE – HORSETAIL FAMILY

Equisetum arvense L. – COMMON HORSETAIL.

Forming colonies on the bank of the Sacramento River. Plants sterile. *Oswald 7618*: NE¼ NE¼ Sect. 29. Locally abundant in riprap near normal high water at the N end of the Riparian Sanctuary. 22 May 96.

Equisetum laevigatum A. Braun – SMOOTH SCOURING-RUSH. Forming colonies on the bank of the Sacramento River. Spring and summer. [*E. funstoni* A.A. Eaton, *E. kansanum* J.H. Schaffn.] *Oswald 7617*: NE¼ NE¼ Sect. 29. Locally abundant in riprap at the N end of the Riparian Sanctuary. 22 May 96.

MARSILEACEAE – MARSILEA FAMILY

Marsilea vestita Hook. & Grev. ssp. *vestita* – HAIRY PEPPERWORT. Uncommon aquatic in permanent ponds (observed on north side of Tract 3.3, Sanctuary II.). Spring and summer. [*M. mucronata* A. Braun]

DICOT FLOWERING PLANTS

ACERACEAE – MAPLE FAMILY

Acer negundo L. var. *californicum* (Torr. & A. Gray) Sarg. – BOX-ELDER. Common tree along sloughs and on the banks of the Sacramento River. Late Mar. *Oswald 7252*: SW¼ NE¼ Sect. 14. Branch of Angel Slough at the SW corner of Tract 2, Sanctuary I. 22 Mar 96. *Oswald 7350*: Same location. 10 Apr 96.

Acer saccharinum L. – SILVER MAPLE. Waif on the bank of the Sacramento River. Native to eastern N. America. Early spring. *Oswald & Ahart 7745*: NE¼ NE¼ Sect. 29. Small tree ca. 5 m tall growing on the riprapped bank of the Sacramento River at the N end of the Riparian Sanctuary.

AMARANTHACEAE – AMARANTH FAMILY

Amaranthus albus L. – TUMBLEWEED. Common weed of roadsides, fields, other disturbed places. Native to tropical Amer. Late May–Oct... [*Oswald 7823*: SW¼ NW¼ Sect. 7, Sanctuary II. In gravel on the hiking trail between the two observation platforms. 20 Jun 96.

Amaranthus blitoides S. Watson – MAT AMARANTH. Roadsides and other disturbed places. Late May–Oct... [*A. graecizans* L. misapplied] *Oswald & Ahart 7751*: SE¼ SW¼ Sect. 33, Riparian Sanctuary. Prostrate annual on the road on the E side of Fish Camp. 10 Jun 96.

Amaranthus retroflexus L. – RED-ROOTED AMARANTH. Weed of fields and roadsides. Native to tropical

plants being considered for updating in the 6th edition of the CNPS Inventory.

Amer. Mid Sep–Oct... *Oswald 8066*: SE¼ NE¼ Sect. 29, Riparian Sanctuary. Weed along the farm road at Dan's Camp. 17 Jul 96.

ANACARDIACEAE – SUMAC FAMILY

Pistacia chinensis Bunge – ORIENTAL PISTACHIO. Several small trees are located along the fence at the south end of Tract 7, Sanctuary II. An addition tree grows along Seven Mile Lane on the east side of Tract 9. Native to Asia. In fruit late May.

Toxicodendron diversilobum (Torr. & A. Gray) Greene – WESTERN POISON-OAK. Common shrub along sloughs at the Riparian Sanctuary. Early May. [*Rhus diversiloba* Torr. & A. Gray]

APIACEAE – CARROT FAMILY

[*Umbelliferae*]

Ammi visnaga (L.) Lam. – TOOTH-PICK-WEED. Roadsides and weedy places near the river. Native to Eurasia. Early Jul–Sep. [*Oswald 8068*: SE¼ SW¼ Sect. 33, Riparian Sanctuary. Weed along the farm road at the E side of Fish Camp. 17 Jul 96.

Anthriscus caucalis M. Bieb. – BUR-CHERVIL. Common on roadside banks, edges of sloughs and ponds, and in brushy places. Native to Eurasia. Early Apr. [*A. neglecta* Boiss. & Reut. var. *scandix* (Scop.) Hyl., *A. scandicina* (G. Weber) Mansf., *A. vulgaris* (L.) Pers.]

Conium maculatum L. – POISON-HEMLOCK. Common on levees, along roads, in weedy fields, and on the margins of sloughs. Native to Eur. Early Apr–Jun.

Eryngium castrense Jeps. – COYOTE-THISTLE. Found in vernal pools and on the drying beds of seasonal marshes. [*E. castrense* Jeps. var. *vallicola* Jeps., *E. vaseyi* var. *castrense* (Jeps.) Hoover ex Mathias and Constance, *E. vaseyi* var. *vallicola* (Jeps.) Munz]

Foeniculum vulgare Mill. – FENNEL. Uncommon on the edge of levee roads. Native to Europe. Mid Jul–Oct. *Oswald & Ahart 8076*: SE¼ NE¼ Sect. 14, Sanctuary I. North side of Tract 6. 22 Jul 96.

Perideridia kelloggii (A. Gray) Math. – KELLOGG'S YAMPAH. Vernal wet places in pastures. Mid Jul. [*Carum kelloggii* A. Gray] *Oswald & Ahart 8089*: SW¼ NE¼ Sect. 12, Sanctuary II. Growing in a vernal wet area on the Llano Seco Ranch side of the fence near the SW corner of Tract 3.4. 22 Jul 96.

Scandix pecten-veneris L. – SHEPHERD'S-NEEDLE. Locally abundant in adobe soil of pastures. Native to the Medit. Early Apr. *Oswald 7409*: SW¼ SW¼ Sect. 7. Southeast corner of Tract 5. 20 Apr 96.

Torilis arvensis (Huds.) Link ssp. *arvensis* – COMMON HEDGE-PARSLEY. Locally common on levees and in fields. Blooming later than the ssp. *purpurea*, with which it sometimes grows. Native to central and south-

¹ Non-native plants are indicated by an italic, non-serif typeface (*Amaranthus albus*); plant names that appear in non-italic boldface (*Astragalus tener* var. *ferrisiae*) are listed in the 5th edition of the CNPS Inventory (Skinner and Pavlik, 1994). Underlined names are

ern Eur. Late May–Jun. *Oswald* 7629: NE¼ SE¼ Sect. 14, Sanctuary I. Locally common on the levee at the NE corner of Tract 7.2. 23 May 96.

Torilis arvensis ssp. *purpurea* (Ten.) Hayek – PURPLE HEDGE-PARSLEY. Common on levees, in fields. Native to central and southern Europe. Early May.

Torilis nodosa (L.) Gaertn. – KNOTTED HEDGE-PARSLEY. Uncommon on levees. Native to Eurasia, especially Medit. Early May–Jun. *Oswald* 7549: NW¼ SW¼ Sect. 18, Sanctuary II. Southwest corner of the S paddock of Tract 7 (formerly irrigated pasture). 09 May 96.

ARISTOLOCHIACEAE – PIPEVINE FAMILY

Aristolochia californica Torr. – CALIFORNIA PIPEVINE. Climbing on brush in riparian woodland. Flowers and fruit late Mar. *Oswald* 7277: SE¼ SE¼ Sect. 32, Riparian Sanctuary. Near the Sacramento River at Fish Camp. 29 Mar 96.

ASCLEPIADACEAE – MILKWEED FAMILY

Asclepias fascicularis Decne. – NARROW-LEAVED MILKWEED. Near marshy places in pastures. Mid Jul. *Oswald & Ahart* 8089: SW¼ NE¼ Sect. 12, Sanctuary II. Llano Seco Ranch side of the fence near the SW corner of Tract 3.4. 22 Jul 96.

Asclepias speciosa Torr. – SHOWY MILKWEED. Roadsides, edge of a sloughs. Early Jun. *Oswald & Ahart* 7749: SW¼ SE¼ Sect. 33. Localized colony on the edge of the farm road bordering the slough on the E side of Little Grant near the Riparian Sanctuary. 10 Jun 96.

ASTERACEAE – SUNFLOWER FAMILY

[*Compositae*]

Achyraea mollis Schauer – BLOW-WIVES. Locally common in grassy fields and pastures, on levees. Mid Apr–May. *Oswald* 7546: NW¼ SW¼ Sect. 18, Sanctuary II. Common in adobe soil in the S paddock of Tract 7 (formerly irrigated pasture). 09 May 96.

Agoseris heterophylla (Nutt.) Greene – ANNUAL AGOSERIS. Scattered plants in formerly irrigated pasture. Mid Apr. *Oswald* 7402: SE¼ NE¼ Sect. 13, Sanctuary II. South paddock of Tract 7. 20 Apr 96.

Ambrosia psilostachya DC. – WESTERN RAGWEED. Bank of the Sacramento River, levees, roadsides. Late Aug–Oct... [Includes var. *californica* (Rydb.) S.F. Blake] *Oswald* 8245: SW¼ NE¼ Sect. 12, Sanctuary II. South side of the levee at the SW corner of Tract 3.4. 29 Aug 96.

Anthemis cotula L. – MAYWEED. Grassy fields, pastures, levees, disturbed places, often locally abundant. Native to Eur. Early May–Jun. *Oswald* 7636: SE¼ SE¼ Sect. 14, Sanctuary I. Levee at the N side of Tract 10.2. 23 May 96.

Artemisia douglasiana Besser – MUGWORT. Roadsides, ditch banks, fields, along Sacramento River. Mid Jul–Oct...

Aster chilensis Nees var. *invenustus* (Greene) Jeps. – CALIFORNIA ASTER. Weedy washes, valley oak woodland, grassy fields. Late Sep–Oct... [Varieties not recognized in The Jepson Manual, but the obviously hairy var. *invenustus* seems to be clearly distinct both morphologically and ecologically in Butte County.] *Oswald* 8293: NW¼ NW¼ Sect. 23, Sanctuary I. Plants ± 1 m tall growing in a fallow field at the S end of Tract 5, with scattered populations at other locations on the ranch. 30 Sep 96.

Aster subulatus Michx. var. *ligulatus* Shinnerr– ANNUAL SALT MARSH ASTER. Levees, margins of ponds and sloughs, beds of seasonal marshes, grassy fields. Mid Jul–Oct... (sometimes blooming in spring on old plants following mild winters). [*A. exilis* S.Elliott] *Oswald* 8246: SW¼ NW¼ Sect. 7, Sanctuary II. Wet drainage in the SW corner of Tract 2 (managed as seasonal marsh). 29 Aug 96.

Aster sp. – UNIDENTIFIED ASTER. An early blooming, tufted aster, which does not seem to correspond to any listed in Western floras, grows in formerly irrigated pasture in Tract 7, Sanctuary II (seen in the middle and south paddocks—one cluster in each). Mid Apr–May. SE¼ NE¼ Sect. 13. S paddock of Tract 7. 20 Apr 96.

Baccharis douglasii DC. – MARSH BACCHARIS. Uncommon along sloughs and in weedy fields. Mid Jul–Sep. *Oswald* 8069: SE¼ SW¼ Sect. 33, Riparian Sanctuary. Localized population along a slough on the E side of Fish Camp. 17 Jul 96.

Baccharis pilularis DC. – COYOTE-BRUSH. Common shrub in fields, along roads, on levees. Late Sep–Oct...

Baccharis salicifolia (Ruiz & Pav.) Pers. – MULE'S-FAT. Shrub on the edges of permanent ponds. Early Apr. [*B. viminea* DC., *B. glutinosa* Pers.] *Oswald* 7353: NE¼ NE¼ Sect. 12, Sanctuary II. Southeast corner of Tract 3.2. 10 Apr 96.

Bidens frondosa L. – STICKTIGHT. Beds of seasonal marshes, ditch banks, other vernal wet places. Mid Jun–Oct. *Oswald* 7833: NW¼ NW¼ Sect. 7, Sanctuary II. Near the NW corner of Tract 2 (seasonal marsh). 20 Jun 96.

Brickellia californica (Torr. & A.Gray) A.Gray – CALIFORNIA BRICKELLBUSH. Occasional shrub on the riprapped bank of Sacramento River. Late Sep–Oct...

Centaurea solstitialis L. – YELLOW STAR-THISTLE. Widespread on levees, in weedy fields, in other disturbed places. Native to southern Eur. Late Mar–Oct...

Chamomilla occidentalis (Greene) Rydb. – VALLEY PINEAPPLE-WEED. Scattered plants in adobe soil in formerly irrigated pasture. Early May. [*Matricaria occidentalis* Greene] *Oswald* 7545: NW¼ SW¼ Sect. 18, Sanctuary II. South paddock of Tract 7. 09 May 96.

Chamomilla suaveolens (Pursh) Rydb. – COMMON PINEAPPLE-WEED. Parking areas, other disturbed places. Late Mar–Apr. [*Matricaria suaveolens* (Pursh) Buch., *M. matricarioides* (Less.) Porter]

Cichorium intybus L. – CHICORY. Fallow fields, levees, roadsides. Native to Eur. Early Apr–Oct...

Cirsium vulgare (Savi) Ten. – BULL THISTLE. Levees, weedy fields. Native to Eur. Early Jul–Oct...

Conyza bonariensis (L.) Cronquist – SOUTH AMERICAN HORSEWEED. Found near the Riparian Sanctuary on the farm road between Little Grant and Oil Well. With flowers and fruit late Sep.

Conyza canadensis (L.) Cronquist – CANADIAN HORSEWEED. Roadsides, levees. Late Aug–Oct...

Conyza floribunda Humb., Bonpl. & Kunth – MANY-FLOWERED HORSEWEED. Levees, roadsides. Native to tropical Amer. Early Jun–Oct... (earlier on old stems following mild winters).

Cotula australis (Sieber ex Spreng.) Hook.f. – AUSTRALIAN COTULA. Moist, disturbed places. Native to Australia. Mid May. *Oswald 7623*: NE¼ NE¼ Sect. 29, Riparian Sanctuary. Riprapping on the Sacramento River at Dan's Camp. 22 May 96.

Euthamia occidentalis Nutt. – WESTERN GOLDEN-ROD. Edge of sloughs, ditches, permanent ponds, other marshy places. Mid Jul–Oct... [*Solidago occidentalis* (Nutt.) Torr. & A. Gray]

Filago gallica L. – NARROW-LEAVED FILAGO. Scattered in old pasture. Native to Medit. Mid Apr–May. [*Logfia gallica* (L.) Coss. & Germ.] *Oswald 7403*: SE¼ NE¼ Sect. 13, Sanctuary II. South paddock of Tract 7. 20 Apr 96.

Filago pyramidata L. *pyramidata* – HERBA IMPIA. Uncommon in formerly irrigated pasture. Native to Medit. Mid Apr. [*F. vulgaris* Lam. misapplied] *Oswald 7404*: SE¼ NE¼ Sect. 13, Sanctuary II. South paddock of Tract 7. 20 Apr 96.

Gnaphalium luteo-album L. – WEEDY CUDWEED. Ditch banks, levee roads. Native to Eurasia. Late Mar–Jul. *Oswald 7256*: SW¼ corner Sect. 13, Sanctuary I. East side of Tract 10.2. 22 Mar 96.

Gnaphalium palustre Nutt. – WESTERN MARSH CUDWEED. Vernal wet places in pastures, bank of the Sacramento River, other vernal wet places. Mid Apr–Jul. *Oswald 7620*: NE¼ NE¼ Sect. 29, Riparian Sanctuary. Scattered plants in moist sand in riprap at Dan's Camp. 22 May 96.

Helenium puberulum DC. – ROSILLA. Scattered plants along the Sacramento River. Early Jun–Jul. *Oswald & Ahart 7737*: NE¼ NE¼ Sect. 29, Riparian Sanctuary. Riprapped bank at Dan's Camp. 10 Jun 96.

Hemizonia congesta ssp. *luzulifolia* (DC.) Babc. & H.M.Hall – HAYFIELD TARWEED. Dry fields, pastures, levees. Late Aug–Oct... [*H. luzulaefolia* DC. including ssp. *rudis* (Benth.) D.D.Keck] *Oswald 8247*: SE¼ NE¼ Sect. 12, Sanctuary II. Weedy field at the NE corner of Tract 5. 29 Aug 96.

Hemizonia fitchii A.Gray – FITCH'S SPIKEWEED. Dry beds of vernal pools, summer dry but vernal wet pasture (Tract 7, Sanctuary II), edge of Sanctuary II parking

lot. Mid Aug–Oct... *Oswald 8248*: SW¼ NE¼ Sect. 12, Sanctuary II. Vernal pool at the NW corner of Tract 5. 29 Aug 96.

Hemizonia parryi Greene ssp. *rudis* (Greene) D.D. Keck – PARRY'S SPIKEWEED. Old fields and pastures, parking lots. Mid Jul–Oct... Tentative addition to the 6th Edition of the CNPS Inventory. *Oswald & Ahart 8096*: SE¼ NW¼ Sect. 7, Sanctuary II. Growing in gravel on the edge of the public parking lot off of Seven Mile Lane. 22 Jul 96.

Hesperovax caulescens (Benth.) A.Gray – HOG-WALLOW EVAX. Scattered in adobe soils in vernal wet places in formerly irrigated pasture. Mid Apr. [*Evax caulescens* (Benth.) A.Gray] *Oswald 7392*: SE¼ NE¼ Sect. 13, Sanctuary II. Localized colonies in the S paddock of Tract 7. 20 Apr 96.

Heterotheca oregona (Nutt.) Shinnery var. *rudis* (Greene) Semple – OREGON GOLDEN-ASTER. A large population of golden-aster (*Oswald 8289*) grows near the Riparian Sanctuary on a gravelly wash on the west side of the farm road bordering Camp 2 West. Late Sep–Oct... [*Chrysopsis oregona* (Nutt.) A.Gray var. *rudis* (Greene) Jeps.]

Hypochoeris glabra L. – SMOOTH CAT'S-EAR. Old pastures. Native to Eur. Mid Apr–May.

Lactuca saligna L. – WILLOW-LEAVED LETTUCE. Levees, weedy fields, roadsides. Native to Eur. Mid Jul–Sep. *Oswald & Ahart 8080*: SE¼ SW¼ Sect. 14, Sanctuary I. Locally common in a weedy field on the W side of the levee road at the SW corner of Tract 6. 22 Jul 96.

Lactuca serriola L. – PRICKLY LETTUCE. Levees, weedy fields, roadsides. Plants with strap-shaped rather than pinnately-lobed leaves are sometimes referred to the var. *integrata* Gren. & Godr. (= forma *integrifolia* Bogenh.). Native to Eur. Early Jul–Oct... *Oswald & Ahart 8081*: SE¼ SW¼ Sect. 14, Sanctuary I. Locally common in a weedy field on the W side of the levee road at the SW corner of Tract 6. 22 Jul 96.

Lasthenia californica DC. ex Lindl. – CALIFORNIA GOLDFIELDS. Uncommon in formerly irrigated pasture. Mid Apr. [*Baeria chrysostoma* Fisch. & C.A.Mey., including ssp. *gracilis* (DC.) Ferris] *Oswald 7395*: SE¼ NE¼ Sect. 13, Sanctuary II. South paddock of Tract 7. 20 Apr 96.

Lasthenia fremontii (Torr. ex A.Gray) Greene – FREMONT'S GOLDFIELDS. Scattered plants in formerly irrigated pasture. Mid Apr. [*Baeria fremontii* (Torr. ex A.Gray) A.Gray] *Oswald 7393*: SE¼ NE¼ Sect. 13, Sanctuary II. South paddock of Tract 7. 20 Apr 96.

Layia fremontii (Torr. & A.Gray) A.Gray – FREMONT'S TIDYTIPS. A single plant (*Oswald 7455*) was found in former pasture the northwest corner of Tract 7, Sanctuary II. Late Apr.

Leontodon taraxacoides ssp. *longirostris* Finch & P.D.Sell – LONG-BEAKED HAWKBIT. Scattered plants in adobe soil of grassy fields and pastures. Native to Eur.

Early May–Jun. [*L. leysseri* (Wallr.) Beck in part, *L. nudicaulis* (L.) Mérat ssp. *nudicaulis*] Oswald 7544: NW¼ SW¼ Sect. 18, Sanctuary II. South paddock of Tract 7. 09 May 96.

Microseris douglasii (DC.) Sch.Bip. ssp. *douglasii* – DOUGLAS' MICROSERIS. Uncommon in adobe soil of formerly irrigated pasture. Mid Apr. Oswald 7388: NW¼ SW¼ Sect. 18, Sanctuary II. South paddock of Tract 7. 19 Apr 96.

Picris echioides L. – BRISTLY-OXTONGUE. Common weed of roadsides, edges of sloughs and marshes. Native to Eur. Late May–Oct...

Psilocarphus brevissimus Nutt. var. *brevissimus* – DWARF WOOLLY-MARBLES. Common in vernal pools and in vernal wet places in formerly irrigated pasture. Mid Apr–Jun. Oswald 7391: NW¼ SW¼ Sect. 18, Sanctuary II. South paddock of Tract 7. 19 Apr 96.

Psilocarphus oregonus Nutt. – OREGON WOOLLY-MARBLES. Localized populations on the drying margin of a pools. Mid Apr–May. Oswald 7406: SE¼ NE¼ Sect. 13, Sanctuary II. West side of Tract 7. 20 Apr 96.

Senecio vulgaris L. – OLD-MAN-IN-THE-SPRING. Common weed on levees, in weedy fields, in other disturbed places. Native to Eurasia. Late Mar–Apr. Oswald 7255: Southwest corner of Sect. 13, Sanctuary I. Dike along E side of Tract 10.2. 22 Mar 96.

Silybum marianum (L.) Gaertn. – MILK-THISTLE. Levees, roadsides, old pastures, disturbed places. Native to Medit. Early May–Jun (Oct). Oswald & Ahart 7667: NW¼ SW¼ Sect. 18, Sanctuary II. Scattered plants in formerly irrigated pasture in the S paddock of Tract 7. 27 May 96.

Sonchus asper (L.) Hill ssp. *asper* – SPINY-LEAVED SOW-THISTLE. Roadsides, levees, marsh edges, old pastures. Native to Eur. Late Mar–Oct... Oswald & Ahart 7669: NW¼ SW¼ Sect. 18, Sanctuary II. Scattered plants in formerly irrigated pasture in the S paddock of Tract 7. 27 May 96.

Sonchus oleraceus L. – COMMON SOW-THISTLE. Old pastures. Native to Eur. Mid May–Jun. Oswald & Ahart 7669.1: NW¼ SW¼ Sect. 18, Sanctuary II. Scattered plants in formerly irrigated pasture in the S paddock of Tract 7. 27 May 1996.

Sonchus tenerrimus L. – SLENDER SOW-THISTLE. Old pastures. Native to southern Eur. Late May–Jun. Oswald & Ahart 7670: NW¼ SW¼ Sect. 18, Sanctuary II. Scattered plants in formerly irrigated pasture in the S paddock of Tract 7. 27 May 96.

Xanthium spinosum L. – SPINY COCKLEBUR. Roadsides. Mid Jul–Oct...

Xanthium strumarium L. – COCKLEBUR. River banks, seasonal marshes, slough margins, other vernal wet places. Early Jun–Oct... [Includes var. *canadense* (Mill.) Torr. & A.Gray & var. *glabratum* (DC.) Cronquist] Oswald & Ahart 7746: NE¼ NE¼ Sect. 29.

Common on the riprapped bank of the Sacramento River at the N end of the Riparian Sanctuary. 10 Jun 96.

BETULACEAE – BIRCH FAMILY

Alnus rhombifolia Nutt. – WHITE ALDER. Occasional tree on the bank of Sacramento River. Flowering interval not determined.

BORAGINACEAE – BORAGE FAMILY

Amsinckia lycopsoides Lehm. – BUGLOSS FIDDLE-NECK. Roadsides, levees. Similar to *A. menziesii* var. *intermedia*. Late Mar–Apr. Oswald 7351: SE¼ SE¼ Sect. 14, Sanctuary I. Common on the levees at the NE corner of Tract 10.2. 10 Apr 96.

Amsinckia menziesii (Lehm.) A.Nelson & J.F. Macbr. var. *intermedia* (Fisch. & C.A.Mey.) F.R.Ganders – COMMON FIDDLENECK. Levees, roadsides, fields. Late Mar. [*A. intermedia* Fisch. & C.A.Mey., including var. *echinata* (A.Gray) Wiggins]

Heliotropium curassavicum L. – WILD HELIOTROPE. Roadside weed near the Riparian Sanctuary. Early Jun–Oct... Oswald & Ahart 7748: SW¼ SE¼ Sect. 33. Localized colony on the edge of the farm road bordering the slough on the E side of Little Grant. 10 Jun 96.

Plagiobothrys canescens Benth. – VALLEY POP-CORN-FLOWER. One plant noted in gravel at the equipment storage lot along Seven Mile Lane. Early Apr (with fruits).

Plagiobothrys stipitatus (Greene) I.M.Johnst. var. *stipitatus* – LARGE-FLOWERED STALKED POPCORN-FLOWER. Margins of vernal pools, wet places in old pastures. Growing with but less common than the var. *micranthus*. Early Apr–May. [*Allocarya stipitata* Greene] Oswald 7355: NW¼ SW¼ Sect. 18, Sanctuary II. Wet soil along a shallowly flooded check in old pasture at the S end of Tract 7. 10 Apr 96.

Plagiobothrys stipitatus var. *micranthus* (Piper) I.M.Johnst. – SMALL-FLOWERED STALKED POPCORN-FLOWER. Margins of vernal pools, wet places in old pastures, adobe soils on levees. Late Mar–Jun. [*A. stipitata* ssp. *micrantha* Piper] Oswald 7407: NW¼ SW¼ Sect. 18, Sanctuary I. Common in vernal wet places in formerly irrigated pasture in the S end of Tract 7. 20 Apr 96.

BRASSICACEAE – MUSTARD FAMILY

[Cruciferae]

Brassica nigra (L.) W.D.J.Koch – BLACK MUSTARD. Common weed of roadsides, levees, pond edges. Native to Eur. Late Mar–Jun.

Capsella bursa-pastoris (L.) Medik. – SHEPHERD'S-PURSE. Levees, disturbed places. Native to Eur. Late Mar (both flowers and fruits)–Apr. Oswald 7258: SW¼ SW¼ Sect. 13, Sanctuary I. Locally common near the N end of the levee along the E side of Tract 10.2. 22 Mar. 96.

Coronopus didymus (L.) Sm. – LESSER SWINE-CRESS. Uncommon on levees. Native to Eurasia. Early May (in fruit). *Oswald 7548*: NW¼ SW¼ Sect. 18, Sanctuary II. Southwest corner of the S paddock of Tract 7. 09 May 96.

Hirschfeldia incana (L.) Lagr.-Foss. – MEDITERRANEAN HOARY-MUSTARD. Common perennial of fields, roadsides, river banks. Native to Medit. Late Mar–Oct... [*Brassica geniculata* (Desf.) Ball, *Sinapis incana* L.] *Oswald & Ahart 7735*: NE¼ NE¼ Sect. 29. Growing on the riprapped bank of the Sacramento River at the N end of the Riparian Sanctuary. 10 Jun 96.

Lepidium latifolium L. – BROAD-LEAVED PEPPER-GRASS. Herbaceous perennial to ± 1 meter tall along the Sacramento River and in weedy fields. Native to Eurasia. Early Jun–Jul. *Oswald 8062*: SE¼ NE¼ Sect. 29. Riprapped bank at the N end of the Riparian Sanctuary. 17 Jul 96.

Lepidium nitidum Nutt. var. *nitidum* – SHINING PEPPER-GRASS. Locally common on levees. Late Mar (flowers and fruits). *Oswald 7254*: SW¼ SW¼ Sect. 13, Sanctuary I. North end of levee along the , Sanctuary IIE side of Tract 10.2. 22 Mar 96.

Lepidium strictum (S. Watson) Rattan – UPRIGHT PEPPER-GRASS. Locally common in gravel of roads and parking places, on levees. Late Mar. *Oswald 7248*: NE¼ SE¼ Sect. 14, Sanctuary I. Farm road and dike at the NE corner Tract 7.2. 22 Mar 96.

Raphanus raphanistrum L. – JOINTED CHARLOCK. Yellow flowered plants on the riprapped bank of the Sacramento River. Native to Medit. Eur. Late Mar–May.

Raphanus sativus L. – RADISH. Abundant in fields, along farm roads. These plants have white or pale purplish flowers. Native to Medit. Eur. Late Mar–Oct...

Rorippa curvisiliqua (Hook.) Bessey ex Britton var. *occidentalis* (Greene) Stuckey – WESTERN YELLOW-CRESS. Common in moist soil on levee roads, edges of seasonal ponds, riprapped banks along the Sacramento River. Late Mar–Jun. [Varieties not recognized in The Jepson Manual] *Oswald 7352*: NE¼ NE¼ Sect. 23, Sanctuary I. Levee between Tract 10.1 and Tract 10.2. 10 Apr 96.

Sibara virginica (L.) Rollins – VIRGINIA WINGED-ROCKCRESS. Uncommon on drying beds of seasonal marshes. Late May (with fruits). *Oswald & Ahart 7655*: SE¼ NW¼ Sect. 7, Sanctuary II. South end of Tract 2. 27 May 96.

CALLITRICHACEAE – WATER-STARWORT FAMILY

Callitriche heterophylla Pursh var. *bolanderi* (Hegelm.) Fassett – VARIABLE-LEAVED WATER-STARWORT. Submersed aquatic with floating rosettes of leaves in marshy pools. Mid Apr. (flowers and fruits). [*C. bolanderi* Hegelm., *C. heterophylla* ssp. *bolanderi* (Hegelm.) Calder & RoyTaylor, *C. palustris* L.] *Oswald 7410*: SW¼ NE¼ Sect. 12, Sanctuary II. Abundant in

standing water of a marshy drainage below the levee at the SW corner of Tract 3.4. 20 Apr 96.

CAMPANULACEAE – BELLFLOWER FAMILY

Downingia bicornuta A.Gray var. *bicornuta* – DOUBLE-HORNED DOWNINGIA. Wet places in old pastures, drying beds of seasonal marshes. Mid Apr–Jun. *Oswald 7541*: SW¼ NW¼ Sect. 7, Sanctuary II. Locally abundant in adobe soil in the N end of Tract 4.2 (seasonal marsh). 09 May 96.

Downingia ornatissima Greene var. *ornatissima* – FOLDED DOWNINGIA. Drying beds of seasonal marshes, formerly irrigated pasture. Mid Apr–Jun. *Oswald 7408*: NW¼ SW¼ Sect. 18, Sanctuary II. Common in vernal wet places at the S end of Tract 7. 20 Apr 96.

CAPRIFOLIACEAE – HONEYSUCKLE FAMILY

Sambucus mexicana C.Presl ex DC. – BLUE ELDERBERRY. Edges of fields, along ditches and sloughs, along the Sacramento River. Early Apr–Oct. [*S. cerulea* Raf., *S. glauca* Nutt., *S. velutina* Durand & Hilg.] *Oswald & Ahart 7742.1*: NE¼ NE¼ Sect. 29. Riprapped bank of the Sacramento River at the N end of the Riparian Sanctuary. 20 Jun 96.

CAPPARACEAE – CAPER FAMILY

[*Capparidaceae*]

Polanisia dodecandra (L.) DC. ssp. *trachysperma* (Torr. & A.Gray) Iltis – CLAMMYWEED. Scattered plants in sandy gravel on the island in the Sacramento River at the north end of the Riparian Sanctuary. Mid Jul–Sep. Identified with binoculars from Dan's Camp.

CARYOPHYLLACEAE – PINK FAMILY

Cerastium glomeratum Thuill. – STICKY MOUSE-EARED CHICKWEED. Levees, ditch banks, old pastures. Native to Eur. Late Mar–Apr. [*C. viscosum* L. misapplied] *Oswald 7257*: SW¼ SW¼ Sect. 13, Sanctuary I. Locally common along the dike on E side of Tract 10.2. 22 Mar 96.

Herniaria hirsuta L. ssp. *hirsuta* – HERNIARIA. Scattered plants in moist sand on banks along the Sacramento River. Native to Eur., N Afr., southwest Asia. Mid May–Jun. [*H. cinerea* DC. in part] *Oswald 7621*: NE¼ NE¼ Sect. 29. Riprap at the N end of the Riparian Sanctuary. 22 May 96.

Spergularia bocconeii (Scheele) Foucaud ex Merino – BOCCONE'S SANDSPURRY. Parking lots, riprapped banks, other disturbed places. Native to southwest Eur. Late Mar–Jun. *Oswald 7622*: NE¼ NE¼ Sect. 29. Scattered plants in moist sand in riprap at the N end of the Riparian Sanctuary. 22 May 96.

Stellaria media (L.) Vill. – COMMON CHICKWEED. Moist places in weedy fields. Native to coastal Eur. Late Mar.

CHENOPODIACEAE – GOOSEFOOT FAMILY

Chenopodium album L. – LAMB’S-QUARTERS. River banks, roadsides, disturbed places. Native to Eur. Early Jun–Sep.

Chenopodium ambrosioides L. – MEXICAN-TEA. Roadsides, riprap along the Sacramento River. Native to tropical Amer. Early Jun–Oct... [Includes var. *vagans* (Standl.) J.T.Howell & var. *anthelminticum* (L.) A.Gray] Oswald 8064: SE¼ NE¼ Sect. 29. Riprap at the N end of the Riparian Sanctuary. 17 Jul 96.

Chenopodium botrys L. – JERUSALEM-OAK. River banks, sand bars. Native to Eur. Early Jun–Sep. Oswald & Ahart 7739: NE¼ NE¼ Sect. 29. Scattered on the riprapped bank of the Sacramento River at the N end of the Riparian Sanctuary. 10 Jun 96.

Chenopodium pumilio R.Br. – TASMANIAN GOOSE-FOOT. Uncommon on the bank of Sacramento River. Native to Australia. Early Jun. Oswald & Ahart 7738: NE¼ NE¼ Sect. 29. Riprap at the N end of the Riparian Sanctuary. 10 Jun 96.

Chenopodium strictum Roth var. *glaucophyllum* (Aellen) Wahl – GLAUCCOUS-LEAVED GOOSEFOOT. Common weed along farm roads. Native to Eurasia. Mid Jul–Oct...

Cycloloma atriplicifolium (Spreng.) J.M.Coult. – WINGED-PIGWEEED. Tumbleweed on a gravel bar in the Sacramento River. Native to central N. Amer. Identified late Aug from Dan’s Camp with the aid of binoculars.

Salsola tragus L. – RUSSIAN-THISTLE. Weedy fields, roadsides, gravel bars. Native to Eurasia. Late Sep–Oct... [*S. australis* R.Br., *S. kali* L. var. *temuifolia* Tausch, *S. pestifer* A. Nelson]

CONVOLVULACEAE – MORNING-GLORY FAMILY

Convolvulus arvensis L. – BINDWEED. Common weed of pastures, fallow fields, roadsides, levees, river banks. Native to Eur. Mid Apr–Oct... Oswald & Ahart 7743: NE¼ NE¼ Sect. 29. Riprapped bank of the Sacramento River at the N end of the Riparian Sanctuary. 10 Jun 96.

CORNACEAE – DOGWOOD FAMILY

Cornus glabrata Benth. – BROWN DOGWOOD. Tall shrub growing on the edge of sloughs at the Riparian Sanctuary. Late May (in fruit). Oswald 7627: SW¼ NW¼ Sect. 3. Southeast edge of slough on the E side of Goodman Opening, Riparian Sanctuary. 22 May 96.

CRASSULACEAE – STONECROP FAMILY

Crassula aquatica (L.) Schönk. – WATER PYGMY-WEED. Drying margins of pools. Mid Apr. [*C. saginoides* (Maxim.) M.Bywater & Wickens, *Tillaea aquatica* L. in part, *Tillaeastrum aquaticum* (L.) Britton in part] Oswald 7405: SE¼ NE¼ Sect. 13, Sanctuary II. Common on mud along the receding margin of a pool along the W side of Tract 7. 20 Apr 96.

CUCURBITACEAE – GOURD FAMILY

Marah fabaceus (Naudin) Greene var. *agrestis* (Greene) Stocking – CALIFORNIA MANROOT. Brushy places in riparian woodland. Late Mar (with both flowers and fruits). [*Echinocystis fabacea* Naudin var. *agrestis* Greene] Oswald 7278: NE¼ Sect. 4. Between the ranch road and the slough on the E side of Goodman Opening, Riparian Sanctuary. 29 Mar 96.

CUSCUTACEAE – DODDER FAMILY

Cuscuta pentagona Engelm. – FIELD DODDER. Grassy fields, parasitic on *Convolvulus*, *Lactuca*, *Lotus*, *Xanthium*, and probably other hosts. Early Jul–Sep. [*C. arvensis* Beyr. misapplied, *C. campestris* Yunck., *C. pentagona* var. *calycina* Engelm.] Oswald 8070: SE¼ NE¼ Sect. 12, Sanctuary II. On *Convolvulus* on the dry bed of a vernal pool in the NE corner of Tract 5. 17 Jul 96.

ELATINACEAE – WATERWORT FAMILY

Elatine heterandra H.Mason – VARIABLE-STAMENED WATERWORT. Drying beds of seasonal marshes, wet places in old pasture. Early Apr–Jun. Oswald 7354: SW¼ NW¼ Sect. 18, Sanctuary II. Forming prostrate patches on the drying bed of Tract 6. 10 Apr 96.

Elatine rubella Rydb. – RED WATERWORT. Drying margins of flooded pools. Mid Jun. Oswald 7835 NW¼ SW¼ Sect. 18, Sanctuary II. Pool along the W side of the S paddock of Tract 7. 20 Jun 96.

EUPHORBIACEAE – SPURGE FAMILY

Chamaesyce maculata (L.) Small – SPOTTED SPURGE. Riprapped bank along the Sacramento River. Native to eastern US. Early Jun. [*Euphorbia maculata* L., *E. supina* Raf.]

Eremocarpus setigerus (Hook.) Benth. – TURKEY-MULLEIN. Roadsides, dry fields, dry beds of seasonal marshes. Late May–Oct. Oswald 7824: SW¼ NW¼ Sect. 7, Sanctuary II. Seasonal marsh at the S end of Tract 2. 20 Jun 96.

FABACEAE – LEGUME FAMILY

[*Leguminosae*]

Astragalus tener A.Gray var. *ferrisiae* Liston – FERRIS’ MILK-VETCH. Growing mostly on low dikes in formerly irrigated pasture in Tract 7, Sanctuary II. Nine plants were counted in the north paddock, 19 plants in the middle paddock, and approximately 150 plants in the south paddock (56 estimated on 14 dikes in the south end of the paddock plus 97 actual count on remaining dikes). Early Apr–May. CNPS List 1B. [*A. rattanii* A.Gray var. *jepsonianus* Barneby in part] Oswald 7547: NW¼ SW¼ Sect. 18, Sanctuary II. 09 May 96.

Glycyrrhiza lepidota Nutt. ex Pursh – AMERICAN LICORICE. Roadsides and edges of sloughs near the Sacramento River. Mid May–Jun. [*G. lepidota* var. *glutinosa*

(Nutt. ex. Torr. & A.Gray) S.Watson] *Oswald* 7624: SE¼ NE¼ Sect. 33. Locally common on the edge of the farm road and slough on the E side of Little Grant near the Riparian Sanctuary. 22 May 96.

Lathyrus angulatus L. – ANGULAR-SEEDED PEA. Growing with other weeds on levees. Native to Eur. Late Apr–Jun. *Oswald & Ahart* 7652: SE¼ NW¼ Sect. 7, Sanctuary II. Between the hiking trail and the S end of Tract 2. 27 May 96.

Lathyrus jepsonii Greene var. *californicus* (S.Watson) Hoover – CALIFORNIA PEA. Locally common on brushy edges of sloughs, river banks. Late May–Jun. [*L. californicus* S.Watson, *L. jepsonii* ssp. *californicus* (S.Watson) C.L.Hitchc., *L. watsonii* T.G.White] *Oswald & Ahart* 7753: SE¼ NE¼ Sect. 4. Edge of the slough on the E side of Goodman Opening near the SE end of the Riparian Sanctuary. 10 Jun 96.

Lotus corniculatus L. – BIRD'S-FOOT-TREFOIL. Common weed of levees, fields, pastures. Native to Eurasia. Early Apr–Oct... *Oswald & Ahart* 7671: NW¼ SW¼ Sect. 18, Sanctuary II. South paddock of Tract 7. 27 May 96.

Lotus purshianus (Benth.) Clem. & E.G.Clem. var. *purshianus* – SPANISH LOTUS. Levees, bank of Sacramento River. Mid Jul–Oct... [*L. americanus* (Nutt.) Bisch., *Hosackia americana* (Nutt.) Piper]

Lotus wrangelianus Fisch. & C.A.Mey. – WRANGEL LOTUS. Occasional in formerly irrigated pasture and at the equipment storage lot on Seven Mile Lane. Early Apr–May. [*L. subpinnatus* Lag. misapplied, *Hosackia subpinnata* (Lag.) Torr. & A.Gray misapplied]

Lupinus bicolor Lindl. var. *tridentatus* Eastw. ex C.P.Sm. – BICOLORED LUPINE. Levees and disturbed places. Late Mar–Apr. [Varieties not recognized in The Jepson Manual] *Oswald* 7357: SE¼ NW¼ Sect. 18, Sanctuary II. Growing in gravel at the equipment storage lot off of Seven Mile Lane (perhaps introduced in gravel hauled into the area). 10 Apr 96.

Lupinus polycarpus Greene – SMALL-FLOWERED LUPINE. Common in grassy fields, on levees, and along ranch roads. Early Apr–May. [*L. micranthus* Douglas. Included in *L. bicolor* in The Jepson Manual.] *Oswald* 7348: NW¼ SE¼ Sect. 14, Sanctuary I. North end of levee road between Tract 6 and Tract 7.1. 10 Apr 96.

Medicago arabica (L.) Huds. – SPOTTED MEDICK. Found along the farm road on the south side of Tract 3, Sanctuary I. Probably native to Medit. Late Apr–Jun.

Medicago polymorpha L. – COMMON BUR-CLOVER. Fields, disturbed places. Both spiny- and smooth-fruited plants are found at the refuge. Native to Medit. Late Mar–Apr. [*M. apiculata* Willd., *M. hispida* Gaertn., *M. hispida* var. *confinis* (W.D.J.Koch) Burnat]

Medicago sativa L. – ALFALFA. Localized population in fallow field on the west side of Tract 4.1, Sanctuary I, where it persists from a former farm crop.

Melilotus alba Medik. – WHITE SWEET-CLOVER. Weedy fields, edge of the Sacramento River. Native to Eurasia. Mid May–Oct..., sometimes blooming earlier on over-wintering stems.

Melilotus indica (L.) All. – INDIAN SWEET-CLOVER. On the bank of the Sacramento River. Native to Medit. Early Jun.

Robinia pseudoacacia L. – BLACK LOCUST. Represented by a seedling tree on the bank of the river at the north end of the Riparian Sanctuary. Native to eastern U.S.

Trifolium bifidum var. *decipiens* Greene – DECEPTIVE CLOVER. Grassy fields and levees, old pastures. Mid Apr–May.

Trifolium fragiferum L. – STRAWBERRY CLOVER. Found in fallow grassland in the north paddock of Tract 3, where it probably persists from an old seeding. Native to Eur. In flower and fruit late Sep.

Trifolium fucatum Lindl. – SOUR CLOVER. Scattered plants in adobe soil of formerly irrigated pasture. Mid Apr. [Includes var. *gambelii* (Nutt.) Jeps. & var. *virescens* (Greene) Jeps., *T. gambelii* Nutt., *T. flavulum* Greene] *Oswald* 7390: NW¼ SW¼ Sect. 18, Sanctuary II. South paddock of Tract 7. 19 Apr 96.

Trifolium hirtum All. – ROSE CLOVER. Old pastures, levees, fields. Native to Eurasia, N. Afr. Early Apr–May.

Trifolium willdenovii Spreng. – TOMCAT CLOVER. Levees, fields, pastures. Mid Apr–Jun. [*T. tridentatum* Lindl. including var. *aciculare* (Nutt.) McDermott] *Oswald & Ahart* 7657: SW¼ NW¼ Sect. 7, Sanctuary II. Island in seasonal marsh at the SW corner of Tract 2. 27 May 96.

Vicia benghalensis L. – RED-FLOWERED VETCH. Scattered plants in formerly irrigated pasture in Tract 7, Sanctuary II. Native to Eur. Late Apr.

Vicia sativa L. ssp. *sativa* – GARDEN VETCH. Occasion in formerly irrigated pasture in Tract 7, Sanctuary II. Native to Eur. Mid Apr–May.

Vicia villosa ssp. *varia* (Host) Corb. – WINTER VETCH. Common plant of roadsides, levees, weedy fields, river banks. Native to Eur. Late Mar–Oct... [*V. villosa* var. *glabrescens* W.D.J.Koch, *V. dasycarpa* Ten.]

FAGACEAE – BEECH FAMILY

Quercus lobata Née – VALLEY OAK. Scattered in fields, on ditch banks, along roads, at the Riparian Sanctuary. Flowering interval not determined.

GENTIANACEAE – GENTIAN FAMILY

Centaurium muehlenbergii (Griseb.) W. Wight ex Piper – JUNE CENTAURY. Common in grassy fields. Late May–Sep. [*C. floribundum* (Benth.) B.L.Rob.] *Oswald & Ahart* 7758: NE¼ SE¼ Sect. 14, Sanctuary I. Edge of drying seasonal marsh in the NE corner of Tract 7.2. 10 Jun 96.

GERANIACEAE – GERANIUM FAMILY

Erodium botrys (Cav.) Bertol. – LONG-BEAKED STORK'S-BILL. Common on levees. Native to southern Eur. Late Mar–Apr.

Erodium brachycarpum (Godr.) Thellung – SHORT-FRUITED STORK'S-BILL. Common on levees. Native to southern Eur. Late Mar–Apr. [*E. obtusiplicatum* (Maire, Weiller & Wilczek) J.T.Howell]

Erodium cicutarium (L.) L'Hér. – RED-STEMMED FILAREE. Levees, weedy fields, other disturbed places. Native to Eurasia. Late Mar–May.

Erodium moschatum (L.) L'Hér. – WHITE-STEMMED FILAREE. Levees, disturbed places. Native to Eur. Late Mar–Apr.

Geranium dissectum L. – CUT-LEAVED GERANIUM. Marshy places, adobe soils on levees. Native to Eur. Early Apr–Jun. *Oswald & Ahart 7661*: SW¼ NE¼ Sect. 12, Sanctuary II. Locally abundant on the edge of a marshy area on the S side of the levee at the SW corner of Tract 3.4. 27 May 96.

JUGLANDACEAE – WALNUT FAMILY

Juglans californica S.Watson var. *hindsii* Jeps. – NORTHERN CALIFORNIA BLACK WALNUT. Common along edges of sloughs, in riparian woodland, and on river banks. Late Mar. Native populations in Napa County are in CNPS List 1B. Naturalized populations, which are common in Northern California, are not inventory plants.

Juglans regia L. ENGLISH WALNUT. An uncommon volunteer at the Riparian Sanctuary. Native to southeast Eur., Asia.

LAMIACEAE – MINT FAMILY

[*Labiatae*]

Lycopus americanus Muhl. ex W.P.C.Bart. – CUT-LEAVED BUGLEWEED. River banks, edges of permanent ponds, marshy places. Early Jun–Oct... *Oswald & Ahart 8079*: SE¼ NW¼ Sect. 14, Sanctuary I. Locally common on the edge of the farm road crossing a branch of Angel Slough at the SE corner of Tract 1. 22 Jul 96.

Marrubium vulgare L. – HOREHOUND. Levees, old fields, other disturbed places. Native to Eur. Early Apr–Jun.

Mentha pulegium L. – PENNYROYAL. River banks, levees, dry beds of seasonal marshes, pastures, often locally abundant. Native to Eur. Early Jun–Oct... *Oswald & Ahart 7756*: NE¼ SE¼ Sect. 14, Sanctuary I. Common herbaceous perennial along the edge of drying seasonal marsh in the NE corner of Tract 7.2. 10 Jun 96.

Stachys stricta Greene – SONOMA HEDGE-NETTLE. Marshy sloughs, margins of permanent ponds. Mid May–Jun. [*S. ajugoides* Benth. var. *stricta* (Greene) Jeps.] *Oswald 7632*: SE¼ NW¼ Sect. 14, Sanctuary I. Among tules along a branch of Angel Slough at SE corner of Tract 1. 23 May 96.

LYTHRACEAE – LOOSESTRIFE FAMILY

Ammannia coccinea Rottb. – VALLEY REDSTEM. Drying beds of seasonal marshes, marshy drainages. Mid Jun–Oct... [*A. auriculata* Willd. misapplied] *Oswald 7829*: SW¼ NW¼ Sect. 7, Sanctuary II. Locally common along a marshy drainage in the SW corner of Tract 2, Sanctuary II. 20 Jun 96.

Ammannia robusta Heer & Regel – ROBUST REDSTEM. Drying beds of seasonal marshes, marshy drainages. Mid Jun–Oct... [*A. coccinea* Rottb. misapplied] *Oswald 7825*: SW¼ NW¼ Sect. 7, Sanctuary II. Common on the dry bed of seasonal marsh at the S end of Tract 2. 20 Jun 96.

Lythrum hyssopifolium L. – HYSSOP LOOSESTRIFE. Common and widespread on the drying beds of seasonal marshes, in formerly irrigated pasture, on banks of the Sacramento River, in other moist disturbed places. Native to Eur. Early May–Jul. *Oswald 7631*: NE¼ SE¼ Sect. 14, Sanctuary I. Northeast corner of Tract 7.2. 23 May 96.

Lythrum tribracteatum Salzm. ex Spreng. – SLENDER-FRUITED LOOSESTRIFE. Locally abundant on drying beds of seasonal marshes. Late May–Jun. *Oswald & Ahart 7654*: SE¼ NW¼ Sect. 7, Sanctuary II. Seasonal marsh at the S end of Tract 2. 27 May 96.

Rotala ramosior (L.) Koehne – LOWLAND TOOTH-CUP. Marshy drainages on the drying beds of seasonal marshes. Mid Jul. *Oswald & Ahart 8085*: SE¼ SW¼ Sect. 14, Sanctuary I. Common in wet soil along a marshy drainage in the NW corner of Tract 9.1 (managed for watergrass). 22 Jul 96.

MALVACEAE – MALLOW FAMILY

Abutilon theophrasti Medik. – VELVETLEAF. Roadsides, drying beds of seasonal marshes. Native to southern Asia. Mid Jul–Oct.

Hibiscus lasiocarpus Cav. – CALIFORNIA HIBISCUS. Although locally abundant at a number of locations on Rancho Llano Seco, it has not been located on U.S. Fish and Wildlife parcels during this survey. Mid Jul–Sep. CNPS List 2; proposed downgrade to List 4 in the 6th Edition of CNPS Inventory. [*H. californicus* Kellogg] *Oswald 8067*: NW¼ NE¼ Sect. 33. Near the Riparian Sanctuary in a drainage crossing the farm road at the W end of Eddy Lake. 17 Jul 96.

Malva nicaeensis All. – BULL MALLOW. Common weed of roadsides, levees, other disturbed places. Native to Eurasia. Late May (with both flowers and fruits)–Jun. *Oswald 7626*: SW¼ NW¼ Sect. 3. Along the farm road at the SE corner of the Riparian Sanctuary. 22 May 96.

Malva parviflora L. – LITTLE MALLOW. Common weed of levees, disturbed places. Native to Eurasia. Late Mar (with both flowers and fruits)–Jun. *Oswald 7637*: SE¼ SE¼ Sect. 14, Sanctuary I. Levee between tracts 7.3 & 10.2. 23 May 96.

Malvella leprosa (Ortega) Krapov. – ALKALI-MALLOW. Locally common on levees, dry beds of seasonal marshes, vernal wet places in pasture. Late May–Sep. [*Sida hederacea* (Douglas) Torr. & A.Gray, *S. leprosa* (Ortega) K.Schum. var. *hederacea* (Douglas) K.Schum.] *Oswald & Ahart 8094*: SW¼ SW¼ Sect. 6, Sanctuary II. Dry bed of seasonal marsh at the NE corner of Tract 1.1. 22 Jul 96.

MARTYNIACEAE – UNICORN-PLANT FAMILY

Proboscidea louisianica (Mill.) Thell. ssp. *louisianica* – COMMON UNICORN-PLANT. Dry beds of seasonal marshes, edges of marshy drainages, irrigated pasture. Probably native to south-central U.S. Mid Jun–Oct. *Oswald 7834*: NW¼ NW¼ Sect. 7, Sanctuary II. Marshy drainage in seasonal marsh near the NW corner of Tract 2. 20 Jun 96.

MOLLUGINACEAE – CARPET-WEED FAMILY

Mollugo verticillata L. – INDIAN-CHICKWEED. Locally common on riprapped banks along the Sacramento River, in other disturbed places. Native to tropical Amer. Late May–Jun.

MORACEAE – MULBERRY FAMILY

Ficus carica L. – EDIBLE FIG. Naturalized along sloughs. Native to Medit. Green fruits ca. the size of a quarter in late Mar.

OLEACEAE – OLIVE FAMILY

Fraxinus latifolia Benth. – OREGON ASH. Along ditches, sloughs, and the Sacramento River. Early Apr.

ONAGRACEAE – EVENING-PRIMROSE FAMILY

Epilobium brachycarpum C.Presl – TALL ANNUAL WILLOWHERB. Common late summer plant of roadsides, levees, dry beds of seasonal marshes, grassy fields. Late Aug–Oct. [*E. paniculatum* Nutt. ex Torr. & A.Gray including var. *jucundum* (A.Gray) Trel. & var. *laevicaule* (Rydb.) Munz]

Epilobium ciliatum Raf. ssp. *ciliatum* – FRINGED WILLOWHERB. Banks of permanent ponds, edges of marshy sloughs. Mid Jul (with flowers and mature fruits). [*E. californicum* Hausskn. including var. *holosericeum* (Trel.) Jeps., var. *occidentale* (Trel.) Jeps. & var. *parishii* (Trel.) Jeps.; *E. adenocaulon* Hausskn. including var. *holosericeum* (Trel.) Munz & var. *parishii* (Trel.) Munz; *E. watsonii* Barbey var. *parishii* (Trel.) C.L.Hitchc. & var. *occidentale* (Trel.) C.L.Hitchc.] *Oswald & Ahart 8078*: SE¼ NW¼ Sect. 14, Sanctuary I. Locally common on the edge of the farm road crossing a branch of Angel Slough at the SE corner of Tract 1. 22 Jul 96.

Epilobium pygmaeum (Speg.) P.Hoch & Raven – SMOOTH SPIKE-PRIMROSE. Drying beds of seasonal marshes, vernal pools, and other seasonally flooded places. Late May–Jul. [*Boisduvalia glabella* (Nutt.)

Walp. including var. *campestris* (Jeps.) Jeps.] *Oswald & Ahart 7653*: SE¼ NW¼ Sect. 7, Sanctuary II. Common on the drying bed of seasonal marsh at the S end of Tract 2. 27 May 96.

Ludwigia peploides (Humb., Bonpl. & Kunth) Raven ssp. *peploides* – YELLOW WATERWEED. Common aquatic plant of sloughs, drainages, ditches. Late May–Oct. [*Jussiaea californica* Jeps., *J. repens* L. var. *peploides* (Humb., Bonpl. & Kunth) Griseb.] *Oswald 7827*: SW¼ NW¼ Sect. 7, Sanctuary II. Locally abundant in shallow water of a marshy drainage in the SW corner of Tract 2. 20 Jun 96.

Oenothera elata Humb., Bonpl. & Kunth ssp. *hirsutissima* (S.Watson) W.Dietr. – HAIRY EVENING-PRIMROSE. Uncommon on the bank of the Sacramento River. Early Jul. [*O. hookeri* Torr. & A.Gray including var. *angustifolia* R.R.Gates, ssp. *angustifolia* (R.R.Gates) Munz, ssp. *grisea* (Bartlett) Munz, & ssp. *venusta* (Bartlett) Munz] *Oswald 8065*: SE¼ NE¼ Sect. 29. In riprap at the N end of the Riparian Sanctuary. 17 Jul 96.

PLANTAGINACEAE – PLANTAIN FAMILY

Plantago coronopus L. – CUT-LEAVED PLANTAIN. Parking lots, other disturbed places. Native to Eur. Dry plants observed mid Jul.

Plantago lanceolata L. – ENGLISH PLANTAIN. Levees, weedy fields, formerly irrigated pasture. Native to Eur. Mid Apr–Jul. *Oswald & Ahart 7666*: NW¼ SW¼ Sect. 18, Sanctuary II. Scattered plants in formerly irrigated pasture in the S paddock of Tract 7. 27 May 96.

Plantago major L. – COMMON PLANTAIN. Along the Sacramento River. Native to Eur. Early Jun–Jul. [Includes vars. *pilgeri* Domin & *scopulorum* Fr. & S.P.Broberg] *Oswald & Ahart 7744*: NE¼ NE¼ Sect. 29. Riprapped bank at the north end of the Riparian Sanctuary. 10 Jun 96.

PLATANACEAE – SYCAMORE FAMILY

Platanus racemosa Nutt. – WESTERN SYCAMORE. Margins of sloughs and banks of the river at the Riparian Sanctuary. Flowering interval not determined.

POLEMONIACEAE – PHLOX FAMILY

Navarretia leucocephala Benth. ssp. *leucocephala* – WHITE-FLOWERED NAVARRETIA. Drying beds of vernal pools and other vernal flooded places. Mid May–Jun. *Oswald 7634*: SE¼ SW¼ Sect. 14, Sanctuary I. Locally abundant on the bed of a drying vernal pool in Tract 5. 23 May 96.

POLYGONACEAE – BUCKWHEAT FAMILY

Polygonum amphibium L. var. *emersum* Michx. – SWAMP SMARTWEED. Ditches, levees, seasonal marshes. Late May–Sep. *Oswald & Ahart 7672*: SE¼ NW¼ Sect. 18, Sanctuary II. Large colony in a ditch between Seven Mile Lane and Tract 6 just N of the equipment storage lot. 27 May 96.

Polygonum arenastrum Jord. ex Boreau – COMMON KNOTWEED. Parking lots, pastures, beds of seasonal marshes, other disturbed areas. Native to Eur. Mid Apr–Oct...

Polygonum hydropiper L. – WATER-PEPPER. Growing on the edge of the Sacramento River at Dan's Camp. Late Sep–Oct...

Polygonum hydropiperoides Michx. – MILD WATER-PEPPER. Locally abundant in shallow water or on wet mud in ditches and other wet places. Mid Jun–Sep. [Includes var. *asperifolium* Stanford] Oswald & Ahart 8082: SE¼ SW¼ Sect. 14, Sanctuary I. Drying slough on the W side of the levee road at the SW corner of Tract 6. 22 Jul 96.

Polygonum lapathifolium L. – WILLOW-WEED. Common in wet places in old fields, along the edge of marshes, on drying beds of seasonal marshes, on the edge of the river. Early May–Oct... Oswald & Ahart 7665: SE¼ SE¼ Sect. 1, Sanctuary II. Locally common on the drying bed of seasonal marsh on the S side of Tract 1.1. 27 May 96.

Polygonum persicaria L. – LADY'S-THUMB. Riprapped bank of the river, seasonal marshes, other vernal wet places. Native to Eur. Mid Jul–Oct... Oswald & Ahart 8097: SE¼ NW¼ Sect. 7, Sanctuary II. In gravel on the edge of the public parking lot. 22 Jul 96.

Polygonum punctatum Elliott – DOTTED SMART-WEED. Edges of marshy sloughs. Mid Jul–Oct... Oswald & Ahart 8077: SE¼ NW¼ Sect. 14, Sanctuary I. Locally common on the edge of the farm road crossing a branch of Angel Slough at the SE corner of Tract 1. 22 Jul 96.

Rumex conglomeratus Murray – GREEN DOCK. Levees, brushy edges of sloughs. Native to Eur. Mid May–Jun. Oswald 7625: NW¼ NE¼ Sect. 4. Common on the brushy edges of sloughs at the Riparian Sanctuary. 22 May 96.

Rumex crispus L. – CURLY DOCK. Common plant of fields, wet meadows, ditches, levees. Native to Eurasia. Late Mar–Jun.

Rumex obtusifolius L. – BITTER DOCK. Bank of the Sacramento River, edges of old oxbows at the Riparian Sanctuary. Native to western Eur. Mid May–Jun. [*R. obtusifolius* ssp. *agrestis* (Fr.) Danser]

Rumex pulcher L. – FIDDLE DOCK. Common plant of grassy fields. Native to Medit. Mid May–Jun. [Includes ssp. *divaricatus* (L.) Murb.]

PORTULACACEAE – PURSLANE FAMILY

Calandrinia ciliata (Ruiz & Pav.) DC. – REDMAIDS. Levee roads, old pastures. Late Mar–Apr. [Includes var. *menziesii* (Hook.) J.F. Macbr.; *C. caulescens* Humb., Bonpl. & Kunth var. *menziesii* A. Gray]

Portulaca oleracea L. – COMMON PURSLANE. Parking lots, other weedy places. Mid Jul. Native to Eur.

PRIMULACEAE – PRIMROSE FAMILY

Anagallis arvensis L. – SCARLET PIMPERNEL. Localized populations in old pasture. Native to Eur. Mid Apr. Oswald 7397: SE¼ NE¼ Sect. 13, Sanctuary II. South paddock of Tract 7. 20 Apr 96.

RANUNCULACEAE – BUTTERCUP FAMILY

Clematis ligusticifolia Nutt. – VIRGIN'S-BOWER. Climbing vine in riparian areas. Early Jun–Sep. Oswald & Ahart 7742: NE¼ NE¼ Sect. 29. Riprapped bank of the Sacramento River at the N end of the Riparian Sanctuary. 10 Jun 96.

Ranunculus muricatus L. – PRICKLE-SEEDED BUTTERCUP. Found in formerly irrigated pasture in Tract 7, Sanctuary II. Native to Eur. Early May.

ROSACEAE – ROSE FAMILY

Prunus cerasifera Ehrh. – CHERRY PLUM. Riparian woodland, banks of ditches, e.g., south edge of Tract 1, Sanctuary I. Used as rootstock for almonds and widely naturalized near the Sacramento River. Native to southeast Eur. With young fruits in late Mar.

Rosa californica Cham. & Schldl. – CALIFORNIA ROSE. Common bramble on the edge of riparian woodlands and sloughs. Mid May–Oct... Oswald 7628: SE¼ NE¼ Sect. 4. Slough near the SE corner of the Riparian Sanctuary. 22 May 96.

Rubus discolor Weihe & Nees – HIMALAYAN BLACKBERRY. Banks of ditches and sloughs, riparian woodland. Native to Asia. Mid May–Jun.

Rubus ursinus Cham. & Schldl. – CALIFORNIA BLACKBERRY. Edge of marshes and sloughs. Late Mar–Apr. Oswald 7253: Branch of Angel Slough at the SE¼ NW¼ Sect. 14, Sanctuary I. Southeast corner of Tract 1. 22 Mar 96. [*R. vitifolius* Cham. & Schldl., *R. vitifolius* ssp. *ursinus* (Cham. & Schldl.) Abrams, *R. macro-petalus* Douglas ex Hook.]

RUBIACEAE – MADDER FAMILY

Cephalanthus occidentalis L. var. *californicus* Benth. – CALIFORNIA BUTTON-WILLOW. Locally abundant shrub in vernal flooded lowlands of old oxbows and in riprap at the Riparian Sanctuary. Early Jun–Jul. Oswald 8061: SE¼ NE¼ Sect. 29. Riprap at the N end of the Riparian Sanctuary. 17 Jul 96.

Galium aparine L. – CLEAVERS. Weedy fields, riprap along Sacramento River. Early May.

SALICACEAE – WILLOW FAMILY

Populus fremontii S. Watson ssp. *fremontii* – FREMONT'S COTTONWOOD. Banks of ditches and canals, along sloughs, along the Sacramento River. Late Mar. Oswald 7250: NW¼ SE¼ Sect. 14, Sanctuary I. Ditch on S edge of Tract 2. 22 Mar 96.

Salix exigua Nutt. – SANDBAR WILLOW. Edge of the Sacramento River, banks of permanent ponds. Late Mar. [*S. exigua* var. *stenophylla* (Rydb.) C.K. Schneid., S.

hindsiana Benth. including var. *leucodendroides* (Rowlee) C.R. Ball & var. *parishiana* (Rowlee) C.R. Ball, *S. sessilifolia* Nutt. var. *hindsiana* (Benth.) Andersson & var. *leucodendroides* C.K. Schneid.]

Salix gooddingii C.R. Ball – GOODDING'S BLACK WILLOW. Banks of canals, ditches, sloughs, and the Sacramento River. Late Mar–Apr. [Includes var. *variabilis* C.R. Ball; *S. nigra* Marshall var. *vallicola* Dudley] *Oswald 7249*: NW¼ SE¼ Sect. 14, Sanctuary I. South edge of Tract 2. 22 Mar 96.

Salix lasiolepis Benth. – ARROYO WILLOW. Shrubby willow along ditches, sloughs, and the Sacramento River. With young fruit in late Mar. [Includes var. *bracelinae* C.R. Ball & var. *sandbergii* (Rydb.) C.R. Ball, *S. tracyi* C.R. Ball] *Oswald 7349*: SE¼ NW¼ Sect. 14, Sanctuary I. Edge of a branch of Angel Slough at the NE corner of Tract 4.2. 10 Apr 96.

SCROPHULARIACEAE – FIGWORT FAMILY

Bacopa rotundifolia (Michx.) Wettst. – ROUND-LEAVED WATER-HYSSOP. Shallow water in marshy places, permanent ponds. Native to central U.S. Mid Jun–Oct. [*B. nobisiana* H. Mason] *Oswald 7830*: SW¼ NW¼ Sect. 7, Sanctuary II. Common in shallow water at the SE corner of Tract 3.3, a permanent pond. 20 Jun 96.

Castilleja attenuata (A. Gray) T. I. Chuang & Heckard – VALLEY-TASSELS. Localized populations in adobe soil of formerly irrigated pasture. Mid Apr–May. [*Orthocarpus attenuatus* A. Gray] *Oswald 7389*: NW¼ SW¼ Sect. 18, Sanctuary II. Localized populations near the S end of Tract 7. 19 Apr 96.

Kickxia elatine (L.) Dumort. – SHARP-LEAVED FLU-ELLIN. Dry beds of seasonal marshes, levees, parking lots, other disturbed places. Native to Eur. Mid Jun–Oct... *Oswald 8063*: SE¼ NE¼ Sect. 29. Riprap at the N end of the Riparian Sanctuary. 17 Jul 96.

Lindernia dubia (L.) Pennell – FALSE PIMPERNEL. Marshy places on the dry beds of seasonal marshes. Mid Jul. [*L. anagallidea* (Michx.) Pennell] *Oswald & Ahart 8083*: SE¼ SW¼ Sect. 14, Sanctuary I. Localized population in moist soil on the edge of a marshy drainage at the NW corner of Tract 9.1 (managed for watergrass). 22 Jul 96.

Mimulus guttatus Fisch. ex DC. – SEEP MONKEY-FLOWER. Marshy places, old pasture. Early Apr–May. [*M. guttatus* var. *depauperatus* (A. Gray) A. L. Grant, *M. micranthus* A. Heller; *M. guttatus* ssp. *micranthus* (A. Heller) Munz] *Oswald 7399*: SE¼ NE¼ Sect. 13, Sanctuary II. Scattered plants in formerly irrigated pasture in the S paddock of Tract 7. Both large- and small-flowered plants grow in Tract 7, the latter would correspond to the ssp. *micranthus*. 20 Apr 96.

Mimulus pilosus (Benth.) S. Watson – DOWNY MIMETANTHE. Locally common in moist sand in riprap along the Sacramento River. Mid May–Jun. [*Mimetanthe pilosa* (Benth.) Greene] *Oswald & Ahart 7741*: NE¼

NE¼ Sect. 29. Bank of the Sacramento River at the N end of the Riparian Sanctuary. 10 Jun 96.

Mimulus tricolor Hartw. ex Lindl. – TRICOLORED MONKEY-FLOWER. Uncommon in formerly irrigated pasture. Mid Apr. *Oswald 7396*: SE¼ NE¼ Sect. 13, Sanctuary II. South paddock of Tract 7. 20 Apr 96.

Verbascum blattaria L. – MOTH MULLEIN. Roadsides, fields, banks of Sacramento River. Native to Eurasia. Mid May–Oct... *Oswald & Ahart 7740*: NE¼ NE¼ Sect. 29. Riprapped bank of the Sacramento River at the N end of the Riparian Sanctuary. Plants with white rather than yellow flowers are common here. 10 Jun 96.

Verbascum thapsus L. – WOOLLY MULLEIN. Weedy fields at the Riparian Sanctuary. Native to Eurasia.

Veronica anagallis-aquatica L. – WATER SPEEDWELL. Moist places along the Sacramento River. Late May–Jun. [*V. anagallis* L.]

Veronica peregrina L. ssp. *xalapensis* (Humb., Bonpl. & Kunth) Pennell – PURSLANE SPEEDWELL. Margins of vernal pools, wet places in old pastures. Early Apr–May. *Oswald 7356*: NW¼ SW¼ Sect. 18, Sanctuary II. South end of Tract 7. 10 Apr 96.

SIMAROUACEAE – QUASSIA FAMILY

Ailanthus altissima (Mill.) Swingle – TREE-OF-HEAVEN. A single small tree grows on the upper bank of the river near the north end of the Riparian Sanctuary. Native to eastern Asia. In fruit early Jun.

SOLANACEAE – NIGHTSHADE FAMILY

Datura wrightii Regel – THORN-APPLE. Scattered plants in sandy gravel on the island in the Sacramento River at the north end of the Riparian Sanctuary. Mid Jul–Oct (identified with binoculars from Dan's Camp). [*D. innoxia* J.S. Mill., *D. meteloides* A. DC. misapplied]

Nicotiana acuminata (Graham) Hook. var. *multiflora* (Phil.) Reiche – MANY-FLOWERED TOBACCO. In riprap along the Sacramento River. Native to S. Amer. Early Jun. *Oswald & Ahart 7736.1*: NE¼ NE¼ Sect. 29. North end of the Riparian Sanctuary. 10 Jun 96.

Nicotiana glauca Graham – TREE TOBACCO. Bank of Sacramento River at Dan's Camp. Native to S. Amer. Late Mar–Jun. *Oswald 7276*: NW corner Sect. 28. North end of Riparian Sanctuary. 29 Mar 96.

Nicotiana quadrivalvis Pursh – INDIAN TOBACCO. Growing on the riprapped bank of the Sacramento River. Early Jun. *Oswald & Ahart 7736*: NE¼ NE¼ Sect. 29. North end of the Riparian Sanctuary. 10 Jun 96.

Physalis lanceifolia Nees – LANCE-LEAVED GROUND-CHERRY. Pond edges, dry beds of seasonal marshes, disturbed places. Mid Jun–Sep. [*P. angulata* L. var. *lanceifolia* (Nees) Waterf.] *Oswald 7822*: SE¼ NW¼ Sect. 7, Sanctuary II. Growing in gravel on the hiking trail near the public parking lot. 20 Jun 96.

Solanum americanum Mill. – AMERICAN BLACK NIGHTSHADE. Among tules along sloughs and marshy ditches, on the bank of the Sacramento River. Late May (with both flowers & fruits)–Oct... [*S. nodiflorum* Jacq.] *Oswald* 7633: SE¼ NW¼ Sect. 14, Sanctuary I. Branch of Angel Slough at SE corner of Tract 1. 23 May 96.

TAMARICACEAE – TAMARISK FAMILY

Tamarix parviflora DC. – SMALL-FLOWERED TAMARISK. On a gravel bar in Sacramento River. Late Mar. [*T. tetrandra* Pall. misapplied]

URTICACEAE – NETTLE FAMILY

Urtica dioica ssp. *holosericea* (Nutt.) Thorne – HOARY CREEK NETTLE. Marsh edges, along ditches and sloughs. Late May–Oct. [*U. dioica* ssp. *gracilis* (Aiton) Selander var. *holosericea* (Nutt.) C.L.Hitchc., *U. gracilis* Aiton var. *holosericea* (Nutt.) Jeps., *U. holosericea* Nutt., *U. breweri* S. Watson, *U. serra* Blume misapplied] *Oswald & Ahart* 7750: SE¼ SW¼ Sect. 33. Common in the weedy field along the slough on the E side of Fish Camp, Riparian Sanctuary. 10 Jun 96.

Urtica urens L. – BURNING NETTLE. Moist soil on the margins of sloughs. Native to Eur. Late Sep–Oct... *Oswald* 8290: SE¼ NW¼ Sect. 15. Drying margin of Angel Slough on the W side of Tract 4.1. 30 Sep 96.

VERBENACEAE – VERVAIN FAMILY

Phyla nodiflora var. *rosea* (D. Don) Moldenke – ROSY LIPPIA. Riprapped bank of the Sacramento River, drying beds of some vernal pools, other vernal wet places. Native to S. Amer. Mid May–Oct... [*Lippia nodiflora* var. *rosea* (D. Don) Munz] *Oswald* 7619: NE¼ NE¼ Sect. 29. Riprap at the N end of the Riparian Sanctuary. 22 May 96.

Verbena bonariensis L. – SOUTH AMERICAN VERVAIN. Weedy field at the north end of the Riparian Sanctuary, riprapped bank of the Sacramento River. Native to S. Amer. Mid Jun–Oct. *Oswald* 8059: SE¼ NE¼ Sect. 29. Plants to > 1 m tall growing in riprap at the N end of the Riparian Sanctuary. 17 Jul 96.

Verbena hastata L. – HALBERD-LEAVED VERVAIN. Marshy places along sloughs, edge of permanent ponds. Early Jun–Sep. [Includes var. *scabra* Moldenke] *Oswald & Ahart* 7762: SE¼ NW¼ Sect. 14, Sanctuary I. Growing among tules and cattails in a branch of Angel Slough at the SE corner of Tract 1. 10 Jun 96.

Verbena lasiostachys Link var. *scabrida* Moldenke – WESTERN VERVAIN. Roadsides, slough margins. Early Jun. [*V. robusta* Greene] *Oswald & Ahart* 7752: SE¼ NE¼ Sect. 4. Edge of the slough on the E side of Goodman Opening near the SE corner of the Riparian Sanctuary. 10 Jun 96.

Verbena littoralis Humb., Bonpl. & Kunth – SHORE VERVAIN. Banks of Sacramento River. Native to Cent. and S. Amer. Early Jun–Oct. [*V. brasiliensis* Vell.] *Oswald* 8060: SE¼ NE¼ Sect. 29. Plants to > 1 m tall

growing in riprap the N end of the Riparian Sanctuary. 17 Jul 96.

VISCACEAE – MISTLETOE FAMILY

[*Loranthaceae*]

Phoradendron macrophyllum (Engelm.) Cockerell – BIG-LEAVED MISTLETOE. On cottonwood at the Riparian Sanctuary. Flowering interval not determined. [*P. flavescens* (Pursh) Nutt. var. *macrophyllum* Engelm., *P. tomentosum* (DC.) Engelm. ex A. Gray ssp. *macrophyllum* (Engelm.) Wiens, *P. longispicum* Trel.]

VITACEAE – GRAPE FAMILY

Vitis californica Benth. – CALIFORNIA WILD GRAPE. Banks of ditches, along sloughs, along the Sacramento River. Mid May–Jun.

ZYGOPHYLLACEAE – CALTROP FAMILY

Tribulus terrestris L. – PUNCTURE-VINE. Weed of roadsides, other disturbed places. Native to Medit. Mid Jul–Oct.

MONOCOT FLOWERING PLANTS

ALISMATACEAE – WATER-PLANTAIN FAMILY

Alisma plantago-aquatica L. – WATER-PLANTAIN. Marshy sloughs, permanent ponds. Late May–Jul. [Includes var. *americanum* Schult. & Schult.f.; *A. plantago* L., *A. subcordatum* Raf., *A. triviale* Pursh] *Oswald & Ahart* 7764: SE¼ SW¼ Sect. 14, Sanctuary I. Scattered plants on the edge of a shallow, vernal flooded slough near the center of the E side of Tract 5 (W side of dike at the SW corner of Tract 6) 10 Jun 96.

Damasonium californicum Torr. ex Benth. – FRINGED WATER-PLANTAIN. Growing in standing water of marshy places. Mid Apr (flowers and fruits). [*Machaerocarpus californicus* (Torr. ex Benth) Small] *Oswald* 7411: SW¼ NE¼ Sect. 12, Sanctuary II. Standing water of a marshy drainage on the S side of the levee at the SW corner of Tract 3.4. 20 Apr 96.

Echinodorus berteroi (Spreng.) Fassett – BURHEAD. Permanent ponds, drying beds of vernal flooded sloughs. Late May–Oct. [Includes var. *lanceolatus* (Engelm.) Fassett; *E. cordifolius* (L.) Griseb. misapplied, *E. rostratus* (Nutt.) Engelm. ex A. Gray] *Oswald & Ahart* 7763: SE¼ SW¼ Sect. 14, Sanctuary I. Locally abundant on the drying bed of a shallow, vernal flooded slough on the W side of the dike at the SW corner of Tract 6. 10 Jun 96.

Sagittaria latifolia Willd. – TULE-POTATO. Just west of Sanctuary I on the edge of Angel Slough near the NW corner of Tract 4.1.

Sagittaria longiloba Engelm. – LONG-LOBED ARROWHEAD. Ditches, flooded seasonal marshes. Mid Jul. [*S. greggii* J.G.Sm.] *Oswald & Ahart* 8087: SW¼ SW¼ Sect. 13, Sanctuary I. Common in shallow water of a roadside ditch on the E side of Tract 10.2. 22 Jul 96.

Sagittaria montevidensis Cham. & Schldl. ssp. *calycina* (Engelm.) Bogin – MONTEVIDEO ARROWHEAD. Common in shallow water of permanent ponds and other marshy places. Mid Jun–Oct. [*S. montevidensis* Cham. & Schlecht.] *Oswald 7831*: SE¼ NE¼ Sect. 12, Sanctuary II. South end of Tract 3.4, a permanent pond. 20 Jun 96.

CYPERACEAE – SEDGE FAMILY

Carex barbarae Dewey – SANTA BARBARA SEDGE. Rhizomatous sedge forming large, spreading colonies on the banks of canals, along sloughs, in sandy lowlands in valley oak woodland, and on the upper bank of the river. Late Mar. *Oswald 7345*: NE¼ SE¼ Sect. 14, Sanctuary I. South side of ranch road at the N end of Tract 7.2. 10 Apr 96.

Carex densa (L.H.Bailey) L.H.Bailey – DENSE SEDGE. Densely tufted sedge in ditches, along canals, along the edge of permanent ponds, in vernal flooded pastures and meadows. Late Mar. [*C. breviligulata* Mack., *C. vicaria* L.H.Bailey in part] *Oswald 7346*: NE¼ SE¼ Sect. 14, Sanctuary I. South side of ranch road at the N end of Tract 7.2. 10 Apr 96.

Carex praeegracilis W.Boott – CLUSTERED FIELD SEDGE. Loosely tufted sedge in shallow roadside ditches, wet places in old pasture. Early Apr. *Oswald 7347*: NE¼ SE¼ Sect. 14, Sanctuary I. South side of ranch road at the N end of Tract 7.2. 10 Apr 96.

Carex nudata W.Boott – TORRENT SEDGE. Forming large tufts on the waterline of the Sacramento River.

Carex vulpinoidea Michx. – FOX SEDGE. Locally common tufted sedge along canals and permanent ponds in Sanctuary I. Mid May. CNPS List 2. *Oswald & Ahart 7754*: NE¼ SE¼ Sect. 14. Just above the high-water line of the canal at the NE corner of Tract 7.2. 10 Jun 96.

Cyperus difformis L. – SMALL-FLOWERED CYPERUS. Marshy places. Native to Old World. Mid Jun. *Oswald 7832*: NW¼ NW¼ Sect. 7, Sanctuary II. Locally abundant in a marshy drainage at the NE corner of Tract 3.1. 20 Jun 96.

Cyperus eragrostis Lam. – TALL CYPERUS. Edges of seasonal marshes, along canals and ditches, in vernal wet meadows, on the bank of the Sacramento River. Early May.

Cyperus erythrorhizos Muhl. – RED-ROOTED CYPERUS. Common along wet drainages in seasonal marshes, muddy margins of receding sloughs. Mid Jun. *Oswald 7828*: SW¼ NW¼ Sect. 7. Drainage in the SW corner end of Tract 2. 20 Jun 96. *Oswald 8291*: SE¼ NW¼ Sect. 15. Drying margin of Angel Slough on the W side of Tract 4.1. 30 Sep 96.

Cyperus strigosus L. – FALSE NUTSEGE. Along the Sacramento River. Early Jun. *Oswald & Ahart 7730*: NE¼ NE¼ Sect. 29. Ripped bank at the N end of the Riparian Sanctuary. 10 Jun 96.

Eleocharis macrostachya Britton ex Small – PALE SPIKE-RUSH. Forming large colonies in shallow water

and later on the drying beds of ditches, ponds, and vernal pools. Early Apr. [*E. palustris* (L.) Roem. & Schult.]

Eleocharis obtusa var. *engelmannii* (Steud.) Gilly – ENGELMANN'S SPIKE-RUSH. Abundant on the drying beds of seasonal marshes. Early May. [*E. monticola* Fernald, *E. engelmannii* Steud., *E. ovata* (Roth) Roem. & Schult.] *Oswald 7542*: SW¼ NW¼ Sect. 7, Sanctuary II. North end of Tract 4.2 (seasonal marsh). 09 May 96.

Eleocharis quadrangulata (Michx.) Roem. & Schult. – SQUARE-STEMMED SPIKE-RUSH. Large colonies in shallow water on the south side of Tract 3.1, a permanent pond in Sanctuary II. Early Jul. CNPS List 2. *Oswald & Ahart 8092*: NE¼ NE¼ Sect. 12. 22 Jul 96.

Scirpus acutus Muhl. ex Bigelow var. *occidentalis* (S.Watson) Beetle – HARD-STEMMED TULE. Forming large colonies in permanent ponds, sloughs, and ditches. Early Apr. *Oswald & Ahart 7656*: SW¼ NW¼ Sect. 7, Sanctuary II. Drainage on the drying bed of seasonal marsh at the SW corner of Tract 2. 27 May 96.

Scirpus maritimus L. – SALT MARSH BULRUSH. Moist soil in marshy places. Mid Jul. [*S. paludosus* A. Nelson, *S. robustus* Pursh misapplied, *S. maritimus* var. *paludosus* (A. Nelson) Kük.] *Oswald & Ahart 8094*: SW¼ SW¼ Sect. 6, Sanctuary II. Edge of a marshy drainage on the dry bed of seasonal marsh in the NE corner of Tract 1.1. 22 Jul 96.

Scirpus mucronatus L. – ROUGH-SEEDED BULRUSH. Marshy places along ditches, edges of permanent ponds. Native to Eurasia. Early Jun. *Oswald 7836*: SW¼ NW¼ Sect. 7, Sanctuary II. Marshy drainage in the SW corner of Tract 2. 20 Jun 96.

Scirpus tuberosus Desf. – TUBEROUS BULRUSH. Spreading colonies on the drying beds of seasonal marshes. Native to Eur. Early Jun. [*S. maritimus* L. var. *tuberosus* (Desf.) Roem. & Schult.] *Oswald & Ahart 7757*: NE¼ SE¼ Sect. 14, Sanctuary I. Northeast corner of Tract 7.2. 10 Jun 96.

HYDROCHARITACEAE – WATERWEED FAMILY

[Includes *Najadaceae* (= *Naiadaceae*)]

Najas graminea Delile – RICEFIELD WATER-NYMPH. Submersed plant in permanent ponds. Native to tropical Asia. Mid Jul. *Oswald & Ahart 8093*: NE¼ NE¼ Sect. 12, Sanctuary II. Shallow water at the S side of Tract 3.1. 22 Jul 96.

JUNCACEAE – RUSH FAMILY

Juncus balticus Willd. var. *balticus* – BALTIC RUSH. Rush with running rhizomes forming spreading colonies in wet to moist soil of ditches and ponds. Early Apr. [Includes var. *montanus* Engelm. & var. *eremicus* Jeps.]

Juncus bufonius L. var. *bufonius* – COMMON TOAD RUSH. Common annual of pastures, fields. Early May.

Juncus bufonius var. *congestus* Wahlenb. – CONGESTED TOAD RUSH. Permanent pond edges, wet places in pastures. Late May. [*J. bufonius* var. *congdonii*

(S. Watson) J.T. Howell] *Oswald & Ahart 7658*: SW¼ NE¼ Sect. 12, Sanctuary II. Locally abundant in wet soil at the SW corner of Tract 3.4. 27 May 96.

Juncus effusus var. *pacificus* Fernald & Wieg. – PACIFIC RUSH. Densely tufted rush on the riprapped bank of the river. Early Jun. *Oswald & Ahart 7731*: NE¼ NE¼ Sect. 29. North end of the Riparian Sanctuary. 10 Jun 96.

Juncus oxymeris Engelm. – POINTED RUSH. Drying edges of marshy places. Late May. *Oswald & Ahart 7659*: SW¼ NE¼ Sect. 12, Sanctuary II. Locally abundant in a marshy drainage on the S side of the levee road at the SW corner of Tract 3.4. 27 May 96.

POACEAE – GRASS FAMILY

[Gramineae]

Agrostis avenacea J.G. Gmel. – AVENS BENTGRASS. Locally abundant on the edge of sloughs and permanent ponds. Native to S. Pacific islands. Mid May. *Oswald & Ahart 7663.1*: SW¼ NE¼ Sect. 12, Sanctuary II. Marshy drainage on the S side of the levee at the SW corner of Tract 3.4. 27 May 96.

Alopecurus pratensis L. – MEADOW FOXTAIL. Loosely tufted perennial in formerly irrigated pasture where probably seeded long ago. Native to Eurasia. Mid Apr. *Oswald 7394*: SE¼ NE¼ Sect. 13, Sanctuary II. South paddock of Tract 7. 20 Apr 96.

Arundo donax L. – GIANT-REED. Common on a gravel bar on the west side of the Sacramento River; at least one seedling is growing in a weedy field at Fish Camp at the Riparian Sanctuary. Native to Eur.

Avena fatua L. – WILD OAT. Levees, roadsides, grassy fields, disturbed places. Late Mar.

Bromus diandrus Roth – RIPGUT BROME. Widespread weed on levees, in fields, in disturbed places. Native to Eur. Early Apr. [*B. rigidus* Roth including var. *gussonei* (Parl.) Coss. & Durieu misapplied]

Bromus hordeaceus L. – SOFT CHESS. Grassy fields, weedy places. Native to Eur. Early Apr. [*B. mollis* L., *B. scoparius* L.]

Bromus madritensis ssp. *rubens* (L.) Husn. – RED BROME. In gravel at the equipment storage lot on Seven Mile Lane. Early Apr. Native to Eur. [*B. rubens* L.]

Bromus racemosus L. – SMOOTH-FLOWERED SOFT CHESS. Locally abundant in vernal wet places. Native to Eur. Late May. [Included in *B. hordeaceus* L. in The Jepson Manual] *Oswald & Ahart 7660*: SW¼ NE¼ Sect. 12, Sanctuary II. Marshy drainage on the S side of the levee at the SW corner of Tract 3.4. 27 May 96.

Crypsis schoenoides (L.) Lam. – SWAMP PRICKLEGRASS. Common to locally abundant on dry beds of seasonal marshes. Native to Eur. Mid Jun. *Oswald 7826*: SW¼ NW¼ Sect. 7, Sanctuary II. Southwest corner of Tract 2. 20 Jun 96.

Cynodon dactylon (L.) Pers. – BERMUDA-GRASS. Riprapped bank of the river, margins of ponds, formerly

irrigated pasture. Native to Afr. Early Apr. *Oswald & Ahart 7668*: NW¼ SW¼ Sect. 18, Sanctuary II. South paddock of Tract 7. 27 May 96.

Echinochloa colona (L.) Link – JUNGLE-RICE. In formerly irrigated pasture in Tract 7, Sanctuary II. Native to Eurasia. Mid Apr.

Echinochloa crus-galli (L.) P. Beauv. – WATER-GRASS. Seasonal marshes, edge of the Sacramento River, other marshy places. This is a favorite food of waterfowl, and several of the tracts in Sanctuary I are specifically managed to encourage this grass. Native to Eurasia, Afr. Late May. [Includes var. *zelayensis* (Humb., Bonpl. & Kunth) Hitchc.] *Oswald & Ahart 7664*: SE¼ SE¼ Sect. 1, Sanctuary II. South side of Tract 1.1. 27 May 96.

Elymus glaucus Buckley ssp. *glaucus* – BLUE WILD-RYE. Fields, banks, and woodland along the Sacramento River. Mid May. *Oswald & Ahart 7732*: NE¼ NE¼ Sect. 29. Riprapped bank of the Sacramento River at the N end of the Riparian Sanctuary. 10 Jun 96.

Eragrostis hypnoides (Lam.) Britton, Sterns & Poggenb. – CREEPING LOVEGRASS. Moist soil on the edge of sloughs. Late Sep. *Oswald 8292*: SE¼ NW¼ Sect. 15. Prostrate, mat-forming grass on the drying margin of Angel Slough on the W side of Tract 4.1. 30 Sep 96.

Eragrostis pectinacea (Michx.) Nees var. *pectinacea* – PURPLE LOVEGRASS. Along the Sacramento River. Early Jun. [*E. diffusa* Buckl.] *Oswald & Ahart 7733*: NE¼ NE¼ Sect. 29. Riprap at the N end of the Riparian Sanctuary. 10 Jun 96.

Festuca arundinacea Schreb. – TALL FESCUE. Tufted perennial in wet places in formerly irrigated pasture in Tract 7, Sanctuary II, where probably originally seeded. Mid Apr.

Holcus lanatus L. – COMMON VELVETGRASS. Ditch banks, roadsides. Early Jun. [*Notholcus lanatus* (L.) Nash] *Oswald & Ahart 7761*: NE¼ SE¼ Sect. 14, Sanctuary I. Shallow ditch along the farm road on the N side of Tract 7.2. 10 Jun 96.

Hordeum brachyantherum Nevski ssp. *brachyantherum* – MEADOW BARLEY. Loosely tufted perennial in wet places in old pasture. Mid Apr. [*H. nodosum* L.] *Oswald 7398*: SE¼ NE¼ Sect. 13, Sanctuary II. South paddock of Tract 7. 20 Apr 96.

Hordeum depressum (Scribn. & J.G. Sm.) Rydb. – LOW BARLEY. Moist adobe soil in old pasture. Early May. *Oswald 7550*: NW¼ SW¼ Sect. 18, Sanctuary II. Southwest corner of Tract 7. 09 May 96.

Hordeum murinum ssp. *leporinum* (Link) Arcang. – HARE WALL BARLEY. Weedy fields, roadsides, disturbed places. Native to Eur. Late Mar. [*H. leporinum* Link, *H. murinum* L.]

Leersia oryzoides (L.) Sw. – RICE CUTGRASS. Ditches, wet drainages. Early Jun. *Oswald & Ahart 7760*: SW¼ SE¼ Sect. 14, Sanctuary I. Wet drainage on

the drying bed of seasonal marsh near the center of the W side of Tract 7.1. 10 Jun 96.

Leptochloa fascicularis (Lam.) A.Gray – BEARDED SPRANGLETOP. Drying beds of seasonal marshes. Late May. [*Diplachne fascicularis* (Lam.) P.Beauv.] *Oswald & Ahart 7664.1*: SE¼ SE¼ Sect. 1, Sanctuary II. Locally abundant on the S side of Tract 1.1. 27 May 96.

Lolium multiflorum Lam. – ANNUAL RYEGRASS. Common and widespread in grassy and weedy fields, riprap along Sacramento River, other disturbed places. Native to Eur. Early Apr. *Oswald & Ahart 7734*: NE¼ NE¼ Sect. 29. Riprap at the N end of the Riparian Sanctuary. 10 Jun 96.

Leymus triticoides (Buckley) Pilg. – ALKALI RYEGRASS. Perennial with creeping rhizomes on the bank of the Sacramento River. Early Jun.

Muhlenbergia rigens (Benth.) Hitchc. – DEERGRASS. Five large tufts grow in a marshy place on the south side of the levee at southwest corner Tract 3.4, Sanctuary II. Mid Aug.

Panicum dichotomiflorum Michx. – SMOOTH WITCHGRASS. Annual grass on the drying beds of seasonal marshes, along the river. Native to eastern US. Early Jun. *Oswald & Ahart 7755*: NE¼ SE¼ Sect. 14, Sanctuary I. Northeast corner of Tract 7.2. 10 Jun 96.

Paspalum dilatatum Poir. – DALLISGRASS. Wet places in old fields, along the edge of permanent marshes, banks of canals, other wet places. Native to S. Amer. Early May. *Oswald & Ahart 7747*: NE¼ NE¼ Sect. 29. Riprap at the N end of the Riparian Sanctuary. 10 Jun 96.

Paspalum distichum L. – KNOTGRASS. Edges of ponds, floor of seasonal marshes, edge of the Sacramento River. Early Jun. *Oswald & Ahart 7759*: SW¼ SE¼ Sect. 14, Sanctuary I. Seasonal marsh near the center of the W side of Tract 7.1. 10 Jun 96.

Phalaris aquatica L. – HARDING-GRASS. Roadside bunchgrass. Native to Medit. Eur. Early Jun. [*P. stenoptera* Hack., *P. tuberosa* L. var. *stenoptera* (Hack.) Hitchc.]

Phalaris lemmonii Vasey – LEMMON'S CANARY-GRASS. Locally common in formerly irrigated pasture. Mid Apr. *Oswald 7400*: SE¼ NE¼ Sect. 13, Sanctuary II. South paddock of Tract 7. 20 Apr 96.

Phalaris paradoxa L. – PARADOX CANARY-GRASS. Common to locally abundant on levees, in old pastures. Native to Medit. Eur. Early May. *Oswald 7635*: NE¼ NW¼ Sect. 23, Sanctuary I. Levee on the W edge of Tract 9.2. 23 May 96.

Poa annua L. – ANNUAL BLUEGRASS. Along roads, on levees. Native to Eur. Late Mar. *Oswald 7251*: NW¼ SE¼ Sect. 14, Sanctuary I. North end of levee between tracts 6 and 7.1. 22 Mar.]

Polypogon maritimus Willd. – MEDITERRANEAN BEARDGRASS. Locally abundant in marshy places. Native to Medit. Eur., Afr. Late May. *Oswald & Ahart 7662*:

SW¼ NE¼ Sect. 12, Sanctuary II. South side of the levee road at the SW corner of Tract 3.4. 27 May 96.

Polypogon monspeliensis (L.) Desf. – ANNUAL BEARDGRASS. Locally abundant on moist soil of old pastures, on marsh edges, in riprap along the Sacramento River. Native to southern Eur. Early May. *Oswald & Ahart 7663*: SW¼ NE¼ Sect. 12, Sanctuary II. South side of the levee road at the SW corner of Tract 3.4. 27 May 96.

Setaria pumila (Poir.) Roem. & Schult. – YELLOW BRISTLEGRASS. Drying beds of seasonal marshes, along the river. Native to Eur. Mid Jul. [*S. glauca* (L.) P. Beauv., *S. lutescens* (Weigel) F.T.Hubb., *Chaetochloa lutescens* (Weigel) Stuntz] *Oswald & Ahart 8086*: SE¼ SW¼ Sect. 14, Sanctuary I. Localized population in the NW corner of Tract 9.1 (managed for watergrass). 22 Jul 96.

Setaria sphacelata (Schum.) Moss – AFRICAN BRISTLEGRASS. Growing near the waterline of drying seasonal marshes. Native to Afr. Mid May. *Oswald 7630*: NE¼ SE¼ Sect. 14, Sanctuary I. Locally common at the base of the levee at the NE corner of Tract 7.2. 23 May 96.

Sorghum halepense (L.) Pers. – JOHNSONGRASS. Roadsides, levees, grassy fields, ripped banks. Native to Medit. Early Apr. *Oswald & Ahart 7742.2*: NE¼ NE¼ Sect. 29. Riprap at the N end of the Riparian Sanctuary. 10 Jun 96.

Vulpia bromoides (L.) Gray – SIX-WEEKS FESCUE. Old pastures. Native to Eur. Late May. [*Festuca bromoides* L., *F. dertonensis* (All.) Asch. & Graebn.] *Oswald & Ahart 7671.1*: NW¼ SW¼ Sect. 18, Sanctuary II. Scattered plants in formerly irrigated pasture in the S paddock of Tract 7. 27 May 96.

Vulpia myuros var. *hirsuta* (Hack.) Asch. & Graebn. – FOXTAIL FESCUE. Weedy grass in disturbed places. Native to Eur. Early Apr. [*Festuca megalura* Nutt.]

PONTEDERIACEAE – PICKEREL-WEED FAMILY

Heteranthera limosa (Sw.) Willd. – MARSH MUD-PLANTAIN. Marshy drainages, shallow water in permanent ponds. Native to eastern & central US. Mid Jul. *Oswald & Ahart 8084*: SE¼ SW¼ Sect. 14, Sanctuary I. Common in a marshy drainage at the NW corner of Tract 9.1 (managed for watergrass). 22 Jul 96.

POTAMOGETONACEAE – PONDWEED FAMILY

Potamogeton foliosus Raf. var. *foliosus* – LEAFY PONDWEED. Submersed in permanent ponds. Mid Jul (with fruit). *Oswald & Ahart 8091*: NW¼ NE¼ Sect. 12, Sanctuary II. Southwest corner of Tract 3.2. 22 Jul 96.

Potamogeton nodosus Poir. – LONG-LEAVED PONDWEED. Aquatic plant with both floating and submersed leaves in permanent ponds. Plants vegetative in mid Jul. *Oswald & Ahart 8090*: NW¼ NE¼ Sect. 12, Sanctuary

II. Locally common in water ca. 4–5 dm deep at the SW corner of Tract 3.2. 22 Jul 96.

TYPHACEAE – CATTAIL FAMILY

Typha domingensis Pers. – SOUTHERN CATTAIL.
Forming extensive colonies in permanent ponds and ditches. Late May–Jun.

Typha latifolia L. – BROAD-LEAVED CATTAIL.
Forming extensive colonies in permanent ponds and ditches. Mid May–Jun.

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