

APPENDICES

- A. Grazing and Haying NWRS Legal and Policy Considerations
- B. Bitter Creek National Wildlife Refuge plant taxa.
- C. DeVries 2009 Plant Survey Report.
- D. Record of San Joaquin Kit Fox sightings at Bitter Creek National Wildlife Refuge.
- E. Bitter Creek National Wildlife Refuge residual dry matter (RDM) monitoring data.
- F. Glossary of Terms
- G. Final Report Review Comments

Appendix A. Grazing and Haying NWRS Legal and Policy Considerations

Background

Livestock grazing and haying occur on a number of units of the National Wildlife Refuge System (NWRS). Data for fiscal years 1999-2006 reveal that, on average, grazing occurred on 105 refuges annually (range = 67-114 refuges/yr) and totaled over 1.1 million acres per year (range = 911,460-1,388,531 ac/yr). On average, haying and/or mowing occurred on 211 refuges annually (range = 200-229 refuges/yr) and totaled over 85 thousand acres (range = 67, 552-105,501 ac/yr).¹

In selected circumstances and when properly managed, livestock grazing and haying can be valuable and cost-effective tools to help a refuge achieve its wildlife and habitat goals and objectives. Examples include short-term, high-intensity grazing at a particular time of year to help control invasive plants and thereby give native species a more competitive advantage; or using grazing or haying to remove tall or decadent grasses and provide short, vigorous grass fields for use by migrating or wintering geese and sandhill cranes. These management practices help refuges to achieve refuge purpose(s), goals, and objectives; and provide permittees with a financial return (in the form of forage). Grazing and haying in these cases are considered “refuge management economic activities.”

For a variety of reasons, grazing and haying are often managed differently on national wildlife refuges than on other public lands. The purpose of this write up is to briefly highlight some of the major legal and policy considerations associated with grazing and haying on refuges.

NWRS Administration Act (16 U.S.C. 668dd-668ee and House Report 105-106)

Almost 100 years after its establishment, the NWRS received organic legislation which provided policy direction and management standards applicable to all refuges. This statute, the National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57), amended the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee).

Included in the NWRS Improvement Act is the first statutory mission statement for the NWRS: “The mission of the [National Wildlife Refuge] System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” Importantly, the mission describes a national network of lands and waters; and states that its purpose is conservation, management, and restoration of fish, wildlife, plants, and their habitats.

The NWRS has more units and more acreage than the better-known National Park System. It is unique in the Nation and World in its scope and its primary-purpose management orientation. In

1. Data for fiscal years (FY) 1999-2003 from the Refuge Comprehensive Accomplishment Report; for FY 2004 from the Refuge Annual Performance Report; and for FYs 2005-2006 from the Refuge Annual Performance Plan. Grazing data exclude Yukon Delta NWR which reported over 900,000 acres of grazing by reindeer in FY 2001-2003. Separate data for haying alone are not available.

sharp contrast to other Federal land management systems (e.g., National Forests administered by the U.S. Forest Service and Public Lands administered by the U.S. Bureau of Land Management), the NWRS is not a multiple-use management system, and is not managed for commodity production, or on the basis of sustained-yield economic principles. Refuges are managed first and foremost for fish, wildlife, plants, and their habitats (House Report 105-106, sec. 5). This is often referred to as the “Wildlife First” management mandate.

The NWRS Improvement Act also established a three-tiered hierarchy for management of the NWRS.

1. Every refuge is managed first to fulfill the purpose(s) for which it was established and the NWRS mission, including the conservation, management, and restoration of fish, wildlife, plants, and their habitats.
2. The second management priority is for wildlife-dependent public uses. There are six of these congressionally identified uses: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Refuges grant these six wildlife-dependent public uses special consideration in planning and management. When on a refuge-specific basis one or more of these uses is determined compatible with the refuge purpose(s) and the NWRS mission, the refuge is to strongly encourage (facilitate) the use(s).
3. The third or lowest NWRS management priority is for other general public uses (i.e., everything else). This includes other types of recreation, economic uses, and other public uses.

Specific use of grazing or haying as a management technique to help achieve refuge wildlife and habitat goals and objectives is a first-tier management priority. When grazing and haying are not specifically used on a refuge to help achieve wildlife and habitat goals and objectives, then these activities fall into the third-, lowest-priority tier.

NWRS Goals (601 FW 1)

Consistent with relevant Federal statutes, the U.S. Fish and Wildlife Service (FWS) has adopted the following five goals for the planning, administration, management, and growth of the NWRS (601 FW 1.8).

- A. Conserve a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered.

- B. Develop and maintain a network of habitats for migratory birds, anadromous and interjurisdictional fish, and marine mammal populations that is strategically distributed and carefully managed to meet important life history needs of these species across their ranges.
- C. Conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and seascapes that are unique, rare, declining, or underrepresented in existing protection efforts.
- D. Provide and enhance opportunities to participate in compatible wildlife-dependent recreation (hunting, fishing, wildlife observation and photography, and environmental education and interpretation).
- E. Foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

Although the NWRS has a number of goals, they all focus on the conservation of fish, wildlife, plants, and their habitats; or providing opportunities for compatible, wildlife-dependent public use opportunities. There are no NWRS goals associated with commodity production or economic uses.

Compatibility and Economic Uses (603 FW 2; 5 RM 17; and 50 C.F.R. 25, 26, and 29)

Another important, bedrock concept for managing units of the NWRS is that (with a few exceptions for waterfowl production areas and refuges in Alaska) refuges are, by law, closed to all public access and use unless and until they are formally opened (603 FW 2.3). FWS follows a refuge-specific, public process to open a refuge to a use or program of uses. This includes conducting scientific and technical analyses, and making a legal decision called a compatibility determination. A proposed use, including grazing or haying, can only be allowed on a refuge if it is determined compatible.

A compatible use is one which, in the, "...sound professional judgment [of the Refuge Manager], will not materially interfere with or detract from..." fulfilling the NWRS mission or the refuge's purpose(s) (603 FW 2.6 B.). Among other things, a compatibility determination involves evaluation of a proposed use's effects upon refuge fish, wildlife, plants, and their habitats; potential conflicts with other refuge uses, especially wildlife-dependent public uses; indirect, future, and cumulative effects; precedence-setting implications; maintenance and monitoring costs; and off-refuge opportunities to exercise the use in question. Because refuges are closed until opened, if we do not have adequate information to find a proposed use compatible, it can not be officially determined compatible and therefore can not be allowed (603 FW 2.11 E.). Opportunity is provided for public review and comment in the compatibility process (603 FW 2.12 A. (9)), and there are no administrative appeal provisions for compatibility determinations (603 FW 2.16).

There are specific FWS regulations which address economic uses of refuges. At 50 C.F.R. 29.1, it states, in part, that, "...We may only authorize public or private economic use of the natural resources of any national wildlife refuge, in accordance with 16 U.S.C. 715s, where we determine that the use contributes to the achievement of the national wildlife refuge purposes

or the National Wildlife Refuge System mission.” This regulatory standard is in addition to the compatibility requirement. Grazing livestock and harvesting hay are listed in the regulation as example uses to which this provision applies.

When grazing or haying is allowed on a refuge, it occurs through issuance of a special use permit. FWS policy at 5 RM 17 provides guidance for permitting refuge specialized uses, including economic uses like grazing and haying. Among other things, the policy makes it clear that, except in unusual circumstances, specialized uses on national wildlife refuges are privileges granted by the FWS (5 RM 17.3). This policy also provides guidance on selection of permittees, charging fees to cover administrative costs and benefits received by permittees, and contents of a permit. FWS regulations at 50 C.F.R. 25.45 establish a process for appealing denial of an application for a refuge special use permit.

Appropriateness (603 FW 1)

In July of 2006, FWS adopted new policy on appropriate uses of the NWRS. This policy is based in part on language in the NWRS Improvement Act which states, “...it is the policy of the United States that...compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System,...compatible wildlife-dependent recreational uses are the priority general public uses of the System and shall receive priority consideration in refuge planning and management; and...when the Secretary determines that a proposed wildlife-dependent recreational use is a compatible use within a refuge, that activity should be facilitated...the Secretary shall...ensure that priority general public uses of the System receive enhanced consideration over other general public uses in planning and management within the System...” (16 U.S.C. 668dd (a)). The appropriateness policy created a process for pre-screening uses prior to determining compatibility. Now, a proposed use can only be allowed on a refuge if it is initially found to be appropriate and then determined compatible.

An appropriate use is one which meets at least one of the following four conditions:

- It is a wildlife-dependent recreational use;
- It is a use which contributes to fulfilling the refuge purpose, the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997;
- It is a use which involves the take of fish and wildlife under State regulations; or
- It is a use which has been found to be appropriate when evaluated against 10 specific criteria included in NWRS policy.

Among other questions, the 10 evaluation criteria ask the following.

- Is the use consistent with applicable Executive orders and Department and Service policies?
- Is the use consistent with goals and objectives in an approved management plan or other document?
- Is the use manageable within available budget and staff?
- Will this be manageable in the future within existing resources?

- Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?
- Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality, compatible, wildlife-dependent recreation into the future?

If the answer is “no” to the first-listed question, the policy states that we will not allow the use. If the answer is “no” to any of the other questions, then we will generally not allow the use (603 FW 1, 1.11 B.).

The appropriateness policy is applicable to consideration of grazing or haying as an existing or proposed refuge use unless the program is specifically used as a management technique to help achieve refuge wildlife and habitat goals and objectives. An appropriateness finding is developed internally by the Refuge Manager. There are no public involvement or administrative appeal provisions for appropriateness findings.

Biological Integrity, Diversity, and Environmental Health (601 FW 3)

The NWRS Improvement Act mandates the maintenance of the NWRS’ biological integrity, diversity, and environmental health. Consistent with its purpose(s), each refuge is required to protect and, where appropriate, restore natural, historic ecological conditions, including associated natural processes (such as hydrology and fire). Historic conditions are those which were present prior to substantial, human-related changes to the landscape (601 FW 3.6 D.).

FWS policy favors, “...management that restores or mimics natural ecosystem processes or functions to achieve refuge purpose(s)” (601 FW 3.7 E). In selected circumstances, grazing and haying may serve in that role by simulating grazing by large, native herbivores. By their nature, however, mechanized haying and grazing by domestic livestock are not natural processes, and these practices can also cause environmental harm. Examples include reducing habitat quantity (e.g., through grazing desirable, non-target plant species); degrading habitat quality (e.g., through deposition of feces in or adjacent to waterways); facilitating introduction of alien, including invasive species (e.g., through seeds carried in hair, on vehicles and farm machinery, and in feces); and disturbing or competing with wildlife (e.g., through presence of permittees and vehicles/farm machinery, and grazing plants that also provide forage for wildlife). Refuge uses which conflict with the legal requirement to maintain biological integrity, diversity, and environmental health are not compatible (603 FW 2.5 A.).

Other Compliance

Proposals to allow grazing or haying often trigger additional procedural and substantive compliance requirements associated with the National Environmental Policy Act (NEPA, 42 U.S.C. 4321-4347); section 7 of the Endangered Species Act (16 U.S.C. 1531-1544); and section 106 of the National Historic Preservation Act (16 U.S.C. 470). These often include scientific and technical analyses, and public involvement processes. All relevant compliance requirements

would need to be satisfied in support of and prior to a decision to allow grazing or haying on a refuge.

Planning, Grazing, and Haying Policies

There is substantial guidance for NWRS planning and management decision-making. FWS policy at 602 FW 1 (“Refuge Planning Overview”) provides general guidance on the processes, philosophies, and other considerations associated with all planning for management of refuges. Development of refuge-specific comprehensive conservation plans (CCPs) is addressed in 602 FW 3. CCPs are the most inclusive of refuge plans and address, among other things, development of goals, objectives, and strategies associated with management of fish, wildlife, plants, and their habitats; management of wildlife-dependent public uses; protection of cultural resources; administration of special management areas; and management of economic and other uses. FWS policy at 620 FW 1 (“Habitat Management Plans”) describes the process and considerations specifically associated with decision-making regarding how best to manage refuges to achieve wildlife and habitat goals and objectives. Decisions made through this policy are documented in refuge habitat management plans, which often step down and are more detailed than CCPs.

Separate FWS policies address overall management of refuge habitats, and associated grazing and haying programs. FWS policy at 6 RM 1 (“Habitat Management: General”) states that, “The attainment and maintenance of naturalness and, to the extent possible, natural diversity should be considered in all habitat and population management activities. The least intensive management measures required to attain objectives should be used” (6 RM 1.3 D.); and “Where practical and economically feasible, habitat management practices will be designed and implemented so that the appearance of naturalness is maintained” (6 RM 1.3 F.).

FWS policy at 6 RM 5 (“Grassland Management”) states that, “Grazing programs may be implemented only when they benefit or are not harmful to wildlife and wildlife habitat” and “Frequency of grazing will vary according to productivity and condition of the site and should be held to the minimum necessary to achieve the desired results” (6 RM 5.6 A.). The policy also states that, “...annual haying of grasslands leads to reduced plant vigor, removal of organic material, and a reduction of wildlife values. However, under some circumstances annual haying may be necessary in order to provide emergent growth on seasonally flooded sites or otherwise support refuge objectives. In some situations, occasional haying can be used to remove excessive mulch accumulation that is inhibiting growth of desired plant species. Haying should be timed to achieve the desired results while minimizing the adverse effects...” (6 RM 5.6 C.).

FWS policy at 6 RM 9 (“Grazing and Haying Management”) states that, “...The primary objective of grazing or haying on refuge lands is to manage vegetation to maintain or increase its value to wildlife at minimum cost to the Government” (6 RM 9.2). Except in unusual circumstances, the policy makes it clear that grazing and haying on national wildlife refuges are privileges granted by the FWS, not legal rights which can be bought, sold, or otherwise transferred among private parties (6 RM 9.7 A. and 9.10). The policy further states that, “Grazing seasons will be

established primarily in accordance with the requirements of the wildlife resources, soil, and vegetation...[and]...will be carried out during the time or times of the year when it will accomplish the desired results” (6 RM 9.8). This policy also provides guidance on selection of permittees and establishment of grazing/haying rates (fees).

References Cited

Following are full references and internet addresses for the core laws, regulations, and policies cited above.

Laws

- National Wildlife Refuge System Administration Act of 1966, as amended (16 U.S.C. 668dd-668ee) – <http://www.fws.gov/refuges/policyMakers/mandates/16USCSec668dd.html>.
- National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57) - <http://www.fws.gov/refuges/policyMakers/mandates/HR1420/index.html>.
- U.S. House of Representatives Report on the National Wildlife Refuge System Improvement Act of 1997 (House Report 105-106) - <http://www.fws.gov/refuges/policyMakers/mandates/HR1420/part1.html>.
- National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321-4347) - <http://ceq.eh.doe.gov/Nepa/regs/nepa/nepaegia.htm>.
- Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1544) - <http://www.fws.gov/endangered/esa.html>.
- Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470) - <http://www.achp.gov/NHPA.pdf>.

Regulations

- National Wildlife Refuge System regulations, Administrative Provisions (50 C.F.R. 25) - http://www.access.gpo.gov/nara/cfr/waisidx_05/50cfr25_05.html.
- National Wildlife Refuge System regulations, Public Entry and Use (50 C.F.R. 26) - http://www.access.gpo.gov/nara/cfr/waisidx_05/50cfr26_05.html.
- National Wildlife Refuge System regulations, Land Use Management (50 C.F.R. 29) - http://www.access.gpo.gov/nara/cfr/waisidx_05/50cfr29_05.html.

Policies

- National Wildlife Refuge System Mission and Goals and Refuge Purposes policy (601 FW 1) - <http://www.fws.gov/policy/601fw1.html>.
- National Wildlife Refuge System Biological Integrity, Diversity, and Environmental Health policy (601 FW 3) - <http://www.fws.gov/policy/601fw3.html>.
- National Wildlife Refuge System Appropriate Refuge Uses policy (603 FW 1) - <http://www.fws.gov/policy/603fw1.html>.

- National Wildlife Refuge System Compatibility policy (603 FW 2) - <http://www.fws.gov/policy/603fw2.html>.
- National Wildlife Refuge System Administration of Specialized Uses policy (5 RM 17).
- National Wildlife Refuge System Refuge Planning Overview policy (602 FW 1) – <http://www.fws.gov/policy/602fw1.html>.
- National Wildlife Refuge System Comprehensive Conservation Planning Process policy (602 FW 3) – <http://www.fws.gov/policy/602fw3.html>.
- National Wildlife Refuge System Habitat Management Plans policy (620 FW 1) – <http://www.fws.gov/policy/620fw1.html>.
- National Wildlife Refuge System General Habitat Management policy (6 RM 1).
- National Wildlife Refuge System Grassland Habitat Management policy (6 RM 5).
- National Wildlife Refuge System Grazing and Haying Management policy (6 RM 9).

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

data source [vouchered in yellow]	family	taxon scientific name [rare plants in bold]	common names [any common name not on this list is probably used for multiple taxa] -- for complete common name information, check Jepson Interchange [http://ucjeps.berkeley.edu/interchange/]
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4]	Adoxaceae [Caryophyllaceae]	<i>Sambucus nigra</i> subsp. <i>caerulea</i> [<i>Sambucus mexicana</i> , misapplied]	western blue elderberry; western blue elder-berry; western blue elder berry; western blue elder; western blueberry elder; western blue-berry elder; western blue berry elder; blue-berried elder
De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [rare, endangered, protected plant list; appendix]	Agavaceae [Liliaceae]	<i>Hesperoyucca whipplei</i> [<i>Yucca whipplei</i>]	Whipple's yucca; Whipple yucca; chaparral yucca; chaparral candle; Lord's candle; lord's candle; Our Lord's candle; Our-Lord's-candle; our lord's candle; Our Lord's candle yucca; Quijote yucca; Quixote yucca; Quijote plant; Quixote plant; quixote plant; mission-bell yucca; mission bell yucca; izote de hoz
Werner 1997 [vouchered]; Thomas & Wishner 1996 [hand-written note]; Hudson Ranch BA 1983 [figure 4]	Alliaceae [Liliaceae]	<i>Allium crispum</i>	crinkled onion; crinkled wild onion; crisped onion; wavy onion
De Vries 2009 [vouchered]	Alliaceae [Liliaceae]	<i>Allium howellii</i> var. <i>howellii</i>	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]	Alliaceae [Liliaceae]	<i>Allium peninsulare</i> var. <i>peninsulare</i>	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Alliaceae [Liliaceae]	<i>Allium</i> sp.	allium; onion; wild onion; garlic; wild garlic; ramps; ramp; leeks; leek; landlauch

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]	Apiaceae	Bowlesia incana	hoary bowlesia; hairy bowlesia; American bowlesia
De Vries 2009 [vouchered]	Apiaceae	Lomatium californicum	California lomatium; Californian lomatium; California rock parsnip; California biscuitroot; California biscuit-root; California biscuit root; California desert-parsley; California desertparsley; California desert parsley; California hog fennel; California chuchupate; chu-chu-pate; green hog fennel
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Apiaceae	Lomatium macrocarpum	large-fruited lomatium; large fruited lomatium; large-fruited desert-parsley; large-fruited desert parsley; large-fruited desertparsley; large-fruited biscuitroot; large-fruited biscuit-root; large-fruited biscuit root; large-fruit lomatium; large-fruit biscuitroot; largefruit biscuitroot; large-fruit desert-parsley; large fruit desert parsley; large-fruit hog-fennel; large-fruit hog fennel; large fruit hog fennel; big-fruited lomatium; big-seed lomatium; bigseed lomatium; big-seed biscuitroot; bigseed biscuitroot; big-seed desert-parsley; bigseed desert parsley; giant-seeded lomatium; long mamma lomatium; long-fruited wild parsley; gray-leaf desert parsley; white prairie parsley; large lace parsnip; sheep-parsnip; sheep parsnip; glabrous-petal hog fennel
De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Apiaceae	Lomatium sp.	lomatium; desert-parsley; desertparsley; biscuit-root; biscuitroot; biscuit root; love seed

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Thomas & Wishner 1996 [hand-written note]	Apiaceae	Lomatium utriculatum	spring-gold lomatium; spring gold lomatium; spring-gold parsley; spring gold parsley; common lomatium; fine-leaved lomatium; fine-leaved desert-parsley; fine-leaved desert parsley; fineleaf desert-parsley; bladder lomatium; bladder desert-parsley; bladder-parsnip; bladder parsnip; lace-leaf parsley; lace leaf parsley; yellow hog fennel; yellow hog-fennel; range hog-fennel; range hog fennel
De Vries 2009 [vouchered]	Apiaceae	Osmorhiza brachypoda	California sweet-cicely; California sweetcicely; California sweet cicely; California cicely
De Vries 2009 [vouchered]	Apiaceae	Perideridia pringlei	Pringle's yampah; Pringle's yampa; Pringle yampah; Pringle yampa; adobe yampah; adobe yampa
Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Apiaceae	Yabea microcarpa	yabea; California hedge-parsley; California hedge parsley; false hedge-parsley; false hedge parsley
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Apocynaceae [Asclepiadaceae]	Asclepias eriocarpa	kotolo; kotolo milkweed; woolly-pod milkweed; woollypod milkweed; wooly-pod milkweed; woolypod milkweed; broad-leaved woolly-pod milkweed
voucher in Consortium; De Vries 2009 [vouchered]	Apocynaceae [Asclepiadaceae]	Asclepias erosa	kotolo; kotolo milkweed; woolly-pod milkweed; woollypod milkweed; wooly-pod milkweed; woolypod milkweed; broad-leaved woolly-pod milkweed
De Vries 2009 [observed]	Apocynaceae [Asclepiadaceae]	Asclepias fascicularis	narrow-leaved milkweed; narrow-leaved milkweed; narrow-leaved milk weed; narrow-leaved milk weed; narrow-leaved milkweed; narrowleafed milkweed; narrow-leaf milkweed; narrow leaf milkweed; narrowleaf milkweed; narrow-leaf butterfly-weed; wiry milkweed
Thomas & Wishner 1996 [observed]	Apocynaceae [Asclepiadaceae]	Asclepias sp.	asclepias

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>vouchers in Consortium; De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]</p>	<p>Asteraceae</p>	<p><i>Achillea millefolium</i></p>	<p>common yarrow; white yarrow; noble yarrow; western yarrow; filfoil yarrow; penerial yarrow; yarrow; yarroway; yarrow milfoil; common milfoil; common millfoil; millefoil; knight's milfoil; millefolium; thousand leaf; thousand-leaf; thousandleaf; thousand-leaved clover; thousand-weed; thousand weed; thousand seal; thousand-seal; hundred-leaved-grass; hundred-leaf-grass; hundred-leaf grass; hundred leaf grass; deadman's daisy; military herb; herbe militaris; soldier's woundwort; stanch weed; staunchweed; staunchgrass; staunch-grass; nosebleed-sanguinary; nosebleed sanguinary; stratiotice; devil's nettle; devils plaything; old-man's-pepper; old man's pepper; carpenter's-grass; Christ's back; Our Lord's back; seven year's love; seven year love; field hoop; little feather; gordaldo</p>
<p>De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]</p>	<p>Asteraceae</p>	<p><i>Agoseris grandiflora</i> var. <i>grandiflora</i> [only var. in range]</p>	<p>no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]</p>
<p>De Vries 2009 [vouchered]</p>	<p>Asteraceae</p>	<p><i>Agoseris retrorsa</i></p>	<p>spear-leaved agoseris; spear leaved agoseris; spear-leaved mountain-dandelion; spear-leaved mountain dandelion; spear-leafed agoseris; spear-leaf agoseris; spearleaf agoseris; spear-leaf mountain-dandelion; spearleaf mountain-dandelion; spearleaf mountain dandelion; spear-leaf false-dandelion; spearleaf dandelion; spear-leaf goat-chicory; spear leaf goat-chicory; spear leaf goat chicory; retrorse agoseris; retrorse-leaved agoseris; retrorse mountain dandelion</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]	Asteraceae	Agoseris sp.	agoseris; mountain-dandelion; mountain dandelion; mountain dandyion; mtn dandelion; goat-chicory; goat chicory
De Vries 2009 [observed]	Asteraceae	Ambrosia acanthicarpa	annual bur-sage; annual bursage; annual bur-ragweed; annual bur ragweed; annual burweed; annual bur weed; annual burrweed; flat-spine burr-ragweed; flat spine burr ragweed; flat-spine burr ragweed; flatspine burr ragweed; flat spine bur-ragweed; flat-spine bur ragweed; flat spine bur-ragweed; flatspine ragweed; false ragweed; bursage ragweed; sand bursage; franseria povertyweed; franseria ragweed; Hooker's gaertneria
De Vries 2009 [vouchered]	Asteraceae	Ancistrocarphus filagineus	hooked groundstar; hooked stylocline; Gray's woolly fishhooks; woolly fishhooks; woolly fish-hooks; woolly fish hooks; woolly fishhooks; woolly hookfruit; false neststraw; hooded neststraw; thread-like cotton-weed; northern stylocline
Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]; 2008 EA, 2006 EA	Asteraceae	Artemisia californica	California sagebrush; California sage-brush; California sage brush; Californian sagebrush; coastal sage; coastal sagebrush; coastal sage-brush; coastal sage brush; coast sagebrush; coast sage-brush; coast sage brush; coast sage

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [observed]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]</p>	<p>Asteraceae</p>	<p>Artemisia dracunculus</p>	<p>wild tarragon; tarragon sagebrush; true tarragon; false tarragon; tarragon; false-tarragon sagewort; falsetarragon sagewort; dragon tarragon; dragon sagewort; dragon sage-wort; dragon wormwood; dragon's head; little dragon; biting-dragon; linear- leaved wormwood; linear-leaf wormwood; linearleaf wormwood; narrow-leaved wormwood; narrow leaved wormwood; narrow-leaved worm wood; piñon wormwood; pinon wormwood; herbaceous sagewort; fuzzyweed; fuzzy-weed; fuzzy weed</p>
<p>De Vries 2009 [vouchered]</p>	<p>Asteraceae</p>	<p>Artemisia tridentata [3 subspp. in range]</p>	<p>big sagebrush; big sage-brush; big sage brush; big sagebush; big sage; big western sagebrush; big western sage; big-leaf sagebrush; bigleaf sagebrush; tall western sagebrush; tall western sage; big mountain sagebrush; common sagebrush; common sage-brush; common sage bush; three-toothed sagebrush; three-toothed sage-brush; three-tooth sagebrush; three-toothed sage; three-tooth sage; three tooth sage</p>
<p>Thomas & Wishner 1996 [observed]</p>	<p>Asteraceae</p>	<p>Artemisia tridentata subsp. tridentata</p>	<p>Great Basin sagebrush; basin sagebrush; Basin sagebrush; basin big sagebrush; Basin big sagebrush; basin big sage; Basin big sage; basin bigleaf sage; Basin bigleaf sage [common name can be created by adding 'typical' to any species- level common name]</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]</p>	<p>Asteraceae</p>	<p>Baccharis douglasii</p>	<p>marsh baccharis; saltmarsh baccharis; salt-marsh baccharis; salt marsh baccharis; Douglas's baccharis; Douglas's saltmarsh baccharis; Douglas's salt-marsh baccharis; Douglas's salt marsh baccharis; Douglas's coyote-bush; Douglas's coyote bush; Douglas's false-willow; Douglas's falsewillow; Douglas's false willow; Douglas's seep-willow; Douglas' baccharis; Douglas' saltmarsh baccharis; Douglas' salt-marsh baccharis; Douglas salt marsh baccharis; Douglas' coyote-bush; Douglas' coyote bush; Douglas' coyotebush; Douglas' false-willow; Douglas' false willow; Douglas' seep-willow; Douglas baccharis; Douglas saltmarsh baccharis; Douglas salt-marsh baccharis; Douglas salt marsh baccharis; Douglas coyote-bush; Douglas coyote bush; Douglas coyotebush; Douglas false-willow; Douglas false willow; Douglas seep-willow</p>
<p>De Vries 2009 [vouchered]; Werner 1997 [vouchered]</p>	<p>Asteraceae</p>	<p>Baccharis salicifolia</p>	<p>mulefat; mule-fat; mule fat; mule's fat; mule's-fat; mulesfat; seep-willow baccharis; seep willow baccharis; seepwillow baccharis; willow-leaved baccharis; willow-leafed baccharis; willow leafed baccharis; willow-leaf baccharis; willow-leaf false-willow; sticky baccharis; sticky false-willow; sticky seep-willow; willow groundsel-tree; water-wally; water wally; water-motor; batamote</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]</p>	<p>Asteraceae</p>	<p>Balsamorhiza deltoidea</p>	<p>deltoid balsamroot; deltoid balsam-root; deltoid balsam root; deltoid balsam-root; deltoid balsam root; Puget balsamroot; Puget balsam-root; Puget balsam root; Northwest balsamroot; Northwest balsam-root; Northwest balsam root; Northwest balsam root; balsam deltoid</p>
<p>De Vries 2009 [observed]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]</p>	<p>Asteraceae</p>	<p>Centaurea melitensis</p>	<p>tocalote; tocolote; Maltese starthistle; Maltese star-thistle; Maltese star thistle; Maltese thistle; Maltese centaury; Maltese cockspur; Maltese cock-spur; Maltese cock spur; Maltese cockspurr; Malta star-thistle; Malta star thistle; Malta starthistle; Malta thistle; Napa star-thistle; Napa star thistle; Napa starthistle; Napa thistle; cockspur thistle; saucy Jack; saucy jack</p>
<p>De Vries 2009 [vouchered]; Werner 1997 [vouchered]; 2008 EA, 2006 EA</p>	<p>Asteraceae</p>	<p>Centaurea solstitialis</p>	<p>yellow centaurea; yellow starthistle; yellow star-thistle; yellow star thistle; yellow-starthistle; Barnaby's sta-thistle; Barnaby's star-thistle; Barnaby's starthistle; Barnaby starthistle; Barnaby star-thistle; Barnaby sta rthistle; Barnaby's thistle; Barnaby thistle; St Barnaby's starthistle; St Barnaby's star-thistle; St Barnaby's star thistle; St Barnaby's thistle; St Barnaby starthistle; St Barnaby star-thistle; St Barnaby star thistle; St Barnaby thistle; golden starthistle; phalaritha</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Hudson Ranch BA 1983 [BA 1983 [figure 4 list]	Asteraceae	Chrysothamnus viscidiflorus [probably subsp. viscidiflorus]	viscid rabbitbrush; sticky-leaved rabbitbrush; sticky-leaved rabbit-brush; sticky-leaved rabbit brush; sticky-leaf rabbitbrush; stickyleaf rabbitbrush; sticky-leaf rabbit-brush; sticky leaf rabbit-brush; sticky rabbitbrush; sticky rabbit-brush; yellow rabbitbrush; yellow rabbit-brush; yellow rabbit brush; low green rabbitbrush; small green rabbitbrush; Douglas's rabbitbrush; Douglas's rabbit-brush; Douglas's rabbit brush; Douglas' rabbitbrush; Douglas' rabbit-brush; Douglas' rabbit brush; Douglas rabbitbrush; Douglas rabbit-brush; Douglas rabbit brush; little rabbitbrush; curly-leaved rabbitbrush
Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Asteraceae	Cirsium occidentale [3 vars. in range]	western thistle; cobwebby thistle; cobweb thistle
De Vries 2009 [observed]; Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]	Asteraceae	Coreopsis bigelovii	Bigelow's coreopsis; Bigelow's tickseed; Bigelow coreopsis; Bigelow tickseed; desert coreopsis
De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]	Asteraceae	Corethrogyne filaginifolia [Lessingia filaginifolia, including var. filaginifolia]	common corethrogyne; common sandaster; common sand-aster; common sand aster
De Vries 2009 [vouchered]; Werner 1997 [observed];	Asteraceae	Deinandra pallida [Hemizonia pallida]	Kern tarplant; Kern tarweed
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [appendix]	Asteraceae	Eastwoodia elegans	eastwoodia; yellow mock-aster; yellow mock aster; yellow-aster

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]; 2008 EA, 2006 EA</p>	<p>Asteraceae</p>	<p><i>Ericameria linearifolia</i> [<i>Haplopappus linearifolius</i>]</p>	<p>linear-leaved goldenbush; linear leaved goldenbush; linear-leaved golden-bush; linear- leaved golden bush; linear-leaf goldenbush; linear- leaf golden-bush; linear-leaf golden bush; linearleaf goldenbush; narrow-leaved goldenbush; narrow-leaved golden-bush; narrow-leaved golden bush; narrow-leaf goldenbush; narrowleaf goldenbush; narrow-leaf heath-goldenrod; narrow- leaf heathgoldenrod; narrowleaf heathgoldenrod; slimleaf goldenbush; interior goldenbush; interior golden-bush; interior golden bush; Mojave goldenbush; Mohave goldenbush</p>
<p>De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]</p>	<p>Asteraceae</p>	<p><i>Ericameria nauseosa</i> [<i>Chrysothamnus nauseosus</i>] [4-5 vars. in range]</p>	<p>rubber rabbitbrush; rubber rabbit-brush; rubber rabbit brush; common rabbitbrush; common rabbit- brush; common rabbit-brush; big rabbitbrush; gray rabbitbrush; gray rabbit-brush; gray rabbit brush; gray rabbitbrush; grey rabbit brush; chamisa rabbitbrush; chamisa rabbit-brush; rabbitbrush chamisa; golden rabbitbrush; golden rabbit brush; green-plume rabbitbrush; greenplume rabbitbrush; green plume rabbitbrush; stinking rabbitbrush; stinking rabbit brush; fetid rayless goldenrod; fetid rayless golden-rod</p>
<p>De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]</p>	<p>Asteraceae</p>	<p><i>Eriophyllum confertiflorum</i> var. <i>confertiflorum</i> [only var. in range]</p>	<p>long-stem golden yarrow; long stem golden yarrow [common name can be created by adding 'typical' to any species-level common name]</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]	Asteraceae	Eriophyllum jepsonii	Jepson's eriophyllum; Jepson's woolly-sunflower; Jepson's woolly sunflower; Jepson's woollysunflower; Jepson's woolly yarrow; Jepson eriophyllum; Jepson woolly-sunflower; Jepson woolly sunflower; Jepson woollysunflower; Jepson woolly yarrow
Werner 1997 [observed]; Hudson Ranch BA 1983 [BA 1983 [figure 4 list]	Asteraceae	Eriophyllum lanatum var. obovatum	southern Sierra woolly sunflower
De Vries 2009 [observed]	Asteraceae	Eriophyllum sp.	golden-yarrow; golden yarrow; yellow yarrow; yellow-yarrow
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Asteraceae	Grindelia camporum [2 vars. possibly in range]	Great Valley grindelia; Great Valley gumplant; Great Valley gumweed; great valley grindelia; great valley gumplant; great valley gumweed; big gumplant; big gum-plant; giant gumplant; giant gum-plant; giant gum plant; robust gumplant; robust gum-plant; hardy grindelia; California gum- plant; California gum plant; California gumweed; common gumplant; common gum-plant; field gumweed
De Vries 2009 [observed]; Werner 1997 [vouchered]	Asteraceae	Gutierrezia californica	California matchweed; California snakeweed; San Joaquin matchweed; San Joaquin snakeweed; bay matchweed
De Vries 2009 [observed]	Asteraceae	Gutierrezia sp.	gutierrezia
Thomas & Wishner 1996 [observed]	Asteraceae	Hemizonia sp.[possibly <i>Deinandra</i> or <i>Centromadia</i>]	hemizonia
De Vries 2009 [observed]	Asteraceae	Hypochaeris glabra	smooth cat's-ear; smooth cat's ear; smooth catsear; smooth cat's-ears; smooth cat's ears; smooth false dandelion; glabrous cat's ear; annual cat's ear; annual flatweed

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]	Asteraceae	<i>Isocoma acradenia</i> [3 vars. in range]	alkali goldenbush; alkalai goldenbush; alkali golden-bush; alkali golden bush; alkali goldenweed; alkali golden-weed; alkali golden weed; golden alkali bush; alkali jimmyweed; alkali jimmy-weed; alkali jimmy weed; desert isocoma; desert goldenbush; pale-leaf goldenbush; pale- leaf golden bush; paleleaf goldenweed; pale-leaf goldenweed
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [hand-written note]	Asteraceae	<i>Iva axillaris</i> [subsp. <i>robustior</i>]	poverty-weed iva; povertyweed iva; iva poverty- weed; iva povertyweed; iva poverty weed; poverty sumpweed; mouse-ear poverty-weed; mouse-ear povertyweed; mouse ear povertyweed; mouse-ear poverty weed; mouse ear poverty weed; mouseear povertyweed; small-flowered marsh-elder; small- flowered marsh elder; smallflowered marshelder; small-flower marsh-elder; small flower marsh elder; lesser marshelder; western marsh-elder; death-weed; deathweed; death weed; deer-root; deer root; deeproot
De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]	Asteraceae	<i>Lactuca serriola</i>	common prickly lettuce; prickly wild lettuce; serriola prickly lettuce; China lettuce
De Vries 2009 [vouchered]	Asteraceae	<i>Lagophylla ramosissima</i> [subsp. <i>ramosissima</i>]	branched lagophylla; branched hareleaf; common hareleaf; common rabbitleaf; slender hareleaf; slender rabbitleaf; slender rabbit-leaf; slender rabbit leaf
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; CalPhotos	Asteraceae	<i>Lasthenia californica</i> [possibly <i>Lasthenia gracilis</i>]	California goldfields; California gold-fields; California gold fields; California goldfield; California goldenfields; coast goldfields; coast gold-fields; coast gold fields; coast goldfield; dwarf goldfields

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [appendix]	Asteraceae	Layia glandulosa	glandular layia; white layia; white tidytips; white tidy-tips; white tidy tips; white-daisy tidytips; white daisy tidytips; whitedaisy tidytips; white-daisy tidy-tips; white daisy tidy tips; desert tidy tips; yellow-rayed layia
De Vries 2009 [vouchered]; CalPhotos	Asteraceae	Layia pentachaeta subsp. albida	white Sierran layia; white Sierra tidytips; white Sierra tidy-tips; white Sierran tidytips
De Vries 2009 [vouchered]	Asteraceae	Layia pentachaeta subsp. pentachaeta	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Asteraceae	Leptosyne calliopsidea [Coreopsis calliopsidea]	leafy-stemmed coreopsis; leafy-stem coreopsis; leafy stem coreopsis; leafsystem coreopsis; leafy-stem tickseed; leaf-stem tickseed; leafstem tickseed; leaf stem tickseed
De Vries 2009 [vouchered]	Asteraceae	Lessingia glandulifera var. glandulifera	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
Thomas & Wishner 1996 [observed; hand-written note]	Asteraceae	Madia elegans	elegant madia; elegant tarplant; elegant tarweed; showy tarplant; showy tarweed; common madia; bright yellow tarweed
Hudson Ranch BA 1983 [appendix]	Asteraceae	Malacothrix californica	California malacothrix; California desert-dandelion; California desertdandelion; California desert dandelion; California dandelion; California cliff-aster; California desert dandylion

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Asteraceae	Malacothrix coulteri	Coulter's malacothrix; Coulter's desert-dandelion; Coulter's desertdandelion; Coulter's snake's-head; Coulter malacothrix; Coulter desert-dandelion; Coulter desertdandelion; Coulter snake's-head; snake's head malacothrix; snake's-head desert- dandelion; snake's head desertdandelion; snakehead malacothrix; snake-head desert- dandelion; snakehead desert-dandelion; snakehead desertdandelion; snakehead desert dandelion
Hudson Ranch BA 1983 [figure 4]	Asteraceae	Malacothrix saxatilis var. tenuifolia [Malacothrix altissima]	short-leaved cliff-aster; short-leaved cliff aster
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Asteraceae	Matricaria discoidea [Chamomilla suaveolens, Matricaria matricarioides]	common pineapple-weed; common pineappleweed; common pineapple weed; pineapple-weed chamomile; pineapple-weed chamomille; pineapple-weed camomile; pineapple chamomile; pineapple chamomile; pineapple camomile; pineapple mayweed; disc pineapple- weed; disc mayweed; disc may-weed; disc may weed; disk mayweed; rayless chamomile; rayless camomile; rayless mayweed; rayless dog-fennel; rayless dogfennel; rayless dog fennel; green dogfennel; green dog-fennel; rounded chamomile; rounded chamomille
Thomas & Wishner 1996 [observed]	Asteraceae	Microseris sp.	microseris
voucher in Consortium; De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Asteraceae	Monolopia lanceolata	common monolopia; common false turtleback; lanceleaf monolopia; lanceleaf hilltop daisy; hillside daisy

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Asteraceae	Monolopia stricta	Crum's monolopia; Crum's false turtleback; Crum monolopia; Crum false turtleback; woolly hilltop daisy
voucher in Consortium; De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [figure 4]	Asteraceae	Packera breweri [Senecio breweri]	Brewer's ragwort; Brewer's butterweed; Brewer's groundsel; Brewer's senecio; Brewer ragwort; Brewer butterweed; Brewer groundsel; Brewer senecio
Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Asteraceae	Pseudognaphalium luteoalbum [Gnaphalium luteo-album]	weedy cudweed; weedy white cudweed; Jersey cudweed; Jersey cud-weed; Jersey cud weed; Jersey rabbit-tobacco; Jersey rabbit tobacco; red-tip rabbit-tobacco; red-tipped cudweed; red tipped cudweed; yellow-white cudweed
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Asteraceae	Pseudognaphalium stramineum [Gnaphalium stramineum, Gnaphalium chilense]	cotton-batting-plant; cotton-batting plant; cotton batting plant; cottonbatting plant; cotton-batting everlasting; cotton-batting cudweed; cotton batting cudweed; cottonbatting cudweed; cotton-batting; cotton batting; cottony everlasting; cottony cudweed; cotton cudweed; small-flowered cudweed; woolly everlasting cudweed; Chilean cudweed
Thomas & Wishner 1996 [observed]	Asteraceae	Rafinesquia californica	California chicory; California-chicory; California chickory; California-chickory; California desert chicory; California white chicory; California plumeseed; California plume-seed; California plume-seeded chicory
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Asteraceae	Senecio vulgaris	common garden groundsel; garden groundsel; garden groundsell common groundsell; common butterweed; old-man-in-the-spring; old-man-in-the-Spring; old man in the spring; old man in the Spring; old-man-of-spring; old man of spring; grinsel; grinsel; watterydrum; groundie-swallow; groundie swallow; chincone; sencion; simson; swichen

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]</p>	<p>Asteraceae</p>	<p><i>Sonchus asper</i> [subsp. <i>asper</i>, only subsp. in CA]</p>	<p>spiny-leaved sow-thistle; spiny-leaved sow thistle; spiny-leaved sowthistle; spiny leaved sow thistle; spiny-leaved sow thistle; spiny-leaf sow-thistle; spiny leaf sow-thistle; spiny-leaf sowthistle; spinyleaf sowthistle; spinyleaf sow-thistle; spinyleaf sow thistle; spiny-leafed sow thistle; spiny-leaf sow thistle; spiny sow-thistle; spiny sowthistle; spiny sow thistle; prickly-leaved sow thistle; prickly sow-thistle; prickly sow thistle; prickly sowthistle; sharp-fringed sow-thistle; sharp- fringed sow thistle; sharp-fringe sow-thistle; rough sow-thistle; rough sow thistle; rough sowthistle</p>
<p>Werner 1997 [vouchered]</p>	<p>Asteraceae</p>	<p><i>Stephanomeria exigua</i> [4 subspp. in range]</p>	<p>small stephanomeria; small wire-lettuce; small wirelettuce; small wire lettuce; small wreath-plant; small wreath plant; small wreathplant; small skeletonplant; white-plume stephanomeria; white- plume wire-lettuce; white-plume wirelettuce; white plume wire lettuce; whiteplume wirelettuce; white- plume milk-aster; slender stephanomeria; slender wreathplant; slender rock-lettuce; annual wire- lettuce; annual wirelettuce; annual wire lettuce</p>
<p>De Vries 2009 [vouchered]</p>	<p>Asteraceae</p>	<p><i>Stephanomeria exigua</i> subsp. <i>exigua</i></p>	<p>no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Asteraceae	Stephanomeria pauciflora [var. pauciflora]	few-flowered stephanomeria; few-flowered wire-lettuce; few-flowered wirelettuce; few-flowered wire lettuce; few flowered wire lettuce; few-flower wire-lettuce; fewflower wire-lettuce; fewflower wirelettuce; few-flower wreath-plant; few flower wreath-plant; few-flower desert-straw; prairie skeletonplant; prairie skeleton-plant; prairie skeleton plant; brown-plume wire-lettuce; brown plume wire lettuce; brown-plume wirelettuce; brown-plume wirelettuce; brownplume wirelettuce; brown-plumed ptiloria; brown-plume ptiloria; desert milk-aster; desert milkaster
De Vries 2009 [observed]	Asteraceae	Stephanomeria sp.	stephanomeria; wire-lettuce; wirelettuce; wire lettuce; wreath-plant; wreathplant; wreath plant; milk-aster; milk aster; milkaster
De Vries 2009 [vouchered , observed]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Asteraceae	Stephanomeria virgata subsp. pleurocarpa [only subsp. in range]	no common name specific to this taxon found
Werner 1997 [observed]; Thomas & Wishner 1996 [observed; hand-written note]	Asteraceae	Stylocline gnaphaloides	everlasting stylocline; everlasting neststraw; everlasting nest-straw; everlasting nest straw; mountain neststraw; new-straw cotton-weed
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Asteraceae	Uropappus lindleyi	Lindley's uropappus; Lindley's silverpuffs; Lindley's silver-puffs; Lindley's silver puffs; Lindley's silver puff; Lindley's false silverpuffs; Lindley's microseris; Lindley uropappus; Lindley silverpuffs; Lindley silver-puffs; Lindley silver puffs; Lindley silver puff; Lindley false silverpuffs; Lindley microseris; linear-leaf microseris; linearleaf microseris; narrow-leaved microseris; narrowleaf microseris; starpoint

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>Hudson Ranch BA 1983 [figure 4]</p>	<p>Asteraceae</p>	<p>Xanthium spinosum</p>	<p>spiny cocklebur; spiny cockle-bur; spiny cockle bur; spiny cockleburr; spiny cockle-burr; spiny cockle burr; spiny clotbur; spiny clotburr; spiny clot-bur; spiny clot burr; spiny clotweed; spiny burweed; spiny bur-weed; prickly cocklebur; prickly cockleburr; prickly clotbur; prickly clott-bur; prickly burweed; prickly bur-weed; thorny cocklebur; thorny cockle-bur; thorny cockle bur; thorny clotbur; thorny clot-bur; thorny burweed; spring clotbur; Bathurst burr; Bathurst bur; Bathurst-bur; bastard burr; dagger cocklebur; dagger cockle-bur; dagger cockle bur; dagger cockleburr; Chinese thistle</p>
<p>De Vries 2009 [observed]</p>	<p>Asteraceae</p>	<p>Xanthium strumarium</p>	<p>common cocklebur; common cockle-bur; common cockle bur; common cockle-burr; common clotbur; common cuckelbur; common cucklebur; rough cocklebur; rough cockle-bur, rough cockle bur; rough cockleburr; rough cockle-burr, rough cockle burr; heartleaf cocklebur; large-leaf cocklebur; large cocklebur; large cockle-bur; large cockle bur; large cockle-burr; great cocklebur; broad cocklebur; broad burweed; broad bur-weed; lesser clotbur; lesser clot-bur; cuckold burs; ditchbur; ditch-bur; ditch bur; dike-but; buttonbur; button-bur; lousebur; louse-bur; louse-burr; hedgehog burweed; hedgehog-burweed; hedge-hog-burweed; sea cocklebur; sea cucklebur; sea burdock; sea-burdock; beach cocklebur; beach clotbur</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]</p>	<p>Boraginaceae</p>	<p>Amsinckia douglasiana</p>	<p>Douglas's amsinckia; Douglas's fiddleneck; Douglas's fiddle-neck; Douglas's buckthorn; Douglas's buckthorn weed; Douglas' amsinckia; Douglas' fiddleneck; Douglas' fiddle-neck; Douglas' buckthorn; Douglas' buckthorn weed; Douglas amsinckia; Douglas fiddleneck; Douglas fiddle-neck; Douglas buckthorn; Douglas buckthorn weed</p>
<p>Werner 1997 [observed]</p>	<p>Boraginaceae</p>	<p>Amsinckia eastwoodiae</p>	<p>Eastwood's fiddleneck; Eastwood's fiddle-neck; Eastwood fiddleneck; Eastwood fiddle-neck; large- flower yellow fiddleneck</p>
<p>De Vries 2009 [observed]; Werner 1997 [observed]</p>	<p>Boraginaceae</p>	<p>Amsinckia menziesii [both vars. documented]</p>	<p>Menzies's fiddleneck; Menzies' fiddleneck; Menzies fiddleneck; common fiddleneck; common fiddle-neck; ranchers' fiddleneck; rancher's fiddleneck; ranchers fiddleneck; rancher's fireweed; rancher's-fireweed; ranchers' fireweed; ranchers fireweed; rancher's fiddleneck; rancher's fireweed; ranchers' fireweed; ranchers fireweed; small-flowered fiddleneck; small flowered fiddleneck; small-flowered fiddle-neck; small- flower fiddleneck; small-flower fiddle-neck; smallflower fiddleneck</p>
<p>De Vries 2009 [vouchered]; Hudson Ranch BA 1983 [figure 4]</p>	<p>Boraginaceae</p>	<p>Amsinckia menziesii var. intermedia</p>	<p>common rancher's fireweed; common ranchers'- fireweed; common ranchers fireweed; intermediate fiddleneck; intermediate rancher's fireweed; orange-flowered Menzies's fiddleneck; orange- flowered Menzies' fiddleneck; orange-flowered Menzies fiddleneck; fireweed fiddleneck; coast buckthorn; sacate gordo; yellow burnweed; finger weed</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]	Boraginaceae	Amsinckia menziesii var. menziesii	small-flowered Menzies's fiddleneck; small-flowered Menzies' fiddleneck; small-flowered Menzies fiddleneck; harvest fiddleneck; harvest fireweed; rigid fiddleneck; rigid fiddle-neck [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Boraginaceae	Amsinckia sp.	amsinckia; buckthornweed; buckthorn-weed; buckthorn weed
Werner 1997 [observed]	Boraginaceae	Amsinckia spp.	amsinckia; buckthornweed; buckthorn-weed; buckthorn weed
De Vries 2009 [observed]; Werner 1997 [vouchered]	Boraginaceae	Amsinckia tessellata [both vars. documented]	tessellate fiddleneck; tessellate fiddle-neck; tessellate fiddle neck; bristly fiddleneck; bristly fiddle-neck; checker fiddleneck; checker fiddle-neck; cobblestone fiddleneck; western fiddleneck; devil's fiddleneck; devil's-lettuce; devil's lettuce
voucher in Consortium; De Vries 2009 [vouchered]	Boraginaceae	Amsinckia tessellata var. gloriosa	glorious fiddleneck; large-flowered devil's fiddleneck
Thomas & Wishner 1996 [observed]	Boraginaceae	Amsinckia tessellata var. tessellata	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4; rare, endangered, protected plant list]	Boraginaceae	Amsinckia vernicosa [2 vars. in range]	green fiddleneck; green fiddle-neck; vernal fiddleneck; vernal fiddle-neck
De Vries 2009 [vouchered]	Boraginaceae	Amsinckia vernicosa var. vernicosa	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]	Boraginaceae	Cryptantha circumscissa	matted cryptantha; capped cryptantha; capped forget-me-not; opening cryptantha; opening cryptanth; western forget-me-not; greeneocharis

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Boraginaceae	Cryptantha echinella	hedgehog cryptantha; prickly cat's-eye; prickly cat's eye; prickly catseye
De Vries 2009 [vouchered]	Boraginaceae	Cryptantha flaccida	flaccid cryptantha; flaccid forget-me-not; weak-stemmed cryptantha; weak-stem cryptantha; weakstem cryptantha; weak-stem cat's-eye; weak-stem cat's eye; weak stem cat's eye; weakstem cat's eye; weakstem catseye; serpentine forget-me-not; serpentine forget me not
De Vries 2009 [vouchered]	Boraginaceae	Cryptantha intermedia	intermediate cryptantha; Clearwater cryptantha; clearwater cryptantha; Clearwater cat's-eye; clearwater cat's-eye; Clearwater cat's eye; clearwater cat's eye; large-flowered cryptantha; large-flower cat's-eye
De Vries 2009 [vouchered]	Boraginaceae	Cryptantha nevadensis	Nevada cryptantha; Nevada cryptanth; Nevada cat's-eye; Nevada cat's eye; Nevada catseye; Nevada forget-me-not; Nevada nievitas
De Vries 2009 [vouchered]	Boraginaceae	Cryptantha nevadensis [var. rigida]	Nevada cryptantha; Nevada cryptanth; Nevada cat's-eye; Nevada cat's eye; Nevada catseye; Nevada forget-me-not; Nevada nievitas
voucher in Consortium; De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed; hand-written note]	Boraginaceae	Cryptantha oxygona	sharp-nut cryptantha; sharpnut cryptantha; sharp-nut cat's-eye; sharp nut cat's eye; sharpnut catseye; sharp-nut forget-me-not; sharp-nut popcorn-flower; sharp-nut popcorn flower; sharp-seed cryptantha; sharpseed cryptantha
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]	Boraginaceae	Cryptantha sp.	cryptantha; cryptanth; cryptanthe
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Boraginaceae [Hydrophyllaceae]	Emmenanthe penduliflora var. penduliflora	yellow-flowered whispering bells; yellow whispering bells; yellow whispering-bells; yellow whisperingbells; California golden bells [common name can be created by adding 'typical' to any species-level common name]

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Boraginaceae	Heliotropium curassavicum	salt heliotrope; seaside heliotrope; sea-side heliotrope; alkali heliotrope; alkalai heliotrope; smooth heliotrope; quail plant; Chinese pusley; Chinese-pusley; spatulate-leaved heliotrope; spatulate-leaf heliotrope
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]	Boraginaceae [Hydrophyllaceae]	Nemophila menziesii [2 vars. in range]	Menzies's baby-blue-eyes; Menzies's baby blue eyes; Menzies's baby blue-eyes; Menzies' baby-blue-eyes; Menzies' baby blue eyes; Menzies' baby blue-eyes; Menzies baby-blue-eyes; Menzies baby blue eyes; Menzies baby blue-eyes; common baby-blue-eyes; common baby blue-eyes; common baby blue eyes
De Vries 2009 [vouchered]	Boraginaceae [Hydrophyllaceae]	Nemophila menziesii var. menziesii	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
Thomas & Wishner 1996 [observed]	Boraginaceae [Hydrophyllaceae]	Nemophila pedunculata	meadow nemophila; meadow baby-blue-eyes; meadow baby blue-eyes; littlefoot nemophila; littlefoot baby-blue-eyes; little-foot baby blue-eyes; littlefoot blue-eyes; spreading nemophila
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [hand-written note]	Boraginaceae	Pectocarya linearis subsp. ferocula	slender pectocarya; slender comb-seed; slender comb-bur
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Boraginaceae	Pectocarya penicillata	sleeping combseed; short-leaf combseed; shortleaf combseed; short leaf combseed; short-leaf comb-seed; short leaf comb seed; roadside comb-fruit
De Vries 2009 [vouchered]	Boraginaceae	Pectocarya setosa	setose pectocarya; bristly pectocarya; bristly combseed; bristled pectocarya; stiff-stemmed comb-bur; moth combseed; saucer combseed
Thomas & Wishner 1996 [observed]	Boraginaceae	Pectocarya sp.	pectocarya; pectocary; comb-bur; combbur; comb bur; comb-seed; combseed; comb-fruit
De Vries 2009 [observed]; Hudson Ranch BA 1983 [figure 4]	Boraginaceae [Hydrophyllaceae]	Phacelia cicutaria [3 vars. in range]	caterpillar phacelia; caterpillar scorpion-weed; caterpillar scorpionweed; caterpillar scorpion weed

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]	Boraginaceae [Hydrophyllaceae]	Phacelia cicutaria var. cicutaria	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]; CalPhotos	Boraginaceae [Hydrophyllaceae]	Phacelia ciliata	ciliate phacelia; ciliate scorpion-weed; ciliate scorpionweed; Great Valley phacelia; great valley phacelia; Great Valley scorpion-weed; Great Valley scorpionweed; great valley scorpionweed; valley phacelia; Chinese-lantern phacelia; Chinese lantern phacelia
De Vries 2009 [vouchered]	Boraginaceae [Hydrophyllaceae]	Phacelia cryptantha	cryptantha phacelia; cryptanth phacelia; hidden- flower phacelia; hiddenflower phacelia; hidden- flower scorpion-weed; hidden-flower scorpionweed; hidden flower scorpion weed; hiddenflower scorpionweed
De Vries 2009 [vouchered]	Boraginaceae [Hydrophyllaceae]	Phacelia davidsonii	Davidson's phacelia; Davidson's scorpion-weed; Davidson's scorpionweed; Davidson phacelia; Davidson scorpion-weed; Davidson scorpionweed
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Boraginaceae [Hydrophyllaceae]	Phacelia distans	distant phacelia; distant scorpion-weed; distant scorpionweed; distant scorpion weed; blue-eyed phacelia; blue-eyed scorpion-weed; fern phacelia; fern-phacelia
De Vries 2009 [vouchered]	Boraginaceae [Hydrophyllaceae]	Phacelia douglasii	Douglas's phacelia; Douglas's scorpion-weed; Douglas's scorpionweed; Douglas' phacelia; Douglas' scorpion-weed; Douglas' scorpionweed; Douglas phacelia; Douglas scorpion-weed; Douglas scorpionweed

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Boraginaceae [Hydrophyllaceae]	Phacelia fremontii	Frémont's phacelia; Frémont's scorpion-weed; Frémont's scorpionweed; Frémont's scorpion weed; Fremont's phacelia; Fremont's scorpion- weed; Fremont's scorpionweed; Fremont's scorpion weed; Frémont phacelia; Frémont scorpion-weed; Frémont scorpionweed; Frémont scorpion weed; Fremont phacelia; Fremont scorpion-weed; Fremont scorpionweed; Fremont scorpion weed
De Vries 2009 [observed]; Werner 1997 [vouchered]	Boraginaceae [Hydrophyllaceae]	Phacelia imbricata [both subsp. documented]	imbricate phacelia; imbricate scorpion-weed; imbricate scorpionweed; imbricate scorpion weed; pine bee flower
De Vries 2009 [vouchered]	Boraginaceae [Hydrophyllaceae]	Phacelia imbricata subsp. imbricata	sordid-white perennial phacelia; sordid perennial phacelia; sordid white phacelia [common name can be created by adding 'typical' to any species- level common name]
De Vries 2009 [vouchered]	Boraginaceae [Hydrophyllaceae]	Phacelia imbricata subsp. patula	sordid-white perennial phacelia; sordid perennial phacelia; sordid white phacelia
De Vries 2009 [vouchered]	Boraginaceae [Hydrophyllaceae]	Phacelia ramosissima var. latifolia	no common name specific to this taxon found
De Vries 2009 [observed]; Thomas & Wishner 1996 [hand-written note]	Boraginaceae [Hydrophyllaceae]	Phacelia sp.	phacelia
Werner 1997	Boraginaceae [Hydrophyllaceae]	Phacelia spp.	phacelia

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed; hand-written note]; Hudson Ranch BA 1983 [figure 4; appendix]</p>	<p>Boraginaceae [Hydrophyllaceae]</p>	<p><i>Phacelia tanacetifolia</i></p>	<p>tansy-leaved phacelia; tansy-leafed phacelia; tansy leafed phacelia; tansy-leaf phacelia; tansyleaf phacelia; tansy leaf phacelia; tansy phacelia; tansy scorpion-weed; tansy scorpionweed; purple tansy; lacy phacelia; lacy scorpion-weed; lacy scorpionweed; lacy scorpion weed; lacy-leaved phacelia; lacy-leafed phacelia; lacy-leaf phacelia; lace-leaved phacelia; lace leaved phacelia; lace phacelia; lacey phacelia; lacey scorpion flower; bee food phacelia; bee's friend phacelia; valley verzenice; valley vervenia</p>
<p>De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]; CalPhotos; Burgess pers. comm.</p>	<p>Boraginaceae [Hydrophyllaceae]</p>	<p><i>Pholistoma membranaceum</i></p>	<p>white pholistoma; white fiesta-flower; white fiesta flower; white fiestaflower</p>
<p>De Vries 2009 [vouchered]</p>	<p>Boraginaceae</p>	<p><i>Plagiobothrys arizonicus</i></p>	<p>Arizona popcorn-flower; Arizona popcornflower; Arizona popcorn flower; Arizona blood-weed; Arizona blood weed; Arizona bloodweed; stainplant; stain-plant; stain plant; lipstick weed</p>
<p>De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]</p>	<p>Boraginaceae</p>	<p><i>Plagiobothrys canescens</i></p>	<p>valley popcorn-flower; valley popcornflower; valley popcorn flower; valley popcorn; Valley popcorn- flower; Valley popcorn flower; Valley popcornflower; gray popcorn-flower; grey popcorn- flower; gray popcornflower; grey popcornflower; gray popcorn flower; grey popcorn flower; hoary popcorn flower</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed; hand-written note]	Boraginaceae	Plagiobothrys nothofulvus	rusty plagiobothrys; rusty popcorn-flower; rusty popcornflower; rusty popcorn flower; larger-flowered rusty-haired popcorn flower; red-stain plagiobothrys; nievitas popcorn-flower; nievitas popcorn flower; foothill snowdrops
De Vries 2009 [observed]	Boraginaceae	Plagiobothrys sp.	plagiobothrys
Werner 1997 [observed]	Boraginaceae	Plagiobothrys spp.	plagiobothrys
Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Boraginaceae	Plagiobothrys tenellus	Pacific popcorn-flower; Pacific popcornflower; Pacific popcorn flower; slender plagiobothrys
Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]	Brassicaceae	Arabis pulchra [2 vars. in range]	beautiful rock-cress; beautiful rockcross; beautiful rock cress; beauty rockcross; pretty rockcross; prince's rock-cress; prince's rockcross; prince's rock cress
De Vries 2009 [vouchered]	Brassicaceae	Arabis pulchra var. pulchra	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Brassicaceae	Athysanus pusillus	dwarf athysanus; dwarf sandweed; petty anthysanus; little-pod athysanus; littlepod athysanus; little-pod sandweed; littlepod sandweed; common sandweed

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [observed]; Werner 1997 [vouchered]; Asteraceae</p>	<p>Brassicaceae</p>	<p>Capsella bursa-pastoris</p>	<p>common shepherd's-purse; common shepherd's purse; common shepherds-purse; common shepherds purse; common shepardspurse; shepherd's-bag; shepherd's bag; shepherds bag; English shepherd's bag; shepherd's-pouch; shepherd's pouch; shepherds pouch; shepherd's heart; shepherd's scrip; shepherd's-sprout; shepherd's sprout; shepherd's pounce; witches'-pouches; witch's pouches; witches' pouches; witches-pouches; witches pouches; rattle pouch; rattle pouches; clapper's pouch; clapped-pouch; clappedepouch; case-weed; caseweed; case weed; casse-weed; casse weed; pick weed; cocowort; toywort; toy-wort; toy wort; toy-weed; poor man's parmacettie; poor-man's-pharmacetty; poor man's pharmacetty; permacety; whoreman's permacety; mother's-heart; mother's heart; shovel-weed; shovelweed; shovel weed; wardseed; wardseed</p>
<p>Werner 1997 [vouchered]; De Vries 2009 [vouchered]; Hudson Ranch BA 1983 [appendix]</p>	<p>Brassicaceae</p>	<p>Caulanthus coulteri [var. coulteri -- see Caulanthus lemmonii for other var.]</p>	<p>Coulter's caulanthus; Coulter's jewel-flower; Coulter's jewelflower; Coulter's wild-cabbage; Coulter's wild cabbage; Coulter caulanthus; Coulter jewel-flower; Coulter jewelflower; Coulter wild-cabbage; Coulter wild cabbage</p>
<p>De Vries 2009 [vouchered]</p>	<p>Brassicaceae</p>	<p>Caulanthus inflatus</p>	<p>desert-candle caulanthus; desert candle caulanthus; desert-candle streptanthus; desert candle streptanthus; inflated-stem caulanthus; inflated-stem streptanthus</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed] ; Hudson Ranch BA 1983 [appendix]	Brassicaceae	Caulanthus lasiophyllus [Guillenia lasiophylla, Thelypodium lasiophyllum]	California mustard; common California mustard; Californian mustard; shaggy thelypod; hairy-leaf caulanthus; hairy-leaved guillenia; hairy-leaf wild cabbage; hairy-leaf wildcabbage; coast range western-cabbage; Coast Range wild cabbage; coast range wild cabbage; coast wild cabbage
Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Brassicaceae	Descurainia pinnata [4 subspp. in range]	pinnate tansy-mustard; pinnate tansymustard; pinnate tansy mustard; western tansy-mustard; western tansymustard; western tansy mustard; green tansy-mustard; green tansymustard; green tansy mustard; yellow tansy-mustard; yellow tansymustard; yellow tansy mustard; shortfruit tansymustard
voucher in Consortium; De Vries 2009 [vouchered]	Brassicaceae	Descurainia pinnata subsp. glabra	smooth western tansy-mustard; smooth western tansymustard; naked western tansy mustard
De Vries 2009 [observed]	Brassicaceae	Descurainia sp.	tansy-mustard; tansymustard; tansy mustard
De Vries 2009 [observed]; Werner 1997 [vouchered]	Brassicaceae	Descurania sophia	Eurasian tansy mustard; introduced tansy mustard; flix-weed tansy mustard; flixweed tansy- mustard; flixweed tansymustard; flixweed tansy mustard; flix-weed mustard; flixweed mustard; flixweed; flix-weed; flix weed; sophia tansy- mustard; sophia tansymustard; herb-Sophia; herb Sophia; herb-sophia; herb sophia; flaxweed tansy- mustard; flaxweed tansymustard; flaxweed tansy mustard; fine-leaf tansy-mustard; fine-leaf tansy mustard; fine-leaved hedge-mustard; fine-leaved hedge mustard; fine-leaf hedge-mustard; feather- leaf tansy mustard; bedground weed

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [appendix]; 2008 EA, 2006 EA	Brassicaceae	Erysimum capitatum var. capitatum [only var. in range; Erysimum moniliforme]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]	Brassicaceae	Hirschfeldia incana	summer field mustard; summer mustard; summer- mustard; short-podded mustard; shortpodded mustard; short-pod mustard; shortpod mustard; short pod mustard; Mediterranean hoary-mustard; Mediterranean hoary mustard; hoary-mustard; hoary mustard; hairy mustard; hairy brassica; Greek mustard; buchan weed; buchanweed
De Vries 2009 [vouchered]	Brassicaceae	Hornungia procumbens [Hutchinsia procumbens]	prostrate hornungia; prostrate hutchinsia; prostrate hymenolobus; prostrate alpen-cress; spreading hutchinsia; desert hutchinsia; oval- purse; ovalpurse; oval purse; nannie's purse; slenderweed
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Brassicaceae	Lepidium nitidum var. nitidum	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4[appendix]	Brassicaceae	Sisymbrium altissimum	tall sisymbrium; tall tumble-mustard; tall tumblemustard; tall tumble mustard; tall tumbleweed-mustard; tall tumbleweed mustard; tall mustard-weed; tall rocket; tumbling-mustard; tumbling mustard; yellow tumbling mustard; tumbleweed-mustard; tumbleweed mustard; Jim Hill mustard; Jim-Hill-mustard; Jim Hill tumble- mustard; Jim Hill tumblemustard; Jim Hill's tumblemustard; Jimhill mustard; jimhill mustard

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]	Brassicaceae	Sisymbrium irio	London rocket; London-rocket; Londonrocket; London mustard; rocket-mustard; rocket mustard; rocketmustard
De Vries 2009 [vouchered]	Brassicaceae	Sisymbrium orientale	oriental sisymbrium; oriental hedge-mustard; oriental hedgemustard; oriental hedge mustard; Indian hedge-mustard; Indian hedgemustard; Indian hedge mustard; eastern rocket
De Vries 2009 [observed]	Brassicaceae	Sisymbrium sp.	sisymbrium; tumbleweed-mustard; tumbleweed mustard; tumbleweedmustard
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [appendix]	Brassicaceae	Stanleya pinnata var. pinnata [only var. in range'	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Brassicaceae	Streptanthus cordatus [3 vars., distribution relative to BC unclear]	heart-leaved streptanthus; heart-leaved jewelflower; heart-leaf jewelflower; heart-leaf jewelflower; heartleaf jewelflower; heart-leaf twist- flower; heartleaf twistflower; perennial twistflower
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Brassicaceae	Streptanthus coulteri [this may be either Caulanthus coulteri or Caulanthus anceps]	
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Brassicaceae	Thysanocarpus curvipes	sand fringedpod; sand lacepod; hairy fringe-pod; hairy fringedpod; hairy fringe pod; hairy lace-pod; hairy lacepod; hairy lace pod; common fringe-pod; lacepod mustard
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Brassicaceae	Tropidocarpum gracile	graceful tropidocarpum; slender tropidocarpum; slender keel-fruit; slender keel fruit; slender dobie- pod; dobie-pod; dobiepod; dobie pod; slender dobie-pod; dobie weed; keel-pod
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]	Caprifoliaceae	Lonicera subspicata var. denudata	southern chaparral honeysuckle; southern chaparral honey-suckle; southern chaparral honey suckle; San Diego honeysuckle

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; CalPhotos	Caryophyllaceae	Minuartia douglasii	Douglas's stitchwort; Douglas' stitchwort; Douglas's sandwort; Douglas' sandwort; Douglas sandwort
De Vries 2009 [vouchered]	Caryophyllaceae	Spergularia salina [Spergularia marina]	salt sand-spurrey; salt sand spurrey; salt sandspurrey; salt sand-spurry; salt sand spurry; salt sandspurry; salt-marsh sand-spurrey; salt- marsh sand spurrey; salt marsh sand spurrey; saltmarsh sand-spurrey; saltmarsh sand spurrey; saltmarsh sandspurrey; salt-mash sand-spurry; salt-marsh sand spurry; salt marsh sand spurry; salt-marsh sandspurry; salt marsh sandspurry; saltmarsh sandspurry; saltmarsh spurrey; salt- marsh spurrey; salt marsh spurrey; salt-marsh spurry; saltmarsh spurry; salt-marsh spurry; salt marsh spurry; sea-bed sandwort; sea bed sandwort; sea-side sandwort; sea side sandwort; seaside sandwort; marine sand-spurrey; marine sandspurry; marine sandspurry; marine sand spurrey; lesser sea-spurrey; lesser sea spurrey; lesser sea-spurry; lesser sea spurry
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Caryophyllaceae	Stellaria nitens	shining starwort; shining chickweed; shiny starwort; shiny chickweed; slender shining chickweed; handsome starwort
De Vries 2009 [vouchered]	Caryophyllaceae	Stellaria pallida	pale starwort; pale chickweed; lesser chickweed
De Vries 2009 [observed]	Chenopodiaceae	Atriplex canescens subsp. canescens [only subsp. in range]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]	Chenopodiaceae	Atriplex lentiformis [2 subspp. in range]	big saltbush; lens-fruited saltbush; lens-scale; lensscale; lens scale; quail brush lens scale; quail-brush; quailbush; quail bush; quail-brush; quailbrush; quail brush; tree atriplex
De Vries 2009 [vouchered]; Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Chenopodiaceae	Atriplex lentiformis subsp. lentiformis [Atriplex breweri]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]	Chenopodiaceae	Atriplex polycarpa	many-fruited saltbush; many-fruit saltbush; cattle-spinach saltbush; cattle-spinach; cattle spinach; cattle saltbush; cow spinach; allscale saltbrush; allscale; all-scale; all scale; alkali saltbush; little-leaf saltbush; littleleaf saltbush; little leaf saltbush
De Vries 2009 [observed]	Chenopodiaceae	Atriplex serenana var. serenana (?) [only var. in range]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Chenopodiaceae	Atriplex spinifera	spinescale saltbush; spinescale; spine-scale; spine scale; spiny spinescale; spiny salybush; Mojave saltbush

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Chenopodiaceae	Chenopodium album	white goosefoot; white goose-foot; white goose-foot; white goose's foot; white lamb's-quarters; white lamb's quarters; white lambs-quarters; white lambs quarters; white lambsquarters; white lambs-quarter; white lambs quarter; white lambsquarter; lambsquarters goosefoot; common lamb's-quarters; common lamb's quarters; common lambsquarters; common lamb's-quarters; common lamb's-quarter; common lambsquarter; common lambs' quarter; dirty dick; dirty-dick; dirtweed; dungweed; dung-weed; dung weed; bacon-weed; baconweed; bacon weed; mealweed; common frost-blite; frost-blite; frostblite; frost blite; frost bite; forst bite; calite; motton-tops; mutton-tops; mutton tops; midden myles; chou grass
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Chenopodiaceae	Chenopodium californicum	California chenopodium; California chenopod; California chenopody; California goosefoot; California goose-foot; California goose foot; California goosefoot soap-plant; California goosefoot soap plant; goosefoot soap-plant; goosefoot soap plant
De Vries 2009 [vouchered]; Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]	Chenopodiaceae	Krascheninnikovia lanata	common winterfat; common winter-fat; common winter fat; American winterfat; American winter-fat; American winter fat; American eurotia; American ceratoides
Hudson Ranch BA 1983 [figure 4; appendix]	Chenopodiaceae	Salsola kali subsp. pontica [only var. in CA]	no common name specific to this taxon found
De Vries 2009 [observed]; Werner 1997 [observed]; Asteraceae	Chenopodiaceae	Salsola tragus	common Russian-thistle tumbleweed; Rcommon Russian thistle tumbleweed; ussian tumbleweed; Russian tumble-weed; Russian tumble weed; wind witch; wind-witch; windwitch

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]</p>	<p>Convolvulaceae</p>	<p><i>Convolvulus arvensis</i></p>	<p>field convolvulus; field morning-glory; field morning glory; field morningglory; field bindweed; field bind-weed; field bind weed; common field bindweed; common field bind-weed; common field bind weed; weedy perennial field bindweed; perennial field bindweed; European morning-glory; European morning glory; European morningglory; European bindweed; European bindweed; common European bindweed; European field bindweed; European glorybind; small bindweed; possession vine; devil's garters; hedge bells; sheep-bine; sheepbine; hedge-bells; Jack-run-in-the-country; Jack-run'-in'-the-country; Jack run in the country; Jack run' in' the country; lap-love; laplove; akkerwinde</p>
<p>De Vries 2009 [vouchered]</p>	<p>Crassulaceae</p>	<p><i>Crassula connata</i></p>	<p>sand pygmyweed; sand pygmy-weed; sand pygmy weed; sand pygmy; sand pygmy-stonecrop; sand pygmy stonecrop; sand pigmy-weed; sand pigmy weed; sand pigmy; sand pigmy-stonecrop; sand pigmy stonecrop; sand pigmyweed; erect pygmyweed; erect pygmy-weed; erect pygmy weed; erect pigmy weed; erect pigmy-weed; erect pigmyweed</p>
<p>De Vries 2009 [vouchered]</p>	<p>Crassulaceae</p>	<p><i>Dudleya lanceolata</i></p>	<p>lance-leaved dudleya; lance leaved dudleya; lance-leaved live-forever; lance-leaved liveforever; lance-leafed dudleya; lance-leaf dudleya; lance leaf dudleya; lanceleaf dudleya; lance-leaf live-forever; lanceleaf live-forever; lanceleaf liveforever; lanceleaf stonecrop; southern California dudleya; Southern California dudleya</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Crassulaceae [Cuscutaceae]	Cuscuta californica [probably 2 vars. in range]	California dodder; California witch's hair; chaparral dodder
De Vries 2009 [vouchered]	Crassulaceae [Cuscutaceae]	Cuscuta californica var. californica	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [appendix]; CalPhotos	Cucurbitaceae	Marah fabaceus	California man-root; California manroot; California man root; California bigroot; California big-root; California chillicothe; common man-root; common manroot; common man root; valley man-root; valley manroot; valley man root; valley wild cucumber; alley chillicothe; people root; old-man-of-the-woods
2008 EA, 2006 EA	Cupressaceae	Juniperus	juniper
De Vries 2009 [vouchered]; Werner 1997; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; Hudson Ranch BA 1983 [appendix]]	Cupressaceae	Juniperus californica	California juniper; Californian juniper
Werner 1997 [observed]; Thomas & Wishner 1996 [observed; hand-written note]	Cyperaceae	Eleocharis quinqueflora [Eleocharis pauciflora]	few-flowered spike-rush; few-flowered spike rush; few flowered spike rush; few-flowered spikerush; few flowered spikerush; few-flowered-spikerush; few-flowered spike-sedge; few-flowered spikesedge; fewflowered spikesedge; few-flower spike-rush; few-flower spike rush; fewflower spike-rush; few-flower spikerush; few flower spikerush; fewflower spikerush; few-flower spike-sedge; five-flowered spike-rush

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Cyperaceae	Bolboschoenus maritimus (L.) Palla [Scirpus maritimus] (?)	maritime scirpus; maritime bulrush; seaside bulrush; saltmarsh clubrush; saltmarsh club-rush; salt-marsh club-rush; salt marsh club-rush; salt marsh club rush; cosmopolitan bulrush; prairie bulrush
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [appendix]	Ephedraceae	Ephedra viridis	green ephedra; green Mormon tea; green Mormon-tea; green jointfir; green joint-fir; mountain ephedra; mountain joint fir
De Vries 2009 [vouchered]; Werner 1997 [observed]	Euphorbiaceae	Croton setigerus [Eremocarpus setigerus]	turkey-mullein; turkey mullein; turkeymullein; doveweed turkey-mullein; doveweed turkey mullein; California dove weed; woolly-white drought weed; woolly white drought weed; woolly-white drought weed; grayweed; fish locoweed
Werner 1997 [vouchered]	Fabaceae	Astragalus didymocarpus [2 vars. in range]	two-seeded milkvetch; two-seeded milk-vetch; two seeded milk vetch; two-seeded locoweed; two-seed milk-vetch; twin locoweed; twin loco; dwarf white milkvetch; dwarf white milk-vetch; dwarf white milk vetch; common dwarf milkvetch; common dwarf locoweed; white dwarf locoweed; dwarf astragalus
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]	Fabaceae	Astragalus didymocarpus var. didymocarpus	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Fabaceae	Astragalus hornii var. hornii [only var. in CA]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Werner 1997 [vouchered]; Hudson Ranch BA 1983 [appendix]	Fabaceae	Astragalus lentiginosus [probably 4 vars. in range]	freckled milkvetch; freckled milk-vetch; freckled milk vetch; freckled locoweed; freckled loco; specklepod loco milkvetch; specklepod locoweed; mottled milkvetch; mottled milk-vetch; mottled locoweed; mottled rattleweed; spotted milkvetch; spotted locoweed; spotted loco; beakpod milkvetch
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed; hand-written note]; Hudson Ranch BA 1983 [figure 4]	Fabaceae	Astragalus lentiginosus var. nigracalycis	black-sepaled freckled locoweed; black-hair milkvetch; black-hair milk-vetch; black hair milk vetch
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [hand-written note]	Fabaceae	Astragalus oxyphysis	Diablo milkvetch; diablo milkvetch; Diablo milk-vetch; diablo milk-vetch; Diablo milk vetch; diablo milk vetch; Diablo locoweed; diablo locoweed; Diablo loco; diablo loco; robust milkvetch; Stanislaus milkvetch; Stanislaus milk-vetch; Stanislaus loco
De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Fabaceae	Astragalus sp.	milkvetch; milk-vetch; milk vetch; sheep-pod; sheeppod; bastard-vetch; bastard vetch; painted-pod; painted pod; paintedpod; poison-vetch; poisonvetch; poison vetch; pop-pea; rattlebox-weed; rattle-box weed
Thomas & Wishner 1996 [observed]	Fabaceae	Astragalus trichopodus var. phoxus (M.E. Jones) Barneby ? [only var. in range]	Antisell milkvetch; Antisell three-pod milkvetch; Antisell three-pod milk-vetch; Antisell's rattleweed; Gaviota rattle-weed; doctor's loco; doctors loco
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [hand-written note]	Fabaceae	Lotus humistratus [Hosackia brachycarpa]	short-podded lotus; short podded lotus; short-podded hosackia; short-podded trefoil; short-pod lotus; short-pod trefoil; foothill lotus; foothill bird's-foot-trefoil; foothill bird's-foot trefoil; foothill trefoil; foot-hill trefoil; foothill deervetch; low trefoil; colchita lotus; colchita

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Fabaceae	Lotus procumbens var. procumbens	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [observed]	Fabaceae	Lotus purshianus var. purshianus	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [observed];	Fabaceae	Lotus scoparius 2 vars. in range]	deer lotus; common deerweed; common deerweed; common deer weed; coastal deerweed; coastal deer weed; coast deerweed; butterfly deerweed; California broom; California broom deerweed
De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Fabaceae	Lotus sp.	lotus; bird's-foot-trefoil; bird's-foot trefoil; birds-foot trefoil; birdsfoot-trefoil; birdsfoot trefoil; birdfoot trefoil; birdfoot-trefoil; deer-vetch; deer vetch; deervetch; deerweed; deer-weed; deer weed
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [hand-written note]; Hudson Ranch BA 1983 [figure 4; appendix]	Fabaceae	Lotus wrangelianus [Lotus subpinnatus, misapplied]	Wrangel's lotus; Wrangel lotus; California lotus; California calf lotus; calf lotus; smooth hill lotus; Chile lotus; Chile hosackia; Chilean lotus; Chilean bird's-foot-trefoil; Chilean bird's-foot trefoil; Chilean bird's foot trefoil; Chilean trefoil
Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed; hand-written note]; Hudson Ranch BA 1983 [figure 4]	Fabaceae	Lupinus albifrons [2 vars. in range]	white-leaf bush-lupine; white-leaf bush lupine; whiteleaf bush lupine; white-foliaged lupine; silver bush-lupine; Bentham's bush-lupine; Bentham's bush lupine
De Vries 2009 [vouchered]	Fabaceae	Lupinus benthamii	spider lupine; Bentham's lupine; Bentham's annual lupine; Bentham lupine; Bentham annual lupine

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

voucher in Consortium; De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed];	Fabaceae	Lupinus bicolor	bicolored lupine; bicolor lupine; two-colored lupine; two-color lupine; miniature lupine; miniature lupine; miniature annual lupine; miniature sky lupine; miniature dove lupine; dove lupine; Lindley's annual lupine; pygmy-leaved lupine; pigmy-leaved lupine; pygmy leaved lupine; pygmy leaved lupine; pygmy-leafed lupine; pygmy leafed lupine; pigmy-leafed lupine; pigmy leafed lupine; pygmy-leaf lupine; pigmy-leaf lupine; fairy lupine; fairy lupin
De Vries 2009 [vouchered]; Hudson Ranch BA 1983 [appendix]	Fabaceae	Lupinus excubitus [3-4 vars. in range]	grape soda lupine; grape soda bush lupine; interior bush lupine; guard lupine; Inyo bush lupine
De Vries 2009 [vouchered]	Fabaceae	Lupinus formosus var. formosus	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
vouchers in Consortium; De Vries 2009 [vouchered]; Werner [vouchered]	Fabaceae	Lupinus microcarpus [all vars. documented]	chick lupine; wide-bannered lupine; small-fruited lupine
De Vries 2009 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Fabaceae	Lupinus microcarpus var. densiflorus [Lupinus densiflorus]	dense-flowered lupine; dense-flowered chick lupine; dense-flowered platycarpus; densely flowered lupine; white-whorled lupine; white-whorl lupine; whitewhorl lupine; gully lupine
De Vries 2009 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Fabaceae	Lupinus microcarpus var. horizontalis [Lupinus horizontalis]	sunset lupine; sunset platycarpus; prostrate red-flowered lupine
vouchers in Consortium; Thomas & Wishner 1996 [observed]	Fabaceae	Lupinus microcarpus var. microcarpus [Lupinus subvexus]	red-flowered lupine; red-flowered platycarpo; redflower lupine; red lupine; intermediate platycarpus [common name can be created by adding 'typical' to any species-level common name]

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]	Fabaceae	Lupinus sp. (annual)	lupine; lupin; sun-dial plant; sun dial plant; sundial plant; sun-dial; sun dial; sundial; old-maid's-sunbonnets
Werner 1997	Fabaceae	Lupinus spp.	lupine; lupin; sun-dial plant; sun dial plant; sundial plant; sun-dial; sun dial; sundial; old-maid's-sunbonnets
De Vries 2009 [vouchered]; Hudson Ranch BA 1983 [appendix]	Fabaceae	Lupinus succulentus	succulent lupine; succulent annual lupine; succulent arroyo lupine; annual arroyo lupine; hollow-leaf annual lupine; hollowleaf annual lupine; hollow leaf lupine; hollowleaf lupine; hollow-stem annual blue lupine
De Vries 2009 [observed]	Fabaceae	Medicago sp.	medicago; medick; medic; bur medick; burr medick; bur medic; burr medic; burmedic; burrmedic; burclover; burr clover; bur-clover; bur clover; burr clover; burr-clover; melilot; melilot trefoil; nonsuch; alfalfa; alphalpha
De Vries 2009 [vouchered]	Fabaceae	Robinia pseudoacacia	common robinia; common locust; common locust tree; common black locust; common black locust tree; false acacia; faux-acacia; faux acacia; bastard acacia; pea-flowered locust; pea-flower locust; pea flower locust; peaflower locust; post locust; shipmast locust; white-flower robinia; white flowering robinia; yellow locust; green locust; white locust; white honey-flower; white laburnum; whya tree
Werner 1997 [vouchered]	Fabaceae	Trifolium albopurpureum [2 vars. in range]	rancheria clover
De Vries 2009 [vouchered]	Fabaceae	Trifolium albopurpureum var. albopurpureum	common rancheria clover [common name can be created by adding 'typical' to any species-level common name]

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [hand-written note]; Hudson Ranch BA 1983 [appendix]	Fabaceae	Trifolium gracilentum var. gracilentum [only var in range]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Fabaceae	Trifolium sp.	clover; true clover; claver; true trefoil
De Vries 2009 [vouchered]	Fabaceae	Trifolium willdenovii	tomcat clover; tom-cat clover; tom cat clover; tomcat valley clover; valley clover; Willdenow's clover; Willdenow clover
Werner 1997 [observed]	Fagaceae	Quercus berberidifolia	inland scrub oak; barberry-leaved scrub oak; barberry-leaf scrub oak; barberry-leaved oak; barberry scrub oak; chaparral scrub oak; riparian scrub oak
Werner 1997 [observed]; Hudson Ranch BA 1983 [hand-written note on figure 4]	Fagaceae	Quercus douglasii	California blue oak; Californian blue oak; California encino azul; Douglas's oak; Douglas' oak; Douglas oak; Douglas's blue oak; Douglas' blue oak; Douglas blue oak
Hudson Ranch BA 1983 [figure 4]	Fagaceae	Quercus dumosa [out of range under current circumscriptions, possibly Quercus berberidifolia]	Nuttall's scrub oak; Nuttall scrub oak; coastal sage scrub oak; coastal scrub oak; coast scrub oak
De Vries 2009 [observed]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Fagaceae	Quercus john-tuckeri [Quercus turbinella subsp. californica]	Tucker's oak; Tucker oak; John Tucker's oak; John Tucker oak; Tucker's desert scrub oak; Tucker desert scrub oak; Tucker's scrub oak; Tucker scrub oak; Tucker's desert oak; Tucker desert oak
Hudson Ranch BA 1983 [appendix]	Fagaceae	Quercus sp.	oak; encino; encina; roble

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

2008 EA, 2006 EA	Fagaceae	Quercus wislizenii var. frutescens	scrub interior live oak; scrub interior live-oak; shrubby interior live oak; shrubby interior live-oak; bush interior live oak; bush interior live-oak; dwarf interior live oak; dwarf interior live-oak; chaparral live oak; chaparral live-oak
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]	Fagaceae	Quercus X alvordiana	Alvord's oak; Alvord oak
De Vries 2009 [vouchered]; Werner 1997 [observed]	Frankeniaceae	Frankenia salina	alkali frankenia; alkali sea-heath; alkali sea heath; alkali seaheath; alkali yerba reuma
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]	Geraniaceae	Erodium cicutarium	red-stemmed filaree; red stemmed filaree; red-stemmed filarel; red-stemmed stork's-bill; red-stemmed stork's bill; red stemmed stork's bill; red-stemmed stork's-bill; red-stem filaree; red stem filaree; redstem filaree; redstem filaria; red stem alfilaree; red-stem alfilaree; redstem alfilaree; red-stem stork's-bill; red-stem stork's bill; redstem stork's bill; red-stem storksbill; redstem stork's-bill; redstem stork's bill; redstem storksbill; red alfilaree; cut-leaf filaree; cutleaf filaree; common heron's-bill; common heron's bill; common herons-bill; common herons bill; common heronsbill; coastal heron's-bill; coastal heron's bill; hemlock geranium; hemlock stork's-bill; hemlock stork's bill; hemlock storksbill; hemlock heron's-bill; hemlock heron's bill; small-flowered stork's-bill; small-flowered stork's bill; pink filaree; pink-needle; powk-needle

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Geraniaceae	Erodium moschatum	musk filaree; musky afilerilla; musk stork's-bill; musk stork's bill; musk storks-bill; musk storks bill; musk storks-bill; musk heron's-bill; musk heron's bill; musk herons-bill; musk herons bill; musk-clover; musk clover; musky filaree; musky filaria; musky stork's-bill; musky stork's bill; musky storks-bill; musky storks bill; musky storks-bill; musky heron's-bill; musky herons-bill; musky heron-bill; musky heronsbill; musky crowfoot; green-stemmed filaree; green-stemmed filarel; green-stem filaree; green stem filaree; white-stem filaree; white stem filaree; whitestem filaree; white-stem storks-bill; white-stem heron's-bill; white-leaf filaree; ground-needle; ground needle
Hudson Ranch BA 1983 [figure 4]	Grossulariaceae	Ribes californicum var. californicum [only var. in range]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
voucher in Consortium; De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Grossulariaceae	Ribes quercetorum	oak-woods gooseberry; oakwoods gooseberry; oak-belt gooseberry; oak gooseberry; foothill gooseberry; yellow-flowered gooseberry; yellow gooseberry
Thomas & Wishner 1996 [observed]	Grossulariaceae	Ribes sp.	ribes; currant; currants; currant-bush; wild currant; wild currants; current; gooseberry; goose-berry; goose berry; gooseberries; wild gooseberry
De Vries 2009 [vouchered]	Juncaceae	Juncus balticus	Baltic rush; Baltic wire rush; Baltic rush-grass; Baltic rush grass; lake shore rush
Thomas & Wishner 1996 [observed]	Juncaceae	Juncus effusus var. pacificus ? [only var. in range]	Pacific soft rush; Pacific bog rush; Pacific common rush; Pacific rush
De Vries 2009 [vouchered]	Juncaceae	Juncus mexicanus	Mexican rush; Mexican wire rush

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Juncaceae	Juncus sp.	juncus; rush
Werner 1997 [observed]	Juncaceae	Juncus spp.	juncus; rush
De Vries 2009 [vouchered]	Juncaceae	Juncus xiphioides	iris-leaved rush; iris leaved rush; iris-leafed rush; iris leafed rush; iris-leaf rush; iris leaf rush; irisleaf rush
Werner 1997 [observed]	Lamiaceae	Acanthomintha obovata [2 subsp., both on CNPS lists]	obovate-leaved thorn-mint; obovate-leaved thornmint
Hudson Ranch BA 1983 [rare, endangered, protected plant list]	Lamiaceae	Acanthomintha obovata subsp. obovata	San Benito thorn-mint; San Benito thorn mint; San Benito thornmint [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4]	Lamiaceae	Marrubium vulgare	common horehound; common hore-hound; common hoarhound; white horehound; white hore- hound; white hore hound; white hoarhound; white hoar-hound; white hoar hound; common white horehound; common white hore-hound; common white hore hound; common white hoarhound; common white hoar-hound; white-wooly horebound; woolly horehound; woolly horehound; woolly hore-hound; woolly hoarhound; herb- horehound; herb horehound; herbe horehound; plant horehound; plant hore-hound; pest plant horehound; herehoune; horhowne; horehownd; horehounde; horone; hound's-bane; hound's bane; hound-bane; houndbane; houndsbane; houndbene; houndsbene; eye of the star; seed of Horus; soldier's tea
Werner 1997 [observed]; Hudson Ranch BA 1983 [rare, endangered, protected plant list]	Lamiaceae	Monardella linoidea subsp. oblonga	willowy monardella; willowy coyote-mint; willowy coyote mint; willowy San Diego mint; San Diego willowy mint; San Diego County monardella; Poway mint

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Thomas & Wishner 1996 [observed]	Lamiaceae	Salvia	salvia
De Vries 2009 [vouchered]; Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]	Lamiaceae	Salvia carduacea	thistle sage; thistle-sage; thistlesage
De Vries 2009 [vouchered]; Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]	Lamiaceae	Salvia columbariae var. columbariae [only var. in CA]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Lamiaceae	Trichostema lanceolatum	vinegar trichostema; vinegar bluecurls; vinegar blue-curls; vinegar-weed trichostema; vinegar weed trichostema; vinegarweed trichostema; turpentine camphor-weed; turpentine camphor weed; terpentine-weed trichostoma; camphor- weed trichostoma; camphor-weed blue-curls; camphor weed blue curls; common bulecurls
Hudson Ranch BA 1983 [rare, endangered, protected plant list]	Lamiaceae	Trichostema ovatum	ovate bluecurls; ovate bluecurls; San Joaquin bluecurls; San Joaquin blue-curls; San Joaquin turpentine weed; alkali blue-curls; alkali blue curls
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4; rare, endangered, protected plant list]	Liliaceae	Calochortus venustus	Venus mariposa; Venus mariposa-lily; Venus mariposa lily; butterfly mariposa; butterfly mariposa-lily; butterfly mariposa lily; showy mariposa; showy mariposa-lily; showy mariposa lily; beautiful mariposa; beautiful mariposa-lily; beautiful mariposa lily; square mariposa-lily; square mariposa lily; square mariposa-tulip; square mariposa tulip

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [observed]; Hudson Ranch BA 1983 [rare, endangered, protected plant list]	Liliaceae	Fritillaria agrestis	stink-bells; stink bells; stinkbells; ill-scented stink bells; ill-scented fritillaria; ill-scented fritillary
De Vries 2009 [vouchered]	Loasaceae	Mentzelia affinis	yellow blazing-star; yellow blazing star; yellow blazingstar; yellow-comet; yellow comet; yellowcomet; yellow-comet stickleaf; yellow comet stickleaf; hydra blazingstar; hydra stick-leaf; hydra stickleaf; triangle-seed blazing-star; triangle-seed blazing star; triangle seed blazing star; kuha
Werner 1997 [vouchered]; Hudson Ranch BA 1983 [appendix]	Loasaceae	Mentzelia dispersa	bushy mentzelia; bushy blazing-star; bushy blazing star; bushy blazingstar; bush mentzelia; brushy mentzelia; scattered blazing-star; scattered blazing star; scattered blazingstar; scattered stickleaf; entire mentzelia; Nevada blazing-star; Nevada blazing star; Nevada blazingstar; Nevada stickleaf; nada stickleaf; nada stick-leaf; mada stick-leaf; mada stickleaf
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [hand-written note]	Loasaceae	Mentzelia pectinata	San Joaquin blazing-star; San Joaquin blazing star; San Joaquin blazingstar; San Joaquin stickleaf; comet blazing-star; comet blazing star
De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Loasaceae	Mentzelia sp.	mentzelia; stick-leaf; stick leaf; stickleaf
Werner 1997 [vouchered]; Hudson Ranch BA 1983 [appendix]	Malvaceae	Eremalche parryi [both subspp. reported]	Parry's eremalche; Parry's mallow; Parry eremalche; Parry mallow

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Hudson Ranch BA 1983 [rare, endangered, protected plant list]	Malvaceae	Eremalche parryi subsp. kernensis [Eremalche kernensis]	Kern eremalche; Kern mallow
De Vries 2009 [vouchered]	Malvaceae	Eremalche parryi subsp. parryi	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [observed]; Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]	Malvaceae	Malva parviflora	small-flowered mallow; small flowered mallow; smallflowered mallow; small-flowered marshmallow; small-flowered cheeseweed; small- flowered cheese-weed; small-flower mallow; smallflower mallow; small-flower marshmallow; small-fruited mallow; small-fruit mallow; small whorled cheeseweed; small-whorled cheeseweed; small-whorl mallow; small whorl mallow; hidden- flower mallow; hidden-flower cheeseweed; little mallow; little cheeseweed; least mallow; myllymalva
De Vries 2009 [vouchered]	Melanthiaceae [Liliaceae]	Zigadenus brevibracteatus	desert zigadene; desert zygadene; desert death- camas; desert death camas; desert deathcamas; desert star-lily; desert star lily
De Vries 2009 [observed]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Melanthiaceae [Liliaceae]	Zigadenus sp.	zigadenus; zigadene; zygadenus; zygadene; death-camas; death camas; deathcamas; death- camass; death camass; death camas lily; poison- camas; poison camas; poisoncamas
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Montiaceae [Portulacaceae]	Calandrinia ciliata	ciliate red-maids; ciliate red maids; fringed red- maids; fringed redmaids; fringed red maids; magenta red maids; mother's beauties
De Vries 2009 [vouchered]	Montiaceae [Portulacaceae]	Calyptridium monandrum	sand-cress calyptridium; sand cress calyptridium; sandcress calyptridium; sandcress pussy-paws; sandcress pussy paws; roseate calyptridium; common calyptridium; common pussy-paws; common pussy paws

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Montiaceae [Portulacaceae]	Claytonia exigua subsp. exigua	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [observed]	Montiaceae [Portulacaceae]	Claytonia parviflora [3 subspp. in range]	streambank spring-beauty; streambank spring beauty; streambank springbeauty; streambank streambeauty; small-flowered claytonia; small flowered claytonia; small-flowered montia; small- flowered miner's lettuce; small-flowered miners lettuce; small flowered miners lettuce; small-flower claytonia; little-flower spring-beauty; little-flower springbeauty; showy rock-montia; showy rock montia; small-leaved claytonia
voucher in Consortium; De Vries 2009 [vouchered]	Montiaceae [Portulacaceae]	Claytonia parviflora subsp. parviflora	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [observed]; Werner 1997 [vouchered]; Asteraceae	Montiaceae [Portulacaceae]	Claytonia perfoliata [2subspp. In range]	perfoliate claytonia; perfoliate miner's-lettuce; perfoliate miner's lettuce; perfoliate miners- lettuce; perfoliate miners lettuce; perfoliate minerslettuce; clasp-leaf miner's-lettuce; clasp- leaf miner's lettuce; claspleaf miner's lettuce; common miner's-lettuce; common miner's lettuce; common miners-lettuce; naiad spring beauty; winter miner's lettuce; winter-purslane; winter purslane; winterpurslane; Spanish lettuce; Portuguese lettuce
De Vries 2009 [vouchered]	Montiaceae [Portulacaceae]	Claytonia perfoliata subsp. perfoliata	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [observed]	Montiaceae [Portulacaceae]	Claytonia sp.	claytonia; spring-beauty; spring beauty; springbeauty; good-morning-spring; good-morning spring; good morning spring; goodmorningspring

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>vouchers in Consortium De Vries 2009 [vouchered]; Werner 1997 [vouchered]; CalPhotos</p>	Nyctaginaceae	Mirabilis multiflora var. pubescens	<p>Foebel's mirabilis; Froebel's four-o'clock; Froebel's four o'clock; Froebel four-o'clock; Froebel four o'clock; downy Colorado four-o'clock; downy Colorado four o'clock</p>
<p>De Vries 2009 [vouchered]; Werner 1997 [vouchered]</p>	Onagraceae	Camissonia campestris subsp. campestris [only subsp. in range]	<p>no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]</p>
<p>De Vries 2009 [vouchered]</p>	Onagraceae	Camissonia contorta	<p>contorted suncup; contorted sun-cup; contorted sun cup; contorted evening-primrose; contorted evening primrose; contorted-pod suncup; contorted pod suncup; contorted-pod evening-primrose; contorted-pod evening primrose; contorted pod evening primrose; contorted-podded evening-primrose; bentpod desert-primrose; bentpod desert primrose; bentpod desertprimrose; cruciated primrose; Douglas's evening-primrose; Douglas's evening primrose; Douglas' evening-primrose; Douglas' evening primrose</p>
<p>De Vries 2009 [vouchered]</p>	Onagraceae	Camissonia kernensis subsp. gilmanii	<p>Gilman's suncup; Gilman's evening-primrose; Gilman's evening primrose; Gilman suncup; Gilman evening-primrose; Gilman evening primrose</p>
<p>Werner 1997 [observed]</p>	Onagraceae	Camissonia spp. [also may be any of several genera segregated from Camissonia]	<p>camissonia; suncup; sun-cup; sun cup</p>
<p>Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]</p>	Onagraceae	Camissoniopsis bistorta [Camissonia bistorta]	<p>southern suncup; southern sun-cup; southern sun cup; southern sun cups</p>
<p>De Vries 2009 [vouchered]</p>	Onagraceae	Camissoniopsis confusa [Camissonia confusa]	<p>San Bernardino suncup; San Bernardino sun-cup; San Bernardino sun cup; confusing primrose</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

voucher in Consortium; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]; CalPhotos	Onagraceae	Clarkia cylindrica [2 subspp. in range]	speckled clarkia; speckled fairyfan; speckled farewell-to-spring; cylindrical clarkia; cylindrical godetia; band clarkia; band godetia
voucher in Consortium; De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Onagraceae	Clarkia sp.	clarkia; fairy-fan; fairy fan; fairyfan; farewell-to-spring; farewell to spring; farewelltospring; herald-of-summer; herald of summer
De Vries 2009 [vouchered]	Onagraceae	Clarkia tembloriensis subsp. tembloriensis	Vasek's Temblor Range clarkia [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [observed]	Onagraceae	Epilobium canum [2 subspp. in range]	California zauschneria; Californian zauschneria; California fuchsia; California-fuchsia; Californian fuchsia; hoary California fuchsia; red California fuchsia; California wild fuchsia; California false fuchsia; California firechalice; California fire chalice; firechalice; California hummingbird trumpet; hummingbird fuchsia; hummingbird trumpet; hummingbird-trumpet; hummingbird's trumpet; hummingbird trumpets; hummingbird trumpet bush; Mexican balsamea
De Vries 2009 [vouchered]	Onagraceae	Eremothera boothii subsp. decorticans [Camissonia boothii subsp. decorticans]	reddish shredding primrose; shredding-bark primrose
De Vries 2009 [vouchered]	Onagraceae	Eulobus californicus [Camissonia californica]	mustard camissonia; mustard evening-primrose; mustard evening primrose; mustard primrose; mustard-like camissonia; mustard-like primrose; false-mustard camissonia; false-mustard primrose

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Hudson Ranch BA 1983 [figure 4]	Onagraceae	Oenothera primiveris	spring evening-primrose; spring evening primrose; early evening-primrose; early evening primrose; yellow-flower desert evening-primrose; yellow desert evening-primrose; yellow desert evening primrose; large yellow desert evening-primrose; large yellow desert primrose; large yellow primrose; bottle evening-primrose; bottle evening primrose; yellow sun cups
De Vries 2009 [vouchered]	Onagraceae	Tetrapteron graciliflorum [Camissonia graciliflora]	hill suncup; hill sun-cup; hill sun cup; hill suncups; hill sun-cups; hill sun cups; slender-flowered suncup; slender-flowered sun-cup; slender-flowered sun cup; slender-flowered evening-primrose; slender-flowered evening primrose; slender-flowered primrose; slender flowered primrose; slender-flower suncup; slenderflower suncup; slender-flower sun-cups; slender-flower primrose
De Vries 2009 [vouchered]	Orobanchaceae [Scrophulariaceae]	Castilleja applegatei [possibly 2 subsp. in range]	Applegate's paintbrush; Applegate paintbrush; Applegate's paint-brush; Applegate's paint brush; wavy-leaved paintbrush; wavy leaved paintbrush; wavy-leaved paint-brush; wavy-leafed paintbrush; wavy-leaf paintbrush; wavy leaf paintbrush; wavyleaf paintbrush
vouchers in Consortium	Orobanchaceae [Scrophulariaceae]	Castilleja applegatei subsp. martinii	Martin's paintbrush; Martin paintbrush; Martin's paint-brush

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]</p>	<p>Orobanchaceae [Scrophulariaceae]</p>	<p>Castilleja exserta [2 subsp. in range; Orthocarpus purpurascens]</p>	<p>purple owl's-clover; purple owl's clover; purple owl-clover; purple owl clover; purple owlclover; purple owls-clover; purple owls clover; purple owlsclover; rose-purple owl's-clover; rose-purple owl's clover; rose purple owl's clover; red owl's-clover; red owl's clover; red owl-clover; red owl clover; red owlclover; exserted owl's-clover; exserted owl's clover; exserted owl-clover; exserted owl clover; exserted paintbrush; escobita owl's-clover; escobita owl's clover; escobita owl-clover; escobita owlclover; ornate owl's clover</p>
<p>De Vries 2009 [vouchered]</p>	<p>Orobanchaceae [Scrophulariaceae]</p>	<p>Castilleja exserta subsp. exserta</p>	<p>typical purple owl's-clover; typical purple owl's clover; typical purple owl-clover; typical purple owl clover; typical purple owlclover; typical purple owls-clover; typical purple owls clover; typical purple owlsclover [common name can be created by adding 'typical' to any species-level common name]</p>
<p>Werner 1997 [vouchered, observed]</p>	<p>Orobanchaceae [Scrophulariaceae]</p>	<p>Castilleja minor subsp. spiralis [only subsp. in range]</p>	<p>California threadtorch; California thread-torch; serpentine-seep paintbrush; serpentine-seep annual paintbrush; creek paintbrush; large-flowered annual paintbrush; large-flowered annual paint-brush; large-flower annual paintbrush; large-flowered paintbrush; large flowered paintbrush; dark-lipped annual paintbrush; dark-lipped annual paint-brush; serpentine-seep paintbrush; serpentine-seep annual paintbrush</p>
<p>Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]</p>	<p>Orobanchaceae [Scrophulariaceae]</p>	<p>Castilleja plagiotoma</p>	<p>Mojave paintbrush; Mojave paint-brush; Mohave paintbrush</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed; hand-written note]	Orobanchaceae [Scrophulariaceae]	Castilleja sp.	paintbrush; paint brush; painter's-brush; painter's brush; painters'-brush; painters' brush; painters- brush; painters brush; painted-cup; painted cup; paintedcup; Native American paintbrush
De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]; 2008 EA, 2006 EA	Papaveraceae	Eschscholzia californica	common California-poppy; common California poppy; common Californiapoppy; common Californian poppy; California golden-poppy; California golden poppy; California goldenpoppy; Californian golden-poppy; Californian golden poppy; California gold-poppy; California gold poppy; California goldpoppy; Californian gold- poppy; orange California-poppy; orange California poppy; orange-flowered California poppy; orange flowered California poppy
De Vries 2009 [vouchered]	Papaveraceae	Eschscholzia lemmonii subsp. lemmonii	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]; CalPhotos	Papaveraceae	Platystemon californicus	cream-cups; cream cups; creamcups; cream-cup; cream cup; creamcup; California creamcups; California cream-cups; California cream cups; California cream-cup; California cream cup; California creamcup
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Papaveraceae	Stylomecon heterophylla	California wind-poppy; California wind poppy; wind-poppy; wind poppy; windpoppy; tangarine poppy

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>Thomas & Wishner 1996 [hand-written note]</p>	<p>Phrymaceae [Scrophulariaceae]</p>	<p>Mimulus androsaceus</p>	<p>orange bush-monkeyflower; orange bush monkeyflower; orange bush-monkey-flower; orange bush monkey-flower; orange bush monkey flower; orange monkeyflower; salmon bush monkey-flower; sticky mimulus; sticky diplacus; sticky bush-monkeyflower; sticky bush monkeyflower; sticky bush monkey-flower; sticky bush monkey flower; sticky monkey bush; coast bush monkeyflower; northern bush-monkeyflower; northern bush monkeyflower</p>
--	--	----------------------------	--

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]</p>	<p>Phrymaceae [Scrophulariaceae]</p>	<p>Mimulus guttatus</p>	<p>seep-spring mimulus; seep spring mimulus; spring-seep mimulus; spring seep mimulus; seep-spring monkeyflower; seep-spring monkey flower; seep spring monkey flower; spring-seep monkeyflower; spring-seep monkey-flower; creek monkeyflower; creek monkey-flower; creek monkey flower; yellow creek monkeyflower creekside monkeyflower; streamside monkeyflower; streamside monkey-flower; streamside monkey flower; common streamside monkeyflower; stream mimulus; stream monkeyflower; stream monkey-flower; stream monkey flower; yellow stream monkeyflower; yellow-stream monkeyflower; common stream monkeyflower; common yellow monkeyflower; common yellow monkey-flower; common yellow monkey flower; yellow common monkeyflower; large yellow monkey-flower; large common monkey-flower; common large monkeyflower; common large monkey-flower; golden monkeyflower; golden monkey-flower; golden monkey flower; mim-gut; mim gut; mimgut</p>
<p>Thomas & Wishner 1996 [observed]</p>	<p>Phrymaceae [Scrophulariaceae]</p>	<p>Mimulus sp.</p>	<p>mimulus; monkeyflower; monkey-flower; monkey flower</p>
<p>2008 EA, 2006 EA</p>	<p>Pinaceae</p>	<p>Pinus</p>	<p>pine; true pine</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; Hudson Ranch BA 1983 [appendix]]	Pinaceae	Pinus monophylla [Pinus cembroides subsp. monophylla, Pinus cembroides var. monophylla]	single-leaved pinyon; single-leaved pinyon pine; single-leaved pinyon pine; single-leaved piñon; single-leaved piñon pine; single-leaved pinyon; single-leaved pinyon pine; single-leaved piñon; single-leaved piñon pine; single-leaf pinyon; single- leaf piñon; single-leaf pinyon pine; singleleaf pinyon; singleleaf pinyon pine; single-leaf piñon; singleleaf piñon; singleleaf nut pine; single-leaf pine; singleleaf pine; one-needle pinyon pine; oneneedle pinyon pine; one-leaved pinyon; one- leaved pinyon pine; one-leaved piñon; one-leaved nut pine; one-leaved piñon; one-leaf pinyon; one leaf pinyon; one-leaf pinyon pine; one-leaf piñon; one-leaf piñon pine; one-leaf pine
De Vries 2009 [vouchered]	Plantaginaceae	Plantago erecta	erect plantain; foothill plantain; California dwarf plantain; common California plantain; dot-seed plantain; dot seed plantain; dotseed plantain
Hudson Ranch BA 1983 [appendix]	Plantaginaceae [Scrophulariaceae]	Collinsia bartsiiifolia [2 vars. in range]	bartsia-leaved collinsia; white blue-eyed-Mary; white blue-eyed Mary; white blue eyed Mary; white blue-eye-Mary; white blue-eye Mary
De Vries 2009 [vouchered]	Plantaginaceae [Scrophulariaceae]	Collinsia bartsiiifolia var. davidsonii	Davidson's collinsia; Davidson's blue-eyed-Mary; Davidson's blue-eyed Mary; Davidson's blue eyed Mary; Davidson's white Chinese-houses; Davidson collinsia; Davidson blue-eyed-Mary; Davidson blue-eyed Mary; Davidson blue eyed Mary; Davidson white Chinese-houses

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4]; CalPhotos	Plantaginaceae [Scrophulariaceae]	Collinsia heterophylla	purple-and-white collinsia; purple-and-white Chinese-houses; purple-and-white Chinese houses; purple and white Chinese-houses; purple and white Chinese houses; purple & white Chinese-houses; purple & white Chinese houses; purple Chinese-houses; purple-and-white blue-eyed-Mary; purple-and-white blue-eyed Mary; purple-and-white blue-eye-Mary; purple-and-white blue-eye Mary; purple Chinese-houses; purple Chinese houses; purple Chinesehouses; bicolored collinsia; bicolored Chinese-houses; bicolored blue-eyed-Mary; bicolored blue-eyed Mary; bicolor collinsia; bicolor Chinese-houses; bicolor blue-eyed-Mary; bicolor blue-eyed Mary; common Chinese-houses; common Chinese houses; harlequin collinsia; harlequin blue-eyed-Mary; harlequin blue-eyed Mary; harlequin blue eyed Mary
De Vries 2009 [observed]	Plantaginaceae [Scrophulariaceae]	Collinsia sp.	collinsia; blue-eyed-Mary; blue-eyed Mary; blue eyed Mary; blueeyed Mary; blue-eye-Mary; blue-eye Mary; Mary blue-lips; blue-lips; blue lips; bluetails; Chinese-houses; Chinese houses; Chinesehouses
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [appendix]	Plantaginaceae [Scrophulariaceae]	Penstemon centranthifolius	California scarlet bugler; California scarlet-bugler
Thomas & Wishner 1996 [observed]	Plantaginaceae [Scrophulariaceae]	Penstemon heterophyllus var. australis ? [only var. in range]	southern foothill penstemon
De Vries 2009 [vouchered]	Plantaginaceae [Scrophulariaceae]	Penstemon laetus var. laetus [only var. in range]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Plantaginaceae [Scrophulariaceae]	Veronica anagallis-aquatica	great water speedwell; great-water speedwell; greater water speedwell; blue water speedwell; blue water-speedwell; blue-flowered water speedwell; blew-flowered pimpernel; blew flowered pimpernel; blew-flower'd pimpernel; brook-pimpernell
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Poaceae	Achnatherum speciosum [Stipa speciosa]	desert needlegrass; desert needle-grass; desert needle grass; desert stipa; desert rice-grass; desert rice grass
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]	Poaceae	Avena barbata	slender wild oat; slender wildoat; slender wild oats; slender wildoats; slender oat; slender oats; slim oat; slim oats; bearded oat; bearded oats; barbed oat; barbed oats; beard oats; wild beard oats
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Poaceae	Avena fatua	common wild oat; common wildoat; common wild oats; common wildoats; spring wild oat; spring wild oat; fat oat; fat wild oat; wheat oat; wheat oats; potato oat; potato oats; poor oat; flaxgrass; flax- grass; flax grass
De Vries 2009 [observed]	Poaceae	Avena sp.	avena; oat; oats
Werner 1997 [observed]	Poaceae	Avena spp.	avena; oat; oats
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Poaceae	Bromus arenarius	Australian cheat; Australian brome; Australian brome-grass; Australian chess; Australian oats; sand brome; seaside brome-grass; sea-side brome grass; sea side brome grass; seaside biome-grass
De Vries 2009 [observed]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4]	Poaceae	Bromus carinatus var. carinatus [only var. in range]	typical California brome; typical California brome- grass; typical California brome grass; typical California brome grass; typical Californian brome [common name can be created by adding 'typical' to any species-level common name]

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Poaceae	<i>Bromus catharticus</i>	rescue brome; rescue brome grass; rescue brome grass; rescuegrass; Schrader's bromus; Schrader's brome; Schrader's brome grass; Schrader's brome grass; Schrader's grass; flat-spiked brome grass; flat spiked brome grass
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4; appendix]; 2008 EA, 2006 EA	Poaceae	<i>Bromus diandrus</i> [<i>Bromus rigidus</i>]	rip gut cheat; rip gut brome; rip-gut brome; rip gut brome; rip gut brome grass; rip gut brome grass; rip gut chess; rip gut chess; rip gut grass; rip gut grass; rip gut grass; rip gut; rip-gut; rip gut; great brome; great brome-grass; great brome grass; great brome grass; English great brome; needle brome
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]; 2008 EA, 2006 EA	Poaceae	<i>Bromus hordeaceus</i> [<i>Bromus mollis</i>]	soft cheatgrass; soft cheat-grass; soft cheat grass; soft cheat; soft chess brome; common soft brome; common soft-brome; soft brome; soft-brome; soft brome grass; introduced soft brome grass; soft cheese brome; hairy cheat; bland brome; bland brome grass; bland brome grass; tender brome; tender brome-grass; tender brome grass; blubber grass; blubber-grass
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]; 2008 EA, 2006 EA	Poaceae	<i>Bromus madritensis</i> subsp. <i>rubens</i> [<i>Bromus rubens</i>]	red foxtail cheat-grass; red foxtail chess; red foxtail brome; red brome; red brome-grass; red brome grass; red brome grass; red brome foxtail chess; bromo rojo; tufted brome
Werner 1997 [observed]	Poaceae	<i>Bromus</i> spp.	brome; brome-grass; brome grass; brome grass; bromo; chess; chess-grass; chess grass; chessgrass

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 figure 4]</p>	<p>Poaceae</p>	<p><i>Bromus tectorum</i></p>	<p>common cheatgrass; common cheat; cheatgrass brome; downy cheatgrass; downy cheat-grass; downy cheat grass; downy cheat; downy brome- grass; downy brome grass; downy brome-grass; downy chess; downy chess brome; downy chess brome grass; downy chess brome-grass; invasive cheatgrass; invasive cheat-grass; invasive cheat grass; weedy cheatgrass; weedy cheat-grass; weedy cheat grass; introduced cheatgrass; introduced cheat grass; introduced cheat; nonnative cheatgrass; European cheatgrass; European cheat-grass; European cheat grass; fire- prone cheatgrass; fire prone cheatgrass; fire- prone cheat grass; early chess; drooping brome; drooping brome-grass; drooping brome-grass; thatch brome-grass; slender chess; awned brome grass; 100-days grass; military grass; Mormon oats; brome tec; brom tec; brom tect</p>
<p>De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4]</p>	<p>Poaceae</p>	<p><i>Distichlis spicata</i></p>	<p>spiked saltgrass; spiked salt-grass; spiked salt grass; marsh saltgrass; marsh salt-grass; marsh salt-grass; inland saltgrass; inland salt-grass; inland salt grass; interior saltgrass; interior salt grass; desert saltgrass; desert salt grass; seashore saltgrass; seashore salt grass; sea- shore salt-grass; coastal saltgrass; coastal salt grass; marsh spikegrass; marsh spike-grass; marsh spike grass; marsh-spike-grass; coast marsh spike-grass</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Poaceae	Elymus elymoides [3 subspp. in range; Sitanion hystrix]	bottlebrush squirreltail; bottle-brush squirreltail; bottle brush squirreltail; bottle-brush squirrel-tail; bottle brush squirrel tail; bottlebrush squirrel-tail; bottlebrush squirrel tail; common squirreltail; common squirrel-tail; western squirreltail; western bottlebrush grass; western bottle brush grass; long-bristled wild rye; long-bristled wild-rye; long- bristle wild rye; orchard barley
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Poaceae	Elymus glaucus [2 subspp. in range]	blue wildrye; blue wild-rye; blue wild rye; blue ryegrass; blue rye-grass; blue rye grass; common western wildrye; common western wild-rye; common western wild rye; woodland rye-grass; woodland wildrye; woodland wild-rye; woodland wild rye
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Poaceae	Elymus multisetus	big squirreltail; big squirrel-tail; big squirrel tail; big squirreltail grass; big squirrel-tail grass
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Poaceae	Elymus stebbinsii [Agropyron parishii]	Stebbins's wheatgrass; Stebbins' wheatgrass; Stebbins wheatgrass; California wheatgrass; California wheat-grass; California wheat grass
De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]	Poaceae	Hordeum murinum [all 3 subspp. reported]	mouse barley; mouse barley grass; mouse barley- grass; mouse-barley grass; common wall-barley- grass; wallbarley; way barley; smooth barley; rabbit barley; farmer's foxtail; farmer's-foxtail; farmers' foxtail; farmers foxtail; barnyard foxtail
De Vries 2009 [vouchered]	Poaceae	Hordeum murinum subsp. glaucum	glaucous barley; blue-gray barley; blue barley- grass; seagreen barley; northern barley grass; northern barley-grass; northern barleygrass; blue- green foxtail barley
De Vries 2009 [observed]; Hudson Ranch BA 1983 [appendix]	Poaceae	Hordeum murinum subsp. leporinum [Hordeum leporinum]	hare barley; hare wall barley; leporinum barley; lepor barley; hair barley; charming barley

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Poaceae	Hordeum murinum subsp. murinum	common wall-barley; common wall-barley-grass [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [vouchered]	Poaceae	Hordeum vulgare	common barley; crop barley
Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Poaceae	Koeleria macrantha	prairie koeleria; prairie June-grass; prairie June grass; prairie Junegrass; prairie june-grass; prairie june grass; prairie junegrass; prairie Koeler's grass; prairie Koeler's-grass; prairie Koeler grass; mountain Junegrass; mountain June grass; mountain junegrass; mountain june grass; crested koeleria; crested June-grass; crested June grass; crested Junegrass; crested june-grass; crested june grass; crested junegrass; crested Koeler-grass; crested Koeler grass
De Vries 2009 [observed]	Poaceae	Leymus condensatus	California giant wildrye; California giant rye; California giant ryegrass; California giant rye-grass
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4]	Poaceae	Leymus triticoides	creeping beardless wildrye; creeping beardless wild-rye; creeping wild ryegrass; creeping wild rye-grass; creeping wild rye grass; saline creeping wild ryegrass; saline creeping wild rye grass; beardless lyme grass; alkali ryegrass; alkali ryegrass; alkali rye grass; alkali rye; alkali wild rye; alkali wild-rye; alkali wildrye; alkalai ryegrass; alkalai rye-grass; alkalai rye grass; alkalai rye; alkalai wild rye; alkalai wild-rye; alkalai wildrye; valley wildrye; valley wild-rye; valley wild rye; wheatgrass leymus
De Vries 2009 [vouchered]	Poaceae	Leymus X multiflorus	multiflowered wildrye; many-flowered wildrye; many-flowered wild-rye; many flowered wild rye

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [hand-written note on figure 4]	Poaceae	Melica imperfecta	imperfect melic; little California melic; chaparral melica; chaparral melic; chaparral oniongrass; foothill melic; foothill melic-grass; foothill melic grass; Coast Range melica; coast range melica; coast-range melica; coast range melic; coast-range melic; Coast Range melic; coastrange melic; coast range melic-grass; Coast Range melic-grass; coast range melic grass; Coast Range melic grass; coast range melicgrass; coast melica; Coast Range melicgrass; coast melic-grass; coast melic grass
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Poaceae	Melica stricta	rock melica; rock melic; rock melic-grass; rock melic grass; rock melicgrass; rock oniongrass; nodding onion grass
Werner 1997 [observed]	Poaceae	Muhlenbergia rigens	California deergrass; California deer-grass; California deer grass; deer muhly; deer muhly grass; deer muhley; basket muhly
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [hand-written note on figure 4]	Poaceae	Nassella cernua [Stipa cernua]	cernuous nassella; nodding nassella; nodding stipa grass; nodding needlegrass; nodding needle-grass; nodding needle grass; nodding tussockgrass; nodding tussock-grass; nodding tussock grass
De Vries 2009 [vouchered]; Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Poaceae	Nassella pulchra [Stipa pulchra]	purple nassella; California purple needle-grass; California purple needle grass; California purple needlegrass; purple-needle grass; purple-needle stipa; purple needle stipa; purple stipa; purple tussockgrass; purple tussock-grass; purple tussock grass

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]	Poaceae	Poa bulbosa	bulbous poa; bulbous bluegrass; bulbous blue- grass; bulbous blue grass; bulbous meadow- grass; bulbous meadow grass; bulbous meadowgrass; bulb rispengras; sweet tussock
Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]	Poaceae	Poa fendleriana subsp. longiligula [only subsp. in CA]	long-liguled mutton-grass; long-tongued mutton grass; long-tongue mutton bluegrass; long tongue mutton bluegrass; long-tongue mutton blue grass; longtongue mutton bluegrass; long-tongue mutton grass; longtongue mutton grass; long-tailed mutton grass
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Poaceae	Poa secunda [2 subspp. in range]	secund bluegrass; one-sided bluegrass; one sided bluegrass; one-sided blue-grass; one-sided blue grass; one sided blue grass; alkali bluegrass; alkalai bluegrass; alkali blue-grass; alkali blue grass
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 figure 4; appendix; 2008 EA, 2006 EA	Poaceae	Poa secunda subsp. secunda [Poa scabrella]	typical secund bluegrass; typical one-sided bluegrass; typical one sided bluegrass; typical one-sided blue-grass; typical one-sided blue grass; typical one sided blue grass; malpais bluegrass; Malpais bluegrass [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 figure 4]	Poaceae	Polypogon monspeliensis	Montpellier polypogon; Montpellier beard-grass; Montpellier beard grass; annual beardgrass; annual beard-grass; annual beard grass; annual rabbit's-foot grass; annual rabbit's foot grass; annual rabbitsfoot grass; annual rabbits-foot grass; annual rabbit-foot grass; annual rabbitfoot grass; tawny rabbit-foot grass; rabbit's-foot polypogon; rabbit's foot polypogon; rabbitsfoot polypogon; rabbit-foot polypogon; rabbitfoot polypogon; rabbit's foot beardgrass; rabbitsfoot beardgrass; rabbitfoot breadgrass

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]	Poaceae	Schismus arabicus	Arabian schismus; Arabian split grass; Arabian Mediterranean grass; Arabian Mediterranean-grass; Arabian Mediterraneangrass; Araby grass
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Poaceae	Schismus barbatus	common Mediterranean schismus; Mediterranean schismus; common Mediterranean grass; common Mediterraneangrass; bearded Mediterranean grass; old Han schismus; Old Han schismus; Kelch grass; Kelch-grass
Thomas & Wishner 1996 [observed]	Poaceae	Vulpia ?	vulpia; annual fescue; six-weeks fescue; six weeks fescue; sixweeks fescue; six-week fescue; six week fescue; six-weeks fescue grass; 6-weeks fescue; 6 weeks fescue; 6-weeks fescue grass; small fescue
Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Poaceae	Vulpia microstachys [4 vars. in range]	Nuttall's fescue; Nuttall fescue; small six-weeks grass; two-flower fescue; twoflower fescue; three-weeks fescue; three weeks fescue; three-week fescue; three week fescue; hairy-leaved fescue; hairy-leaf fescue; hairy leaf fescue
Hudson Ranch BA 1983 [appendix]	Poaceae	Vulpia microstachys var. ciliata [Festuca eastwoodiae]	Eastwood's fescue; Eastwood fescue; Gray's fescue; Gray fescue; hairy fescue
Thomas & Wishner 1996 [observed; hand-written note]	Poaceae	Vulpia microstachys var. confusa [Vulpia confusa, Vulpia tracyi]	confusing fescue; Tracy's fescue
Hudson Ranch BA 1983 [figure 4]	Poaceae	Vulpia microstachys var. pauciflora [Vulpia reflexa]	Pacific fescue; few-flowered fescue; few flowered fescue; few-flower fescue; small-flowered reflexed vulpia; common hairy-leaf fescue; common hairy leaf fescue; common hairleaf fescue; few-flowered side-oats

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]; Werner 1997 [vouchered]	Poaceae	Vulpia myuros [2 vars. in range]	rat-tailed fescue; rat's-tail fescue grass; rat's tail fescue grass; rat-tail annual fescue; rattail annual fescue; rattail six-weeks fescue; rattail six weeks fescue; rattail sixweeks fescue; rattail six-weeks grass; rattail sixweeks grass; fox-tail fescue; fox tail fescue; foxtail fescue; false foxtail fescue; red-tail fescue; capon's-tail grass; capon's tail grass; myur fescue; zorro annual fescue; zorro fescue
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]	Poaceae	Vulpia myuros var. myuros	typical rat-tailed fescue; typical rat's-tail fescue grass; typical rat's tail fescue grass [common name can be created by adding 'typical' to any species-level common name]
Thomas & Wishner 1996 [observed]	Polemoniaceae	Allophyllum gilioides [2 subsp. in range]	gilia-like allophyllum; dense allophyllum; dense false-gilia; dense false gilia; dense false gily-flower; dense false gily flower; dense false gilyflower
Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Polemoniaceae	Allophyllum gilioides subsp. gilioides	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
voucher in Consortium; De Vries 2009 [observed]; Werner 1997 [vouchered]	Polemoniaceae	Eriastrum densifolium [4 subsp. in range]	giant eriastrum; giant woolly-star; giant woolly star; giant woollystar; giant woollystar; giant wool-star; giant woolstar; many-leaved eriastrum; many leaved eriastrum; perennial eriastrum; perennial woolly-star; perennial woollystar; perennial wool-star; perennial wool star; perennial woolstar; perennial woollystar; shrubby eriastrum; mesa phlox
De Vries 2009 [vouchered]	Polemoniaceae	Eriastrum densifolium subsp. elongatum	elongate eriastrum; elongate woolly-star; elongate woolly star; elongate woollystar; chaparral woolly-star

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Polemoniaceae	<i>Gilia capitata</i> [2 subspp. in range]	capitate gilia; ball gilia; blue-headed gilia; blue-headed gily-flower; blue-headed gily flower; blue-head gilia; blue head gilia; bluehead gilia; blue-head gily-flower; blue-field gilia; blue field-gilia; bluefield gilia; range gilia; ornamental gilia; blue thimble flower; Queen Anne's thimbles; Queen Anne's thimble
De Vries 2009 [vouchered]	Polemoniaceae	<i>Gilia capitata</i> subsp. <i>abrotanifolia</i>	southernwood-leaved gilia; southernwood-leaf gilia
De Vries 2009 [vouchered]	Polemoniaceae	<i>Gilia interior</i>	inland gilia; inland gily-flower
Werner 1997 [vouchered]	Polemoniaceae	<i>Gilia latiflora</i> [3 subspp. in range]	broad-flower gilia; broadflower gilia; broad gilia; holly-leaf gilia; holly leaf gilia; hollyleaf gilia; holly-leaf gily-flower; holly leaf gily flower; Gray's gilia
De Vries 2009 [observed]; Hudson Ranch BA 1983 [rare, endangered, protected plant list]	Polemoniaceae	<i>Gilia latiflora</i> subsp. <i>cuyamensis</i>	Cuyama gilia
Hudson Ranch BA 1983 [appendix]	Polemoniaceae	<i>Gilia leptomeria</i> [not in CA, CA material undescribed species]	
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]	Polemoniaceae	<i>Gilia</i> sp.	gilia
Thomas & Wishner 1996 [hand-written]; Hudson Ranch BA 1983 [figure 4; appendix]	Polemoniaceae	<i>Gilia tricolor</i> [2 subspp. in range]	tricolored gilia; tricolor gilia; bird's-eyes gilia; bird's eyes gilia; birds'-eyes gilia birds' eyes gilia; birds-eyes gilia' birds eyes gilia; bird's-eye gilia; bird's eye gilia; birds-eye gilia; birds eye gilia; birdseye gilia
De Vries 2009 [vouchered]	Polemoniaceae	<i>Gilia tricolor</i> subsp. <i>diffusa</i>	diffuse bird's-eyes gilia; diffuse bird's-eye gilia

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [appendix]	Polemoniaceae	Leptosiphon androsaceus [Linanthus androsaceus]	androsace-like leptosiphon; showy linanthus; shower linanthus; lavender shower linanthus; lavender linanthus; pink-lobed linanthus; pink-lobe linanthus; pinklobe linanthus; smooth linanthus; lavender baby-stars; lilac babystars; lilac-shower babystars; lilac shower babystars; shower linanthus; shower gilia; lavender shower linanthus; spreading baby-stars; common desert-gold
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Polemoniaceae	Leptosiphon filipes [Linanthus filipes]	thread-like leptosiphon; thread-like linanthus; threadlike linanthus; thread-like desert-trumpets; thread-like desert-trumpets
De Vries 2009 [vouchered]	Polemoniaceae	Leptosiphon liniflorus [Linanthus liniflorus]	flax-flowered leptosiphon; flax-flowered linanthus; flax flowered linanthus; flax-flower linanthus; flaxflower linanthus; flax-flower desert-trumpets; narrow-flowered flaxflower; narrow flowered flaxflower; narrow-flower flax-flower; narrow-flower flaxflower; narrowflower flaxflower; Great Basin linanthus
De Vries 2009 [vouchered]; CalPhotos	Polemoniaceae	Leptosiphon parviflorus [Linanthus parviflorus]	small-flowered leptosiphon; small-flowered linanthus; small flowered linanthus; small-flower linanthus; variable linanthus; variable desert- trumpets; Cherokee linanthus
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed; hand-written note]	Polemoniaceae	Leptosiphon pygmaeus subsp. continentalis [Linanthus pygmaeus subsp. continentalis] [only subsp. in range]	continental pygmy leptosiphon; continental pygmy linanthus
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [hand-written note]	Polemoniaceae	Linanthus dichotomus subsp. dichotomus [only subsp. in range]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]	Polemoniaceae	Linanthus sp.	linanthus

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Polemoniaceae	Loeseliastrum schottii	Schott's loeseliastrum; Schott's calico; Schott's desert calico; Schott's langloisia; Schott's gilia; Schott loeseliastrum; Schott calico; Schott desert calico; Schott langloisia; Schott gilia; little sunbonnets
voucher in Consortium; De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]	Polemoniaceae	Microsteris gracilis [Phlox gracilis]	slender microsteris; slender phlox; slender-phlox; common slender phlox; slender annual phlox; slender false phlox; pink microsteris; pink annual phlox; pink twink; beggar's gilia; beggar gilia; beggars gilia; little phlox; little polecat
Werner 1997 [observed]	Polemoniaceae	Navarretia jaredii	Paso Robles navarretia; Jared's navarretia; Jared navarretia
Werner 1997 [observed]	Polemoniaceae	Navarretia leptalea [Gilia leptalea]	Bridges's pincushion-plant; Bridges's pincushion plant; Bridges's pincushionplant; Bridges' pincushion-plant; Bridges' pincushion plant; Bridges' pincushionplant; Bridges pincushion-plant; Bridges pincushion plant; Bridges pincushionplant
Hudson Ranch BA 1983 [figure 4]	Polemoniaceae	Navarretia mitracarpa [including Navarretia jaredii, Navarretia pubescens]	
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Polygonaceae	Chorizanthe staticoides	statice chorizanthae; statice spineflower; common Turkish rugging; common Turkish-rugging; Turkish rugging spineflower; Turkish-rugging spineflower; Turkish-rugging spine-flower; Turkish rugging spine-flower
De Vries 2009 [vouchered]	Polygonaceae	Chorizanthe uniaristata	one-awn chorizanthae; one-awn spineflower; one awn spineflower; oneawn spineflower

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

voucher in Consortium; De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4; appendix]	Polygonaceae	Eriogonum angulosum	angle-stemmed eriogonum; angle-stemmed wild buckwheat; angle-stemmed wild-buckwheat; angled-stem buckwheat; angled stem buckwheat; angle-stem wild buckwheat; angle-stem wild-buckwheat; angle stem wild buckwheat; angle-stem buckwheat
De Vries 2009 [vouchered]	Polygonaceae	Eriogonum elegans	elegant eriogonum; elegant wild buckwheat; elegant wild-buckwheat; elegant buckwheat
De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [hand-written note]	Polygonaceae	Eriogonum elongatum var. elongatum [only var. in CA]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [vouchered]; Hudson Ranch BA 1983 [figure 4]	Polygonaceae	Eriogonum fasciculatum [2 vars. in range]	California wild buckwheat; California wild-buckwheat; wild California buckwheat; California flat-top buckwheat; California flattop buckwheat; eastern Mojave wild buckwheat; eastern Mojave wild-buckwheat; eastern Mojave buckwheat; eastern Mojave-buckwheat; eastern Mohave buckwheat
De Vries 2009 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [appendix]	Polygonaceae	Eriogonum fasciculatum var. polifolium	Mojave Desert California buckwheat; California Mojave buckwheat; interior flat-top buckwheat; interior buckwheat; hoary California buckwheat; gray California buckwheat; felt-leaf California buckwheat; rosemary California buckwheat; rosemary flat-top buckwheat; gray-leaved California buckwheat
Werner 1997 [observed]; Hudson Ranch BA 1983 [rare, endangered, protected plant list; appendix]	Polygonaceae	Eriogonum gossypinum	cottony wild buckwheat; cottony wild-buckwheat; cottony buckwheat; cotton eriogonum; cotton-flowered buckwheat
Werner 1997 [vouchered]	Polygonaceae	Eriogonum gracile var. gracile [only var. in range]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]	Polygonaceae	Eriogonum gracillimum	rose-and-white wild buckwheat; rose-and-white wild-buckwheat; rose and white wild buckwheat; rose-and-white buckwheat; rose and white buckwheat; rose & white buckwheat; slender-stemmed buckwheat; slender stemmed buckwheat
Thomas & Wishner 1996 [observed]	Polygonaceae	Eriogonum nudum ? [4 vars. in range]	naked eriogonum; naked wild buckwheat; naked wild-buckwheat; naked buckwheat; naked-stemmed eriogonum; naked stemmed eriogonum; naked-stemmed wild buckwheat; naked-stemmed wild-buckwheat; naked-stem wild buckwheat; naked-stem wild-buckwheat; naked-stem buckwheat; naked stem buckwheat; barestem buckwheat; bare-stem buckwheat; nude wild buckwheat; nude buckwheat; nude-stemmed buckwheat; nude-stem buckwheat; nude stem buckwheat; tibinagua
De Vries 2009 [vouchered]	Polygonaceae	Eriogonum ordii	Fort Mohave wild buckwheat; Fort Mohave wild-buckwheat; Fort Mohave buckwheat; Fort Mojave wild buckwheat; Fort Mojave wild buckwheat; Fort Mojave wild-buckwheat; Fort Mojave buckwheat; Ord's eriogonum; Ord's buckwheat; Ord eriogonum; Ord buckwheat
De Vries 2009 [vouchered]	Polygonaceae	Eriogonum pusillum	yellow-turbans buckwheat; yellow turbans buckwheat; yellow turbans; yellow-turbans; yellowturbans; yellow turban; puny eriogonum; puny buckwheat; weak buckwheat; low buckwheat
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner [hand-written note]	Polygonaceae	Eriogonum roseum	wand wild buckwheat; wand wild-buckwheat; virgate eriogonum; virgate buckwheat

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Polygonaceae	Eriogonum sp.	wand wild buckwheat; wand wild-buckwheat; virgate eriogonum; virgate buckwheat
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4, rare, endangered, protected plant list]	Polygonaceae	Eriogonum temblorense	Temblor wild buckwheat; Temblor wild-buckwheat; Temblor buckwheat
De Vries 2009 [vouchered]	Polygonaceae	Eriogonum viridescens	two-toothed wild buckwheat; two-toothed wild- buckwheat; two-tooth wild buckwheat; two-tooth wild-buckwheat; two tooth wild buckwheat; two- tooth buckwheat; twotooth buckwheat; bright green buckwheat
Thomas & Wishner 1996 [hand-written]	Polygonaceae	Eriogonum cf. Wrightii [3 vars. in range]	Wright's eriogonum; Wright's wild buckwheat; Wright's wild-buckwheat; Wright's buckwheat; Wright's bastard-sage; Wright eriogonum; Wright wild buckwheat; Wright wildbuckwheat; Wright buckwheat; Wright bastard-sage; bastard-sage; bastard sage; bastardsage
De Vries 2009 [vouchered]	Polygonaceae	Eriogonum wrighti var. trachygonum	rough-node bastard-sage; rough-node bastardsage
Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]	Polygonaceae	Mucronea perfoliata [Chorizanthe perfoliata]	perfoliate mucronea; perfoliate spineflower; perfoliate spine-flower; perfoliate chorizanth
De Vries 2009 [vouchered]	Polygonaceae	Polygonum aviculare subsp. depressum [Polygonum arenastrum]	oval-leaved knotweed; oval-leaf knotweed; ovalleaf knotweed; small-leaved knotweed; equal- leaved knotgrass; dooryard knotweed; door-yard knotweed
De Vries 2009 [vouchered]; Werner 1997 [vouchered]	Polygonaceae	Rumex crispus	oval-leaved knotweed; oval-leaf knotweed; ovalleaf knotweed; small-leaved knotweed; equal- leaved knotgrass; dooryard knotweed; door-yard knotweed

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]	Polygonaceae	Rumex hymenosephalus	canaigre dock; canaigre; ganagra; tanner's dock; tanners dock; desert rhubarb; desert ginseng; red desert ginseng; wild red desert ginseng; conaigre
Werner 1997 [vouchered]	Polygonaceae	Rumex sp.	rumex; dock
De Vries 2009 [vouchered]	Ranunculaceae	Delphinium gypsophilum subsp. gypsophilum	Pinoche Creek larkspur; large-flowered gypsum-loving larkspur [common name can be created by adding 'typical' to any species-level common name]
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Ranunculaceae	Delphinium hansenii [2 subspp. in range]	Hansen's delphinium; Hansen's larkspur; Hansen delphinium; Hansen larkspur; El Dorado larkspur; Eldorado larkspur
Werner 1997 [observed]; Hudson Ranch BA 1983 [rare, endangered, protected plant list]	Ranunculaceae	Delphinium inopinum	unexpected larkspur; Kern River Canyon larkspur; Kern River Cyn larkspur; Kern Canyon larkspur
Werner 1997 [observed]; Hudson Ranch BA 1983 [rare, endangered, protected plant list; appendix]	Ranunculaceae	Delphinium parryi subsp. purpureum	Mount Pinos larkspur; Mt Pinos larkspur; Mount Piños larkspur
De Vries 2009 [vouchered]	Ranunculaceae	Delphinium patens subsp. montanum	mountain spreading larkspur
Werner 1997 [vouchered]	Ranunculaceae	Delphinium sp.	delphinium; cavalier's spur; espuela del caballero
De Vries 2009 [observed]	Rosaceae	Malus sp.	apple; apple tree
Thomas & Wishner 1996 [observed]	Ro	Prunus sp.	prunus; apricot; cherry tree
De Vries 2009 [vouchered]; Werner 1997 [observed]	Rosaceae	Prunus virginiana var. demissa	western choke-cherry; western choke cherry; western chokecherry
De Vries 2009 [observed]	Rosaceae	Rosa sp.	rose; wild rose; wildrose; true rose

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

2008 EA, 2006 EA	Rosaceae	Rubus sp.	blackberry; black-berry; black berry; dewberry; raspberry; raspberry bush; flowering raspberry; cloudberry; cloud-berry; cloud berry; salmonberry; salmon-berry; salmon berry; thimbleberry; thimble-berry; thimble berry; bramble; brambles
vouchers in Consortium	Rubiaceae	Galium andrewsii subsp. intermedium	intermediate Andrews's bedstraw; intermediate Andrews' bedstraw; intermediate Andrews bedstraw; intermediate phlox-leaved bedstraw; intermediate phlox-leaf bedstraw; intermediate pine mat galium

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

<p>De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]</p>	<p>Rubiaceae</p>	<p>Galium aparine</p>	<p>annual bedstraw; annual cleavers; cleavers goosegrass; cleavers goose-grass; cleavers goose grass; spring-cleavers; spring cleavers; clayver-grass; clitheren; clithers; catchweed bedstraw; goosegrass bedstraw; goose-bill; goosebill; goose's hair; goose's hare; goose' hare; gooses hare; gosling-grass; gosling grass; gosling- weed; gosling weed; goslingweed; sticky-willy; sticky willy; stickywilly; sticky-willie; sticky willie; stickywillie; stick-willy; stickwilly; stick-a-back clivers; stick-a-back; stick a back; stickaback; stickle-back; stickleback; cling-rascal; cling rascal; catch-rogue; grip-grass; grip grass; gripgrass; coachweed; Robin-run-in-the-grass; robin-run-in- the-grass; Robin run over the hedge; robin run over the hedge; Robin-run-ahead; robin-run- ahead; scratweed; scratch-weed; scratch weed; snatch-weed; scarthgrass; beggergrass; barweed; hedge clivers; white hedge bedstraw; white hedge; wild hedge-burs; wild-hedge-burs; wild hedge burs; hedge-burs; hedge burs; hedgeburs; hedge-burrs; hedge burrs; hedgeburrs; hedgeheriffe; hedgerif; hayruff; hayriffe; harif; erriffe; grateron; pertimugget; gia mara; bloody- tongues; tongue-bleed; whip-tongue; whip</p>
<p>De Vries 2009 [observed]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [hand-written note on figure 4]</p>	<p>Salicaceae</p>	<p>Populus fremontii subsp. fremontii [only subsp. in CA]</p>	<p>no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]</p>

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Hudson Ranch BA 1983 [figure 4]	Salicaceae	Populus nigra	European black poplar; black poplar; black-poplar; Lombardy black poplar; Lombardy poplar; Lombard poplar; Italian poplar; Old English poplar; house poplar; birch-leaf poplar; cat-foot poplar; cat foot poplar; black alamo; alamo negro; black pepillary; black pipple; black popillary
De Vries 2009 [observed]	Salicaceae	Populus sp.	poplar; poplar-tree; poplar tree; popple; cottonwood; cotton-wood; cotton wood; cottonwood tree; cotton tree; alamo; aspen
De Vries 2009 [observed]; Hudson Ranch BA 1983 [figure 4]	Salicaceae	Populus trichocarpa [Populus balsamifera subsp. trichocarpa]	western black cottonwood; western balsam poplar; California black cottonwood; California balsam poplar; California poplar
2008 EA, 2006 EA	Salicaceae	Salix	salix; willow; willow tree; willow-tree; willowtree; pussy willow; pussy-willow; pussywillow; pussy willows; scrub willow; scrub-willow; osier; saugh; saugh tree; saugh-tree; sally-tree; sally tree; Sally-tree; Sally tree; sally; Sallys; sallys
De Vries 2009 [observed]; Hudson Ranch BA 1983 [figure 4]	Salicaceae	Salix exigua [2 vars.; Salix argophylla]	coyote willow; common coyote willow; coyote sandbar willow; coyote sand-bar willow; coyote sand bar willow; narrow-leaved sandbar willow; narrow-leaf sandbar willow; narrow leaf sandbar willow; narrow-leaved hairy willow; silvery desert willow
De Vries 2009 [vouchered]	Salicaceae	Salix gooddingii	Goodding's black willow; Goodding black willow; Goodding's willow; Goodding willow; southwestern willow; Dudley willow's; Dudley willow

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [appendix]	Salicaceae	Salix laevigata	smooth red willow; polished willow
Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Salicaceae	Salix lasiolepis	arroyo willow; common arroyo willow; wooly- scaled willow
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Saxifragaceae	Lithophragma parviflorum var. parviflorum [only var. in range]	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]	Saxifragaceae	Lithophragma sp.	lithophragma; prairie-star; prairie star; prairiestar; rockstar
De Vries 2009 [vouchered]	Selaginellaceae	Selaginella asprella	bluish selaginella; bluish spike-moss; bluish spikemoss; bluish spike moss
De Vries 2009 [observed]; Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Simaroubaceae	Ailanthus altissima	tree-of-heaven; tree of heaven; treeofheaven; tree- of-heaven ailanthus; treeofheaven ailanthus; Chinese tree-of-heaven; Chinese tree of heaven; Chinese ailanthus; China ailanthus; China-sumac; China sumac; stinking shumac; ailanthus sumac; stinking shumac; false varnish tree; false varnish- tree; hemelboom; árbol del cielo; arbol del cielo
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Solanaceae	Datura wrightii	Wright's datura; Wright's jimson-weed; Wright's jimson weed; Wright's jimsonweed; Wright datura; Wright jimson-weed; Wright jimson weed; Wright jimsonweed; western jimson-weed; western jimson weed; western jimsonweed; sacred thorn-apple; sacred thorn apple; sacred thornapple; selguacha

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Thomas & Wishner 1996 [observed]	Solanaceae	Nicotiana glauca	glaucous tobacco; yellow tree tobacco; Brazilian tree tobacco; shrub tobacco; Mexican tobacco; tabaco amarillo; tabaco moro; San Juan tree
De Vries 2009 [vouchered]; Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Solanaceae	Nicotiana quadrivalvis [Nicotiana bigelovii]	large-flowered tobacco
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]	Solanaceae	Solanum umbelliferum [var. incanum]	blue-witch nightshade; blue witch nightshade; bluewitch nightshade; blue-witch; blue witch; bluewitch
2008 EA, 2006 EA	Tamaricaceae	Tamarix	tamarix; tamarisk; tamarisk tree; flowering cypress
Werner 1997 [observed]; Hudson Ranch BA 1983 [figure 4]	Tamaricaceae	Tamarix aphylla	athel tamarix; athel tamarisk; athel tree; athel pine; desert athel; desert tamarisk; leafless tamarisk; evergreen tamarisk
De Vries 2009 [observed]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [hand-written note on figure 4]	Tamaricaceae	Tamarix ramosissima	common salt-cedar; common salt cedar; common saltcedar; pink tamarix; pink tamarisk
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]	Themidiaceae [Liliaceae]	Bloomeria crocea	golden bloomeria; common golden-star; common golden star; common goldenstar; common golden-stars; common golden stars; common goldenstars

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

De Vries 2009 [observed]; Werner 1997 [vouchered] ; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4; appendix]; Burgess pers. comm.	Themidiaceae [Liliaceae]	Dichelostemma capitatum [Brodiaea pulchella] [2 vars. in range]	capitate blue-dicks; capitate blue dicks; capitate bluedicks; beautiful blue-dicks; beautiful blue dicks; beautiful bluedicks; common blue-dicks; common blue dicks; common bluedicks; common blue-dick; common blue dick; common saitas; hyacinth blue-dicks; hyacinth blue dicks; hyacinth bluedicks; wild hyacinth blue-dicks; wild hyacinth blue dicks; wild hyacinth bluedicks; desert hyacinth blue-dicks; desert hyacinth blue dicks; desert hyacinth bluedicks; vernal pool blue dicks; blue-dicks California-hyacinth; covenna; Papago lily; Chester lily
De Vries 2009 [vouchered]	Themidiaceae [Liliaceae]	Dichelostemma capitatum subsp. capitatum	no common name specific to this taxon found [common name can be created by adding 'typical' to any species-level common name]
De Vries 2009 [vouchered] ; Werner 1997 [observed]; Hudson Ranch BA 1983 [appendix]	Themidiaceae [Liliaceae]	Muilla maritima	common muilla; sea muilla; sea golden-star; sea goldenstar; coastal muilla; rough muilla
De Vries 2009 [observed]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Typhaceae	Typha domingensis	southern cattail; southern cat-tail; southern narrow- leaved cattail; southern narrow-leaved cat-tail; southern reedmace; southern reed-mace; narrow- leaved cumbungi; narrow leaved cumbungi; narrow-leafed cumbungi; narrow leafed cumbungi; narrow-leaf cumbungi; narrow leaf cumbungi; Dominican cattail; Domincan cat-tail; Santo Domingo cattail; woody cattail; tropical cattail
De Vries 2009 [observed]; 2008 EA, 2006 EA	Typhaceae	Typha sp.	cattail; cat-tail; cat tail; cat-tail flag; cattail flag; cat's-tail flag; cat's tail flag; cattail reed; cat-tail reed; cat-o'-nine-tails; cat-o-nine tails; cat o' nine tails; cat o nine tails; reedmace; reed-mace; reed mace; false bulrush

Appendix B. Bitter Creek National Wildlife Refuge plant taxa.

Werner 1997 [vouchered]	Ulmaceae	Ulmus sp.	elm; elm tree; elm-tree
De Vries 2009 [observed]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Urticaceae	Urtica dioica subsp. holosericea [only subsp. in range]	hoary nettle; hoary stinging nettle; hoary creek nettle; giant creek nettle; creek stinging-nettle; creek stinging nettle; silky stinging nettle; Sierra nettle; sierra nettle
2008 EA, 2006 EA	Urticaceae	Urtica sp.	urtica
De Vries 2009 [vouchered]	Valerianaceae	Plectritis ciliosa subsp. insignis	short-spurred pink plectritis; petite long-spurred plectritis
De Vries 2009 [observed]	Verbenaceae	Verbena lasiostachys [2 vars. in range]	western verbena; western vervain; western verbane
De Vries 2009 [vouchered]; Werner 1997 [observed]; Thomas & Wishner 1996 [observed]	Viscaceae	Phoradendron bolleanum [Phoradendron densum]	bollean mistletoe; boll American mistletoe; boll mistletoe; rough American mistletoe; rough mistletoe; cypress mistletoe
De Vries 2009 [vouchered]; Werner 1997 [vouchered]; Thomas & Wishner 1996 [observed]; Hudson Ranch BA 1983 [figure 4]	Viscaceae	Phoradendron serotinum subsp. tomentosum [Phoradendron villosum, [Phoradendron flavens]	hairy mistletoe

Appendix C. DeVries 2009 Plant Survey Report.

CONTAINS TWO APPENDICES A & B



Pam De Vries
Botany and Restoration Ecology
P.O. Box 5173
Pine Mountain Club, CA 93222
(661) 242-1574
pdevries@frazmtn.com

July 3, 2009

Mr. Mike Stockton
U.S. Fish and Wildlife Service
Bitter Creek National Wildlife Refuge
2493 Portola Road, Suite A
Ventura, California 93003

Subject: Results of the 2009 Reconnaissance and Focused Plant Surveys on the Bitter Creek National Wildlife Refuge, Kern and Ventura Counties, California

Dear Mr. Stockton:

This letter report presents the findings of reconnaissance and focused plant surveys conducted on the Bitter Creek National Wildlife Refuge (Refuge) in Spring 2009. The purpose of the surveys was to compile a current floral compendium and to document the presence or absence of special status plant species on the Refuge.

The approximately 14,000-acre Refuge is primarily undeveloped land located in Kern and Ventura Counties, southeast of the towns of Taft and Maricopa. It is located approximately 27 miles west of Interstate 5 and approximately 10 miles southeast of the Carrizo Plain National Monument. The Refuge is located on the U.S. Geological Survey's (USGS) Santiago Creek and Ballinger Canyon, California 7.5-minute quadrangles. Topography on the project site varies from steep, narrow canyons to low rolling hills, with elevations ranging from approximately 1,700 feet to 4,600 feet above mean sea level (msl).

For management and reference purposes, the Refuge is divided into 13 units of varying sizes. Two units (Units 4 and 5) are separate from the main body of the Refuge. Two privately held properties are also located within the boundaries of the Refuge.

METHODS

Reconnaissance-level plant surveys were conducted in most areas of the Refuge between March 16 and July 1, 2009 by Pam De Vries, LeRoy Gross and Otto Gasser. Mary Ann Lockhart, Shannon Still, Daisy Huang, and Sarah De Groot assisted on several field survey days. Units 4 and 5, and portions of Unit 2 that were inaccessible at the time of the surveys were not included in the survey effort. A table showing the dates, personnel and specific areas surveyed in each Unit is provided in Appendix A.

Focused surveys for two federally listed Endangered plant species, California jewelflower (*Caulanthus californicus*) and San Joaquin woollythreads (*Monolopia [=Lembertia] congdonii*), were conducted in the western portion of the Refuge in Units 9, 10B, and 12 at elevations below approximately 3,500 feet above msl using meandering transects. These surveys were conducted on March 16 in Unit 12, March 17, 19, 20 and 23 in Unit 10B, and on March 19 in Unit 9. Reference populations of California jewelflower and San Joaquin woollythreads located at the Carrizo Plains National Monument were visited on March 10 and March 19, 2009; both of these species were in flower at the time of the reference population visits.

Prior to the field survey, a literature review was conducted to identify special status plants or vegetation types known from the Refuge and vicinity. This included a review of the Cuyama, Ballinger Canyon, Santiago Creek, Apache Canyon, Elkhorn Hills, Pentland, Cuyama Peak, Eagle Rest Peak, Maricopa, Sawmill Mountain and Fox Mountain USGS 7.5-minute quadrangles in the California Natural Diversity Data Base (CNDDDB) (CDFG 2009) and California Native Plant Society's *Electronic Inventory* (CNPS 2009).

All plant species observed were recorded in field notes. Plant species were identified in the field or collected for subsequent identification. Plants were identified using keys in Hickman (1993) and Moe/Twisselmann (1985). Voucher specimens of most plant species observed during the surveys were collected and placed in the herbarium at Rancho Santa Ana Botanic Gardens, Claremont, California. Taxonomy follows Hickman (1993) for scientific and common names. A list of all plant species observed during the surveys is provided in Appendix B. Nomenclature for vegetation types generally follows that of *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995) with reference to vegetation types mentioned in *A Flora of Kern County* (Moe/Twisselmann 1995) or *The Vegetation Classification and Mapping Program: List of California Terrestrial Natural Communities recognized by the CNDDDB* (CDFG 2003).

SITE DESCRIPTION

SOILS

Soils types on the Refuge include Balhud, Balhud-Pelato Association, Bittercreek, Bittercreek-Balhud Association, Camatta Family-Bittercreek-Pattway Association, Nord Family, Pattway-Balhud Association, Pattway-Camatta Family Association, Pelato-Balhud, Rettib-Balhud Association, and Sanhud (SCS 1989)

VEGETATION TYPES

Vegetation types were not formally delineated during the surveys. Descriptions and general locations of vegetation types were included in field notes. Fourteen vegetation types were identified on the Refuge. These include California annual grassland series, native perennial grasslands (nodding needlegrass series; one-sided bluegrass series; creeping ryegrass series), goldenbush scrub, bush lupine scrub, California buckwheat series, rubber rabbitbrush series, mixed saltbush series, mixed scrub oak series, mixed scrub oak/singleleaf pinyon series, California juniper series, red willow series, freshwater



marsh, riparian scrub, and ornamental/orchard. Other areas present include disturbed and developed. A brief description of each vegetation type is provided below.

California Annual Grassland Series

California annual grassland is the most abundant vegetation type on the Refuge. It is dominated by a variety of annual grass species, mainly of Mediterranean origin. Typical grass species found in this vegetation type include foxtail chess (*Bromus madritensis* subsp. *rubens*), soft chess (*Bromus hordaceus*), rippgut brome (*Bromus diandrus*), wild oats (*Avena fatua* and *Avena barbata*), cheat grass (*Bromus tectorum*), and wild barley (*Hordeum murinum* subsp. *leporinum*), among others. Common forbs and perennials found in this vegetation type include red-stemmed filaree (*Erodium cicutarium*), miniature lupine (*Lupinus bicolor*), wild parsnip (*Lomatium utriculatum*), devil's lettuce (*Amsinckia tessellata* var. *gloriosa*), California mustard (*Guillenia lasiophylla*), California poppy (*Eschscholzia californica*), cream cups (*Platystemmon californicus*) and California aster (*Lessingia filaginifolia*).

Scattered native perennial grasses such as one-sided blue grass (*Poa secunda* var. *secunda*) and nodding needlegrass (*Nassella cernua*) occur in many areas of the California annual grasslands at low densities. Several other species found primarily in the annual grasslands at higher elevations (e.g., approximately 3,500 feet above msl) include mountain phacelia (*Phacelia imbricata*), spearleaf mountain dandelion (*Agoseris retrorsa*) and common yarrow (*Achillea millefolium*). Scattered individuals of shrub species such as rubber rabbitbrush (*Chrysothamnus nauseosus*) and interior goldenbush (*Ericameria linearifolia*) are also common within the annual grassland vegetation type.

This vegetation type includes portions of the CNDDDB's Non-native Grassland, California Annual Herb-land, and Wildflower Field vegetation types. The Wildflower Field vegetation type is considered to be rare and of high priority for inventory (CDFG 2003). California annual grassland series is included in the Upper and Lower Sonoran Grassland vegetation types described by Twisselmann (Moe/Twisselmann 1995).

Native Perennial Grasslands (Nodding Needlegrass Series, One-sided Bluegrass Series; Creeping Ryegrass Series)

Native perennial grasslands, defined as grasslands with an estimated ten percent or greater cover of native perennial grass species, occur in isolated patches within and adjacent to the California annual grassland vegetation type. The most common native perennial grass species observed on the Refuge is one-sided blue grass. A native perennial grassland dominated by this species occurs in the southeast portion of the Refuge in Unit 6 on north-facing slopes west of the water tank. A large area of nodding needlegrass (*Nassella cernua*) perennial grasslands occurs on south-facing slopes in the same area. Nodding needlegrass grasslands were also observed in the extreme northwest portion of Unit 12. Creeping ryegrass (*Leymus triticoides*) forms extensive native perennial grasslands in areas where water is close to the soil surface. These scattered areas are typically associated with natural seeps and outflow areas close to water tanks.



This vegetation type includes portions of the CNDDDB's Native Grassland vegetation type (CDFG 2003). Native California annual grassland series is general included in the Upper Lower Sonoran Grassland vegetation type described by Twisselmann (Moe/Twisselmann 1995).

Goldenbush Scrub

This vegetation type is the most common sub-shrub association on the Refuge. Interior goldenbush (*Ericameria linerifolia*) forms the majority of vegetative cover in this scrub association. California matchweed (*Gutierrezia californica*) is abundant; grape-soda lupine (*Lupinus excurbitus*) frequently occurs at the interface of this association with adjacent annual grasslands. Other species common in this vegetation type include wild parsnip, one-sided blue grass, valley phacelia (*Phacelia ciliata*), wavy-leaved Indian paintbrush (*Castilleja applegatei*), and Mexicali onion (*Allium peninsulare* var. *peninsulare*). Goldenbush scrub is common in Unit 9 and Unit 11; smaller patches of this association can also be found elsewhere on the Refuge.

Goldenbush scrub is not described in the CNDDDB; however, a scrub association dominated by interior goldenbush is described as part of the Upper Sonoran Subshrub Association by Twisselmann (Moe/Twisselmann 1995).

Bush Lupine Scrub

Usually occurring in small patches on hilltops, bush lupine scrub is dominated by grape soda lupine (*Lupinus excurbitus*). Other species commonly present in this vegetation type include California aster, annual phacelias (*Phacelia ciliata*, *P. fremontii*, *P. douglasii*), suncups (*Camissonia* sp.), Nevada gilia (*Gilia breccarium* subsp. *jacens*), globe gilia (*Gilia capitata*), and popcorn flowers (*Cryptantha* spp.). Non-native annual grasses such as Australian chess (*Bromus arenarius*) and wild oats (*Avena fatua*) and occasional native perennial grasses may also be present. Bush lupine scrub was observed in Units 3, 9, 11 and 12.

A Silver Bush Lupine Scrub dominated by *Lupinus albifrons* is included in the CNDDDB as part of the Coastal Scrub group. Silver bush lupine and grape-soda lupine are morphologically very similar plants. These two species are currently the subject of study to distinguish the difference, if any, between them (Daisy Huang, personal communication). Both *Lupinus albifrons* and *Lupinus excurbitus* are mentioned by Twisselmann as occurring in colonies in the region, the former in the Temblor Range south to the Mt. Able area, and the latter in the Mt. Pinos area (Moe/Twisselmann 1995).

California Buckwheat Series

California buckwheat series occurs on dry slopes and steep cliff faces, and is dominated by a dense to open cover of California buckwheat (*Eriogonum fasciculatum* var. *polifolium*). Other species that may occur in this vegetation type include California matchweed, interior goldenbush, one-sided bluegrass, foxtail chess, and many-flowered eriastrum (*Eriastrum pluriflorum*). California buckwheat series is common in Unit 11 where it occurs on dry slopes and hillsides. It also occurs on steep canyon faces in Bitter Creek Canyon (Units 2 and 3), and dominates much of the interspace area within the California juniper series (described below).



California buckwheat series is included in CNDDDB's California Buckwheat Scrub under the Coastal Scrub group; however, the specific variety of *Eriogonum fasciculatum* is not mentioned (CDFG 2003). This vegetation type is described in Twisselmann's Upper Sonoran Subshrub Association and Arid Shrub Association (Moe/Twisselmann 1995).

Rubber Rabbitbrush Series

Rubber rabbitbrush series occurs in isolated patches on the Refuge. This vegetation type is dominated by a moderate cover of rubber rabbitbrush (*Chrysothamnus nauseosus*). Annual grasses and forbs present in this vegetation type include foxtail chess, soft chess, California aster, and owl's clover (*Castilleja exserta* subsp. *exserta*). Small areas of rubber rabbitbrush series occur in Unit 3 and Unit 8.

Rubber rabbitbrush series is included in CNDDDB's Rabbitbrush Scrub under the Great Basin Scrub group (CDFG 2003). This vegetation type is also described in Twisselmann's Arid Shrub Association (Moe/Twisselmann 1995).

Mixed Saltbush Series

Mixed saltbush series is dominated by big saltbush (*Atriplex lentiformis*) and/or allscale (*Atriplex polycarpa*). Saltgrass (*Distichlis spicata*) is also common in this vegetation type. Mixed saltbush scrub occurs in several areas on the Refuge, generally in canyon bottom or drainage areas in Unit 9 and Unit 2.

Mixed saltbush series is included in CNDDDB's Chenopod Scrub group (CDFG 2003) and in Twisselmann's Shadscale Scrub Association (Moe/Twisselmann 1995).

Mixed Scrub Oak Series

Mixed scrub oak series is dominated by Tucker's oak (*Quercus john-tuckeri*) and/or Alvord oak (*Quercus x alvordiana*). Alvord oak is a semi-deciduous small tree or large shrub that is a fertile hybrid between Tucker's oak and blue oak (*Quercus douglasii*), a large deciduous tree species, which was not found on the Refuge. Other species commonly found in the mixed scrub oak series include oak gooseberry (*Ribes quercetorum*), miner's lettuce (*Claytonia* spp.), fiesta flower (*Pholistoma membranaceum*), and Brewer's butterweed (*Senecio breweri*). California juniper (*Juniperus californica*) is also frequently present in this vegetation type. Mixed scrub oak series dominated primarily by Tucker's oak was observed in Klipstein Canyon in Units 10A and 10B; a scrub oak series dominated primarily by Alvord oak occurs on steep, north-facing slopes in Unit 2 and in Unit 3. In some areas, the larger stature of the dominant oaks forms a vegetation type that is more woodland than scrub in character.

Mixed scrub oak series is included in CNDDDB's Oak Woodlands and Forest group (CDFG 2003), and in Twisselmann's Douglas Oak Woodland Association (Moe/Twisselmann 1995).

Mixed Scrub Oak/Singleleaf Pinyon Pine Series

Similar to the mixed scrub oak series, this vegetation type differs in the presence of singleleaf pinyon pine (*Pinus monophylla*). This vegetation type forms an extensive woodland on steep slopes at the head of Bitter Creek Canyon in Unit 3. In addition to



the associated species described in the mixed oak series, other species found in this scrub/woodland vegetation type are green ephedra (*Ephedra viridis*), golden yarrow (*Eriophyllum confertiflorum*), big sagebrush (*Artemisia tridentata*), and California man-root (*Marah fabaceus*). A wide variety of spring annuals including wind poppies (*Stylomecon heterophylla*), common phacelia (*Phacelia distans*), and common linanthus (*Linanthus parviflorus*) are also present. Non-native annual grasses (*Bromus* spp.) dominate open spaces between larger trees and shrubs.

Mixed scrub oak/Singleleaf pinyon pine series is included in CNDDDB's Oak Woodlands and Forest group (in part) and in the Pine Forest and Woodlands group (in part) (CDFG 2003). It is described in Twisselmann's Pinyon Woodland Association (in part) and Douglas Oak Woodland Associations (in part) (Moe/Twisselmann 1995).

California Juniper Series

California juniper series is characterized by dense to widely spaced California juniper. Openings between stands of juniper are dominated by annual grassland or by various shrub associations including areas dominated by interior goldenbush, California buckwheat, rubber rabbitbrush, California matchweed, or blue witch (*Solanum umbelliferrum*). Native perennial grasses are also present including desert needlegrass (*Achnatherum speciosum*) and one-sided blue grass. It is the dominant vegetation type in the westernmost portions of Unit 11.

California juniper series is included in CNDDDB's California Juniper Woodland and Scrub in the Juniper Woodlands group (CDFG 2003). It is described in Twisselmann's Pinyon Woodland Association (in part) (Moe/Twisselmann 1995).

Red Willow Series

Red willow series is dominated by red willows (*Salix laevigata*), which form a continuous tree canopy layer over an understory of hydrophilic shrub and herbaceous species. Species noted in the understory include hoary nettle (*Urtica dioica* subsp. *holosericea*), mule fat (*Baccharis salicifolia*), rush (*Juncus* spp.), marsh baccharis (*Baccharis douglasii*), cattail (*Typha* sp.), seep monkeyflower (*Mimulus guttatus*), annual beard grass (*Polypogon monspiliensis*), and prickly sow thistle (*Sonchus asper*). A red willow series woodland occurs at the head of Bitter Creek Canyon in Unit 3.

Red willow series is included in CNDDDB's Red Willow Riparian Forests in the Riparian Forest and Woodland group (CDFG 2003). It is described in Twisselmann's Streambank Association (Moe/Twisselmann 1995).

Freshwater Marsh

Freshwater marsh vegetation is dominated by cattail (*Typha* sp.) or rush (*Juncus* spp.). This vegetation type is typically associated with water tank outfalls or natural seeps and wet depressions such as the pond in Unit 9 or the wet depression west of the Refuge offices in Unit 10A.

The freshwater marsh vegetation type includes species mentioned in several of the Emergent Aquatic Associations described by Sawyer and Keeler-Wolf (1995) such as Cattail Series and Spikerush Series. It is included in CNDDDB's Marsh group (CDFG



2003) and in Twisselmann's Freshwater Marsh Association (Moe/Twisselmann 1995).

Riparian Scrub

Riparian scrub vegetation types typically occur along stream channels and other seasonally or perennially wet places. This vegetation type may be dominated by a variety of hydrophilic shrub species such as marsh baccharis, tarragon (*Artemisia dracunculus*), hoary nettle, mule fat, or alkali heath (*Frankenia salina*). Occasional Fremont cottonwood (*Populus fremontii*) and scrub willows (*Salix* spp.) may also occur in this vegetation type. Riparian scrub vegetation occurs along most seasonally wet drainages throughout the Refuge such as Spanish Springs Canyon in the north portion of Unit 2, which is dominated by hoary nettle and narrow-leaved willow (*Salix exigua*).

The riparian scrub vegetation type marsh includes species mentioned in several of the Associations described by Sawyer and Keeler-Wolf (1995) such as Mulefat Series and Bush Seepweed Series. It is included in CNDDB's Riparian and Bottomland group (CDFG 2003) and in Twisselmann's Streambank Association (Moe/Twisselmann 1995).

Ornamental and Orchard

Ornamental vegetation is typically associated with abandoned residential areas. On the Refuge, this vegetation type is represented by stands of Tree of Heaven (*Ailanthus altissima*), which, in many areas, has naturalized and spread into other vegetation types. An abandoned apple orchard (*Malus* sp.) is located in the southeast portion of Unit 3.

This vegetation type is not specifically described in CNDDB (CDFG 2003) or by Twisselmann (Moe/Twisselmann 1995)

Disturbed and Developed

Disturbed and developed areas include paved or graded roads, buildings, and other structures and areas that are essentially devoid of vegetative cover.

SPECIAL STATUS PLANTS

Sixty-three special status plant species have potential to occur or are known to occur in the vicinity of Bitter Creek National Wildlife Refuge based on a review of the California Natural Diversity Data Base (CNDDB) (CDFG 2009) and California Native Plant Society's *Electronic Inventory* (CNPS 2009) for the Cuyama, Ballinger Canyon, Santiago Creek, Apache Canyon, Elkhorn Hills, Pentland, Cuyama Peak, Eagle Rest Peak, Maricopa, Sawmill Mountain and Fox Mountain, California USGS 7.5-minute quadrangles. Other literature reviewed included the special status species lists for the Los Padres National Forest (USFS 2007), compendia of plant species observed on the Wind Wolves Preserve (1999) and at Fort Tejon State Historic Park (Moe 2004), the Draft Environmental Impact Statement for the Tehachapi Uplands Multi-Species Habitat Conservation Plan (USFWS 2008), and the Centennial Biota Report (BonTerra 2008). These species and their potential for occurrence within the Refuge are discussed below and summarized in Table 1.



TABLE 1
SPECIAL STATUS PLANTS KNOWN TO OCCUR IN THE VICINITY OF
BITTER CREEK NATIONAL WILDLIFE REFUGE

Species Scientific Name Common Name	STATUS			Habitat Associations & Reported Elevation Range	Survey Results Potential to Occur
	USFWS	CDFG	CNPS		
<i>Acanthomintha obovata</i> subsp. <i>cordata</i> Heart-leaved thorn-mint	-	-	4.2	Chaparral, cismontane woodland; pinyon & juniper woodland, grassland (clay); 2,575-5,050 ft	Not observed (see discussion); may occur
<i>Acanthoscyphus</i> (= <i>Oxytheca</i>) <i>parishii</i> var. <i>abramsii</i> Abrams' oxytheca	-		1B.2	Chaparral; 3,750-6,750 ft	Not observed; may occur
<i>Allium howellii</i> var. <i>clokeyi</i> Mt. Pinos onion	-	-	1B.3	Pinyon & juniper woodland; 4,350-6,050 ft	Not observed; may occur
<i>Amsinckia douglasiana</i> Douglas' fiddleneck	-	-	4.2	Cismontane woodland, grassland (Monterey shale, dry); 0-6,400 ft	Reported on the Refuge in 1997; not observed in 2009
<i>Androsace elongata</i> subsp. <i>acuta</i> California androsace	-	-	4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon & juniper woodland, grassland; 490-3,900 ft	Not observed; may occur
<i>Antirrhinum ovatum</i> Oval leaved snapdragon	-	-	4.2	Chaparral, cismontane woodland, Pinyon & juniper woodland, grassland/clay or gypsum, often alkaline; 650-3,280 ft	Not observed; may occur
<i>Aster bernardinus</i> (= <i>Symphotrichum defoliatum</i>) San Bernardino Aster	-	-	1B.2	Cismontane woodland, coastal scrub, lower montane conifer woodland, meadows and seeps, grassland (mesic); 0-6,700 ft	Not observed; may occur
<i>Astragalus hornii</i> var. <i>hornii</i> Horn's Milk-Vetch	-	-	1B.1	Meadows and seeps; 200-2,800 ft	Reported on the Refuge in 1997; not observed in 2009
<i>Astragalus leucolobus</i> Big Bear Valley woollypod	-	-	1B.2	Pinyon & juniper woodland; 5,700-8,700 ft	Not observed; not expected to occur



Species Scientific Name Common Name	STATUS			Habitat Associations & Reported Elevation Range	Survey Results Potential to Occur
	USFWS	CDFG	CNPS		
<i>Astragalus macrodon</i> Salinas milk-vetch	-	-	4.3	Chaparral openings, cismontane woodland, grassland (sandstone, shale, or serpentinite; 820-3,120 ft)	Not observed; may occur
<i>Atriplex coronata</i> var. <i>coronata</i> Crownscale	-	-	4.2	Chenopod scrub, grassland, vernal pools/alkaline; 0-1,935 ft	Not observed; may occur
<i>Calochortus clavatus</i> var. <i>clavatus</i> Club-haired mariposa lily	-	-	4.3	Chaparral, cismontane woodland, coastal scrub, grassland (usually serpentinite, clay, rocky; 250-4,260 ft)	Not observed; may occur
<i>Calochortus palmeri</i> var. <i>palmeri</i> Palmer's mariposa lily	-	-	1B.2	Chaparral, lower montane coniferous woodland, meadows & seeps (mesic); 3,280-7,850 ft	Not observed; may occur
<i>Calochortus weedii</i> var. <i>vestus</i> Late-flowered mariposa lily	-	-	1B.2	Chaparral, cismontane woodland, riparian woodland; 900-6,250 ft	Not observed; may occur
<i>Castilleja plagiotoma</i> Mojave paintbrush	-	-	4.3	Great Basin scrub (alluvial), Joshua tree woodland, lower montane coniferous forest, Pinyon & juniper woodland; 985-8,200 ft	Reported on the Refuge in 1997; not observed in 2009
<i>Caulanthus californicus</i> California jewelflower	FE	SE	1B.1	Saltbush scrub; pinyon & juniper woodland; grassland (sandy; 200-3,280 ft)	Not observed; may occur
<i>Caulanthus coulteri</i> var. <i>lemmoni</i> Lemmon's jewelflower	-	-	1B.2	Pinyon & juniper woodland, grassland; 260-4,000 ft	Not observed; may occur
<i>Convolvulus simulans</i> Small-flowered morning glory	-	-	4.2	Chaparral openings, coastal scrub, grassland (clay, serpentinite seeps); 100-2,300 ft	Not observed; may occur
<i>Chorizanthe blakleyi</i> Blakley's spineflower	-	-	1B.3	Chaparral, pinyon & juniper woodland; 1,950-5,250 ft	Not observed; may occur
<i>Cordylanthus rigidus</i> subsp. <i>brevibracteatus</i> Short-bracted bird's-beak	-	-	4.3	Chaparral, lower and upper montane coniferous forest (granitic), Pinyon & juniper woodland; 3,280-8,500 ft	Not observed; may occur



Species Scientific Name Common Name	STATUS			Habitat Associations & Reported Elevation Range	Survey Results Potential to Occur
	USFWS	CDFG	CNPS		
<i>Delphinium gypsophilum</i> subsp. <i>gypsophilum</i> Gypsum-loving larkspur	-	-	4.2	Chenopod scrub, cismontane woodland, grassland; 330-2,700 ft	Observed in Unit 11
<i>Delphimnium inopinum</i> Unexpected larkspur	-	-	4.3	Upper montane coniferous forest (rocky, metamorphic); 6,200-9,200 ft	Reported on the Refuge in 1997; not observed in 2009
<i>Delphinium parryi</i> subsp. <i>purpureum</i> Mt. Pinos larkspur	-	-	4.3	Chaparral, Mojavean desert scrub, Pinyon & juniper woodland; 3,280-8,530 ft	Reported on the Refuge in 1997; not observed in 2009
<i>Delphinium recurvatum</i> Recurved larkspur	-	-	1B.2	Saltbush scrub; cismontane woodland, grassland (alkaline); 10-2,460 ft	Not observed; may occur
<i>Delphinium umbracolorum</i> Umbrella larkspur	-	-	1B.3	Cismontane woodland; 1,300-1,970 ft.	Not observed; may occur
<i>Eriastrum hooveri</i> Hoover's eriastrum	-	-	4.2	Saltbush scrub; pinyon and juniper woodland; grassland; 165-3,000 ft	Reported on the Refuge in 1997; not observed in 2009
<i>Eriogonum gossypinum</i> Cottony buckwheat	-	-	4.2	Chenopod scrub, grassland (clay); 330-1,800 ft	Reported on the Refuge in 1997; not observed in 2009
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i> Southern alpine buckwheat	-	-	1B.3	Subalpine coniferous woodland; 8,500-11,500 ft	Not observed; not expected to occur
<i>Eriogonum nudum</i> var. <i>indictum</i> Protruding buckwheat	-	-	4.2	Chaparral, chenopod scrub, cismontane woodland (clay), serpentinite; 490-4,800 ft	Not observed; may occur
<i>Eriogonum temblorense</i> Temblor buckwheat	-	-	1B.2	Grassland; 985-3,280 ft.	Reported on the Refuge in 1997; not observed in 2009
<i>Eriophyllum jepsonii</i> Jepson's woolly sunflower	-	-	4.3	Chaparral, cismontane woodland, coastal scrub (sometimes serpentinite); 650-3,300 ft	Reported on the Refuge in 1997; not observed in 2009
<i>Eriophyllum lanatum</i> var. <i>hallii</i> Ft. Tejon woolly sunflower	-	-	1B.1	Chaparral and cismontane woodland; 3,500-4,925 ft	Not observed; may occur
<i>Eriophyllum lanatum</i> var. <i>obovatum</i> Southern Sierra woolly sunflower	-	-	4.3	Lower and upper montane coniferous forest (sandy loam); 3,650-8,200 ft	Reported on the Refuge in 1997; not observed in 2009



Species Scientific Name Common Name	STATUS			Habitat Associations & Reported Elevation Range	Survey Results Potential to Occur
	USFWS	CDFG	CNPS		
<i>Erodium macrophylla</i> (=California macrophylla) Round leaved filaree			1B.1	cismontane woodland, grassland; 50-3,950 ft	Not observed; may occur
<i>Eschscholzia hypocoides</i> San Benito poppy	-	-	4.3	Chaparral, cismontane woodland, grassland (serpentinite clay); 650-4,920 ft	Not observed; may occur
<i>Eschscholzia lemmonii</i> subsp. <i>kemensis</i> Tejon poppy	-	-	1B.1	Grassland; 800-2,000 ft	Not observed; may occur
<i>Fritillaria agrestis</i> Stinkbells (Chocolate lily)	-	-	4.2	chaparral, pinyon & juniper woodland, cismontane woodland; grassland; 35-5,100 ft	Observed in Unit 11
<i>Fritillaria striata</i> Striped adobe lily		ST	1B.1	clay soils in grasslands and oak woodlands ; 400-4,800 feet	Not observed; not expected to occur
<i>Gilia latiflora</i> subsp. <i>cuyamensis</i> Cuyama gilia	-	-	4.3	Pinyon & juniper woodland (sandy); 1,970-6,560 ft	Observed in Unit 11
<i>Gilia tenuiflora</i> subsp. <i>amplifaucalis</i> Trumpet-throated gilia	-	-	4.3	Cismontane woodland, grassland (sandy); 1,280-2,950 ft	Not observed; may occur
<i>Lasthenia glabrata</i> subsp. <i>coulteri</i> Coulter's goldfields	-	-	1B.1	Marshes, swamps, playas, vernal pools; 0-4,000 feet	Not observed; may occur
<i>Layia heterotricha</i> Pale yellow layia	-	-	1B.1	cismontane woodland, coastal scrub, pinyon & juniper woodland, grassland (alkaline or clay soils); 985-5,600 ft	Not observed; may occur
<i>Layia munzii</i> Munz's tidy- tips	-	-	1B.2	saltbush scrub, grassland (alkaline or clay soils); 500-2,300 ft	Not observed; may occur
<i>Lepidium jaredii</i> subsp. <i>jaredi</i> Jared's pepper-grass	-	-	1B.2	Grassland (alkaline or adobe); 1,100-3,300 ft	Not observed; may occur
<i>Lessingia tenuis</i> Spring lessingia	-	-	4.3	Chaparral, cismontane woodland, lower montane coniferous forest openings; 985-7,050 ft	Not observed; may occur
<i>Madia radiata</i> Showy golden madia	-	-	1B.1	Saltbush scrub, grassland; 80- 2,950 ft	Not observed; may occur
<i>Monardella linoides</i> subsp. <i>oblonga</i> Tehachapi monardella	-	-	1B.3	Lower and upper montane coniferous forest, pinyon & juniper woodland; 2,950-8,100 ft	Reported on the Refuge in 1997; not observed in 2009
<i>Monolopia congdonii</i> (=Lembertia congdonii) San Joaquin woolly-threads	FE		1B.2	Saltbush scrub; valley and foothill grassland (sandy)	Not observed; may occur



Species Scientific Name Common Name	STATUS			Habitat Associations & Reported Elevation Range	Survey Results Potential to Occur
	USFWS	CDFG	CNPS		
<i>Mucronea californica</i> California spineflower	-	-	4.2	Chaparral, cismontane woodland, coastal dunes, coastal scrub, grassland (sandy); 0-4,600 ft	Not observed; may occur
<i>Navarretia jaredii</i> Paso Robles navarretia	-	-	4.3	Cismontane woodland, meadows and seeps, grassland, vernal pools/clay, serpentinite; 650-2,115 ft	Reported on the Refuge in 1997; not observed in 2009
<i>Navarretia peninsularis</i> Baja navarretia	-	-	1B.2	chaparral, lower montane coniferous forest, meadows and seeps, pinyon & juniper woodland; 4,900-7,500 ft	Not observed; may occur
<i>Navarretia setiloba</i> Piute Mountains navarretia	-	-	1B.1	cismontane woodland, pinyon & juniper woodland, grassland; 1,000-6,900 ft	Not observed; may occur
<i>Nemacladus gracilis</i> Slender nemacladus	-	-	4.3	Cismontane woodland, grassland (sandy or gravelly); 390-6,230 ft	Not observed; may occur
<i>Perideridia pringlei</i> Adobe yampah	-	-	4.3	Chaparral, cismontane woodland, coastal scrub, Pinyon & juniper woodland (serpentinite, often clay); 985-5,900 ft	Observed in Unit 3
<i>Phacelia exilis</i> Transverse Range phacelia	-	-	4.3	Lower and upper montane coniferous forest (sandy or gravelly) meadows and seeps, Pebble plain; 3,600-8,850 ft	Not observed; may occur
<i>Phacelia mohavensis</i> Mojave phacelia	-	-	4.3	Cismontane woodland, lower montane coniferous forest, meadows and seeps, Pinyon & juniper woodland (sandy or gravelly); 4,590-8,200 ft	Not observed; may occur
<i>Sidalcea neomexicana</i> Salt-spring checkerbloom	-	-	2.2	Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, alkaline playas; 50- 5,020 ft	Not observed; may occur
<i>Stylocline masonii</i> Mason's neststraw	-	-	1B.1	Saltbush scrub; pinyon & juniper woodland (sandy); sandy washes; 300-1,300 ft.	Not observed; may occur



Species Scientific Name Common Name	STATUS			Habitat Associations & Reported Elevation Range	Survey Results Potential to Occur
	USFWS	CDFG	CNPS		
<i>Swertia neglecta</i> Pine-green gentian	-	-	4.3	Lower and upper montane coniferous forest, Pinyon & juniper woodland; 4,590-8,200 ft	Not observed; may occur
<i>Syntrichopappus lemmonii</i> Lemmon's syntrichopappus	-	-	4.3	Chaparral, Joshua tree woodland, Pinyon & juniper woodland (sandy or gravelly); 1,640-6,000 ft	Not observed; may occur
<i>Thermopsis californica</i> var. <i>argentata</i> Silvery false lupine	-	-	4.3	Lower montane coniferous forest, Pinyon & juniper woodland; 2,950-5,230 ft	Not observed; may occur
<i>Trichostema ovatum</i> San Joaquin bluecurls	-	-	4.2	Saltbush scrub; grassland; 200-1,000 ft	Not observed; may occur
<i>Viola aurea</i> Golden violet	-	-	2.2	Great Basin scrub, Pinyon & juniper woodland; 3,280-6,700 ft	Not observed; may occur
LEGEND:					
Federal (USFWS)			State (CDFG)		
FE	Endangered		SE	Endangered	
FT	Threatened		ST	Threatened	
FC	Candidate		SR	Rare	
			SC	Candidate	
California Native Plant Society (CNPS) List Categories					
List 1A	Plants Presumed Extinct in California				
List 1B	Plants Rare, Threatened, or Endangered in California and Elsewhere				
List 2	Plants Rare, Threatened, or Endangered in California But More Common Elsewhere				
List 3	Plants About Which We Need More Information - A Review List				
List 4	Plants of Limited Distribution – A Watch List				
California Native Plant Society (CNPS) Threat Code Extensions					
None	Plants lacking any threat information				
.1	Seriously Endangered in California (over 80% of occurrences threatened; high degree and immediacy of threat)				
.2	Fairly Endangered in California (20-80% of occurrences threatened)				
.3	Not very Endangered in California (less than 20% of occurrences threatened or no current threats known)				

Heart-leaved Thorn Mint (*Acanthomintha obovata* subsp. *cordata*)

Heart-leaved thorn mint is a CNPS List 4.2 species that flowers from April to July. This annual herb occurs in openings in chaparral, cismontane woodland, pinyon and juniper woodland, and grassland vegetation types at elevations ranging from 2,575 to 5,050 feet above msl. The known range of heart leaved thorn mint includes Monterey, Santa Barbara, San Luis Obispo, Ventura and Los Angeles Counties. In the vicinity of the Refuge, this species has been reported in the upper Cuyama Valley, near Hwy 33 (UCJEPS 2009). A thornmint species was reported on the Refuge in 1997 (San Benito thornmint; *Acanthomintha obovata*, no subspecies designated). Heart-leaved thorn-mint was not observed during the 2009 surveys; however, suitable habitat for this species is present in many areas of the Refuge, and it is considered to have potential to occur.



Abrams' Oxytheca (*Acanthoscyphus parishii* var. *abramsii*)

Abram's oxytheca is a CNPS List 1B.2 species that flowers from June to August. This annual herb occurs in sandy or shale substrates in chaparral vegetation types at elevations ranging from 3,750 feet to 6,750 feet above msl. The known range of Abram's oxytheca includes Ventura and Santa Barbara Counties. In the vicinity of the Refuge, this species was reported on the south side of Mt. Pinos in north Ventura County (UCJEPS 2009). Abrams' oxytheca was not observed during the 2009 surveys; it has limited potential to occur as the Refuge is somewhat outside of this species' known range.

Mt. Pinos Onion (*Allium howellii* var. *clokeyi*)

Mt. Pinos onion is a CNPS List 1B.3 species that flowers from April to June. This bulbiferous perennial occurs in pinyon and juniper woodlands and in Great Basin scrub vegetation types at elevations ranging from 4,350 feet to 6,050 feet above msl. In the Refuge vicinity, Mt. Pinos onion is known from collections at the Ballinger Canyon campground in Ventura County (UCJEPS 2009). Suitable habitat is present within the Refuge in the pinyon and juniper woodland vegetation type at higher elevations; therefore Mt. Pinos onion is considered to have potential to occur within the Refuge.

Douglas' Fiddleneck (*Amsinckia douglasiana*)

Douglas' fiddleneck is a CNPS List 4.2 species that flowers from March to May. This annual herb occurs in woodland and grassland vegetation types in dry Monterey shale substrates at elevations below 6,400 feet above msl. In the Refuge vicinity, Douglas' fiddleneck is known from collections at San Emigdio Ranch (now Wind Wolves Preserve) (UCJEPS 2009). Douglas' fiddleneck was reported on the Refuge in 1997, but was not observed during the 2009 surveys. Suitable habitat is present within the Refuge in the woodland and grassland vegetation types; therefore Douglas' fiddleneck is considered to have potential to occur within the Refuge.

California Androsace (*Androsace elongata* subsp. *acuta*)

California androsace is a CNPS List 4.2 species that flowers from March to June. This annual herb occurs in chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland and grassland vegetation types at elevations ranging from 490 feet to 3,900 feet above msl. In the Refuge vicinity, California androsace is known from Doc Williams Canyon on San Emigdio Ranch (now Wind Wolves Preserve) (UCJEPS 2009). Suitable habitat is present within the Refuge in the woodland and grassland vegetation types; therefore California androsace is considered to have potential to occur within the Refuge.

Oval-leaved Snapdragon (*Antirrhinum ovatum*)

Oval-leaved snapdragon is a CNPS List 4.2 species that flowers from May to November. This annual herb occurs in grassland vegetation types in clay or gypsum substrates at elevations ranging from 650 feet to 3,280 feet above msl. Its range includes Fresno, Kern, Monterey, Santa Barbara, San Benito, San Luis Obispo and Ventura Counties. In the Refuge vicinity, oval-leaved snapdragon is known from a collection near the Ballinger Canyon campground in the upper Cuyama Valley (UCJEPS 2009). Suitable habitat is



present within the Refuge in the grassland vegetation types; therefore oval-leaved snapdragon is considered to have potential to occur within the Refuge.

San Bernardino Aster (*Aster bernardinus*; =*Symphyotrichum defoliatum*)

San Bernardino Aster is a CNPS List 1B.2 species that flowers from July to November. This rhizomatous perennial herb occurs in a cismontane woodland, coastal scrub, lower montane coniferous woodland, meadows and seeps, marshes and swamps, and mesic grassland vegetation types typically in mesic conditions at elevations ranging from 0 feet to 6,700 feet above msl. Its range includes San Luis Obispo and Kern Counties south to San Diego County. In the Refuge vicinity, San Bernardino aster was reported on Tejon Ranch (USFWS 2008). Suitable habitat is present within the Refuge in many mesic vegetation types; therefore San Bernardino aster is considered to have potential to occur within the Refuge.

Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*)

Horn's milk-vetch is a CNPS List 1B.1 species that flowers between June and October. It generally occurs in moist places in meadows, seeps, and lake margins in alkaline soils (CNPS 2009). Its historic range included Inyo, Tulare, Kern, and San Bernardino counties at elevations from approximately 200 to 2,800 feet above msl. Horn's milk-vetch was reported on the Refuge in 1997 as sheep locoweed (*Astragalus hornii*). This species was not observed during the 2009 surveys.

Big Bear Valley Woollypod (*Astragalus leucolobus*)

Big Bear Valley woollypod is a CNPS List 1B.2 species that flowers between May and July. Its habitat associations include pinyon and juniper woodlands and lower mountain coniferous forests at elevations ranging from 5,700 to 8,700 feet above msl (CNPS 2009). It is mostly known from records in the San Bernardino Mountains; however, it has been reported in north Ventura County in the Sawmill and Cuddy Valley USGS 7.5-minute quadrangles (UCJEPS 2009). Although pinyon and juniper woodland vegetation occurs on the Refuge, the elevation range for this species is considerably higher than the elevations found on the Refuge, therefore, Big Bear Valley woollypod is not expected to occur.

Salinas Milk-vetch (*Astragalus macrodon*)

Salinas milk-vetch is a CNPS List 4.3 species that flowers between April and June. It occurs in openings in chaparral, cismontane woodland, and grassland vegetation types in sandstone, shale or serpentinite soils at elevations between 820 and 3,115 feet above msl. Its range includes Kern, Monterey, San Benito, San Luis Obispo and Ventura Counties. In the Refuge vicinity, Salinas milk-vetch is known from collections in the Temblor Range (UCJEPS 2009). Suitable habitat is present within the Refuge in the woodland and grassland vegetation types; therefore, Salinas milk-vetch is considered to have potential to occur within the Refuge.

Crownscale (*Atriplex coronata* var. *coronata*)

Crownscale is a CNPS List 4.2 species that flowers from March to October. This annual herb occurs in saltbush scrub, vernal pools and grassland vegetation types in alkaline



soils at elevations ranging from 0 to 1,935 feet above msl. In the Refuge vicinity, crownscale is known from collection on the Carrizo Plain (UCJEPS 2009). Suitable habitat is present within the Refuge in portions of the grassland vegetation type; therefore crownscale is considered to have potential to occur within the Refuge.

Club-haired Mariposa Lily (*Calochortus clavatus* var. *clavatus*)

Club-haired mariposa lily is a CNPS List 4.3 species that flowers between May and June. This bulbaceous perennial occurs in grassland, in clay or serpentine soils, at elevations between 240 and 4,260 feet above msl. Its range includes Santa Barbara, San Luis Obispo, Los Angeles and Ventura Counties. Club-haired mariposa lily is known from collections in the Sespe Canyon area in Ventura County and near San Luis Obispo (UCJEPS 2009). Although this species has not been reported nearby the Refuge, the Refuge is within the species' range and suitable habitat is present in the grassland vegetation type; therefore, club-haired mariposa lily is considered to have potential to occur within the Refuge.

Palmer's Mariposa Lily (*Calochortus palmeri* var. *palmeri*)

Palmer's mariposa lily is a CNPS List 1B.2 species that flowers between April and July. This bulbaceous perennial occurs in chaparral, lower montane coniferous forest, and mesic (wet) meadows vegetation types at elevations between 3,280 and 7,850 feet above msl. Its range includes San Luis Obispo and Kern Counties in the north, through Riverside and San Bernardino Counties in the south. Palmer's mariposa lily is known from collections in the San Emigdio Canyon area in Kern County (UCJEPS 2009). Suitable habitat is present in the woodland vegetation type and in meadow areas where seeps are present; therefore, Palmer's mariposa lily is considered to have potential to occur within the Refuge.

Late Flowered Mariposa Lily (*Calochortus weedii* var. *vestus*)

Late flowered mariposa lily is a CNPS List 1B.2 species that flowers between June and August. This bulbaceous perennial occurs in chaparral, cismontane woodland, and riparian woodland, often in serpentine soils, at elevations between 900 and 6,250 feet above msl. Its range includes Kern, Monterey, Santa Barbara, San Luis Obispo, and Ventura Counties. In the Refuge vicinity, late-flowered mariposa lily is known from collections in the New Cuyama and Sawmill Mountain USGS 7.5 minute quadrangles (UCJEPS 2009). Suitable habitat is present within the Refuge in the oak and mixed woodland vegetation types; therefore, late flowered mariposa lily is considered to have potential to occur within the Refuge.

Mojave Paintbrush (*Castilleja plagiotoma*)

Mojave paintbrush is a CNPS List 4.3 species that flowers from April to June. This perennial herb occurs in Great Basin scrub (alluvial), Joshua tree woodland, lower montane coniferous forest and pinyon and juniper woodland at elevations ranging from 985 feet to 8,200 feet above msl. Its known range includes San Luis Obispo, Kern and Los Angeles Counties. In the Refuge vicinity, Mojave paintbrush is known from a collection near the Cuyama Ranch in the USGS Mt. Pinos 7.5-minute quadrangle (UCJEPS 2009). This species was reported on the Refuge in 1997, but was not observed during surveys in 2009. Suitable habitat is present within the Refuge in the



pinyon and juniper woodland vegetation types; therefore Mojave paintbrush is considered to have potential to occur within the Refuge.

California Jewelflower (*Caulanthus californicus*)

California jewel-flower is a federal and state listed Endangered species and a CNPS List 1B.1 species that flowers between February and May. This annual species grows on dry plains and slopes in grassland, saltbush scrub, and cismontane juniper woodland vegetation types at elevations below 3,280 feet msl (CNPS 2009). California jewel-flower historically occurred in Fresno, Kern, Santa Barbara, San Luis Obispo, Tulare, Ventura, and King counties. It is currently known from three natural occurring populations and one introduced colony (USFWS 1998). The extant populations occur in Santa Barbara Canyon, the Carrizo Plain in San Luis Obispo County and the Kreyenhagen Hills in Fresno County (USFWS 1998). The introduced colony is in Paine Preserve in Kern County.

California jewel-flower was not observed during focused surveys of Units 9, 10B and 12 in 2009. Marginally suitable habitat is present within the Refuge in grassland vegetation types at lower elevations in Bitter Creek Canyon in Unit 2; this area was not included in the focused surveys as the canyons could not be accessed during the time that this species was known to be in flower. California jewel-flower has limited potential to occur within the Refuge in these areas.

Lemmon's Jewelflower (*Caulanthus coulteri* var. *lemmonii*)

Lemmon's jewelflower is a CNPS List 1B.2 species that flowers from March to May. This annual herb occurs in pinyon and juniper woodland and grassland vegetation types at elevations between 260 to 4,000 feet above msl. It has been reported over a large range from San Joaquin County to Ventura County. In the vicinity of the Refuge, it has been reported from the hills northeast of the campground in Ballinger Canyon (UCJEPS 2009). Coulter's jewelflower (*Caulanthus coulteri*) was reported on the Refuge in 1997. It is assumed that the species observed in 1997 was *Caulanthus coulteri* var. *coulteri* as this variety was observed in abundance on the Refuge in 2009. Suitable habitat for Lemmon's jewelflower is present within the Refuge in several vegetation types; therefore, Lemmon's jewelflower has potential to occur.

Blakley's spineflower (*Chorizanthe blakleyi*)

Blake is a CNPS List 1B.3 species that flowers from April to June. This annual herb occurs in pinyon and juniper woodland and chaparral vegetation types at elevations between 1,950 to 5,250 feet above msl. Its reported range includes Santa Barbara and Ventura Counties. In the vicinity of the Refuge, it has been reported from upper Cuyama Valley and along Aliso Cyn Road west of Bitter Creek in the Santa Ynez Mountains region (UCJEPS 2009). Suitable habitat is present within the Refuge for this species in the woodland vegetation types. This species was not observed during the 2009 surveys; however, Blakley's spineflower has potential to occur within the Refuge.

Small-flowered Morning Glory (*Convolvulus simulans*)

Small-flowered morning glory is a CNPS List 4.2 species that flowers from March to July. This annual herb occurs in openings in chaparral, coastal scrub and grassland



vegetation types in clay or serpentinite seeps at elevations ranging from 100 feet to 2,300 feet above msl. It is known over a wide range from Contra Costa County to Baja California. In the Refuge vicinity, small-flowered morning glory is known from a collection in the Temblor Range southwest of Yeguas Mountain (UCJEPS 2009). Suitable habitat is present within the Refuge in the grassland vegetation type; therefore small-flowered morning glory is considered to have potential to occur within the Refuge.

Short-bracted Bird's-beak (*Cordylanthus rigidus* subsp. *brevibracteatus*)

Short-bracted bird's-beak is a CNPS List 4.3 species that flowers from July to August. This annual herb occurs in chaparral, upper and lower montane coniferous forest, and pinyon and juniper woodland vegetation types at elevations ranging from 3,280 feet to 8,500 feet above msl. Its known range includes Tulare and Kern Counties. In the Refuge vicinity, short-bracted bird's-beak is known from a collection in the San Emigdio Range near the entrance to Valle Vista Campground (UCJEPS 2009). Suitable habitat is present within the Refuge in the pinyon and juniper woodland vegetation type; therefore short-bracted bird's-beak is considered to have potential to occur within the Refuge.

Gypsum-loving Larkspur (*Delphinium gypsophilum* subsp. *gypsophilum*)

Gypsum-loving larkspur is a CNPS List 4.2 species that flowers from February to May. This perennial herb occurs in saltbush scrub, cismontane woodland and grassland vegetation types at elevations ranging from 325 feet to 2,700 feet above msl. It is known to range between Alameda and Stanislaus Counties in the north to Ventura County in the south. In the Refuge vicinity, gypsum-loving larkspur is known from a collection in the San Emigdio Range (now Wind Wolves Preserve) near the San Emigdio Ranch headquarters (UCJEPS 2009).

Gypsum-loving larkspur was observed in Unit 11 within the Refuge. A population of approximately 100 individuals was observed in buckwheat scrub habitat on either side of the primary dirt road approximately 0.25 mile west of the entry gate to this unit (UTM coordinates 0279311E/3866227N, NAD83 datum).

Unexpected Larkspur (*Delphinium inopinum*)

Unexpected larkspur is a CNPS List 4.3 species that flowers from May to July. This perennial herb occurs in reported in upper montane coniferous forest in rocky or metamorphic substrates at elevations ranging from 6,200 to 9,185 feet above msl. It is known from Fresno, Inyo, Kern, Tulare and Ventura Counties. In the Refuge vicinity, unexpected larkspur is known from a collection in the Mt. Pinos area near the Chuchupate Ranger Station. Unexpected larkspur was reported on the Refuge in 1997; however, it appears that the elevations on the Refuge are outside of the elevation range reported for this species. Because elevations on the Refuge are lower than the known elevation range for this species, unexpected larkspur is not expected to occur within the Refuge.

Mt. Pinos Larkspur (*Delphinium parryi* subsp. *purpureum*)

Mt. Pinos larkspur is a CNPS List 4.3 species that typically blooms from May to June. This perennial herb occurs in chaparral, Mojavean desert scrub, and pinyon and juniper



woodland vegetation types between 3,280 and 8,530 feet above msl (CNPS 2009). This species has been reported in Kern, Santa Barbara and Ventura Counties. In the vicinity of the Refuge, this species was reported near Frazier Park in the Mt. Pinos region, at 4,300 feet elevation (UCJEPS 2009). Mt. Pinos larkspur was reported on the Refuge in 1997, but this species was not observed during surveys in 2009. Suitable habitat for Mt. Pinos larkspur is present in the pinyon and juniper vegetation type within the Refuge; therefore, this species is considered to have potential to occur on the Refuge.

Recurved Larkspur (*Delphinium recurvatum*)

Recurved larkspur is a CNPS List 1B.1 species that typically blooms from March to May. This perennial herb occurs in saltbush scrub, cismontane woodland, and valley and foothill grasslands between 10 and 2,460 feet above msl (CNPS 2008). This species historically occurred in Glenn and Butte counties and from Contra Costa County south to Kern County (MBHCP 1994). In the vicinity of the Refuge, an historic record of this species was reported in lower San Emigdio Canyon; it is also known from the Carrizo Plain (UCJEPS 2009). Suitable habitat for recurved larkspur is present in the annual grassland vegetation type within the Refuge; therefore, this species is considered to have potential to occur on the Refuge.

Umbrella Larkspur (*Delphinium umbraculorum*)

Umbrella larkspur is a CNPS List 1B.3 species that typically blooms from April to June. This perennial herb occurs in cismontane woodlands between 1,300 and 1,970 feet above msl (CNPS 2009). This species occurs in the coast ranges from Monterey to Ventura Counties. In the vicinity of the Refuge, it has been documented in along Hwy 166 in the Cuyama River Canyon (UCJEPS 2009). Although the Refuge is somewhat removed from reported records of this species, suitable habitat is present in the oak and mixed woodland vegetation types; therefore, umbrella larkspur is considered to have limited potential to occur within the Refuge.

Hoover's Eriastrum (*Eriastrum hooveri*)

Hoover's eriastrum is a CNPS 4.2 species that flowers from March to June. This small annual occurs in a variety of soil types within saltbush scrub, pinyon and juniper woodland, and grassland vegetation types at elevations between 165 and 3,000 feet above msl (CNPS 2009). It has also been reported to occur in alkali sinks and washes (CSUS 2006). It is known from several locations in Fresno, Kern, Kings, San Benito, San Luis Obispo, and Santa Barbara Counties (CSUS 2006). In the vicinity of the Refuge, Hoover's eriastrum was reported in Cuyama Valley on both sides of Ballinger Canyon (UCJEPS 2009). Hoover's eriastrum was reported on the Refuge in 1997. It was not observed during the 2009 surveys; however, suitable habitat for this species is present in many areas of the Refuge, and it is considered to have potential to occur.

Cottony Buckwheat (*Eriogonum gossypinum*)

Cottony buckwheat is a CNPS List 4.2 species that flowers from March to September. This annual herb occurs in saltbush scrub and grassland vegetation types in clay substrates at elevations between 925 and 1,800 feet above msl (CNPS 2009). Cottony buckwheat is known Fresno, Kings, Kern and San Luis Obispo Counties. In the Refuge vicinity, cottony buckwheat is known from a collection in the Kern oil fields near the town



of Taft in Kern County (UCJEPS 2009). Cottony buckwheat was reported on the Refuge in 1997, but it was not observed during the 2009 surveys. Suitable habitat for this species is present in many areas of the Refuge, and it is considered to have potential to occur.

Southern Alpine Buckwheat (*Eriogonum kennedyi* var. *alpigenum*)

Southern alpine buckwheat is a CNPS List 1B.3 species that typically blooms from July to September. This subshrub occurs in subalpine coniferous woodland above 8,500 feet above msl (CNPS 2009). This species is known from the San Bernardino Mountains area north to the Mount Pinos Region (UCJEPS 2009). The elevation range of the Refuge is well below the range at which southern alpine buckwheat is known to occur; therefore, it is not expected to occur within the Refuge.

Protruding Buckwheat (*Eriogonum nudum* var. *indictum*)

Protruding buckwheat is a CNPS List 4.2 species that flowers from May to October. This perennial herb occurs in chaparral, saltbush scrub, and cismontane woodland vegetation types typically in clay or serpentinite substrates at elevations between 490 and 4,800 feet above msl (CNPS 2009). Protruding buckwheat is known Monterey, San Benito, Fresno, Kern, Merced and San Luis Obispo Counties. In the Refuge vicinity, protruding buckwheat is known from a collection in the Temblor Range on Hwy 58, west of the junction with Hwy 33 and the town of McKittrick (UCJEPS 2009). The Refuge is somewhat outside of the known range of protruding buckwheat; however, suitable habitat for this species is present in several areas of the Refuge, and it is considered to have potential to occur.

Temblor Buckwheat (*Eriogonum temblorense*)

Temblor buckwheat is a CNPS List 1B.2 species that flowers from May to September. This annual herb occurs in grassland vegetation types at elevations between 985 and 3,280 feet above msl (CSUS 2006). Temblor buckwheat is known primarily from the Temblor Range along the east side of the Carrizo Plain (UCJEPS 2009). Temblor buckwheat was reported on the Refuge in 1997, but it was not observed during the 2009 surveys. Suitable habitat for this species is present in many areas of the Refuge, and it is considered to have potential to occur.

Jepson's Woolly Sunflower (*Eriophyllum jepsonii*)

Jepson's woolly sunflower is a CNPS List 4.3 species that flowers from April to June. This perennial herb occurs in chaparral, cismontane woodland and coastal scrub vegetation types, occasionally in serpentinite substrates, at elevations between 650 and 3,360 feet above msl (CNPS 2009). Jepson's woolly sunflower is known from Alameda and Contra Costa Counties south to Ventura County. Jepson's woolly sunflower was reported on the Refuge in 1997, but it was not observed during the 2009 surveys. Suitable habitat for this species is present in the woodland vegetation types on the Refuge; therefore, it is considered to have potential to occur.



Ft. Tejon Woolly Sunflower (*Eriophyllum lanatum* var. *hallii*)

Ft. Tejon woolly sunflower is a CNPS List 1B.1 species that flowers from May to July. This perennial herb occurs in chaparral and cismontane woodland vegetation types in at elevations between 3,500 and 4,925 feet above msl (CNPS 2009). Ft. Tejon Woolly sunflower is known from Kern and Santa Barbara Counties. In the vicinity of the Refuge, Ft. Tejon woolly sunflower was reported in the Sierra Madre Range in the Cuyama Valley region, near Pine Corral Potrero. Suitable habitat for this species is present in the woodland vegetation types on the Refuge; therefore, it is considered to have potential to occur.

Southern Sierra Woolly Sunflower (*Eriophyllum lanatum* var. *obovatum*)

Southern Sierra woolly sunflower is a CNPS List 4.3 species that flowers from June to July. This perennial herb occurs in upper and lower montane coniferous forest vegetation types in sandy loam substrates at elevations between 3,650 and 8,200 feet above msl (CNPS 2009). Southern Sierra woolly sunflower is known from Fresno, Kern, San Bernardino and Tulare Counties. Southern Sierra woolly sunflower was reported on the Refuge in 1997, but it was not observed during the 2009 surveys. Marginally suitable habitat for this species is present in the woodland vegetation types on the Refuge; therefore, it is considered to have limited potential to occur.

Round-leaved Filaree (*Erodium macrophylla* [= *California macrophylla*])

Round leaved filaree is a CNPS List 1B.1 species that flowers from March to May. This annual herb occurs in cismontane woodland and grassland vegetation types at elevations between 50 and 3,950 feet above msl (CNPS 2009). Round leaved filaree has an extensive range, and has been reported from Lassen County south to San Diego County. In the vicinity of the Refuge, round leaved filaree is known from the Temblor Range and from the Tejon Ranch area (UCJEPS 2009; BonTerra 2008). Round leaved filaree was not observed during the 2009 surveys; however, suitable habitat for this species is present in many areas of the Refuge, and it is considered to have potential to occur.

San Benito Poppy (*Eschscholzia hyscoides*)

San Benito poppy is a CNPS List 4.3 species that flowers from March to June. This annual herb occurs in chaparral, cismontane woodland, and grassland vegetation types in serpentinite clay soils at elevations between 650 feet and 4,920 feet above msl (CNPS 2009). San Benito poppy has been reported from Monterey County south to San Luis Obispo County. In the Refuge vicinity, San Benito poppy is known from a collection near Wells Ranch on the Carrizo Plain (UCJEPS 2009). Suitable habitat for this species is present on the Refuge in the woodland and grassland vegetation types; therefore it is considered to have potential to occur.

Tejon Poppy (*Eschscholzia lemmonii* subsp. *kernensis*)

Tejon poppy is a CNPS List 1B.1 species that flowers from March to April. Tejon poppy grows on adobe clay soils in sparsely-vegetated grasslands between 800 and 2,000 feet above msl (CSUS 2006). Tejon poppy occurred historically in six areas in the low hills that surround the southern tip of the San Joaquin Valley, from Dry Bog Knoll (between



Bakersfield and Woody) on the northeast to Elk Hills on the northwest. In the Refuge vicinity, Tejon poppy is known from a collection at the Naval Petroleum Reserve No. 1 approximately 20 miles north of the Refuge (UCJEPS 2009). Tejon poppy was not observed during the 2009 surveys; however, suitable habitat for this species is present on the Refuge, and it is considered to have potential to occur.

Stinkbells (*Fritillaria agrestis*)

Stinkbells, also known as chocolate lily, is a CNPS List 4.2 species that flowers from March to June. Stinkbells occur in chaparral, pinyon and juniper woodland, cismontane woodland and grassland vegetation types at elevations between 35 and 5,100 feet above msl (CNPS 2009). Stinkbells have a wide distribution in California; it has been reported from Mendocino County south to Ventura County, including Kern County.

Stinkbells were observed in two locations within the Refuge. A small population of approximately 20 individuals was observed along the dirt road in the northeast area of Unit 11 (UTM coordinates 0278343E/3866492N, NAD83 datum). A second, larger population of approximately 100 individuals was observed on north facing slope in the extreme southwest portion of Unit 11 (UTM coordinates 278102E/3865516N, NAD83 datum).

Striped Adobe Lily (*Fritillaria striata*)

Striped adobe-lily is a state-listed Threatened species and a CNPS List 1B.1 species that flowers between February and April. It is a bulbiferous perennial that occurs in clay soils in grasslands and oak woodlands at elevations between approximately 400 and 4,800 feet above msl. This species occurs in the Sierra Nevada foothills in eastern Tulare and Kern counties, including the Tejon Hills. Clay soils suitable for striped adobe lily may occur within the Refuge, however, the Refuge is located well west of the striped adobe-lily's known geographic range; therefore, striped adobe-lily is not expected to occur within the Refuge.

Cuyama Gilia (*Gilia latiflora* subsp. *cuyamensis*)

Cuyama gilia is a CNPS List 4.3 species that flowers from April to June. This annual herb occurs in sandy substrates in pinyon and juniper woodland vegetation types at elevations between 1,960 and 6,560 feet above msl (CNPS 2009). Cuyama gilia is known from Kern, Los Angeles, Ventura, Santa Barbara and possibly San Luis Obispo Counties. In the vicinity of the Refuge, this species was reported in the Pleito Hills region of the San Emigdio Range on San Emigdio Ranch (now Wind Wolves Preserve), north of Antimony Peak. (UCJEPS 2009).

Cuyama gilia was observed within the Refuge in Unit 11 and in Unit 3. A small population was observed on a north facing slope in the extreme southwest portion of Unit 11 (UTM coordinates 278102E/3865516N, NAD83 datum). A second population was observed on a north facing slope in the extreme south portion of Unit 3 (UTM coordinates 282957E/3865242N, NAD83 datum).

Trumpet-throated Gilia (*Gilia tenuiflora* subsp. *amplifaucalis*)

Trumpet-throated gilia is a CNPS List 4.3 species that flowers from March to April. This



annual herb occurs in sandy substrates in woodland and grassland vegetation types at elevations between 1,280 and 2,950 feet above msl (CNPS 2009). Trumpet-throated gilia is known from Monterey and San Luis Obispo Counties. In the vicinity of the Refuge, this species was reported in the Cuyama Valley at the east base of Caliente Mountain (UCJEPS 2009). The Refuge is somewhat outside of the reported range of this species; however, suitable habitat for this species is present in the woodland and grassland vegetation types on the Refuge, and it is considered to have limited potential to occur.

Coulter's Goldfields (*Lasthenia glabrata* subsp. *coulteri*)

Coulter's goldfields is a CNPS List 1B.1 species that flowers from February to June. This annual herb occurs in marshes, swamps, playas, and vernal pool vegetation types at elevations below 4,000 feet above msl (CNPS 2009). Coulter's goldfields has a wide distribution in California from Colusa County in the north to San Diego County in the south. This species was reported on the Carrizo Plain in the vicinity of Soda Lake area (UCJEPS 2009). Coulter's goldfields was not observed during the 2009 surveys; however, marginally suitable habitat for this species is present within the Refuge, and it is considered to have limited potential to occur.

Pale Yellow Layia (*Layia heterotricha*)

Pale yellow layia is a CNPS List 1B.1 species that flowers from March to June. This annual herb occurs in cismontane woodland, coastal scrub, pinyon and juniper woodland and grassland vegetation types in alkaline or clay soils at elevations between 985 and 5,600 feet above msl (CNPS 2009). Pale yellow layia occurs from Fresno and San Benito Counties south to Los Angeles County. In the vicinity of the Refuge, this species was reported in the Pleito Hills area of the San Emigdio Range, approximately 4.5 miles due north of Antimony Peak (UCJEPS 2009). Pale yellow layia was not observed during the 2009 surveys; however, suitable habitat for this species is present within the Refuge, and it is considered to have potential to occur.

Munz's Tidy-Tips (*Layia munzii*)

Munz's tidy-tips is a CNPS List 1B.2 species that flowers from March to April. This annual herb occurs in saltbush scrub and grassland vegetation types in alkaline or clay soils at elevations between 500 and 2,300 feet above msl (CNPS 2009). Munz's tidy-tips occurs in Fresno, Kern and San Luis Obispo Counties. In the vicinity of the Refuge, this species was reported on the Carrizo Plain near Soda Lake (UCJEPS 2009). Munz's tidy-tips was not observed during the 2009 surveys; however, suitable habitat for this species is present within the Refuge, and it is considered to have potential to occur.

Jared's Pepper-grass (*Lepidium jaredii* subsp. *jaredi*)

Jared's pepper-grass is a CNPS List 1B.2 species that flowers from March to May. This annual herb occurs in grassland vegetation types at elevations between 1,100 and 3,300 feet above msl (CNPS 2009). Jared's pepper-grass is known primarily from the Carrizo Plain where it occurs in the Soda Lake area (UCJEPS 2009). Jared's pepper-grass was not observed during the 2009 surveys; however, marginally suitable habitat for this species is present within the Refuge, and it is considered to have limited potential to occur.



Spring Lessingia (*Lessingia tenuis*)

Spring lessingia is a CNPS List 4.3 species that flowers from May to July. This annual herb occurs in chaparral, cismontane woodland, and in openings in lower montane coniferous forest vegetation types at elevations between 980 and 7,050 feet above msl (CNPS 2009). Spring lessingia occurs from Monterey and Alameda Counties south to Ventura and Santa Barbara Counties. In the vicinity of the Refuge, this species was reported in the Mt. Pinos Region in the Camp Seymour Public Camp Grounds. (UCJEPS 2009). Spring lessingia was not observed during the 2009 surveys; however, marginally suitable habitat for this species is present within the woodland vegetation types on the Refuge, and it is considered to have potential to occur.

Showy Golden Madia (*Madia radiata*)

Showy golden madia is a CNPS List 1B.1 species that flowers from March to May. This annual herb occurs in saltbush scrub and grassland vegetation types at elevations between 80 and 2,950 feet above msl (CNPS 2009). Showy golden madia occurs from Contra Costa County south to Kern and Santa Barbara Counties. In the vicinity of the Refuge, this species was reported on the Carrizo Plain near Soda Lake (UCJEPS 2009). Showy golden madia was not observed during the 2009 surveys; however, suitable habitat for this species is present within the Refuge, and it is considered to have potential to occur.

Tehachapi Monardella (*Monardella linoides* subsp. *oblonga*)

Tehachapi monardella, also called flax-like monardella, is a CNPS List 1B.3 species that flowers from June to August. This rhizotomaceous perennial herb occurs in lower and upper montane coniferous forest; and pinyon and juniper woodland vegetation types at elevations between 2,950 and 8,100 feet above msl (CNPS 2009). Tehachapi monardella is known from Kern, Tulare and Ventura Counties. In the vicinity of the Refuge, this species was reported on the road to Mt. Able in the Mt. Pinos region (UCJEPS 2009). Tehachapi monardella was reported on the Refuge in 1997, but it was not observed during the 2009 surveys. Suitable habitat for this species is present within the Refuge, and it is considered to have potential to occur.

San Joaquin Woollythreads (*Monolopia* [=*Lembertia*] *congdonii*)

San Joaquin woollythreads is a federally listed Endangered species and a CNPS List 1B.2 species that typically blooms from February through May. This annual herb grows in grassland and saltbush scrub vegetation types (CNPS 2009; USFWS 1998) from 200 to 2,625 feet above msl. It is known to occur in Fresno, Kern, Santa Barbara, San Luis Obispo, King, and San Benito counties, and historically in Tulare County. In the Refuge vicinity, San Joaquin woolly-threads is known from the Carrizo Plain approximately 10 miles northwest of the Refuge (UCJEPS 2009).

This species was not observed during focused surveys of Units 9, 10B and 12 in 2009. Marginally suitable habitat is present within the Refuge in grassland vegetation types at lower elevations in Bitter Creek Canyon in Unit 2; this area was not included in the focused surveys as the canyons could not be accessed during the time that this species was known to be in flower. San Joaquin woollythreads has limited potential to occur within the Refuge in these areas.



California Spineflower (*Mucronea californica*)

California spineflower is a CNPS List 4.2 species that flowers from March to July. This annual herb occurs in sandy substrates in chaparral, cismontane woodland, coastal dunes, coastal scrub and grassland vegetation types at elevations between 0 and 4,600 feet above msl (CNPS 2009). California spineflower occurs over a wide range from Monterey County south to San Diego County. In the vicinity of the Refuge, California spineflower was reported near Ballinger Canyon Rd east of Hwy 33, about four miles north of Ventucopa (UCJEPS 2009). California spineflower was not observed during the 2009 surveys; however, suitable habitat for this species is present within grassland vegetation types on the Refuge, and it is considered to have potential to occur.

Paso Robles Navarretia (*Navarretia jaredii*)

Paso Robles navarretia is a CNPS List 4.3 species that flowers from April to July. This annual herb occurs in sandy substrates in cismontane woodland, meadows and seeps, grassland and vernal pool vegetation types in clay or serpentinite soils at elevations between 650 and 2,115 feet above msl (CNPS 2009). Paso Robles navarretia occurs over a wide range from Monterey County south to Ventura County. In the vicinity of the Refuge, Paso Robles navarretia was reported on San Emigdio Ranch (now Wind Wolves Preserve) (UCJEPS 2009). Paso Robles navarretia was reported on the Refuge in 1997, but this species was not observed during the 2009 surveys. Suitable habitat for this species is present within grassland vegetation types on the Refuge, and it is considered to have potential to occur.

Baja Navarretia (*Navarretia peninsularis*)

Baja navarretia is a CNPS List 1B.2 species that flowers from June to August. This annual herb occurs in chaparral, lower montane coniferous forest, meadows and seeps, pinyon and juniper woodland vegetation types at elevations between 4,900 and 7,500 feet above msl (CNPS 2009). Baja navarretia is known from Kern County south to Baja California. Vegetation types suitable for Baja navarretia are present on the Refuge, however, elevations on the Refuge are generally below that at which Baja navarretia has been reported; therefore, Baja navarretia has limited potential to occur within the Refuge.

Piute Mountains Navarretia (*Navarretia setiloba*)

Piute Mountains navarretia is a CNPS List 1B.1 species that flowers from April to July. This annual herb occurs in cismontane woodland, pinyon and juniper woodland, and grassland vegetation types at elevations between 1,000 and 6,900 feet above msl (CNPS 2009). Piute Mountains navarretia is primarily known from the southern Sierra Nevada range. It has been reported in the San Emigdio Mountains northeast of Eagle Nest Peak near Plieto Creek and in Ft. Tejon State Park (UCJEPS 2009). Vegetation types suitable for Piute Mountains navarretia are present on the Refuge; therefore, Baja navarretia has potential to occur within the Refuge.

Slender Nemacladus (*Nemacladus gracilis*)

Slender nemacladus is a CNPS List 4.3 species that flowers from March to May. This



annual herb occurs in cismontane woodland and grassland vegetation types in sandy or gravelly substrates at elevations between 390 and 6,230 feet above msl (CNPS 2009). Slender nemacladus is known from Fresno, Merced, Kings, Kern and Los Angeles Counties. Slender nemacladus is reported from a collection near the Hard Luck Campground in the Piru Creek floodplain (UCJEPS 2009). Although the Refuge is somewhat distant from the closest known report of slender nemacladus, it is well within the range of this species. Vegetation types suitable for slender nemacladus are present in the woodland and grassland vegetation types on the Refuge; therefore, slender nemacladus is considered to have potential to occur within the Refuge.

Adobe Yampah (*Perideridia pringlei*)

Adobe yampah is a CNPS List 4.3 species that flowers from April to June. This perennial herb occurs in chaparral, cismontane woodland, coastal scrub and pinyon and juniper woodland vegetation types, often in serpentinite or clay substrates, at elevations between 985 and 5,900 feet above msl (CNPS 2009). The known range of adobe yampah is from Monterey County south to Ventura County. In the vicinity of the Refuge, adobe yampah is known from a collection near the Valle Vista Public Campground (UCJEPS 2009).

Adobe yampah was observed within the Refuge in Unit 3. A scattered population of approximately 200 individuals was observed in grassland habitat on a north facing slope in the extreme south portion of Unit 3 (UTM coordinates 282957E/3865242N, NAD83 datum).

Transverse Range Phacelia (*Phacelia exilis*)

Transverse Range phacelia is a CNPS List 4.3 species that flowers from May to August. This annual herb occurs in lower and upper montane coniferous forest, meadows and seeps and Pebble plain vegetation types in sandy or gravelly substrates at elevations between 3,600 and 8,850 feet above msl (CNPS 2009). Transverse Range phacelia is known from Kern, Tulare, San Bernardino and Ventura Counties. In the vicinity of the Refuge, Transverse Range phacelia is known from a collection near the Frazier Mountain Lookout in the Mt. Pinos Region (UCJEPS 2009). Marginally suitable habitat is present on the Refuge in the upper elevation areas; therefore, Transverse Range phacelia is considered to have limited potential to occur within the Refuge.

Mojave Phacelia (*Phacelia mohavensis*)

Mojave phacelia is a CNPS List 4.3 species that flowers from April to August. This annual herb occurs in cismontane woodland, lower montane coniferous forest, meadows and seeps and pinyon and juniper woodland vegetation types in sandy or gravelly substrates at elevations between 4,590 and 8,200 feet above msl (CNPS 2009). Mojave phacelia is known from Tulare, Los Angeles, San Bernardino and Ventura Counties. In the vicinity of the Refuge, Mojave phacelia is known from a collection near Marion Campground on Brush Mountain in the Mt. Pinos Region (UCJEPS 2009). The highest elevations on the Refuge are near the low elevation range for this species. Marginally suitable habitat is present on the Refuge in the pinyon and juniper woodland vegetation type in upper elevation areas; therefore, Mojave phacelia is considered to have limited potential to occur within the Refuge.



Salt Spring Checkerbloom (*Sidalcea neomexicana*)

Salt spring checkbloom is a CNPS List 2.2 species that flowers from March to June. This annual herb occurs in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub and alkaline playa vegetation types at elevations between 50 and 5,020 feet above msl (CNPS 2009). Salt spring checkerbloom occurs from Kern County south to Baja California. In the vicinity of the Refuge, this species was reported in the Mt. Pinos region, west of Lockwood Valley (UCJEPS 2009). Salt spring checkerbloom was not observed during the 2009 surveys; however, suitable habitat for this species is present within the Refuge, and it is considered to have potential to occur.

Mason's Neststraw (*Styocline masonii*)

Mason's neststraw is CNPS List 1B.1 species that flowers from March to May. Mason's neststraw occurs in open, dry sandy soils in juniper woodland or saltbush scrub vegetation between approximately 300 and 1,300 feet above msl, and rarely to almost 4,000 feet (CNPS 2009). Mason's neststraw is known only from the southern San Joaquin Valley and adjacent inner coastal ranges (Morefield 1992) and the desert slopes of the Liebre Mountains in Los Angeles County (Boyd 1999). Marginally suitable habitat occurs within the Refuge in the California juniper vegetation type; therefore, Mason's neststraw has potential to occur in the Refuge.

Pine-green Gentian (*Swertia neglecta*)

Pine-green gentian is CNPS List 4.3 species that flowers from May to July. This perennial herb occurs in upper and lower montane coniferous forest; and pinyon and juniper woodland vegetation types between approximately 4,590 and 8,200 feet above msl (CNPS 2009). Pine-green gentian is known from Kern, Los Angeles, San Bernardino and Ventura Counties. In the vicinity of the Refuge, pine-green gentian was reported on the west side of Mt. Pinos, although most records for this species are near Lockwood Valley (UCJEPS 2009). Marginally suitable habitat occurs within the Refuge in the pinyon and juniper woodland vegetation type at higher elevations; therefore, pine green gentian has limited potential to occur in the Refuge.

Lemmon's Syntrichopappus (*Syntrichopappus lemmonii*)

Lemmon's syntrichopappus is CNPS List 4.3 species that flowers from April to May. This annual herb occurs in chaparral, Joshua tree woodland; and pinyon and juniper woodland vegetation types in sandy or gravelly substrates between approximately 1,640 and 6,000 feet above msl (CNPS 2009). Lemmon's syntrichopappus is known from Kern, Los Angeles, San Bernardino, Monterey and Riverside Counties. In the vicinity of the Refuge, Lemmon's syntrichopappus was reported on the San Emigdio Mesa near Apache Canyon (UCJEPS 2009). Suitable habitat occurs within the Refuge in the pinyon and juniper woodland vegetation type; therefore, Lemmon's syntrichopappus is considered to have potential to occur within the Refuge.

Silvery False Lupine (*Thermopsis californica* var. *argentata*)

Silvery false lupine is CNPS List 4.3 species that flowers from April to October. This rhizotomaceous perennial herb occurs in lower montane coniferous forest; and pinyon



and juniper woodland vegetation types between approximately 2,950 and 5,230 feet above msl (CNPS 2009). Silvery false lupine is known from Lassen and Shasta Counties in the north to Los Angeles and Ventura Counties in the south. In the vicinity of the Refuge, silvery false lupine is known from an historic record reported on the San Emigdio Potrereros in the Mt. Pinos region (UCJEPS 2009). Suitable habitat occurs within the Refuge in the pinyon and juniper woodland vegetation type; therefore, silvery false lupine is considered to have potential to occur within the Refuge.

San Joaquin Bluecurls (*Trichostema ovatum*)

San Joaquin bluecurls is CNPS List 4.2 species that flowers from July to October. San Joaquin bluecurls occur in disturbed places, saltbush scrub, and grassland vegetation types between approximately 200 and 1,000 feet above msl (CNPS 2009). San Joaquin bluecurls is known from the San Joaquin Valley from north of Fresno south to the Cuyama Valley (UCJEPS 2009). In the vicinity of the Refuge, this species was recorded near Ballinger Canyon in the Cuyama Valley. Suitable habitat occurs within the Refuge in the grassland vegetation types; therefore, San Joaquin bluecurls is considered to have potential to occur in the Refuge.

Golden Violet (*Viola aurea*)

Golden violet is CNPS List 2.2 species that flowers from April to June. Golden violet occurs in Great Basin scrub and Pinyon and juniper woodland vegetation types between approximately 3,280 and 6,700 feet above msl (CNPS 2009). Golden violet is known from the Great Basin Region and the Transverse Ranges (UCJEPS 2009). In the vicinity of the Refuge, this species was recorded approximately five miles northeast of Mt. Pinos, between Frazier Park and Mt. Pinos. Suitable habitat occurs within the Refuge in the woodland vegetation types; therefore, golden violet is considered to have potential to occur in the Refuge.

DISCUSSION AND RECOMMENDATIONS

Survey Limitations

Rainfall totals in the general area of the Refuge appear to have been considerably lower than average during the 2008-2009 rainfall season. The National Weather Service Forecast Office at Hanford, California reported precipitation totals in surrounding areas through April 2009 at approximately 60 percent of normal for the 2008-2009 water year. At the Wasco Station, precipitation totals were reported at 50 percent of normal (NOAA 2009). Because rainfall totals were low, many plants may not have been detectable during the general plant surveys.

Although plant population numbers may be lower than normal due to the drought conditions, the focused surveys conducted in the west portion of the Refuge for the two federally listed species with potential to occur, California jewelflower and San Joaquin woollythreads, should be considered valid as these two species were observed in flower at a nearby location during the period of time in which the surveys on the Refuge were conducted.



Recommendations

1. A map delineating the vegetation types on the Refuge would greatly assist the Refuge Manager in determining the potential for federally listed or other special status species (including wildlife species) to occur in specific areas. It is therefore recommended that surveys be conducted to map the various vegetation types on the Refuge.
2. As previously mentioned, the lower elevation areas in the steep canyons of Unit 2 were not accessible during the early months of this year's survey effort. Limited suitable habitat for California jewelflower and San Joaquin woollythreads was observed in these lower elevation areas during reconnaissance surveys conducted later in the spring season; therefore, focused surveys for these two listed species are recommended prior to initiating any habitat modification activities in these lower canyon areas. The focused surveys should be conducted during the appropriate flowering period for these two species (e.g., approximately February to April).
3. Repeating the reconnaissance botanical surveys over the next few years will greatly improve the likelihood that all plant taxa present on the Refuge are observed and reported. Repeated surveys are especially important as the precipitation totals for the current water year (2008-2009) are low, and many species may not have been evident during this drought year.

We greatly appreciate the opportunity to participate in the botanical assessment of the Bitter Creek National Wildlife Refuge. If you have any comments or questions, please call Pam De Vries at (661) 242-1574.

Sincerely,

Pam DeVries
Botanist



References and Other Literature

- Abrams, L. 1923-1951. *Illustrated Flora of the Pacific States*. Volumes. I, II, and III. Stanford University Press, Stanford, California.
- Abrams, L. and R. Ferris. 1960. *Illustrated Flora of the Pacific States*. Volume IV. Stanford University Press, Stanford, California.
- BonTerra Consulting. 2008. *Biota Report for the Centennial Specific Plan in Northwestern Antelope Valley, Los Angeles County, California*. Unpublished report available through Los Angeles County Department of Planning.
- Boyd, S. 1999. Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California. Reprinted from *Aliso* Vol 18:2, pps 93-139 by Rancho Santa Ana Botanic Garden Occasional Publications, Number 5, xii + 93-139 pps. Claremont, California.
- California Department of Fish and Game. 2003. Natural Diversity Database. *List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base*. Wildlife and Habitat Data Analysis Branch, Sacramento, California. September.
- California Department of Fish and Game (CDFG) 2009. *California Natural Diversity Database*. California Department of Fish and Game, Natural Heritage Division, Sacramento, California.
- California Native Plant Society (CNPS). 2009. *Electronic Inventory of Rare and Endangered Vascular Plants of California*. Sacramento, California.
- California Native Plant Society (CNPS). 2001. *CNPS Botanical Survey Guidelines*. Policy adopted December 9, 1983, and revised June 2, 2001. Sacramento, California. <http://www.cnps.org>
- California State University, Stanislaus (CSUS). 2006. Endangered Species Recovery Program. Program webpage available at <http://esrp.csustan.edu/>
- Hickman, J. C. Editor. 1993. *The Jepson Manual Higher Plants of California*. University of California Press, Berkeley, California.
- Metropolitan Bakersfield Habitat Conservation Plan, City of Bakersfield, Kern County (MBHCP). 1994. Metropolitan Bakersfield Habitat Conservation Plan and Final Environmental Impact Report. Online copy accessed at http://library.ceres.ca.gov/cgi-bin/doc_home?elib_id=2497
- Moe, L. M./Twisselmann, E. 1995. *A Key to Vascular Plant Species of Kern County, California* by L. Maynard Moe and *A Flora of Kern County* by Ernest G. Twisselmann. *A Flora of Kern County, California* by Ernest G. Twisselmann reprinted from the Wasmann Journal of Biology, Vol. 25, Nos. 1 and 2, 1967. California Native Plant Society, Sacramento, California.



- Moe, L. M. 2004. *A Floristic Study of Fort Tejon State Historic Park, Kern County, California*. *Crossosoma*, V30:2, Fall-Winter 2004, pp.45-77.
- Morefield, J.D. 1992. Three new species of *Stylocline* (Asteraceae:Inuleae) from California and the Mojave Desert. *Madroño* 39:114-130.
- National Oceanographic and Atmospheric Administration (NOAA). 2009. National Weather Service Forecast Office, Hanford, California. Accessed online at: <http://www.weather.gov/climate/index.php?wfo=hnx>
- Sawyer, J.O. and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society, Sacramento, California.
- Smith, C. 1998. *A Flora of the Santa Barbara Region, California, Second Edition*. Santa Barbara Botanic Garden, Santa Barbara, California.
- U.S. Department of Agriculture Soil Conservation Service (SCS). 1989. Bitter Creek NWR Soil Survey. Maps and Field sheet Symbol Identification Legend provided by USFWS.
- U.S. Fish and Wildlife Service (USFWS) 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, Oregon. 319 pages.
- U.S. Fish and Wildlife Service (USFWS). 2008. Draft Environmental Impact Statement for the Tehachapi Uplands Multi-Species Habitat Conservation Plan. Available online at: <http://www.fws.gov/ventura/endangered/hconservation/hcp/hcfiles/>
- U.S. Forest Service (USFS), Los Padres National Forest. 2007. Threatened, Endangered, and Sensitive Species of Los Padres National Forest, April 2007. Checklist of sensitive species provided by U. S. Forest Service, March 2009.
- U.S. Forest Service (USFS), Los Padres National Forest. 2009. Plants of the Mt. Pinos Summit. Botanical checklist accessed March 2009 online at <http://www.fs.fed.us/r5/lospadres/about/resources/botanical/pinos/index.shtml>
- University of California, Berkeley, Jepson Herbarium (UCJEPS). 2009. Consortium of California Herbaria available online at <http://ucjeps.berkeley.edu/consortium/>. Accessed Spring 2009.
- Werner, N. Misa. 1997. *Flora of Bitter Creek National Wildlife Refuge*. Unpublished flora checklist compiled in 1997, copy provided by U.S. Fish & Wildlife Service.
- Wind Wolves Preserve. (1999) *Plant Species List for the Wind Wolves Preserve, Southern Kern County*. Unpublished flora checklist including collections and observations of plants on the Preserve between April 1996 and October 1999.



Survey Dates, Personnel and Specific Areas Visited 2009

Unit	Specific Area	Date Surveyed (2009)	Survey Personnel
1	N of Kirschenmann residence	3-Apr	Pam De Vries, Otto Gasser, Shannon Still
1	N of Kirschenmann residence	7-Apr	Pam De Vries, Otto Gasser
1	N of water tank, along the ridge	17-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart
1	Open canyon east of water tank	23-Apr	Pam De Vries, Otto Gasser
1	N of Kirschenmann residence	1-July	Pam De Vries, Otto Gasser, Mary Ann Lockhart
2	Bitter Creek Canyon, Lower portion	14-Apr	Pam De Vries, Otto Gasser, LeRoy Gross
2	Barren hilltops, NW end of Unit	23-Apr	Pam De Vries, Otto Gasser
2	Oak woodland in switchbacks, W end of Unit	23-Apr	Pam De Vries, Otto Gasser
2	Grasslands near Oak woodland in switchbacks; Spanish Springs Cyn (north area)	1-July	Pam De Vries, Otto Gasser, Mary Ann Lockhart
3	Near upper gate	20-Mar	Pam De Vries, Otto Gasser
3	S end	21-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart
3	S of cell towers, parallel to Cerro Noroeste	21-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart
3	Oak woodland west and uphill of flight pen	27-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart
3	Upper Bitter Creek Canyon	27-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart
3	SE end	12-May	Pam De Vries, Otto Gasser, Mary Ann Lockhart
3	Bitter Creek Canyon, Upper and mid portions	19-May	Pam De Vries, Otto Gasser, LeRoy Gross, Sarah Degroot
3	Near upper gate	2-June	Pam De Vries, Otto Gasser, Mary Ann Lockhart
3	SE end	17-June	Pam De Vries, Otto Gasser, Mary Ann Lockhart, James (FWS Staff)
6	W and NW of the water tank	20-Apr	Pam De Vries, Otto Gasser
6	W of water tank	30-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart
6	West of water tank	19-May	LeRoy Gross
7	At adobe and hills to the N and E	20-Apr	Pam De Vries, Otto Gasser
8	Along dirt road	23-Apr	Pam De Vries, Otto Gasser
8	Near gate at Cerro Noroeste	26-May	Pam De Vries, Otto Gasser, Mary Ann Lockhart
8	Near gate at Cerro Noroeste	2-June	Pam De Vries, Otto Gasser, Mary Ann Lockhart
9	E of Hwy 166	19-Mar	Pam De Vries, Otto Gasser, Mary Ann Lockhart



Unit	Specific Area	Date Surveyed (2009)	Survey Personnel
9	Corral area W of Bogel's	30-Mar	Pam De Vries, Otto Gasser, LeRoy Gross
9	W of Corrals	9-Apr	Pam De Vries, Otto Gasser
9	W of Bogel residence	17-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart, Daisie Huang
9	W of Bogel residence	23-Apr	Pam De Vries, Otto Gasser
9	Near gate on Cerro Noroeste	26-May	Pam De Vries, Otto Gasser, Mary Ann Lockhart
9	W of Bogel residence	26-May	Pam De Vries, Otto Gasser, Mary Ann Lockhart
9	Pond area	26-May	Pam De Vries, Otto Gasser, Mary Ann Lockhart
9	Drainage near northwest boundary	1-July	Pam De Vries, Otto Gasser, Mary Ann Lockhart
10A	Klipstein Canyon E of Klipstein Cyn Rd	30-Mar	Pam De Vries, Otto Gasser, LeRoy Gross
10A	N end, along the ridge	17-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart
10B	N of Cerro Noroeste	17-Mar	Pam De Vries, Otto Gasser, LeRoy Gross
10B	West of Hwy 166	17-Mar	Pam De Vries, Otto Gasser, LeRoy Gross
10B	Slope above entry gate N of Cerro Noroeste	19-Mar	Pam De Vries, Otto Gasser, Mary Ann Lockhart
10B	Slope above entry gate N of Cerro Noroeste	20-Mar	Pam De Vries, Otto Gasser
10B	Klipstein Canyon near property boundary	23-Mar	Pam De Vries, Otto Gasser
10B	N of Cerro Noroeste, W of Klipstein Cyn Rd	3-Apr	Pam De Vries, Otto Gasser, Shannon Still
10B	Slope above entry gate N of Cerro Noroeste	3-Apr	Pam De Vries, Otto Gasser, Shannon Still
10B	Klipstein Canyon along drainage and road	12-May	Pam De Vries, Otto Gasser, Mary Ann Lockhart
10B	N of Cerro Noroeste	26-May	Pam De Vries, Otto Gasser, Mary Ann Lockhart
10B	Klipstein Canyon, lower	26-May	Pam De Vries, Otto Gasser, Mary Ann Lockhart
10B	Near FWS Offices	2-June	Pam De Vries, Otto Gasser, Mary Ann Lockhart
10B	N of Cerro Noroeste and Klipstein Canyon	1-July	Pam De Vries, Otto Gasser, Mary Ann Lockhart
11	NE near gate off Cerro Noroeste	17-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart, Daisie Huang
11	Near switchbacks in road, mid unit	17-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart
11	Hills N and S of 1st fork in road	28-Apr	Pam De Vries, Otto Gasser
11	SW end, S and W of 2nd fork in road	30-Apr	Pam De Vries, Otto Gasser, Mary Ann Lockhart
11	NE near gate off Cerro Noroeste	12-May	Pam De Vries, Otto Gasser, Mary Ann Lockhart



Unit	Specific Area	Date Surveyed (2009)	Survey Personnel
11	SW end, S and W of 2nd fork in road	19-May	Pam De Vries, Otto Gasser, LeRoy Gross, Sarah Degroot
11	Near switchbacks in road, mid unit	2-June	Pam De Vries, Otto Gasser, Mary Ann Lockhart
11	SW end and switchbacks in road	17-June	Pam De Vries, Otto Gasser, Mary Ann Lockhart, James (FWS staff)
12	West of Hwy 166	16-Mar	Pam De Vries, Otto Gasser



**Appendix B
Plant Compendium
Bitter Creek National Wildlife Refuge
Spring 2009**

The following compendium includes all vascular plant taxa observed on the Bitter Creek National Wildlife Refuge during surveys conducted from March through July 2009. For ease of reference, an alphabetical arrangement has been followed for families within Divisions or Subclasses, for genera within families, and for species within genera. Nomenclature used in this compendium follows the treatments in the *Jepson Manual: Higher Plants of California* (Hickman, 1993).

As of the date of this report, 338 taxa have been identified (species, subspecies, varieties and hybrids) within the Refuge. Of this total, 287 are considered native and 51 are non-native. The largest plant families represented on the site include the Asteraceae (50), Boraginaceae (21), Brassicaceae (20), Fabaceae (25), Hydrophyllaceae (18), Polemoniaceae (21), and Poaceae (33). The largest number of genera include *Bromus*, *Eriogonum*, *Phacelia*, *Camissonia*, *Lupinus*, and *Gilia*.

Non-native taxa are indicated by an asterisk (*) symbol before the name. Special status species are indicated by a dagger (‡) symbol. Specimens identified only to genus are indicated by "sp." following the genus name. Voucher specimens collected and documented by LeRoy Gross are indicated by "LG" preceding the voucher number; all other vouchers were collected and documented by Pam De Vries. All voucher specimens collected were deposited at the Rancho Santa Ana Botanic Gardens, Claremont, California.

FERNS AND FERN ALLIES

Selaginellaceae - Spike Moss Family

<i>Selaginella asprella</i>	bluish spike moss	7427
-----------------------------	-------------------	------

GYMNOSPERMS

Cupressaceae - Cypress Family

<i>Juniperus californica</i>	California juniper	LG3654; 7353
------------------------------	--------------------	--------------

Ephedraceae - Ephedra Family

<i>Ephedra viridis</i>	green ephedra	7383, 7411
------------------------	---------------	------------

Pinaceae - Pine Family

<i>Pinus monophylla</i>	singleleaf pinyon pine	
-------------------------	------------------------	--



FLOWERING PLANTS - DICOTS

Apiaceae - Carrot Family

<i>Bowlesia incana</i>	bowlesia	LG3673; 7462
<i>Lomatium californicum</i>	California parsnip	7432
<i>Lomatium macrocarpum</i>	large-fruited lomatium	7326
<i>Lomatium sp.</i>	parsley	
<i>Lomatium utriculatum</i>	wild parsnip	LG3586, LG3682; 7162, 7196, 7318, 7319, 7356, 7429
<i>Osmorhiza brachypoda</i>	sweet cicely	7390
‡ <i>Perideridia pringlei</i>	Pringle's yampah	7512, 7532

Asclepiadaceae - Milkweed Family

<i>Asclepias eriocarpa</i>	indian milkweed	7481
<i>Asclepias erosa</i>	desert milkweed	7539
<i>Asclepias fascicularis</i>	narrow-leaf milkweed	

Asteraceae - Sunflower Family

<i>Achillea millefolium</i>	yarrow	7446
<i>Agoseris grandiflora</i>	mountain dandelion	7515
<i>Agoseris retrorsa</i>	spearleaf mountain dandelion	7468
<i>Agoseris sp.</i>	agoseris	
<i>Ambrosia acanthicarpa</i>	annual bur sage	
<i>Ancistrocarphus filagineus</i>	wooly fish hooks	7294
<i>Artemisia dracunculus</i>	wild tarragon	
<i>Artemisia tridentata</i>	big sagebrush	7409
<i>Baccharis douglasii</i>	marsh baccharis	7455
<i>Baccharis salicifolia</i>	mule fat	7357
<i>Balsamorhiza deltoidea</i>	balsam root	7329
* <i>Centaurea melitensis</i>	tocolate	
* <i>Centaurea solstitialis</i>	star thistle	7538
* <i>Chamomilla suaveolens</i>	pineapple weed	7437
<i>Chrysothamnus nauseosus</i>	rabbitbrush	
<i>Coreopsis bigelovii</i>	Bigelow's tickseed	



<i>Eastwoodia elegans</i>	yellow mock aster	7487, 7507
<i>Ericameria linearifolia</i>	interior goldenbush	LG3629, LG3664, LG3674; 7249
<i>Eriophyllum confertiflorum</i> var. <i>confertiflorum</i>	golden yarrow	7378, 7440
<i>Eriophyllum pringlei</i>	woolly sunflower	7406
<i>Eriophyllum</i> sp.		
<i>Gutierrezia californica</i>	California matchweed	
<i>Gutierrezia</i> sp.	matchweed	
<i>Hemizonia pallida</i>	Kern tarplant	LG3620; 7486
<i>Heterotheca sessiliflora</i> ssp. <i>echioides</i>	bristly golden aster	
* <i>Hypochaeris glabra</i>	smooth cat's ear	
<i>Isocoma acradenia</i>	alkali goldenbush	
<i>Iva axillaris</i> ssp. <i>robustior</i>	poverty weed	7540
* <i>Lactuca serriola</i>	wild lettuce	
<i>Lagophylla ramosissima</i> ssp. <i>ramosissima</i>	branched hareleaf	7531
<i>Lasthenia californica</i>	goldfields	LG3688; 7237
<i>Layia glandulosa</i>	white layia	7216, 7234, 7255, 7276, 7290, 7315
<i>Layia pentachaeta</i> ssp. <i>albida</i>	Sierran tidy tips	LG3643, LG3798
<i>Layia pentachaeta</i> ssp. <i>pentachaeta</i>	Sierra tidy tips	7367, 7369
<i>Lessingia filaginifolia</i>	California aster	
<i>Lessingia filaginifolia</i> var. <i>filaginifolia</i>	California aster	
<i>Lessingia glandulifera</i> var. <i>glandulifera</i>	Valley lessingia	7527
<i>Malacothrix coulteri</i>	snake heads	LG3618, LG3827; 7266
<i>Monolopia lanceolata</i>	common monolopia	LG3607, LG3658; 7217, 7236
<i>Monolopia stricta</i>	Crum's monolopia	LG3823
<i>Senecio breweri</i>	Brewer's butterweed	7325, 7363, 7365
* <i>Senecio vulgaris</i>	common groundsel	LG3830
* <i>Sonchus asper</i>	prickly sow thistle	7454
<i>Stephanomeria exigua</i> ssp. <i>exigua</i>	wire lettuce	7488
<i>Stephanomeria pauciflora</i> var. <i>pauciflora</i>	wire lettuce	7506
<i>Stephanomeria</i> sp.	wire lettuce	
<i>Stephanomeria virgata</i>	tall stephanomeria	
<i>Stephanomeria virgata</i> ssp. <i>pleurocarpa</i>	wire lettuce	7508



<i>Uropappus lindleyi</i>	silver puffs	LG3635; 7201
<i>Xanthium strumarium</i>	cocklebur	
Boraginaceae - Borage Family		
<i>Amsinckia menziesii</i>	rancher's fiddleneck	
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	rancher's fireweed	7171, 7204, 7207, 7246
<i>Amsinckia menziesii</i> var. <i>menziesii</i>	rancher's fireweed	LG3627
<i>Amsinckia</i> sp.	fiddleneck	
<i>Amsinckia tessellata</i>	desert fiddleneck	
<i>Amsinckia tessellate</i> var. <i>gloriosa</i>	devil's lettuce	LG3589, LG3600, LG3614, LG3650, LG3681; 7159, 7166, 7218, 7245
<i>Amsinckia vernicosa</i> var. <i>vernicosa</i>	fiddleneck	LG3661, LG3683; 7189
<i>Cryptantha circumscissa</i>	cushion cryptantha	7301, 7416
<i>Cryptantha echinella</i>	hedgehog cryptantha	7347
<i>Cryptantha flaccida</i>	weakstem cryptantha	7414
<i>Cryptantha intermedia</i>	intermediate cryptantha	7418, 7443
<i>Cryptantha nevadensis</i>	Nevada catseye	7248, 7300, 7304, 7309, 7355, 7396
<i>Cryptantha nevadensis</i> var. <i>rigida</i>	rigid Nevada catseye	LG3812, LG3833
<i>Cryptantha oxygona</i>	sharp-nut cryptantha	7415, 7439, 7444
<i>Cryptantha</i> sp.	popcorn flower	7333
<i>Heliotropium curassavicum</i>	wild heliotrope	7495
<i>Pectocarya linearis</i> ssp. <i>ferocula</i>	slender pectocarya	7410
<i>Pectocarya penicillata</i>	winged pectocarya	LG3619, LG3809; 7184, 7224, 7385
<i>Pectocarya setosa</i>	pectocarya	7346, 7405
<i>Plagiobothrys arizonicus</i>	Arizona popcorn flower	7323
<i>Plagiobothrys canescens</i>	valley popcorn flower	LG3671, LG3819, LG3821; 7199, 7206, 7389
<i>Plagiobothrys</i> sp.	popcorn flower	

Brassicaceae - Mustard Family

<i>Arabis pulchra</i> var. <i>pulchra</i>	beautiful rock cress	7302
<i>Athysanus pusillus</i>	common sandweed	7187, 7311, 7387



<i>*Capsella bursa-pastoris</i>	shepard's purse	
<i>Caulanthus coulteri</i> var. <i>coulteri</i>	Coulter's jewel flower	LG3626, LG3666; 7195, 7336
<i>Caulanthus inflatus</i>	desert candle	7192
<i>Descurainia pinnata</i> ssp. <i>glabra</i>	tansy mustard	7238
<i>*Descurainia</i> sp.	tansy-mustard	
<i>*Descurainia sophia</i>	tansy mustard	
<i>Erysimum capitatum</i> ssp. <i>capitatum</i>	western wallflower	7258, 7522
<i>Guillenia lasiophylla</i>	California mustard	LG3604, LG3639, LG3653, LG3687, LG3814; 7157, 7176, 7188
<i>*Hirschfeldia incana</i>	short-pod mustard	
<i>Hutchinsia procumbens</i>	prostrate hutchinsia	LG3828
<i>Lepidium nitidum</i> var. <i>nitidum</i>	common pepper grass	LG3597, LG3608; 7155, 7169, 7211
<i>*Sisymbrium altissimum</i>	tumble mustard	7288
<i>*Sisymbrium irio</i>	London rocket	
<i>*Sisymbrium orientale</i>	Oriental mustard	LG3797
<i>*Sisymbrium</i> sp.	mustard	
<i>Stanleya pinnata</i> var. <i>pinnata</i>	prince's plume	7442
<i>Thysanocarpus curvipes</i>	fringepod	LG3656, LG3657; 7175, 7208, 7219
<i>Tropidocarpum gracile</i>	dobie pod	LG3603, LG3598, LG3680, LG3649, LG3834; 7156, 7181

Caprifoliaceae - Caper Family

<i>Lonicera subspicata</i> var. <i>denudata</i>	southern honeysuckle	7466, 7516
<i>Sambucus mexicana</i>	blue elderberry	7467

Caryophyllaceae - Pink Family

<i>Minuartia douglasii</i>	Douglas' sandwort	7337, 7392, 7420
<i>Spergularia marina</i>	sandspurry	LG3807
<i>Stellaria nitens</i>	shining chickweed	LG3832



**Stellaria pallida* pale starwort LG4079

Chenopodiaceae - Goosefoot Family

Atriplex canescens fourwing saltbush
Atriplex lentiformis big saltbush
Atriplex lentiformis ssp. *lentiformis* quail bush/big saltbush 7503
Atriplex polycarpa allscale 7492
Atriplex serenana (?) bractscale
**Chenopodium album* lamb's quarters 7518
Chenopodium californicum soap plant LG3684; 7190
Krascheninnikovia lanata winter fat LG3636; 7161
**Salsola tragus* tumbleweed

Convolvulaceae - Morning Glory Family

**Convolvulus arvensis* bindweed 7475, 7478, 7480, 7482,
7484, 7498

Crassulaceae - StoneCrop Family

Crassula connata pigmy weed LG3826
Dudleya lanceolata lanceleaf liveforever 7476

Cucurbitaceae - Gourd Family

Marah fabaceus California man-root LG3679; 7330

Cuscutaceae - Dodder Family

Cuscuta californica var. *californica* California dodder 7528

Euphorbiaceae - Spurge Family

Eremocarpus setigerus turkey mullein 7525

Fabaceae - Pea Family

Astragalus didymocarpus var. *didymocarpus* two-seeded milkvetch LG3623, LG3815; 7158,
7185, 7361

Astragalus lentiginosus var. *nigracalycis* freckled milk-vetch 7223, 7272



<i>Astragalus oxyphysus</i>	Diablo milk-vetch	7465
<i>Astragalus sp.</i>	loco weed	
<i>Lotus humistratus</i>	hill lotus	7228, 7268, 7275
<i>Lotus procumbens</i> var. <i>procumbens</i>	silky deerweed	7517
<i>Lotus purshianus</i> var. <i>purshianus</i>	Spanish clover	
<i>Lotus sp.</i>	lotus	
<i>Lotus wrangelianus</i>	calf lotus	LG3632
<i>Lupinus benthamii</i>	Bentham lupine	7281
<i>Lupinus bicolor</i>	minature lupine	LG3599, LG3678; 7177, 7191, 7213
<i>Lupinus elatus</i>	silky lupine	7511
<i>Lupinus excubitus</i>	grape-soda lupine	7164, 7186, 7225, 7233
<i>Lupinus formosus</i> var. <i>formosus</i>	summer lupine	7430
<i>Lupinus microcarpus</i>	chick lupine	7222, 7230
<i>Lupinus microcarpus</i> var. <i>densiflorus</i>	chick lupine	7240
<i>Lupinus microcarpus</i> var. <i>horizontalis</i>	chick lupine	LG3640, LG3663, LG3822; 7259
<i>Lupinus sp. (annual)</i>	annual lupine	
<i>Lupinus succulentus</i>	arroyo lupine	LG3811
<i>Medicago sp.</i>	clover	
* <i>Robinia pseudoacacia</i>	black locust	7542
<i>Trifolium albopurpureum</i> var. <i>albopurpureum</i>	rancheria clover	7292, 7317, 7320
<i>Trifolium gracilentum</i> var. <i>gracilentum</i>	pin-point clover	LG3612, LG3668; 7298, 7321, 7382
<i>Trifolium sp.</i>	clover	
<i>Trifolium willdenovii</i>	tomcat clover	LG3825; 7264, 7279
Fagaceae - Oak Family		
<i>Quercus alvordiana</i>	Alvord oak	7352, 7354
<i>Quercus john-tuckeri</i>	Tucker's oak	
Frankeniaceae - Frankenia Family		
<i>Frankenia salina</i>	alkali heath	7270



Geraniaceae - Geranium Family

<i>*Erodium cicutarium</i>	red-stemmed filaree	LG3591, LG3610, LG3670, LG3672, LG3817; 7220, 7239,7402
<i>*Erodium moschatum</i>	whitestem filaree	LG3805; 7277

Grossulariaceae - Gooseberry Family

<i>Ribes quercetorum</i>	oak gooseberry	7214
--------------------------	----------------	------

Hydrophyllaceae - Waterleaf Family

<i>Emmenanthe penduliflora</i> var. <i>penduliflora</i>	whispering bells	7358
<i>Nemophila menziesii</i>	baby blue-eyes	7173
<i>Nemophila menziesii</i> var. <i>menziesii</i>	baby blue eyes	LG3651; 7244, 7274
<i>Phacelia cicutaria</i>	caterpillar phacelia	
<i>Phacelia cicutaria</i> var. <i>cutitaria</i>	caterpillar phacelia	
<i>Phacelia ciliata</i>	valley phacelia	LG3587, LG3602, LG3667, LG3689; 7163, 7174, 7179, 7182, 7250, 7362
<i>Phacelia cryptantha</i>	limestone phacelia	LG3662
<i>Phacelia davidsonii</i>	Davidson's phacelia	7374, 7375
<i>Phacelia distans</i>	common phacelia	LG3552, LG3813; 7247, 7278, 7314, 7399
<i>Phacelia douglasii</i>	Douglas' phacelia	7305, 7327
<i>Phacelia fremontii</i>	Fremont phacelia	7296, 7348, 7376, 7398
<i>Phacelia imbricata</i>	imbricate phacelia	
<i>Phacelia imbricata</i> ssp. <i>imbricata</i>	imbricate phacelia	7536
<i>Phacelia imbricata</i> ssp. <i>patula</i>	phacelia	7535
<i>Phacelia ramosissima</i> var. <i>latifolia</i>	branching phacelia	7360
<i>Phacelia</i> sp.	phacelia	
<i>Phacelia tanacetifolia</i>	lacy phacelia	LG3625, LG3660, LG3816; 7210, 7229
<i>Pholistoma membranaceum</i>	white fiesta flower	LG3659, LG3799; 7221

Lamiaceae - Mint Family

<i>*Marrubium vulgare</i>	horehound	7500
---------------------------	-----------	------



<i>Salvia carduacea</i>	thistle sage	LG3634; 7231
<i>Salvia columbariae</i>	chia	LG3617, LG3665; 7194

Loasaceae - Loasa Family

<i>Mentzelia affinis</i>	blazing star	LG3795; 7284, 7307, 7328, 7395, 7417
<i>Mentzelia pectinata</i>	San Joachin blazing star	7335
<i>Mentzelia sp.</i>	blazing star	

Malvaceae - Mallow Family

<i>Eremalche parryi</i> ssp. <i>parryi</i>	Parry's mallow	LG3642; 7289, 7295
* <i>Malva parviflora</i>	cheeseweed	

Nyctaginaceae - Four O'Clock Family

<i>Mirabilis multiflora</i> var. <i>pubescens</i>	wagon wheels	7477
---	--------------	------

Onagraceae - Evening Primrose Family

<i>Camissonia boothii</i> ssp. <i>decorticans</i>	shredding evening primrose	LG3633, 7232
<i>Camissonia californica</i>	mustard-like primrose	LG3637
<i>Camissonia campestris</i> ssp. <i>campestris</i>	Mojave sun cups	LG3641; 7332, 7397
<i>Camissonia confusa</i>	San Bernardino suncups	7425
<i>Camissonia contorta</i>	contorted suncups	7380
<i>Camissonia graciliflora</i>	hill suncups	LG3646; 7345
<i>Camissonia kernensis</i> ssp. <i>gilmanii</i>	Gilman evening primrose	7269, 7303, 7351
<i>Camissonia sp.</i>	sun cups	
<i>Camissonia strigulosa</i>	sun cups	LG3645
<i>Clarkia cylindrica</i>	farewell to Spring	7368, 7434, 7438
<i>Clarkia purpurea</i> ssp. <i>viminea</i>	wine cups	7510
<i>Clarkia sp.</i>	clarkia	
<i>Clarkia tembloriensis</i> ssp. <i>tembloriensis</i>	Temblor clarkia	LG3803

Papaveraceae - Poppy Family

<i>Eschscholzia californica</i>	California poppy	
---------------------------------	------------------	--



<i>Eschscholzia lemmonii</i> ssp. <i>lemmonii</i>	Lemmon's poppy	LG3644; 7180, 7193, 7441, 7445
<i>Platystemon californicus</i>	cream cups	LG3655, LG3685; 7209, 7322
<i>Stylomecon heterophylla</i>	wind poppy	LG3824; 7280, 7313

Plantaginaceae - Plantain Family

<i>Plantago erecta</i> California plantain		LG3631; 7227
--	--	--------------

Polemoniaceae - Phlox Family

<i>Eriastrum densifolium</i>	woollystar (perennial)	
<i>Eriastrum densifolium</i> ssp. <i>elongatum</i>	woollystar (perennial)	7435
<i>Eriastrum pluriflorum</i>	many-flowered eriastrum	7370, 7403
<i>Eriastrum sparsiflorum</i>	Great Basin woollystar	7453
<i>Gilia brecciarum</i> ssp. <i>brecciarum</i>	Nevada gilia	7338
<i>Gilia brecciarum</i> ssp. <i>jacens</i>	Nevada gilia	LG3596, LG3606, LG3616, LG3669; 7197, 7308, 7339
<i>Gilia capitata</i> ssp. <i>abrotanifolia</i>	globe gilia	7251
<i>Gilia interior</i>	gilia	7426
‡ <i>Gilia latiflora</i> ssp. <i>cuyamensis</i>	Cuyama gilia	7423
<i>Gilia latiflora</i> ssp. <i>davyi</i>	Davey gilia	7340
<i>Gilia</i> sp.	gilia	7243, 7324
<i>Gilia tricolor</i> ssp. <i>diffusa</i>	bird's eye gilia	7297
<i>Linanthus androsaceus</i>	linanthus	7253
<i>Linanthus dichotomus</i>	evening snow	7342
<i>Linanthus filipes</i>	thread linanthus	7384
<i>Linanthus liniflorus</i>	flax-flowered linanthus	7451
<i>Linanthus parviflorus</i>	common linanthus	LG3647; 7235, 7312, 7343, 7519
<i>Linanthus pygmaeus</i>	pygmy linanthus	7350, 7452
<i>Linanthus</i> sp.	linanthus	7202
<i>Loeseliastrum schottii</i>	Schott's calico	LG3638; 7470
<i>Phlox gracilis</i>	slender phlox	LG3611, LG3595, LG3675; 7168. 7205



Polygonaceae - Buckwheat Family

<i>Chorizanthe staticoides</i>	Turkish rugging	7400, 7424, 7449
<i>Chorizanthe uniaristata</i>	one-awned spineflower	7450
<i>Eriogonum angulosom</i>	angled-stemed buckwheat	LG3796
<i>Eriogonum elegans</i>	elegant buckwheat	7428, 7526
<i>Eriogonum elongatum</i>	longstem buckwheat	
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	California buckwheat	7490
<i>Eriogonum gracillimum</i>	rose and white buckwheat	7285, 7287, 7316, 7530
<i>Eriogonum ordii</i>	Fort Mojave buckwheat	7371
<i>Eriogonum pusillum</i>	yellow turban	7422
<i>Eriogonum roseum</i>	wand buckwheat	7514, 7520, 7537
<i>Eriogonum</i> sp.	annual buckwheat	
* <i>Eriogonum viridescens</i>	bright green buckwheat	7473, 7474
<i>Eriogonum wrighti</i> var. <i>trachygonum</i>	Wright's buckwheat	7523
* <i>Polygonum arenastrum</i>	common knotweed	7534
<i>Pterostegia drymarioides</i>	granny's hairnet/threadstem	LG3801
* <i>Rumex crispus</i>	curly dock	7499
<i>Rumex hymenosephalus</i>	wild rhubarb	

Portulacaceae - Purslane Family

<i>Calandrinia ciliata</i>	red maids	LG3592, LG3601, LG3686, LG3648; 7170
<i>Calyptidium monandrum</i>	dead man's fingers	7299, 7419
<i>Claytonia exigua</i> ssp. <i>exigua</i>	miner's lettuce	LG3615; 7242, 7256
<i>Claytonia parviflora</i>	narrow-leaved miner's lettuce	
<i>Claytonia parviflora</i> ssp. <i>parviflora</i>	miner's lettuce	LG3594, LG3609, LG3676; 7160, 7215, 7241
<i>Claytonia perfoliata</i>	miner's lettuce	
<i>Claytonia perfoliata</i> ssp. <i>perfoliata</i>	miner's lettuce	LG3590; 7178, 7183
<i>Claytonia</i> sp.	miner's lettuce	

Ranunculaceae - Buttercup Family

‡ <i>Delphinium gypsophilum</i> ssp. <i>gypsophilum</i>	gypsum loving larkspur	7433, 7509
---	------------------------	------------



<i>Delphinium patens</i> ssp. <i>montanum</i>	spreading larkspur	7381
<i>Delphinium</i> sp.	larkspur	

Rosaceae - Rose Family

* <i>Malus</i> sp.	apple (cultivated)	
<i>Prunus virginiana</i> var. <i>demissa</i>	Western chokecherry	7469
* <i>Rosa</i> sp.	rose (horticulture variety)	

Rubiaceae - Madder Family

<i>Galium aparine</i>	goose grass	7388
-----------------------	-------------	------

Salicaceae - Willow Family

<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood	
* <i>Populus</i> sp.	Cottonwood (horticultural)	
<i>Salix exigua</i>	narrow-leaved willow	
<i>Salix gooddingii</i>	Goodding's black willow	7502
<i>Salix laevigata</i>	red willow	7459

Saxifragaceae - Saxifrage Family

<i>Lithophragma</i> sp.	woodland star	
<i>Lithophragma parviflorum</i> var. <i>parviflorum</i>	woodland star	7331, 7341, 7391

Scrophulariaceae - Figwort Family

<i>Castilleja applegatei</i>	wavy-leaved indian paintbrush	7271
<i>Castilleja exserta</i>	owl's clover	
<i>Castilleja exserta</i> ssp. <i>exserta</i>	owl's clover	LG3624, LG3818; 7226
<i>Castilleja</i> sp.	indian paintbrush	7203
<i>Collinsia bartsiiifolia</i> var. <i>davidsonii</i>	Chinese houses	7254, 7293, 7344, 7364
<i>Collinsia heterophylla</i>	Chinese houses	7421
<i>Collinsia</i> sp.	collinsia	
<i>Mimulus guttatus</i>	seep monkey flower	7456
<i>Penstemon centranthifolius</i>	scarlet bugler	7436
<i>Penstemon laetus</i>	penstemon	7464



Penstemon sp.

Simaroubaceae - Jojoba Family

**Ailanthus altissima* tree of heaven

Solanaceae - Nightshade Family

Datura wrightii jimson weed 7521
Nicotiana quadrivalvis indian tobacco 7483, 7505
Solanum umbelliferum blue witch LG3588; 7386
Solanum umbelliferum var. incanum blue witch LG3677

Tamaricaceae - Tamarisk Family

**Tamarix ramosissima* salt cedar/tamarisk

Urticaceae - Nettle Family

Urtica dioica ssp. holosericea hoary nettle

Valerianaceae - Valerian Family

Plectritis ciliosa ssp. insignis long-spurred plectritis 7334, 7366, 7393, 7431

Verbenaceae - Verbain Family

Verbena lasiostachys verbena

Viscaceae - Mistletoe Family

Phoradendron bolleanum mistletoe 7408, 7463
Phoradendron villosum oak mistletoe 7252

FLOWERING PLANTS - MONOCOTS

Cyperaceae - Sedge Family

Scirpus maritimus (?) alkali bulrush 7493

Juncaceae - Rush Family

Juncus balticus Baltic rush 7501
Juncus mexicanus Mexican rush 7460, 7489, 7496



<i>Juncus sp.</i>	rush	
<i>Juncus xiphioides</i>	iris-leaved rush	7457

Liliaceae - Lily Family

<i>Allium howellii</i> var. <i>howellii</i>	Howell's onion	7198
<i>Allium peninsulare</i> var. <i>peninsulare</i>	Mexicali onion	LG3820; 7291, 7372
<i>Allium sp.</i>	wild onion	
<i>Bloomeria crocea</i>	golden stars	7200, 7479
<i>Calochortus venustus</i>	butterfly mariposa lily	7485, 7513, 7529
<i>Dichelostemma capitatum</i>	blue dicks	
<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i>	blue dicks	7265
<i>Fritillaria agrestis</i>	stink bells	7394
<i>Muilla maritima</i>	common muilla	LG3628; 7349
<i>Yucca whipplei</i>	our Lord's candle	
<i>Zigadenus brevibracteatus</i>	desert death camas	7404, 7413
<i>Zigadenus sp.</i>	death camas	

Poaceae - Grass Family

<i>Achnatherum speciosum</i>	desert needlegrass	7412
* <i>Avena barbata</i>	slender wild oat	LG3810; 7282, 7359
* <i>Avena fatua</i>	wild oat	7262
* <i>Avena sp.</i>	wild oat	
* <i>Bromus arenarius</i>	Australian brome	7260
<i>Bromus carinatus</i> var. <i>carinatus</i>	California brome	
* <i>Bromus catharticus</i>	rescue grass	7212, 7447
* <i>Bromus diandrus</i>	ripgut grass	LG3804; 7448
* <i>Bromus hordeaceus</i>	soft chess	LG3806; 7263, 7273
* <i>Bromus madritensis</i> ssp. <i>rubens</i>	foxtail chess	LG3593, LG3630, LG3829; 7167, 7261
* <i>Bromus tectorum</i>	cheat grass	7306
<i>Distichlis spicata</i>	saltgrass	LG3800; 7491, 7494
<i>Elymus elymoides</i>	squirreltail grass	
<i>Elymus multisetus</i>	big squirrel tail	7471
* <i>Hordeum murinum</i>	farmer's foxtail	



<i>*Hordeum murinum</i> ssp. <i>glaucum</i>	foxtail	LG3808
<i>*Hordeum murinum</i> ssp. <i>leporinum</i>	wild barley	
<i>*Hordeum murinum</i> ssp. <i>murinum</i>	barley	7165
<i>Leymus condensatus</i>	giant wild rye	
<i>Leymus triticoides</i>	alkali rye	7172, 7458, 7541
<i>Leymus X multiflorus</i>	giant rye/alkali rye	7524, 7533
<i>Melica imperfecta</i>	California melic grass	
<i>Nassella cernua</i>	nodding needlegrass	7407, 7472
<i>Nassella pulchra</i>	purple needlegrass	7497
<i>Nassella</i> sp.	needlegrass	
<i>*Poa bulbosa</i>	bulbous bluegrass	7286
<i>Poa secunda</i>	one-sided bluegrass	LG3802
<i>Poa secunda</i> var. <i>secunda</i>	one-sided bluegrass	7267, 7377, 7379, 7401
<i>*Polypogon monspeliensis</i>	annual beard grass	7461
<i>*Schismus arabicus</i>	Arabian schismus	LG3621a, LG3831b
<i>*Schismus barbatus</i>	Mediterranean schismus	LG3605, LG3621b, LG3831a
<i>*Vulpia myuros</i>	rat-tail fescue	
<i>*Vulpia myuros</i> var. <i>myuros</i>	rat-tail fescue	7283, 7373

Typhaceae - Cattail Family

<i>Typha domingensis</i>	southern cattail
<i>Typha</i> sp.	cattail



Appendix D. Record of San Joaquin Kit Fox sightings at Bitter Creek National Wildlife Refuge.

Animal	Year	Description	Est E	Est N
Kit Fox	1982	5 miles E of 166 on CN(area around Cliff Hudson's)	279616	3867741
Kit Fox	1988	Aug 1988 Sec 17 and 18 boundary	284435	3870644
Kit Fox	1988	Aug 1988 Sec 17 and 18 boundary	284046	3870527
Kit Fox	1988	Aug 1988 Sec 17 and 18 boundary	284046	3870527
Kit Fox	1984	Intersection 166 and CN	276502	3871476
Kit Fox	1991	5 miles E of 166 on CN(area around Cliff Hudson's)	279616	3867741
Kit Fox	1991	5 miles E of 166 on CN(area around Cliff Hudson's)	279616	3867741
Kit Fox	1991	Jul-91	284435	3870644
Kit Fox	1991	Aug-91	284435	3870644
Kit Fox	1991	Sep-91	284046	3870527
Kit Fox	1991	Dec-91	284046	3870527
Kit Fox	1992	Two adults and five pups observed(7/7, 8/4, 9/3/and 11/5)	284046	3870527
Kit Fox	1994	Near 92 den site	284046	3870527
Kit Fox	1996	Intersection 166 and Cerro Noroeste Rd.	276502	3871476
Kit Fox	2004	The Timbers - 3400 ft.	-119.104	34.56361
Kit Fox	2006	Near Flight pen - 4000 ft.	-119.232	34.55289
Kit Fox	2007	166 and Cerro Noroeste - 3000 ft.	-119.262	34.58505
Kit Fox	2005- 07	Near Solar Water Well Pump - 4500 ft.	-119.238	34.54644

Appendix E. Bitter Creek National Wildlife Refuge residual dry matter (RDM) monitoring data.

		2003	2004	2005	2006	2007	2008
Unit 1 West	Cover (%)	73	40	90	96	100	100
	Height (in.)	14.2	12.23	12.03	15.38	21.76	13.1
	RDM (lbs/ac)	880	1000	3720	5380	6480	6860
Unit 1 North	Cover (%)	82	48	82	88	100	100
	Height (in.)	13	2.7	11.87	9.5	7.47	6.72
	RDM (lbs/ac)	1580	460	2040	2780	4180	4400
Unit 1 South	Cover (%)	74	52	56	99	96	71
	Height (in.)	8.2	9.93	7.5	9.8	9.84	13.5
	RDM (lbs/ac)	670	780	860	5060	4000	2560
Unit 2 East	Cover (%)		28	29	100	100	100
	Height (in.)		5.13	7.8	11.58	10.62	10.9
	RDM (lbs/ac)		600	320	3480	3780	4480
Unit 2 NW	Cover (%)	61	40	30	97	99	98
	Height (in.)	7.2	5.29	7.9	11.9	11.13	9.78
	RDM (lbs/ac)	870	460	205	25	5080	3640
Unit 2 South	Cover (%)	85	14	75	55	98	100
	Height (in.)	13.4	8.86	13.7	4.76	10.76	10.8
	RDM (lbs/ac)	2020	1380	626	480	4780	3420
Unit 3 SE	Cover (%)	62	54	82	98	100	100
	Height (in.)	8.79	9.46	12.73	13.12	16.33	14.06
	RDM (lbs/ac)	960	680	1460	4360	8520	52.6
Unit 3 Central	Cover (%)	75	55	90	86	94	100
	Height (in.)	13.3	6.06	15.3	13.74	11.7	10.6
	RDM (lbs/ac)	1220	780	3000	3320	7900	5700
Unit 4	Cover (%)		49	84	97	84	86
	Height (in.)		7.23	9.03	9.5	6	2.3
	RDM (lbs/ac)		1140	1380	3000	4440	3400
Unit 5	Cover (%)		57	82	99	99.4	94
	Height (in.)		7.5	8.7	9.6	11.2	4.4
	RDM (lbs/ac)		930	1220	5580	4700	5560
Unit 6	Cover (%)	85	80	87	95	100	100
	Height (in.)	7.1	7.2	9.9	11.25	11.59	8.93
	RDM (lbs/ac)	7660	540	1360	3240	5900	5060
Unit 8	Cover (%)		71	89	100	100	100
	Height (in.)		9.34	9.6	20.3	16.49	10.52
	RDM (lbs/ac)		1000	2520	11880	9380	6540

Unit 9 South	Cover (%)	46	19	87	100	95	99
	Height (in.)	10.6	6.27	12.4	12.28	5.12	7.96
	RDM (lbs/ac)	750	380	1640	3160	3300	4300
Unit 9 Central	Cover (%)	78	17	66	86	100	95
	Height (in.)	5.6	2.67	6.3	7.98	4.85	4.4
	RDM (lbs/ac)	1780	380	1060	1960	3100	2920
Unit 9 West	Cover (%)	66	2	69	85	100	88
	Height (in.)	3.3	1.86	7.33	8.44	4.62	7.16
	RDM (lbs/ac)	900	60	1200	3040	3660	36.2
Unit 10A South	Cover (%)	82	36	88	89	100	100
	Height (in.)	8.4	9.17	7.6	8.76	10.47	9.73
	RDM (lbs/ac)	1640	920	2600	2200	5100	3160
Unit 10A East	Cover (%)	73	49	86	99	99	88
	Height (in.)	15.25	8.33	12.8	12.28	8.1	7.5
	RDM (lbs/ac)	1560	1020	2080	5500	4040	2720
Unit 10B Central	Cover (%)	79	44	94	93	100	89
	Height (in.)	9.88	7.16		10.2	6.83	8.57
	RDM (lbs/ac)	1960	820	1800	3220	4900	2880
Unit 10B NW	Cover (%)	72	26	86	87	99	84
	Height (in.)	10.9	6.93	6.63	8.7	7.2	7.1
	RDM (lbs/ac)	1920	680	1240	2100	2660	2180
Unit 11	Cover (%)		50	77	78	95	93
	Height (in.)		12.66	7.77	9.1	10.53	8.27
	RDM (lbs/ac)		1500	1140	2200	3020	3580
Unit 12	Cover (%)		28	50	99	80	67
	Height (in.)		5.96	2	3.64	4.1	4.5
	RDM (lbs/ac)		540	184	500	1880	1920

Appendix F. Glossary of Terms

Abundance: The total number of individuals of a species in an area, population, or community.

Adaptive Management: a form of management based on experimentation (trial and error). Guided by measurable objectives, it allows managers to monitor and evaluate management practices as they go along.

Alien Species: with respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem.

Animal Unit (AU): One mature cow of approximately 1000 lb body weight.

Animal Unit Month (AUM): The amount of dry forage required by one animal unit for one month.

Browse: That part of leaf and twig growth of shrubs, woody vines and trees available for consumption by livestock or wildlife.

Bunch grass: a grass having the characteristic growth habit of forming a bunch, lacking stolons or rhizomes.

Carrying Capacity: The maximum stocking rate possible which is consistent with maintain or improving vegetation or related resources. It may vary from year to year on the same area due to fluctuating forage production.

Class of Animal: Description of age and/or sex-group for a particular kind of animal. For example, cow, calf, yearly, ewe, doe, fawn, etc.

Climax: The final or stable biotic community in a successional series which is self-perpetuating and in dynamic equilibrium with the physical habitat. Also the assumed endpoint in succession.

Composition: see species composition.

Cool-season plant: a plant that generally makes the major portion of its growth during the late fall, winter, and spring.

Continuous grazing: The grazing of a specific unit by livestock throughout a year or for that part of the year during which grazing is feasible. The term is not necessarily synonymous with yearlong grazing, since seasonal grazing may be involved.

Cover: The plant or plant parts, living or dead, on the ground surface. The proportional area of ground covered by plants on a stated area.

Ecosystem: Organisms that together with their physical environment form an interacting system and inhabit an identifiable space.

Drought: A prolonged chronic shortage of water, as compared to the norm, often associated with high temperatures and winds during spring, summer, and fall. A period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water.

Duration of grazing: length of the grazing period.

Enclosure: Area fenced to confine animals.

Exclosure: Area fenced to exclude animals.

Exotic: An organism or species which is not native to the region in which it is found.

Flora: The plant species of an area. A simple list of plant species or a taxonomic manual.

Forb: Any broad-leaved herbaceous plant other than those in the grass, sedge or rush families.

Frequency of grazing: how often a pasture is grazed. **Forage:** browse and herbage that are available for food for grazing animals or be harvested for feeding. **Forage production:** the weight of forage that is produced within a designated period of time on a given area (e.g. pounds per acre).

Grass: a plant with long, narrow leaves having parallel veins and nondescript flowers. Stems are hollow or pithy in cross-section.

Grass-like plant: a plant that resembles a grass but has stems that are solid in cross-section, including rushes and sedges.

Graze/grazing: The consumption of standing forage by livestock or wildlife.

Grazing period: Length of time that animals are allowed to graze a specific area.

Grazing management: the manipulation of grazing and browsing animals to accomplish a desired result.

Grazing preference: Selection of plants, or plant parts, over others by grazing animals.

Grazing pressure: An animal-to-forage relationship measured in terms of animal units per unit weight of forage at any instant (i.e. AU/ton).

Grazing system: grazing management that defines the periods of grazing and non-grazing.

Grazing unit: a grazing area enclosed and separated from other areas by fencing or other barriers.

Habitat type: the collective area that one plant community occupies or will come to occupy as succession advances to climax.

Half-shrub: a perennial plant with a woody base whose annually produced stems die each year.

Herbage: total aboveground biomass of herbaceous plants regardless of grazing preference or availability.

Intensity of grazing: intensity of grazing is the degree of use resulting from the number of animals and length of the grazing period. It may be reported as percent utilization or amount of residue or stubble height remaining at end of grazing period.

Introduced species: A species not a part of the original fauna or flora of the area in question.

Invasive species: an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Monitoring: The orderly collection, analysis, and interpretation of resource data to evaluate progress o management objectives.

Native species: A species which is a part of the original fauna or flora of the area in question.

Non-native: A species which is not part of the original fauna or flora of the area in question.

Prescribed grazing: Managing the controlled harvest of vegetation with grazing animals to meet management objectives (NRCS).

Pre-settlement: Before settlement by Europeans.

Pristine: A state of ecological stability or condition existing in the absence of direct disturbance by modern man.

Overgrazing: continued heavy grazing that exceeds the recovery capacity of the community and creates a deteriorated range.

Palatability: the relish with which a particular species or plant part is consumed by an animal.

Phenology: the study of periodic biological phenomena that are recurrent such as flowering or seeding, especially as related to climate.

Photopoint: a point from which photos are periodically taken to monitor long-term changes due to management or disturbances such as fire.

Plant community: as assemblage of plants occurring together at any point in time, denoting no particular ecological status.

Plant succession: the process of vegetation development whereby an area over time is occupied by different plant communities of later ecological stage.

Plant vigor: plant health; relates to the relative robustness of a plant in comparison to other individuals of the same species.

Range condition: the health of range as compared to some standard at a point in time. The standard can be defined in ecological terms or in terms of a particular use. In the ecological determination, the degree of departure from climax determines condition.

Range management: a district discipline founded on ecological principles with the objective of sustainable use of rangelands and related resources for various purposes.

Residual dry matter: (RDM) the amount of old plant material left on the ground at the beginning of a new growing season.

Rest: leaving an area ungrazed for a specific time. Rest period. The length of time that a management unit is not grazed.

Rest-rotation: a grazing-management scheme in which rest periods, usually for a full growing season, for individuals grazing units are incorporated into a grazing rotation.

Riparian zone: the banks and adjacent areas of water bodies, water courses, seeps and springs whose waters provide soil moisture sufficiently in excess of that otherwise available locally so as to provide a moister habitat than that of contiguous flood plains and uplands.

Rotation grazing: a grazing scheme where animals are moved from one grazing unit in the same group of grazing units to another without regard to specific graze: rest periods or levels of plant defoliation.

Season of grazing: time of year or season when grazing occurs.

Seasonal grazing: Grazing restricted to a specific season or time of year.

Season-long grazing: Continuous grazing for a season.

Species composition: The proportions of various plant species in relation to the total on a given area. It may be expressed in terms of cover, density or weight.

Stocking density: the relationship between the number of animals and the area of land at any given time.

Stocking rate: The number of specific kinds and classes of animals grazing or utilizing a unit of land for a specified period of time. May be expressed as animal unit months per acre.

Suitability: the adaptability of an area to grazing by livestock or wildlife.

Year-round grazing: Not a proper grazing management term. Often means year-long grazing.

Yearlong grazing: Continuous grazing for a calendar year.

Targeted grazing: Targeted grazing is the application of a specific kind of livestock at a determined season, duration, and intensity to accomplish defined vegetation or landscape goals. This concept has been around for decades and has taken many names, including prescribed grazing and managed herbivory (Launchbaugh and Walker 2006).

Utilization: see "use".

Umbrella (Key) Species: a particular species which requires specific requirements (environmental conditions) for survival which mirror requirements of other species. Hence by providing and managing for the “umbrella” species, other species benefit.

Use: the proportion of current years forage production that is consumed or destroyed by grazing animals.

Warm-season plant: a plant that makes most or all its growth during late spring, summer or early fall and is usually dormant in winter.

Weed: (1) a plant growing where unwanted. (2) A plant having a negative value within a given management system.

Note: Most of these definition follow those published in “A Glossary of Terms Used in Range Management” published by the Society for Range Management (1989).

Appendix G. Final Report Comments

Final report provided on May 20, 2010 to the Advisory Committee including R. Phillips, D. Germano, D. Clendenen and E. Painter.

Review responses by July 9, 2010 include:

- Letter from Ralph Phillips
- Letter from Richard and Susan Snedden

Date: May 31, 2010

To: Mel George and Neil McDougald

From: Ralph L. Phillips

Re: Review of the Bitter Creek National Wildlife Refuge Independent Rangeland Review.

I am impressed with the volume and quality of work that has gone into this document. It is straight forward and demonstrates the application of the principal of range management, particularly in the area of vegetation management.

In Chapter 2, I appreciate introducing the idea of how invasive Rip gut brome can be without vegetation management. Also, introducing the idea of plant density is critical when measuring the influence of management on plant species of concern. I have several comments regarding Chapter 4. You have talked about fencing in several places in the chapter. I feel that a discussion on how fences should be placed on the landscape to manage livestock and avoid erosion. Fence placement should be compatible with the natural flow of cattle in relationship to the topography of the land. Poorly placed fences can force livestock into areas that could cause serious erosion.

I appreciate your discussion about Carrizo Plains National Monument. (Page 47-49). The point I got was it is easy to draw the wrong conclusions from data if you do not understand the principles of range management and grazing. In the vegetation management practices section, you gave good advice on reseeding perennial grasses starting with small plots. In 30 years in Kern County I have not seen a successful seeding of perennial grasses.

**BITTER CREEK NATIONAL WILDLIFE REFUGE
INDEPENDENT RANGELAND REVIEW
Final Draft – May 23, 2010**

Comments – 7/3/10

Richard & Susie Snedden

We preface our comments with a reference to a comment to us from Chris Barr, Hopper Mountain NWR Complex Deputy Project Leader, dated April 30, 2010. “Any information you wish to provide is appreciated and will be shared with Dr. George and we will also use it as additional information.” We want to express our appreciation to you for the opportunity to have our comments considered at this point in the process and not just considered “additional information.”

Chapter 1 - Introduction

We appreciated your clear and focused purpose statement. Here you reference the “draft environmental assessment (USFWS 2008).” The EA which is referred to here and throughout your Review, is described as offering three alternatives, none of which includes prescribed burning. This unpublished document was not made available to the public but apparently shares the same title as the previous one (2008 EA) that was subjected to extensive comment; it included prescribed burning and the Service has now declared it to be “obsolete.” Having two draft EA’s with the same title may lend to some major confusion when/if any members of the public are asked to comment on any proposals. Could you please refer to it as the “unpublished” draft environmental assessment . . . ?

Grazing and Haying Policies: It seems that this grazing and haying section could be revised to more accurately reflect current law and to represent this specific refuge. Perhaps this section was provided to you by the Service, but in our understanding, several statements made here are no longer accurate as they have been amended due to the 1997 Improvement Act’s three-tiered hierarchy for management. We would like to see the first four paragraphs changed to be in line with the Improvement Act and current law. This section appears to be drafted to allow the manager more discretion and unilateral decision making power than the law allows.

We have reviewed our copy of the Improvement Act along with the Service’s Grazing and Haying policies. In your first paragraph’s sentence: “Grazing and haying in these cases are considered “refuge management economic activities,” we would recommend a change to: “Grazing and haying in these cases are considered a first-tier management priority under the 1997 NWRS Improvement Act” (Please refer to the Improvement Act’s three-tiered hierarchy for management of NWRS – “specific use of grazing or haying as a management technique to help achieve refuge wildlife goals and objectives is a first-tier management priority. When grazing and haying are not specifically used on a refuge to help achieve wildlife and habitat goals and objectives, then these activities fall into the third, lowest-priority tier.” In view of this we ask that you also strike out of the sentence before this one, the phrase, “and provide permittees with a financial return.” **We believe that it is imperative that the Service distinctly identify grazing as a management tool on the BCNW** in line with the current law. (On our special use permit it reads – “habitat management – grazing as a tool.”) Economic activities are a third-tier priority and therefore subject to arbitrary removal.

Chapter 2- Literature Review and Citations

We appreciated, once again, your clear, concise and well documented introduction.

Grassland History: Second paragraph “pre-settlement composition . . . are uncertain.” In view of this and to avoid a possible contradiction, perhaps it would be good in the third paragraph to change the first sentence to: “Invasion by exotic species is believed to have begun with European exploration and settlement . . .” “It is also believed that the major period of invasion was in the 18th century and many of these . . .”

The National Environmental Policy Act (NEPA) (Sec. 1502.22 - Incomplete or Unavailable Information) states: “When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.”

This statement is helpful in requiring the Service to distinguish between supposition and existing credible scientific evidence in the text of their management plan.

We appreciated your including the statement in the first paragraph, page 5, that there is no record of intentional or routine burning in this area. Also, the statement in the third paragraph that “removal of grazing does not return the grassland to a perennial dominated climax state,” is a key point to be made.

In the last sentence of the third paragraph, page 5, could you include the word “theoretical” or “presumed” or something equivalent before the term “the pre-settlement state” so that it will remain consistent with the statement on page 4 of the uncertainty of pre-settlement conditions?

The rest of this section is very impressively referenced.

Grazing Management: This section is very good and comprehensive. Would it be appropriate when you are discussing exclosure studies on pages 8-9, to include data or a summary **regarding protection / restoration of junipers** and the effectiveness (or not) of exclosures for this purpose? We are expecting that the Service cannot ignore the 4,600 acres of junipers, etc. in their management plan – it seems they will have to include them in the CCP, so perhaps this is a good place to cite some research data.

On page 8, first paragraph, you reference three types of grazers: domestic, feral, and native herbivores. On page 9, last paragraph, you reference “native and alien grazers.” Could you clarify these terms? We’re unsure of the distinction among these three - **feral, native and alien grazers**, particularly on this refuge.

On page 9, last paragraph, the sentence, “In the non-native annual dominated grasslands of California grazing has contributed to the transition from a native perennial dominated state to a non-native annual dominated state . . .” This appears to again contradict the statement about the uncertainty of pre-settlement conditions. Could it be reworded: “It is believed that the annual dominated grasslands of California superceded a pre-settlement perennial dominated state, and that grazing contributed to this transition. However, removal of grazing has not resulted in reversal to a perennial dominated state.”

On page 10, second paragraph, the statement, “However, healthy populations of *Holocarpha macradenia* also occur . . .” was authenticated by citing a personal observation by Elizabeth Painter, and personal communication with Margaret Wetherwax. Does the inclusion of these personal comments set a precedent and perhaps give these types of citations equal weight with peer-reviewed studies? We can see that you’re striving for balance, but we ask that you consider omitting this statement, or providing something similar that’s linked to a study.

CHAPTER 3 – RESOURCE INVENTORY

Land Use History: In the first paragraph, third sentence, could you add: “the USFWS allowed seasonal grazing on a year long basis to continue.”

Vegetation: (page 24) Would it be appropriate to include in this first paragraph a definition of “native flora”? Also, in the second paragraph in this section, last sentence, “they do not provide any measure of abundance,” do we need to add “or plant locations”?

Wildlife Resources: In the first paragraph of this section, last sentence, is it supposed to read “tule elk and antelope?”

Management Units: In the third paragraph, we believe that Unit 2 might better be described as “steep slopes with abundant vegetation in a normal year.”

Carrying Capacity: The last paragraph, next-to-the-last sentence, seems to suggest a plan that seeks to mitigate the natural environmental variations (drought, flood, wind, etc.) and the associated stresses, in search of an ideal by reducing the stocking rate or eliminating it completely. This would produce conditions that are far from natural and might even prove harmful to the natural ecosystem. This same statement is made in **Chapter 4, Prescribed Grazing**, third paragraph, “. . . and keep annual stocking rate below the long-term average carrying capacity.” We would appreciate a closer look at recommending this stocking approach in terms of the need to accomplish habitat objectives.

CHAPTER 4 – GRAZING AND VEGETATION MANAGEMENT

Low Elevation Management Units (Unit 2): The RDM target here (300 to 600 lb/a) for this unit doesn’t correspond to Table 2 (800-1000 lb/a.)

Targeted Grazing Management: Error in sentence # 4 - “to”

Grazing Alternatives: Please add: “In the unpublished draft environmental assessment (EA)”

CHAPTER 5 – GOALS, OBJECTIVES AND PROCEDURES

Potential Goals, Objectives and Procedures:

Goal C (p. 56): Could you please confirm the RDM requirements for **Measurable Objective 1** and the accompanying **Procedure** and **Measurable Objective 2** (800 to 1,000 lb/a); they don’t jive with the RDM requirements for Unit 2 in Chapter 4 (300 to 600 lb/a. - see above.)

Goal D (p. 56): The **Measurable Objective** here requires the RDM to be less than 800 lb/a; whereas **Table 2** (p.31) requires 800 to 1,000 lb/a. Also, regarding the accompanying **Procedure** – We believe it is an unreasonable expectation to be able to accomplish this objective before the beginning of fire season (which we would say is June 1) for several reasons: Those pastures would need to be grazed down between March 15 and June 1 – too much country for the cows to cover in that short a period, under the current unit design. There are approximately only five grazing units that are not adjacent to Cerro Noroeste Road and Klipstein Canyon Road. **Our recommendation would be to extend the deadline for meeting the 800 lb/a. requirement to September 1, and also ensure that the stocking rate is adequate (high enough) to accomplish this very crucial objective.**

Monitoring Procedure: Possible typo? – “the end of the beginning of the dry season.”

Goal E (p. 57): **Measurable Objective 1.** This section perhaps warrants adding a Procedure that states. “Fence both units to divide each of the units into at least five pastures - requiring an added total of approximately ten miles of fence and necessitating relocation stock waters. Also, management oversight needs to be greatly intensified in order to accomplish this Objective.” (Concentrating cattle on one-fifth of the land mass in Unit 2 in January – March requires very intense cattle management – nearly impossible due to the topography and also creates a high impact situation which could create erosion/trail issues as well as greater concentration around water sources.)

Goal G (p. 57) **Measurable Objective:** We believe that requiring the riparian areas in Unit 2 to be fenced off from cattle during the wet season essentially excludes cattle grazing entirely in that Unit. The grazing period for this unit should be December to June (the wet season.) This Objective would require that a fence must be built and maintained on both sides of Bitter Creek (ten to fifteen miles of fence in extremely rugged country), restricts movement of all ungulates, and makes it an unfeasible proposition for a livestock manager.

CHAPTER 6 – RANGELAND INVENTORY AND MONITORING

Plant Density: We believe that it is important when information is collected for monitoring plant density that the responsible person factor in the timing of the first significant rainfall, as well as the winter temperature patterns when recording the data summary. These factors can influence the presence or absence from year to year of a specific plant.

SUMMARY

We believe that it would be helpful to have an Appendix for Definitions. The BCNWR 2008 EA (the “obsolete” one that we have) included four pages of definitions that might be good to review and correct, if necessary. If they plan to include the same definitions page, it would be very important that you look over these definitions so that incorrect definitions don’t confuse the process later.

Could you please look over your tables and figures lists and see that they are properly labeled? (some figures are under the tables heading.)

We did not see any reference in this Review to a proposal for managing livestock predators. We believe that if the coyote population continues to grow unchecked, it will be a deterrent to a well-functioning livestock program. Other refuges conduct coyote and squirrel control programs. We believe that it is worth offering it as an option.

Again, we thank you for this opportunity to comment. We commend you for the great job you have done on this Review.

With sincere appreciation,

Richard and Susie Snedden