

Section 5.5 Valley Natural Communities Conservation Measures

Note to reviewers: This proposal presents a framework for a conservation strategy for lands comprising the Valley Natural Communities Unit. This proposal does not attempt to quantify goals by acreage targets. Due to the interrelated nature of the Upland, Valley Oak Community, Riparian, and Agricultural Landscape areas, draft recommendations regarding acreage targets will be presented concurrently with the other conservation strategy proposals.

This section addresses Conservation Measures for Natural Communities within the Valley Natural Communities Landscape Unit of the Yolo NHP plan area. This area consists of the remaining uncultivated lands, other than riparian and watercourse areas, within lowland portions of Planning Units 10-18, where agriculture, and to a lesser degree flood conveyance, are the predominant use (Figure __). Except for large areas of managed wetlands and associated open water habitat, the lands within the Valley Natural Communities Landscape Unit consist mainly of small remnant areas of Annual Grasslands, Vernal Pool Complex, Alkali Sink, and Valley Oak Woodland habitats (Table 5.5-1).

Table 5.5-1. Acres of natural community habitats and Eucalyptus in Planning Units with lands of the Valley Natural Community Landscape Unit.

Habitat	Hungry Hollow Basin	Willow Slough Basin	Colusa Basin	Colusa Basin Plains	North Yolo Basin	South Yolo Basin	Yolo Basin Plains	North Yolo Bypass	South Yolo Bypass	Total
Annual Grassland	1,171	3,334	990	1,111	454	2,095	815	2,801	5,120	17,890
Blue Oak Woodland	1	3	0	123	0	0	0	0	0	127
Eucalyptus	0	12	0	203	0	7	0	0	0	222
Valley Oak Woodland	0	30	1	34	0	61	0	0	0	126
Fresh Emergent Wetland	3	558	5	2,995	0	64	58	547	7,258	11,490
Open Water	9	569	1,441	390	688	2,287	0	723	1,420	7,527
Saline Emergent Wetland	0	0	0	0	0	0	561	0	3,772	4,333
Vernal Pool	0	3	0	0	0	0	361	0	60	424
Alkali Sink	0	164	0	162	0	11	0	0	157	494
Total - All Natural Communities	1,184	4,673	2,437	5,018	1,142	4,525	1,795	4,071	17,787	42,633
Total Planning Unit Acres	21,000	124,287	40,920	54,439	13,260	39,060	7,557	24,364	30,294	355,181

1 The Natural Community lands within this landscape unit occupy only 12% of the total area of the
2 Planning Units within which they occur, with most of the remaining land in agricultural use. Many of
3 these remaining natural lands also have been significantly reduced in habitat value from their original
4 condition due to past and ongoing disturbance by agricultural use, other uses, and effects of habitat
5 fragmentation. Nonetheless, they provide a disproportionately high biological value, as sole remaining
6 habitats for a substantial number of covered species, especially plants and invertebrates, in these Planning
7 Units (Table 5.5-2). They also contribute to local and regional biodiversity by providing suitable
8 opportunities for breeding and resting by a number of species that forage in agricultural lands. As a
9 result, the Valley Natural Communities are a high priority for conservation in the Yolo NHP.

10 **Table 5.5-2. Predicted use of Valley Natural Community Habitats by Yolo NHP Covered Species**
11 **and Species of Local Concern**

12
13 *[Table to be provided later]*
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15 The conservation strategy for the Valley Natural Communities is closely related to the strategies
16 for the Upland, Riparian, and Agricultural Landscape Units. Most obviously, the Valley Natural
17 Communities Landscape Unit is intermixed with the Agricultural Landscape Unit, and thus species using
18 these areas also may benefit from the presence of foraging habitat value in agricultural lands and be
19 affected by adjacent agricultural land uses. Also, notably, lands encompassed within the agricultural
20 landscape unit contain small areas of the habitats that in larger configurations were included within the
21 Valley Natural Community Landscape Unit (e.g., grasslands, wetlands, and other herbaceous habitats at
22 field edges and corners, and isolated oak trees). Lands encompassed within the Valley Natural
23 Community Landscape Unit also support grassland and oak woodland habitats with many of the same
24 species that also are common in the Upland Landscape Unit. Finally, Valley Natural Communities may be
25 connected to woody and herbaceous habitats within the Riparian Landscape Unit or used by covered
26 species that use make of both riparian and adjacent natural communities.

27 **5.5.1. Application of the Assembly Rules to Valley Natural Community**
28 **Conservation Areas**

29 Conservation planning for Valley Natural Community habitats has incorporated ecosystem-based
30 planning approaches and specific land selection criteria, as outline in the NHP Assembly Rules (see
31 Section 5.3). Assembly Rules have to be applied to reflect the specific conditions within this landscape
32 unit, so as to meet covered species requirements. The assembly rule applications summarized in Table
33 5.5-3 and discussed in this section describe the basis for NHP planning and also will guide land selection
34 during implementation of the plan. Candidate lands for conservation often lack certain of the desired
35 characteristics identified in the application of the assembly rules. Therefore, evaluation of individual land
36 areas for conservation uses often will involve the weighting of various rules.

Table 5.5-3. Application of the Yolo NHP Assembly Rules to the selection of Conservation Lands within the Valley Natural Communities Landscape Unit of the Yolo NHP

Land Characteristic	Desired Condition	Rationale	Specific Guidance
Land unit sizes	Protection of the largest available examples of natural communities and habitats encompassed in this Landscape Unit	Notwithstanding remnant conditions of most lands within this Unit, larger-sized units are more likely to support more species, larger populations of target covered species, more varied ecological conditions (to accommodate annual variation in conditions, better ecological functions, including pollination, prey populations), and better management ability.	Focus conservation to protect most examples of habitat that exceed the following target sizes: --Valley Oak Woodland: > 0.5 ac --Grasslands: >20 ac -- Alkali Sink: >0.5 ac --Saline and Emergent Wetlands: >200 ac --Vernal Pools: all occurrences, with surrounding watersheds
Geographic distribution	Representation of the full existing geographic distribution of habitats within conservation lands, and restoration of habitats to representative locations where they historically occurred but are now absent.	A broad distribution of natural communities increases potential to maintain a wide range of habitat variants. Multiple widespread occurrences of habitats increases number and size of populations, to buffer against local extinctions that could occur as a result of climate changes, competition with invasive species, and cumulative effects of disturbance.	Incorporate representative examples of communities from throughout their current ranges and encourage restoration of representative examples of high quality habitats within regions of former occurrence where communities are now absent. Emphasize selection of grasslands away from large areas of more intact grasslands incorporated in the Uplands Landscape Unit.
Habitat and Species Diversity	Representation of variant examples of high quality habitats within conservation lands based on species diversity, density, topographic position, etc. Emphasize protection of areas with highest species richness and multiple habitats in natural arrangements and in association with riparian woodland and scrub habitats.	Conserving habitats with high species richness with different conditions and species compositions maintains biodiversity and options for community adjustment in response to climate change. Maintaining natural suites of habitats provides for needs of species that require multiple habitats for pollination, foraging, breeding, etc.	Represent the full range of natural habitat conditions and preferentially select lands for conservation that contain multiple natural habitat types and high species richness.
Ability to maintain or restore needed ecological functions	Land that retain a substantial component of their natural ecological function or for which these functions can be restored	Health and vigor of habitats and associated species may depend on restoring natural ecological conditions, including hydrology, species composition (i.e., removal of invasive species), pollinator habitat, and managed herbivory.	Preferentially select lands that retain natural ecological functions and areas where such functions can be restored sustainably.

Table 5.5-3. Application of the Yolo NHP Assembly Rules to the selection of Conservation Lands within the Valley Natural Communities Landscape Unit of the Yolo NHP

Land Characteristic	Desired Condition	Rationale	Specific Guidance
Adjacent sources of disturbance	Lands that can be buffered from substantial degradation resulting from adjacent land uses' (e.g., disturbance from agricultural activities, public use, vegetation control, invasive species introduction)	Frequent disturbance within or adjacent natural habitat remnants reduces the value of habitat by eliminating or precluding certain characteristic species, reducing plant vigor, and introducing invasive species.	Preferentially select sites away or buffered from adjacent uses that may disturb onsite conditions. Select larger sites with more "interior" lands away from disturbance, and avoid lands with narrow configurations, except where needed for key habitat preservation or where other options are not available. Incorporate adjacent agricultural lands into conservation status where needed to encourage uses that minimize disturbance to natural habitats, provide key services (pollination), or provide priority restoration sites
Plan species occurrence	Incorporation of lands that support covered species and species of local concern into conservation areas, especially those occupied by rarer species, regardless of other characteristics	Selecting areas with known occurrences of covered species will increase the potential that species will be protected. Protecting all or most occurrences of rarer species may be necessary because of their precarious status, regardless of existing conditions onsite and on adjacent lands	Preferentially select lands that support the rarest species, including extremely rare and localized vernal pool plants and invertebrates, alkali plants, key wetland breeding areas, and raptor nesting sites,.
Relationship to existing conservation areas	Conservation lands that complement, enhance, and connect existing conservation lands	Acquiring new conservation lands that complement and enhance existing conservation lands will enhance functions of existing protection areas and improve the effectiveness and efficiency and of overall land conservation efforts.	Evaluate existing conservation lands, and select additional conservation areas and corridor lands nearby that will enhance values cumulatively
Relationship to other beneficial habitats	Valley Natural Community conservation areas that benefit from presence of desirable riparian and agricultural habitats	Conserving upland and wetland natural habitats within this landscape unit adjacent to riparian areas and beneficial agricultural lands provides corridors and serves Plan species that use or depend on other habitats	Preferentially select Valley Natural Community habitats for conservation that are adjacent to riparian habitats or provide key functions (e.g., raptor nesting habitat) in areas with protected areas with high value foraging habitat.

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This section describes the application of the conservation lands assembly rules to Valley Natural Community habitats to be considered in selecting upland habitats for incorporation into the Conservation

1 Strategy for Planning Units 10-18. In general, the following assembly rules are compatible and mutually
2 supportive, as described below. Application of the rules and the resulting outcomes are subsequently
3 discussed for each of the individual habitats or habitat groups.

4 **Land Unit Size.** Many of the natural lands within this agriculture-dominated area are isolated
5 remnants of communities that were much more extensive. Protecting the largest examples of these
6 remnant habitats is important in maximizing the number of constituent species, the population sizes of
7 species, more varied ecological conditions and associated diversity, enhance ecological functions, such as
8 pollination) and ability to maintain species under shorter-and longer-term changes in environmental
9 conditions. Large units also are inherently more buffered from adjacent disturbance and can be managed
10 more efficiently and effectively. Notwithstanding the importance of larger units, many key habitats
11 consist mainly of smaller units. Such smaller areas within lowland plan areas, such as vernal pool and
12 alkali sink habitats, support imperiled plant and invertebrate species populations.

13 As applied to the Valley Natural Communities Landscape Unit, larger examples of oak,
14 grassland, and wetland habitats will be preferentially selected for conservation. Smaller units also will be
15 incorporated into the strategy, particularly where they support populations of rarer species. General
16 guidelines for minimum unit sizes include:

- 17 • Valley Oak: >0.5 ac
- 18 • Grassland: >20 ac
- 19 • Saline and emergent wetlands: >200 ac
- 20 • Alkali wetlands: >0.5 ac
- 21 • Vernal pools: any sized occurrences, with surrounding watersheds.

22 Smaller areas of these habitats may be conserved when they occur within a desirable mix of other
23 habitats. Notably, smaller areas of these habitats, including smaller Valley Oak aggregations and
24 individual trees, and narrow field edges and levee slopes, will subject to conservation actions (see
25 **Conservation Measures** below), but not generally through acquisition of lands or conservation
26 easements.

27 **Geographic Distribution.** The historic conversion of the majority of the natural habitat in
28 lowland areas of Yolo County has fragmented the remaining habitats into relatively small remnant
29 patches, generally surrounded by agriculture and often encroached upon by human uses, including
30 residential and commercial development, flood agricultural operations areas, and farmsteads. The
31 remaining habitat patches retain some remnant component of the historic geographic variability in the
32 character, composition, and gene pools of these habitats and their constituent species (e.g., Grivet et al.
33 2007). Maintenance of representative areas of these habitats throughout lowland portions of the county
34 also will provide well-distributed habitat conditions for those species that utilize combinations of natural
35 and agricultural habitats (i.e., nesting raptors, yellow-billed magpie).

36 A full range of geographic examples, and a high proportion of remaining areas of Valley Natural
37 Communities Landscape Unit habitat, will be conserved throughout their current distribution. Habitat
38 will be restored in areas where opportunities exist to reduce distances between remnant patches, enhance

1 combined diversity with woody riparian habitats, and enhance use of crop lands by agriculturally
2 dependent species.

3 The distribution of habitat within other Landscape Units also will be considered in selecting
4 conservation lands. For example, grasslands surrounded by agricultural lands, but adjacent to the more
5 extensive conserved grasslands in the Upland Landscape Unit, may be given lower priority for
6 conservation than isolated grasslands that are further from areas where large amounts of grassland will be
7 conserved.

8 **Habitat and Species Diversity.** The conservation strategy incorporates representatives of all
9 extant lowland habitats in the Conservation Strategy. Due to the paucity of lands supporting natural
10 habitats, the strategy cannot be too selective in conserving only habitats in natural landscape
11 arrangements or with the highest current diversity of constituent species. Therefore, in addition to
12 selecting lands with the highest habitat values, the strategy will enhance the diversity of degraded areas of
13 conserved habitats through control of disturbances, removal of invasive species, and management for or
14 reintroduction of desirable native species and ecosystem processes.

15 **Ability to Maintain or Restore Needed Ecological Functions.** Because many of the examples
16 of natural communities with the Valley Natural Community Landscape Unit are degraded by past and
17 present uses, enhancement of ecological conditions will be an important part of the conservation strategy.
18 Natural community lands differ substantially, however, in their ability to be enhanced and restored. Many
19 remnant natural communities are located in areas where enhancement or restoration may be difficult or
20 impossible. For example, many occurrences of Valley Oak Woodlands are degraded remnants retained as
21 shade trees at farmsteads, agricultural equipment yards and processing areas, or roadside utility corridors.
22 Similarly, some herbaceous natural communities occur on levee slopes or within canals that require
23 regular maintenance. Such areas may have limited capability and feasibility for enhancing conservation
24 values. In contrast, examples of communities in less disturbed settings or where effects of land use
25 practices can be reversed are more amenable to enhancement and restoration.

26 A challenge to maintaining and restoring needed ecological functions is that the current
27 conditions of all examples of these habitats, and their ability to be enhanced, is not fully known. The
28 Conservation Strategy for Valley Natural Communities explicitly recognizes that significant areas of
29 these communities need to have ecological functions maintained and restored, but an additional focused
30 planning process is needed to evaluate the current habitat conditions of natural community lands and their
31 capability to be enhanced and restored. Therefore, the strategy will evaluate these natural communities to
32 determine which can be enhanced and work with willing landowners to enhance lands with that potential.

33 **Adjacent Sources of Disturbance.** The extensive presence of agriculture and other adjacent
34 disturbing land uses may degrade habitat values within remnant Valley Natural Communities by
35 introduction of non-native plants and animals, introduction of pesticides and dust, disruption of root
36 systems at field-community edges, alteration of water availability through irrigation, creation of noise,
37 and a variety of other disturbing influences.

38 Effects of adjacent land uses will be considered in selecting conservation lands, and prescribing
39 management to protect and enhance values. In addition, where disturbances are causing significant

1 effects on covered species, the strategy provides a basis for working with willing landowners to identify
2 and conserve buffer lands, within which uses may be limited to minimize effects. These evaluations will
3 be required on a case-by-case basis, but experience in addressing adjacent disturbance will be
4 incorporated adaptively into the conservation program of the NHP.

5 **Covered Species Occurrence.** The Conservation Strategy initially emphasizes conservation of
6 lands that are known to support populations of covered species and species of local concern, especially
7 those that are considered the rarest in Yolo County. Results of ongoing reporting of occurrence of plan
8 species will be incorporated into the implementation of the Conservation Strategy over its implementation
9 period.

10 **Relationship to Existing Conservation Areas.** The Conservation Strategy will seek to identify
11 natural habitats for conservation that adjoin or are adjacent to other protected conservation areas, in
12 balance with other assembly needs (i.e., to achieve wide geographic representation of habitats)

13 **Relationship to Existing Beneficial Habitats.** The presence of other natural habitats, including
14 riparian areas increases the value of lands supporting Valley Natural Communities by increasing the
15 aggregate size and diversity of natural lands. Valley Natural Communities located adjacent to conserved
16 agricultural lands that provide habitat value to covered species, such as alfalfa fields for raptors, enhance
17 the ability of the natural community lands to support agriculture-dependent covered species.

18 The Conservation Strategy incorporates selection of Valley Natural Community lands as
19 Conservation Lands based on their spatial relationships to other natural habitats and agricultural lands that
20 serve Covered Species. In particular, areas will be identified for habitat enhancement and restoration
21 partly based on their proximity to other supporting natural habitats and agricultural habitats for species
22 that jointly require natural and agricultural lands. Restoration of Valley Oak Habitats, for example, is
23 directly in part to lands where high quality foraging habitat exists for covered raptor species, but nesting
24 habitat is lacking.

25 **5.5.2. Conservation Measures**

26 The Conservation Measures for the Valley Natural Communities Landscape Unit focus on protection and
27 enhancement of existing habitats and restoration of key habitats, consistent with habitat goals of the plan.
28 Lands currently in conservation status and amounts proposed to be added to conservation through the
29 Yolo NHP are summarized in Table 5.5-4. Allocation of conservation efforts by habitat in various
30 lowland Planning Units are summarized in Table 5.5-5.

31 **Table 5.5-4. Area of habitats in the Valley Natural Communities Landscape Unit that are currently
in conservation status, additional lands to be conserved through the Yolo NHP plan, and resulting
total conservation area.** *(Additional lands to be conserved under the plan to be provided later)*

Natural Community	Habitat	Total Acres	Habitat Currently Conserved ¹	% Currently Conserved	Additional	% Total Added To Conservation	Total Land Conserved	% of Total Lands Conserved
					Lands to be Conserved			

Table 5.5-4. Area of habitats in the Valley Natural Communities Landscape Unit that are currently in conservation status, additional lands to be conserved through the Yolo NHP plan, and resulting total conservation area. (Additional lands to be conserved under the plan to be provided later)

Natural Community	Habitat	Total Acres	Habitat Currently Conserved ¹	% Currently Conserved	Additional Lands to be Conserved	% Total Added To Conservation	Total Land Conserved	% of Total Lands Conserved
Grasslands	Annual Grassland	17,890	6,010	34%				
Woodlands and Forest	Blue Oak Woodland	127	0	0%				
	Valley Oak Woodland	126	2	2%				
Riparian and Wetlands	Fresh Emergent Wetland	11,490	9,195	80%				
	Saline Emergent Wetland	4,333	4,161	96%				
	Open Water	7,527	1,638	22%				
	Vernal Pools	424	391	92%				
	Alkali Sink	494	276	56%				
Total – Natural Communities		42,411	21,673	51%				

¹ Reported acreages include both lands with conservation easements and public lands managed for natural resource emphasis but that do not have perpetual protection [Will break these acreages out in subsequent versions]

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Table 5.5-5. Proposed land conservation (in acres) by habitat type within lowland Planning Units (10-18) as part of the conservation strategy for the Yolo NHP Valley Natural Communities Landscape Unit (X = Planning units with expected acreage for conservation)

Habitat	Hungry Hollow Basin	Willow Slough Basin	Colusa Basin	Colusa Basin Plains	North Yolo Basin	South Yolo Basin	Yolo Basin Plains	North Yolo Bypass	South Yolo Bypass	Total
Annual Grassland		X	X	X		X		X	X	X
Blue Oak Woodland				X						X
Valley Oak Woodland		X		X		X				X
Vernal Pool									X	X

Table 5.5-5. Proposed land conservation (in acres) by habitat type within lowland Planning Units (10-18) as part of the conservation strategy for the Yolo NHP Valley Natural Communities Landscape Unit (X = Planning units with expected acreage for conservation)

Habitat	Hungry Hollow Basin	Willow Slough Basin	Colusa Basin	Colusa Basin Plains	North Yolo Basin	South Yolo Basin	Yolo Basin Plains	North Yolo Bypass	South Yolo Bypass	Total
Alkali Sink		X		X						X
Total Natural Communities		X	X	X		X		X	X	X

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2 **5.5.2.1. Valley Natural Community-wide Mitigation Program**

3 The mitigation program for impacts of covered activities is developed to minimize impacts on
4 important habitat values, and to maximize values of mitigation areas, as outlined in the following
5 conservation measure.

6 **Conservation Measure 5.5-1. Establish a Mitigation Program for Losses to Valley Natural**
7 **Community Habitat Values.** The Implementing Entity will develop a comprehensive program to
8 mitigate for unavoidable losses of natural habitats within the Valley Natural Communities landscape unit.
9 The program will be implemented according to the following guidelines:

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- 11 • No vernal pool grasslands habitats impacts and associated mitigation will be authorized through
12 the plan and associated permit, and impacts to alkali sink habitats also will be avoided, except
13 where it is demonstrated that ongoing activities (i.e., flood water conveyance) is compatible with
14 maintenance of habitat values.
- 15
- 16 • Habitat avoidance and minimization will be the primary mitigation option for impacts to other
17 natural communities; compensation through protection, enhancement and restoration of off-site
18 habitat will be applied only where impacts cannot be avoided.
- 19
- 20 • Habitat losses and reduction in habitat value of natural habitats within the Valley Natural
21 Community landscape unit will be mitigated in-kind and within the geographic area of landscape
22 unit, and where the opportunity exists, within the same planning unit where impacts occurred.
- 23
- 24 • Mitigation will be accomplished using mitigation ratios commensurate with the extent of habitat
25 value loss due to the proposed action and the net onsite benefits of mitigation actions.
- 26
- 27 • Mitigation areas will be selected to maximize their biological resource value by encouraging
28 protection and expansion of larger, connected, and diverse areas of pre-designated natural
29 communities, except where a priority for geographic dispersion of habitat or other assembly rule
30 attributes outweighs these considerations.

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- Valley Natural Community mitigation areas also will be designed to serve impacts of activities within Developed Landscape Unit areas.

The mitigation program will be developed with greater specificity prior to completion of the NHP.

5.5.2.2. Grasslands

Conservation Measures 5.5-2. Conserve Larger Remnant Areas of Grassland Habitats in Valley Lowland Areas. The Implementing Entity will conserve approximately █ acres of grassland within larger remnant grassland areas in lowland portions of Yolo County. Conservation is focused mainly in the Willow Slough and Yolo Bypass Planning Areas (Table 5.5-5). Grasslands in other planning units were not included for several reasons. First, many areas of grasslands consisted of smaller units that did not meet minimum size standards for conservation (See *Geographic Distribution* above). Second, grasslands within agricultural areas adjacent to Upland Planning Units were given low priority for conservation because more intact grasslands in the nearby Upland areas had higher biological value. Thus, priority for conservation was assigned to grasslands in these adjacent Upland areas.

Conservation Measures 5.5-3. Conserve and Enhance Small Grassland Areas where Important Conservation Values Exist. Small areas of grassland habitat occur throughout the planning areas at field edges, roadsides and other rights-of-way, and levee slope. Often these areas are disturbed by maintenance practices. Nonetheless, these areas can contribute to various biological functions, including providing food and cover that supports a variety of wildlife species (including reservoir areas for rodent populations that serve as raptor prey), support of insect pollinators, erosion control, and water quality protection. Although such small areas are not amenable to conservation through land protection (i.e., acquisition in fee title or conservation easements), the Yolo NHP will encourage and implement a variety of programs to protect and enhance grassland habitats. Specific measures include:

- Encouraging retention of such lands through simple elimination of disincentives associated with potential take of listed species,
- Encouraging management of lands for pollinator species that serve agricultural and natural habitats through landowner education and incentive programs,
- Encouragement of measures to manage rights of ways and field edges and hedgerows to enhance wildlife value and reduce the need for use of pesticides and land-disturbing maintenance programs (i.e., www.ceyolo.ucdavis.edu/Custom_Program/Hedgerows.htm; www.cdpr.ca.gov/docs/pestmgmt/grants/97-98/finlrpts/97-0247.pdf).

Potential actions that would assist in encouraging retention of grassland and other non-agricultural habitats within the agricultural matrix are likely to be similar to measures identified to implement conservation measures in the agricultural landscape unit (See Section 5.7, ***Agricultural Landscape Unit Conservation Strategies***). [Note: A final decision on whether field edge habitats will be addressed either in the strategy for VNC or Ag Cons. Strategy will be made with the next revision.]

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2 **5.5.2.3. Valley Oak Woodland Habitat**

3 Only a small amount of the upland Valley Oak Woodland habitat exists in Yolo County, with a
4 total of 418 acres mapped in the Yolo NHP GIS (Table 2-2). Valley oak also is a prominent component
5 of riparian woodlands in the County (see Section 5.6, **Riparian and Watercourse Landscape Unit
6 Conservation Measures**). Valley Oak Woodland habitat occurs in small patches, often within the
7 disturbed agricultural landscape. Mapped acreages by stand size class countywide (including 292 acres
8 outside the Valley Natural Communities landscape unit) are as follows:

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<u>Stand size range (ac)</u>	Total Acres
0 - 0.5	9.8
0.5 - 3	152
>3	<u>257</u>
Grand Total	418

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12 Oak stands within the Valley Natural Communities landscape unit are predominantly smaller than 3 acres.
13 Additional small, discontinuous, and linear stands occur within the landscape unit but are not mapped in
14 the NHP GIS data base.

15 Notably, however, the current mapping of Valley Oak Woodland habitat in the Yolo NHP GIS is
16 imprecise. Although larger stands are well mapped, not all smaller aggregations of trees are mapped, due
17 to their small, scattered, and linear nature. Nonetheless, an effective conservation program can be
18 identified for Valley Oak Woodland, which can be used adaptively as more information becomes
19 available.

20 Only 2 acres (2%) of mapped Valley Oak Woodland within the Valley Natural Communities
21 Landscape Unit is incorporated into existing conservation areas (Table 5.5.1). Much of remaining Valley
22 Oak habitat within this landscape unit is within disturbed remnant areas (farmsteads, processing areas,
23 and equipment yards). These areas retain certain key habitat values, including serving as nesting habitat
24 for the Swainson’s hawk, other raptors, and the yellow-billed magpie. Overall, however, these disturbed
25 remnants have lower habitat value than less-disturbed areas. They also have more limited feasibility for
26 enhancement of habitat values because of disturbed site conditions and potential conflicts with existing
27 uses. Therefore, these disturbed use areas retain priority for protection, but are given low priority for
28 enhancement and restoration, except to encourage recruitment of replacement trees.

29 Conservation of Valley Oak Woodland values extends beyond existing and restored larger stands.
30 Individual trees or small groups of trees are an important habitat element that enhances the value of
31 agricultural lands (i.e., as foraging habitat for nesting raptors and magpies). The Conservation Strategy
32 thereby incorporates a component to require measures to ensure their protection and long-term
33 maintenance.

1 Yolo County has adopted an Oak Woodland Conservation and Enhancement Plan (Yolo County
2 Parks and Natural Resources Management Division 2007). The plan summarizes information on the
3 status, ecology, and management of oaks. The goal of the plan is to “*help coordinate voluntary oak
4 woodlands conservation and enhancement efforts, guide oak woodlands mitigation, provide access to
5 state funding, and assist with state efforts to conserve and enhance oak woodlands in California*”. The
6 plan identifies a system to help identify high-priority, voluntary oak woodland conservation opportunities.
7 It identifies Valley Oak Woodland stands as a high priority for conservation and enhancement. The plan
8 also identifies a set of 21 criteria for use in ranking conservation priorities, in the general categories of:

- 9 • Stand composition and integrity, and functionality
- 10 • Habitat for plant and wildlife species
- 11 • Landscape Function
- 12 • Human interactions
- 13 • Risk Factors, and
- 14 • Management Constraints.

15 The plan includes a set of policies that address plan use, staff training, public outreach and education,
16 minimization of project impacts through planning and use of best management practices, research,
17 mitigation bank establishment, conservation of local genetic stocks, oak use in public landscaping,
18 development of mitigation guidelines, and cooperative funding for open space conservation. It also
19 includes a set of recommendations that apply primarily to other organizations and agencies.

20
21 **Conservation Measure 5.5-4. Conduct an Assessment of Valley Oak Woodland Habitat**
22 **Value and Potential for Habitat Enhancement and Restoration in Lowland Areas.** The
23 Implementing Entity will conduct an assessment program to identify and characterize remnant Valley
24 Oak Woodland habitats with lowland Planning Units 10-18. The assessment will update the current Yolo
25 NHP GIS mapping of this habitat, quantify sizes of woodland stands, and characterize onsite and
26 landscape features. Stands will be characterized onsite for their conservation value, depending on
27 whether lands are accessible for survey. Stands should be evaluated based on a refined version of the
28 countywide evaluation checklist in the County’s Oak Woodland Conservation and Enhancement Plan
29 (Yolo County Parks and Natural Resources Management Division 2007: p. 43). Characteristics of Valley
30 Oak Woodland stands that are important in determining existing conservation value and potential for
31 enhancement and restoration of value may include:

- 32 • soil characteristics
- 33 • stand size,
- 34 • parcel size,
- 35 • size, density, and health of trees,
- 36 • understory species and structure,
- 37 • prevalence of invasive species,
- 38 • presence of permanent human uses (homes, farm buildings, roads, parking areas, landscaping,
39 equipment storage, trash dumping, etc.), and

- other conditions that may affect enhancement and restoration potential (e.g., water sources).

Characteristics of adjacent uses also will be evaluated, including land uses activities that could be disturbing to the Valley Oak community or that could conflict with conservation measures, including adjacent land uses, agricultural management (e.g., crops grown, pesticide use, and irrigation regime), and distances to uses.

The survey also would characterize landscape characteristics, including the relationship of the parcel to other natural habitats and conservation lands and the availability and quality of woodland habitat and surrounding agricultural habitats for Covered Species that nest in Valley Oak habitats (Swainson’s hawk, yellow-billed magpie). Current or potential public benefits (i.e., water quality, erosion and flood protection, visual quality, cultural and historic resources, and recreation use) should be evaluated. Finally, it would evaluate landowner receptivity to participation in conservation actions.

Results of the surveys assessment will be compiled and analyzed, and used by the Implementing Entity to assign priorities for conservation, enhancement and restoration of areas Valley Oak Woodland habitats. Results will be evaluated along with predictions regarding potential effects of climate change on site suitability for Valley Oak and associated species (e.g., Kueppers et al. 2005).

Conservation Measure 5.5-5. Conserve, Enhance, and Restore Existing Valley Oak Woodland Habitat. The need for a more comprehensive characterization of remaining Valley Oak Woodland habitat (see *Conservation Measure 5.5.-4*) will not delay implementation of programs by the Implementing Entity to conserve key lands that support high quality woodland habitats. Currently, a total of [] acres of Valley Oak Habitat within lowland planning units are identified for conservation through the plan (Table 5.4-5). The amounts of land to be conserved may change as a result of the assessment of Valley Oak habitat value and enhancement potential. Protection, enhancement, and restoration efforts will focus initially on protection of higher value areas of remnant Valley Oak Woodland habitat (i.e., larger areas of more intact woodland) to ensure that remaining values are protected.

Conservation Measure 5.5-6. Protect and Sustain Isolated Valley Oak Trees in Key Raptor Foraging Areas with Limited Tree Cover. Although isolated valley oak trees and small stands in agricultural areas are not mapped and tracked in the Yolo HMP GIS system, they perform an important ecological role in providing nesting sites for raptors and other species, and may contribute to maintaining the high genetic diversity of oaks that has been reported in Yolo County (Grivet et al. 2008). Many isolated trees are old and in deteriorating health. They are threatened with removal to increase farm productivity or during roadside and utility improvements, or they may be weakened by damage from these operations. Even without removal or significant effects of activities, many oaks are old and deteriorating, and will die over the life of the plan. This measure addresses the need for protection of these trees and replacement and augmentation of the isolated tree habitat values in agricultural lands.

The Implementing Entity will conserve small valley oak groves and isolated trees through a variety of voluntary, regulatory, mitigation, and incentive programs. Priority areas for isolated tree protection and replacement will be determined based on habitat standards (i.e., where <50 trees/square

1 mile suitable for nesting use by Swainson’s hawks are available). The Implementing Entity will provide
2 information to assist landowners in protecting isolated trees and in establishing new trees in agricultural
3 habitats. The County General Plan includes a proposed implementation action (CO-A 29) to adopt a
4 heritage tree ordinance. Inclusion of large isolated trees for protection in the ordinance would assist in
5 implementing this conservation measure. Mitigation programs will involve establishment of a mitigation
6 fund resulting from tree removal in designated urban areas or through other project actions, which will be
7 used to pay landowners to protect existing isolated and to establish new replacement trees in priority
8 areas. Various state, private, and local funding sources will be used to support incentive programs for
9 oak conservation and enhancement.

11 **5.5.2.4. Vernal Pool Grasslands**

12 Vernal pools and their associated grassland habitat are a priority habitat for conservation. They
13 serve as habitat, or have potential to support, a variety of specialized plant and invertebrate species,
14 including many species that are covered or species of local concern, including eight plants, five
15 invertebrates, and two amphibians (See Appendix 1). Vernal pools comprise a rare habitat, represented
16 by only 424 acres, of which 92% are currently in some form of conservation ownership (Table 5.5.4),
17 primarily within Grasslands Park, which is managed by the City of Davis.

18 **Conservation Measures 5.5-7. Conserve Vernal Pool Habitats and Associated Grassland**
19 **and Pollinator Habitats.** The Yolo NHP will achieve a goal of ensuring conservation of at least █%
20 of the existing vernal pool habitat in the plan area. Achieving this goal will require acquisition of at least
21 █ of the remaining 21 acres of unprotected vernal pool habitat within the plan area and associated
22 watersheds and pollinator habitat. To the extent feasible the JPA in cooperation with other conservation
23 partners, will attempt to exceed the plan goal, and acquire all lands supporting vernal pools and their
24 surrounding watersheds.

25 **5.5.2.5. Alkali Sink**

26 Alkali sink habitat also is a conservation priority because of its limited extent in Yolo County and
27 importance to covered species and species of local concern. A total of eight covered or local concern
28 plant species, five plan invertebrates, and two plan amphibians may make primary use of this habitat,
29 most of which also use Vernal Pool habitat (Appendix 1). Alkali sink habitat is represented by only 494
30 acres, of which 56% are currently in some form of conservation ownership (Table 5.5-4)

31 **Conservation Measures 5.5-8. Conserve Alkali Sink Habitats and Associated Grassland**
32 **and Pollinator Habitats.** The Yolo NHP will achieve a goal of ensuring conservation of a large
33 proportion (at least █%) of the existing Alkali Sink habitat in the plan area. Achieving this goal will
34 require acquisition of at least █ of the remaining 218 acres of unprotected vernal pool habitat within the
35 plan area. To the extent feasible the JPA in cooperation with other conservation partners, will attempt to
36 exceed the plan goal, and acquire all lands supporting alkali sink habitat and adjacent lands as buffers and
37 pollinator habitats.

1 **5.5.2.5. Fresh and Saline Emergent Wetlands**

2 A substantial area of freshwater and saline emergent wetland habitats (>19,000 acres; Table
3 4.5.1) occur in lowland areas of Yolo County. Over 84% of these wetlands habitats were developed by
4 CDFG on flood easement lands within the Yolo Bypass as part of the South Yolo Bypass Wildlife Area.
5 Because of the relative abundance of these habitats and their protection on state lands, the Yolo NHP has
6 emphasized wetland conservation, but not extensive wetland restoration as a priority for the plan.

7
8 **Conservation Measure 5.5-9. Conserve Existing Fresh and Saline Emergent Wetlands.**

9 Existing wetland areas outside of existing protection will be protected largely a variety of mechanisms,
10 including General Plan Policies (cite #), state wetlands policies, and federal Clean Water Act regulations.
11 Emergent wetlands also will be protected in combination with other wetland and upland Natural
12 Communities to achieve diversity goals, although no specific conservation objective is established.

13
14 **Conservation Measure 5.5-10. Coordinate Management of Conservation Lands with State
15 Wetland Areas.** The Yolo NHP plan incorporates protection of vernal pools and associated grasslands in
16 the South Yolo Bypass planning unit (see *Conservation Measure 5.5.7.*), adjacent to fresh and saline
17 wetland habitats. The Implementing Entity will coordinate its conservation and management efforts with
18 CDFG and its partners to ensure compatible operations that maintain the benefits of diverse habitats in
19 this area.

20
21 **5.5.3. Conservation Lands Management**

22 **Conservation Measures 5.5-11. Prepare Management Plans for Valley Natural Community
23 Conservation Lands.** Conserved Natural Community lands within the Valley Natural Community
24 Landscape Unit (i.e., Planning Units 10-18) will be protected through a variety of conservation measures,
25 including fee title acquisition and management and acquisition of conservation easements. Management
26 of conserved lands will be consistent with habitat –specific direction provided in the Conservation
27 Strategy. Management will be conducted according to the habitat specific approaches identified in
28 **Section 5.3 Planning Area Conservation Measures [in preparation]** Site-specific management plans will
29 be prepared, or approved plans will be amended to encompass new acquisitions. The planning process
30 and plan content for conservation property management plans will be generally as described in
31 Conservation Measure 5.4.1-7 for upland habitats, with specific measures identified as needed for the
32 land conditions in this Landscape Unit. Key planning elements to be addressed in these plans including:

- 33 • coordination and protection measures to control effects of external disturbances on relatively
34 small conserved land areas
35 • measures to enhance and restore habitat conditions
36 • [others?]

1 **Additions to Literature Cited**

2 Grivet, D., V.L. Sork, R.D. Westfall, and F.W. Davis. 2007. Conserving the evolutionary potential of
3 California valley oak (*Quercus lobata* Nee): multivariate genetic approach to conservation planning.
4 *Molecular Ecology*

5 Keuppers, L.M., M.A. Snyder, L.C. Sloan, and E.S. Zalvaleta. 2005. Modeled regional climate change
6 and California endemic oak ranges. *Proceedings of the National Academy of Sciences, USA*. 102:
7 16281-16286.

8 Yolo County Parks and Recreation Management Division. 2007. Yolo County oak woodland
9 conservation and enhancement plan. Yolo County Planning, Resources, and Public Works Department.
10 Woodland, CA.

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