

WORKSHOP #3 DETAILED REPORT | PRIORITY NATURAL RESOURCES

CENTRAL VALLEY LANDSCAPE CONSERVATION PROJECT

June 3, 2015

Table of Contents

1. Welcome and Opening Remarks	1
2. Priority Natural Resources: Overview	4
A. Case Study Examples.....	4
B. Priority Natural Resources List	5
C. Questions, Comments Discussion	5
3. Selection of Priority Natural Resources: Part 1	6
A. Instructions for Prioritization of Priority Natural Resources	6
B. Questions, Comments Discussion	8
4. Selection of Priority Natural Resources: Part 2	9
A. Riparian Habitat	9
B. Upland Habitat	10
C. Wetland Habitat	12
D. Woodland Habitat.....	14
5. Selection of Priority Natural Resources: Part 3	15
6. Next Steps and Closing Remarks	15
A. Vulnerability Assessment	15
B. Closing Remarks	16
7. Attendance	17
APPENDIX A: Methodology used to develop the preliminary Priority Resource lists	18
Source Plans and Lists:	20
Other References for Species Information.....	25
APPENDIX B: Definitions of Select Terminology	26

General information and all workshop materials are available at <http://californialcc.org/central-valley-landscape-conservation-project>. For questions please contact Debra Schlafmann, CA LCC Coordinator, at Debra_Schlafmann@fws.gov or (916) 278-9414.

1. Welcome and Opening Remarks

Debra Schlafmann, California Landscape Conservation Cooperative (CA LCC) Coordinator, opened the Central Valley Landscape Conservation Project's (CVLCP) third workshop. She thanked attendees for their participation, and noted that the workshop would focus on priority natural resources.

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

Ms. Schlafmann introduced project staff. Next, attendees introduced themselves and their organizational or agency affiliation, and were asked to share their favorite Central Valley species. Species included:

- Blunt-Nosed Leopard Lizard
- Ruddy Duck
- Yellow Billed Cuckoo
- Riparian Brush Rabbits
- Central Valley Rancher
- San Joaquin Kangaroo Rat
- San Joaquin Giant Flower Loving Fly
- San Joaquin Kit Fox
- Rufus Hummingbird
- Blue Oak
- Sturgeon
- Blackbird
- Creek Mole Rat
- Cottonwood Tree
- Lawrence's Goldfinch
- Salmon
- CA Buckwheat
- Vernal Pools And Their Biota
- Cinnamon Teal Duck
- Fairy Shrimp
- Giant Garter Snakes
- Northern Pintail
- Mountain Lion

Following participant introductions, Dorian Fougères, facilitator from the Center for Collaborative Policy (CCP), California State University Sacramento, reviewed the agenda and materials, including the following workshop goal:

Workshop Goal: Develop a list of Central Valley priority natural resources for climate change vulnerability analyses and adaptation strategies with the intention of addressing key management questions of our partners.

Rebecca Fris, CA LCC, provided an overview of the project goals, objectives and outcomes, and reviewed the context of this workshop in relation to both the previous workshop on scenario planning, and the next workshop, which will focus on vulnerability assessments. (Please refer to slides available on the project website at <http://californialcc.org/central-valley-landscape-conservation-project>.)

Topics reviewed were:

- Central Valley Project Goal and the three Central Valley Conservation Objectives

Goal: Identify actions that will maximize the adaptive capacity of priority species, habitats, and ecosystems to support an ecologically connected Central Valley landscape.

- **Objective 1:** Conserve resilient and adaptable ecosystems that sustain future Central Valley biodiversity.
- **Objective 2:** Promote landscape-scale connectivity and ecological and physical processes
- **Objective 3:** Reduce the impacts of climate change and other co-occurring stressors.

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

- Broad project timeline
 - The project was initiated in the fall of 2014.
 - Over the next 1-2 years, the project will be focused on developing adaptive management actions to take in response to climate change impacts, and developing a climate change communications strategy with the project's education and media staff.
- Steps of the iterative climate-smart landscape conservation process
 - This workshop is related to Step #1.4
- Established working groups and organizational structure
- Purpose of developing adaptation strategies
 - Considering future scenarios, adaptation strategies will help to address:
 - Where to invest in land protection and restoration
 - Where the critical areas for land connectivity are
 - The types of resource management that are necessary in the face of climate change
- Anticipated project products
 - Climate-Smart Conservation objectives developed across a broad set of partners
 - Completed at Workshop #1
 - Development of a range of future scenarios for the Central Valley
 - Completed at workshop #2 – see more information below
 - A spatially explicit description of desired future natural resource conditions
 - This will also include Vulnerability Assessments and mapping products
 - A set of adaptive strategies and actions for achieving those conditions
 - Online toolbox and outreach plan to help partners use and apply the adaptive strategies for their organization.
 - A “lessons learned” document to inform similar efforts within the CA LCC and other regions.
- Central Valley Future Scenarios
 - Central Valley Future Scenarios were developed as a product from Workshop #2 efforts, related to Step #1.3
 - Scenario Planning was conducted in order to:
 - Think beyond historical trends and approaches
 - Embrace uncertainty rather than trying to reduce or eliminate it
 - Develop strategies that play out across a wide variety of futures

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

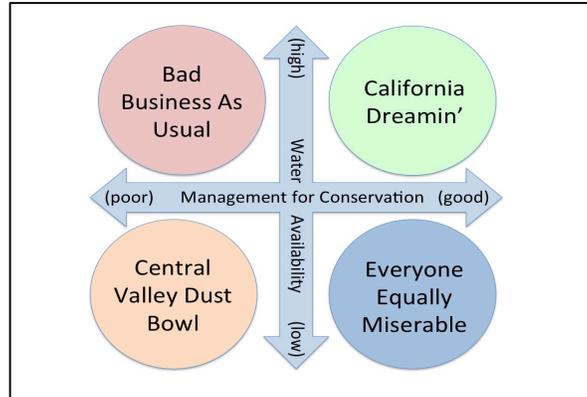


Figure above: Four Central Valley Future Scenarios as developed at the March 3, 2015 workshop.

2. Priority Natural Resources: Overview

Ms. Fris reminded the group that the goal of this workshop is to develop a list of Central Valley priority natural resources for climate change vulnerability analyses and adaptation strategies with the purpose of addressing key management questions of project partners. The intention is not to re-prioritize what has already been prioritized for the Central Valley through other studies, but to build from and use those lists for purposes of this project.

A. Case Study Examples

Two case study examples were provided:

1. [Vulnerability Assessments for Focal Resources in the Sierra Nevada](#)

- Goal: Develop landscape-scale vulnerability assessment and adaptation strategies for focal resources of the Sierra Nevada.
- Partners: US Forest Service, National Park Service, EcoAdapt, California Department of Fish and Wildlife, GEOS Institute, and others.
- Resulting from this workshop was identification of eight habitats and 15 special attention species for which to conduct vulnerability assessments.
- This project produced a graphical representation of relative vulnerability levels of the identified priority species as part of their project deliverable.
- Adaptation strategies and specific management actions were developed for the priority species and habitats
- Example of one of the project's one-page descriptions of vulnerability (oak woodland) provided as a printed handout

2. Gulf of the Farallones

- Recently, the National Oceanic and Atmospheric Administration (NOAA) conducted a "focal resources" workshop for the Gulf of the Farallones.

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

- Resulting from this workshop was identification of six habitats and 28 special attention species for which vulnerability assessments were conducted.
- This project is currently working on developing adaptation strategies for the habitats and species.

B. Priority Natural Resources List

Andrea Graffis, CA LCC, reviewed the methodology for the preliminary creation of sub-habitat and species lists for the purposes of this workshop. For further detail regarding this methodology, please refer to **Appendix A**. Primary steps included:

- Reviewing 27 core conservation plans and 43 species-specific plans for the Central Valley for priority sub-habitats and species
 - Example of plans reviewed: State Wildlife Action Plan, Department of Water Resources Flood Strategy, and Fish Passage Forum. (A full list was provided to participants, and can be found in Appendix A below.)
- From this literature review, 24 habitats/ecosystems and 272 species were identified.
- Sub-habitats were organized into four broad habitat types for this workshop:
 - Wetlands
 - Riparian
 - Woodland
 - Upland
- Species were organized by the habitat type(s) in which they occur.
- The species list was ranked by:
 - The number of plans in which they appear (as a way of measuring management relevance)
- Threatened and Endangered or Special Status listing is provided with each species listed.

Participants were provided one comprehensive list of species per habitat group as a reference source. The worksheets for the afternoon group work provided only the top one- to two-dozen species for easier sorting and prioritization by the working groups. Participants were allowed to add any number of sub-habitats and/or species back onto their worksheets, as they felt appropriate. (**The worksheets can be viewed in Appendix C, below.**)

C. Questions, Comments, Discussion

- As the lists are currently organized by the number of management plans the priority natural resources appear in, this raises a red flag for the species that are poorly studied and therefore do not currently receive management priority.
 - This is true, and the reason why the more comprehensive list of 272 species is provided for reference. The groups are not precluded from adding anything to their working group lists. Please add species to the “essential” and/or “if possible” categories per your expert opinion.
- Why were these particular 27 plans reviewed?

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

- The project team wanted to be comprehensive in the literature review. They began by reviewing plans related specifically to the Central Valley (e.g. Bay Delta Conservation Plan) and then reviewed other plans, including national and international as well as smaller-region plans. There are many highly area-specific or species-specific plans that were not reviewed.
- The participants at Workshop #2 were also asked to suggest plans to review for this purpose.

- Why are birds broken out as a taxonomic group in the complete species spreadsheet?
 - This was an attempt to remove the bird bias from the comprehensive species list, as many of the plans reviewed (for creation of this list) were applicable only to bird species. Without separating birds, birds would have dominated the top tier of every list, to the exclusion of other types of species.

- It is recommended to use alternative terminology for “non-birds” if this list will be published in any form.
 - Noted. However, the compiled results from the work groups will not be packaged or sorted by “bird” and “other” species in this manner.

- Regarding the printed reference maps, some of the data layers may not be accurate, especially riparian areas in the southern portion of the valley.
 - These maps were intended for use simply as a visual reference guide for discussion. However, if there are data sets that can be recommended for use for future generation of maps, please inform the planning team.
 - The US Fish and Wildlife Service maintains accurate riparian and wetland data layers for the southern portion of the valley.

3. Selection of Priority Natural Resources: Part 1

A. Instructions for Prioritization of Priority Natural Resources

Deanne DiPietro, California LCC, provided instructions for the group exercise of prioritizing the natural resources list by each of the four habitat types (wetlands, riparian, woodland, and upland). The desired outcome for this activity was a list of sub-habitats and their associated ecosystem processes/characteristics, species groups, and individual species prioritized for Vulnerability Assessments and Adaptation Strategies (VA/AS).

The prioritization was conducted in two parts:

Part 1: Participants were asked to first consider the **sub-habitats** included in their habitat group in light of the four Central Valley Future Scenarios, and:

- Refine the list, combining and/or adding sub-habitats as needed.

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

- Mark 2-3 as “Essential” to include for VA/AS and, optionally, a few to include “If Possible.”
- Indicate ecosystem processes or characteristics important to include in the VA/AS.

Sub-habitats	Important processes / characteristics	Prioritized for VA/AS
Combined sub-habitat	Mixture of both types	Essential
Another sub-habitat	Connectivity between patches	If Possible

Above: Example of a filled-out Sub-habitat worksheet.

Part 2: Participants were next asked to consider the candidate **species** included in their habitat type in light of the four Central Valley Future Scenarios, and:

- Refine the list, adding species they think important.
- Note any special attributes that may contribute to their species selection.
- Note species that would be adequately addressed by an “essential” sub-habitat VA/AS.
- Group species that could be addressed together in a shared VA/AS. *Example: ground-nesters.*
- Indicate species prioritized for individual VA/AS.
- Choose 3-5 groups/individual species for “Essential” and optionally a few more as “If Possible.”

Species	Special Attributes	Addressed by “Essential” sub-habitat VA/AS	Species Grouping for shared VA/AS	Prioritized for group or individual VA/AS
Common name		Riparian		
<i>Scientific name</i>				
Common name	Endemic		Ground nesters	Essential
<i>Scientific name</i>				
Common name				Essential
<i>Scientific name</i>				
Common name		Riparian		
<i>Scientific name</i>				
Common name	Ecosystem engineer			If possible
<i>Scientific name</i>				
Common name				
<i>Scientific name</i>				
Common name	Keystone, indicator of connectivity		Ground nesters	(Already ID’d as Essential)
<i>Scientific name</i>				

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

Above: Example of a filled-out species worksheet.

Ms. DiPietro also noted the following:

- The project team will be conducting VA/AS for the sub-habitats and species that are identified as “Essential.”
- Species-specific VA/AS will address only the part of that species’ lifecycle that is reliant on the Central Valley for survival (e.g. certain periods for migratory birds).
- Participants will have the opportunity to refine the sub-habitat list after plenary discussion with the full group.
- Grouped species where the group is identified as “essential” will be conducted as a single VA/AS (e.g. ground nesters).
- The habitat working groups should keep in mind the Central Valley Future Scenarios developed in the previous workshop, and those sub-habitats and species that will be important to consider in the future.
- Regarding ecosystem processes, the groups should help direct where processes may fit into VA (e.g. riparian habitat should consider flood plain connectivity).
- Definitions of certain terminology used were provided as a handout (see **Appendix B**).

B. Questions, Comments Discussion

- How were habitat group participants sorted?
 - Participants were sorted into habitat groups based on their expertise listed on the RSVP form.
- Can one habitat group view the list of another group’s sub-habitats?
 - Yes. Also, there is no overlap in the sub-habitats listed by each major habitat group. Groups are free to revise their sub-habitat lists as desired based on their expert knowledge.
- Do sub-habitats include managed systems?
 - Yes.
- Regarding the definitions provided, please clarify the distinction between “ecologically foundational” and “keystone.”
 - The distinction is not pronounced; both terms are meant to highlight the fact that there is a special attribute of a particular species.
 - In this case, these terms were frequently used in the reviewed planning documents, and so were listed on the definitions sheet. Furthermore, the definitions were provided as a reference as to how the planning team employed this terminology in development of the worksheets.
 - Groups are free to expand upon or revise the definitions if they desire. If they choose to do so, please note this down on the worksheet.

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

- Are the groups directed to refine the species lists and select “essential” species based only on the fact that they are already managed (as indicated by the reviewed management plans)?
 - No. The planning team provided a number of other species attributes for participants to consider when selecting their “essential” species. Please consider all of these criteria, employ your expert knowledge on the species, and consider the future scenarios and management goals for this task.
- Realizing that it would create additional work for vulnerability assessments, is there any value of adding more than 3-5 “essential” species to the priority list?
 - This is the judgment call of the group. The groups are asked to identify what they feel are the “essential” sub-habitats and species, and can also identify the “if possible” ones.
 - The “if possible” priority natural resources can be visited at a later time if there are more resources available, or is a specific management need is identified.
 - Furthermore, if the group believes that additional information is needed on a resource, they may note that and the project team can review additional literature and/or consult another expert.

4. Selection of Priority Natural Resources: Part 2

After approximately 75 minutes, each of the four habitat groups reported on their considerations and decisions to the full group. Plenary discussion followed after each group’s report-out. The natural resources listed here will be further reviewed by the Project Teams and therefore are **not the final list of natural resources**.

For the following, “E” represents an “Essential” selection, and “IP” represents “If Possible.”

A. Riparian Habitat

Sub-habitats:

- E: Floodplain Inundation Areas
- E: Riparian / Riparian Woodland
- E: Stream Channel
- IP: Estuarine

Key Species:

- E: Chinook salmon
- E: Pacific lamprey
- E: Cottonwood
- E: Bank Swallow
- E: Western yellow-billed cuckoo
- Least Bell’s vireo

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

Species Groups:

- E: Riparian songbirds (as a guild – more discussion is required)

Comments/Notes from the RIPARIAN group members:

- Riparian songbirds could be analyzed as a guild. More discussion is required about whether this approach would lose important distinctions between birds.
- Cottonwood, while a relatively common species, is highly important to myriad other species and thus considered essential.
- The group specifically decided *not* to include garter snake, as they believed the Wetlands group would include this species in their selection.
- No mammals were included in this priority list, primarily for the reason that there were no mammal experts in this working group. Some mammals should be considered, and/or some measure of their sub-habitat considered for “essential” listing.

Plenary Discussion:

- A few other groups divided the sub-habitats by sub-geography as well.
- Should the vast marshes that previously covered the San Joaquin Valley be considered?
 - The Wetlands group did consider these.
- Was there any discussion on the various bypasses that occur in the valley? Or surrogate floodplain habitat?
 - They were discussed, and the group included them in floodplain inundation sub-habitat. Furthermore, group members did comment that there is both natural and man-made floodplain inundation, but that particular conversation was very high-level as it may be more appropriate for the next project phase.
- Riparian wetland serves as an essential nursery habitat for several species. The inundation portion is important to consider.
 - Agreed. The group discussed its importance for connectivity.
- Should the Riparian group be separate from the Wetlands group? Riparian might be thought of as a sub-wetland category.
 - Riparian is being considered separately because it has unique characteristics. The habitat includes riparian forest and the seral stages and processes resulting from meander-belt activity,. This distinction can be considered further going forward.

B. Upland Habitat

Sub-habitats:

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

- E: San Joaquin Desert
- E: Grasslands (native and non-native)
- E: Dunes
- E: Vernal pools and swales
- IP: Chaparral

Key Species:

- E: Western burrowing owl
- E: Kangaroo rats
- E: Blunt-nosed leopard lizard
- E: California ground squirrel
- E: San Joaquin Antelope squirrel
- E: Vernal pool crustaceans
- IP: *Atriplex polycarpa*
- IP: *Orcuttia* grasses
- IP: *Ephedra californica*

Comments/Notes from the UPLAND group members:

- Rangelands may be more appropriate as a land-use characteristic. However, most of the Central Valley natural lands are also rangeland, so rangelands are also a part of the landscape.
- The group did not include row crops, but would like the larger group to consider the row crop-to-orchard transition area as a possible sub-habitat.
- All of the species selected are umbrella or keystone species.
- The species the group identified as “essential” will not be captured by VA/AS of the sub-habitats.
- Burrowing rodents are also engineers, and can be considered habitat drivers.
- The blunt-nosed lizard is an indicator species.

Plenary Discussion:

- Could burrowing animals be considered a group for efficiency purposes?
 - Yes. Though, if burrowing animals are not determined “essential” for VA/AS then the individual burrowing species will be reviewed for “essential” listing on a case-by-case basis. Not all burrowing animals have the same level of vulnerability.
 - Many of these same species should be captured in the Upland “essential” sub-habitats.
- Rangelands are a type of land use, and so they might be tied more closely to a strategy rather than considered a sub-habitat.
 - Rangeland may also be a land use that exists in conjunction with the pre-existing natural habitat.

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

- Note that grazing is a land use, and some rangelands are not grazed. Rangeland areas could be considered instead as “land covers” individually, or as series of land covers.
- This is good conversation involving social drivers, and the Rangeland discussion should be continued.
- The group might want to consider the approach of selecting sub-habitats that are almost organismal of themselves, and similarly organisms that stand for a larger native habitat.
- The Woodland group did not consider row crops as a sub-habitat, either. Should row crops, orchards and vineyards be considered together as a group?
 - Orchards are a low-value sub-habitat compared to the value of row crops.
 - Orchards and vineyards are typically thought of as land use, as they are imposed on natural habitats.
 - What should be discussed further are the cases where orchards are replacing woodland areas versus where they are replacing row crops. The transition from natural habitat is greater where woodland areas are cut down, and more species are affected.
 - For the time being, the groups will not consider row crops, rangeland and orchards as sub-habitats.
- An Agriculture habitat working group may be needed in the future.
 - Rice fields are considered a sub-habitat.
 - Rice was considered by the Wetlands working group.

C. Wetland Habitat

Sub-habitats:

- E: Flooded cropland
- E: Seasonal wetlands (includes alkali seasonal wetlands)
- E: Permanent wetlands
- IP: Tidal and salt marsh
- IP: Semi-permanent wetlands

Species Grouping:

- E: Amphibians (tiger salamander, red-legged frog, western spade-foot)
- E: Vernal pool anostrocans (fairy shrimp)
- E: Wintering and breeding water birds (represented by White-faced ibis, black-necked stilt, greater and lesser sandhill cranes, northern pintail, mallard) and these requirements also cover the giant garter snake
- E: Songbirds and overwater nesters (represented by tricolored blackbird, common yellowthroat, song sparrow)

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

- E: Wintering shorebirds (represented by long-billed dowicher, dunlin)
- E: Obligate plants (represented by Chinese Camp brodiaea)
- E: Wetland-dependent mammals (represented by Buena Vista Lake shrew)

Comments/Notes from the WETLAND group members:

- All species were grouped. No individual species were; the group recommends a guild approach, captured by the species groupings above.
- Regarding processes:
 - The group would like to consider whether the sub-habitat areas are managed or unmanaged. This will play a major role in vulnerability resiliency.
 - Optimal inundation regime is important for seasonal wetlands
 - Disturbance regime is important for vernal pools (e.g. hydro-period, grazing, fire)
 - Sea level rise is important for tidal and salt marsh areas. A lot of work has been conducted on this process and sub-habitat already, so we don't need to make it "essential".
 - Connectivity and linkage should be considered for all sub-habitats.

Plenary Discussion:

- What is the difference between seasonal and semi-permanent wetlands?
 - Seasonal wetlands are shallow flooded, or winter flooded wetlands. Semi-permanent wetlands have a dry period that occurs in winter. The two sub-habitats have different vegetation and species. Historically, there would also be primary and secondary flooding periods due to hydrology and snow melt.
- Other than rice, are there other croplands that are flooded?
 - Corn is flooded. Once the corn is finished growing and is harvested, the stocks are flooded to promote decomposition. Flooding usually begins in October.
 - In the Tulare Basin there is about 10,000 hectares of agricultural land that are flooded for harvest. This is very valuable habitat for shorebirds.
 - Rice is flooded year-round, in some cases, including during some part of its cultivation period.
 - In the Yolo Bypass are, there are agricultural areas that may not go into production for a year or two, but will still be flooded for other benefits, such as to create habitat for birds.
- Does this process need to consider crops that are typically irrigated in summer for waterfowl that cannot be irrigated currently because of drought? These areas are not permanent habitats, nor are they seasonal wetlands.
 - These areas are considered "moist soil management areas" and are treated like a sub-sub habitat.
 - This situation is one that plays out under the future scenarios, where less water is available in the future. Thus, it is important to consider.

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

- Management actions (for both public and private lands) sometimes result in summer/seasonal habitats.
 - The Wetlands group began their discussions considering agricultural lands as one sub-habitat type, and ended up categorizing managed lands that also offer habitat value into their related sub-habitats.
 - As the project moves next through VA/AS, the group would suggest continuing with that structure. This would later allow for the recommendation of management actions that would provide more habitat value.
 - Perhaps “managed actions” belongs in each of the habitats as a category. Groups should consider if there are any essential species entirely dependent on managed landscapes that are missing from their lists.
- Actions that managers and others might take to improve conservation are the bottom line. There are many things that can be done to improve habitat value of certain agricultural lands. For example, orchards and vineyards can be fitted with hedgerows and pollinator strips, and landowners can maintain native plants on their landscape.
 - This can viewed from an alternate perspective. Rather than thinking about how landowners and managers can increase habitat value, instead consider how they can reduce expansion into natural habitat. (e.g. plant avocado trees 10 feet apart instead of 20 feet apart. This both saves water and reduces the agricultural footprint.)
 - The State Wildlife Action Plan (SWAP) is currently conducting a companion piece on agriculture.

D. Woodland Habitat

Sub-habitats:

- E: East Foothills
- E: Northwest Coast Range
- E: Southwest Coast Range
- E: Chaparral (Serpentine soils?)

Species Groups:

- E: Mast-associated (e.g. deer, some birds)
- E: Cavity nesters and roosters (e.g. birds, bats)
- E: Western bumblebee and pollinators

Individual Species:

- E: Red legged frogs and yellow legged frogs (depending on geography,)
- E: Yellow-billed magpies (endemic to CV)

Comments/Notes from the WOODLAND group members:

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

- The extent of the woodland area in the Central Valley ultimately depends on how the “Central Valley” is defined. Woodland habitat is transitional from the Valley into higher elevations.
- The group wound up "adopting" Chaparral and included some species from it, as they believed that the Upland group was not going to cover that sub-habitat after all.
- Regarding chaparral, many plant species are linked to serpentine soils here that would be affected by climate change. A botanist’s opinion would be beneficial here.
- The group determined that orchards and vineyards did not offer enough value to be considered as separate sub-habitat types, but would be interested in learning more about the processes they provide.
- Further thought should be given as to where grasslands end and woodlands begin, as grazing happens in between these two areas.

Plenary Discussion:

- This group did something interesting in segmenting their analysis geographically. This approach could be taken a step further for a finer geographic scale analysis, and it may be found that there are more highly vulnerable habitats for species with smaller ranges.
 - If the groups are interested in looking at what might be lost if VA/AS are conducted on a larger scale, it is up to their discretion.
- Is there any Valley bottom Oak Woodland habitat left?
 - There is anecdotal evidence of it, but its extent is unknown.
 - The group did discuss identifying Valley Oak as a distinct sub-habitat. Valley Oak Woodlands were added to the reference map specifically. The Sutter Buttes an area where this sub-habitat is found.

5. Selection of Priority Natural Resources: Part 3

The four habitat working groups were asked to take into consideration the feedback received from colleagues during the plenary discussion period, and revisit/revise their sub-habitat and species list as needed. They were also asked to note and conceptual concerns or areas for the Project Team to follow-up on.

There was not a formal report-out and plenary discussion following this activity. Revised worksheets were submitted to the Project Team for compilation. The Project Development Team and Leadership Team will later review these compiled worksheets before they are finalized for future use.

6. Next Steps and Closing Remarks

A. Vulnerability Assessment

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

Ms. Fris noted that the Vulnerability Assessments that will be completed as the next step for the project. A Vulnerability Assessment workshop will occur in the fall of this year. The Data Team will be engaged for this endeavor, and the Project Team may bring in consultants as needed.

Discussion followed:

- It would be useful to have a list of existing VAs related to the Central Valley habitats and species that are either completed or in the process of completion.
 - The Project Team has already collected some of that information in preparation for this next workshop, and a database is being built. The intention is to share this collection of existing VA comprehensively, in one place, such that project partners do not spend resources duplicating efforts.
 - The list of management plans (that may include some VA) that were reviewed for this workshop are listed both in the methodology and posted on the Central Valley project website.

- On the example VA two-page sheet provided for Oak Woodlands, it is surprising that this habitat is listed only as low- to moderate-vulnerability. It has been listed as very vulnerable in other assessments.
 - The vulnerability level for Oak Woodlands here was relative to the other habitats this project was considering for the Sierras.
 - It is also important to note that ranking of vulnerability is always somewhat subjective.
 - This two-page information sheet is useful. If we decide to produce something similar, it would be beneficial to provide some additional context to the decisions made, and list where more information/references can be found.

- Beyond the VA workshop, there will be a few additional workshops for this group over the next year. Any suggestions on other partners to invite to future workshops are welcome.
 - The California Native Plant Society should be included.
 - The Project Team could also review the list of participants from the Climate-Smart Training series, as some may have expertise for the future exercises.

B. Closing Remarks

Ms. Fris thanked all participants for their contributions to the day's workshop. She noted the Project Team would prepare a meeting summary and compile the results of the work groups. These results will be reviewed by the Project Development Team for feedback and refinement, and will then be shared with the Leadership Team for approval as a product. This process will take approximately one month.

Ms. Schlafmann also expressed her gratitude to participants, and closed the meeting.

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

7. Attendance

PARTICIPANTS

Riparian/Riverine Habitat Group:

Reyn	Akiona	US Fish & Wildlife Service
Karen	Laing	US Fish & Wildlife Service
Javier	Linares-Casenave	CA Fish Passage Forum
Ray	McDowell	CA Department of Water Resources
Ruth	Ostroff	Central Valley Joint Venture
Michael	Rogner	River Partners

Upland Habitat Group:

Pelayo	Alvarez	California Rangeland Conservation Coalition
Matt	Lloyd	US Fish & Wildlife Service
Scott	Philips	Endangered Species Recovery Program
Ken	Sanchez	US Fish & Wildlife Service
Michael	Westphal	Bureau of Land Management

Wetlands Habitat Group:

Brian	Cary	Wildlife Conservation Board
Dan	Frisk	US Fish & Wildlife Service
Daniel	Kaiser	Environmental Defense Fund
Bobby	Kamansky	Independent - Tulare Basin Expert
Elliott	Matchett	USGS
Greg	Yarris	Central Valley Joint Venture

Woodland Habitat Group:

Matt	Hamman	US Fish & Wildlife Service
Amber	Kerr	USDA Climate Hub
Mark Pelz	Pelz	US Fish & Wildlife Service
Nat	Seavy	Point Blue Conservation Science
Tara	Ursell	CA State Parks

APPENDIX A: Methodology used to develop the preliminary Priority Resource lists

This document describes the methods used to develop the preliminary Priority Resources (species and habitat) lists provided for sub-selection in the Priority Resource Workshop, June 3, 2015. The resulting selected Priority Resources will be the focus of climate change vulnerability assessments and region-wide adaptation strategies.

SPECIES

Species List Creation

Species common and scientific names were gathered from 27 conservation plans and lists and 43 species-specific plans (see Appendix A). Only species with significant occurrence in the Central Valley were selected (“significant occurrence”= a population of the species regularly utilizes Central Valley habitats for one or more stages of its lifecycle). Judgments about species distributions were made by referring to the resources in the references section.

The plans and lists were split into two categories for use in the ranking step described below. The first category (“Core Plans”) are 12 plans and lists that were determined to be of high relevance to the Central Valley and are all focused on the Central Valley or its sub-regions. Among them are five plans and one list that address all taxa, one plan and one list addressing only birds, two lists of fish species, and one list for invertebrates. In the second category (“Additional Plans”) are nine plans and six lists ranging from state-level to national and international focus and all pertaining to birds, plus a collection of 44 species-specific bird plans.

Species Ranking

Species lists were first sorted into taxonomic groups. This was done first because the scores for birds would always outweigh the scores for other taxa due to the fact that there are more bird plans (see the listings below).

A ranking order was accomplished using the following information:

- “Total Core Plans”, the sum of one point for each plan/list from the 12 Core Plans/Lists that the species occurred in, multiplied by a weighting of 2.
- “Total Other Plans”, the sum of one point for each plan/list from the 15 Additional Plans/Lists that the species occurred in.

Because of the “Other Plans” which were available only for birds, we ranked and sorted bird species and other species separately. Approximately 25 of the highest ranking species in each Habitat Type, distributed among multiple taxon groups, were chosen to be included in the Species Selection Worksheet, and sorted from highest to lowest ranking. The entire ranked

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

species list is also being made available to the workshop participants in a handout, and species can be chosen from there to be included in the worksheet.

T&E and Special Status Scores

A “T&E and Special Status Score” was assigned using the system of the USFWS Resources of Concern Database, and augmented for “Special Status” with information from additional sources, listed below.

T&E/SS Score Definitions:

3 = The species is federally listed as T or E or is a Federal Candidate

2 = The species is state listed as T or E, or is a Federal trust resource of the NWRS (migratory bird, marine mammal or anadromous or interjurisdictional fish)

1 = The species is a State Candidate or any other designation of management concern, including: American Bird Conservancy, American Fisheries Society, CA Department of Fish & Wildlife, The World Conservation Union, NatureServe, US Forest Service, US Fish & Wildlife Service, North American Bird Conservation Initiative, National Marine Fisheries Service, Xerces Society Redlist

0 = The species has no special listing status or designation.

HABITATS

Habitat List Creation

Ranked species were sorted into habitat lists for use in the Priority Resources Workshop working groups. Habitat groupings were:

Habitat - Macro group	Habitat - subgroup
Wetlands	Alkali Seasonal wetland complex, Managed Wetland, Permanent wetland, Seasonal wetlands, Semi-permanent wetlands, Ponds, Rice cropland
Riparian and Riverine	Riparian, Floodplain ecosystems, Riparian woodland, Stream channel/riverine, Estuarine
Upland	Grassland, Rangeland/pasture, Native uplands, Alkali scrubland, Grain/hay crops, Dunes, Chaparral, Row crops, Vernal pools and swales

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

Woodland	Oak woodland/savanna, Coniferous forest, Orchard/vineyard
----------	---

Source Plans and Lists:

“Core” Plans And Lists Used In Ranking:

1. Bay Delta Conservation Plan. California Natural Resources Agency. http://baydeltaconservationplan.com/Home.aspx
2. Central Valley Project Conservation Plan. Bureau of Reclamation. http://www.usbr.gov/projects/Project.jsp?proj_Name=Central+Valley+Project
3. Central Valley Joint Venture Implementation Plan – Conserving Bird Habitat. 2006. http://www.centralvalleyjointventure.org/assets/pdf/CVJV_fnl.pdf
4. Central Valley Flood System Conservation Strategy. California Department of Water Resources. http://www.water.ca.gov/conservationstrategy/
5. 2013 California Water Plan. California Department of Water Resources. http://www.waterplan.water.ca.gov/cwpu2013/final/index.cfm
6. 2005 State Wildlife Action Plan. California Department of Fish and Wildlife. https://www.wildlife.ca.gov/SWAP
7. 2015 State Wildlife Action Plan. California Department of Fish and Wildlife. https://www.wildlife.ca.gov/SWAP
8. Fish Passage Forum Website. http://www.cafishpassageforum.org/
9. Fish Species of Special Concern in California. California Department of fish and Wildlife. https://www.dfg.ca.gov/wildlife/nongame/ssc/fish.html
10. California Bird Species of Special Concern. California Department of Fish and Wildlife. https://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html
11. Xerces Society for Invertebrate Conservation Redlist. http://www.xerces.org/pollinator-redlist/
12. Tulare Basin Wildlife Partners Conservation Vision. Tulare Basin Wildlife Partners.

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

http://www.tularebasinwildlifepartners.org/uploads/2/1/4/7/21473344/tbwp_conservationvision072110.pdf

Additional plans and lists used in ranking:

13. Audubon strategic plan 2012-2015 plan - A Roadmap for Hemispheric Conservation. Audubon Society.
http://www.audubon.org/sites/default/files/documents/audubon_strategic_plan_-_web_2012.pdf
14. CPIF (California Partners in Flight). 2000. Version 1.0. The draft grassland bird conservation plan: a strategy for protecting and managing grassland habitats and associated birds in California (B. Allen, lead author). Point Reyes Bird Observatory
15. The State of the Birds 2014 Common Birds in Steep Decline. North American Bird Conservation Initiative, U.S. Committee. Washington, D.C.
16. North American Waterbird Conservation Plan. James A. Kushlan, Melanie J. Steinkamp, Katharine C. Parsons, Jack Capp, Martin Acosta Cruz, Malcolm Coulter, Ian Davidson, Loney Dickson, Naomi Edelson, Richard Elliot, R. Michael Erwin, Scott Hatch, Stephen Kress, Robert Milko, Steve Miller, Kyra Mills
17. North American Waterfowl Management Plan 2012 : People Conserving Waterfowl and Wetlands.
18. Saving Our Shared Birds: Partners in Flight Tri-National Vision for Landbird Conservation. H. Berlanga, et al. 2010. Cornell Lab of Ornithology: Ithaca, NY
19. RHJV (Riparian Habitat Joint Venture). 2004. Version 2.0. The riparian bird conservation plan: a strategy for reversing the decline of riparian associated birds in California. California Partners in Flight.
<http://www.prbo.org/calpif/pdfs/riparian.v-2.pdf>
20. The Southern Pacific Shorebird Conservation Plan: A strategy for supporting California's Central Valley and coastal shorebird populations. Hickey, C., W.D. Shuford, G.W. Page, and S. Warnock. 2003. Version 1.1. PRBO Conservation Science, Stinson Beach, CA
21. U.S. Fish & Wildlife Service Migratory Bird Program Focal Species Strategy. 2011.

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

22. American Bird Conservancy (2012) List of the Birds of the United States with Conservation Rankings
23. The State of the Birds 2014 Watch List. Rosenberg, K.V., D. Pashley, B. Andres, P. J. Blancher, G.S. Butcher, W.C. Hunter, D. Mehlman, A.O. Panjabi, M. Parr, G. Wallace, and D. Wiedenfeld. 2014. North American Bird Conservation Initiative, U.S. Committee.
24. Birds of Conservation Concern 2008. U.S. Fish and Wildlife Service. 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp.
25. USFWS Birds of Management Concern, personal communication, Brad Andres, National Coordinator, U.S. Shorebird Conservation Plan, 12/10/2014
26. Birds of Conservation Concern 2008. U.S. Fish and Wildlife Service. 2008. United States Department of Interior, Fish and Wildlife Service
27. Conservation Status Assessment Factor Scores and Categories of Concern for Solitary-Nesting Waterbird Species [Relative to All Waterbirds and Derived Within the Spatial Context of the NAWCP Area]

Species-Specific Plans:

1. A Monitoring Strategy for the Western Population of American White Pelicans within the Pacific Flyway
2. A Monitoring Strategy for the Western Population of Double-crested Cormorants within the Pacific Flyway
3. Bank Swallow (<i>Riparia riparia</i>) Conservation Strategy for the Sacramento River Watershed, California
4. Bank Swallow Recovery Plan, 1992
5. California Wild Turkey Strategic Plan Synopsis
6. Conservation Plan for the Dunlin with Breeding Populations in North America (<i>Calidris alpina arctica</i> , <i>C.a. pacifica</i> , and <i>C.a. hudsonia</i>)
7. Conservation Plan for the Tricolored Blackbird (<i>Agelaius tricolor</i>)

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

8. Draft Recovery Plan for the Quino Checkerspot Butterfly (<i>Euphydryas editha quino</i>)
9. Draft Recovery Plan for the Smith's Blue Butterfly
10. Kern Primrose Sphinx Moth Draft Recovery Plan
11. Management Plan for Mule Deer
12. Management plan of the Pacific and Central Flyways for the Rocky Mountain population of greater sandhill cranes.
13. Monitoring Plan for the American Peregrine Falcon
14. Mourning Dove National Strategic Harvest Management Plan
15. North American grouse management plan (Draft 2004)
16. Pacific Flyway Management Plan for Pacific Brant
17. Pacific Flyway Management Plan for Ross' Geese
18. Pacific Flyway Management Plan for the Aleutian Goose
19. Pacific Flyway Management Plan for the Cackling Canada Goose
20. Pacific Flyway Management Plan for the Central Valley Population of Greater Sandhill Cranes
21. Pacific Flyway management plan for the greater white-fronted goose
22. Pacific Flyway Management Plan for the Pacific Coast population of band-tailed pigeons
23. Pacific Flyway Management Plan for the Pacific Coast Population of Trumpeter Swans
24. Pacific Flyway Management Plan for the Pacific Flyway Population of Lesser Sandhill Cranes
25. Pacific Flyway Management Plan for the Pacific Population of Lesser Canada Geese
26. Pacific Flyway Management Plan for the Pacific Population of Western Canada

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

Geese
27. Pacific Flyway Management Plan for the Rocky Mountain Population of Canada Geese
28. Pacific Flyway Management Plan for the Rocky Mountain Population of Trumpeter Swans
29. Pacific Flyway Management Plan for the Tule Greater White-Fronted Goose
30. Pacific Flyway Management Plan for the Western Arctic Population of Lesser Snow Geese
31. Pacific Flyway Management Plan for the Western Population of Tundra Swans
32. Pacific Flyway Management Plan for the Wrangel Island Population of Lesser Snow Geese
33. Pacific Flyway Management Plan for Western White-winged Doves
34. Pacific Flyway Plan: A Framework for the Management of American White Pelican Depredation on Fish Resources in the Pacific Flyway
35. Pacific Flyway Plan: A Framework for the Management of Double-crested Cormorant Depredation on Fish Resources in the Pacific Flyway
36. Recovery Plan for Peregrine Falcon (Pacific Population) 1982
37. Recovery Plan for the California Condor, April, 1996
38. Recovery Plan for the California Least Tern, <i>Sterna antillarum brownii</i>
39. Recovery Plan for the Light-footed Clapper Rail (Revised 1985)
40. Seven Coastal Plants and the Myrtle's Silverspot Butterfly Recovery Plan.
41. Southwestern Willow Flycatcher Recovery Plan
42. Status Assessment and Conservation Action Plan for the Long-Billed Curlew (<i>Numenius americanus</i>)
43. Western Quail Management Plan

WORKSHOP #3 SUMMARY | PRIORITY NATURAL RESOURCES

Other References for Species Information

References used to determine geographic distributions:

- The Cornell Lab of Ornithology. Basic Bird Info Website
- CA Natural Diversity Database (CNDDB)
- Calflora
- UC Davis PISCES
- CA Dept. of Fish & Wildlife - Biogeographic Data Branch Conservation Analysis Documents
- California Herps Website
- Endangered Species Recovery Program Mammal and Southern Valley Species profiles
- Sierra Forest Legacy List of Indicator Species
- East Bay Park District List of Indicator Species
- Jepson Eflora Plant habitats
- Xerces Society Red Lists Invertebrate Basic Info Website

References for existing vulnerability assessments:

- Gardali, et al. Bird Species of Special Concern vulnerability to climate change
- Siegel, et. al. Vulnerability of birds to climate change in California's Sierra Nevada
- Nur, et. al. Assessing Vulnerability of Tidal Marsh Birds to Climate Change through the Analysis of Population Dynamics and Viability.
- Moyle, et. al. Climate change effects on California fishes, 2012.
- Kershner, J. M., ed. A Climate Change Vulnerability Assessment for Focal Resources of the Sierra Nevada. 2014. EcoAdapt.

APPENDIX B: Definitions of Select Terminology

Habitat Type

Groups of sub-habitats being used to group workshop participants.

Sub-habitats

The landscape cover, processes, and characteristics required for a species or group of species to maintain a population over time.

Keystone species

A species on which other species in an ecosystem largely depend, such that if it were removed the ecosystem would change drastically.

Ecologically foundational species

A species that has a strong role in structuring a community. A foundation species can occupy any trophic level in a food web (i.e., they can be primary producers, herbivores or predators).

Ecosystem engineer

An organism that modifies, creates, or destroys habitat and directly or indirectly modulates the availability of resources to other species, causing physical state changes in biotic or abiotic materials.

Species of socio-economic or cultural significance

Species that play an important role in a culture, as reflected in their uses as food, materials, or medicine, or that are important in generating economic activity by providing income directly or indirectly, such as through hunting or tourism.

APPENDIX C: Habitat Group Worksheets