

**Independent Science Advisors Recommendations from July 2011 Review of the BRCP  
Conservation Strategy (Draft Chapter 5, Conservation Strategy, April 18, 2011)**

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1. Importance of Grazing	1-2	The advisors would like to reemphasize the importance of managed grazing as a habitat management tool for maintaining desired vegetation conditions, biological diversity, and some covered species in the plan area. Where the document makes references to excluding livestock with fencing, we recommend using more flexible language, such as “fencing to control access by livestock.” The plan should also consider landscape configuration as it pertains to livestock management: large, connected, and contiguous grazing areas are important to effective range management, just as they are to reserve design.	Text on managed grazing and landscape configuration will be added to relevant conservation measures and other applicable BRCP sections.
2. Land Status Assumptions	2	The vernal pool mapping needs to be checked and updated, as loss is occurring rapidly. Based on GoogleEarth investigations and a recent rangeland assessment prepared by The Nature Conservancy (TNC) one advisor noted that some vernal pool areas planned for acquisition to conserve Butte County meadowfoam have been recently converted, are under development, or are heavily disturbed.	Past and ongoing activities have resulted and continue to result in disturbance and degradation of habitat function of vernal pool terrains in the BRCP Plan Area. Many of these disturbances are inclusions within the mapping resolution of the “grassland with vernal pool complex” mapping unit used in the BRCP and were recognized at the time of data capture. There are areas of habitat disturbance in the proposed Butte County meadowfoam (BCM) preserve. Past and ongoing disturbances on private lands within the proposed preserve highlight the need for acquisition and protection of these lands at the earliest possible timing under the BRCP. The BRCP land cover GIS database has been updated throughout the planning process as more recent aerial images became available and large areas of habitat disturbance and removal (at the resolution of the original mapping methods) were identified. Base conditions for the impact analysis were set based on updates to the GIS in 2009. Natural communities

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			and species habitat available at the time of BRCP preparation are sufficient that BRCP goals and objectives are achievable.
3. Conservation Prioritization	2-3	The document would benefit from some reorganization or other changes to clarify priorities for goals, objectives, and conservation actions. While the current organization is clear and logical, it reads almost like a catalog of goals and actions, with little attention to which of these are most important, urgent, or influential in designing the plan and prioritizing conservation actions. Similarly, the list of reserve assembly principles beginning on page 5-16, appears to give equal priority to everything. Clearly, some lands are urgent to conserve and manage to prevent habitat conversion and fragmentation for the rarest, most sensitive species and communities (e.g., vernal pool areas subject to conversion), whereas other lands could be added over time, perhaps using agricultural easements and incentive programs to maintain habitat values (e.g., in oak woodlands and savannahs).	Habitat protection priorities will be addressed in the BRCP implementation schedule, which is a component of Chapter 6, <i>Plan Implementation</i> , under development. Some text additions will be made in Chapter 5, <i>Conservation Strategy</i> , to identify priorities for conservation measures.
4. Literature Citations	3	The advisors remain concerned that some information, assumptions, etc., throughout the document are not adequately supported by scientific citations, and in some cases are at odds with the published literature. We also recommend (and assume) that all species accounts and management recommendations will be comprehensively updated with the latest literature, because there have been significant advances in understanding of some species, communities, and habitat management and monitoring methods since 2007. Likewise, species locality data should be updated on maps (e.g., from the latest CNDDDB).	Relevant citations will be added to the text to better support the conservation measures. Species accounts will be updated if the project planning budget allows; the conservation strategy, however, is based on the most recent citations.  Recent additions to CNDDDB occurrence information have been added where relevant for conservation planning for key species (e.g., Butte County meadowfoam).
5. Sacramento River Habitats	3	We recommend considering additional conservation actions along the Sacramento River, including within the Sacramento River CAZ and portions of other CAZs that border the River. We also recommend designating an additional wildlife corridor within this CAZ (perhaps also extending north to the North Plan Area Corridor). The area along the river and floodplain should be a focus for conserving, restoring, and buffering natural riparian/floodplain habitats to make larger, more continuous habitat (e.g., by	The BRCP intentionally excludes covered activities associated with effects on the Sacramento River and its banks and levees. Other programs are addressing the Sacramento River, therefore the BRCP does not include conservation measures specifically addressing the Sacramento River or that could result in impacts on river species not covered under the

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		restoring some agricultural areas to natural habitat) for such species as yellow-billed cuckoo, valley elderberry longhorn beetle, and numerous other riparian species.	BRCP. Given this constraint, the practicability of establishing a corridor of protected habitat adjacent to the Sacramento River as a BRCP objective is being assessed. The BRCP riparian habitat objectives for the Northern Orchards and Sacramento River CAZs (that border the Sacramento River) include a substantial amount of protection of existing riparian habitat (84 percent and 77 percent, respectively) and restoration of riparian habitats (see Table 5-12). Riparian habitat protection and restoration in these two CAZs could be designed and implemented to achieve a riparian corridor goal and increase habitat for riparian species such as western yellow-billed cuckoo and valley elderberry longhorn beetle.
6. Tables	3	Tables presenting acreage acquisition targets (e.g., Table 5-1, 5-2) would be more meaningful if they included percentages of the total as well as acreages. Tables should also be carefully proofed, as we noted scattered typos and some incorrect numbers. For example, in Table 5-7 the Percent Existing Protected Habitat for western yellow-billed cuckoo should be 19.3, not 42.3.	All tables and figures presenting quantitative information will be reviewed to ensure values are correct. The additional information requested in Tables 5-1 and 5-2 represent outcomes of BRCP implementation. This information is presented in Tables 5-8 and 5-9 and summarized in figures presented in Sections 5.5 and 5.6. References to locations of information related to topics discussed throughout Chapter 5 will be added to help the reader navigate the document (i.e., greater “sign-posting”).
7. Species Categories	4	We recommend adding a section early in Chapter 5 (or in earlier chapters) to clearly explain the rationale for selecting Covered Species, Planning Species, and Local Concern Species, and how these species were used in designing the Conservation Strategy. In particular, the terms Planning Species and Local Concern Species arise in various portions of the Chapter before they are defined (Covered and Local Concern Species are defined in Chapter 1, but Planning Species are not). Note also that Table 5-4 includes white-fronted goose and yellow-breasted chat as planning species, but these	The process for selection of covered species and local concern species is described in Chapter 3, <i>Existing Baseline Conditions</i> and Appendix B, <i>Evaluation of Species Considered for Coverage</i> . As described in Recommendation 6, references to Chapter 3 will be added. Chapter 5 text will be revised to expand the discussion of the role of planning species as a tool in formulating the

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		are not mentioned in text concerning planning species (and yellow-breasted chat is also listed as a covered species).	Conservation Strategy.
8. Specific Bird Comments	4	Bird accounts and information in the plan concerning threats, management recommendations, etc., should be updated with information in Shuford and Gardali (2008), Richmond et al. (2010), Tricolored Blackbird Working Group (2009), and other recent publications.	See disposition to Recommendation 4.
9. Specific Bird Comments	4	Black rail. Information and recommendations should be updated to reflect the most recent results of the California Black Rail Project. Note that the majority of habitat in the study area may be associated with wetlands maintained by irrigation practices (e.g., from leaky irrigation lines or canals), rather than natural wetlands (Richmond et al. 2010).	See disposition to Recommendation 4.
10. Specific Bird Comments	4	Tricolored blackbird. Contrary to statements in the species account and Section 5.5.1, this species prefers short grasslands (less than 6 inches tall) maintained by grazing or mowing rather than ungrazed, tall grasses for foraging habitat (Tricolored Blackbird Working Group 2009).	Text will be revised to reflect this habitat preference.
11. Specific Herpetofauna Comments	4	<i>Hyla regilla</i> is now <i>Pseudacris regilla</i>	Scientific name will be changed to reflect current taxonomy.
12. Specific Herpetofauna Comments	4	Section 5.4.1.1.2 ; There should be more than 1 pond protected for western pond turtle in the Basin and North Orchard CAZs and more than 0 for the Southern Orchard CAZ.	BRCP objectives result in protection of about 70 percent of western pond turtle aquatic habitat (which includes non-pond aquatic habitats) in these CAZs, including 13 percent of ponds. In addition, it is certain that additional ponds will be acquired that happen to be present on lands to be conserved in fulfillment of other habitat objectives. Approximately 51 percent of the existing unprotected ponds are in the Northern Orchards CAZ, of which orchards are the primary land cover, which does not support modeled habitat for this species. The distribution of ponds in this CAZ will be re-examined to determine the number of ponds that occur in turtle habitat and whether or not protection

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			of additional ponds in the CAZ would substantively benefit the turtle.
13. Specific Herpetofauna Comments	4	Section 5.5.12 ; Giant garter snake reports from near Chico are not in rice land, but rather in irrigation ditches near the water treatment plant	Text will be revised to cite this information from the ISA report.
14. Specific Herpetofauna Comments	4	Section 5.5.14 ; Clawed frogs are only important in the southern part of the range, not here.	Text will be revised to address this recommendation.
15. Specific Herpetofauna Comments	4	Section 5.5.15. Foothill yellow-legged frogs also use ephemeral tributaries to perennial streams during winter. Frogs may travel long distances away from permanent streams up these tributaries.	Ephemeral tributaries are included in the foothill yellow-legged frog habitat model as a land cover type supporting its habitat. Habitat conservation objectives focus on acquisition of perennial streams because these support primary habitat areas for yellow-legged frog and other covered species. Ephemeral stream courses bisect the entire landscape that will be protected through achieving protection targets for upland natural communities, thus these frog habitat areas will be protected. The expected outcomes described in Section 5.6 for the frog will be revised to clarify this benefit.
16. Specific Herpetofauna Comments	5	Section 5.5.15; Include intermittent stream habitat as important for foothill yellow-legged frog in the Cascades CAZ. Frogs spend considerable time in intermittent streams during the winter. The importance of this habitat is recognized in the Sierra Foothills CAZ but not the Cascades CAZ.	See disposition to Recommendation 15.
17. Specific Herpetofauna Comments	5	Appendix A; Giant garter snake; look out for updated recovery plan due out in late 2011 or early 2012. Threats should include road mortality (as a source of habitat fragmentation and significant source of adult and juvenile mortality).	See response to Recommendation 4.
18. Specific Herpetofauna Comments	5	Appendix A; western pond turtle; There should be more records in CNDDDB now. T. Engstrom contributed additional locations in January 2011.	See response to Recommendation 4.

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19. Specific Herpetofauna Comments	5	Appendix A; foothill yellow-legged frog; there should have been extensive surveys for foothill yellow-legged frog for FERP (FERC?) relicensing of hydroelectric plants. Consultants or PG&E should have submitted these to CNDDDB. If not, then seek reports to FERP and PG&E. Large populations exist in both of CSU Chico’s ecological reserves BCCER and BCEP. Include Chytrid fungus as a potential threat mediated by bullfrogs. Bullfrogs can act as carriers, infecting native species without mortality to the bullfrogs.	See response to Recommendation 4.
20. Fish Comments	5	The following two references should be considered and cited regarding the importance and use of seasonal tributaries by fishes in the northern Sacramento Valley: Limm and Marchetti (2009) and Walther (2009).	See response to Recommendation 4.
21. Land Protection Categories	5	These are not defined prior to the map showing them (unless defined prior to Chapter 5?). The term “open space” appears throughout the document without a definition. Does this include recreational open space or parks that generally do not provide habitat for covered species?	Text will be revised to address this concern.
22. Land Assembly Priorities	5	Pages 5-16 and 5-17 provide a list of assembly principles that seem to give priority to everything. Can this be refined to provide more guidance for prioritization by the Implementing Entity (i.e., which principles are most important?) since not everything can be a priority?	This section will be revised to reflect priorities for application of the assembly principles.
23. Vernal Pool Restoration	5	Section 5.4.2.2 CM5; Language should be added to prohibit vernal pool creation on lands with existing vernal pool complexes. Artificially increasing vernal pool density on a site can degrade the hydrologic function of the natural pools and remove habitat for species dependent on the upland surrounding the pools.	Text will be revised to include this clarification.
24. Habitat Connectivity	6	Change “Caltrans and DFG 2010” to preferred citation. We recommend consulting Chapters 5 and 6 of that document for a comprehensive review and recommendations for siting and designing local linkages or wildlife corridors for focal species and mitigating the effects of roads on wildlife movement and ecological processes.	The citation will be revised and additional supporting considerations for the establishment of corridors will be incorporated from the report.

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25. Grazing and Range Management	6	Wherever the document refers to grazing to “increase absolute cover of native plant species” (e.g., page 5-73) it should be preceded by “influence vegetation structure or composition or increase absolute cover...” Grazing can reduce woody species, alter grass heights, reduce biomass of nonnative annuals, etc., which may in turn increase habitat value or absolute cover of particular plant species.	Text will be revised to address this recommendation.
26. Grazing and Range Management	6	Portions of the document dealing with irrigated pastures, ponds, and habitat management should recognize that the majority of black rail habitat in the plan area is likely created by leaky irrigation pipes and canals used for livestock production (Richmond et al. 2010).	Text will be revised in applicable sections to address this recommendation.
27. Grazing and Range Management	6	Information on threats to oaks and appropriate management for oak woodlands and savannahs should be updated and refined based on Tyler et al. (2006).	Tyler et al. has been reviewed and text discussing oak decline will be added to applicable Chapter 3 and Chapter 5 sections.
28. Grazing and Range Management	6	We suggest rewording text in Section 5.5.1.5 stating “stock ponds and other human-made ponds are harmful [to foothill yellow-legged frogs] because they promote bullfrog populations.” to focus on the bullfrogs, rather than the ponds, as being harmful. Bullfrog management in existing ponds is a more practical and beneficial action than eliminating ponds.	Text will be revised to address this recommendation.
29. Grazing and Range Management	6	Section 5.8.5, second bullet under potential research needs: Add —and improve habitat conditions for covered wildlife species “after —abundance and vigor of... covered plant species.”	Text will be revised to address this recommendation.
30. Question (Q) 1; Table 5-1	7	It is difficult to evaluate whether targets are “reasonable based on the available data,” since they are absolute values rather than percentages of total amount of each habitat type to be protected. Percentages should be added. Perhaps combining Table 5-1 with Table 5-6 (which shows percent of vegetation types protected with and without BRCP) would be useful.	We anticipate modifying Table 5-8 or adding new tables to describe the outcomes by CAZ as well as for the entire Plan Area.
31. Q1: Table 5-1	7	Percentages in Table 5-6 suggest that some community types are underrepresented in protected areas, both with and without BRCP implementation (i.e., blue oak woodland). Given the importance of these communities to some covered, planning, and local concern species, as well as to watershed functions and overall ecological values, how is this low level	The conservation objectives for oak woodland and savanna will be increased to address this recommendation.

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		of protection justified?	
32. Q1: Table 5-4	7	It is unclear exactly how these guidelines are to be applied in practice (as described in Section 5.2.3.5). Are the minimum patch sizes assumed to apply to isolated patches, or single acquisitions, or portions of a larger mosaic, or perhaps smaller acquisitions to increase the size of existing protected areas? The intent of the minimum patch sizes should be clarified, or the acreages increased, depending on how these guidelines will be used. If these guidelines are used to imply that, for example, 400 acres of grassland is sufficient to meet the needs of badgers, this is not defensible. A more defensible size would be enough for about five 2,000-acre home ranges = 10,000 acres. The size should be similarly increased for mule deer.	The requested guidelines for applying patch size requirements are described in Objective LAND1.1. Text will be revised to clarify the application of these requirements.
33. Q1: Table 5-4; Yellow-billed Cuckoo	7	Only patches > 80 hectare (197 acres) were 100% occupied, so we recommend this as a desirable target size for riparian patches. The patch size minimum of 25 acres (Gaines 1974) seems low and should be a minimum of 50 acres according to Laymon and Halterman (1989) and Laymon (1998).	The minimum 25 acres was based on the extreme low range of habitat patch sizes known to support the cuckoo (LCR MSCP 2004). Recommend keeping requirement to avoid impacts of covered activities on patch sizes $\geq$ 25 acres, but limiting conservation to patch sizes that are $\geq$ 50 acres. This may necessitate a reduction in the extent of conserved existing habitat because of limit in the extent of patch sizes that are $\geq$ 50 acres in the Plan Area.
34. Q1: Table 5-4; Yellow-breasted Chat	8	Include the words “early seral stages of riparian scrub” or similar under the description of the natural community.	Table 5-4 (5-6 in current version) will be modified to address this recommendation. Note that the species account states that chats prefer early seral stages.
35. Q1: Table 5-5; Valley Elderberry Longhorn Beetle	8	Habitat connectivity enhances populations for this invertebrate; isolated bushes are less likely to be occupied than others (Collinge et al. 2001).	Text will be modified to address this recommendation. The existing definition, however, needs to be retained to address regulatory requirements.

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36. Q1: Table 5-5; Vernal Pool Invertebrates	8	It is not clear how the “vernal pool watershed” will be defined for planning purposes. Some recent hydrological studies (N. McCarten, unpublished) indicate that overland and subsurface water flow into a vernal pool may come from at least 250-500 m away. Rains et al. (2006) also provide information that may be useful to the development of a definition of vernal pool watershed.	Text will be revised to indicate protection of the wetted vernal pool surface and surrounding uplands that support its watershed. BRCP vernal pool complex objectives target protection of large patches of landscape and thus are intended to obviate the need for expensive and complex mapping of micro-watersheds.
37. Q1: Table 5-5; Fish	8	We noted that Table 5-5 has blanks for habitat size criteria for all of the fishes. There is little if any scientific data available for establishing these criteria, but in the professional judgment of our fish expert (M. Marchetti), the following minimum standards seem reasonable: >150 acres of floodplain habitat, >5,000 feet of riparian cover habitat, and >2,700 feet of spawning gravels.	These or other appropriate criteria will be provided in Table 5-5 to the extent that the information applies to each of the applicable fish species (e.g., no conservation actions will be implemented along the Sacramento or Feather Rivers, which are not under the jurisdiction of the Applicants. Consequently, these criteria would not apply to fish species that only occur in these major rivers.
38. Q1: Table 5-5; Yellow-billed Cuckoo	8	See comments on Table 5-4.	See response to Recommendation 33.
39. Q1: Table 5-5; Plants	8	Why are there no plants included in Table 5-5? Is this due to an assumption that plants don't have minimum patch size or connectivity requirements? Note that all covered species can be adversely affected if conserved in areas too small or poorly connected due to numerous edge effects, loss of symbionts (e.g., pollinators), etc. We recommend developing guidelines for plants as well as animals.	This table will be revised to include criteria for covered plant species. We anticipate that these descriptions will likely be more qualitative than those established for wildlife because of a paucity of information on patch size and connectivity requirements for the covered plant species.
40. Q2: Corridors and Figure 5-4	8-9	See Spencer et al. (2010) for recommendations on siting and designing local-scale corridors for focal species and for mitigating potential road and barrier effects. In the case of a riparian corridor, does the 0.6 or 1.2-mile width include the width of the river or creek, or only the adjacent terrestrial lands? We recommend the latter. The advisors recommend considering a 5th north-south corridor linking at least a few of the larger patches of remnant riparian patches (and meanders) along the Sacramento River (e.g. below	See response to Recommendations 5 and 6. The corridors are intended to include the width of terrestrial lands only and text will be revised to clarify this requirement.

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		Hwy 32 to Phelan Island). This is likely the only way to —support survival   of viable populations (minimum 25 pairs, Laymon 1998) of YBCU and other covered species (e.g. bank swallow’s ephemeral nesting habitat and need for multiple colonies to ensure survival). This corridor could be a focal area for riparian and floodplain restoration efforts with agricultural set-backs or other appropriate measures. Advisors also recommend that the corridors be designed to help maintain viable ranching and other agriculture where appropriate to meet habitat management goals. Large, contiguous and connected lands are important for agricultural management purposes, as they are for reserve design.	
41. Q3: Assessment Timing	9	Assessments should be conducted within one year of acquisition rather than two. There may be instances where conditions could change dramatically within two years (for example, if the parcel was previously grazed, then grazers were removed immediately after acquisition), which would render the “baseline conditions” to be less meaningful and informative.	Text will be revised to address this recommendation.
42. Q3: Grazing	9	Greater flexibility should be allowed for retaining livestock grazing where appropriate to maintain habitat favorable to covered species. Recommendations for “excluding grazing” should be changed to “controlling grazing” or “controlling access for grazing” so that grazing can be evaluated and used if needed within the adaptive habitat management framework. Sometimes, exclusion does more harm than good, but this may not be known for a while. Long term management flexibility is important.	See response to Recommendation 1.
43. Q3: Road Mortality	9	Additional enhancement/management actions should be included to identify and if necessary mitigate areas of high road mortality (e.g. where roads lie between aquatic and nesting habitats for Western pond turtle). Potential mitigations include crossing structures (e.g., appropriately designed culverts or underpasses), signage, etc.	Recommend revising Section 5.9, <i>Adaptive Management</i> , to indicate that the Implementing Entity may support focused studies to identify locations with high road mortality that may have a population-level affect and provisions for adjusting BRCP implementation to reduce those effects.
44. Q3: Oak Woodland	9	5.4.2.6.1 <i>Oak Woodland and Savanna</i> —It is unclear why bald eagle is mentioned here. The third bullet should be reworded as “Managing grazing to enhance woody plant survival and recruitment and to improve watershed function and reduce erosion.”	As indicated in the bald eagle species account and habitat model, oak woodland supports bald eagle nesting habitat. Text will be modified to address the suggested text.

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45. Q3: Grassland	9-10	<p>5.4.2.6.2; It is unclear why fire, grazing and other techniques would be used to only increase absolute cover of native plants. Why not overall native plant diversity?</p> <p>The following bullet should be split into two bullets to read:</p> <ul style="list-style-type: none"> <li>- Application of herbicides to remove heavy infestations of nonnative plants.</li> <li>- Restoration of native plant species</li> </ul>	Text will be modified to address this recommendation.
46. Q3: Vernal Pool	10	<p>Under <i>vernal pool and grassland swale complex</i>—add to the following: “Enhancement actions could also include modifying or removing structures and supplemental sources of water that increase or decrease the historical inundation period of protected vernal pools only when the enhancement activities will not adversely impact covered species.” The rationale for this is that, oftentimes, when the alteration is in place long enough, the species composition in the vernal pool changes to include species that thrive in the new inundation regime. There needs to be more justification for the enhancement activity than simply returning it to what it was before the changed condition occurred.</p>	Text will be modified to address this recommendation.
47. Q3: Riparian	10	<p>5.4.2.6.3; We recommend changing the first bullet from “excluding livestock from riparian habitats” to “carefully managing livestock grazing to control invasive species and to maintain favorable habitat conditions for covered species.”</p>	Text will be modified to address this recommendation.
48. Q3: Riparian	10	<p>Change the fourth bullet to read “installing or maintaining woody debris...”</p>	Text will be modified to address this recommendation.
49. Q3: Riparian	10	<p>Add a bullet: “Connecting the flood plain to the river to promote regular disturbance and regeneration of young riparian seral stages and promote structural diversity” (see RHJV 2004).</p>	Text will be revised to address the recommendation to the extent that it would not apply to the Sacramento and Feather Rivers, which are not under the jurisdiction of the Applicants, and that any such actions must be consistent with existing flood control requirements.
50. Q3: Agriculture	10	<p>5.4.2.6.6; Add a new bullet: “Encourage use of owl nest boxes, raptor perches, etc., for control of rodents.” Add to existing bullet: “Altering cultivation, water management and/or harvest practices to increase forage and prey availability for covered and other native wildlife species.”</p>	Text will be revised to address this recommendation.

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51. Q4: Grazing	10	We recommend more consideration for maintaining a viable grazing industry in the area. Some covered species require grazing and irrigation. Maintaining some lands in well management private stewardship (e.g., via easements that allow adaptive management and monitoring) may be more effective and cost-effective than acquiring lands in fee simple and managing resources in other ways.	See response to Recommendation 1.
52. Q5: Erosion	10-11	Loss of natural erosion/deposition processes (due to rip-rapping, etc.) is a stressor to riparian systems and many associated species. Restoring meander (e.g. protecting a corridor along the river and allowing regular high water events) is important for yellow-billed cuckoo, bank swallow, and probably garter snakes and others.	This objective is accommodated through removal of riprap under conservation measure CM12, to the extent that flood control requirements are not compromised. These types of actions are not proposed for the Sacramento and Feather Rivers because they are not under the jurisdiction of the Applicants.
53. Q5: Grazing	11	Over grazing or poor grazing practices in riparian (especially in foothill streams) will reduce understory/shrub cover and impact breeding YBCH. Also invasive (non-native blackberry) control can impact chats in some places. Control should always be followed by replanting of natives that provide habitat and food sources.	See response to Recommendation 1. Conservation measure CM2, <i>Develop and Implement an Invasive Species Control Program</i> , will be clarified to address replanting of native species.
54. Q5 Agriculture and Nests	11	Swainsons hawk, white-tailed kite, tricolored blackbird (and to some extent bank swallow) need to nest near and/or forage in agricultural fields. Changes in agricultural uses (e.g. conversion of alfalfa to orchards or rangeland to row crops) may therefore impact nesting populations of these species. Losses of agricultural types that complement native habitat for such species, and that provides important habitat elements such as small wetlands and canals, could be a stressor on various covered species, including giant garter snakes and the above-mentioned birds.	Comment is addressed in part by ensuring that a large proportion of rice lands or restoration of native habitats supporting equivalent habitat functions are maintained. The Conservation Strategy also provides for maintaining inclusions of natural habitats present on BRCP-maintained agricultural lands.
55. Q5: Road Mortality	11	Road mortality is an important stressor for populations of many amphibians and reptiles. Giant garter snakes and western pond turtles are affected by road mortality. Conservation actions for mitigating road mortality should be addressed by BRCP. Surveys of road kill can be used to identify particular areas of high impact. Areas may include migration corridors between habitat types, for example between water and nesting habitats for western pond turtle or between ephemeral waterways and permanent wetlands for giant garter snakes. Protocols could be developed for surveys to carried out during normal road maintenance and cleaning or to be carried out by contract	See response to Recommendation 43.

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		biologists. Depending on extent of impact there are a number of appropriate strategies available to reduce road impacts on wildlife, including underpasses, reduced speed or signage to alert motorists etc. See Spencer et al. (2010, Chapter 6) for a review, recommendations, and additional citations that may be useful.	
56. Q6: More Justification	11-12	We would like to see additional justification for the amount of habitat conserved (see earlier comments on patch size and other related issues). If there is no justification beyond “best professional opinion” that should be stated. There should also be provisions in the adaptive management and monitoring plan to expand or add habitat acreages, restoration areas, etc., as necessary to achieve the conservation goals and sustain covered species if new information gathered during plan implementation suggests this is necessary.	The justifications for habitat protection objectives will be expanded. Provisions to adjust BRCP implementation based on new information as it becomes available over the term of the BRCP are provided in Section 5.9, <i>Adaptive Management</i> .
57. Q6: Sacramento River Riparian	12	As stated earlier, the advisors recommend additional conservation and restoration along the Sacramento River corridor, if possible. Large, contiguous riparian and floodplain habitats are important to numerous covered species, and seem essential to conserving some species populations, especially the yellow-billed cuckoo and valley elderberry longhorn beetle. Table 5-2 has 0 or very low habitat acquisition targets in the Sacramento River CAZ for valley elderberry longhorn beetle, yellow-breasted chat, bank swallow, Swainson’s hawk, giant garter snake, and western pond turtle, despite the importance of this area to sustaining these species.	See response to Recommendation 5.
58. Q6: Sacramento River Riparian	12	For valley elderberry longhorn beetle, it is not clear what evidence was used to support the statement that the habitat is “stabilized” (Table 5-3). We suspect that riparian habitats, like vernal pool habitats, have continued to decline statewide.	Text will be revised to clarify the statement.
59. Q6: Oak Woodland and Savanna	12	Additional conservation for some habitat types, such as oak woodlands and blue oak savannah are very low. We recommend considering whether there will be sufficient acreage and contiguity of oak woodlands to meet conservation goals for various covered and planning species (e.g., mule deer).	See response to Recommendation 31.
60. Q7: GGS 10:1 Ratio	12	We see no reason to suggest anything different. Nevertheless, there is a need to critically evaluate this policy by researching carrying capacity of both rice land and designated wetlands, along with relative edge effects, immigration and emigration rates, and occupancy rates in both habitat types. We	The monitoring plan identifies general monitoring actions to evaluate the effectiveness of conservation measures in achieving objectives. Text will be revised to indicate that this is a particular type of

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		recommend including such studies within the adaptive management and monitoring plan.	monitoring that should be undertaken.
Q8: Greater Sandhill Crane	13	We recommend ensuring that agricultural practices conducive to sustaining covered species such as sandhill cranes be encouraged and continued using easements or other incentives.	This recommendation is provided for under conservation measure CMI.
Q9: Butte County Meadowfoam Habitat Model	13	We encourage a comparison with results of modeling done for this species by Bob Holland. Elevation or topographic relief might be factors that need to be considered. In particular, some of the area east of Cohasset Road in the Chico B area is predicted by the model to be high quality Butte County meadowfoam (BCM) habitat, but it appears to have a high degree of topographic relief and some tree cover. Consider modifying the model using elevation, a measure of topographic relief, or tree density if these observations are correct (verify with a field visit?). We also recommend developing a map layer showing where surveys have been conducted for BCM to verify absence from some locations. This would decrease uncertainties about model accuracy and the overall conservation strategy for BCM. If an area is shown as high quality habitat and has been extensively surveyed with negative results, then the habitat designation should be questioned.	<p>Holland’s BCM habitat model was considered. That model used a similar approach, but at a more coarse level of resolution, as the BRCP BCM model. The BRCP BCM model provides a finer-grained and more locally specific result. The BRCP BCM habitat model has undergone several iterations in consultation with USFWS, DFG, and local soil and species experts. The model is based on best available GIS data sources (e.g., soil survey, vegetation mapping, topography).</p> <p>The area east of Cohasset Road supports soils of BCM primary habitat for which BCM occurrences are highly correlated. Much of the BCM secondary habitat east of Cohasset Road, however, is in areas of relief that only rarely, if ever, support BCM, as indicated by the science advisors. These secondary habitat areas were included in the BCM model at the request of USFWS to ensure that small, isolated areas of potentially suitable habitat are captured by the model. Areas of sparse tree cover (i.e., the oak savanna land cover type) were included as secondary habitat where soils were appropriate. No changes to the BCM habitat model are proposed at this time.</p> <p>Locations of BCM surveys (with both positive and negative results) were used in the development of the BCM model. A map layer graphic of the collective</p>

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			survey area boundaries will be developed and included in Appendix A.33 to help the reader understand the breadth and limits of surveys.
Q11: Butte County Meadowfoam Conservation Measures; b	14	Some parts of the CBCMP are fairly close to developed areas, and there may be incompatible uses on these lands that may negatively influence these populations (e.g., via changes to runoff and sedimentation). Have adjacent land uses been investigated? Additionally, there are some small parcels in prime BCM habitat near Chico that have been identified as “BCM habitat removal” on Figure 5-5. We would like to see more of these parcels included in the preserve, if possible, since these are far more likely than areas beyond Chico to support BCM occurrences (see additional comments in “e,” below).	The impact analysis specifically for BCM has not been released at this time, however, indirect effects of existing development and planned future development will be discussed in that section. Adjacent land uses have been investigated, but the existing condition in which the largest BCM occurrences and presumably the highest functioning habitat is immediately adjacent to existing development leaves no practicable alternative to protecting populations and habitat other than the areas identified for the BCM preserve. Sites identified for BCM removal are parcels that remained after a process, working with city and county planners, of reducing the number and areal extent of future development in BCM habitat; those remaining development sites were determined to be of marginal importance to the species because of existing level of disturbance, separation from other occurrences, and proximity to existing development.
Q11: Butte County Meadowfoam Conservation Measures; c	14	Figure 5-6d is difficult to follow. Could this be revised to more clearly differentiate the two cases?	Some simple revisions to Figure 5.6d will be made to clarify meaning and illustrate situations where downslope development alters the hydrological regime upslope.
Q11: Butte County Meadowfoam Conservation Measures; e	14	A large proportion of the proposed, additional protected acres for BCM (e.g., the 2,500 acres of Rock Creek primary habitat shown in Table 15-5) does not currently show any BCM occurrences. This may skew the perception that the protected acreage for BCM will double (compare columns d and e in Table 15-5), because it is not clear that BCM will actually be supported in these areas. Pending verification of populations in these modeled habitat	Conservation measure 16 calls for the protection of BCM occurrences in the Rock Creek area. Known occurrences are all within modeled primary habitat and would be protected through the acquisition of primary habitat under the Conservation Strategy. Protection of large areas of BCM primary habitat is

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		<p>areas, we recommend focusing as much as possible on protecting existing populations. The lines on the map do a good job of capturing all known occupied habitat, but that does not equate to protection of a functioning landscape that will support the species into the future. Significant areas of the habitat targeted for acquisition for the BCM preserve, including known occupied BCM population areas, have recently been converted or are being compromised by ongoing development. One of the advisors made notes on Figures 5-5 and 5-X with comments about habitat degradation that has occurred since the maps were made. These comments are mostly based on investigations using GoogleEarth imagery to determine whether the land was still intact, but even this may be obsolete depending on when the imagery was last updated.</p>	<p>important in providing the ability to protect newly discovered BCM occurrences and to provide sufficient areal extent of preserves to protect watersheds and buffer effects from adjacent land use. The Conservation Strategy includes the protection of all known occurrences (other than the small areas requested for removal in Chico) and of newly discovered occurrences important to BCM conservation.</p> <p>The boundaries identified in CM15 for the Chico BCM preserve take into account adjacent land use and necessary hydrology to support habitat. It is recognized that there are past and ongoing disturbances on private lands within the proposed preserve, and this fact highlights the need for acquisition and protection of these lands at the earliest possible time following BRCP authorization.</p>
Q12: Butte County Meadowfoam Unknown Occurrences	14	<p>If species recovery is truly the goal, then any significant new populations need to be conserved to maintain their landscape function. Newly discovered populations that are large or close to other populations are high priority for protection, but populations that may be genetically unique (i.e., far isolated from other populations) should also be protected. New occurrences that may be removed could be those that are very small, not genetically unique, and redundant with more significant, already protected populations. Populations need to be conserved within large preserves that protect more than just the occupied pools, so they can be managed effectively. If an area is designated for protection within the BCM preserve area, it should be protected regardless of whether BCM is found there or not (to ensure landscape integrity and allow for potential population expansions or colonization events).</p>	<p>Comments provided will be used to expand the text in CM17 regarding criteria to be used by the Implementing Entity in determining the importance of newly discovered occurrences of BCM to the recovery of the species. Since most new occurrences, especially large ones, are likely to be found within the modeled primary habitat, protection of these occurrences will most likely fall easily within the process of acquiring lands to meet BCM primary habitat objectives.</p> <p>The objectives and conservation measures for BCM provide for the protection of large areas that will incorporate occurrences, unoccupied suitable habitat, areas that support hydrologic needs of habitat, areas supporting habitat for pollinators, and connecting corridors for gene flow. Additional lands will also be</p>

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			protected and managed under the BRCP to address other covered species that use related contiguous habitats (e.g., fairy shrimp, Orcutt grasses).
Q13: Butte County Meadowfoam Long Term Survival	15-16	<p>The removal of newly discovered populations must proceed cautiously (see 12, above), and should only be done if there is evidence that BCM populations elsewhere are increasing over time. Surveys for BCM to determine existing environmental conditions (Section 5.4.1.4) should follow a standardized protocol developed by scientists with appropriate experience and qualifications. Monitoring should also include monitoring of pollinators. The spatial configuration of the proposed and existing Preserves has been compromised and continues to be further compromised by existing and on-going development in unprotected areas. As previously mentioned, one advisor has documented at least 3 examples of conversion or disturbance activities within proposed preserve boundaries of the core Chico A and B areas. This concerns us that the preserve cannot therefore even be created as proposed. At any rate, those disturbed or converted lands need to be subtracted from the totals in the conservation tables. Our biggest concern with the preserve design in the Chico Core A, B and C areas is with the small size of the protected habitat and its landscape context. The habitat around the airport is surrounded on all sides by development, and lands within this proposed protection area are already being compromised. The proposed preserves in the Chico C area have a lot of edge habitat, roads that bisect the proposed preserves and no protection of land to the east. This sets them up for being completely surrounded by development. The watershed of the BCM habitat needs to be better understood and its function protected. The conservation measures don't address the potential for introducing BCM into suitable habitat in order to secure the population. We think that this measure should be at least considered and evaluated given the threats to the species, even if the preserve network can be assembled as proposed. The tenuous nature of BCM habitat in the ever-expanding Chico area necessitates developing a "Plan B" that includes experimental translocation (with careful, long-term monitoring) to expand the population and reduce extirpation risks. We recommend more research and citation of the literature on grazing management to make sure the management and monitoring</p>	<p>Comments provided will be used to expand the text in CM17 regarding criteria to be used by the Implementing Entity in determining the importance of newly discovered occurrences of BCM to the recovery of the species.</p> <p>Existing development surrounds the Chico A, B, and C preserves and these areas are bisected by roads and ditches. However, these areas contain the highest population densities and largest BCM populations in existence. All of these lands have been surveyed multiple times over many years and are critical to the recovery of BCM. There are no alternate lands with the same conservation value.</p> <p>Disturbances have occurred in areas adjacent to and within the proposed preserve. Past and ongoing disturbances on private lands within the proposed preserve highlight the need for acquisition and protection of these lands at the earliest possible time following authorization of the BRCP. The objectives and conservation measures for BCM provide for the protection of large areas that incorporate BCM occurrences, unoccupied suitable habitat, areas that support hydrologic needs of habitat, areas supporting habitat for pollinators, and connecting corridors for gene flow. Additional lands will also be protected and managed under the BRCP to address other covered species that use related contiguous habitats (e.g., fairy shrimp, Orcutt grasses). Acknowledging the uncertainty of the hydrological requirements</p>

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		<p>recommendations are as scientifically sound and up-to-date as possible. We also recommend that options for using grazing within the adaptive management framework be maintained whenever possible. In other words, excluding grazing from an area may be the right decision now, but the option of using grazing again if it is deemed necessary through monitoring and research should be maintained.</p>	<p>necessary for sustaining BCM habitat, the proposed BCM preserve locations and preserve design criteria were developed based on examination of surface drainage patterns and the inclusion of extensive upslope areas to support the likely hydrological requirements of BCM habitat. New knowledge on watershed functions related to BCM gained during Plan implementation will help guide the Implementing Entity in acquisition of lands for additional BCM preserves called for under the BRCP.</p> <p>Experimental introductions of BCM into protected suitable habitat could be added as a conservation measure or as part of the research and adaptive management programs. Adding such a measure will be discussed with USFWS and DFG.</p> <p>The BRCP requires management plans be developed and implemented for each new preserve added to the conservation lands at the time of acquisition. Grazing is identified as an appropriate tool to consider for management. Additional text and citations will be added to emphasize the consideration of grazing practice as part of management prescriptions. Continuing existing land management activities such as grazing will be a component of the management of the preserves. The adaptive management plan includes the flexibility to add or remove grazing as monitoring results indicate. Additional text will be added to the adaptive management plan to highlight this flexibility specifically for grazing management.</p>

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Small Text Change	NA	Page 5-5: Under Basin CAZ - should read .....and DFG Wildlife Areas	Text will be modified to address comment.
Small Text Change	NA	Page 5-5: Under Basin CAZ – should mention USFWS Wildlife Management Areas (e.g., Rancho Llano Seco Unit of the North Central Valley Wildlife Management Area)	Text will be modified in relevant sections. However, Rancho Llano Seco and other USFWS-protected areas are located in the Sacramento River CAZ, not the Basin CAZ.
Small Text Change	NA	Page 5-93; 5-138: from table 5-17: should say western spadefoot, not spadefoot toad	Text will be corrected.
Small Text Change	NA	Page 5-132: re Blainville’s horned lizard. There are actually many recent reports from the Table Mountain area, including at least 2 that I know of in May/June 2011	See response to Recommendation 4.
Wetland Classification	NA	<ul style="list-style-type: none"> <li>- Page 5-56 and others: Use of the terms “Emergent Wetlands” vs “Managed Wetlands” continues to be troublesome, at least to me:</li> <li>- Most of the wetlands in the CV, including Butte County, are managed to some extent (marshlands, flooded rice, etc.)</li> <li>- Considering the non-agricultural wetlands (i.e., moist-soil impoundments, seasonal, semi-permanent, and permanent marshlands), most have at least some emergent vegetation (e.g., bulrushes, cattails, etc.).</li> <li>- Therefore, I’d suggest adopting a wetland classification terminology that is consistent with that used by CDFG and the USFWS, the agencies most involved with wetland management in the CV.</li> </ul>	This classification system is an underpinning of the current plan and cannot be readily changed at this point in the planning process. Existing definitions of the classifications in Chapter 3, <i>Ecological Baseline Conditions</i> will be reviewed and clarified as appropriate to address any ambiguities.