

## **State-wide and Regional Climate Change References to Support the CA Wildlife Action Plan Revision Developed by DFG's SWAP Climate Work Group, April 2012**

The following list of resources is intended to support ecoregional teams as they work to address climate change issues within their ecoregions that are relative to the State Wildlife Action Plan (SWAP) revision process. The list is not exhaustive, but consists of key references identified by DFG Climate Stakeholders that will serve as a starting point for assessing how projected climatic changes will affect ecoregional conservation targets. This document will be updated regularly as new resources become available.

The information presented in this document was compiled by DFG's Wildlife Action Plan Climate work group. The climate workgroup is composed of a subset of partners from DFG's climate stakeholder group that formed to provide stakeholder input and support to thoroughly integrate climate change into California's SWAP revision process. Please contact [climatechange@dfg.ca.gov](mailto:climatechange@dfg.ca.gov) with any questions or recommendations for additional resources.

### ***California Climate Change Literature***

*Links provided where available.*

- [Cal-Adapt.org](http://Cal-Adapt.org); Explore climate projections in your area.
- *Overview of the California climate change scenarios project.* Cayan, D., Luers, A., Franco, G., Hanemann, B., Croes, B. & Vine, E., 2008. Climate Change 87: 1-6. [http://meteora.ucsd.edu/cap/pdffiles/Cayan\\_overview\\_jan2008.pdf](http://meteora.ucsd.edu/cap/pdffiles/Cayan_overview_jan2008.pdf)
- *Climate change scenarios for the California region.* Cayan, D., Maurer, E., Dettinger, M., Tyree, M., & Hayhoe, K., 2008. Climate Change 87: 21-42. [http://tenaya.ucsd.edu/~dettinge/cccc08\\_scenarios.pdf](http://tenaya.ucsd.edu/~dettinge/cccc08_scenarios.pdf)
- *California Climate Adaptation Strategy*, <http://www.climatechange.ca.gov/adaptation/>
- *Projected Effects of Climate Change in California: Ecoregional Summaries Emphasizing Consequences for Wildlife.* PRBO Conservation Science, 2011. <http://data.prbo.org/apps/bssc/uploads/Ecoregional021011.pdf>
- *A Climate Change Vulnerability Assessment of California's At-Risk Birds.* Gardali et al PLoS ONE 7.3. 2012. <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0029507>

- *Sea Level Rise Maps*. Pacific Institute [http://www.pacinst.org/reports/sea\\_level\\_rise/maps/](http://www.pacinst.org/reports/sea_level_rise/maps/)
- *Climate Change 2007, the fourth assessment report (AR4) of the United Nations Intergovernmental Panel on Climate Change*. Intergovernmental Panel on Climate Change (IPCC), 2007. [http://www.ipcc.ch/publications\\_and\\_data/publications\\_and\\_data\\_reports.htm](http://www.ipcc.ch/publications_and_data/publications_and_data_reports.htm)
- *Landscape-scale indicators of biodiversity's vulnerability to climate change*. Klausmeyer, Kirk R., M. Rebecca Shaw, Jason B. MacKenzie, and D. Richard Cameron. 2011. *Ecosphere* 2:art88. <http://dx.doi.org/10.1890/ES11-00044.1>
- *Second California Assessment: integrated climate change impacts assessment of natural and managed systems*. [http://www.susannemoser.com/documents/Francoetal\\_2011\\_SecondCAAssessmentIntro.pdf](http://www.susannemoser.com/documents/Francoetal_2011_SecondCAAssessmentIntro.pdf)
- *Modeling plant ranges over 75 years of climate change in California, USA: temporal transferability and species traits*. Dobrowski et al. 2011. *Ecological Monographs* 81 (2): 241–257. <http://www.esajournals.org/doi/pdf/10.1890/10-1325.1>
- *Climate Change and the Future of California's Endemic Flora*. Scott R. Loarie, Benjamin E. Carter, Katherine Hayhoe, Sean McMahon, Richard Moe, Charles A. Knight, and David D. Ackerly. *PLoS ONE* 3.6. 2008. <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0002502>
- *Scanning the Conservation Horizon - A Guide to Climate Change Vulnerability Assessment*. National Wildlife Federation, 2011. <http://www.nwf.org/~media/PDFs/Global-Warming/Climate-Smart-Conservation/NWFScanningtheConservationHorizonFINAL92311.ashx>
- *National Fish, Wildlife, and Plants Climate Change Adaptation Strategy Draft*. 2012. <http://www.wildlifeadaptationstrategy.gov/strategy.php>
- *Incorporating climate change into systematic conservation planning*. Groves et al. 2012. *Biodiversity Conservation*. DOI 10.1007/s10531-012-0269-3. <http://www.springerlink.com/content/0236jn13147588m0/fulltext.html>
- *Biodiversity management in the face of climate change: A review of 22 years of recommendations*. Heller, N.E. and E.S. Zavaleta. 2009. *Bio Cons.* 14:14-32

## ***Regional Climate Change Literature***

### **Klamath-Cascade-Sierra:**

- *Responding to Climate Change in National Forests: A Guidebook to Developing Adaptation Options* (USDA, Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-855, November 2011)  
[http://www.fs.fed.us/pnw/pubs/pnw\\_gtr855.pdf](http://www.fs.fed.us/pnw/pubs/pnw_gtr855.pdf)
- *Sierra Climate Change Toolkit*. 3<sup>rd</sup> Edition, Sierra Nevada Alliance, 2011.  
[http://www.sierranevadaalliance.org/publications/db/pics/1303760072\\_12034.f\\_pdf.pdf](http://www.sierranevadaalliance.org/publications/db/pics/1303760072_12034.f_pdf.pdf)
- *California's Forests and Rangelands: 2010 Assessment*. California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resource Assessment Program (FRAP). Chapter 3.7 Climate Change: Threats and Opportunities, 2010.  
[http://frap.fire.ca.gov/assessment2010/pdfs/3.7climate\\_change.pdf](http://frap.fire.ca.gov/assessment2010/pdfs/3.7climate_change.pdf)
- *Framework for Cooperative Conservation and Climate Adaptation for the Southern Sierra Nevada and Tehachapi Mountains*. Southern Sierra Partnership. 2010.  
<http://www.cakex.org/sites/default/files/Framework%20Sierra%20Nevada%20Tehachapi%20Mtns.pdf>
- *Managing the risk of climate change to wildlands of the Sierra Nevada*. Aplet et al. 2010. <http://wilderness.org/files/Managing-the-risk-of-climate-change-to-wildlands-of-the-Sierra-Nevada.pdf>
- *Quantitative Evidence for Increasing Forest Fire Severity in the Sierra Nevada and Southern Cascade Mountains, California and Nevada, USA*. Miller, et al. 2009. *Ecosystems* 12:16-32.  
<http://www.fs.fed.us/r5/news/2008/pdfs/2008EcosystemsSierraNevadaseveritytrends.pdf>
- *Widespread shifts in the demographic structure of subalpine forests in the sierra nevada, califorina, 1934 to 2007*. Dolanc, C.R., J.H. Thorne, H.D. Safford. In Press. *Global Ecology and Biogeography*. <http://onlinelibrary.wiley.com/doi/10.1111/j.1466-8238.2011.00748.x/pdf>
- *Uncertainty in hydrologic impacts of climate change in the Sierra Nevada, California, under two emissions scenarios*. Maurer, E.P. 2007. *Climatic Change* 82:309-325.

[http://www.climateknowledge.org/heat\\_waves/Heat\\_model\\_proposal/Maurer\\_Downscaling\\_Hydrological\\_Impact\\_ClimaticChange\\_2007.pdf](http://www.climateknowledge.org/heat_waves/Heat_model_proposal/Maurer_Downscaling_Hydrological_Impact_ClimaticChange_2007.pdf)

- *Hydrologic response and watershed sensitivity to climate warming in California's Sierra Nevada.* Null, S.E., J.H. Viers, J.F. Mount. 2010. Plos One 5. <http://www.plosone.org/article/info:doi%2F10.1371%2Fjournal.pone.0009932>
- *The development of 70-year-old wieslander vegetation type maps and an assessment of landscape change in the Central Sierra Nevada.* Thorne, J.H., T.R. Kelsey, J. Honig, B. Morgan. 2006. California Energy Commission, Public Interest Energy Research Program. CEC-500-2006-107. <http://www.energy.ca.gov/2006publications/CEC-500-2006-107/CEC-500-2006-107.PDF>
- *Birds track their grinnellian niche through a century of climate change.* Tingley, M.W., W.B. Monahan, S.R. Beissinger, C. Moritz. 2009. Proceedings of the National Academy of Sciences of the United States of America 106:19637-19643. <http://www.pnas.org/content/106/suppl.2/19637.full.pdf+html>
- *Climate change and wildfire in California.* Westerling, A.L., B.P. Bryant. 2008. Climatic Change 87:S231-S249. [http://ulmo.ucmerced.edu/pdffiles/08CC\\_WesterlingBryant.pdf](http://ulmo.ucmerced.edu/pdffiles/08CC_WesterlingBryant.pdf)
- *Climate change, growth and california wildfire.* Westerling, A.L., B.P. Bryant, H.K. Preisler, H.G. Hidalgo, T. Das, S.R. Shrestha. 2009. California Energy Commission, California Climate Change Center. CEC-500-2009-046-D. <http://www.energy.ca.gov/2009publications/CEC-500-2009-046/CEC-500-2009-046-D.PDF>
- *U.S. National forests adapt to climate change through science-managment partnerships.* Littell, J.S., D.L. Peterson, C.I. Millar, K.A. O'Halloran. 2011. Climate Change. DOI 10.1007/s10584-011-0066-0. [http://www.fs.fed.us/psw/publications/millar/psw\\_2011\\_millar004\(littell\).pdf](http://www.fs.fed.us/psw/publications/millar/psw_2011_millar004(littell).pdf)
- *Simulated hydrologic responses to climate variations and change in the Merced, Carson, and American River basins, Sierra Nevada, California, 1900-2009.* Dettinger, M.D., D.R. Cayan, M. Meyer, A.E. Jeton. 2004. Climatic Change 62:283-317.
- *Assessing climate change vulnerability and developing a climate change adaptation strategy for Sierra Nevada birds.* Siegel, Rodney: currently working with partners at USFS, NPS, and UC Davis on this LCC-funded project

### **Coasts and Marine:**

- *Impacts of Sea Level Rise on the California Coast.* [http://www.pacinst.org/reports/sea\\_level\\_rise/](http://www.pacinst.org/reports/sea_level_rise/)
- *Sea Level Rise Maps.* Pacific Institute [http://www.pacinst.org/reports/sea\\_level\\_rise/maps/](http://www.pacinst.org/reports/sea_level_rise/maps/)
- *Climate change and the timing of songbird migration in California: Focus on coastal central and northern regions.* MacMynowski, D.P., T.L. Root. 2007. California Energy Commission, Public Interest Energy Research Program. CEC-500-2007-010. <http://www.energy.ca.gov/2007publications/CEC-500-2007-010/CEC-500-2007-010.PDF>
- *Climate change projections of sea level extremes along the California coast.* Cayan, D., Bromirski, P., Hayhoe, K., Tyree, M., Dettinger, M., & Flick, R., 2008. *Climate Change* 87: 57-73. <http://online.sfsu.edu/~models/Files/References/Cayan2008ClimaticChange.pdf>
- *Climate change scenarios and sea level rise estimates for the California 2008 climate change scenarios assessment.* Cayan, D., Tyree, M., Dettinger, M., Hidalgo, H., Das, T., Maurer, E., Bromirski, P., Graham, N., Flick, R., 2009. California Climate Change Center. <http://www.energy.ca.gov/2009publications/CEC-500-2009-014/CEC-500-2009-014-D.PDF>
- *Internalizing climate change – scientific resource management and the climate change challenges.* Dettinger, M.D. & Culberson, S., 2008. *San Francisco Estuary and Watershed Science*, 6(2). [http://meteora.ucsd.edu/cap/pdffiles/Dettinger\\_ClimatechangeScienceStrategies.pdf](http://meteora.ucsd.edu/cap/pdffiles/Dettinger_ClimatechangeScienceStrategies.pdf)
- *Global climate change and sea level rise: potential losses of intertidal habitat for shorebirds.* Galbraith, H., Jones, R., Park, R., Clough, J., Herrod-Julius, S., Harrington, B., and Page, G., 2002. *Waterbirds*, 25(2), 173-183. [http://research.fit.edu/sealevelriselibrary/documents/doc\\_mgr/470/Global\\_Potential\\_Losses\\_of\\_Shorebird\\_Habitats\\_-\\_Galbraith\\_et\\_al.\\_2005.pdf](http://research.fit.edu/sealevelriselibrary/documents/doc_mgr/470/Global_Potential_Losses_of_Shorebird_Habitats_-_Galbraith_et_al._2005.pdf)
- *Decadal-timescale estuarine geomorphic change under future scenarios of climate and sediment supply.* Ganju, N.K. & Schoellhamer, D.H., 2010. *Estuaries and Coasts*, 33(1), 15-29. [https://darchive.mblwhoilibrary.org/bitstream/handle/1912/3226/Ganju\\_Schoellhamer\\_E%26C.pdf?sequence=1](https://darchive.mblwhoilibrary.org/bitstream/handle/1912/3226/Ganju_Schoellhamer_E%26C.pdf?sequence=1)
- *Potential inundation due to rising sea levels in the San Francisco Bay region.* Knowles, N., 2010. *San Francisco Estuary and Watershed Science*, 8(1). <http://escholarship.org/uc/item/8ck5h3qn>

- *Elevational dependence of projected hydrologic changes in the San Francisco Estuary and watershed.* Knowles, N. & Cayan, D.R., 2004. *Climatic Change*, 62(1), 319-336. [http://tenaya.ucsd.edu/~dettinge/noah\\_cc.pdf](http://tenaya.ucsd.edu/~dettinge/noah_cc.pdf)
- *Potential effects of global warming on the Sacramento/San Joaquin watershed and the San Francisco estuary.* Knowles, N. & Cayan, D.R., 2002. *Geophysical Research Letters*, 29(18), 1891. [http://cirrus.ucsd.edu/~pierce/crd/globalwarming/knowles\\_cayan\\_2002.pdf](http://cirrus.ucsd.edu/~pierce/crd/globalwarming/knowles_cayan_2002.pdf)
- *Protecting Climate Refugia Areas: The case of the Gaviota coast in southern California.* Michael McGinnis. 2008. <http://www.umich.edu/~esupdate/octdec2008/climate%20refugia.pdf>
- *Climate change impacts on US coastal and marine ecosystems.* Scavia, D., Field, J.C., Boesch, D.F., Buddemeier, R.W., Burkett, V., Cayan, D., Fogarty, M., Harwell, M.A., Howarth, R.W., Mason, C., Reed, J., Royer, T.C., Sallenger, A.H. & Titus, J.G., 2002. *Estuaries and Coasts*, 25(2), 149-164. [http://tenaya.ucsd.edu/~cayan/Pubs/66\\_Scavia\\_Estuaries\\_2002.pdf](http://tenaya.ucsd.edu/~cayan/Pubs/66_Scavia_Estuaries_2002.pdf)
- *CASCaDE: Computational Assessments of Scenarios of Change for the Delta Ecosystem.* USGS. 2007. <http://sfbay.wr.usgs.gov/cascade/>
- San Francisco Bay Joint Venture Climate change section of Phase I Monitoring & Evaluation Plan available here: <http://www.sfbayjv.org/monitoring-evaluation.php> (click link for "climate change")
- *Monitoring Climate Effects in Temperate Marine Ecosystems.* MPA Monitoring Enterprise, California Ocean Science Trust, Oakland, CA. February 2012. <http://ecoadapt.org/data/library-documents/Monitoring%20climate%20change%20effects%20in%20temperate%20marine%20ecosystems%2030612.pdf>
- *Vulnerability Assessments in Support of the Climate Ready Estuaries Program: A Novel Approach Using Expert Judgment, Volume I: Results for the San Francisco Estuary Partnership* <http://cfpub.epa.gov/ncea/global/recordisplay.cfm?deid=241556#Download>
- *Coastal Adaptation to Climate Change: Lessons from America's Coasts.* Laura Hansen. 2011. [http://www.cakex.org/sites/default/files/Lara\\_Hansen\\_EcoAdapt\\_NCSE2011\\_Intro.pdf](http://www.cakex.org/sites/default/files/Lara_Hansen_EcoAdapt_NCSE2011_Intro.pdf)

### **Central Valley and Coast Ranges:**

- *Climate Change Impacts to Species and Ecosystems of San Louis Obispo County*. National Center for Conservation Science and Policy. [http://www.lgc.org/adaptation/slo/docs/NatSystReview\\_03\\_03\\_2010opt.pdf](http://www.lgc.org/adaptation/slo/docs/NatSystReview_03_03_2010opt.pdf)
- *Projected Future Climatic and Ecological Conditions in San Louis Obispo County*. National Center for Conservation Science and Policy. [http://www.lgc.org/adaptation/slo/docs/SLOModelReport\\_FINALsmall.pdf](http://www.lgc.org/adaptation/slo/docs/SLOModelReport_FINALsmall.pdf)
- *Future Climate Conditions in Fresno County and Surrounding Counties*. National Center for Conservation Science and Policy. [http://www.lgc.org/adaptation/fresno/docs/Future\\_Climate\\_Conditions-Fresno\\_County\\_and\\_Surrounding\\_0710.pdf](http://www.lgc.org/adaptation/fresno/docs/Future_Climate_Conditions-Fresno_County_and_Surrounding_0710.pdf)

### **California Deserts:**

*The references below can be found in DFG's online document library.*

- *Global Climate Change: Potential Effects on Ecosystems in the Great Basin and Mojave* (presentation by Stanley Smith, UNLV) [http://www.wr.usgs.gov/workshops/ccw2010/presentations/S2\\_Smith%20talk.pdf](http://www.wr.usgs.gov/workshops/ccw2010/presentations/S2_Smith%20talk.pdf)
- *A shift in seasonal rainfall reduces soil organic carbon storage in a cold desert*. Zachary T. Aanderud, James, H. Richards, Tony Svejcar, and Jeremy J. James. 2010. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46439>
- *Long-term variation in soil temperature of the Mojave Desert, Southwestern USA*. Yanying Bai, Thomas A. Scott, Weiping Chen, Richard A. Minnich, Andrew C. Chang. 2011. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46440>
- *Assessing sensitivity to climate change and drought variability of a sand dune endemic lizard*. Cameron W. Barrows, John T. Rotenberry, Michael F. Allen. 2010. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46441>
- *Soil texture drives responses of soil respiration to precipitation pulses in the Sonoran Desert: Implications for climate change*. Jessica M. Cable, Kiona Ogle, David G. Williams, Jake F. Weltzen, and Travis E. Huxman. 2008. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46442>
- *Effects of climate change on population persistence of desert-dwelling mountain sheep in California*. Clinton W. Epps, Dale R. McCullough, John D. Wehausen, Vernon C. Bleich, and Jennifer L. Blechel. [http://nature.berkeley.edu/BrasharesLab/documents/epps\\_Consbio2004.pdf](http://nature.berkeley.edu/BrasharesLab/documents/epps_Consbio2004.pdf)

- *Pulse events in Great Basin Desert Shrublands: Physiological responses of Artemisia Tridentata and Purshia Tridentata seedlings to increased summer precipitation.* Ian G. Gillespie, Michael E. Loik. 2004. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46443>
- *Using population viability analysis to predict the effects of climate change on the extinction risk of an endangered limestone endemic shrub, Arizona Cliffrose.* Joyce Maschinski, Joanne E. Baggs, Pedro F. Quintana-Ascenio, and Eric S. Menges. <http://pascencio.cos.ucf.edu/classes/Research%20publications/PDFManuscripts/Maschinski%20et%20al%202006.pdf>
- *The ecological role of climate extremes: Current understanding and future prospects.* Melinda D. Smith. 2011. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46444>
- *Responses of macroinvertebrate communities to long-term flow variability in a Sonoran Desert stream.* Ryan A. Sponseller, Nancy B. Grimm, Andrew J. Boulton and John L. Sabo. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46445>
- *Tolerance mechanisms in North American Deserts: Biological and societal approaches to climate change.* Z.R. Stahlschmidt, D.F. Denardo, J.N. Holland, B.P. Kotler, M. Kruse-Peeples. [http://bchs.uh.edu/~nholland/PDF/2011\\_Stahlschmidt\\_etal\\_JAE.pdf](http://bchs.uh.edu/~nholland/PDF/2011_Stahlschmidt_etal_JAE.pdf)
- *Effects of increased summer precipitation and N deposition on Mojave Desert populations of the biological crust moss Syntrichia caninervis.* L.R. Stark, J.C. Brinda, D.N. Mcletchie. 2011. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46446>
- *Effects of fire on vegetation and small mammal communities in a Mojave Desert Joshua Tree Woodland.* M.S. Vamstad, J.T. Rotenberry. 2010. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46447>
- *Is the Sonoran Desert losing its cool?* Jeremy L. Weiss and Jonathan T. Overpeck. 2005. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46448>
- *Understanding interaction effects of climate change and fire management on bird distributions through combined process and habitat models.* Joseph D. White, Kevin J. Gutzwiller, Wylie C. Barrow, Lori Johnson-Randall, Lisa Zygo and Pamela Swint. 2011. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=46449>