



California's Fifth Climate Change Assessment
Draft Research Topics

Natural Waters and Biodiversity

This category includes California's Fifth Climate Change topic suggestions regarding climate impacts on natural aquatic ecosystems, habitat and biodiversity, including ocean areas, estuaries, lakes, and streams and rivers, throughout California, and how to respond to such impacts. **Each roundtable discussion includes considerations for equity, traditional knowledges, governance, and economics and financing.**

Draft Research Topics & Gaps for Discussion	
NWB 1	Conditions that contribute to increases in invasive aquatic vegetation under various climate change scenarios.
NWB 2	Drivers of harmful algal blooms and identifying what tools and practices are needed to prevent and control them.
NWB 3	Impacts of climate change (including extreme events) on aquatic and marine biodiversity. This includes what factors play a role in vulnerability and resilience, ways to identify the greatest threats to aquatic and marine biodiversity caused by climate change, molecular changes, understanding how species will respond to climate change, and techniques and metrics for tracking and monitoring the impacts of climate change on aquatic and marine biodiversity.
NWB 4	Management options to address salination of freshwater due to sea level rise and persistent drought.
NWB 5	Effects of increasing water temperatures, varying precipitation patterns and associated events such as harmful algal blooms on fish and other aquatic species, including chronic and acute physiological changes, sex ratios, and fecundity.
NWB 6	Identifying restoration and conservation management practices that best increase climate resilience for native fish species.
NWB 7	Effects of large-scale forest management on stream flows and wetlands as precipitation patterns change, including impacts to hydrology, water temperature, habitat, and biodiversity. What conditions resulting from potential forest management techniques will maintain (or conversely cause excessive stress) to aquatic habitats and ecosystem services?
NWB 8	Impacts of intrusion from saltwater caused by sea level rise on coastal wetlands and estuaries. This includes identification of what areas are most vulnerable to saltwater intrusion.
NWB 9	Climate refugia opportunities for aquatic and marine species that might enable adaptation and increase resilience to climate change impacts. This includes restoration and conservation opportunities, and connectivity/migration pathways and corridors.



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NWB 10	Roles of wetlands and associated ecosystem functions in maintaining carbon storage, water supply, and water quality. This may consider various habitat restoration techniques, including animal and other process-based restoration such as beavers.
NWB 11	Impacts of ocean acidification and hypoxia on marine ecosystems, wildlife and food webs.
NWB 12	Ocean warming trends and events and their impacts on marine ecosystems.
NWB 13	Sea level rise impacts to California, including identification of vulnerability hot spots.
NWB 14	How coastal erosion and landslide risks affect changes in coastal habitats.
NWB 15	How headwater management practices affect downstream water supply and quality. This includes identifying practices to maximize snowpack retention and measuring watershed yield based on changes in forest density/basal area.
NWB 16	How wildfire management practices, such as the deployment of phosphate-based flame retardants, affect aquatic ecosystems.
NWB 17	Impacts of increased runoff and sedimentation due to wildfire and precipitation events on aquatic and marine habitats.
NWB 18	Impacts of wildfire smoke on aquatic ecosystems, including effects on water quality or composition, light availability and primary productivity.
NWB 19	Identifying which streams and rivers have the highest potential to preserve biodiversity under a range of climate scenarios.