Seasonal Wetlands Habitat
Vulnerability Assessment Summary

Overall Vulnerability

Seasonal Wetlands	Score (1-5)	Confidence (1-3)
Sensitivity	Moderate-High (4)	High (3)
Exposure	Moderate-High (4)	High (3)
Adaptive Capacity	Moderate (3)	High (3)
Vulnerability	**Moderate-High (4)**	**High (3)**

Sensitivity

Climate-driven Stressors	Potential Impacts
Snowpack and precipitation amount	Water for seasonal wetlands in spring/summer comes from water in snowpack and reservoir storage. Water availability and cost is a limiting factor for wetland irrigation.
Precipitation timing	Water timing is critical, and the need is often greatest when water availability is lowest and competition for water resources (e.g., with agriculture) is high.
Timing of snowmelt/runoff	Timing of runoff important for seed germination and production in seasonal wetlands, seed production highest when spring drawdown occurs slowly through evaporation
Extreme events (drought)	Less sensitive to drought than other habitats if stored water is available.

Disturbance Regimes	Potential Impacts
Flooding	Natural scouring from high water flows has been replaced by tractor disking as a habitat management technique; important for maintaining mosaic habitat for giant garter snake.
Grazing	Moderate grazing increases species richness and vegetative cover. Intensive grazing may negatively impact water quality.
Wildfire	Seasonal wetland management typically includes prescribed fire, which may be used to increase species richness and vegetative cover

Non-climate Stressors	Potential Impacts
Hunting	Hunting provides funding for the conservation of this habitat. Two-thirds of wetlands on private lands are maintained for hunting.
Land use change	Unprotected wetlands are vulnerable to future land use conversion, and many privately-owned wetlands, which comprise two-thirds of all seasonal wetlands in the Central Valley, remain unprotected.

Non-climate Stressors	Potential Impacts
Invasive species	Warmer temperatures and water shortages resulting in eariler drawdowns may allow more xeric plants to invade seasonally-flooded wetlands
Nutrient loading	Increased nutrient availability can increase production of algae, decrease dissolved oxygen, and alter the species composition of plant, invertebrate, and aquatic vertebrate communities.

Exposure

Future Projected Changes	Exposure Notes	Potential Refugia
Decreased snowpack and earlier snowmelt & runoff, resulting in less available stored water	Statewide, 1% or less of the current area of freshwater marsh is projected to remain suitable by the end of the century, and the small areas of marsh that are still suitable will likely occur as vegetation refugia.	Projected suitable habitat primarily on the eastern side and a small area located on the far north-western edge.
Agricultural practices & Land use change	Two-thirds of the remaining area of seasonal wetlands is privately owned; these areas are exposed to change away from flooding practices during periods of drought when the cost of water is very high.	Regions where access to stored water is more secure.

Adaptive Capacity

Ecosystem condition	Habitat greatly reduced and highly fragmented. Over half of remaining habitat is located in the San Joaquin (61,000 acres) and Suisun (32,000 acres) basins. There is significant year-to-year variation in the area of flooded habitat, responding to water availability.
Resistance & recovery	Resistance to climate stressors is largely related to the economic support coming from hunters, as well as incentive programs, both of which fund habitat management and water costs.
Diversity	Characterized by moderate overall habtitat diversity with high species diversity. Tricolored blackbird and salt marsh harvest mouse (Suisun) the most sensitive component species.
Management potential	Low-moderate likelihood of converting farmland to wetland habitat due to competition with commodity prices. Receives regulatory, legislative support but society would have to prioritize wetland management over other uses of water. Frequent flooding may increase societal support, drought reduces support. Possibility of being able to manage/alleviate the impacts of climate change are good because the system is highly managed. Land managers may be able to buffer wetlands from climate change impacts if water is available, as well as policies that support wetland irrigation. Flooded croplands complement wetland habitat continuity.