The Central Valley Habitat Exchange: Quantifying Benefits for Multiple Species at Parcel and Landscape Scales

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Land use conversion, drought, and climate change are conspiring against many native species once abundant in the Delta and Central Valley. Restoring and protecting habitat is critical for their recovery, and private lands, which make up over 80% of the Central Valley, are a necessary part of the solution. How do we engage private land owners in this effort to effectively address multiple species needs?

We developed and piloted a scientifically based, transparent and accessible tool to assess habitat quality for multiple species native to the Central Valley. The Multispecies Habitat Quantification Tool (mHQT) applies a multi-scaled approach for assessing habitat quality and quantity, and for tracking conservation or mitigation outcomes for native species in the Central Valley. To date, these species include Swainson's hawk and riparian landbirds; tools for other species are under development. The mHQT can assess a specific parcel as well as the relative value of that site on a landscape scale, when compared to other sites. Within the Central Valley Habitat Exchange (CVHE), habitat credits and debits are assigned to the most beneficial locations for species, and parcel scale contributions to species' habitat are tracked over time.

We compared tool scores for Swainson's hawk and riparian land birds to species use and occurrence at six locations in the Delta and Central Valley using ranked comparisons. Our findings support use of the tool as a valid, transparent and accessible means of prioritizing areas and actions to create multiple species benefits. The CVHE is working with private land owners and local planning agencies to apply the mHQT to inform management and to improve planning, tracking, and reporting. The mHQT provides clear and concrete guidelines with response scores that private landowners can use to demonstrate good stewardship, implement conservation and mitigation projects, and to guide land management planning.

Keywords: multiple benefits, habitat mitigation, private lands, quantification tool,

Poster Topic: Natural Resource Management

Desalination Cost Analysis for California

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In 2015, desalination -- from seawater, brackish and other sources -- accounted for 25.7 MAF/yr of worldwide, and 62.1 TAF/yr of California's water production capacity. California's droughts spur conversations on desalination as a panacea. However, two factors have hindered the widespread adoption of desalination: its high costs and environmental effects. In this paper, the CALVIN model of California's water supply system was used to study economical operations with different desalination costs, under different climate scenarios. Given historical hydrology, the use of ocean desalination remains minimal until its costs fall by 40%, after which use increases. Given an overlay of climate change this value decreases to 20%. These results show the viability of cheaper desalination with an increasingly constrained water supply. Should desalination overcome its environmental challenges, it can foster long-term regional sustainability by bringing greater resilience, reliability and local control to areas like the California coast.

Keywords: Desalination, Climate Change, California, Water Supply Management

Poster Topic: Natural Resource Management