



Using prescribed fire as a management tool for the Yuma clapper rail and California black rail



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Why burn wetlands on the LCR ?

- ▶ The LCR was once a highly ephemeral system with large spring floods that removed the decadent vegetation from existing marshes, encouraged the growth of early successional vegetation, and created new marshes throughout the flood plain of the river.
- ▶ Flood control efforts and dams on the LCR have reduced the variation in annual flow rates causing decadent vegetation to build up in existing marshes.
- ▶ Prescribed fire in marshes might be a tool that would simulate the historic flood regime by removing the decadent vegetation from marshes and encouraging early succession vegetative growth.

How will burning help the birds ?

- ▶ Excessive decadent vegetation is thought to negatively impact wetland-dependent birds by reducing vertical cover, reducing access to food resources, and limiting the production of prey items by shading the marsh bottom.
- ▶ The Yuma clapper rail is a federally endangered species that occurs mainly in the LCR basin in Arizona, California and Mexico.
- ▶ The California black rail is threatened in California and endangered in Arizona, a bird of "National Conservation Concern", and was once a candidate species for federal listing.
- ▶ Many other wetland-dependent birds of management concern also occur on the LCR including Virginia rails, soras, and least bitterns.

How are we evaluating the effects of fire ?

- ▶ We worked with USFWS and BLM fire management teams to conduct prescribed fires in 22 marshes throughout most of U.S. range of the Yuma clapper rail between 2003 and 2006.
- ▶ We are monitoring the number of each species of wetland-dependent bird in marshes burned by prescribed fire, marshes burned by wildfire, and unburned marshes near burned marsh throughout the LCR basin in the U.S. We have conducted surveys within each marsh for ≥ 1 year pre-fire and ≥ 2 years post-fire.
- ▶ We are comparing the change in the number of birds post-fire in both burn and control marshes. This rigorous study design incorporates both temporal and spatial controls to ensure that factors not associated with fire do not influence our results.



An unburned marsh on the LCR with a build-up of decadent vegetation and no early-successional vegetation



An adjacent burned marsh on the LCR. Fire removed decadent vegetation and promoted growth of early-successional vegetation.

Rail populations increase post-fire

- ▶ Yuma clapper rail abundance increased in the first three breeding seasons post-fire. Detection probability estimated using Program MARK did not differ between burned and unburned marshes.
- ▶ California black rail abundance was not affected by fire.
- ▶ Abundance of the other 3 focal species of wetland-dependent birds were either unaffected or increased in response to fire.

Taking the next step: determining the fire frequency necessary to maintain optimal habitat

- ▶ Managers need to know how often to burn marshes to maintain optimal rail habitat so they can create a long-term inter-agency burn plan to recover Yuma clapper rail populations.
- ▶ We will continue to monitor burned and unburned marshes for at least 2 more years to help determine the frequency with which to reapply fire to maintain high quality rail habitat.

