

# Klamath Bird Observatory



Advancing bird and habitat conservation through science, education, and partnerships

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## **Birds Teach Scientists How to Improve Streamside Restoration**

Ashland, OR—Restoring river health in the western United States is important for addressing drought and water quality issues in support of restoring endangered salmon populations, but it is often challenging to understand how best to restore wildlife habitat along stream banks. A new study by a team of researchers from Klamath Bird Observatory (KBO), in partnership with the Trinity River Restoration Program (TRRP), sheds light on how best to understand the success of river restoration efforts: follow the birds.

Researchers studied a series of sites along the Trinity River in northern California for four years to figure out how best to restore vegetation along streambanks following river restoration. Creating new side channels and lowering the floodplain next to streams is good for fish spawning and rearing, but creating more salmon habitat sometimes requires a bulldozer. Removing lush, dense bank vegetation in the process may seem like bad news for birds, but the TRRP replants portions of the riverside with native trees and shrubs, and the birds come back. Still, it is important to monitor the newly created floodplains to ensure they are providing good habitat for wildlife – just in case this human assistance isn't working the way we expect it to. The research team found that there are ways to plan river restoration and replant vegetation that encourage the birds to return, which can help improve restoration projects in the future.

To learn how birds respond to restoration, scientists studied four key bird species that are common in riverside habitats (Black-headed Grosbeak, Song Sparrow, Yellow-breasted Chat, and Yellow Warbler) at a set of sites that have undergone restoration by the TRRP and a set of sites that were left as remnant mature forest. Birds are good indicators of healthy, functioning ecosystems, in part because they have a diverse range of habitat needs and respond quickly to changes in their environment. The authors compared vegetation on the recently restored sites to the remnant mature forest, and monitored which vegetation features were preferentially used by birds. Birds in the study overall chose to use areas with features of mature forest that were less abundant on new floodplains in the early stages of revegetation (planted just 3-10 years ago). Birds used the newly restored sites too, particularly the remnant patches of undisturbed habitat on those sites. Looking at where birds choose to raise their young reveals why: birds generally placed their territories and/or nests in areas with more canopy cover, taller trees, greater tree species diversity, and multiple layers of vegetation at different heights – all habitat features that may take decades to develop on restored areas. Knowing that these habitat features are important helps land managers recreate the best quality habitat for terrestrial wildlife and informs restoration planning. For example, future projects may benefit birds by leaving patches of mature vegetation within or near restoration sites whenever possible.

One result was unexpected. “We were really interested in the fact that Yellow-breasted Chats and Yellow Warblers frequently placed their territories or nests in areas with more Himalayan blackberry,” says Dr. Sarah Rockwell, KBO Research Biologist and lead author of the study. “Himalayan blackberry is a non-native, invasive shrub that land managers spend a lot of time and money removing – an important restoration practice – but the removal may have unintended consequences for birds.” She suggests that replanting with similarly structured native shrubs may be important in order to provide good nesting habitat for these birds following restoration.



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Habitat selection of riparian birds at restoration sites along the Trinity River, California. Published in Restoration Ecology (Early View online) DOI: 10.1111/rec.12624.

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**About Klamath Bird Observatory:**

Klamath Bird Observatory advances bird and habitat conservation through science, education, and partnerships. We achieve bird conservation in the Pacific Northwest and throughout the migratory ranges of birds native to our region. We developed our award-winning conservation model in the ruggedly beautiful and wildlife-rich Klamath-Siskiyou Bioregion of southern Oregon and northern California. Emphasizing high-caliber science and the role of birds as indicators of the health of the land, we specialize in cost-effective bird monitoring and research projects that improve natural resource management. Also, recognizing that conservation occurs across many fronts, we nurture a conservation ethic in our communities through our outreach and educational programs. Visit Klamath Bird Observatory at [www.KlamathBird.org](http://www.KlamathBird.org).

**About Trinity River Restoration Program:**

Created by a Record of Decision from Congress in 2000, the TRRP is an inter-agency partnership (including National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Reclamation, California Natural Resources Agency, Hoopa Valley Tribe, Yurok Tribe, and Trinity County) with funding from Bureau of Reclamation appropriations, Central Valley Project Improvement Act funds, and U.S. Fish and Wildlife Service funds. Its creation was motivated by drastic declines in salmonid fish populations observed in the Trinity River since the installation of two dams in the early 1960s, which slowed and stabilized the river flow, causing changes in the shape of the river channel and hydrology that were detrimental to salmonids. The TRRP is tasked with returning salmon fisheries to pre-dam levels by restoring the river’s physical processes - through techniques such as watershed restoration, managed flows, channel rehabilitation including construction of floodplain habitat scaled to restoration flow levels, gravel augmentation, and addition of large woody debris. These efforts are managed by the Trinity Management Council Partners, and advised by the Trinity Adaptive Management Working Group and a Science Advisory Board. Visit TRRP at [www.trrp.net](http://www.trrp.net).

**Image 1:** Caption – The Yellow-breasted Chat, one of the focal bird species used in the study, prefers areas with dense shrubs (Photo Credit James Livaudais).

Image files: Yellow-breasted Chat © James Livaudais (72ppi 1.7x2.4).jpg, Yellow-breasted Chat © James Livaudais (300ppi 1.7x2.4).jpg

**Image 2:** Caption – KBO scientists monitor birds as they return to streamside habitats like these, to learn how to improve river restoration projects. Young willows grow on a restoration site on the right bank, while mature alder trees make up the canopy on the left bank (Photo Credit Allison Salas).

Image files: Trinity River riparian © Allison Salas (72dpi 3.6x2.4).jpg, Trinity River riparian © Allison Salas (300ppi 12.7x8.5).jpg