

Anticipated restoration offers hope for Mill Creek

by Morgan Lindsay

The welcome heat of late spring brings fresh snowmelt gushing down Mono Lake's tributary streams and triggers a surge of new life after the long winter. Black cottonwood buds swell with the prospect of bright green leaves; quaking aspens display cascades of feathery catkins; mayflies and caddis flies hatch by the hundreds, a tasty treat for brown and rainbow trout; and Song Sparrows sing melodies while staking out their nesting territories. With such visible signs of health in full display, it's difficult to imagine that only 30 years ago the same creeks were dry and lifeless.

This creek is not like the others

This *Newsletter* features an in-depth look at the decades of successful restoration work still ongoing for Rush, Lee Vining, Parker, and Walker creeks—but Mill Creek, the third largest in the Mono Basin, is still struggling to survive. In their 1994 recommendations to historic Decision 1631, scientists considered the restoration of Mill Creek's vibrant cottonwood-willow forest a valuable restoration opportunity. However, even though Mono Lake's decline degraded Mill Creek through incision, the north basin stream was not included in the State Water Board's restoration order because Los Angeles never diverted water from Mill Creek.

Mill Creek through time

Instead, Mill Creek's flow is governed by established water rights for diversions within the Mono Basin that serve hydropower, irrigation, and fish-rearing uses. Northwest of Mono Lake, Mill Creek flows 13 miles from high in Lundy Canyon through Lundy Lake Reservoir and the bottomlands, entering Mono Lake west of Black Point. Mill Creek once supported acres of mature cottonwood-willow forest spreading across a wide valley floor interlaced with meandering channels and deep pools—an oasis for birds, mammals, and fish in an otherwise arid landscape. But as a result of a century's worth of local diversions, Mill Creek is only able to support a narrow corridor of trees along the banks, leaving dead snags and drought-tolerant shrubs where the forest had flourished (see Spring 2010 *Newsletter*).

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Bring back the bottomlands

In light of this situation, Mill Creek represents a significant opportunity for future restoration in the Mono Basin. As suggested by the success at nearby Rush and Lee Vining creeks, Mill Creek also stands ready to flourish once given the chance.

Restoration can be measured in many different ways—from the distribution and sinuosity of side channels, to the amount of large woody debris present in the creek, to maximum trout size, the density of mature trees, diversity of bird species, depth to groundwater table, the list goes on. All of these indicators are important signs of a stream moving towards health, but in general, the goal of restoration in the Mono Basin is to reinstate natural processes in order to re-establish natural conditions. This focus enables the stream to regain resiliency and self-sustaining processes like the slow but constant movement of stream channels across a floodplain.

Early signs of recovery

Despite the decades of dewatering and incision, in recent years Mill Creek has generally received just enough water to prevent it from running dry before it reaches the lake. This tenuous lifeline has allowed Mill Creek to display the



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first tentative signs of recovery, beginning with more mature cottonwood and willow trees stabilizing the fragile banks. This upswing in plant growth in turn provides better nesting and foraging habitat for waterfowl and songbirds.

As part of an extensive songbird monitoring program in the Eastern Sierra, PRBO Conservation Science studied the population of birds on Mill Creek from 1998–2005. The researchers conducted point counts to document the species present in a given area at any one time, searched for and monitored nests to document their productivity, and even set up cameras to record nest predators like Brown-headed Cowbirds in action (see Spring 2003 *Newsletter*).



GEORGE MCCOULIKIN

Committee staff and restoration scientists looking out at part of the Mill Creek bottomlands.

This baseline research shows that of the Mono Basin bottomland streams, Mill Creek has the second highest bird species diversity after Lee Vining Creek, which testifies to the variety and potential of the surviving habitat. The data also indicates that the species richness (or composition) is fairly static, and has not changed drastically since the monitoring began. In addition, territory numbers for riparian associated species like the Yellow Warbler are much lower than on Lee Vining Creek or Rush Creek. This valuable information confirms that Mill Creek is surviving, but not thriving—although it remains ready to respond quickly to a more natural flow pattern.

Poised for recovery

Looking ahead, the recent completion of a settlement agreement for the relicensing of the Lundy Powerhouse, a Committee project for many years (see Spring 2008 *Newsletter*), opens the door to meaningful restoration for Mill Creek. Facilities improvements will allow water diverted for hydropower to return directly to Mill Creek in keeping with established water rights.

After giving his expert testimony to the State Water Board concerning the pre-diversion condition of Rush Creek, Elden Vestal remarked of its future, “Perhaps it will be like it was.” For Mill Creek, we cannot hope to erase the deep scars of over 100 years of dewatering. What we can do is remove the obstacles to the creek’s natural ability to heal itself. If we give it a fair chance, by re-opening long dry channels, and ensuring it gets the water it needs, Mill Creek is poised to make a remarkable recovery. ❖

Birds, bugs, and cottonwoods

As I tromp alongside Mill Creek the sunny March day feels warm, but snow remains two or three feet deep under our snowshoes. During lunch we take a break from shoveling, pounding stakes, trimming lengths of ¾-inch white PVC pipe, and zip-tying unwieldy yards of microfilament netting. Longtime Mono Basin PRBO Conservation Science researcher Sacha Heath fills me in on what all of this vigorous exercise has to do with her Master’s thesis work at Humboldt State University.

In short, her project investigates several interacting layers of the food chain, examining the “contributions of insectivorous birds to riparian plant growth in a restoration setting.” The overarching goal of Heath’s research is to determine to what extent birds influence plant growth, and therefore the progress of restoration, by consuming herbivorous insects.

The simplest way to find out birds’ effects is to compare a setting with birds to a setting without them. However, it is difficult, if not impossible, to control birds’ movements. It’s much easier to identify a similar pair of black cottonwood saplings alike in size, distance from the creek, and other variables, and then build an “exclosure” to prevent birds from accessing one of the saplings. The experiment will compare each control sapling with its excluded neighbor and determine the difference between the two saplings in insect populations, foliage damage, and overall plant growth.

Heath’s work is exciting because it proposes to answer questions about what role birds like Song Sparrows and Yellow Warblers play in riparian forest regeneration. This kind of information is central to the adaptive management restoration approach, which involves learning by doing and then carefully monitoring the results to inform future actions. The more we know about how plants and animals interact in stream environments, the better we can work to restore the natural processes that sustain them.



MORRAN LINDSAY

Researcher Sacha Heath with a newly constructed temporary bird exclosure on Mill Creek, one of 30 she will be monitoring this summer.