

## The streams wait patiently as we learn

by Greg Reis

On December 6<sup>th</sup>, 62 miles of the Lower Owens River were rewatered for the first time in almost a century. It is a great start, and it will take years for water-dependent wildlife habitat to develop.

We can compare this to the roughly 20 miles of Mono Basin streams that were rewatered after being dry for 40 years. There is much to learn from 20 years of recovery on Rush, Lee Vining, Parker, and Walker Creeks. Here are a few things we've learned—though we seem to come up with questions just as often as answers.

It is a slow process. An individual black cottonwood tree can produce over 13 million seeds, most of which are deposited within 5 meters of the tree. Does this mean that a dry 500 meter gap in trees will be filled, at 5 meters per year (if we are lucky), in 100 years?

Perhaps. There are 227 plant species along Rush and Lee Vining Creeks, 20 of which are non-native. Some move faster than cottonwoods.

Riparian plant communities are most strongly affected by distance to groundwater (more so on Rush Creek than Lee Vining Creek), frequent disturbance, and availability of fine substrate. High streamflows move all of these in a beneficial direction. Rush Creek was deprived of high flows from 1999 until 2004 due to delayed facility upgrades and dry years. Have the last two wet years caught us up?

Vegetation surveys in 2001 and 2005 found that vegetation structure is mostly static. Without new channel openings or higher flows, only gradual changes in vegetation are likely to occur in the next 5–10 years. We are planting some trees to help things along, but will these trees be able to successfully regenerate into future generations? We are working to open channels, but will they stay open? We are hoping for higher flows, but will the dams and the dam operators—and the climate—be able to do it?

The pre-diversion acreage of woody riparian vegetation was 240 acres on Rush Creek and 109 acres on Lee Vining Creek. On average, all Rush Creek and Lee Vining Creek reaches



PHOTO COURTESY OF JOHN BAIR

A remarkable 75 centimeters of new growth on a Mono Basin black cottonwood shoot.

have recovered to 77% and 74% cover, respectively. Unfortunately, the most barren reaches of Rush Creek are only 30% recovered, and some reaches of Lee Vining Creek are only 36% recovered.

That is just woody plant cover. Structure and species composition are another matter. The beginnings of a cottonwood forest only exist in 47 out of 172 transects—and only 5 of those transects are in the cottonwood-deficient Rush Creek drainage.

“Channel 8” is a plugged stream channel in the Rush Creek bottomlands. The restoration plan calls for a year-round flow to be restored to the channel, however, the Water Board appointed scientists in charge disagree with the plan. They have deferred this, and so far have only turned it into a high flow channel. But every year it is opened up a bit more, and we are almost to the point of perennial flow. Vegetation surveys in the area showed a steady increase in riparian vegetation in 2005, and amazing growth in 2006. In fact, many cottonwood shoots grew 75 cm in 2006, when in previous years they only grew 5 cm. The good growing season conditions during the last two years, mainly high flows aided by additional channel opening work, influenced this phenomenal increase in growth.

Vegetation recovery is only one piece of the puzzle, and we are also learning—and asking more questions about—fish, birds, geomorphic processes, and flow management. These lessons will be shared with restoration practitioners on the Owens River, San Joaquin River, and on our very own Mill Creek. And we will continue to learn from other efforts as well. There is much to be hopeful about—and much work yet to do. ❖

*Greg Reis is the Committee's Information Specialist. He sometimes embarks on superhuman feats, the most recent of which involved running from Mono Lake to Tioga Pass and then hiking to the top of Mount Dana.*