

A Moo-ving Story

Planting tree buffers in pastoral streams to help salmon

Notable notes in forest research at Oregon State University College of Forestry

In many areas, farmers have cleared trees from land along streams in western Oregon to plant crops and graze livestock. Without the trees to shade the stream, the water may become too warm during the low flows of summer. Without tree roots to hold the soil in place, erosion may accelerate, especially where cattle trample the bank. Water quality may decrease as soil—sometimes loaded with excess nutrients or herbicides from farm fields—wash into streams.

All this is bad news for fish like salmon. Salmon need clear cool water and streams with complex habitat such as deep pools, fast-moving riffles, and quiet shallows.

But farmers need fertile land to produce the food we all consume. Is there a way to help keep coastal streams cool and clean for fish, while still allowing farmers to graze cattle and grow crops in their riparian pastures? Scientists Badege Bishaw and Bill Emmingham (College of Forestry, Forest Science), and Bill Rogers (Extension Agent, Newport) set up a study to find out.

They planted tree buffers or “filter belts” of red alder trees in pastures along Beaver Creek in the Oregon Coast Range. Buffers were planted one, three, and six rows thick to test the tradeoff between benefits to the stream and land taken from pasture. To help the young trees get established, the scientists controlled competing vegetation. They built fences to keep cattle from trampling or eating the young trees. When beavers, mice, and other rodents began munching on the trees, they installed protective tubes around the trunks. The beavers along Beaver Creek were especially persistent and it took several tries to find the right kind of protection.

For 7 years, scientists measured the amount of shade the trees cast on the stream by measuring the amount of light the trees’ leafy canopies intercepted. Six-row buffers began significantly shading the stream in only 2 years. Even a single row of trees shaded the stream after 4 years. After 8 years, farmers could let cattle graze in the shade beneath the young trees, as long as the fence was kept in place to protect the stream bank. Overall, the project demonstrated that tree buffers can be established and provide significant benefits to the stream in just a few years. And that’s good news for fishermen and farmers!

For more about trees and salmon habitat, see [Salmon of the Future](#).

