

# **Buying Time...In-Stream Restoration (transcript)**

## **Narrator**

A watershed is the land area that drains into a particular stream or river...And the streams running along the bottom of a watershed inevitably are affected by what goes on in the rest of the basin, both good and bad.

Although these water ways make up only one per cent of the watershed they are a critical component to watershed health. A well functioning stream contributes to water quantity and quality and it plays important role in flood and erosion control.

And of course it's where wildlife and fish live...

## **Steve Johnson-Research Biologist, Oregon Department of Fish and Wildlife**

Each species of salmonid that uses this system has a different fresh water life history.

## **Narrator**

Steve Johnson has spent years studying salmon and trout in Western Oregon.

## **Steve Johnson**

Here's a coho salmon...emerged a little over a year ago out of the

gravels. Has spent all of last summer and all this last winter rearing in the watershed and now he's finally heading out.

## **Narrator**

On Ten Mile creek a half dozen species of fish use different parts of the stream system during different times of the year.

## **Steve Johnson**

Many of the other species in here...the juvenile coho, the steelhead, the sea run cutthroat trout...are spending at least one winter and in the case of the trout, usually multiple years, in this system before they actually go on their seaward migration. The longer these fish have to maintain their population in the freshwater the more tied in they are to the structure.

## **Narrator**

The structure Steve's talking about... the fallen trees and boulders, the beaver dams, and the meanders all slow the water down. The result—quiet pools and a refuge from flood waters and predators—a safe haven for young salmon and trout. Slowing down the water allows gravel to drop out and form gravel beds where fish spawn and insects, a food source for growing fish, thrive.

Slowing down water also helps control down cutting erosion and improves water quality by causing fine sediments to drop out.

These days many streams are missing critical structure. Historically trees and snags were removed, to clear the way for boats and for logs in route to sawmills downstream.

Beginning the 1950's, in an effort to reduce the negative impacts of

impassable man-made logging debris jams, often all wood— both logging debris and naturally occurring wood was removed. When the practice ended in the 1970's many streams were left barren of woody structure.

In-stream restoration can be as varied as the watersheds where it occurs. At one extreme a whole watershed restoration can include changing tree plantations into natural forests, removing roads and culverts, planting riparian areas. On Ten Mile creek where Steve Johnson's working, ridge top to ridge top restoration is underway. The U.S. Forest service is jump starting the in-stream restoration process by harvesting some big trees and using helicopters to place them in the creek. The man made structures are placeholders that maintain stream function. This move buys time for trees to grow and rocks to roll. It may take 100 years or more for natural delivery of materials into this stream.

## **Narrator**

The project has attracted a lot of attention. Jack Sleeper is in charge of the project for the U.S. Forest Service.

## **Jack Sleeper-Fish Biologist, U.S. Forest Service**

So our philosophy was pretty much give the stream the materials it needs to make fish habitat, and hopefully that will last us until our vegetation grows up and can start functioning naturally. This is an expensive way...we can't afford it. We can't afford to do this kind of restoration everywhere

## **Narrator**

Often land use makes basin wide restoration impossible.

Bob Drummond is a cattle rancher in Western Oregon along Buck Creek.

## **Bob Drummond-Western Oregon Rancher**

When I bought this place and when I moved over here I saw it as pretty well used up. Practically every tree of value was taken off the place. It was hot here...I mean there were no big trees down in the bottom land.

### **Narrator**

Erosion was Bob's big concern. He contacted fisheries biologist Tony Stein for help. Tony suggested planting trees and shrubs.

### **Bob Drummond**

I did that, but at the same time Tony went a lot further than that. Rather than just addressing the immediate erosion problem at that site, he talked about the reasons for the erosion. And then talked about how they were building in stream structures to slow down the flow of water. Explained to me how the creek had...had over years channeled itself down on the bed rock...was flowing faster. For different reasons the creek had been straightened. Anyway the result was a faster stream. Anyway, Tony asked if I was interested in doing more than just something right at the site where the erosion was, but going all the way back upstream and placing these structures in with the hope of slowing the flow.

Here we're looking at a pool that's a result of placing this structure here. I think we can find gravel has been kicked up over the structure and placed just forward of it.

### **Narrator**

As you can see from Bob's work...adding structure— the logs and rocks— slows the flow and gravel drops out. As more and more gravel falls—a gravel spawning bed forms. Good news for returning salmon.

A stream's condition is affected by land use and in land use priorities. That's true on both the west and the east sides of Oregon.

## **Brett Hodgson-Fish Biologist, Oregon Department of Fish and Wildlife**

These areas were settled in the late 1800's, early 1900's. When the first settlers came in, they brought in large numbers of livestock, predominantly cattle, and they grazed the riparian areas very heavy.

## **Narrator**

But today some landowners like Jim Bauersfeld, a rancher and veterinarian, are making improvements along Mill creek in Eastern Oregon. He's been at it the last ten years, and his neighbors are taking notice.

## **Jim Bauersfeld-Eastern Oregon Rancher**

The first year we started this project, we fenced the creek and kept the cattle out. And so because the cattle do a lot more damage to the new willow shoots and the new alder shoots than anything else. You know, the cattle were fenced out, we had some structures in that raised the water table, and the willows and alders started growing. And now in many areas along the creek...it's a jungle. They're very, very thick. We've had a couple of high water events where neighbors that have had lush green pasture going down to

the edge of the creek and no woody debris to hold the creek. The high water events washed those pastures away as compared to this section of the creek where we have lots of woody debris holding the stream edges. They came up and saw that we didn't have as much so called damage...so they're all interested in doing the same thing.

## **Narrator**

Landscape and land use dictate the fix. The Bauersfeld ranch is a good example of making improvements that are good for the watershed, the red band trout and good for business.

## **Brett Hodgson**

Returning these streams to historic, pristine conditions is really not a viable option. These landowners need to make a living off of this land and having these creeks meander back and forth across these broad valleys like they did historically is not a reasonable option.

Really what we're trying to do here is a compromise.

## **Narrator**

Brett and the ranchers he works with are allowing vegetation along the streams to grow, reducing stream temperature and slowing stream flow when water is high. Other ways used to slow water down are re-creating bends in channelized or ditched streams...a meandering effect...and by adding structure...logs and boulders.

Large rocks and boulders are only used in streams where they naturally occur.

Using backhoes and heavy equipment, Brett's team is just mimicking the work of nature's contractors...the beavers.

## **Jim Bauersfeld**

The beavers are actually pretty phenomenal. Beavers are wonderful for the creek. It's incredible what they do.

## **Narrator**

Once vegetation is reestablished beavers move in. They build dams that store water— raising the water table—a benefit to fish and streamside plants during the dry season. The dams also slow high water during storms and provide a refuge for fish and wildlife. On the west side beavers are just as busy doing the same things.

## **Narrator**

Don Wagner is a forester for Hull Oakes Lumber.

## **Don Wagner-Forester, Hull-Oakes Lumber**

This is the kind of natural area that everybody is trying to create today with dollars. But this is an area here that didn't cost anybody, anything. Nobody's done anything. It's just just been left up to Mother Nature and the beavers. The beavers have come in and made these dams in here and we left everything alone and it's created great habitat for just about any critter that wants to use the area including the salmon that are coming up the stream.

## **Narrator**

In fact research shows that beaver ponds are an important resource for rearing salmon and trout in Oregon.

This low tech, passive restoration started when Hull-Oaks replaced a culvert with a bridge.

## **Don Wagner**

We had beaver problems in here. They continually plugged our culverts up and so we did a cost share with the state. We put this bridge in two winters ago. The beavers now have free rein of the territory. We don't have any problems with them. And we also now have clear fish passage. So it's a win, win for all of us.

## **Narrator**

Plugged culverts is one concern for forest land owners. Losing some trees is another.

## **Don Wagner**

We occasionally lose an alder tree like this right here we might even lose a fur tree like this one right here. But they're going to be inside the buffer strip of the stream. And we're not allowed to...because of the forest practices act...use those trees anyway. So instead of us using them...the beavers are using them.

## **Narrator**

Like Hull-Oakes, Starker Forest is concerned about culverts and fish migration.

Traditionally culverts were designed to efficiently move water with little consideration for fish and sediment passage.



## **Jennifer Noonan-Forest Engineer, Starker Forest**

As you can see is this perched outlet. It's about a one foot drop from the outlet to the pool in the stream. And juvenile fish can not pass...they cannot make this jump and swim through the pipe.

### **Narrator**

Jennifer Noonan is a forest engineer for Starker.

During the low flow of summer months when the impacts to fish are minimal, Jennifer and her crew replace the small culverts with bigger ones that are embedded in the stream. The result...fish can move upstream and wood and gravel can move downstream.

In a single season or two the streambed can change dramatically.

### **Jennifer Noonan**

At one time this stream had all bed rock below the culvert crossing. And now that we've replaced the culvert the stream material...the sediment and cobbles have been able to flow through the pipe and fill in the bed rock below the culvert allowing good habitat for salmon spawning.