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'A CAREER FLOOD'



JOE WILKINS III/The Register-Guard

Scientists and others study the effects of flooding on Lookout Creek at the H.J. Andrews Experimental Forest near Blue River on Monday.

Flood gives researchers 'terrific opportunity'

■ Nature: Study results at Lookout Creek find clearcut areas have risk of slides.

By LANCE ROBERTSON

The Register-Guard

BLUE RIVER — Gordon Grant remembers watching in awe nearly nine months ago as 40-foot logs and giant boulders tumbled down swollen Lookout Creek like nothing more than tiny twigs and pebbles.

It was Feb. 6, and Oregon's worst flood in at least 30 years was just getting started high in the Cascades, where heavy rain and rapidly melting snow turned every creek and gully into a torrent of muddy water.

Grant, a research hydrologist for the U.S. Forest Service, had rushed from his laboratory in Corvallis to the H.J. Andrews Experimental Forest near Blue River, where he's studied Lookout Creek and other streams for 14 years.

"I stood here and knew: This was a career flood. This was a once-in-a-lifetime flood," Grant said. "As scientists, we don't get opportunities like these but once in a career."

It was, Grant added, "the realization of all the ideas we've been studying for years."

While last February's flooding forced thousands from their homes and caused hundreds of millions of dollars in damage, it has proven to be somewhat of a bonanza for the Northwest's forest researchers and scientists.

The flooding provided scientists with an enormous opportunity to study how the flood affected streams and fish, as well as how logging practices like clear-cutting and road-building contributed to the level of flooding and erosion.

The Forest Service, U.S. Bureau of Land Management and Oregon Department of Forestry all have launched studies to determine how much logging contributed to the flood's severity, with an eye on changing forest practices to cut down on landslides and road washouts in the future.

Those studies are expected to be finished by the end of the year.

Monday, many of the scientists studying the flood's effects gathered at the H.J. Andrews, where much of the nation's forest research has been conducted for decades. The scientists



Gordon Grant (center), who is a research hydrologist, talks about February's flooding.

were able to sit around and talk with land managers — a national forest supervisor, district rangers and others who will make future decisions about where and when to log the federal forests.

"It's a terrific opportunity," said Fred Swanson, a forest ecologist who works with Grant at the Corvallis lab. "We're at a critical juncture right now in forest management. We were managing our forests one way for 40 years. Now, we're heading off in a new direction with President Clinton's forest plan. There's a window of opportunity here not only for learning, but for talking to land managers about what we've learned."

Scientists also had some preliminary re-
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sults of studies they've been doing at the experimental forest since last February's flooding.

The H.J. Andrews is unique because it has some of the most studied streams in the Northwest. Along a stretch of Mack Creek, for example, every piece of wood in the stream has been tagged, cataloged, measured and tracked as it moves downstream.

When the flood hit, scientists had a wealth of information already on hand to measure changes in the streams.

Along the stretch of Lookout Creek where Grant stood nine months ago, the flood deposited 4-foot boulders from far upstream. A side channel no longer exists, blocked by a pile of smaller rocks. Logs that roared downstream when a debris jam burst were pushed out into the forest. Some trees were visibly "sandblasted" by sediment. In parts of the riparian area along the stream's edge, the flood deposited up to 2 feet of sediment — without knocking down a single tree.

As powerful as the flood was, it didn't change streams "as much as I thought it would," said Stan Gregory, a top fish biologist and Oregon State University professor.

Scientists first thought the floods had wiped out many of the expensive stream restoration projects the government funded over the past several years to restore fish habitat. But Gregory said most of those projects, which include putting large logs in streams to mimic natural conditions, survived relatively intact.

The number of fish in creeks on the experimental forest also remained about the same as before the flood, Gregory reported. Some trout species actually increased in numbers.

That's because flooding can be good for fish habitat, Gregory said.

Floods can clean out sediment in spawning grounds and deposit the small gravel fish need.

"A flood is the best thing that can happen to fish," he said. "Biologically, fish need floods."

Away from the streams, scientists are finding out what many researchers already have contended for years: That clear-cut logging and road-building are leading causes of landslides and "debris flows" — the wall of mud, rocks, water and wood that begins as a landslide and then builds up steam as it heads downhill, wiping out everything in its path.

Preliminary results of a landslide study in the H.J. Andrews forest indicates that more than 60 percent of the slides larger than 100 cubic yards began in a replanted clear-cut or along a road.

Since most of the forest hasn't had any clear-cutting for at least 20 years, the study suggests that the "legacy" of clear-cut logging and outdated methods of road-building can affect a watershed decades later, Swanson said.

Clear-cut areas also produced more water runoff than natural forests, according to preliminary results.

Water flows in watersheds that have been heavily clear-cut were between 14 percent and 60 percent higher than watersheds with little or no previous clear-cutting, Grant said.

As bad as the flooding was, especially for the Portland area, Grant added, it could have been much worse.

Scientists found that the upper-elevation snowpack didn't melt at the same time the heaviest rains fell. Had that happened, stream flows would have been 50 percent to 100 percent higher.

"It could have been much worse than what we saw," Grant said.

PHOTO BY JEFFREY M. SWANSON