

H51A CA:416 FRI 0830h

Cumulative Watershed Effects

Presiding: K Loague, Univ of California;

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H51A-13 1330H

Studies of Two Cumulative Effects Riddles

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Although it is unquestionably prudent to consider the cumulative watershed effects (CWEs) of timber harvesting, the presumed CWE phenomena offer limited opportunity for scientific inquiry. We are addressing two questions: are there synergistic sedimentation effects of sufficient magnitude to warrant consideration beyond efforts to reduce on-site erosion; and what are the expected long term effects of different harvesting schedules on fish habitat?

We are testing for synergism in suspended sediment loads in an intensive watershed experiment utilizing 14 gauging stations. The watersheds have been calibrated. Logging began in May 1989 and will be completed by 1993. During the course of logging, depending upon storms, we expect to get data from basins that are from 10% to 100% clearcut. New statistical analyses are being devised to accurately test for synergistic effects using storm data as dependent variables.

The long term effects of alternative harvesting schedules is a scientifically less tractable question. Cutting cycles near the coast in northern California and Oregon range from 50 to 100 years. Consequently, an experiment to estimate long term CWEs would have to span several centuries. We have used a computer simulation to gain some insights into potential long term CWEs. The effects of two harvest schedules and no logging are being contrasted in identical 10,000 ha "watersheds". Both logged watersheds are being managed on a 100-year rotation. In one logged watershed all timber is cut in a decade; in the other logged watershed 1% of the timber is cut each year on widely dispersed harvest units. The cumulative effects of these schedules are evaluated in terms of sediment discharge, bed stability, and the likelihood that spawning redds will be destroyed by scour or deposition.