

1330h

AN: H52A-1159

TI: Channel Incision and Suspended Sediment Delivery at Caspar Creek, Mendocino County, California.

AU: * Dewey, N J

EM: nickjdewey@yahoo.com

AF: USDA Forest Service, Pacific Southwest Research Station, 1700 Bayview Drive, Arcata, CA 95521 United States

AU: * Dewey, N J

EM: nickjdewey@yahoo.com

AF: Humboldt State University, Geology Department, Arcata, CA 95521 United States

AU: Lisle, T E

EM: tlisle@fs.fed.us

AF: USDA Forest Service, Pacific Southwest Research Station, 1700 Bayview Drive, Arcata, CA 95521 United States

AU: Reid, L M

EM: lreid@fs.fed.us

AF: USDA Forest Service, Pacific Southwest Research Station, 1700 Bayview Drive, Arcata, CA 95521 United States

AB: Tributary and headwater valleys in the Caspar Creek watershed, in coastal Mendocino County, California, show signs of incision along much of their lengths. An episode of incision followed initial-entry logging which took place between 1860 and 1906. Another episode of incision cut into skid-trails created for second-entry logging in the 1970's. Gullies resulting from both of these episodes of incision are sensitive to hydrologic fluctuations and feature active headcuts, deepening plungepools, and unstable banks, which continue to contribute sediment to the Caspar Creek channel network. Headcuts are numerous in each channel. In some cases headcuts define the upstream extent of an incised reach; in many cases headcuts migrate up previously incised reaches, increasing the depth of incision. Surveys indicate that bank retreat, plunge pool deepening, and headcut retreat all contributed sediment to the channels between 2000 and 2003. Since bank walls have considerably more surface area than headwalls per given length of channel, and headcuts have largely migrated into positions temporarily constrained by resistant lips, bankwall retreat appears to be a more significant chronic source of sediment than headwall retreat. Stream gage records show that some channels consistently deliver higher levels of suspended sediment than others. In comparing channels, ongoing levels of suspended sediment delivery correlate well with total amount of exposed channel bank (depth of incision integrated over length of channel) in the reaches upstream of stream gages. On an annual to decadal time-scale, rates of suspended sediment delivery per unit area of catchment correlate better with the amount of exposed bank area in reaches upstream of stream gages, than with the volume of sediment delivered by landslide events, with total catchment area, or with peak storm flow per unit area. The correlation between amount of exposed bank area and ongoing levels of suspended sediment delivery is attributable to the importance of bank erosion as a sediment source to these gullied channels.

DE: 1803 Anthropogenic effects

DE: 1815 Erosion and sedimentation

DE: 1848 Networks

SC: Hydrology [H]

MN: 2003 Fall Meeting