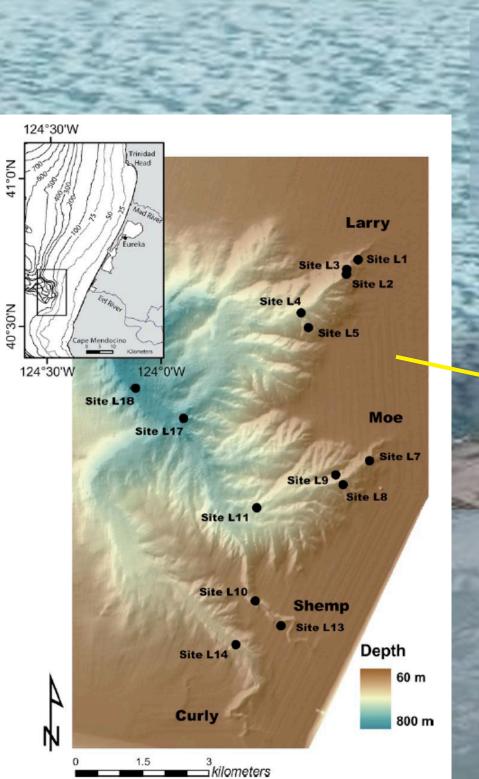
Forests, sediments, flows, foodwebs, and river-ocean linkages: enhancing basin resiliency through community-based forestry







seful paleo-indicators of the more productive algae years" associated with winter floods. Thanks to work by Chuck Nittrouer and colleagues in the Office of Naval Research Strataform project, we ve records that are 100s to 1000s of years old of River sediments that have been deposited in ep marine canyons off the mouth of the Eel. jelo researcher Jack Sculley has found the nctive frustrules of Cladophora's freshwater c diatoms in these marine sediment cores g them to understand the relationships o cycles, river productivity, and food web ontrols over decadal, centennial, and millenn



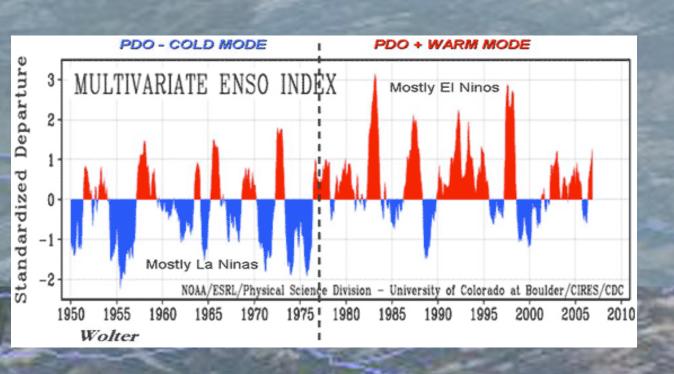


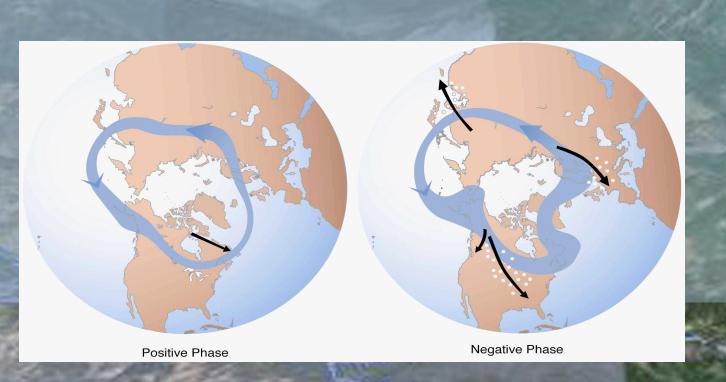
rchase and conserve forest land on a scale that is

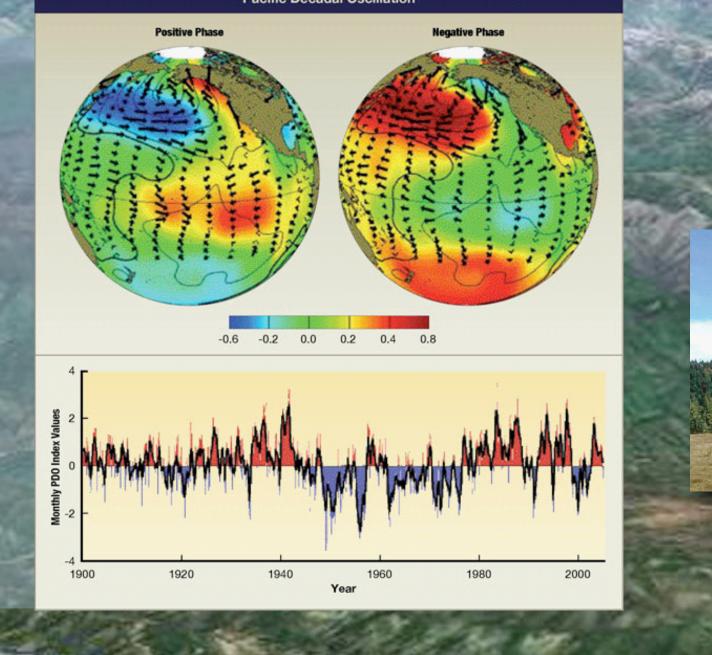
npacts on local communities. The RFFI model provides an opportunity

This "sense of ownership" empowers local citizens to be part of shaping their community's future When RFFI's debt from the intial land acquisition has been repaid, profit from sustainable harvest will go back into the community, creating a social infrastructure and economic independence that has never existed in these rural communities before.

From the RFFI web site (www.rffi.org/CommunityForestry) with slight modification













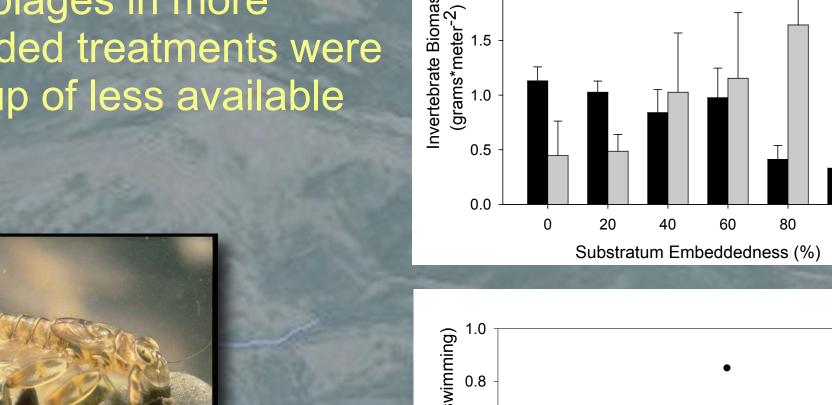
The Angelo Coast Range Reserve, managed by the University of California Natural Reserve System

(http://angelo.berkeley.edu) and U.C. Berkeley, protects ca. 30 km2 of the Upper South Fork Eel water for teaching and research. Over the last 25 years, ecologists there have studied how river flow, geomorphic settings, and sediment transport affect salmonids and the food webs that support them. More recently earth scientists and plant ecophysiologists have studied the life cycle of water as it rains on to this ste forested basin, cycles among thin soils, deep fractured bedrock, and deep rooted trees, and eventual flows to river networks, supporting cool runoff even through the summer drought.

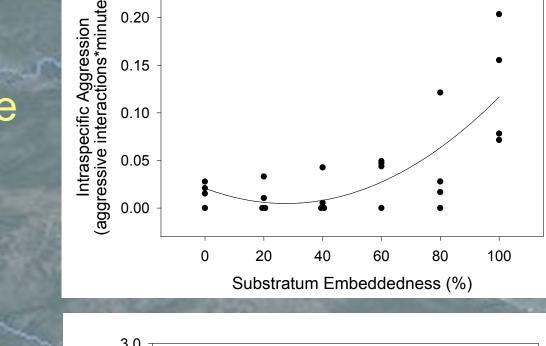
Can this basic research inform land stewardship? Angelo researchers are beginning to collaborate wit Redwood Forest Foundation, Inc. RFFI brings together local groups and individuals who have drawn thei living from the redwood forests of California's North Coast, but now face economic hardship, in large part from unsustainable timber harvest practices of the past. Can RFFI develop a new model of community based forestry that sustains humans and the other biota of the basin? How useful will academic research on water cycles, sediments, rivers, and food webs, like that done at Angelo, be as such groups design strategies that we hope will restore this steep, fragile, potentially productive forest landscape, and increase its resilience in the face of anticipated climate change?

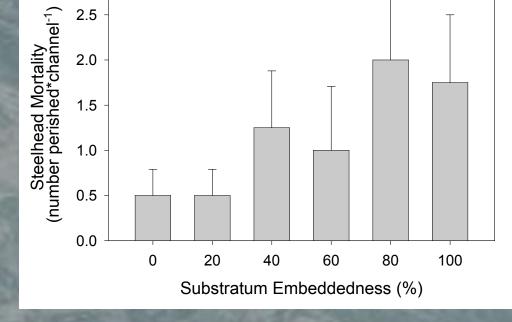
much of the basin's water is stored belo soil in fractured bedrock, and that large deep-rooted trees can access this rock mo and lifting it and leaking some into shallow to sustain forest understory. This research indicates that leaving large, deep-rooted trees cosystems through the droughts anticipated

Benthic invertebrate assemblages in more embedded treatments



more active (and aggressive towards each other) on the embedded treatments





(predator resistant) grazers like the caddisfly Dicosmoecus. The grazers suppress algal accrual, and sequester primary production that might otherwise travel up the food web to nourish young salmon. ollowing winter floods that scour out these resistant grazers, large of the green macroalga Cladophora occur. Cladophora becomes covered with nutritious,





Power, M, Parker, M, Dietrich, W. 2008. Seasonally reassembly of a river foodweb: Floods, droughts and impacts of fish.

Ecological Monographs 78: 263-282. Redwood Forest Foundation, Inc Website, http://www.rffi.org.

salmonids. Ecological Applications 14: 969- 974.

Keck HydroWatch Project Website http://bie.berkeley.edu/keck

Sculley, J, Nittrouer, C, Lowe, R, Drexler, T, Furey, P, Power, M. 2009. Projecting response of aquatic food webs to climate change: Synthesizing ecological data and models with a new paleoproductivity indicator. ESA Abstracts, Albuquerque, NM. In Press. Suttle, K.B., M.E. Power, J.M. Levine, and C. McNeely. 2004. How fine sediment in riverbeds impairs growth and survival of juvenile

During drought, the Eel River food web is dominated by armored

20 m³s⁻¹) have significantly reduced peak filament length for dominant Cladophora glomerata blooms.

natural processes are clearer in places that have not been destabilized by multiple disturbances. • P < 0.02

Research at protected natural areas like the

Angelo Reserve potentially shed light on the

extensive areas of the state that have been

impacted by humans, because fundamental

