

from 'A Conservation Strategy for the
Jacoby Creek Land Trust', Francis, 1999

HISTORICAL PERSPECTIVE

Natural History of Jacoby Creek

This topic is only summarized here since other authors have presented comprehensive overviews of the Jacoby Creek Watershed and the greater region (Murray and Wunner, 1980, 1988; Seeman & Associates, 1980; Tuttle, 1985). The summary was drawn from these sources to provide background for readers of the strategy.

The Jacoby Creek Watershed (JCW) is part of the Northern California coast ranges in Humboldt County, located between the cities of Arcata and Eureka. The watershed is 16.6 square miles in area and empties into the northeast section of Humboldt Bay just north of the Bayside Cutoff (Figure 1). Humboldt Bay is the largest estuary between Coos Bay, Oregon and San Francisco (unpublished report, Thompson, 1971). Jacoby Creek flows into the main tidal artery of Arcata Bay, providing an important link between freshwater and brackish ecosystems. Coastal wetland areas consisting of tidal channels, saltmarshes and mudflats serve as transitional areas where organisms adapt to fluctuating water levels and salinities. A high biological productivity is correlated with these areas due to the constant influx of nutrients from the uplands and the opposing tidal influence which supports a diverse array of invertebrates, shellfish, fish and waterfowl (Tuttle, 1985). Steelhead trout (*Salmo gairdneri*), coho salmon (*Onchorhynchus kisutch*) and rarely chinook salmon (*O. tshawytscha*) spawn in the lower reaches of the creek. The wetlands also provide habitat for migrating birds, animals and plants. Three plant species, bird's beak (*Cordylanthus maritimus*), Humboldt Bay owl's clover (*Castilleja ambigua ssp. humboldtiensis*) and Humboldt Bay gum plant (*Grindelia stricta ssp. blakei*) are rare and endangered throughout their range with the latter two species being endemic to the salt marshes around Humboldt Bay.

Like the rest of the coast ranges, the JCW is a product of upheaval from the earth's crust. The mountains resulted from the uplifting and folding of off-shore marine sediments, known as the Franciscan Formation. The Franciscan Formation is an assemblage of rocks differing in texture and other properties that can appear in a matrix of clay or "melange". The melange is susceptible to mass movement. Some of the earthflows in Jacoby Creek consist of this melange. The Franciscan Formation is visible at the quarry on Jacoby Creek Rd. (Section 24) and in the upper reaches of the creek. Another feature, the Falor Formation, comprises the less consolidated, more porous sands, silts and gravels commonly found along the stream channel and in the estuary.

The sub-tropical climate of the north coast has been a key factor in shaping the temperate rain forest that exists today. Precipitation occurs predominantly in the form of fog drip, rain and less frequently snow. Average yearly rainfalls documented three miles upstream from the mouth of Jacoby Creek and in nearby Sunnybrae, respectively, were 42" (over three years) and 61" (over 10 years) (Murray and Wunner, 1988). In addition to precipitation, stream flow volume is regulated by other variables: the density and type of vegetation, soil type, soil infiltration and evaporation rates, and degree of solar radiation. Stream flow rate depends on channel depth, width, and flow velocity. Flow velocity is partly a factor of stream gradient. The root systems of plants stabilize streambanks and reduce stream flow velocity. Riparian vegetation also helps reduce soil loss due to erosion.

A number of different vegetation types can be found in the JCW. The following natural plant communities originally described by Holland (1986) were identified in the watershed by Murray and Wunner (1988): Northern Coastal Salt Marsh, North Coast Riparian Scrub, North Coastal Coniferous Forest, Redwood Forest, Douglas-Fir Hardwood, Mixed-Evergreen Forest, and Bald Hills Prairie. Riparian areas, in particular, have an important ecological role in the watershed. They are typically the most diverse, providing abundant food, water, and habitat for a variety of wildlife species. The riparian

zone establishes connectivity between different habitat types from the headwaters to the bay. Riparian areas are also centers of decomposition and nutrient cycling.

Human Development of the Region

The first known inhabitants of the Humboldt Bay area were the Wiyot Indians. Although Wiyot territory included ocean front, bay, and forested slopes to the east, they lived principally along the protected shores of Humboldt Bay and along rivers and creeks such as the Mad River, Jacoby Creek, and Freshwater Creek (Heizer, 1978) where they fished, hunted, and gathered their plant staples. The Wiyot people are a distinct tribe from their northern relatives, the Yurok, Hupa, and Karok and utilized their landscape in some unique ways.

In addition to fishing, they harvested redwood, cultivated brodiaea bulbs, ferns and iris, and had an extensive trail system (Loud, 1918). They also regularly burned patches of forest to create prairies and maintain oak woodlands for acorn production. Past burning by Native Americans is probably what created many of the local prairies still existing today (Baumhoff, 1978; Loud, 1918). Burning improved habitat for game, and increased yields of grain, basketry materials, and forage for deer.

Environmental alterations began with the Native Americans; however, major transformations occurred after the arrival of white settlers. In 1849, homesteaders established the first claims in the flatlands for residences and agricultural development while a few companies obtained ownership rights to the timberlands. Fire suppression was exercised by the timber interests resulting in a gradual loss of the prairies traditionally maintained by the Wiyot. Presently, agriculture, timber production, and residential development are still the three main uses of land in the watershed.

Old maps and other sources of information suggest that the natural course of Jacoby Creek and its tributaries in the lowlands was more complex before agricultural development (Murray and Wunner, 1988). Dikes, levees, road and railroad construction, and the placement of tide-gates have prevented the natural meandering of the stream, changing the water/nutrient cycling between the uplands and tidelands. These structures have contributed to stream channelization and greater sedimentation loads in the tidal flats and marshlands near the mouth rather than in the former floodplain. It was estimated that the Jacoby Creek mouth-delta grew about 18 acres between 1931 and 1978 due to sediment deposition (Tuttle, 1985). Tuttle estimated that Humboldt Bay has experienced an 87% loss of the original 300,000 acres of tidal and brackish marshes between 1871 and 1979. While agriculture is an important industry on the north coast, the tradeoff has been a loss of wetlands. The alteration of the estuary and stream morphology has also had negative effects for the commercial fishing industry.

The first timber harvesting took place during the 1850's involving Douglas-fir, Sitka spruce and later redwood. The end of the first round of logging was around 1910. Residential development also increased up into the old growth zones around this time. According to Murray and Wunner (1988), 60% of the upper headwaters was clearcut before the 1973 revision of the California Practices which mandated more ecologically sound timber harvest plans. Logging has disturbed soils considerably, causing erosion, and increased sediment deposits in the stream. It has also negatively impacted the stream channel.

Urban and rural residential development is the third major land use in the watershed. The number of residences has steadily increased to the present and this is likely to continue in the future. A 1980 census done by the Humboldt County Planning Dept. estimated that the population in the watershed was about 2,036 with 732 housing units (JCCP, 1982). The maximum allowable population and number of housing units based upon the current

zoning would permit an additional 2,915 residents and 1,048 housing units based upon a lot size of 6,000 square feet. One drawback of increased residential development has been exacerbation of already elevated erosion and sedimentation rates due to impervious surfaces

(i.e. roads and roofs). These structures cause precipitation to be concentrated as runoff into the stream channel rather than gradually percolating into the soil, resulting in higher stream flows and a greater potential for channelization and flooding. The leaching of septic systems has also elevated coliform bacteria and viral counts in the creek.

The evidence presented by many researchers (Johnson, 1972; Murray and Wunner, 1980, 1988; Thompson, 1971; Tuttle, 1985) suggests that the carrying capacity of the watershed may be exceeded if development reaches the maximum limits set by the county. This could result in the gradual degradation of an inherently fragile ecosystem and loss of important resources. Fortunately, the need for improvements has already been recognized. To date, restoration work in Jacoby Creek has addressed some of the problems, such as erosion control, protecting habitat for fish, and safeguarding water quality (Murray and Wunner, 1988).

History of JCLT Organization

The founders of JCLT recognized the natural values associated with Jacoby Creek and the need for sustainable use of watershed resources. The concept of 'sustainability' and 'sustainable communities' varies widely, but the general definition, "able to remain in existence" (Aplet et al, 1993), basically sums up JCLT's intent with respect to preservation. JCLT has been supported consistently in its endeavors by the local community and interest in easements has increased. Although its number of holdings is modest at present, JCLT has gained experience and built a foundation for the organization.

Since its inception in 1992, JCLT has served its community in a number of important ways: 1) provided information on the land trust and other topics to the public as requested; 2) produced educational brochures and given presentations; 3) produced a yearly newsletter; and 4) secured three easements which it monitors annually. Thus far, the emphasis has been on conservation easements. Restoration work, through comprehensive management plans or other projects has not been fully implemented yet but JCLT recognizes the need for such projects.

The following chronology gives dates and details of important events and highlights the accomplishments listed above. To respect the confidentiality of some of the landowners, their names were omitted.

Chronology of Past Events & Achievements

April-May, 1991.....Bill and June Thompson employ Bob Wunner to stabilize the streambank on their property in the Jacoby Creek bottoms. During this project, Bob shows Bill some other restoration sites along the creek and problem areas that he is familiar with through other work he has done in the watershed. They discuss ways to protect and conserve lands, a land trust being one of them. Bill obtains general information on the subject and begins discussing possibilities with people in the community who have been supportive of past restoration efforts.

Sept. 5, 1991.....Bill T. and Bob W. approach other Jacoby Creek residents and ask them to consider being on the land trust board. Bill T. and Bob W. attend the Land Trust Alliance's (LTA) annual rally in Waterville Valley, New Hampshire.

Oct. 7, 1991.....The third draft of the by-laws and articles of incorporation for the JCLT are reviewed. The first board of directors take office: Bob Wunner