

## Chapter 9

### The Redwood Empire Today

The Redwood Empire continues to evolve. While redwood harvesting remains important throughout the region, changes in the forest industry, increased population, and economic diversification have resulted in a Redwood Empire that is much different from 75 or even 40 years ago. Teachers generally have a good idea of what's happening in their community and county. Visits to local museums can provide information about local history.

#### Economics

In the 1950s and 1960s, redwood logging was the major industry in Del Norte and Humboldt Counties. In 1960, prior to the creation of Redwood National Park, lumber and wood products accounted for 38%, 31%, and 23% of the total employment in Del Norte, Humboldt, and Mendocino Counties, respectively. In all three counties average yearly income was lower than the state average, and unemployment rates were higher than the state average. The predictions in the interim report (Hartzog, 1964) were that annual attendance in the National Park would exceed 2.5 million by 1985, and that park visitors would spend millions of dollars, leading to expansion of the private resort industry outside of the park. The report also predicted increased income from sales and use taxes. However, the hoped-for tourism has not materialized. According to an article written by William Stewart in *California Forests* (2004), redwood park visits in Mendocino, Humboldt, and Del Norte counties have decreased by 14 percent since 1990.

According to a booklet titled *The Forest Products Industries in California: Their Impact on the State Economy* (McWilliams, 1994), the general decline of lumber production in California (not just the redwood region) is due "in part" to withdrawal of public lands from timber production to other uses and to new policies created to protect wildlife. McWilliams also attributes the decline in net volume of saw-timber inventory from 1952-1977 primarily to the reduced cutting of large trees, with the percentage of timber coming from old-growth trees falling from 78% in 1968 to 47% in 1988.

In the late 1990s, the average per capita income in the north coast region was only about 73% of the state average, but the "well being" in the region was rated as about 110% of the state average, indicating that residents liked living there even though their income was below the state average. (Lower housing costs may have made the lower incomes more palatable.) (*The Changing California*, 2003).

As a percentage of the total employment, jobs in the lumber and wood products industries in Humboldt and Del Norte counties have steadily declined, at least between 1982 and 2001:

Percentage of Population Employed in the Lumber and Wood Products Industries:

	1982*	1990*	1992**	1996**	2001**
Humboldt Co.	16.5%	12.0%	6.3%	7.6%	5.8%
Del Norte Co.	22%	10.2%	3.1%	2.0%	1.3%

\*Source of 1982 and 1990 data: *The Forest Products Industries in California: Their Impact on the State Economy* (McWilliams, 1994).

\*\*Source of the 1992, 1996, and 2001 data: *The Changing California* (2003)

These declines reflect both percentage and actual number of employees, although the change in actual numbers of employees is not as great as the percentages would indicate. For example, in Del Norte County, between 1982 and 1990, the percentage of employment in the wood products fell by over 50%, but the actual number of people employed in the industry fell by about 35%. Similarly, in Humboldt County, the percentage of people employed in the woods industry fell by 27% but the actual number of people employed in the industry fell by less than 4% (McWilliams, 1994).

When land and trees were inexpensive and logging and milling processes were relatively unregulated, many small mills were able to turn a profit. With increased regulation and competition from larger operations that are able to use more of the tree, many of the smaller mills have gone out of business. Consolidation has had a major impact on employment in the forest products industry.

The Western Wood Products Association produces an annual *Statistical Yearbook*. The 2002 and 2004 *Statistical Yearbooks* yield the following information, with my interpretation in parentheses:

"While employment in the western lumber industry (not just the redwood industry) declined by 16% between 2000 and 2004, the production of lumber per plant employee has increased significantly...increasing by 11% between 2003 and 2004 alone. Thus, changes in technologies and efficiencies seem to account for much of the loss of employment...and for much of the increased production. Production of redwood seemed to have stabilized at around 500 million board feet between 2001 and 2004, which is down somewhat from the 1996-2000 period. "

This conclusion is supported in *The Forest Products Industries in California: Their Impact on the State Economy* (McWilliams, 1994). That report points out that labor productivity in U.S. sawmills increased by almost 60% between 1973 and 1991, and by about 30% between 1982 and 1991. Each worker is producing more lumber per hour.

In 1968, the annual cut of timber in Humboldt County (more than 1.3 billion board feet) exceeded annual growth by 270%. This was largely due to the slow growth of trees in the old-growth stands. In fact, an old-growth stand can actually have a net growth of zero or even negative net growth as branches and tops die on the slow-growing trees. Now that there is little old-growth being cut and the harvest comes from more rapidly growing young growth, many timber companies have annual growth exceeding what is cut, or have that as a goal for the near future.

According to a study by the Center for Economic Development at California State University Chico, personal income (adjusted for inflation) from the lumber and wood products industry in Del Norte County has declined steadily and very significantly since 1969. Income from hotels and lodging is now about the same as it was then, and income from federal government employment has increased somewhat.

The southern counties in the redwood region have generally been more diversified in their economic base, but the economic role of redwood logging is diminishing in all areas. Because the economies of the counties in the redwood region aren't as dependent on the redwood industry as they once were does not however, mean that the timber industry is not important.

## **Timber**

At one time, logging companies didn't worry much about where the next trees were coming from; there seemed to be an almost infinite supply. As stands were cut, some companies began to replant trees so that, as Kramer Adams points out in *The Redwoods* (1969?), "The business of growing trees was now part of the business of making boards." The California Redwood Association (CRA) points out that there are now more redwood trees growing than there were before logging began. The trees, of course, aren't as large as the old-growth trees were; the modern industry depends on harvesting trees in 50-70 year cycles rather than letting them grow for hundreds of years. Such trees grow very rapidly in areas that have ample sunlight. According to the CRA, an acre of 40-60 year old trees can add 2000 board feet of wood per year, which is enough to build an average sized house every five years. Other estimates range from about 150 board feet per acre per year in the poorest site to over 3,500 board feet per acre per year in the best sites (Lindquist and Palley, 1963).

The California Redwood Association points out that a fully stocked 80 year old stand of trees averages 114,000 board feet of timber per acre, with some stands having 200,000 board feet.

## **Concerns: Competition**

Factors affecting the redwood logging industry include a lack of available old-growth timber, changing attitudes within and without the industry, regulations, mechanization, development of alternative materials such as decking made from recycled plastics, metal grape stakes, vinyl plastic fencing, posts and other ground-contact wood made

from treated fir, sales of land for parks and development, and fragmentation of redwood forestlands. Cedar fencing, largely from old-growth forests in British Columbia, has become a common substitute for coast redwood from California.

Synthetic decking material is in direct competition with redwood. Both the redwood industry and the makers of the synthetics claim that their products are better for the environment. Synthetic materials generally are made of recycled plastic and wood particles. The makers of the synthetic decking claim that staining and sealing chemicals are not needed, trees are not cut, the boards don't rot, and plastics are recycled. On the other hand, producing the synthetic products uses a lot of energy, and produces water and air pollution. Redwood growers point out that trees are a renewable resource that helps to reduce air and water pollution. They claim that using redwood for decks has a smaller "environmental footprint," *i.e.*, to have a smaller negative environmental impact over the life of the decking.

As a building material, studies have shown wood to have less negative ecological impact than concrete or steel from a number of perspectives (Dekker-Robertson,2004):

	<b>Wood</b>	<b>Steel</b>	<b>Concrete</b>
Total Energy Use	Lowest	140% more	70% more
Greenhouse Gases	Lowest	45% more	81% more
Air Pollution	Lowest	42% more	67% more
Solid Waste	Lowest	36% more	96% more
Ecological Resource Use	Lowest	16% more	97% more

### Teaching Tip



*The California Forest Products Commission has produced an interesting booklet titled We Care for the Forests (2003). While not specifically about coast redwoods, the booklet contains some useful information, including graphs comparing water pollution and energy use of various building materials. Students can study and interpret the graphs and other information.*

### Concerns: Development, Urbanization, Fragmentation

A current hot topic in the forest products industry, including the redwood industry, is the breakup of large tracts of forest land into smaller parcels, especially when the smaller parcels are developed for real estate or other "urban" types of development. While large tracts of timberland are regulated to protect water and wildlife resources, small residential parcels are relatively unregulated. Development not only results because of trees lost for the house or shopping mall, but also from the building of roads. While logging a forest tract for lumber removes the trees, they eventually regrow. Cutting trees for development replaces them with pavement, lawns, and structures. Deer, skunks,

bears, and raccoons can roam in a tract managed for lumber; they can't in a developed neighborhood. Water runs off of pavement and rooftops into storm drains; a forest allows water to enter the natural ground or surface water systems. Furthermore, breaking up large forested tracts results in loss of uninterrupted forests that may be essential for wildlife. Santa Cruz County, for example, has had more than 12,000 acres broken into smaller parcels with homes since 1990, and nearly 60% of the former forest land has been **urbanized**.

According to the California Redwood Association, about 52% of the redwood forests are owned by timber companies, and about 14% is in government ownership, most of which is in parks. The other 34% is owned by ranchers, tree farmers, and other private owners, and those private land owners have to deal with regulations and tax policies that sometimes encourage them to sell their land for development. Taxes, the high cost of meeting logging regulations, and the money to be made by selling land for development all contribute to conversion of timber land to other uses and fragmentation.

An important aspect of urbanization of the forests is that people moving to the newly developed former forest land often don't know very much about forest management or the forest products industry. Sometimes they draw their water from wells that diminish water flow in local streams, but complain that timber companies are affecting the fish. Their property may disrupt the habitat of many animals, but they assume that nearby logging operations are the reason that they see fewer deer, birds, or raccoons. Thus, education of the general public about modern forest management and the impact of development and urbanization is an important issue.

### **Concerns: Carbon Sequestration and Global Climate Change**

Global climate change (a.k.a. global warming or the greenhouse effect) is another topic on which there is some disagreement with regards to cutting trees. There is no doubt that trees help combat climate change by absorbing carbon dioxide, which is a major "greenhouse gas." Obviously, cutting trees immediately reduces the photosynthetic uptake of carbon dioxide. When used as lumber, the carbon is stored or "sequestered," rather than re-entering the atmosphere. Also, studies show that a stand of rapidly growing young trees actually absorbs carbon dioxide at a faster rate than an older stand. Thus, a temporary loss of older trees may lead to replacement by younger trees, resulting in more rapid removal of carbon dioxide from the atmosphere. As is so often the case, the issue is more complex than it first appears to be.

### **Concerns: Park Use and Management**

Another issue is concern about the protection of the magnificent stands of redwoods in the redwood parks. Not only do more visitors expect more accommodations such as parking spaces and trails, but compaction of the soils on trails and around trees threatens both the understory vegetation and the redwoods themselves. (See Figure 107.) Various parks are trying to alleviate the problems through such methods as re-

routing trails, building elevated walkways, and separating visitors from the trees themselves.

Human park users sometimes cause problems for wildlife. Sometimes people feed raccoons, birds such as jays and crows, deer, chipmunks, and other animals. Usually the food is "human food," which is generally not good for the animals, and if the animals become too tame they are more likely to be injured by cars or pets or to become pests.

The presence of people may negatively impact some species, including some endangered species.



Figure 107. Compaction around the base of redwoods can harm the roots, so boardwalks have been built around some of the more visited trees. The Founders Tree, in Humboldt Redwoods State Park, commemorates the founding of the Save-the-Redwoods League. Note that even the presence of the boardwalk doesn't always keep people from walking on the base of the tree. (Photo by Michael Roa.)

### Concerns: Introduced Species

Yet another concern is the introduction of exotic species of plants and animals, which threaten the natural ecological communities. Even species that are native to California can be a problem when introduced into different ecosystems. There is some evidence that crows, for example, have learned to follow people into the redwoods to feed on scraps of food dropped by the visitors. Once in the redwoods, the crows may attack the young of endangered species such as the marbled murrelet.

### **Concerns: Fire and Flood Prevention**

As mentioned previously, fire is a natural part of the coast redwood environment, and fire prevention may be favoring other species to the detriment of the redwoods. Even if other species don't invade the stand of redwoods, crowding causes competition and the weaker trees may die. The dead trees, whether redwood or other species, present an increased fire danger. Evidence shows that there are increasingly long dry spells in the redwood region, and that may also result in more severe fires. The elimination from the parks of naturally occurring fires is yet another problem. Even without catastrophic fires, keeping fire out of redwood parks may cause successional changes to other forest types. In essence, we may be over-protecting the redwoods in some parks.

Floods, which are a natural part of the coast redwood ecology, provide nutrient-rich silt and kill competition. Most redwood region rivers have been dammed to prevent flooding. Not only do the dams affect the redwoods, but they also affect salmon and other fish.

### **Concerns: Funding of Parks**

The limited amount of funds available for the purchase of redwood lands requires judicious use of those funds. Few old-growth stands are available for purchase, and decisions must be made about the allocation of funding. Some advocate using available monies to connect currently protected stands. Others suggest purchasing whatever old-growth stands are available, or purchasing large tracts of second-growth trees rather than small groves of old-growth. Funds must also be allocated to provide long-term protection for stands already in parks and other reserves. Such decisions are not easy, and different people and groups have different priorities. While there is no easy answer, it may be useful for teachers to discuss these issues with the students and with park personnel.

### **Preservation and Conservation**

As noted elsewhere, the timber industry has evolved to become a resource management industry, and that management sometimes includes working cooperatively with conservation groups and governmental agencies to protect sensitive areas. Maintaining timberland as forest land rather than urban development is a priority.

Groups such as the Sempervirens Fund and the Save-the-Redwoods League continue to raise funds for the purchase of redwood forest land. Now that little old-growth land is available, the emphasis is on connecting fragmented parcels, protecting watersheds, and purchasing lands that will help expand and protect existing parklands for both the plant and animal species within them and for human recreation, education, and enjoyment.

The large organizations have been joined by many local groups that work with parks to help with conservation efforts, interpretation, and fund-raising. These "cooperating

associations," such as the Stewards of the Coast and Redwoods, Humboldt Redwoods Interpretive Association, and the Big Sur Natural History Association, provide invaluable services to the parks and opportunities for students and others to become involved at a local level. See Appendix III for contact information.

The California Department of Parks and Recreation continues to manage parks and acquire new park land, often in cooperation with non-governmental organizations as described above. Given financial constraints, it is often difficult to balance the needs for maintaining and improving existing facilities and services, developing new facilities and services, and acquiring new land. While these and other issues will not be resolved simply or soon, it is important for students and other park users to be aware of the complexity of the issues.

In *The Redwood Forest*, 2000, Noss sets forth five general goals for conservation planning, including planning for the redwood region:

- 1) protect representative samples of all kinds of natural communities
- 2) maintain or restore healthy populations of all native species in natural patterns of distribution and abundance
- 3) sustain or restore ecological and evolutionary processes to their natural state
- 4) create a network of areas that can withstand natural and man-made changes
- 5) encourage human uses that are compatible with conservation goals while discouraging human uses that are not compatible with conservation goals.

***See the activity "Red's Woods: Tough Choices" in Section IV.***

## **Conclusion**

The interrelationships between people and the coast redwoods have changed throughout history. Various species of redwood-like trees were common throughout the world long before humans had even evolved, and the coast redwood was here when people arrived from Asia 14,000 or more years ago.

Native peoples not only used redwood in a variety of ways; they apparently actually used fire to manage forests and clearings. While the first Europeans were too few in number and too limited in technology to have a major impact on the vast coast redwood forests, the population explosion that followed the gold rush meant the development of large-scale logging operations throughout the redwood region. The mid-1800s were a time when people thought nothing of rapidly exploiting natural resources with little regard for the future. The redwood forests seemed almost infinite, especially considering the simple technologies available.

The early 1900s brought new technologies and large scale logging as well as the beginnings of concern for conservation and preservation of these majestic trees. By the 1950s, many of the most impressive stands of trees had been either logged or acquired for protection in parks or other types of reserves. Continued demand for redwood lumber and ongoing development of logging and milling technologies increased the



harvesting of the trees. In less than 200 years, 95 percent of the ancient redwoods have been logged, and much of the cut-over land is now covered with stands of second- or third-growth redwood forest. Some has been paved over, built upon, or developed for agricultural uses, and there is constant pressure for more conversion of redwood forest land to other uses. Private landowners sometimes have difficult choices to make with regards to the trees on their land.

Since the 1960s and 1970s, the timber industry has developed a resource management approach that is very different from the cut-out and get-out approach taken by many earlier logging operations. Increased understanding, public concern, and regulation have produced a redwood forest products industry that seeks to manage the land and trees for long-term productivity, habitat protection, and other uses. At the same time, public and private groups seek to protect and preserve remaining groves and stands for future generations to enjoy. Our understanding of how best to meet these goals of productive forests and protected stands continues to evolve. Both scientific research and public education need to be part of the process as decisions with long term consequences for the future of the coast redwood are made.