

# Economic Questions in the Redwood Regions

by Dr. John Zivnuska, 1965

*This is one of a series of five lectures on the California Redwood presented by Letters & Sciences Extension in cooperation with the School of Forestry, University of California. Dr. John Zivnuska is introduced by Dr. Nathan W. Cohen, head of the Letters & Science Extension.*

## Introduction

Good evening, ladies and gentlemen. On behalf of University Extension, Department of Letters & Science, I'd like to welcome you to the fourth in a series, The California Redwoods. Our speaker for this evening, Dr. John Zivnuska, is dean of the School of Forestry and director of the University of California Wild Land Research Center. He has just returned from a world tour designed to produce a problem analysis of those timber developments which may affect United States forest resources. Professor Zivnuska is a member of the Forestry Research Advisory Committee of the United States Department of Agriculture and he has recently published a monograph, The Commercial Forest Resources and Forest Product Industries of California. His research interest, as one might guess from the topic of his lecture tonight, is forest economics.

## Economic Questions in Redwoods

Thank you, Dr. Cohen. I appreciate the introduction. As the introduction indicated, my research interests run very much in the direction of economics and particularly in the economics of the forest products industries. I think, however, I should add a couple of other qualifications for my remarks tonight. In addition to being concerned with the forest products industries and the commercial utilization of for-

est land, I can also claim to be a longtime member of the Sierra Club and a longtime member of the Wilderness Society.

These aspects of my outlook probably won't be to evident in my remarks tonight.

Each of us in the School of Forestry is concerned with the use of forest land for all of its social benefits. Each of us also specializes in a particular research area. And in our comments during this lecture series, we're inclined to present what we've learned through our studies and through the studies of other people working along similar lines. In the comments in the previous lectures that you've heard, you've surely become aware of the fact that in looking at the redwood type, you cannot look at the redwood trees in isolation. You look at them as part of a biological complex. You become aware of their associated species, such as Douglas fir. And you become aware of the redwoods as a part of a total biological system.

The same thing is certainly true when we turn to economics. We can't talk about economic issues in the Redwood Region and narrow this down specifically to the belt of redwood forest type. We have to consider the entire system in which common forces interact. The economic developments in the region cover all of the forest types, cover all of the resources, cover the total complex. And so in approaching my topic this evening, I'm going to leave out part of the redwood belt. I'm going to leave out the southern part. Because I don't think we're particularly concerned with the economic issues of the redwoods in the San Francisco south or even in Marin County. Instead I will be concentrating on the northern part of the redwood range. And I will also be moving quite a bit eastward to the crest of the coast range.

The concept of the region that I'm going to be dealing with is based on the economic planning regions developed by the State Office of Planning. And it will be primarily State Planning Region 1, which is the north coastal region and includes the western half of Siskiyou County and Del Norte, Humboldt, Mendocino, Trinity and Lake counties.

In addition, I'm going to add in the northern part of Sonoma County which is economically very much part of the same belt, although the State Office of Planning excludes that from their definition of the north coastal region.

This north coastal region is an extremely mountainous region. Only one-eighth of the region is classified topographically as either valley or mesa. Seven-eighth of the region is hilly and extremely mountainous, rising to peak elevations of 9,000 feet, generally very steep ground. It is also a region marked by very heavy and very frequent rainfall - rainfalls running up as high as 140 inches per year - the heaviest intensity and the greatest frequency of rainfall found in the state. Also, of course, in the redwood belt itself, you have the frequent very heavy summer fogs as a very important feature of the climate.

As a result of this topography and the very heavy rainfall, this is a heavily forested region. The north coastal region contains nearly 7 million acres of commercial forest land, which amounts to about 40% of the commercial forest land in the state of California. In this total forest zone, the redwood is not the major species.

The redwood belt is the green belt generally along the coast, except up in Mattole country where the Douglas fir come through to the coast. to the east of this you have the Douglas fir belt. And in the economy of the region and in the economic prospects of the region, this Douglas fir belt is every bit as important. In the last 10 years it has been more important in many ways than the redwood belt. And we will be referring constantly this evening to this Douglas fir belt. Higher up in the mountain, you get a mixed conifer type, a mixture of pine, true firs and other species. The redwood type alone amounts to 27% of the forest area; the Douglas fir types, essentially larger, amount to 36%, and the mixed conifer and pine amount to 37%.

In terms of ownership, about 3 million acres of this land is in public ownership, primarily in national forests. That national forest owner-

ship is concentrated in the mixed conifer type. It is in the higher elevations in the eastern portions of the region. Large industrial ownerships - forest industries companies holding more than 50,000 acres each - own about 1.2 million acres. And that large industrial ownership is heavily concentrated in the redwood type. The remainder, nearly 2-1/2 million acres, is privately held in small and medium size holdings - many ranch holdings, farmer holdings, some holdings by small timber companies, holdings by people who live in San Francisco, Los Angeles and other urban areas - but typically in small and medium holdings. These holdings are particularly concentrated in the Douglas fir of the region.

The population of the north coastal region is very sparse. Total population is about 220,000 people, which is only about 1-1/2% of the total population of California. Access to the region is quite limited. The first major transportation development in the region was the Northwestern Pacific Railroad, which was completed in 1914, but which extends only to the Humboldt Bay area, the Eureka-Arcata area, and does not extend on up into Del Norte County. The only transportation extending the full length of the region is Highway 101, The Redwood Highway. Connections to the east are very limited, three main highways from 101 heading east into the United States generally. One might say State Highway 20 by Clear Lake at the southern end of this region; U.S. 299, the Eureka-Redding road, and U.S. 199, the road from Crescent City up to Grant's Pass. There is also, of course, water transportation. Humboldt Bay is an important port, primarily for shipments of lumber.

So it is a mountainous region. It is a region that is somewhat remote. It is a region of sparse population. Such regions generally develop distinct sociological characteristics and certainly the north coast region has been marked by this. The outlook of the people of the North Coast is often quite different on many topics than the outlook of the people of the metropolitan areas of the state.

As a forester, I had this first impressed on me by the attitude of the people toward foresters. In the redwood industry, there was a very strong early interest in forestry in the 1920's. There was a major effort at reforestation - probably the first major effort by private industry anywhere in the United States - an effort that was not particularly successful for a wide variety of reasons, biological as well as economic. But while the industry may have welcomed foresters; in the 1920's, the people in the region generally did not.

The ranchers, and people of that kind, are primarily concerned with grazing and they were convinced of the virtues of burning the country over to freshen up the forage, to get rid of the brush, and to increase the carrying capacity for range. And so this region was burned rapidly.

Foresters who came in and stood for fire control, who pointed out that the law said that this type of burning was illegal and tried to enforce the law and so on, were not a very popular group in that region through the end of World War II

The efforts at brush burning that were carried out by the ranchers included, as a very important part of that brush, large areas of Douglas fir timber. During the 1930's this timber had no value whatsoever. From the standpoint of the landowners it was simply a barrier to the development of grazing and many of them exerted substantial efforts to try and burn it off and get rid of it.

In terms of the economic development of the north coastal region, this began back with the Russians. Probably the first economic development up there was by the Russians at Fort Ross, development of a lumber trade. This, according to some authorities, involved the shipment of hewn products to Hawaii and down to the San Francisco area, certainly very small scale thing and actually of no significance except as a historical curiosity.

The real development of the region began when the Yankees came in the 1830's and de-

veloped water-powered and steam-powered sawmills and laid the basis of the industries, which really began to expand after the Americanization of San Francisco. As San Francisco was rapidly built, burned down, and rebuilt, the primary building material was redwood lumber. This lumber was produced from the Oakland hills, from San Mateo County area, and also, as the years went by, increasingly moving up the North Coast. With water shipment of the lumber down into the San Francisco area, the initial cutting developed right along the sea shore.

The redwoods industry apparently developed very rapidly, because quite soon there was some reaction to it. By 1869, the California State Board of Agriculture, in one of their official reports, stated: "If we were to continue consumption at the same rate in the future as in the past, it would require only 40 years to exhaust our entire present lumber supply." This point of view prevailed with some people. In 1879, Secretary of the Interior Carl Schurz said: "These species of trees, the noblest and the oldest in the world, will entirely disappear unless some measure be taken to preserve at least a portion of them." This is obviously a timely statement because it exactly parallels statements that are being made at the present time.

Despite these predictions back in 1869 and 1879, the industry continued to expand. By 1900, redwood lumber production had risen to about 400 million board feet per year and at about that stage it stabilized. We had the development of a number of large companies up there. Many of the mills that are still operating were developed between 1900 and 1910.

From that time through World War II, there was very little economic growth in the North Coast region. The lumber industry stabilized. The peak of lumber production prior to World War II was 500 million feet and it simply fluctuated back and forth between 400 and 500 million feet except during the Great Depression when it dropped below. It was an industry dominated by a number of old-line companies, producing a magnificent product that set a

pattern and a public conception of the forest products industry of the North Coast - a conception which today is completely invalid.

Because following World War II there was a complete revolutionary change in the forest products industry and in the economy of the North Coast. The first symptom was not particularly promising, the great strike of 1946. But among other things that redwood strike did was to stimulate many small mills to come into redwood production, cutting from redwood holdings other than those in the large companies which had been closed by the strike. Many other features were at work, such as the rapid building boom and so on.

And as a result of this, in a twelve year period, from 1947 to 1959 the annual cut of timber in this region more than tripled. The cut rose from 1.3 billion board feet in 1947 to 4.2 billion board feet in 1959. And with this, of course, occurred a tremendous economic boom through that area based on this very rapid expansion of cutting of the timber resource. The number of sawmills expanded along with this. In 1941 there were about 80 sawmills in the region. By 1951 there were 400 sawmills. Many of these were quite small. Many were uneconomical and they soon began to drop out. When lumber prices began to sag, many more of the mills dropped out. And by 1962, we were back down to 120 mills in the region but with about four times the capacity of 15 years earlier.

The output of redwood lumber increased as part of this pattern. It went from half a billion feet to one billion feet, essentially doubling the cut from the redwood type. A much more significant and amazing development in the region was a development of an entire new industry, the Douglas fir lumber industry. Prior to World War II very little Douglas fir lumber was cut in that region. By 1956, the four coastal counties alone produced about 1.8 billion board feet of Douglas fir lumber. That is more than the output of the entire lumber industry of the state of California, all species included, in 1939. So one can truly say that this was an entire new industry of quite substantial size.

This industry was based on these small holdings largely, these ranch properties which in the 1930's people were trying to burn out and get rid of. I remember talking to one rancher up there who said he spent four years in a row during the 1930's trying to burn out his Douglas fir. It was too damp. He couldn't get a good fire and it proved to be just as well because two years before I was talking to him, he had sold that same Douglas fir for \$150,000.

This was an exceptional case perhaps. But it is a symptom of the kind of change that occurred in that region. You had this tremendous expansion based primarily on cutting from the small and medium size properties. We also had the development of the Douglas fir plywood industry, an industry that did not exist in that region in 1947 and which today cuts about half a billion board feet - another new industry. You had the development of a pulp and paper industry. First the Masonite mill at Ukiah in 1948. This year the Georgia Pacific mill at Samoa near Eureka. And next year the Crown-Simpson mill should be completed also in the Eureka-Arcata area. So there's another new industry in the region. You have the particle board industry having developed in Humboldt County and Del Norte County. You have various silvicochemical industries. And so there is a whole complex of industries there.

As I say, there is very little resemblance to the old-line redwood industry that dominated the region from 1900 to 1945. Although those same old-line companies are still there and are still a very important element in the economy, there has grown up about them a new and diversified forest industry. In the period from 1947 to 1960, in this period of rapid expansions there was only 40 billion feet of timber cut in that region. It is important to understand what has happened there and why it has happened, and what the future outlook is.

Of that 40 billion board feet of timber, only nine percent came from the public lands. And remember that federal agencies own 3 million out of the 7 million acres of forest up there. But only 9% of the cut came from the public

land. The large forest industries, the industries that many of you tend to identify with the region over-all - the companies each holding over 50,000 acres - these cut only 18% of the total cut. And the other 72% of the cut, nearly three-fourths of the total cut of the regions came from these small and medium size private holdings, largely non-industrial in nature.

These were held by people who had looked on this material as worthless as a barrier to the kind of land use they wanted. When the Douglas fir loggers moved down from Oregon into this region and offered \$2 per thousand board feet for the right to cut this timber, they were greeted warmly and the sales were made eagerly. The price quickly rose from \$2 up to around \$15 and the people who sold first became very unhappy and bitter. But at the time they were quite delighted.

This is where the cut came. It was an extremely heavy cut. Much of this cut was on land that was held by people who knew nothing of forestry. They frequently got the short end of the bargaining. We carried out studies up there, and we found that over one-third of the people who sold timber didn't even go out on their land to inspect the result of the timber sale - over one-third of the small owners we interviewed.

It was under these kinds of conditions that much of this cutting was carried out. The visceral impact of the aesthetic impact, has certainly been very great. We've no doubt that the aesthetic impact of the cutting on some of the large industrial properties carried out in accordance with planned silvicultural systems also has a very great adverse aesthetic effect. A logging operation in timber of that size certainly has a tremendous effect on the landscape, on the scenery, and on the emotions of people who travel through the region. None the less, much of the most unfortunate cutting occurred on the small and medium properties.

The forest industries the larger properties, are under the management of foresters. They may not always be professional in what they're doing. Some of their practices are controversial

but there is an effort being made, one way or another to keep the land in production. The small and medium holders of Douglas fir timber did not have this concern.

We have in California a State Forest Practice Act which sets certain minimum standards for forest operations, the purpose being to maintain some degree of productivity on the land, even though the owners may not be much concerned with the future.

One of the provisions of this Forest Practice Act, however, is that an owner who wishes to convert his forest land to some other use simply has to file a conversion affidavit. And upon his filing this conversion affidavit the silvicultural requirements are suspended. In other words, these are the requirements for leaving of seed trees, for certain other provisions for the natural regeneration of the area, leaving of smaller materials things of this kind. If you file a conversion affidavit, these requirements no longer holds because after all the conversion affidavit says you're going to try to convert this to grazing or to subdivision or to some other purpose.

About 80% of the land that has been cut under conversion affidavits in the entire state of California has been cut in the North Coast region - roughly 400,000 acres of the forest land of that region. The change in land use sometimes has been successful. Sometimes it has not. Sometimes it hasn't even been attempted. There is no doubt that this is one of the important factors in the situation up there, primarily of importance again on the Douglas fir lands, more than on the redwood lands.

But through this whole process, we have a continuation of the whole century-long pattern of the North Coast region. This is an economy that is based on wood, that is based on the utilization of wood. It is an economy that has undergone a tremendous expansion in the last 20 years, in fact in the first 15 of the last 20 years, to be more precise. Because during this time of very rapid increase in cut. It was necessary to bring in more logging equipment, to build more sawmills, to hire more mill hands

and loggers. When you hired more mill hands and loggers, it was necessary to build more houses to provide more schools, to provide more governmental services.

And so through this expansion there was a tremendous acceleration effect on the total economy of the region. When you go through a 15-year period of this kind, even if your cut then stabilizes and you go along at an absolutely even level, your overall economy will go into a period of slump, because you've lost this acceleration, the whole mass of economic activity that was devoted to growth. And if growth ends you lose this portion of economic activity.

And this very definitely is what has happened to the North Coast region in the last five years. It's happened because of some weakness in the market for lumber. And it's happened because the total quantity of timber in the region has been very greatly reduced by this heavy cutting of the last twenty years. In particular, the Douglas fir stands have been reduced. But the economy of the region is very strongly oriented to the utilization of timber.

In Humboldt County which is, of course, the center of the industry, the main source of employment is lumbering. Agriculture is relatively minor in importance, primarily dairying, some livestock production; fisheries, which is often mentioned as a natural resource industry, is of very minor importance. And actually fisheries are declining. The fisheries are moving northward and there is no prospect of commercial fisheries in the North Coast area.

When we turn to these other kinds of activities such as trade and service and government industries, we find that many of these are involved in servicing the lumber industry. A common rule of thumb is that one person is employed in a service industry for each person employed in the basic industries. If you look at the employment in the wood product industries of the regions you see that as of 1950, 38% of the employment in Del Norte County, 31% in Humboldt and 38% in Mendocino of all employment is directly in lumber and wood prod-

ucts. And this does not include pulp and paper, but just the mechanical wood products. If you allow for the one person in service industry for each person in the basic industry, you come out with about two-thirds of the total employment in this North Coast region being based either directly or indirectly on the timber industry.

In the face of this importance of timber in the region, the outlook for the future is highly significant. And the outlook, according to the studies we've made is that the total cut of timber in that region is going to decline. We expect that by 1975 the timber cut will be about 20% less than it was from 1958 to 1960. So instead of having this rapid expansion of cut we moved into a period now of gradual decline in cut lumber. And this downward movement is already under way.

In addition, the timber industries like most industries have increased their efficiency of the use of labor by putting in, more capital equipment. We use about 20% less labor today in processing a million board feet of logs than we did about 18 years ago. Presumably this trend will also continue and by 1975, we'll have about another 20% decline in the amount of labor used in processing a given volume of logs. So you combine the 20% decline in cut with the 20% decline in labor use per unit of volume, you get about a 40% decline in employment in the North Coast region. This is obviously a rough orders of magnitude figure, but it gives some impression of the movement in the basic source of that economy that is under way at the present time and is a source of much concern the people in the region.

Over the long term it is certainly possible to increase the cut again. Incidentally, this downward movement in cut is concentrated in the Douglas fir. The cut of redwood lumber probably can be held fairly stable at about its present level assuming no major shifts in land ownership, which is a big assumption. But under the present land ownership the best estimates indicate that the cut of redwood lumber can be maintained at about its present level, and that

the cut and growth will come into balance at this level in about another 20 years.

Over a longer period of time it is possible to increase greatly the growth of that region. This is probably the most productive softwood timber growing region to be found anywhere in the world. There are few areas in Washington and Oregon that are equal to it. Here you get a tremendously rapid growth over a period of 50 or 60 years, a volume of growth that is not surpassed in any place in the world. You are dealing with species, particularly redwoods but the Douglas fir up there also that are remarkably free of insect problems, remarkably free of disease problems. The redwood itself is resistant to fire. The redwood sprout as well as reproduces from seed. And, in general it is as ideal an a for intensive timber management as can be found any place. And this certainly important in terms of the outlook of the region 40, 50, 60 years into the future when increasing intensity of management can increase greatly the volume of wood available for utilization. But it will take some time before that comes. The current look is certainly downward.

Another aspect of the development of the region is the water resource. The North Coast region is the state's major undeveloped water resource. As a result of the high rainfall, the high precipitation, and the lack of development up to the present time, the outlook for the next 40 years is one of rapid change in the region as a result of water development. Studies by the State Department of Water Resources indicate that the region produces around 29,000,000 acre feet of free runoff each year. Most of this currently is simply spilling into the ocean during the winter season. The Klamath River system alone produces some 12,000,000 acre feet of water each year in runoff. The Eel River is second with 6,300,000 acre feet.

The State Department of Water Resources has developed a detailed long term plan for the development of the water resources of the region. The plan for the North Coast includes

not only the North Coast area itself, but also related developments on the east side of the Sacramento Valley and down to Lake Berryessa. To put this water to use, it's necessary after you get the water impounded and stored, to ship it by tunnels through the coast ranges into reservoirs on the west side of the Sacramento Valley. And from there it moves into the water distribution system down into the delta areas and down into Southern California, down into whatever parts of the state it's needed.

So the total plan development for the North Coast involves opening primary reservoirs in the North Coast and a secondary system of storage reservoirs on the west side of the Sacramento Valley. The total development of this plan would develop about 12,000,000 acre feet of water.

This is estimated to be enough to meet California's water needs through the year 2020.

The prime development is in stages. After the upper Eel River has been developed, the next stage will be the Trinity River, a system of major reservoirs. Currently this is termed the Trinity River Development Project. And this will be the second stage with related storage facilities on the West side again of the Sacramento River. At a somewhat more distant period, we move into the lower Eel, where there will be a development of a tremendous body of water. A major problem here is that this will involve relocation of the Northwest Pacific Railroad About a hundred miles of right away will have to be shifted and the cost of this alone is estimated at \$130,000,000 to say nothing about the water development itself.

The final stage in the current plan will be the development of the Klamath River itself and its potential of 12,000,000 acre feet. This is a colossal project with a total figure estimated at around, but check my figure here before I give it, a total cost of 1.6 billion dollars. Sometimes I get a little hesitant about these billions. More than one and a half billion dollars for the Klamath. The date for this development has not yet been set.

It is sure to prove controversial, because the development on the Klamath River will interrupt and largely destroy the current runs of steelhead and salmon. According to the water resource people themselves none of the current systems for transporting fish dams can be very effective in the situation in the Klamath River. So this major sports fishery will be radically interrupted, largely destroyed by this proposed water development.

So there will certainly be controversy when this time comes. But the general pattern will certainly be important to the economy of the region. There will be tremendous expenditures on development and related economic activities. The water development will also be important in developing opportunities for recreation, commercial recreation of all kinds. You'll notice generally these reservoirs are some distance inland. They're not in the main redwood belt. They're in the warmer, sunnier portions of the area. And they will without question be major sources of recreational activity. In California our mass recreation is almost always strongly oriented to water. And so this development is certainly going to change the economy of the region, both to construction activity and to the development of major new recreational resources. This matter of recreation is of course, of great concern in the region. With the timber cut declining, they are looking for a new form of economic development, new opportunities.

One very important opportunity is of course the development of the pulp and paper industry. The pulp and paper mills are based entirely on wood residues from lumber and pinewood operations. There is the opportunity to increase substantially the number of pulp and paper mills in the region, particle board plants and plants of that kind, without any increase in the timber cutting simply through better utilization, more complete utilization of the timber that is already being cut. And this is one line of economic activity, a very important one, and one with a very high tax base. A pulp and paper mill costs from 50 million to 100 million dollars. It provides remarkably stable employ-

ment. to operate a pulp mill successfully, you have to operate it 360 days a year. And so the whole problem of seasonal development that plagues many resource areas tends to be reduced by shifts toward the chemical processing of the raw materials.

The other opportunity that people discuss, generally, I think, somewhat casually, is the recreational industry, commercial recreational service industries based on tourism. And this is the other aspect of the region to which I want to turn. Recreation in the North Coast itself is largely a fairly recent development. Certainly the people of San Francisco turned to outdoor recreation almost as soon as San Francisco was settled. They began to move into Marin County. And as the railroad was developed, on up into the Russian River area. But there's very little development beyond that until about the 1920's.

It was not until the Northwest Pacific Railroad was completed that it was possible for tourists generally to move up into the northern part of the Redwood Region. It was really not until Highway 101 was largely completed and the automobile revolutionized American society that recreation became important in this north coastal area. It really begins in about the 1920's. Of course the people of the region themselves turned to outdoor recreation. And the pattern is somewhat interesting in terms of the future prospects for the region and in terms of consumer preference in the field of outdoor recreation.

The Division of Beaches and Parks in analyzing the long term recreational patterns in the region points out, speaking of an early period back in the last century, "the prevalent coastal fogs responsible for the outstanding development of the redwood groves were also responsible for a recreation use pattern that has been brought down to the present. This is the trip inland to a warmer sunnier environment." In short, for the people who lived in the redwood belt, outdoor recreation meant getting out of it. And this is of course, the reaction of most of us to whatever environment we find our-



selves in. For recreation we shift to a different environment.

But it's also of some fundamental importance I think, because it points up one of the features of the redwood belt and that's the climate the heaviest, most frequent rainfall of any area in California and persistent heavy summer fogs. It is not an area, not a climatic condition that most people find conducive to very long periods of outdoor recreation. Outdoor recreation in the redwood belt itself is primarily a matter of sightseeing. And this was made evident by the reactions of the residents of the area themselves.

The recreational resources of the North Coast consist of a good many things. It is a whole recreational complex with two major scenic features, the redwood flats that lie at the heart of most of our state parks in the area with their magnificent groves of old redwoods, and, of course, the Pacific sea shore itself. These are the two major scenic features which are important in recreation. There are also, of course many activity opportunities. The activity forms of recreation in that region are primarily hunting and fishing. It is a major area for deer hunting, and also, of course the primary area for steelhead and salmon fishing and for some general trout fishing as well. Salmon and steelhead are a major source of recreation, as are the deer herds and the deer-hunting opportunities.

So you have these very important activities opportunities. You have various kinds of recreational environments just about every kind of recreational environment one could imagine, starting from the extremely heavily used resort area of the Russian River - mass recreation, heavy development of cabins, neon signs, dance halls, hot dog stands and all the other attributes of heavy outdoor use we can call that recreation. The region ranges all the way from that to wilderness area, wilderness areas that receive very light use instead of the heavy use of our Sierra Nevada wilderness areas such as the Yolla Bolly and the Salmon Trinity Alps. So the region does produce almost every type

of recreational environment. There are even some opportunities for ski development on the higher mountain areas. None yet has been developed as far as I know.

Further, of course, in the recreational use of the region, it is a very important alternative route of travel. People who are traveling between the metropolitan areas of California and the Pacific Northwest essentially have the choice of Highway 99 or Highway 101.

They choose 101 only because of the scenery since it's a much slower longer ride. But none the less, this is an important aspect of recreational use. People who are traveling for some other reason pass through the region as a desirable route. Now this was reflected very strongly in 1962 when recreational travel in the region increased very greatly, primarily because of the Seattle World's Fair. In 1963 it dropped back down again. So this route of travel aspect is important.

This all relates to how redwoods fit into the recreation pattern and the potential for a recreation industry in the North Coast. Now these are not very good data on the pattern on recreational use in the area. There are no consistent series as to the volume of travel or anything of this kind. And everyone agrees that the general pattern has been strongly upward.

Nonetheless, in some areas where there are detailed statistics, in the last four or five years, the volume of use has declined. Somewhat interesting is the fact that there have been a decline in the number of visits to such areas as the Prairie Creek Redwoods State Park, the Jedediah Smith Redwoods State Park, and, for that matter, there has also been a decline in the volume of use on the Shasta-Trinity National Forest and at some other areas. The peak level of use was apparently reached about five years ago and has definitely dropped since that time. I have no idea as to what the reasons are for it. But it is shown by the official records of the management agency.

The general pattern is that out-of-state visitors concentrate entirely on the Redwood Highway,

they almost never move off of it to any extent. They don't get out of the redwood belt except when the highway does. They do not participate in such activities as picnicking, camping, hunting, fishing, these kinds of things. Typically, they stay in the larger cities, Eureka, Santa Rosa, things of this kind. So essentially the out-of-state visitor passes through the area, perhaps spending one night in the region, stopping and sightseeing at the groves as he moves through. In fact, visitors to state parks generally come in this sightseeing category. According to the Division of Beaches and Parks, about 80% of the visitors do not engage in any activities other than sightseeing. They don't stop for picnicking, for camping, for swimming, for fishing. They simply stop, enjoy the view, look at the sights, walk a hundred yards from the road perhaps, and get back in their cars and move on.

Now the use by the residents of California is much more varied. Some of the residents, of course, travel up the Redwood Highway in exactly the same fashion. Also many people in California go up into this north coastal region for other types of outdoor recreation other than sightseeing. Then you have this great activity in spring and fall, related to fishing and hunting. And this is of importance.

The activity on the Redwood Highway itself is concentrated in a 12-week period, primarily concentrated in the month of August. From the standpoint of economics and from the standpoint of government, this heavy peak use in a 12-week period is an extremely difficult problem. It is almost impossible to put in resort-type developments or commercial recreation generally and have this pay off over a 12 week period. Yet the other 40 weeks of the year, there is very little recreational use within the redwoods. Furthermore, you get into very difficult problems in terms of public services, police protection, public health, safety, sanitation. The demands in the month of August are totally out of proportion to the demands in the rest of the year. This is a common problem of recreational areas. It can cause a serious problem for the state of California. It's a problem

which we as a society do not honestly face. We simply don't pay the costs that are involved in the pattern of recreation use that we have.

And as a result of this fact, we are seriously deteriorating the recreational environment that is involved, by overuse and pollution. Some of the worst examples of water pollution in the state are directly tied to peak recreation use. Again from the standpoint of the economy of the North Coast, it's very clear that this kind of use is by no means, an unmixed blessing. It might even turn out to be a very serious economic problem for the local governments there.

The fact that you have hunting and fishing use in fall and spring helps to spread out the recreational load. It's spread out geographically also. But it does lengthen the period. And in terms of the economy of the region it is, undoubtedly, more important to spread out the period of recreational use, extend the period throughout the calendar year, and to increase the volume. Certainly, it's more important than increasing the volume during the month of August when things are already pretty well at overflow on the Redwood Highway.

When you get off the Redwood Highway, the situation is quite different. For example, in the Mendocino National Forest, you find the heavy recreational use is in May and again in the late summer and fall related to the deer season. During July and early August, the campgrounds and so on are partially empty. In the Mad River district or the Six Rivers National Forest, again you have the same kind of pattern with empty campgrounds during the summer. On the Klamath River, some Forest Service campgrounds during July and August are almost empty. They run at about 5% occupancy. During spring and fall they have very great use. There is a common idea that if you have a campground in California, it's going to be used very heavily throughout the summer. This is simply not the case. It depends on where it is and what the recreational patterns are.

Now, incidentally, the pulp and paper industry on the North Coast has had some important recreational impacts, favorable ones by the way, despite what you may have read in the San Francisco Chronicle and other places. The Ruth Reservoir on the Mad River was put in primarily for water development for these two pulp mills in the Eureka area. This has developed into one of the most popular fishing areas in the entire North Coast, with very heavy fishing in the spring and again in the fall, very light use during the middle of the summer. And in terms of recreation, in terms of volume of outdoor recreation and so on, whether a man is enjoying the aesthetic beauty of the redwoods or enjoying the opportunity to fish in an attractive outdoor environment, both of these are important, both of these people pump money into the economy. And the hunting and fishing activities have the particular virtue of being spread out, occurring at times other than the peak of travel on the Redwood Highway. The development of the reservoirs, as I was pointing out earlier, is certainly going to add to this pattern of spring and fall recreational use.

Within this total pattern then -- this economy that's been under discussion, the timber economy, the water developments, and the recreational developments that have occurred so far -- we have now the proposal; for a major redwood park, which is the item that has tended to turn attention to the economic issues and the biological issues and everything else about the north coastal region. The proposals for a major redwood park are numerous, and this is one of the sources of confusion now. When people begin to debate the redwood park proposal) the first thing you have to determine is which proposal are they talking about and what are the interactions among the various proposals.

The more important proposals include the master plan of the State Division of Beaches and Parks. This plan is concentrated on the areas of the redwoods that have long been held up as particularly deserving of preservation. The Division of Beaches and Parks plan is de-

signed to increase the area of the four major state parks in the North Coast area, primarily to expand Jedediah Smith Redwoods Park, Del Norte Coast Redwoods Park, Prairie Creek Redwoods Park and Humboldt Redwoods Park.

These four parks now total 64,000 acres. And incidentally, this is a substantial area of land. We're not really talking about little isolated groves to be preserved. We're talking about some quite large land areas as they now exist in preservation. Now, the proposal of the Division is to increase the four parks by another 45,000 acres which would bring them to a total of 109,000 acres in the four parks. Over three-fourths of this acquisition of 45,000 acres would be in cutover and second-growth land; only a minor part of it, around 8,000 acres, I believe, in virgin old-growth. Now, this is one proposal.

A year ago the National Park Service published a very elaborate brochure with three proposals in it, Plans 1, 2 and 3 of the National Park Service for what was delicately termed a major redwood park, never using the word a redwood national park, although very clearly this was the intent.

Now these three proposals for a redwood national park that came out at that time were all based on the Redwood Creek Area. People have long been aware of this area, but had not considered it the top priority opportunity for acquisition. The Save-the-Redwoods League and other groups had previously concentrated on the areas of these four state parks. The redwood park proposal, however, based on the Redwood Creek area, involves incorporating Prairie Creek State Park. The three proposals then announced by the Park Service were for total parks ranging from 57,000 acres down to about 32,000 acres.

About 10 days or two weeks ago, in Washington, the National Park Service unveiled three new proposals, Proposals A, B and C rather than 1, 2 and 3. Proposals A, B and C are all larger than any of the previous proposals of the National Park Service. Now these range from

93,000 acres down to 61,000 acres. I don't know any of the details of these proposals other than what I've read in the papers and the papers haven't published very much to date.

In addition, of course, there is the Sierra Club proposal for a park which would total 97,600 acres and which of course generally is in close coincidence with the largest proposal of the National Park Service. They are in essentially the same area. I am not aware of the exact degree to which the boundaries are parallel. The Sierra Club proposal is somewhat larger than any of the National Park Services proposals.

So, to talk about the economic impact and economic effect it would depend on which proposal you had in mind. Now Plan 1 published a year ago has received the most attention to date. This plan would require the purchase of 43,000 acres of private land to put into the national park. It would also require the purchase of 8,800 acres of private land to turn over to the State Division of Beaches and Parks, presumably as some kind of a payment for taking over Prairie Creek Park. But the total proposal under Plan 1 would be to take 52,000 acres of private land for purchases for preservation. The cost of this plan has been estimated in a study by the American Forestry Association at \$120,000,000. Plan 1 would take holdings from five major redwood companies. The effect would be greatest on the Arcata Redwood Company, taking 85% of their holdings. The Rellim Redwood Company would lose 18% of their holdings. Georgia-Pacific would lose 11% and The Pacific Lumber Company and Simpson, smaller amounts. In total, this plan would take 10% of the land of these five companies combined.

Now, what would be the economic impact of this on the timber industry? Well, obviously Arcata Redwood Company would have only one possibility and that's to close down after losing 85% of their land. They would presumably sell the other 15% to some other company. The 300 people now working for Arcata Lumber Company Timber would be laid off. With the total timber industry in the region declin-

ing there is no alternate employment opportunity in the region and so these people would be faced with a major problem. That is, there is no alternate opportunity for loggers and millhands except by displacing somebody else. There are various reasons to think that the Miller (Rellim) Company might also have to shut down and there'd be about another 155 people. There might be some reduction in employment by these other companies. There are various ways they could adjust and it's very difficult for anyone to say what they would do.

Well, it seems quite likely that at least 500 people directly employed would lose their jobs and without any alternate demand for these 500 people in the region in their current trade. Now there'd also be people in the service industries serving the lumber and logging industries who would be affected. So perhaps a thousand people overall would have their jobs affected by this. In the state of California overall this is not particularly important. Our error of estimating the volume of employment is such that a thousand people more or less wouldn't show up. So it is well within our error of estimation of unemployment within the state. On the other hand, for the thousand people involved, it's a pretty vital thing.

And this explains in large part the reaction that is going on. Within the entire north coastal region, the effect of this acquisition would be to reduce the cut of timber by not more than 2%. So even within the total region there'd be lots of opportunity for adjustment. It would reduce the cut of redwood, however, by some 6% or 7%. Remember, the north coastal region is a very large region in which redwood amounts to only 27% of the forest type. In terms of the cut of redwood timber, there'd be a reduction of about 6 or 7% according to my estimates. Other people have made other estimates and there's certainly room for already adjusting to a downward movement and is already in difficulty, this would accentuate an already difficult problem. So understandably there is concern by the communities, by the local governmental agencies and by a number of the people of the region.

There are also, of course, people up in the Eureka-Arcata area that were strongly in favor of the redwood park. And there are people who would expect to gain economic benefit from the development of the park. While you would have this adverse effect on the timber industry, it's argued there would be some stimulation of recreational activity. The stimulation of recreational activity would come, presumably, from three sources. The first would be the advertising value of a national park. And throughout the United States we find commercial groups supporting national park proposals because of this advertising value, because of the belief that the name national park will attract more tourists to the region. All experience indicates there's considerable truth to this.

The extent to which this would be true in the Redwood Region is difficult to gauge, because the redwoods, of course, are already very well known. They're known throughout the world as a magnificent scenic resource. It's not the same kind of situation that Utah had with canyon mines, things of this kind, beautiful recreation areas that were very little known until national park status came to them. Still there would, presumably, be some stimulation of tourist activity by the name national park. The National Park Service analysis of the economic effects, the study prepared by John Decker, argues essentially that there would be an increase because of the fact that the National Park Service would build more campgrounds. He essentially argues that if 500 more campgrounds were put in, these would be utilized by so many people per day and this would bring so many more people into the region. So because of more development of public campgrounds and things of this kind, you'd also get more people and more expenditures. And third, presumably, depending on how you really feel about these things, that because a greater natural scenic wonder would be preserved, this in itself would attract more people.

This last argument from the economic standpoint and from all experience with recreation, I personally cannot accept. We know from all

experience in national parks that the great bulk of people go to see two or three highly publicized sites. They go into Yosemite Valley. In Yellowstone Park the use is concentrated on only 10% of the area. The smaller number of people who use the back country have a wonderful experience, but they have very little economic impact. So it's the superlative groves, the acquisition of the tallest trees, these are the things that would attract the bulk of tourists. And how much back country there is, whether it is 50,000 acres or 90,000 acres, I suspect would have very little effect. In terms of the advertising value of the term national park, this is largely independent of the size of the park. And in terms of putting in 500 or 1,000 campgrounds, whether you have 50,000 acres or 100,000 acres makes no difference. You can put in 500 or 1,000 more campgrounds.

The point here is that the economic activity generated by a national park will be essentially independent of the size of the park. The adverse effect on the timber economy will vary directly with the size of the park. And in terms of the economic impact then, this is essentially the situation. You can get all the economic benefits from a national park essentially by applying the name national park to an existing state park and putting in more campgrounds, and acquiring the tallest trees, acquiring eight or ten thousand more acres of superlative areas. As you acquire more, you'll certainly have an adverse economic effect which will not be offset to the additional acreage that is acquired.

The final consideration of this of course is why do we want a national park up there. Certainly the basic argument for a national park, unless you're in the commercial tourist business is not to generate economic activity. It's to preserve a scenic asset of great importance to society.

And this is the issue. It's not an opportunity for outdoor recreation. The recreation patterns that I have been describing in the north coastal region indicate that people would stay there for a short time. They would largely pass

through on an overnight visit. It is not an activities area. It is not the kind of countryside that one gets out and walks through. I personally greatly enjoy walking through any Sierra forest I've ever seen, and I find almost no attraction to walking through a redwood forest, because it's next to impossible with the amount of vegetation, the steepness of the ground and the general barriers. And I've worked as a forester in the North Coast and I've worked in the Sierra Nevada 25 years ago when I was a good deal more vigorous and I was still not able to get across very much of that kind of countryside. And so we're not after really a kind of recreational activity.

If we wanted outdoor recreation, there are many ways we could get more recreation for the expenditure. The argument must rest on the importance of preserving a scenic asset, and on this alone. How big an area you have to preserve to achieve this depends on your point of view, on your conception of what will happen to the surrounding country, and various other things of this kind, things that have been covered in various other talks. The other economic question about this, of course, is how do we want to spend \$150 to \$200 million for preservation of beautiful scenery. Do we want to concentrate it up the North Coast? Or would we rather see some of this spent preserving other types of scenic assets? These seem to me to be the fundamental questions in terms of the park.

I think there would be some adverse economic effect on the North Coast region. I cannot myself see that this is of such overwhelming significance that it should be a barrier to establishing the park. If society feels this is an asset on which it wishes to spend \$150 to \$200 million in acquiring and if the conclusion is made that we really have to have this much land in order to achieve this scenic opportunity, in general than the North Coast region faces a whole series of economic questions. The park proposal fits into the whole pattern of these problems.

The region is faced with adjusting to change and its traditional economic pace has to adjust to a changing and declining wood supply. It has to adjust to major water developments. There is going to be a great demand on the region for mass recreation of all kinds: hunting, fishing, picnicking, camping by the residents of California, all kinds of outdoor recreation, largely outside the redwood belt. There would be heavy demands on it for this mass recreation, from our rapidly increasing population. It also faces the problem, we all face the problem, of preserving some part at least of the magnificent scenic asset of the region and its coast and its redwood flats.

And these, I think, are enough economic issues for any region, but I'm very much afraid that the region is going to face one more economic question, an economic question and issue that need not arise, but which past experience suggests will. This again relates to the national park. Personally I think the greatest danger for the economy of the region and for misunderstandings and bitterness would be for the Congress to pass an act establishing a national park and failing to appropriate the funds required to complete the acquisition very rapidly. And this has been the characteristic pattern of the past, The purchase units have been set up. The funds have not been obligated. And if this happens you place the private owner in the region in an impossible situation. He has an asset, if he cuts it, he is destroying something that the public has said it wishes to have, yet, if he doesn't cut it, how does he survive?

And this, I think, is a danger and I think is something that both the people who oppose the park and the people who favor the park need to push forward in hearings that are sure to come, the Congressional hearings and so on. I think both sides should stress that whatever is done should be done quickly and it should be done cleanly. And if they're going so purchase it the money should be put up at the same time that the decision is made to purchase it. This will certainly save a vast amount of money. If it's purchased slowly it drives the price up against itself and it will bring a major

economic problem to the region -- a problem that could be avoided.

## Questions and Answers

**QUESTION:** You spoke of stabilizing the production of timber. As I understand it, this is much more possible with the large holdings in the redwood area, much more doubtful in the Douglas fir with the small ownerships. Now how is a person going to stabilize unless you consolidate into larger holdings and in that very way, you're going to reduce the population if you do that.

**ANSWER:** Yes, well, I would certainly agree that to get successful commercial forest land management, the land needs to be consolidated into larger holding where they'll be a long term management interest. I think it is quite possible that the population of the region will decline. And there's nothing adverse about this. There are parts of California where this is already happening. Northeastern California, for example, has a substantially smaller population today than it did 30 years ago. They hit their peak of timber cutting up there in the 1940's and the population has gone down ever since. And perhaps the people up there are the happier because of it. And so to me it is not necessarily adverse if the population of the region does decline, if the population that's up there has a solid year round economic basis.

**QUESTION:** Would making the Redwood Highway, completing it so that it's a freeway or at least it's an easily driven expressway, have great economic effect on the region by bringing in more tourists and so forth?

**ANSWER:** Well, this would presumably increase the volume of traffic because people facing a choice between Highway 99 and Highway 101 would now have to give up less hours of time to drive the Redwood Highway. It would also make the people merely go through it a lot faster and they would simply spend less time in it. There would be less expenditure of funds in the area. What the net economic effect there would be, I don't know. The primary pressure

for this of course, is from the commercial activity. The people in the region who are engaged in commercial operations between that region and San Francisco, they're the ones who are primarily affected by the highway. Improvement of the highway will make their industries more profitable. I don't think it will increase the volume, because the volume is limited essentially by the timber that's available for cutting.