Staff Papers Series

P90-48

July 1990

ECONOMIC AND SOCIAL IMPACTS OF PRESERVING ANCIENT FORESTS IN THE PACIFIC NORTHWEST

Wilbur R. Maki and Douglas C. Olson
University of Minnesota

Department of Agricultural and Applied Economics

University of Minnesota
Institute of Agriculture, Forestry and Home Economics
St. Paul, Minnesota 55108

ECONOMIC AND SOCIAL IMPACTS OF PRESERVING ANCIENT FORESTS IN THE PACIFIC NORTHWEST

Wilbur R. Maki and Douglas C. Olson
University of Minnesota

Staff Papers are published without formal review within the Department of Agricultural and Applied Economics.

Contents

ECONOMIC AND SOCIAL IMPACTS OF PRESERVING ANCIENT FORESTS IN THE PACIFIC NORTHWEST

Wilbur R. Maki and Douglas C. Olson
University of Minnesota

Assessing the economic and social impacts of preserving ancient forests in the Pacific Northwest is a two-fold challenge for regional economic and policy analysts. Firstly, the local and regional implications of alternative forest conservation strategies must be assessed. Both state and federal agencies have a long-standing responsibility in managing forests so as to maintain stable communities. Indeed, the maintenance of stable communities, following widely accepted sustainable yield timber management practices, is the current US Forest Service policy prescription for the conservation of old forest growth and, also, of the northern spotted owl in the Pacific Northwest. As a result of these conservation efforts, a large body of scientific knowledge and management capabilities exists in the public sector to facilitate the regional assessments.

Secondly, the assessments of local and regional impacts of preserving ancient forests must be related to the federal budget and the associated costs and benefits of forest management options. Different management practices yield different levels of timber production, which, in turn, result in different patterns of industry employment and community well-being. The trade-offs between timber production and environmental preservation are now being measured by changes in local and regional employment and income and related changes in the public costs of lessening the adverse economic and social impacts of reductions in commercial timber production.

I. Introduction

Reducing timber production and conserving spotted owl habitat has associated costs and benefits, with the private sector incurring the immediate costs of reduced product sales and the public sector incurring the social costs of increased unemployment. Consumers generally may pay more for timber-related products, which will provide opportunities, however, for the introduction and/or expansion of wood substitutes. These substitutes will incur higher costs of pollution abatement when derived from petroleum and other mineral resources. Moreover, a non-renewable resource is substituted for a renewable resource, which promises to add to future costs because of growing resource scarcity. All of these costs ultimately affect the size of federal, as well state and local, government budgets.

This report addresses the first set of challenges--measurement of the local and regional impacts of preserving the

ancient forests in the Pacific Northwest. For this purpose, Dr. John Beuter, consulting forester with Mason, Bruce & Girard, Inc., Portland, Oregon, assembled a team of economists and social scientists. They conducted an investigation of the social and economic impacts of the implementation of the Interagency Scientific Committee (ISC) recommendations for recovery of spotted owl habitats in the timber-dependent areas of Washington, Oregon and Northern California (Beuter 1990; Gilless 1990; Lee 1990; Olson 1990; Polzin 1990; Rasmussen 1990). The investigation was commissioned by the American Forest Resource Alliance with absolutely no stipulation as to its conduct and findings. The authors of this report participated, along with other university staff, in this effort.

Because of the overlapping geographical coverage, the Beuter report and its authoritative analysis provides an excellent tool for assessing the potential impacts of bills such as HR.5295, introduced by Congressman Bruce Vento of Minnesota, that would establish an "Ancient Forest Reserve System" encompassing 6.3 million acres in the Douglas-fir region of California, Oregon and Washington, and HR.4492 introduced by Congressman James Jontz of Indiana that would achieve a similar purpose. In collaboration with Dr. Beuter, we identify six specific concerns to address at this time. They are:

1. The varying degrees of timber-dependency of individual communities in the Pacific Northwest.

2. The economic and social impacts of timberland withdrawal from commercial timber production on these communities.

3. The likely success of mitigating efforts in these communities to ease the adverse effects of reductions in commercial timber production.

4. The likely impacts of proposed industry subsidies in the Pacific Northwest on competing businesses in other areas.

5. The replacement of local with central planning and the emergence of a class struggle in which the victims become the enemies of the larger society.

6. The continuing growth of world demand for timber products and the role of managed public forests in reducing its adverse global environmental impacts.

To set the stage for this presentation we refer to the following excerpt from the best seller, Our Common Future:

"Industry is on the leading edge of the interface between people and the environment. It is perhaps the main instrument of change that affects the environmental resource

bases of development, both positively and negatively. Both industry and government, therefore, stand to benefit from working together more closely."

This observation from Our Common Future is the underlying premise of our presentation and the concerns it addresses. Industry and government must work together with science to conserve ancient forests and endangered species, and at the same time, to manage our national forests with sustained yields for the support of stable communities.

Through bottom-up national forest planning, 3.1 million acres of old growth Douglas-fir timberland--that will increase to 8.4 million acres by the year 2000--has been set aside already. Continued study of northern owl habitats is underway to add to the existing knowledge base. Indeed, the most recent findings reported by Dr. Larry Irwin and associates point to the resiliency of the northern spotted owl in adjusting to new growth habitats in northern California--a highly important finding relative to its implications for local communities as well as the federal budget.

II. Timber Dependency Varies Widely Among Areas

Using the University of Minnesota IMPLAN (IMpact Analysis for PLANning) System, it is possible to estimate the most timber-dependent and the least timber-dependent areas of the Pacific Northwest (see Figure 1, and also see Beuter 1990; Olson 1990). Timber-dependency is represented by the magnitude of the above-average levels of employment in wood products industries. It is measured also by the proportion of total commodity exports from each area accounted for by wood products. It approximates the contribution of the forest products industry to an area's basic economy.

For example, employment in primary wood products in Southwest Washington, accounts for 55 percent of the total above-average employment in the area while secondary wood products manufacturing accounts for four percent of the total. For individual counties, the timber-dependency index may be even higher, accounting for practically all of the basic economy of the county. In the Puget Sound Area, on the other hand, wood products manufacturing accounts for only nine percent of the total above-average employment.

Based on the timber-dependency indexes published in Table 1, it is clear that timber-dependency is reduced by proximity to a large metropolitan area, which serves an ancillary role in providing high order goods and services not available in rural areas. In the most heavily timber-dependent areas, the agriculture, forestry and fisheries industry group is a close

second in above-average employment. This differentiation of economic activity, between more or less standardized commodity production and high order manufacturing and services makes rural and metropolitan areas inexorably interdependent regional economies with both areas benefiting from their particular specializations. Change in the rural areas inevitably affects the metropolitan core area of an economic region.

Conclusion:

- Sudden changes in wood products industry employment will have vastly different impacts on area economic well-being.
- Proximity to a metropolitan area is an important factor in accounting for reduced levels of timber-dependency.

III. Impacts of Ancient Forest Bills Greater Than Impacts of ISC Strategy

Our analysis of the impacts of the ISC strategy used three scenarios compared to the 1983-1987 base period to address the following issues (see, Table 2):

1. What would likely have happened during 1991-2000 without the ISC strategy;

2. What would have happened if the ISC strategy is implemented on public lands only ;

3. What would happen if the ISC strategy is implemented on public and private lands.

The base period and the three scenarios are directly applicable to assessing the effects of the Vento Bill (H.R. 5295) and the Jontz Bill (H.R. 4492).

Both of the Ancient Forest bills (HR.4492 and HR.5295) would impose greater restrictions on timber harvesting than the ISC strategy (see, Table 3). Interim management guidelines under H.R. 5295 would provide at least 2.65 billion board feet compared to 2.8 for the ISC strategy. Although the Jontz bill does not give specific acreage and volume restrictions, the wording implies a significantly greater reduction than either the ISC strategy or the Vento Bill--it is hard to visualize the Jontz bill providing more than one billion board feet of timber. The impacts described in our report would under-estimate the social and economic impacts of the Vento bill. In the case of the Jontz bill the impacts would be substantially greater than for the other scenarios.

Our earlier analysis shows that it is likely that 19,497 direct timber industry jobs, and 44,436 total jobs would have been lost throughout the three-state owl region during the 1990s even without the ISC strategy or the proposed bills. This presumes the implementation of the Federal forest plans, which already included harvest reduction to accommodate spotted owls, and other wildlife and environmental concerns.

The economic impact of the ISC strategy on public lands only would account for an additional direct job loss of 17.1 thousand and additional total job loss of 40 thousand for the three-state owl region. For the Vento bill the loss of total jobs would be 43 thousand--slightly more than for the ISC strategy. In the case of the Jontz bill, however, the loss would be substantially greater--80 thousand jobs.

Provisions of the ISC strategy as well as both of the Ancient of Forest bills do not distinctly clarify the issue of whether protection of spotted owl habitat on private lands will be required. Indeed, the State of California has already included private lands in its interpretation of the scientific recommendations that it intends to protect privately owned habitat. Consequently, we investigated the economic impact of the ISC strategy implemented on both public and private lands.

In the case of the ISC, the combined public and private lands harvest reductions would result in an additional (above baseline) direct job loss of 44.3 thousand and an additional total job loss of more than 102 thousand. In the case of the Vento Bill, the additional loss would be 105 thousand, whereas the Jontz bill would reduce total jobs by 136 thousand.

Conclusion:

- Estimates of the economic impact of the ISC strategy restricted to public lands would generate a loss of 40 thousand jobs. Additional job losses due to the application of spotted owl restrictions on private lands would total to 102 thousand over the 1991-2000 period.

- The Vento bill would reduce jobs by 43 thousand jobs if public lands only are protected and 105 thousand if the ISC strategy is applied to private lands. By far the greater losses would be associated with the Jontz bill--80 thousand inclusive of public lands only and 136 thousand if private lands are protected.

- Likely job losses would lead to severe and continuing worker dislocations because of their concentration in highly timber-dependent communities of the Douglas-fir region.

IV. Mitigating Proposals Lack Realism

Proposed mitigating efforts for reducing the adverse economic and social impacts of proposed or probable reductions in commercial timber cut in the Douglas-fir region may include:

1. Counseling of adversely affected families by trained social workers.

2. Retraining of dislocated workers for government-funded jobs.

3. Promotion of secondary wood products manufacturing in timber-dependent communities.

4. Promotion of tourism to provide replacement jobs for the dislocated workers.

Each of these remedies is based on the underlying premise that government intervention can correct any difficulty it may have created in the first place.

Two of the reports prepared for our analysis of the ISC strategy addressed three of the four remedies (Lee 1990; Polzin 1990). Their findings are highly relevant, also, to the discussion of mitigating measures proposed in the Ancient Forest Act of 1990.

We refer, first, to the findings by Dr. Robert Lee, who addressed the role of counseling and retraining of dislocated workers. From one-on-one interviews and careful and critical reading of related reports, Dr. Lee concluded that both counseling and retraining have only limited promise of success in the adversely-impacted communities. Because of the continuing disparagement of the logger and the industry in which he works, social workers and retraining specialists are viewed with suspicion as agents of the unfriendly world outside these communities.

A first reading of the Ancient Forest Act of 1990 and its mitigating measures is reminiscent of the WPA and the CCC, which were remedial measures of the Great Depression. For a highly independent and spirited, but now dislocated, small business person, however, the idea of living off a government make-work project is incongruous to his or her mode of thinking and values. There is a strong, intrinsic sense of human worth and dignity among these people. They see themselves as "real people", much unlike the "urban yuppies" they associate with the outside world. Dr. Lee also observed in his testimony that any counseling and retraining proposals would have very little, if any, successes

among the dislocated workers who have already experienced much abuse from the outside, both printed and verbal.

Dr. Paul Polzin, regional economist from the University of Montana, addressed the role of secondary wood products manufacturing in the rehabilitation of timber-dependent communities. From his careful and thorough analysis of the location of secondary wood products manufacturing establishments in the US he concluded that they are, for the most part, located near major consumer markets and that the probability of their location in the highly timber-dependent communities in which they would by most needed is extremely small. This finding is supported, also, by Schallau and Maki (1986) in their study of interregional commpetition in the forest products industry of the Pacific Northwest and the South.

The role of recreation-related industry in the rehabilitation of timber-dependent communities is proposed now as another mitigating measure for dealing with the adverse impacts of commercial timber cut reductions. The lack of statistical representation of this industry (which is actually parts of many industries that are included in the standard industry classification system) causes some difficulty in the assessment of this proposal. Studies are available, however, that show outdoor recreation-related activity as being largely seasonal and supporting mostly low-paying and part-time jobs, while higher-paying jobs are held by temporary residents who reside elsewhere during the off-season.

Four-season highly-developed recreation, which is the only viable alternative to the loss of timber-related job, is limited in the Douglas-fir region by geography and climate. Environmental groups usually oppose such developments. For example, the development of a large-scale, year-around recreational facilities on Mt. Hood could provide year-around jobs for the local work force in the Douglas-fir region. Local environmental groups have stymied plans to move forward with this project (Goranson 1989).

Finally, the track record of the federal government in living up to its promises of finding future employment for adversely-impacted timber-dependent communities is very poor, indeed. For example, in the north coast area of California, much worker dislocation resulted from the reductions in harvesting redwood when private forest land was expropriated to expand the Redwood National Park. In spite of Economic Development Administration efforts to establish new jobs in the area, it still suffers from high unemployment levels. Dr. Keith Gilless, forest economist from the University of California, Berkeley and member of the expert panel, has documented the exceptionally high unemployment rates--in some coastal counties in excess of 14 percent of the labor force.

Conclusion:

- The promise of new basic industry with year-around employment at comparable to current timber-products industry wages has very little foundation in reality.

- Counseling and retraining of dislocated workers is unlikely to succeed in overcoming long-standing cultural barriers and persona objections to moving out of established timber-dependent communities.

- Promotion of secondary wood products manufacturing and tourism to provide replacement jobs for dislocated workers--a viable alternative for metropolitan areas--runs counter to the location economics of secondary wood products manufacturing and the environmental restrictions imposed on four-season recreation development.

V. Subsidized Industry is Unfair Competition

The extended industry impacts of federal government subsidizing of secondary wood products manufacturing raises serious question of fiscal responsibility and fairness. Existing evidence supports the alternative position, for example, that secondary wood products manufacturing is market-driven, with an early start and market proximity being the most important location determinants. To successfully counteract these critical business location determinants would undoubtedly require large federal subsidies. At a time when fiscal austerity is called for, the subsidy alternative appears extremely difficult to sustain.

If the federal subsidy route were followed, then the existing secondary wood products industry would have just cause to protest the unfair competitive advantage that the federal subsidy would grant the newly-formed businesses. Andersen Windows, a secondary wood products firm located Bayport, Minnesota, which enjoys the benefits of an early start, initial proximity to a large metropolitan market, and excellent access to national and world markets, would soon discover an erosion of its western market share because of the entry into its market of the new federal subsidized firms in the Douglas-fir region. Moreover, its source of supply of partially assembled window frames from central Oregon would be jeopardized. Its difficulties would have nothing to do with the productivity of its workers or the effectiveness of its management; they would have everything to do with unfair competition and artificial rigging of the market economy at taxpayers' expense.

For Andersen Windows and other secondary wood products manufacturers, government action proposed in the Ancient Forest

Act of 1990 represents double jeopardy. Obviously, subsidized competition would reduce the ability of these manufacturers to sell their products in the Pacific Northwest. But just as important, preservation of a major share of the remaining, commercially available old-growth timber would severely reduce the supply of the softwood lumber and boards required to fabricate their product.

Proposed here is a set of public programs that address a problem created by another set of public programs. First, revenues originating from timber sales are reduced or eliminated, then the federal government turns around and appropriates tax dollars to subsidize non-market related activities. Furthermore, some of the WPA-like recreation activities, if successful, would become competitive with already existing recreation activity in the private sector. As an example, the owner of a KOA campground could suffer economic loss from expansion of recreation vehicle facilities on public land as a government-funded program.

Conclusion:

- Use of government subsidies to overcome existing impediments to the development of new industry in distressed timber-dependent areas would be costly to its government sponsors and damaging to competing private sector activities elsewhere in the region and the nation.

- Subsidizing secondary wood products manufacturing in timber-dependent communities would, if successful, simply redistribute existing markets at the expense of established companies.

VI. Emerging Class Struggle

Associated with the sudden economic changes are severe and profound social impacts on members of timber-dependent communities. The most sobering finding in our analysis of the ISC strategy concerns growing perceptions about the nature of the current conflict over national forest management. Dr. Robert Lee finds that this conflict, as characterized in the press and in public debate, is leading to the emergence of a new "enemy of society" --the logger and wood products worker.

Loggers in the Douglas-fir region are already being caricatured as enemies of society--"tree killers" and even worse. The logger--the epitome of the free entrepreneurial spirit that built this country and made it great--has now replaced the old lumber barons as the latter day tree killer of the editorial pages, cartoon books and teaching resource materials of the larger society. From the perspective of the adversely-impacted community, an unfamiliar role is being prescribed for the

dislocated logger as a government employee in a newly resurrected WPA or CCC. Caricature of the logger as subhuman is a prelude to direct attacks on his personal worth and source of income. This characterization, according to Dr. Lee, is a manifestation of the emerging class struggle that he describes the Beuter report.

The primary wood products worker faces an uncertain future, even with the most effective personal and job counseling. High unemployment and lack of new job prospects soon lead to increasing numbers of discouraged workers. These individuals are reluctant to leave the area because of immobile personal assets, familial ties, and long-standing abhorrence of living in a metropolitan area. Soon they will become part of the growing underclass in the rural areas of the Douglas-fir region.

With unemployment reaching levels not seen since the Great Depression in some communities, the social impacts of worker dislocation would virtually destroy whatever adaptive capacities these communities may have for effectively coping with sudden economic change. Simple human compassion cries for calm and sober reassessment of existing efforts to replace successful bottom-up forest planning with top-down directives that weaken formerly healthy communities. A healthy natural environment is based on healthy human communities.

Conclusion:

- Primary forest products industry jobs are critical to the avoidance of an emerging class struggle emanating from adversely impacted, timber-based communities in the Douglas-fir region.

- The characterization of loggers as enemies of society creates deep resentments that erode the capacity of timber-dependent communities to cope with sudden economic change.

VII. Thinking Globally, Acting Locally

Rapidly growing world demand for wood and paper products puts increasing pressure on limited world supplies of high quality timber resources. Managed forests located in the as favorable a growth area as the Douglas-fir region, with a comparative advantage in both the commercial production of timber and the regeneration of its supply, are of vital importance to the safeguarding of the global environment. In the hurry to impose certain national or societal values on local communities, the global dimensions of the task of environmental preservation are being overlooked.

Domestic consumption of softwoods in the U.S. grew from 31 billion board feet in 1982 to 51 billion board feet in 1987--an

increase closely linked to the business cycle, but also long-term decline in per capita softwood consumption. Douglas fir production is equivalent to nearly 30 percent of the total softwood consumption with an even larger share of total lumber utilization in the U.S.

Implementing the ISC owl conservation strategy on public and private forest lands would be equivalent to a 25 percent reduction in US softwood production (Rasmussen, 1990). The even larger reductions in Douglas-fir production of the magnitude called for in the two Ancient Forest bills would result in further upward adjustments in short-term lumber prices. Because the Douglas-fir region is a dominant source of lumber for U.S. markets, we could expect corresponding increases in residential construction costs, with new opportunities provided for the entry of wood substitutes, derived largely from U.S. and foreign chemical, metals, petroleum and allied industries.

Historically, our national forest system, established nearly 100 years ago to assure a sustained and reliable supply of timber, has well served an expanding US economy. To place more of the national forests off limits to harvesting--a significant share of the federal forests are already preserved as wilderness--would greatly jeopardize the nation's ability to meet consumer needs. Furthermore, restricting domestic supply of timber would shift the burden to other, less developed, countries. This shift would have serious environmental repercussions as the use of modern forestry techniques is not widespread through much of the developing world.

Conclusion:

- Proposed reductions in commercial timber production in the Douglas-fir region are likely to have adverse consequences for the consumer in higher residential construction costs and for the environment in increased pollutants from the manufacturing of wood substitutes.

- Redirecting consumer demand for timber products supply sources simply shifts the burden of environmental protection to countries ill-prepared to cope with its costs and complexity.

- US Forest Service bottom-up planning has a long-standing commitment to manage the national forests for multiple use including the harvesting of timber to meet the housing needs of a growing nation.

VIII. Summary and Conclusions

The underlying premise of this report is that science, industry and government must work together to conserve ancient

forests and endangered species. At the same time, our national forests, especially in the Pacific Northwest where they are most productive, must be managed for sustained yields and stable communities. It is important, however, that we avoid damaging natural environments elsewhere on this planet as a consequence of our collective actions in an increasingly competitive and volatile world economy.

For every action there is a reaction. Not only will communities in the Pacific Northwest be adversely affected by sudden changes in the use of our most productive natural resources but, also, the global community. Globally, we are now entering a new period of economic growth and development which may find the exploitation of unguarded forest resources in developing countries as the only available alternative to replacing the loss of timber harvested in the Pacific Northwest.

In addition, wood substitutes derived from environment damaging fossil fuels will replace wood products as the price of forest products increases to reflect reduced supply. Plantation forestry, of which the national forests in the Douglas-fir region are prime examples, thus remains the scientifically sound and socially responsible alternative to destructive exploitation of tropical forests and increased use of fossil fuels for wood substitutes that are likely to follow a sharp curtailing of existing supplies of high quality timber products.

In summary:

- Investigation of the social and economic impacts of the spotted owl recovery program is relevant to the discussion of the Ancient Forest Act of 1990 and its impact on timber-dependent communities in the Douglas-fir region of the Pacific Northwest.

- Rural areas of the Pacific Northwest will bear the brunt of economic disruption from the implementation of the Ancient Forest Act of 1990.

- Social and economic impacts of the Ancient Forest Act of 1990 are at least as severe as the spotted owl recovery program.

- Implementation of the Ancient Forest Act of 1990 could trigger severe social stress.

- Mitigating strategies will fall short of alleviating the adverse effects of the social and economic problems triggered by the implementation of the Ancient Forest Act of 1990.

- Science, industry and government, working together, can fashion a strategy to protect critical habitats, ecosystems and the timber products industry.

IX. References Cited(*)

Beuter, John H. Social and Economic Impacts in Washington, Oregon and California Associated with Implementing the Conservation Strategy for the Northern Spotted Owl: An Overview. Mason, Bruce & Girard, Inc., Portland, Oregon. July 9, 1990.

Gilless, J. Keith, Economic Effects in California of Protecting the Northern Spotted Owl, An independent analysis commissioned by: Mason, Bruce & Girard, Inc., Portland, Oregon. University of California, Berkeley, California. July 9, 1990.

Goranson, Eric. Mt. Hood Meadows scales down plans, The Oregonian, May 24, 1989.

Irwin, Larry L., Steven Self and Linwood Smith. The Northern Spotted Owl: Status on Managed Forestlands in Northern California. A study conducted for the Timber Association of California. National Council of the Paper Industry for Air and Stream Improvement, Inc., P. O. Box 458, Corvallis, OR 97339. December 1989.

Interagency Scientific Committee. A Conservation Strategy for the Northern Spotted Owl. USDA Forest Service, USDI Bureau of Land Management, USDI National Park Service and USDI Fish and Wildlife Service Committee Report. 1990.

Olson, Douglas C. Economic Impacts of the ISC Northern Spotted Owl Conservation Strategy for Washington, Oregon, and Northern California. An independent analysis commissioned by: Mason, Bruce & Girard, Inc., Portland, Oregon. June 21, 1990.

Lee, Robert G. Social and Cultural Implications of Implementing "A Conservation Strategy for the Northern Spotted Owl." An independent analysis commissioned by: Mason, Bruce & Girard, Inc., Portland, Oregon. University of Washington, Seattle, Washington. June 21, 1990.

Polzin, Paul E. The Spatial Distribution of Wood Products Industries. An independent analysis commissioned by: Mason Bruce & Girard, Inc., Portland, Oregon. Bureau of Business and Economic Research, University of Montana, Missoula, Montana. July 9, 1990.

Rasmussen, Mark, 1990. The Timber Output Impacts of the Northern Spotted Owl Conservation Strategy: An Evaluation of the Early Estimates. An independent analysis commissioned by; Mason, Bruce & Girard, Inc., Portland, Oregon. Timber Data, Inc. Eugene, Oregon. July 9, 1990.

Schallau, Con H and Wilbur R. Maki. Economic Impacts of Interregional Competition in the Forest Products Industry During the 1970s in the South and Pacific Northwest. Research Paper PNW-350. USDA Forests Service, PNW Research Station, Portland, OR. 1986.

World Commission on Environment and Development. Our Common Future. New York: Oxford University Press. 1977 p. 329.

X. Appendix A: Comparisons of Employment Impact Estimates

University of Minnesota IMPLAN estimates of employment before the ISC strategy and with the ISC strategy are based on the 1982 IMPLAN data base and a 1983-87 base period. The corresponding US Forest Service estimates are derived from the 1982 IMPLAN data base and a 1980-88 base period. The geographic coverage of the two studies differs, also, with the Forest Service study covering only the economic activity associated with the National Forests. In addition, only the indirect effects apparantly are incorporated in the Forest Service impact estimates.

The University of Minnesota study appropriately includes the induced effects in the Type III multiplier values. These are the second round effects emanating from industry employment and investment changes contributing to changes in industry outputs, income payments, and final sales. Hence, the technical coefficients in the Forest Service study, based on Type I multiplier values, result in lower estimates of total employment change associated with the initial changes in direct expenditures.

The use of Type III multiplier values in the University of Minnesota study is based on recognition of the timber-related industry as part of an area's basic economy. It accounts for a large share of the outside dollars coming into an area in exchange for the outshipments of timber products.

(*) Copies of the reports by Beuter, Gilless, Olson, Lee & Polzin, and Rasmussen can be obtained from Heidi Jaquish, Technical Assistant, American Forest Resource Alliance, 1250 Connecticut Avenue, Suite 200, Washington, D.C. 20036. (202) 463-2792.

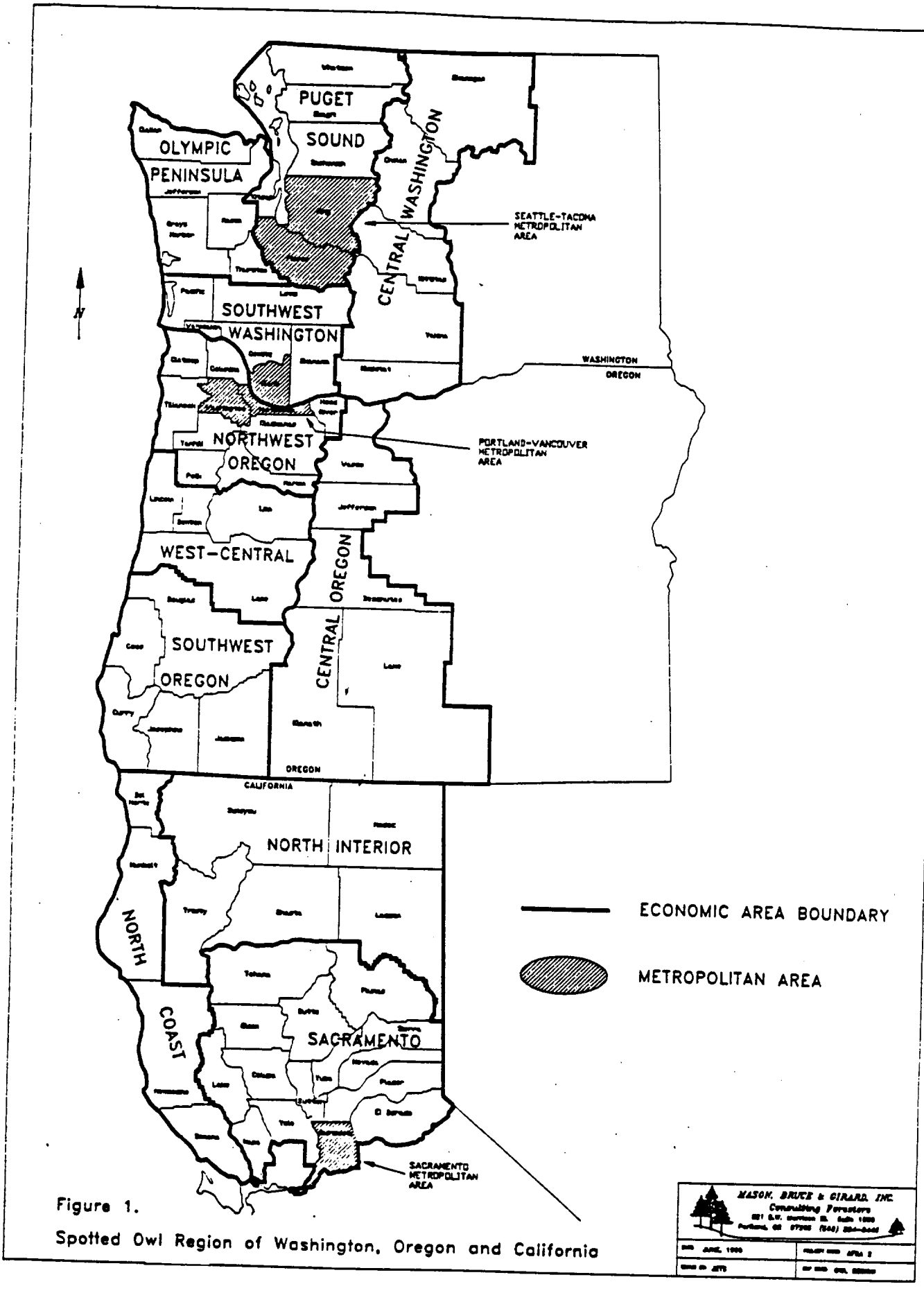

Figure 1.

Spotted Owl Region of Washington, Oregon and California

Table 1. Economic dependency indexes for wood products and other selected industrial sectors, by economic area and region, 1985.

Economic area/region	Wood Products Primary	Wood Products Secondary	Other Mnfg	Ag., For. & Fish.	Serv-ices	Other	Total
	(Dependency indexes: estimated % of area's economic base)						
Washington:							
Western Washington	13	0	40	7	13	27	100
Puget Sound	7	2	31	16	14	30	100
Olympic Paninsula	40	5	0	9	19	27	100
Southwest	55	4	9	13	9	10	100
Central	10	0	9	72	4	5	100
Oregon:							
Western Oregon	40	5	4	22	6	23	100
Northwest	22	3	10	44	8	13	100
West Central	45	6	2	21	13	13	100
Southwest	52	6	0	21	7	14	100
Central	28	18	0	18	9	27	100
California:							
Northern California	5	3	3	22	27	40	100
North Coast	15	4	9	24	28	20	100
North Interior	17	5	0	17	23	38	100
Sacramento	2	3	6	38	21	30	100

Source: Olson (1990).

Note 1: Primary wood products includes: SIC 2411 (logging), 2421 (sawmills and planning mills), 2435-6 (veneer & plywood), 26xx (pulp & paper). Secondary wood products includes remainder of SIC 24xx (other wood products), 2511--12, 2517, 2521, 2542 (wood furniture & fictures).

Note 2: Dependency indexes in this table were determined exclusive of the government and household sectors. See Table A-2 in Olson (1990) indexes determined with all sectors included. Also, see Table A-1 in Olson (1990) for more sector detail regarding indexes in this table.

Note 3: Metropolitan areas are included in the eocnomic areas as well as the regions in this table.

Table 2. Summary of expected changes in total jobs during 1991-2000 if ISC strategy were implemented today, compared to the situation likely to have occurred without the ISC strategy (number of jobs).

Economic Area/Region	Before ISC Strategy	Projected additional job losses with ISC strategy	
		on public land only	on public and private land
	(compared to 1983-1987)	(compared to "before ISC strategy" for 1991-2000)	
Washington:			
Puget Sound (non-metro)	-640	-1264	-3625
Olympic Peninsula	-4471	-1363	-5025
Southwest	-1408	-2519	-7029
Western Washington (non-metr	-6519	-5146	-15679
Puget Sound (metro only)	-1907	-746	-6256
Western Washington (w/metro)	-8426	-5910	-21935
Central	-1460	-1099	-1099
Wash. Owl Region (non-metro)	-7979	-6245	-16778
Wash. Owl Region (w/metro)	-9886	-7009	-23034
Oregon:			
Northwest (non-metro)	-1999	-3166	-7261
West Central	-5615	-8863	-17473
Southwest	-5607	-7212	-14317
Western Oregon (non-metro)	-13221	-19241	-39051
Northwest (metro only)	-577	-623	-1307
Western Oregon (w/metro)	-13798	-19864	-40358
Central	-4827	-446	-446
Ore. Owl Region (non-metro)	-18048	-19687	-39497
Ore. Owl Region (w/metro)	-18625	-20310	-40804
California:			
North Coast	-866	-1471	-13799
North Interior	-2493	-1526	-4649
Sacramento (non-metro)	-1564	-370	-370
Northern Calif. (non-metro)	-4943	-3367	-18818
Sacramento (metro only)	-1435	-406	-657
Northern Calif. (w/metro)	-6378	-3773	-19475
3-State Region (non-metro)	-32913	-27356	-73150
3-State Region (w/metro):			
ISC Strategy	-44436	-40321	-102757
Vento Bill	-44436	-43569	-105550
Jontz Bill	-44436	-80529	-136900

Source: Adapted fropm Olson (1990)

Note: Direct timber industry includes lumber and shakes, veneer and plywood, pulp and board, logging and forestry.

Table 3. Summary of harvest impacts related to ISC strategy, the Vento Bill and the Jontz Bill for the three-state owl region

Ownership	Average 1983-1987	Projected Harvest for 1991-2000		
		Before ISC Strategy	With ISC Strategy	
			Public Lands Only	Public and Private Lands
ISC Strategy:				
Federal	5639	4368 (-23%)	2795 (-50%) (-36%)	2795 (-50%) (-36%)
Other public	1441	1237 (-14%)	1009 (-30%) (-18%)	1009 (-30%) (-18%)
Private	8387	7720 (- 8%)	7720 (- 8%) (- 0%)	4137 (-51%) (-46%)
Total ISC Strategy	15467	13325 (-14%)	11524 (-26%) (-14%)	7943 (-49%) (-40%)
Vento Bill:				
Federal	5639	4368 (-23%)	2650 (-53%) (-39%)	2650 (-53%) (-39%)
Other public	1441	1237 (-14%)	1009 (-30%) (-18%)	1009 (-30%) (-18%)
Private	8387	7720 (- 8%)	7720 (- 8%) (- 0%)	4137 (-51%) (-46%)
Total Vento Bill	15467	13325 (-14%)	11379 (-26%) (-15%)	7796 (-50%) (-31%)
Jontz Bill:				
Federal	5639	4368 (-23%)	1000 (-82%) (-77%)	1000 (-82%) (-76%)
Other public	1441	1237 (-14%)	1009 (-30%) (-18%)	1009 (-27%) (-17%)
Private	8387	7720 (- 8%)	7720 (- 8%) (- 0%)	4137 (-42%) (-39%)
Total Jontz Bill	15467	13325 (-14%)	9729 (-37%) (-27%)	6146 (-60%) (-54%)

Note: Annual volumes in million board feet, long log;
Percentage changes in () are from 1983-1987 average
Percentage changes in [] are from "before ISC strategy";