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Authors

Harris, Richard R.
Blomstrom, Greg
Nakamura, Gary

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Tribal Self-Governance and Forest Management at the Hoopa Valley Indian Reservation, Humboldt County, California

**RICHARD R. HARRIS, GREG BLOMSTROM,
AND GARY NAKAMURA**

INTRODUCTION

Indian Country in the United States contains substantial commercial forest resources. The sixteen million forested acres on 214 reservations in twenty-three states generated over \$465 million in revenue and supported forty thousand jobs in 1991, primarily through timber harvesting.¹ Management of these resources is performed by three types of organizations: on- and off-reservation United States Department of the Interior-Bureau of Indian Affairs (BIA) forestry programs; joint BIA and tribal forestry programs that share responsibilities; and completely tribal forestry programs. Joint BIA-tribal programs are enabled by the "Indian Self-Determination and Educational Assistance Act of 1975," P.L. 93-638, through which tribes can contract with the BIA to do part or all of the forest management work. So-called 638

Richard R. Harris is an extension forestry specialist in the Department of Environmental Science, Policy, and Management at the University of California, Berkeley. Greg Blomstrom is a planning forester at the Hoopa Valley Indian Reservation, California. Gary Nakamura is an extension forestry specialist with the University of California, stationed in Redding, California.

contracts are constrained, however, at the same funding level as a solely BIA program and, further, by BIA rules and regulations. Totally tribal programs, permitted under the "Indian Self-Determination Act Amendments of 1988," P.L. 100-472, may appear to be an attractive alternative to BIA or joint programs because self-governance allows a tribe to design a program it chooses, pursue funding independent of ordinary BIA budgeting procedures, and seek waivers from regulations that are inappropriate. A tribe seeking greater control over its forest resources may ask, Is self-governance a better way to do forest resource management?

The Hoopa Valley Indian Reservation in Humboldt County, California (figure 1) is one of only a few reservations where, since 1991, the full powers of self-governance as authorized by P.L. 100-472 have been applied to forest management. The Hoopa Reservation contains about seventy-five thousand acres of trust commercial timberland, with an estimated merchantable conifer timber inventory exceeding one billion board feet.² The Hupa (Hupa is the name of the people, and Hoopa is the name of the place) have inhabited the Hoopa Valley for thousands of years, and their cultural, spiritual, and material well-being depends on the resources associated with its streams and forest. In the reservation era, the valley has been home to other Indian people, including Karoks and Yuroks. In addition to timber, which is the cash crop of the reservation, fish, game, medicinal plants, basketmaking materials and edible plants are major forest products. Specific locations and more generalized areas of the forest are used for religious ceremonies and spiritual training. Virtually all two thousand tribal members have at least some vested interest in how the communal forest is managed.

Commercial timber harvesting at Hoopa currently supports tribal and individual businesses both on and off the reservation and provides revenues to tribal government. These revenues are used to fund tribal programs and per capita payments to tribal members. In developing forest resources, the tribal council must weigh economic motives with tribal goals for preservation of environmental quality and traditional cultural values. Tribal decisions are affected by procedural and substantive federal laws, such as the National Environmental Policy Act (NEPA); the National Indian Forest Resources Management Act of 1990, P.L. 101-630 (NIFRMA); and the Endangered Species Act (ESA). The tribe also has its own body of policy, mostly in the form of tribal council resolutions, that affects forest management.

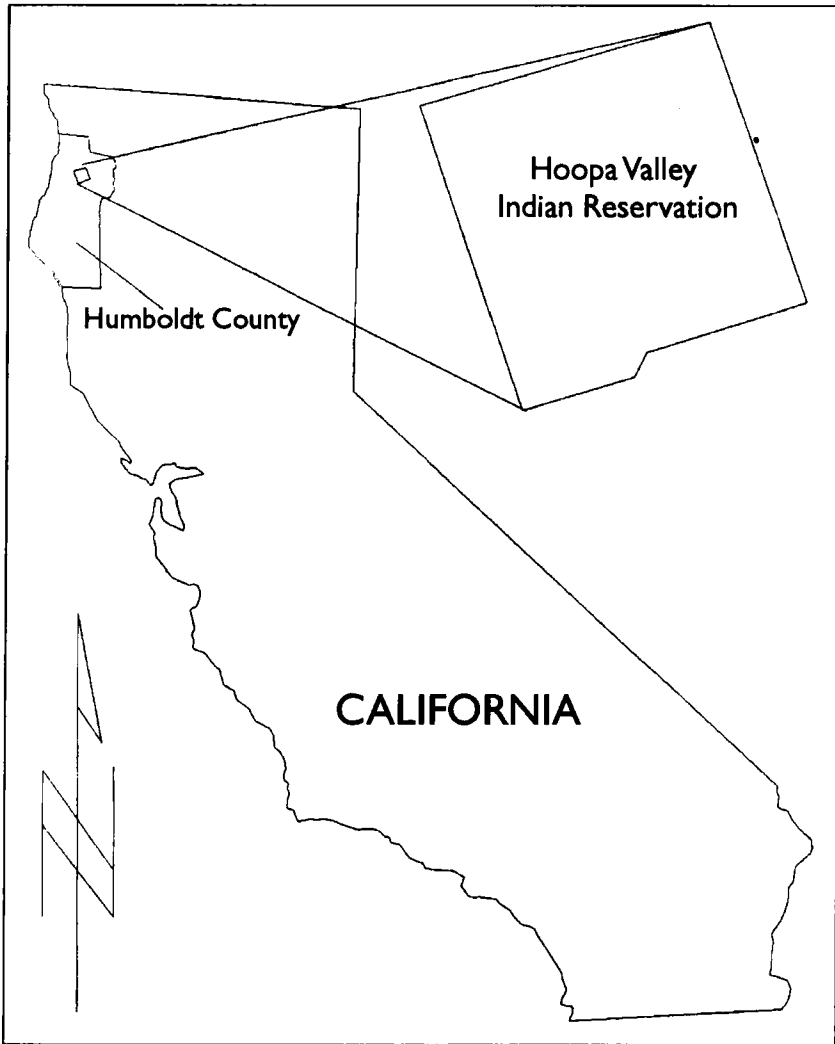


FIGURE 1. Location of Hoopa Valley Indian Reservation.

This research investigates the history and current status of forest management at the Hoopa Reservation from its inception (c. 1910) through the period of transition from a BIA to a tribal program (1988–94). It attempts to detect the effects of self-governance on forest management. Issues of budget, staffing, and performance are evaluated. The findings of this research are interpreted in relation to some findings of the national assessment

recently completed by the independent Indian Forest Management Assessment Team (IFMAT) mandated by NIFRMA. Although the situation at Hoopa is unique, we hope the experiences reported here are useful to other tribes and other researchers interested in the self-governance experiment and its interrelationship with natural resource management.

METHODS

A database spanning the period from the creation of a forestry program at Hoopa up to and including the present was established and queried in the following areas of interest:

1. What is the history of forestry program organization and staffing?
2. What is the history of management activities, particularly timber harvesting?
3. What are the sources for program funding, and how has funding varied over time?
4. How has the forestry program been affected by the transition from a BIA management regime to a tribal management regime under self-governance?
5. Is there evidence indicating that the forestry program has attained goals and furthered objectives of the self-governance demonstration project?

Some of the answers to these questions lie in quantitative sources, while others depend on interpretation of qualitative, often opinionated information. Research included review of historical documents and the current forestry program and interviews with various tribal and BIA officials. Historical documentation of the forestry program at Hoopa is scattered in a variety of reports, memoranda, and correspondence; there is no detailed published information on the subject. Moreover, many sources contain conflicting data that require corroboration, which is difficult for data from before 1970. Data after 1970 were verified by interviews with knowledgeable individuals.

Important data sources included the forest history for the Hoopa Reservation,³ annual reports of the Hoopa BIA agency,⁴ Hoopa forestry program reviews undertaken in 1979, 1980, and

1987,⁵ and the recently adopted Forest Management Plan for the reservation.⁶ Tribal employees with long tenure at Hoopa were also an invaluable source. In addition, the report of IFMAT, which was released for review in late 1993, provided a national perspective on Indian forest management. The Hoopa forestry program was one of those evaluated by IFMAT, although its report contains no specific reference to Hoopa.

SELF-GOVERNANCE: A BRIEF REVIEW

Congress passed P.L. 100-472 in 1988 to establish an experimental demonstration project in self-governance for federally recognized Indian tribes. This legislation evolved from the amendment process of P.L. 93-638, which enables tribes to contract federal programs. Exposure of BIA program mismanagement and pressures by tribes for greater autonomy led to the articulation of the self-governance concept and passage of P.L. 100-472.⁷

Self-governance means that a tribe assumes responsibility for the design and self-delivery of trust programs administered by the BIA and other federal agencies. Funds formerly provided to BIA programs at all administrative levels are shifted to a self-governance tribe. The BIA retains trust oversight and liability for program effectiveness.

Although "638" contracts are considered to be precursors of self-governance, there are some basic differences between these contracts and self-governance as authorized by P.L. 100-472.⁸ Contracts under 638 permit tribes to assume existing BIA programs or activities in the form and at the funding level they had when run by the BIA. Under 638, tribes perform a contracted scope of work governed by BIA rules and regulations. Contracting was never envisioned to be tribal management in lieu of federal management but equivalent to it.

As set forth by an educational publication of participating tribes,⁹ the goals of self-governance are as follows:

1. Formalize relations between the United States and Indian tribes on a government-to-government basis;
2. Allow Indian tribes to determine internal priorities, redesign programs, and reallocate financial resources to more effectively and efficiently meet the needs of their tribal communities;

3. Promote greater social, economic, and political self-sufficiency among Indian tribes;
4. Establish better accountability through expanded tribal council decision-making authority;
5. Institute administrative cost-efficiencies between tribal governments and the United States through reduced paperwork burdens and streamlined decision-making processes; and
6. Change the role of the federal agencies serving Indian tribes by shifting their responsibilities from day-to-day management of tribal affairs to that of protectors and advocates of tribal interests.

Self-governance is aimed at maintaining the positive aspects of trust, assuring sufficient federal involvement in tribal management to meet prudent judicial standards and providing maximum tribal control over tribal property.¹⁰ P.L. 100-472 neither defines nor diminishes the trust relationship between tribes and the United States. With respect to forestry activities, the trust has been interpreted as protecting resources and preventing long-term declines in timber inventories.¹¹ It has never been formally defined in statute.

Tribes engaging in self-governance are required by P.L. 100-472 to prepare a "compact" or agreement delineating the programs administered by the federal government that will be assumed by the tribe. The tribe then becomes responsible for designing and ensuring effective delivery systems for the programs, subject to statutes, laws, and rules and regulations published in the Federal Register. Pursuant to provisions for waiving federal regulations in P.L. 100-472, a tribe may establish its own rules and regulations.

In each compact, the tribe and the Department of the Interior each identify "designated officials" for resolving problems that may arise. If a problem is disclosed, federal authority is limited to informing the tribe of the concern and allowing the tribe the opportunity to respond. Compacts are monitored through a yearly "trust evaluation process" conducted by tribal and federal officials (currently this applies only to the BIA). This usually involves an on-site review and concludes with preparation of a report addressing a few basic questions. The most important question is, "Are trust assets in imminent jeopardy?" *Imminent jeopardy* is defined as significant loss or devaluation of an asset caused by a tribe's actions or inactions. Such a finding would be a basis for direct intervention by the federal government.

An "annual funding agreement" to implement the compact is negotiated between each tribe and the federal government. Self-governance tribes are not permitted to adversely impact funding to other tribes on any level: BIA agency, area, or nationally. Given that constraint, tribes are free to design and allocate the funds they receive based on tribal needs and priorities. Prudent fiscal management is required, and, if failure occurs, the United States can be held liable for money damages in the United States Claims Court. To ensure that trust assets are properly managed, tribes may not reallocate more than 30 percent of negotiated funding for trust programs to other programs without prior consent of the BIA. Funds earmarked for specific purposes (e.g., endangered species management, forest development, etc.), competitive grants, and construction funds must be used for the intended purpose.

P.L. 100-472 initially authorized up to ten tribes to participate in a five-year demonstration project. Subsequent reauthorizations extended the demonstration period to 1996 and permitted up to thirty tribes to participate. As of this writing, legislation that would permanently authorize self-governance is pending in Congress and is due for hearings.

In 1990, the Hoopa Valley tribe was one of the first seven tribes that petitioned and was selected to participate in the self-governance demonstration project. It included all BIA programs in its compact. It has aggressively pursued compacting federal programs, and, in 1993, it became one of the first tribes to compact federal road construction from the Federal Highway Administration and health services from the Indian Health Service.¹²

HISTORY OF TIMBER MANAGEMENT AT HOOPA

Timber Harvest

Large-scale commercial timber harvesting has occurred at the Hoopa Valley Reservation since the late-1940s, and, over time, the level of harvest has fluctuated from zero to more than sixty million board-feet (MMBF) per year of net merchantable sawlog timber (table 1). The first commercial timber sale of consequence occurred in 1947. By the late 1950s, there were at least three sawmills on the reservation and another four mills within twenty miles of it.¹³

Table 1. Timber Harvest History, Hoopa Valley Indian Reservation, 1947-93¹

Year	Net conifer harvest (MMBF) ²	Annual Allowable Cut (MMBF)	Harvest value (\$000)	Douglas-fir stumpage (\$/MBF) ³
1947	10.8	na ⁴	44	6
1948	10.3	na	65	6
1949	4.2	na	24	6
1950	21.8	na	123	nd ⁵
1951	25.5	na	171	7
1952	11.5	na	104	9
1953	14.5	na	136	9
1954	9.2	na	88	9
1955	11.3	na	100	9
1956	17.4	na	263	15
1957	26.7	na	516	18
1958	36.3	35	643	17
1959	37.0	35	1,175	32
1960	32.3	35	1,060	32
1961	37.6	35	1,102	30
1962	36.8	40	1,078	31
1963	42.4	40	1,403	34
1964	40.3	40	1,536	39
1965	nd	40	nd	nd
1966	35.3	60	1,365	37
1967	34.6	60	1,524	36
1968	61.0	60	2,780	44
1969	35.1	60	2,566	73
1970	21.3	60	1,286	60
1971	53.0	60	3,689	68
1972	53.7	60	4,261	79
1973	38.6	40	6,335	127
1974	43.0	40	7,692	175
1975	12.4	40	1,678	135
1976	25.8	40	3,375	124
1977	27.1	26	3,201	117
1978	32.7	26	4,893	139
1979	31.7	26	6,271	191
1980	26.9	26	5,634	203
1981	14.2	26	2,313	161
1982	4.1	26	621	153
1983	9.9	26	1,360	137
1984	15.0	26	1,442	121
1985	0	26	0	0
1986	16.1	26	1,033	64
1987	35.0	13	2,377	68
1988	9.0	13	746	84
1989	4.7	13	903	197
1990	18.2	13	3,936	225
1991	16.4	13	5,874	360
1992	16.2	13	5,093	317
1993	8.3	13	3,762	448
Total	1,125.2		95,641	

1. These data were obtained from BIA annual reports for the Hoopa Reservation Forestry Program, 1947-93.

2. MMBF = million board-feet.

3. MBF = thousand board-feet. Stumpage is the net return to the timber seller after subtracting all harvesting and regeneration costs from the price paid by the purchaser.

4. Not available.

5. No data.

Timber harvesting escalated beginning in 1958 and remained at a high level until 1974, in part to capture mortality from insect epidemics and floods. In 1975, the harvest level fell substantially. It then rebounded until the very poor markets of the early 1980s. With the exception of 1987, when it reached thirty-five MMBF, annual harvest has been less than twenty MMBF since 1981.

Between 1948 and 1993, more than 1.1 billion board-feet of merchantable timber was harvested from the Hoopa Valley Reservation with a total value greater than \$95 million (table 1). Most of this harvesting occurred during the tenure of the BIA as the sole manager (until 1988). The inventory of merchantable timber has declined by about 50 percent since initiation of commercial activities. Records and correspondence between the tribe and the BIA indicate that, in general, the tribe supported high harvest levels. It is evident, however, that accelerated harvesting at low timber values was an unfortunate coincidence. A more conservative management regime might have resulted in lower timber harvest levels and maintenance of higher inventories.

Evidence exists that the BIA attempted to market more timber when prices were relatively high. In the case of one species, Port Orford cedar, which had exceedingly high stumpage values as compared to Douglas-fir in the period from 1967 to 1980, BIA foresters attempted to take advantage of this market by including cedar in timber sales when possible. Harvest of cedar reached 1.4 MMBF in 1973 when its stumpage value (\$1,099/MBF) was ten times higher than Douglas-fir.¹⁴ Port Orford cedar holds cultural significance for the tribe. A ban on its commercial harvesting has been in place since 1986, and its current use is confined completely to religious purposes. In total, more than six MMBF of the species was harvested from 1967 to 1980, probably without the active consent of tribal cultural leaders. It does not appear that this level of harvesting has created a scarcity of trees usable for religious purposes on the reservation.

Forest Regeneration

One result of the extensive harvesting during the 1960s and 1970s is a large component of older (more than twenty years old) clearcuts. Some of the clearcuts exceed one hundred acres in size. Prior to 1965, these were expected to regenerate to conifers naturally. Between 1965 and 1981, harvest areas were seeded aurally.

As of 1992, there were more than seven hundred identifiable clearcut blocks encompassing more than thirty-four thousand acres (roughly 40 percent of the total reservation area).¹⁵ Since 1967, there have been periodic surveys to determine the condition of existing harvest areas. These surveys collect information on site preparation method effectiveness, stocking, crop tree (conifer) competitive status, and environmental conditions. In 1987, an analysis of these survey data showed that about 30 percent of the plots (statistically representing more than ten thousand acres) in the harvest areas were not adequately stocked with conifers but, instead, were dominated by brush and hardwoods. In an additional 20 percent of the plots (representing more than seven thousand acres), conifers were suppressed (overtopped) by brush.¹⁶ Since the desirable condition in plantations is to have the crop trees free to grow, the fact that conifers are suppressed or understocked on more than half of the older plantations is a significant management and harvest regulation issue.

Development of better forest inventory information and closer scrutiny of harvesting and regeneration practices after 1980 appear to have improved conditions in some recent plantations, but no detailed analysis has been conducted. There are sharp differences of opinion among the tribe's own forestry staff regarding present harvest and regeneration practices. One particular issue of contention is the use of chemical herbicides to control competing vegetation in conifer plantations. Between 1975 and 1977, the BIA used chemical herbicides to control competition with conifers. This practice was stopped at the tribe's request in 1977, although no formal resolution was recorded. Many plantations established prior to or after that time have either been treated with relatively more expensive manual methods or they have not been treated at all. Untreated plantations are not attaining their growth potential.

In 1977, the BIA was successful in obtaining funding for a new national program (authorized by P.L. 94-373) that was aimed at treating the "backlog" of untreated harvest areas in Indian Country (i.e., the "forest development" add-on). At Hoopa, this funding source has been used over the past decade to manually treat an average of 238 acres per year of pre-1977 plantations.¹⁷ The tribe estimates that there are still more than twenty thousand acres of untreated pre-1977 harvest areas.¹⁸

Forest Management Planning and Sustained Yield

Timber management on reservations is supposed to be consistent with principles of sustained yield. Sustained yield for Indian lands is defined in 25 CFR 163.4 in the following way: "Harvest schedules shall be directed toward achieving an approximate balance at the earliest practical time, between maximum net growth and harvest . . ." This is quantified for administrative purposes as the "annual allowable cut" (AAC), usually expressed in terms of net (usable) commercial harvest volume. With respect to old-growth forests like Hoopa's, this definition of sustained yield is not particularly useful, since old-growth forests typically have very low net growth rates. Harvesting of old-growth forests is usually based on establishing some policy for the period of conversion to a regulated, regenerated forest. At Hoopa, the conversion period recommended by the BIA and its consultants has varied from twenty-five to eighty years.¹⁹ The shorter the conversion period, the higher the annual harvest. This is obviously not an approach that results in sustained yield until the forest is completely regulated. It is, however, the approach that guided harvests at Hoopa until at least 1976, when detailed forest inventory information became available on the reservation.

The first estimate of AAC for the Hoopa Reservation was made in 1947 by agency forester A.G. Hauge.²⁰ An AAC of fifteen MMBF over a fifty-year conversion period was estimated, but it was not officially adopted. In effect, there was no official AAC until the first Forest Management Plan for the reservation was approved by the BIA in 1958. It estimated an AAC of thirty-five MMBF between 1958 and 1963 and twenty-one MMBF for seventy-five years thereafter.²¹ This was in effect until 1962, when the AAC was increased to forty MMBF, apparently on the basis of an error in judgment on the part of the BIA.²² That AAC was administratively increased from 1967 to 1972 to sixty MMBF, with the tribe's support, due to salvage logging in disease-, insect-, and flood-damaged stands. It fell back to forty MMBF from 1972 to 1986, although it was unofficially decreased to twenty-seven MMBF from 1977 to 1986, based on analysis of inventory data. From 1986 to the present, the AAC has remained at about thirteen MMBF.

Variances in the AAC are due to a variety of causes, including changes in the land base available for management, catastrophic mortality (and subsequent salvage), differences in the manner in which allowable cut was estimated, and mistakes. A Forest Man-

agement Plan prepared by the BIA in the early 1980s established the current AAC. That plan was rejected by the tribal council in 1984 but was adopted by the BIA over the tribe's objections in 1986. One reason for the tribe's objection was a lack of understanding of the rationale for the drastic reduction in harvest levels (i.e., from forty MMBF to fifteen MMBF).

With the exception of the period from 1947 to 1957, when there was no official AAC, harvest levels have fluctuated from year to year, but, overall, they have conformed to the established AAC (table 1). A review by an independent consultant and views expressed by BIA foresters at Hoopa indicate that overcutting occurred prior to 1982 due to inadequate forest inventory information, unrealistic assumptions about Hoopa forest productivity, and faulty techniques for calculating the AAC.²³ Although no forest inventory analysis document exists to support the current AAC of thirteen MMBF, the tribal forestry staff agrees that this is a realistic level that was calculated in a proper manner using good inventory data.

Since 1988, under a 638 forestry program, and since 1991, under self-governance, the tribe has continued to be bound by the management direction established in the 1986 BIA management plan, despite the fact that the tribe never approved it. Recent timber harvesting levels generally conform to the AAC established by the BIA. Timber is marketed and harvested by a tribal enterprise, Hoopa Forest Industries, and trucked to off-reservation mills by independent Indian truckers. There are no mills on the reservation, and timber is sold to the highest bidder.

The tribe recently adopted a new Forest Management Plan, which will take effect in 1994-95. The plan was developed over a five-year period using a sophisticated linear program-based model and computerized geographical information system technology for analysis. There was extensive involvement of tribal leaders and the general tribal membership. Forest planning and modeling efforts were directed at determining the production limits of the Hoopa forest, given past management, biological capacity and constraints, and tradeoffs related to different management objectives. Five alternatives were developed and modeled. The alternative selected proposes a reduced annual allowable cut of 10.4 MMBF.

The reduced allowable cut reflects the effects of past harvesting and the growing stock on half of the tribe's forested acreage. As modeled in the tribe's management plan, current inventory of

old-growth forest will be harvested over a sixty-year period. The year-to-year harvest level is constrained to produce a relatively even flow of timber consistent with economic projections of predicted price increases. Management practices of the past will begin to affect the tribe in about 2020, when plantations established in the 1960s will reach maturity. At that point, stands with lower volumes will be entered, and, to achieve harvest levels comparable to the present, more acres will be harvested. This could result in a higher degree of environmental impact to harvest the same volume of timber.²⁴ The tribe already experiences difficulty in attaining its currently authorized AAC because of the degree to which higher-volume timber stands were harvested in the past.

Under the tribe's management plan, certain lands will be withdrawn from the commercial timber land base or restricted from intensive commercial forest management. These include (1) the Trinity River valley; (2) stream protection zones along domestic and fish-bearing streams and tributaries; (3) sites, areas, and plant species (Port Orford cedar) of religious and cultural importance; and (4) soils subject to extreme geologic hazards. Superimposed on the tribe's own restrictions are the additional regulations under the ESA to protect northern spotted owls, marbled murrelets, and peregrine falcons. These restrictions are both temporary, i.e., seasonal restrictions on harvesting, and semipermanent, e.g., set-aside of spotted owl nesting stands.

Unlike past planning efforts in which the BIA did the majority of the technical work and tribal involvement was minimal, the new Forest Management Plan was produced entirely by tribal staff, with technical assistance from the University of California, Berkeley. This would probably not have been possible if Hoopa were not a self-governance tribe. The plan itself can be considered a product of self-governance in that it was done without significant assistance or policy direction from the BIA. It must, however, still be approved by the BIA before it becomes legal.

FOREST MANAGEMENT ORGANIZATION

The evolution of a forest management organization at Hoopa reflects adaptation to federal policy regarding Indian forests in general and to specific local market conditions. Up until the era of Indian reorganization (1928–45), various laws and regulations essentially prevented the commercial development of most In-

dian forests. Until then, the emphasis of the BIA throughout Indian Country was on protection of forests from fire and trespass, a policy that was then prevalent on national forest lands as well. Eventually, legal limitations to commercial forest development were relaxed, especially after the Indian Reorganization Act of 1934,²⁵ but commercial activity at Hoopa was limited until the end of World War II because of its remote location and lack of markets for Douglas-fir. The dramatic increase in commercial operations that occurred after World War II was caused by improved market conditions in the region. National Forests and private lands in Hoopa's vicinity experienced this same "boom."

Appropriations for forest management and the resultant staffing configurations at Hoopa show changes in the nature of management activities. The first appropriations were provided in 1912–18 and were earmarked for fire protection and development of access. One BIA agency forester was employed at that time, and up to thirty people (mostly Indian) were employed on projects. The Indian development component of the Civilian Conservation Corps was very active at Hoopa during 1933–42. Funding was provided for six to fourteen permanent employees (not necessarily professional foresters) and twenty-one to 240 laborers during that period. These people were employed in protection and development of access and had a very minor role in regulating forest uses.²⁶

During the heyday of logging at Hoopa, staffing increased in response to the level of forest activity. In the early 1950s, the BIA agency forestry staff consisted of one forester, one forestry aide, and six additional full-time or temporary staff (table 2). Staffing through the 1960s and early 1970s increased to as many as eight professionals, four or five technicians, and two support staff. These numbers do not include additional seasonal staff hired for fire protection or other purposes.

A manpower analysis conducted by the BIA in 1979 revealed that professional staffing had declined during the late 1970s, because vacant positions were not filled. The program was seriously understaffed, and the analysis recommended adding seventeen man-years of professional and support staff.²⁷ A comparison between staffing at Hoopa and staffing on adjacent USDA-Forest Service lands at that time indicated gross discrepancies as measured by acres managed and timber harvested per staff-year. For example, the manpower analysis found that, on the adjacent Lower Trinity Ranger District of the Six Rivers National Forest, each professional staff member was responsible for about one-

Table 2. Hoopa Valley Reservation Forestry Program Staffing, 1950–94¹

Year	Professional	Technical	Support/Other
1950	1	7	0
1960	5	5	0
1970	8	5	2
1975	8	5	2
1976	7	4	2
1977	6	4	2
1978	5	4	2
1979	5	4	2
1980	7	3	2
1981	11	3	3
1982	9	3	3
1983	7	4	3
1984	7	4	3
1985	6	4	3
1986	5	6	3
1987	5	6	3
1988	5	6	3
1989 ²	6	11	6
1990	8	11	5
1991	10	11	5
1992	9	11	4
1993	8	12	3.5
1994	8	12	3.5

1. Data were obtained from various sources, including forest history, annual reports, BIA program reviews and staffing plans for the last few years. Data were corroborated, where possible, by reference to several sources. Paul Abbott, silviculturist on the reservation since the mid-1960s, verified and corrected some data.

2. Program assumed by tribe under 638 contract.

half the acres and one-third the timber harvest volume as a comparable staff person at Hoopa. During this period of minimal staffing at Hoopa in 1977–79, two people were preparing more than thirteen hundred acres of timber harvest sales per year, and only one person was assigned to regeneration and evaluation of the status of regenerated cutover lands.

As of 1980, there were two forest management organizations at Hoopa, one tribal and one BIA. Tribal forestry consisted of a forest manager, a silviculturist, and a contract compliance technician. Funding for the tribal program was provided by forest manage-

ment deductions from timber sale receipts (FMDS).²⁸ The BIA forestry program in 1980 consisted of seven professional positions, three technicians, and two support staff (table 2). This is a significant increase in professional staffing over the late 1970s but still well below the BIA's own recommendations.

The BIA program of 1980 was organized around functions, with most professional and technical staff allocated to timber sales. Two professionals were assigned to silviculture. There was no separate functional group in forest inventory and planning, and no professional assigned to it. There were no staff assigned to environmental assessment, nor were there any environmental specialists on staff despite the requirements for NEPA documentation that became law in the early 1970s.

A program review by a national BIA team in 1980 recommended adding one forester, one fish biologist, two technicians, and one clerical staff.²⁹ These recommendations were not directly implemented, but several professional foresters were added in 1981 in response to a one-time funding increase. Between 1982 and 1987, the BIA Hoopa program lost staff again. In an apparent repeat of what happened in the 1970s, the workforce reduction occurred because vacant positions went unfilled. The number of authorized positions remained essentially the same during this period. By 1987, there were five professionals, six technicians, and three support or "other" staff. Vacancies included five professionals and one support. There was no BIA forest manager in Hoopa as of 1987.³⁰

Tribal forestry in 1987 consisted of one forest manager, six technical staff, one support staff person, and two seasonal employees. These tribally funded staff assisted the BIA in timber sale layout and monitored BIA activities. In essence, the tribe at that time subsidized the inadequately staffed BIA program. Tribal staff helped in the preparation of the Forest Management Plan in the early 1980s, but the majority of that work was accomplished by the BIA Branch of Forest Resources Planning.

In summary, during BIA management at Hoopa, staffing fluctuated without apparent relationship to workload or tribal priorities. In frustration with this, between 1980 and 1987, the tribe funded its own forestry department to take up the slack.

CURRENT ORGANIZATION AND STAFFING

When the tribe assumed the forest management program under a 638 contract in mid-1988, the organizational structure that was

created was essentially the same as it had been under BIA management. It was a merger of parallel tribal and BIA programs that shared some functions. As of 1989, when the 638 contract was totally in effect, staffing consisted of six professional, eleven technical and six support/other employees, although additional, unfunded positions were authorized (table 2).

Leadership of the program was assumed by the former tribal forest manager, a tribal member with no college degree but many years of forestry experience. None of the Hoopa tribal members or others of Indian descent who became employed in the new program had college degrees. Four of the professional staff were former BIA foresters, and one of the technical staff was a former BIA log scaler.

Professional staffing increased under the 638 contract between 1989 and 1991 due to addition of staff for compliance with the ESA (northern spotted owl survey work) and for timber sale planning and environmental assessment. The four professionals added during this period were non-Indians. They included two graduate foresters, a wildlife biologist with a master's degree, and a degreed but unlicensed geologist. None had worked directly for the BIA. One of the technical staff hired at this time was a tribal member who was attending college to obtain his forestry degree. Otherwise, none of the technical employees had forestry degrees or forest technician degrees.

Between 1991 and the present, the forestry program has been covered under the self-governance compact. Self-governance did not change the basic organization of the program.³¹ The program remains internally divided along functional lines into three sub-departments: silviculture, timber sales layout and administration, and planning. Each of these has a manager who establishes priorities and manages personnel for the subdepartment. The managers, in turn, report to the tribal forest manager, who reports to the tribal council. Support to the entire program is provided by three administrative staff and a half-time accountant.

Although still divided along functional lines, staffing is much more diverse under self-governance, reflecting the need for increased involvement of environmental specialists in forest management projects. Authorized and funded professional positions have declined somewhat since self-governance because of reduced tribal and federal funding. Apparently, the tribe has not reallocated federal funds from the forestry program to other programs, although that is permissible under self-governance.

The number of technical positions has fluctuated slightly from year to year. Support positions have declined. In fiscal year 1994, the staff in the forestry program consisted of eight degreed professionals, one of whom (forest manager) is a Hoopa tribal member. None of the others is Indian, and three are former BIA employees. There are currently twelve technical staff; all but two are of Indian descent, and only one (a non-Indian) has formal natural resource education. All support staff are of Indian descent.

Functionally, in silviculture there is a subdepartment manager, an assistant silviculturist who splits his time as planning forester, a fuels specialist, a lead technician, and three silviculture aides. In planning, there is a subdepartment manager, an inventory forester, a geologist, a wildlife biologist, a GIS technician, a lead wildlife technician, and a variable number of wildlife technicians who are hired seasonally for survey work (not included in the count of permanent positions). Some planning work (archaeological and botanical surveys for timber sales) is contracted. Timber sales administration includes a subdepartment manager and several technicians in timber sales administration, scaling, and sale layout. In general, work assignments are totally along functional lines, as determined by subdepartment managers.

In summary, engagement in self-governance allows the tribe to select the expertise and staff that it feels are needed for forest management. This has diversified the program. Direct experience with the program indicates that retention of the BIA-based organizational model is an impediment to integrated resource management.

PROGRAM FUNDING

Data on forestry program funding prior to 1980 are extremely limited for several reasons, including separate recordkeeping by the BIA, which is not readily available to the tribe. The closure of the BIA agency offices at Hoopa in 1986 resulted in the loss or, at least, the misplacement of many agency budget records. Requests to the BIA for budget information were unanswered as of this writing.

Data in the Hoopa Agency Forestry Annual Reports³² indicate that the total federal expenditures on the Hoopa forestry program

from 1948 to 1963 were about \$353,000. During that same period, the Hoopa tribe reportedly expended \$308,000 of its own funds on forestry activities. From 1956 to 1969, the BIA reported that more than \$700,000 of forest management deductions from timber sale receipts (FMDS) funds were "earned" by the tribe, presumably in forestry-related activities. It is unknown if those expenditures were different from or included in the other totals.

During the period 1981–94, funding for the forestry program was derived from four major sources: federal base forestry budget; federal add-ons for specific purposes (forest development, forest inventory and planning, compliance with the ESA, and timber sales administration); FMDS; and tribal budgets. Additional funding for the tribe's greenhouse, road maintenance, and fire management has been available from federal sources, tribal enterprise accounts, and fees charged against timber sales. Those sources are not considered in the following analysis.

Prior to 1988, federal base funding supported the BIA forestry program. Federal add-ons apparently also provided some support to the BIA program, but some of those funds were contracted to the tribe for projects. For example, the analysis of regeneration data that was done in 1987 was performed by tribal Forestry Department staff under contract to the BIA. The tribal Forestry Department was supported by a combination of tribal funding, grants (from federal add-ons), and FMDS.

Total federal funding ranged from \$558,000 to \$750,000 per year from 1981 to 1988 and fluctuated depending on the allocations to add-ons versus base budget (table 3).³³ Until 1988, the federal base funding was established at the BIA agency level through the Indian Priority System (IPS) involving all Northern California agency tribes. In this process, the funding allocation to the Northern California agency was divided among the tribes according to priorities they established. Although Hoopa tribal leaders believe that the IPS process resulted in an erosion of support for Hoopa's forestry program because other agency tribes did not rank forestry as a high priority, the figures for yearly funding do not support that contention. There is evidence that funding for the BIA program increased in response to reviews of the program in 1979 and 1980. No clear relationship appears to exist between funding level and activity level (i.e., level of timber harvest) or staffing.

Beginning with the 638 contracting of the program in 1988, the base budget for the forestry program was established as a set-

Table 3
Funding sources and amounts, Hoopa Valley Forestry Program, 1981-94

Year	Funding Source (\$000)			
	Federal base budget ¹	Add-on budget	FMDS ²	Tribal funds ³
1981	222	435	72	0
1982	408	200	9	30
1983	431	195	173	39
1984	493	201	231	86
1985	573	177	4	131
1986	413	145	76	96
1987	596	32	175	238
1988	468	175	59	170
1989	266	226	491	227
1990	561	320	341	501
1991	570	310	464	288
1992	433	335	763	19
1993	439	539	537	158
1994	395	452	nd	0

1. Data for federal base and add-ons are budgets, not expenditures. Source: BIA budget documents; Paul Abbott, Tribal Forestry.

2. Data on FMDS are reimbursements or expenditures. Sources: BIA Northern California Agency Offices; tribal year-end audits.

3. Data for tribal expenditures as reported in year-end audits. For 1994, no tribal funds are budgeted to the program.

aside, immune from the IPS process, but consistent with the requirement that Hoopa budgets not impact other tribes. FMDS and tribal budget were used to augment what was perceived as an inadequate federal funding level. This was most dramatic in 1990, when more than \$840,000 of tribal and FMDS funds were expended (table 3). Since 1990, tribal discretionary funding has been reduced, and FMDS has been used increasingly to meet shortfalls. Since FMDS funds are a percentage of yearly stumpage receipts (varying between 6 and 10 percent since 1980), they actually represent tribal dollars. In fiscal year 1994, no discretionary tribal funds were available to the program; this has, in part, resulted in some staffing declines.

Federal funds earmarked for specific purposes (add-ons) are a large proportion of overall program support. Although the tribe has contended in the past that these funds are part of the compact Annual Funding Agreement and may be reallocated, recent correspondence from the BIA asserts otherwise.³⁴ Some program

elements—notably forest development and endangered species management—are funded and staffed only because of yearly add-ons. In the long-term, add-on funds are an undependable funding source: They can disappear any year. For example, add-ons for forest inventory and planning have been allocated to the tribe by the BIA for the past few years. In fiscal year 1994, no funds were available from this source. The actual federal funding available to the base forestry program, which includes all activities related to timber sales and environmental assessment, has declined since 1991, primarily due to national reductions in federal budgets. The response to reduced funding has been to eliminate positions and other expenditures while retaining the overall structure of the program.

In summary, in the self-governance era, the tribe has more opportunities to control funding to the forestry program. However, the tribe has little discretion to reallocate so-called add-on funds, and these have become an increasingly large proportion of the forestry budget over the past few years. Environmental specialists, in particular, are susceptible to unstable funding.

PROGRAM COSTS AND BENEFITS

Timber Sale Costs

One basis for evaluating the program is its cost relative to its primary mission: timber sale planning and administration. To evaluate costs for these functions during tribal program management, data were collected for yearly expenditures on these functions for the period 1989–93. This was accomplished by separating out staff and expenses directly associated with these functions from the total expenditures for each year. The analysis was done in part to provide input to a national BIA initiative for increased funding to Indian forest management.³⁵

Data indicate that the costs for timber sale layout and administration at Hoopa have averaged about \$50 per MBF of timber produced between 1989 and 1993. A gross index of these costs prior to tribal assumption of the program can be obtained by dividing the federal base budget for a given year by the harvest for the same year (data from tables 1 and 3). For the period 1982–88 (excluding 1985, when harvest was 0), the average cost obtained is \$45 per MBF, unadjusted for inflation. This estimate would be

considered low, since it does not include costs for tribal employees who assisted in the timber program.

Figures published by the BIA indicate that the estimated cost for the same functions on other reservations in the Pacific Northwest ranged from \$17–\$48 per MBF in 1993.³⁶ These are gross estimates obtained by dividing proposed increases in reservation forestry budgets by anticipated increases in harvest that would occur with the new funding.

To permit comparison of the tribal program to other local programs, additional data were collected from USDA-Forest Service and private companies operating in the vicinity of the Hoopa Valley Reservation. These data indicate similar costs for USDA-Forest Service and generally lower average costs for private companies. Although different regulatory requirements and procedures are used on private lands, some care was taken to ensure that the range of activities assessed was similar. Some of the reduced cost on private lands is due to more limited resource survey work as compared to USDA-Forest Service and the Hoopa tribal programs.

The Indian Forest Management Assessment Team (IFMAT) estimated timber sale preparation and administration costs to average \$73 per MBF nationwide for all timber-producing reservations as of 1993. An estimate of \$127 per MBF was provided for all national forests.³⁷ Both of these numbers appear unusually high when compared to data presented here.

These data indicate that timber sale planning and administration costs under self-governance are comparable to costs for a similar USDA-Forest Service program. Costs are well below the national estimates provided by IFMAT. There is no evidence that costs have increased because of tribal takeover.

Cost Effectiveness of the Timber Sale Program

When timber is sold to a mill at a specified delivered log price, the return to the tribe is derived by subtracting all costs associated with logging and transporting timber to the mill and all costs for regenerating the harvested forest, tending the future stands, and improving roads used to access the timber. This residual return is called stumpage value.

Over the past few years, the Hoopa tribe, like some other tribes, has realized high stumpage returns as compared to other land managers in its region. In 1991, Hoopa received an average

stumpage value of \$358 per MBF for all sawtimber it sold. In the same year, the average return on sawtimber from private and other federal lands in the vicinity of Hoopa was \$194 per MBF; for all Indian lands in Washington and Oregon, it was \$205 per MBF.³⁸ In 1992, Hoopa received more than \$315 per MBF average stumpage return on its timber sales. The average stumpage return for combined Forest Service and private lands in Hoopa's vicinity for 1992 was \$280 per MBF.³⁹

The timber produced by the Hoopa Reservation is very valuable.⁴⁰ In 1991, the Sacramento area of the BIA—where Hoopa accounted for 96 percent of the timber harvest—had the second highest total harvest value of all BIA areas. Only the Portland area, which contains most of the large timbered reservations, had a higher value. In 1991, Portland area tribes harvested twenty times the volume that Sacramento area did and received only ten times the return. Much of this value differential is undoubtedly due to the nature of the timber that Hoopa produces (i.e., old-growth Douglas fir,) compared to the products from other Indian lands.

The stumpage returns to the Hoopa tribe over the past few years are substantially higher than the returns realized under BIA management (see table 1), but this cannot be considered a direct impact of self-governance. It is, instead, the artifact of a scarcity in the supply of high quality, old-growth timber. The recent upward trend in timber prices is a regional reaction to increased environmental restrictions on timber sales.

Since stumpage return alone is not a good basis for evaluation, an index of performance—a ratio of value of the product to costs—was calculated using the best available timber stumpage values for the most recent years. In table 4, data on stumpage value for other reservations are 1993 estimates provided by the BIA.⁴¹ Stumpage values for the pre-1989 Hoopa BIA program are the average of values for 1982–88, as obtained from annual forestry reports. It should be noted that this was a period of low stumpage values, but these data must be used, because data on BIA program costs are not available for previous years. The data on stumpage value for the Hoopa tribal program and other entities in its vicinity are for 1992, as provided by the annual forestry report for that year (Hoopa) and the California State Board of Equalization.⁴²

Hoopa's value/cost ratio as a tribal program is better than or relatively close to all but one reservation (Yakima). It exceeds the pre-1989 Hoopa BIA program considerably, and it is comparable

Table 4
Comparative Data on Costs for Timber Sale Planning, Layout,
and Administration, Hoopa Valley Reservation,
Other Pacific Northwest Indian Reservations,
and Public and Private Land Managers in Hoopa's Vicinity

Location	Program type	TSA costs (\$/MBF)	Stumpage (\$/MBF)	Ratio of stumpage value to costs
Hoopa ¹	BIA	45	105 ²	2.3
Hoopa	Self-gov	50	315	6.3
Other reservations: ³				
Coeur d'Alene	BIA/638	36	194	5.4
Colville	BIA/638	41	290	7.1
Flathead	BIA/638	34	233	6.9
Makah	Self-gov	47	135	2.9
Nez Perce	638	30	120	4.0
Spokane	BIA/638	21	164	7.8
Umatilla	BIA	17	122	7.2
Warm Springs	BIA/638	36	267	7.4
Yakima	BIA/638	34	324	9.5
USDA-Forest Service: ⁴				
Shasta-Trinity NF		54	280 ⁵	5.2
Private:				
Without mill	(n=5)	21	280	12.7
With mill	(n=2)	14	280	20.0
Consultant	(n=2)	38	280	7.4

1. Timber sale cost for Hoopa-BIA is average for 1982-88, based on budget analysis. Timber sale cost for Hoopa-Self-governance is average for 1989-93, based on actual expenditures.

2. Stumpage value for Hoopa-BIA is average for 1982-88; for Hoopa-Self-governance it is for 1992.

3. All data for other reservations obtained from reference (note 35). Costs were obtained by dividing proposed harvest increase into proposed funding increase (from table 1 of report). Stumpage values obtained directly from table 1 of report.

4. Data for USDA-Forest Service and private companies obtained by telephone and written interviews.

5. Stumpage data for USDA-Forest Service and private companies obtained from reports of California State Board of Equalization for 1992.

with Forest Service and consultants in the region. Private industry, presumably driven exclusively to maximize profits, obtains the highest return on its costs.

In 1993–94, stumpage return to the Hoopa tribe continued to increase as the program funding level decreased. Average stumpage return on merchantable timber exceeded \$454 per MBF in 1993.⁴³ It is likely that the value/cost measure for Hoopa will improve as long as timber prices continue to rise. To the extent that the tribe can control costs under self-governance, it can influence its stumpage return. Prior to self-governance, it had little control over forestry program costs.

Tribal Forestry Investment and Social Benefits

In 1993, the Hoopa Tribal Council approved costs in excess of \$500 per MBF for regeneration, road improvement, logging, and transporting logs. This investment is a measure of the tribe's commitment to long-term forest management. The tribe also subtracts 10 percent of its stumpage receipts and deposits them in FMDS accounts that are used to fund forest management activities subject to BIA approval. Current high timber prices enable the tribe to make large investments in its future forest, while still achieving reasonably high stumpage return.

Although private forest enterprises seek to minimize costs and maximize profits, tribal forestry programs typically have strong social objectives such as employment of Indian people and overall improvement of quality of life through tribal programs.⁴⁴ Social benefits of the Hoopa forestry program are important. The program provides direct employment to more than twenty people of Indian descent. The timber produced provides employment to thirty to forty additional people who reside on the reservation. Stand regeneration and tending activities support a number of contractors, most of whom are of Indian descent. Fees collected against timber sales for planting and road work support tribal enterprises. To some degree, the tribe implicitly makes a financial tradeoff by its employment and contracting policies. Some tribal council members have advocated contracting timber sale preparation and harvesting through competitive bidding. Although this might reduce costs and increase stumpage returns, there would be serious direct employment impacts on tribal members.

DECISION-MAKING ON TIMBER SALES

Decision-making on timber sales is a critical issue to the tribe. Delays in decisions have resulted in revenue losses as well as temporary unemployment. Prior to 1973, timber sales at Hoopa were planned and authorized by the BIA, generally with support from the Hoopa Tribal Council. Many tribal members were employed in the timber industry at Hoopa or in nearby mills at that time. Stumpage returns were used then, as now, mostly for per capita payments and tribal programs.

In 1973, the so-called Short decision changed the relationship between the BIA and the Hoopa tribe.⁴⁵ This court decision caused an immediate change in the distribution of timber sales proceeds to Hoopa tribal members in favor of plaintiff Yurok Indians residing on the reservation. Harvest levels were relatively high in the mid to late 1970s, but the Hoopa tribe as an entity had very limited access to the receipts. Tribal members still continued to be employed in the timber industry, and there was interest in maintaining harvests. As of 1978, the BIA made decisions on timber sales unilaterally to discharge what it viewed as its trust responsibility to Yurok claimants under Short.

During the late 1970s, the Hoopa Valley tribe went on record in resolutions several times in opposition to BIA forest management practices.⁴⁶ The tribe expressed concern about tractor brushraking, use of herbicides, and clearcutting. Antagonism grew between the BIA and the tribal Forestry Department, which became a "watchdog" on the BIA. Timber harvest levels declined during the early 1980s and even fell to zero in 1985.

Under BIA management subsequent to Short, the Hoopa Tribal Council had no decision-making authority over timber sales; its role was advisory only. The BIA was responsible for all coordination with outside reviewing agencies and developed an adversarial relationship with its sister agency, USDI-Fish and Wildlife Service (FWS).⁴⁷ At the time, the principle environmental concerns were destruction of fisheries habitat and cultural resources.

The Hoopa-Yurok Settlement Act of 1988, P.L. 100-580, reinstated the authority of the Hoopa Tribal Council regarding timber sales. As of the enactment of that law, timber sales on the Hoopa Reservation required the approval, by resolution, of the tribal council. The BIA area director could approve the sale only after adoption of the required resolution.

Under 638 and subsequently, under self-governance, the tribe assumed day-to-day control over the timber harvest planning process. The authority retained by the BIA regarding forest management under the compact is confined to issuance of environmental decision notices, final approvals of timber sale contracts, and approval of Forest Management Plan documents. A chain of authority exists that determines protocol of relationship between the Hoopa tribe and the FWS, which has review and enforcement authority pursuant to the ESA. The BIA serves as the intermediary in this relationship. After completion of required documentation by the tribe, timber sales are approved by tribal resolution, but final approval still rests with the BIA area director in Sacramento, who acts as the "responsible federal official." All preparatory fieldwork, all surveys, all documentation for timber sales, and all administration and monitoring is carried out by the tribal forestry program. Tribal forestry performs many of the consultation functions with FWS and the State Historic Preservation Office (SHPO; archaeological and historical resources), both of which require clearances before timber harvest plans can be approved. However, when formal consultation is requested, the request must be forwarded through the BIA area office in Sacramento to FWS and SHPO, with attendant delays. Recently, the BIA area director notified the tribe that a thirty-day review period would be required for these approvals.⁴⁸ Under the rules of the Endangered Species Act, the FWS may take as long as ninety days to render a biological opinion on potential take of listed species. In practice, the FWS has not taken its full statutory review period; however, it has not honored the tribe's requests to expedite processing pursuant to its trust obligation to the tribe.

The decision-making authority of the BIA is final, and changes to environmental assessments or contracts may be required before approval. To date, there has never been a situation in which the BIA refused to approve environmental documents or contracts essentially as submitted by the tribe. Under existing law, the BIA could deny approval or extend the approval period until the tribe met specified conditions.

In summary, under self-governance, the tribe has considerably more decision-making authority than it had under BIA management. Part of this increased authority was facilitated by final settlement of disputes between the Hoopa tribe and the Yurok Indians. Some decision-making authority is retained by the BIA under the compact, but the only major consequence of this has been occasional delay in project approvals.

CONCLUSIONS

The intent of this research was to reconstruct the historical development of a forest management program at the Hoopa Valley Indian Reservation and to review the present program in light of that history and in relation to self-governance. The results of this review include several key findings that could have implications for the future of the Hoopa program and perhaps could apply to other tribes:

1. Self-governance has given the tribe authority and technical expertise to establish its own sustained-yield harvest levels, regeneration practices, and environmental protection procedures.

Under self-governance, the tribe has established a technical capacity that is at least equivalent to BIA and joint programs on other reservations. This has improved planning and management of forest resources. Among the tribal forestry staff, there is some dispute regarding the quality of management now as compared to the quality of management under the BIA. The major changes over the past decade include alteration of harvesting techniques (shift from large-scale clearcutting to more environmentally acceptable methods); shift from chemical to manual methods of plantation competition control; greater emphasis on protection of environmental and cultural resources; and overall reduced timber harvest level. Most of these changes preceded the tribal takeover, and many were triggered by forces beyond either the tribe's or the BIA's control, such as the listing of the northern spotted owl and marbled murrelet as protected species under the ESA and a general tendency toward more substantive resource protections pursuant to NEPA. It would be difficult to attribute many changes in management to self-governance because of the tremendous demands created by environmental regulations. The tribe does, however, now have the technical capacity to meet those demands.

2. The new Forest Management Plan is almost totally a tribal product, yet it is affected by constraints imposed by many years of BIA management.

Past management has created forest conditions that will limit the future management options of the tribe, because a large proportion of the forest resource was harvested and inadequately regenerated under BIA management. It has been argued in the

past that the BIA's management has been in violation of its trust responsibilities to the tribe. Lack of adherence to evenflow timber harvest because of mistakes in estimating the annual allowable cut; poor regeneration practices; and declining inventory over time would support that argument. The legacy to the tribe is the anticipated environmental impact of future timber harvesting, caused by policies of accelerated harvest and inadequate regeneration practices. Since 1977, the BIA has been obligated to ensure that harvest areas throughout Indian Country are properly regenerated and are achieving their timber production potential. There are differing opinions among the tribal forestry staff at Hoopa regarding the condition of post-1977 plantations. Currently, fees are collected to pay for future treatments of harvest areas, at the expense of current stumpage receipts. This may preclude repetition of past mistakes. It is unlikely, however, that this practice will reduce the impact of the timber harvest that will occur over the next twenty to fifty years.

3. Under self-governance, the tribe has complete authority over the staff composition and structure of its forestry program. It has only partially realized that potential.

Although diversified in staff expertise, the present forest management organization at Hoopa is based on the BIA model. The tribe's new Forest Management Plan contains organizational diagrams and staffing plans that do not differ substantially from the current organization. Even with a tribal plan, a BIA organizational model will continue. Nothing has been done to restructure the organization to be more effective in achieving stated tribal goals of integrated resource management,⁴⁹ even though this possibility is explicit in the enabling legislation for self-governance. The organization of the BIA program, and now the tribal program, is based on functions and a hierarchy of authority. The ability of a stratified organization that is based on federal government bureaucratic models to respond to new initiatives in integrated resource management and ecosystem management must be questioned.⁵⁰ Organization based on functions has the effect of creating adversarial relationships. At Hoopa, this is present in timber sale planning. The planning subdepartment, which is the regulator and the group responsible for environmental assessment, is pitted against timber sale layout and administration. Outside entities, both within and outside the tribe, antagonize these relationships by forming alliances with one or the other faction. Typically, the tribal Fisheries Department lobbies hard

for protections against habitat degradation, while the tribal forest enterprise, Hoopa Forest Industries, advocates more liberal practices. Considerable time is spent at Hoopa in large interdisciplinary team meetings attempting to resolve disputes among staff who are in the same program but are performing different functions.

The Hoopa forestry program does not employ trained Indian people in positions of authority, with the notable exception of the forest manager, who assumed his position in 1993. The lack of Indians in management is a chronic problem in Indian Country, and there is little prospect for significant improvement, given the low number of Indian college graduates with degrees in natural resources.⁵¹ Opportunities for continuing education have diminished with reduced budgets. At Hoopa, few tribal members in technical positions have the financial or personal freedom to further their formal education.

4. Although the tribe has been in a better position since self-governance to obtain adequate funding for its forestry program, it is, in fact, subject to federal funding limits, restrictions on use of the add-on funds that comprise a large part of its budget, and BIA approval of FMDS expenditures.

Since entering into self-governance, the Hoopa tribe has had considerably more flexibility in establishing funding priorities and allocating funds. The issue of federal support for specific functions is serious, however, and threatens long-term program stability and development. This is of particular concern to the wildlife, forest development, and planning functions, which are funded by add-ons. The tribe has no control over the disposition of add-on funds. Its use of forest management deductions from timber sale receipts (FMDS) funds is also subject to approval by the BIA, even though FMDSs are a percentage of stumpage returns from timber sales and are, in fact, tribal dollars. As a consequence of these restrictions, the tribe has few options for redirecting funds based on its internal priorities. In the case of funds earmarked for endangered species, they currently support staff who could improve management for all wildlife. That source of funding could, however, disappear any year.

5. The self-governance forestry program is no more costly than comparable USDA-Forest Service programs in its vicinity. It is cost-effective in comparison to other tribal, public, and some private programs.

Program costs are relatively high compared to private land managers, but the resources being managed are of substantial

value, both in commercial and social terms. Overall, the present program appears competitive with all but private industrial forests, which are managed for distinctively different objectives. The tribe is vulnerable in its dependence on secure funding to maintain program capacity and its dependence on currently high timber prices to achieve financial and social objectives. Neither of these issues is significantly affected by self-governance in its present form.

6. Decision-making authority on forest management has increased under self-governance, but there is still room for improvement.

Self-governance at Hoopa was stimulated, in part, by the tribe's frustration over controlling forest management activities on the reservation. The tribe now performs all technical duties related to forest management with virtually no input from the BIA. Authority for consultations with other agencies and final approval of timber sales still resides with the BIA. These dual lines of authority can cause delays but rarely create substantive changes in tribal plans. An improvement could be achieved if one of the Indian forest management assessment team's recommendations were adopted. IFMAT suggested that decision-making be changed from BIA sign-off on individual timber sales to sign-off on comprehensive plans containing trust-related performance standards.⁵² This would concur with recent initiatives and concepts under development at the Office of Trust Responsibilities.⁵³ It would also further goals of self-governance aimed at streamlining decision-making, increasing cost-efficiency, and curtailing day-to-day control by the BIA.

In reference to the question posed at the beginning of this article—Is self-governance a better way to do forest resource management?—this review concludes that, in general, self-governance has substantially improved the Hoopa tribe's control over its forest resources. There are some lingering issues, however, mostly concerning the nature of the forestry program organization and the stated desire of the tribe to move into integrated resource management. The recommendations provided below address those issues.

RECOMMENDATIONS

One of the major conclusions of the IFMAT report was that staffing and funding levels on reservations should be increased to

be commensurate with the USDA-Forest Service. That recommendation begs the issue of whether the Forest Service organizational model, which is a better-funded version of the BIA's, should be propagated in Indian Country. Observations at Hoopa over the past five years lead us to believe that the tribe should consider what kind of organization it needs to implement integrated resource management. Funding for such an organization can then be determined, and it may be more or less than the funding provided to the current forestry program. Just increasing or decreasing funding will not necessarily create an adequate program.

With respect to decision-making, IFMAT suggests that a single manager should be responsible for all aspects of natural resource management on reservations.⁵⁴ Although it is not clearly stated in their report, this may mean that parallel and sometimes conflicting tribal and BIA decision-making procedures should be eliminated. The Hoopa tribe should continue to seek greater autonomy in external decision-making, but the tribe should also change its internal decision-making process. At Hoopa, a single natural resources management organization, combining the tribal forestry, fisheries, and planning programs, is a model that might be considered for integrated resource management. Goals and objectives must be set for this organization, and managers must act together to implement those goals and objectives and break down disciplinary distinctions. This would be a path to integrated resource management.

Integration at the professional and technical staff level begins with the individual and his/her training and experience. Currently, people employed in the forestry and other programs are limited by the institutional arrangement from obtaining more holistic perspectives. Moreover, they have almost totally adopted the dominant culture's paradigms of management. The disciplinary, hierarchical structure that exists could be replaced with an emphasis on in-service, individual training in integrated resource management that incorporates Hoopa cultural knowledge. Traditional forest management practices, including vegetation management with fire, are almost totally absent at Hoopa. A management philosophy that is more culturally based could lead to reintroduction of these practices. All employees could be allowed to participate in all aspects of the reorganized natural resources program. This would apply to every level of authority. It is much more difficult to maintain adversarial positions if you have been personally involved in the work of your adversary.

A tribal natural resources program could embody culturally determined decision-making procedures. This would be best accomplished in the long term by employing tribal members as program leaders and by facilitating the involvement of tribal members (not just the tribal council and tribal bureaucracy) in decision-making. Turnover in the program has begun with the appointment of tribal members as forest manager and fire management officer in 1993, and continuing employment of tribal members as heads of the present Fisheries and Planning departments. Many other professionals in all programs are non-Indian. The tribe needs to invest in the education of its youth. This does not mean simply providing dollars for tuition; it also means evaluating primary and secondary school systems that may not be preparing Hupa people for advanced training; it means working with the youth to build self-esteem and interest in natural resources.

The tribe needs to consider changing the relationship it has with the BIA and other agencies in transition to integrated resource management. As a first step that is consistent with the goals of self-governance, direct government-to-government relations could be established between the tribe and the agencies regulating natural resources. This would require willingness on the part of the agencies, release of authority by the BIA, and, perhaps, negotiated agreements between the tribe and the agencies. Direct relationships could streamline the decision-making process on natural resource activities. P.L. 92-184 authorizes the tribe to enter into direct relationships with agencies other than the BIA that affect management. At Hoopa, these include the U.S. Fish and Wildlife Service and the State Historic Preservation Office. The tribe could work with these agencies directly to remove them from project-by-project intervention into tribal decision-making. There are vehicles for this in the ESA, including preparation of habitat conservation plans for listed species. In the case of SHPO, it might mean establishing a tribal review procedure for archaeological and historical resources that is equivalent to the procedure now used by the state. BIA involvement in individual timber sales should be replaced by BIA certification of comprehensive plans and standards, with performance standards built into the annual trust review.

Finally, the tribe should seek waivers from the sustained yield provisions of 25 CFR Sect. 163.4, replacing them with its own definition of sustained yield that reflects integrated resource management.

Self-governance is aimed at enhancing tribal political, economic, and social self-sufficiency. The tribe has the opportunity to be more self-sufficient politically if it implements some of the suggestions provided above. Attaining economic and social self-sufficiency will be difficult at Hoopa, given the legacy of past management and the historic lack of investment in enterprises that would diversify the local economy. The economic realities at Hoopa, and especially the tribe's utter dependence on its timber resource, must be dealt with by present and future leaders unfettered by outside bureaucracies. The tribe needs to consider how best to use its forest capital to further self-governance. This may mean reconsidering how it currently allocates the proceeds from harvesting that capital to tribal members and tribal programs. The forest is the tribe's primary resource. Much of it has been depleted already. It is timely to plan on the future disposition of proceeds from its use.

In the long term, the survival of the Hupa culture may depend on current and future tribal members repairing the results of past management and ensuring against problems in the future. The commitment of the tribe towards this goal is evident in the investment it currently makes in its future forests.

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comments and the comments of two anonymous reviewers considerably improved the paper.

NOTES

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7. Tribal Self-Governance Demonstration Project, *Self-Governance: A Tribally-driven Initiative* (Bellingham, WA: Lummi Indian Business Council, 1991).

8. Idem, *Shaping Our Own Future: The Next Step towards a True Government-to-Government Relationship* (Bellingham, WA: Lummi Indian Business Council, 1991).

9. Ibid.

10. Idem, *Self-Governance*.

11. Rick Fielitz, area forester, Sacramento area office, USDI-BIA, personal communication, January 1994. According to Marshall Pecore, forest manager at the Menominee Reservation in Wisconsin, the concept of trust is there interpreted to include adherence to sustained yield forest management. The BIA and the Menominee tribe have agreed to standards for monitoring this aspect of trust.

12. Danny Jordan, self-governance coordinator, Hoopa Valley tribe, personal communication, December 1993.

13. American Indian Technical Services, Inc., *Indian Land and Forest Resources*.

14. USDI-BIA, *Hoopa Agency Forestry Annual Reports* (Hoopa, CA: USDI-BIA files, 1947–88).

15. Greg Blomstrom, Nolan Colegrove, and Kevin Britton, *Analysis of Regeneration Data Collected 1967–1986 on Hoopa Valley Indian Reservation* (Hoopa, CA: Hoopa Valley Tribal Council, 1987).

16. Ibid.

17. Paul Abbott, silviculturist, Hoopa Valley Tribal Forestry, personal communication, January 1994.

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21. Harris, "Timber Inventory Analysis."

22. The annual allowable cut was raised in 1962, because BIA foresters at Hoopa found that timber sales were scaling higher volumes at the mill than had been estimated in the field. They therefore concluded that the inventories on the ground were higher and that a higher annual allowable cut was justified. This proved to be false. The reason why the scaled volumes were higher was that the harvest areas were arbitrarily enlarged during the process of logging.

23. Hammon, Jenson, Wallen and Associates, Inc., "Evaluation of Bureau of Indian Affairs Timber Management Practices, Hoopa Valley Indian Reservation" (Oakland, CA: Hammon, Jenson, Wallen and Associates, Inc., 1985).

24. Greg Blomstrom, planning forester, Hoopa Valley Tribal Forestry, personal communication, January, 1994.

25. American Indian Lawyer Training Program, Inc., "Indian Tribes as Sovereign Governments" (Oakland, CA: AILTP, 1991)

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27. USDI-BIA, Planning Support Group, *Manpower Needs Analysis for Bureau of Indian Affairs, Branch of Forestry, Hoopa Indian Reservation* (Washington, DC: USDI-BIA, February 1979).

28. "Forest Management Deductions from Stumpage," or FMDS, are authorized by 25 CFR, chapter 1, part 163, section 18, as follows: "In sales of forest products from Indian forest lands, a reasonable deduction shall be made from the gross proceeds (i.e., stumpage) to cover in whole or in part the cost of managing and protecting the forest." These funds are deposited in federal accounts, and expenditures are reimbursed to the tribe subject to the authorization of the BIA. In 1993–94, the BIA rejected one of the Hoopa tribe's requests for reimbursement on the basis that the activities were not forestry-related. Other spending from FMDS was contested by the BIA in the early 1980s.

In practice, on nearly all Indian reservations, FMDS funds are used to do regeneration and stand improvement work after harvesting. Currently at

Hoopa, FMDS is used primarily to offset inadequate federal funding for timber sale preparation and administration.

29. USDI-BIA, Division of Forestry, *Forestry Program Review, Hoopa Indian Reservation* (Washington, DC: USDI-BIA, June 1980).

30. *Idem*, *Northern California Agency Forestry Program Review* (Washington, DC: USDI-BIA, 1988).

31. As a tribal organization, the Division of Forestry includes Tribal Forestry, Tribal Fire Management (currently a cooperative involving the tribe, the USDI-BIA, and the USDA-Forest Service), Tribal Roads (an enterprise that performs road maintenance, construction, and reconstruction functions), and Tsemeta Regeneration Facility (an enterprise consisting of a greenhouse and associated facilities). All of these entities have separate organizational structures and funding, although there is some overlap of management staffing in the case of the regeneration facility.

32. USDI-BIA, *Hoopa Agency Forestry Annual Report, 1964* (Hoopa, CA: USDI-BIA file, 1964).

33. Funding data for 1981–94 obtained from USDI-BIA, Northern California agency, Redding, California, and Hoopa Valley tribe, Fiscal Department, Hoopa, California.

34. Assistant secretary, Indian Affairs, USDI, letter to USDI-BIA area directors, "The Exclusion of Certain Project Funds from Inclusion within Tribal Compact Budgets" (Washington, DC: USDI, Office of the Secretary, 11 August 1993); director, Office of Trust Responsibilities, USDI-BIA, letter to USDI-BIA Sacramento area director, "Hoopa Tribe Use of Forest Development Funds" (Washington, DC: USDI-BIA, 23 September 1993).

35. USDI-BIA, *Revised Committee Report and Proposal for the Harvest of Short-fall of Allowable Annual Cut on Indian Forest Lands in the Pacific Northwest Region* (Portland, OR: USDI-Bureau of Indian Affairs, 7 July 1993).

36. *Ibid.*

37. Indian Forest Management Assessment Team, *An Assessment of Indian Forests*.

38. Debra D. Warren, "Production, Prices, Employment and Trade in Northwest Forest Industries, Third Quarter 1991," *USDA-Forest Service Pacific Northwest Research Station Resource Bulletin RB-190* (February 1992).

39. *Ibid.*

40. USDI-BIA, Division of Forestry, *Forestry Program Funding and Position Analysis, FY 1991* (Washington, DC: USDI-BIA, March 1992).

41. *Idem*, *Revised Committee Report and Proposal*.

42. State of California, Board of Equalization, *California Timber Harvest by County, January 1, 1990–December 31, 1992* (Sacramento, CA: State Board of Equalization, 1990–93).

43. USDI-BIA, *Northern California Agency Forestry Annual Report, 1993* (USDI-BIA: Redding, CA, 1993).

44. "Resource and Sanctuary, Indigenous Peoples, Ancestral Rights and the Forests of the Americas," *Cultural Survival Quarterly* 17:1 (special issue) (Spring 1993).

45. *Short v. United States*, 486 F.2d, Ct. Cl. 1973, confirmed on appeal in 1974. This decision determined that descendants of Yurok Indians were entitled to a share of the receipts gained from timber harvesting on the Hoopa Reservation; formerly, the receipts had been distributed only to Hoopa Valley tribal members. Until this issue was resolved in part by the Hoopa-Yurok Settlement Act of 1988, all proceeds from timber harvesting were put into a trust account to which the Hoopa tribe had limited access.

46. In 1973, the tribal council adopted stream protection guidelines, recommending buffer strips and other precautions against logging damage to streams. Although no resolution was passed, in 1977 the tribal council banned the use of herbicides on the reservation. Apparently, this occurred in reaction to the commencement of aerial herbicide spraying by the BIA in 1975. From 1975 to 1982, a number of resolutions were passed protesting brushraking as a site preparation technique. In 1984, tribal council resolution 48 rejected the Forest Management Plan prepared by the BIA. In 1986, the tribal council passed a resolution prohibiting the commercial harvest of Port Orford cedar.

47. USDI-BIA, Division of Forestry, *Northern California Agency Forestry Program Review*.

48. Area director, USDI-BIA, Sacramento area, letter to chairman, Hoopa Valley Tribal Council (Sacramento, CA: USDI-BIA, 21 October 1993).

49. Recently, the tribe entered into an agreement with World Wildlife Fund to develop an integrated resource management plan for the reservation. Although this arrangement is of potential benefit to the tribe, efforts to date have concentrated on inventory and research needs rather than on development of decision-making processes for integrated resource management. Research, policies, and plans are important, but many of the concerns at Hoopa relate to how decisions are made, who makes them, and what organizations carry out the decisions. There are also sovereignty issues yet to be addressed in the relationship between the tribe and an international conservation organization.

50. Society of American Foresters, *Task Force Report on Sustaining Long-term Forest Health and Productivity* (Bethesda, MD: Society of American Foresters, 4 January 1993).

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52. *Ibid.*

53. Marshall Cutsforth, USDI-BIA Office of Trust Responsibilities, oral presentation to the Hoopa Valley Tribal Council, September 1993.

54. Indian Forest Management Assessment Team, *An Assessment of Indian Forests*.