ANTHROPOLOGICAL STUDY OF THE HUPA, YUROK, AND KAROK INDIAN TRIBES OF NORTHWESTERN CALIFORNIA

FINAL REPORT

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3.2 Tribal Ecology and Food Quest

The Hupa inhabited an ecological zone as complex as it was rich. Geographic features, a relatively mild climate, and natural resources all combined to provide the Klamath-Trinity peoples with a significant edge in their struggle for survival. Two major geographic components contributed to Hupa ecological success. First, the Hoopa Valley--six miles long and between one and two miles wide (hence, "the 12-mile square" of reservation terminology)--was surrounded by mountains which provided a buffer from bad weather and afforded considerable protection from intruders. At the same time, the heavily forested mountains contained a wide variety of animal and plant resources.

Second, the Trinity River ran through Hupa territory up to its confluence with the Klamath, bisecting the valley along the way and creating a rich riverine environment abounding with salmon, sturgeon, eels, and other fish. Kroeber (1925,1939) thus classifies the Hupa as members of the Riverine Subculture of California. Refinements of this work by Beals and Hester (1960:411; 1974:2) also place the Hupa firmly in the Riverine typology, referring to these as the "salmon cultures" and demonstrating a regional blending of the riverine typology with the coastal (tidelands gatherers, and sea hunters and fishers).

In discussing the rationale behind their "ecological typologies" for the California Indians, Beals and Hester (1960) note that

> *separate regions in California differ markedly from one another in the amount and kinds of food resources they offered the California Indians and upon the similarity of economic adaptations of the various groups within each region . . . . In some cases, food resources differed not so much in kind as in amount. In such cases, the differences between types depend upon the relative importance of various food resources. Particular local groups of California Indians in some cases had easy access to more than one type of environment . . . . (411, 412).*

This was particularly true for the Hupa, who were able to utilize resources from the several different econiches existing within or bordering their territory. This abundance of naturally-occurring food resources does much to explain why the Hupa in precontact times did not practice agriculture, despite the fact that Hoopa Valley was the longest stretch of level, fertile land in this mountainous region (Anderson 1956:4).

• *Vegetable Foods.* Along with the salmon (discussed below), the major constituent of the Hupa diet was the acorn harvested from various species of oak growing in the mountains surrounding Hoopa Valley. These included the tanbark oak (*Lithocarpus densiflora*), the Pacific post oak (*Q. Garryana*), the black oak (*Q. Californica*), the madrona (*Arbutus Meaziesii*), and the maul oak (*Quercus chrysolepsis*) (Goddard 1903:5, 27). Of these, the tanbark oak was most prized for its acorns (Goddard 1903: 27), and interviewees at Hupa assert that this remains so today. As was characteristic of many native California groups, the Hupa gathered and dried considerable stores of acorns which were then pounded into flour, leached, and used to prepare acorn soup. Goddard (1903:27-29) describes this process in some detail. Acorns were gathered in the early fall in conical burden baskets called *Kaitemil*, and were subsequently dried in the sun in large hampers called *djelo*. The acorns were then shelled and split and were replaced in hampers for continued drying. At this stage, the acorns were called *djoaslai*. Flour was ground from the dried acorns using a flat stone, a pestle *(meist)*, and a funnel-shaped basket, *kaiist*. The flour was then sifted in a shallow basket called *mildakidil*.

Once the grinding was completed, the flour had to be leached of its tannic acid. This was done in shallow sand pits along the river banks. Certain volcanic pebbles were heated and dropped into basket-pots called *miltoi* to heat the water to near scalding. Hot water was then poured over the flour until it lost its bitterness. The resulting uncooked meal is called *kitast*.

Those interviewed at Hoopa told the Study Team that acorns are still an important part of the diet of many Hupa people. Figure 3.1 at the end of this chapter illustrates the traditional method of leaching. Modern technology--including the use of blenders--has made the process considerably easier.

Acorn mush or--more appropriately--soup is called *saxauw* and was served in small baskets called *xaitsa*. Those involved in preparing for Hupa ceremonials are allowed no other food; and the soup is served to all attending the ceremonials as well. Acorn soup was also served to the elderly and infirm, and is still an integral part of their regular diet for many Hupa of all ages today (Interview data, October 1981).

Both Goddard (1903:29) and Curtis (1924(13):13), state that a bread was also made from acorn flour. This bread--the word for which in Hupa means "slap-on-coals" (Curtis 1924(13):13), was cooked on a flat hot rock and eaten principally by hunters and travellers.

As will be discussed below, acorns were also a primary trade item of the Hupa, and were traded both directly and indirectly through bartering short-term gathering rights (Davis 1974:23).

In addition to the acorn, several different species of nuts, berries, grasses and seeds, and bulbs provided food stuffs for the Hupa. Nuts included hazelnuts (*Corylus rostrata*), chinquapin (*Castanea chrysophylla*), pepperwood nuts (*Umbellularia California*) (Goddard 1903: 29), and pine nuts (Curtis 1924(13):13). A wide variety of berries were eaten fresh in season and some were dried and crushed for later use. These included salmonberries, elderberries, blackberries, huckleberries, manzanita grapes, and madrona fruit. Seeds of the sugar pine and the digger pine were also eaten as were bulbs such as soap root (*Chlorogalum pomeridianum*). Seaweed *(porphyra perforata)* obtained as a trade item from the Coastal Yurok, was boiled and eaten for its salt content. (Goddard 1903 : 31; Curtis 1924(13):13). Mushrooms were also gathered, dried, and stored for future use (Interview data, 1981).

Beals and Hester (1974:49-50) summarized the Hupa gathering round as follows:

> *Spring: gathered and ate fresh shoots, roots, berries, as they became available.*
>
> *Summer: continued gathering the same categories and added bulbs and nuts, when ripe. Ate most, dried some berries, seeds, nuts. Nuts included hazel nut, chinquapin, and pepperwood nuts . . . . Berries gathered were manzanita, madrone, huckleberries, elderberries, gooseberries, and currants . . . . Wild grape wood, sorrel leaves and tobacco leaves were used.*

• *Game.* The mountains surrounding Hoopa Valley were covered with several species of conifers, a few redwood, and spruce which provided a covering shelter for deer, elk, bear, and a number of small mammals and birds. While these game resources have largely disappeared (principally deer and elk) from Hupa territory (Interview data, October 1981), they also comprised an important dietary element in aboriginal times (Goddard 1903:21-23; Curtis 1924 (13): 13-14; Baumhoff 1963:182). Deerskins were considered particularly valuable and were traded or maintained as major wealth items (Goddard 1903:22; Powers 1877:78-79).

Deer and elk were killed with the bow and arrow; were driven into the river and clubbed by hunters working in concert; or were caught in set snares (Goddard 1903:21). Curtis (1924 (13):14) states that these snares were considered quite valuable and only the wealthy could afford them.

Finally, the rich runs of spring and fall salmon which migrated up the Trinity River and its tributaries were--together with the acorn--the primary staple of the Hupa diet. This resource is discussed in the section below.

A major characteristic of all the Hupa food resources, however, was the seasonality of resource occurrence. While an adequate subsistence level was usually maintained in aboriginal times (Baumhoff 1958, 1963), this demanded a concerted response by the villagers in harvesting and storing each category of foodstuff as it became available.

Further, such a seasonal food supply was sensitive to environmental pressures or dislocations,and in years where harvests were insufficient, people were hard pressed to maintain sufficient nutritional levels for themselves and their families (Baumhoff 1958:158). Thus, life was to a degree uncertain, and the highly cyclical quality of Hupa life regulated their activities and kept them solidly based within their home territory.

The extent to which reliance on seasonal "harvests" discouraged both internal and external warfare has yet to be researched, but it can be noted that return to normal relations between feuding individuals,

villages, or tribes was an expected consequence of the negotiation process (Goddard 1903:59). Finally, the mutual reliance of these people on each other is further apparent in the pronounced sharing that is a major constituent of Hupa interpersonal relations. In a micro-society such as that of Hoopa Valley, the well-being of all was essential to maintaining that society in its delicate balance with nature.

3.2.1 Fishery Resources and Their Importance

Bledsoe (1956:78) describes the Klamath-Trinity drainage of aboriginal and early contact times as "teeming with fish." With respect to the Hupa, the Trinity

> *. . . is rated as the best in this country for salmon fish, which constitutes almost the whole subsistence of the Indians* (E.F. Beale, letter to the Governor, July 12, 1855).

Bancroft (1886:337) states that "fish, being abundant, are generally more plentiful in the aboriginal larder than venison," while Curtis (1924(13):7) regards salmon as a staple equal to the acorn in the Hupa diet.

Baumhoff (1963) provides an analysis of Hupa territory in terms of its food resources. In this regard, he assigns them 39 linear miles of river stream, of which 27 miles were along the Trinity River and 12 miles were along the South Fork. These streams supplied the Hupa with both a spring and fall run of the King Salmon *(Oncorhynchus tschowytscha)*; a fall run of the silver salmon *(O. Kisutch)*; a summer and fall run of sturgeon *(Acipenser transmontanus* and *A. medirostris)*; a fall run of steelhead trout *(Salmo gairdnerii)*; and a spring run of lamprey eels *(Entosphenus tridentatus)* (Baumhoff 1963:170; Goddard 1903:6; Nelson 1978:16).

Baumhoff rates the Hupa 39 mile stretch along the Trinity River and its South Fork as a ". . . better-than-average salmon stream but being distinctly inferior to the Klamath . . ." (1963:182). This is particularly interesting in light of his conclusions regarding the fish resource of the Lower Klamath cultures as a whole. Baumhoff believes that it is the fish resource which is "the limiting factor on population" size (1963:185, emphasis added) in this area. He continues:

> *In the given social and technological conditions, a low resource will hold the population at a low plateau, with only small variability perhaps associated with varying acorn and game resources. A very large resource will sustain people under the same conditions at a higher plateau, its height probably being determined by social conditions. In between the two levels, population rises sharply with each increment of fish resource* (189).

When the fish resource indices are correlated with aboriginal population sizes for the study-area peoples, this finding is borne out. Of the three tribal groups discussed here, the Hupa have the lowest aboriginal population (1,475) and the lowest fish resource index (390). Baumhoff (1958) also concludes that the Hupa subsistence level in good salmon harvest years was certainly sufficient but could be easily disrupted in years of poor salmon harvests. However, there is little evidence that poor harvests did not yield close to adequate salmon supplies, and starvation in aboriginal times seems to have occurred rarely (Rostlund 1952; Baumhoff 1958, 1963).

The importance of the acorn-fish trade among the Klamath-Trinity tribes may also help to explain their high degree of nutritional success. The Hupa acorn food index by Baumhoff is 496.4, and it is known that they often traded acorns with the Coastal Yurok for additional supplies of salmon and for shellfish and seaweed. In years when Trinity runs may have been poor, this trade may well have enabled the Hupa to maintain an adequate level of nutrition. That they were able to do so is reinforced by data from Heizer and Elsasser (1980) who computed population densities per square mile in the general study area. They state, "Such population densities directly reflect the productiveness of the land in terms of available food resources, and the richer the land, the more people, and vice versa." Moving west to east, Heizer and Elsasser arrive at the following densities: Yurok, 4.66 persons per square mile; Hupa, 5.20; Karok, 2.42 (1980:27). Thus, it appears that the Hupa--despite their coinciding low fish resource index (390) and population (1,475) (Baumhoff 1963:182)--had achieved an impressive ecological balance. Possession of an additional food resource both to utilize and trade may well account for this.

3.2.2 Ownership and Exchange of Sites and Resources

Goldschmidt (1951:507-508) notes that the concept of property rights among the Hupa extended to natural resources and the fishing, hunting, or gathering sites associated with them. Fishing sites were "privately and individually held" and in many cases, highly elaborated titles pertained. Beals and Hester (1974:25) note, "Ownership conferred the privilege of controlling the usufruct; it conferred the right of rental and alienation; it entailed responsibility on the part of the owners in the form of liability for damages incurred on the premises." There is some evidence that claim to a fishing site enabled one to exercise some control over activities conducted at points downstream. Kroeber states that "It was forbidden to establish a new fishing place or to fish below a recognized one. This provision guaranteed the maintenance of the value of those in existence and must have very closely restricted the total number to those established by tradition and inheritance" (Kroeber 1960:34-35).

Control over resources was a major source of wealth and prestige among the people of Northwest California:

> *This property gave strength to the individual by developing a network of obligations toward him on the part of his kindred. These kindred were not a finite number, but spread in ever-widening circles of influence. The ability to provide food resources was an important element in the establishment of power or influence. Furthermore, the fact that such a wealthy man's control of resources could be translated into wealth was important. He could do this by renting his fishing place or selling his surplus products in times of famine. His advantageous position in litigations was also a factor in improving his strength in community matters.*
>
> *Indeed, the strength of an individual rested precisely on these economic relationships; his power had the sanction of force in the potential feuds that stood in the back of every legal battle, and the strength a leader could muster rested upon the network of economic and family obligations he could establish (Beals and Hester 1974:37).*

In addition

> *Ownership of property was no empty privilege. The control of fishing and gathering places was not merely for prestige; it gave a cushion against disaster and assured continuity of the family line when times were bad (Beals and Hester 1974:63-64).*

Ownership of resource property could be achieved in several ways, the most common of which was hereditary passage of rights from father to son (Goddard 1903:26). However, Goddard also claims that it was in the capacity of "head of family" that such inheritance took place, and thus, he seems to imply that families--not individuals--owned sites. Addressing these problems, Beals and Hester argue, "The spirit of Hupa culture places responsibility in legal matters upon the individual. Their legal code and practices . . . supportthe idea of individual ownership" (Beals and Hester 1974:25).

Settlement of feuds between individuals could involve the transfer of a fishing site to the injured party. Thus, Goldschmidt (1951:507) tells us that rights might be held "within the territory of an alien tribe, such as a Hupa family's ownership of a rock on the Yurok coast area from which they obtain claims . . . ." Such rights could also be purchased outright or were the subject of yearly bartering for temporary usage (Nelson 1978:25). Within one's own territory, one might also rent or purchase partial rights to a fishing site. These partial rights were divided by assignment of a time of day, a set number of consecutive days, or an agreed upon share of the catch. Also, elderly or infirm owners might grant use of their fishing sites to persons willing to pay for it by supplying portions of the total catch. Rights could also be won or lost through gambling, although this seems to have happened rarely. Finally, shamans and other curers often obtained fishing sites or partial rights in payment for services rendered.

However, it must be remembered that not all sites were owned by village headmen or the wealthy. Indeed, a substantial number of people owned small sites--such as individual eddies--that were handed down from one generation to the next. Usually these sites were near the family's xonta, but this was not always so. Large and small sites alike were given names up and down the river that usually pertained either to events associated with the spot or to persons who owned them.

Our interview data provided a number of insights into the maintenance of site ownership. Two interviewees volunteered that they could provide the Study Team with the names of eddies, riffles, and bends along the course of the river's flow through Hoopa Valley. In addition, all of the people

interviewed in Hoopa Valley stated that they still maintained their "own fishing spot" where they go to fish. The custom of asking permission before using someone's spot is still practiced among the Hupa, and some bemoaned the fact that sport fishermen on the reservation exhibit a great lack of respect (or at least knowledge of proper protocol) for the fishing spots of the residents. The interview data also indicate that it was customary to grant permission to fish from one's site to "anyone who asked," as long as the person was not an enemy and was willing to abide by whatever restrictions or price was imposed.

The question of communally owned sites also appears in the literature. Primarily, "communal" sites seem to be of two major types. First, when the sacred fish dams were built at Takimildin and Medildin in alternate years, all Hupa people from all the Hupa villages were allowed to fish from them. "Regular" or "unconsecrated" dams were also communally built and in these cases, those who participated in the dam's construction and anyone invited to fish by the builders made use of the fishing platforms across the river (Goddard 1903:24; Beals and Hester 1974:30-31,42).

Second, because of their low-yield, sites which were not considered particularly valuable were not generally privately held, and anyone who wished could fish there. The extent to which such sites were utilized is not clear, and the possibility of "borrowing" or "renting" a better site makes the question of poor site utilization problematic.

Table 3.1 on the following page details a number of major fishing spots that have been identified in Hoopa Valley. In addition to these, many individual family fishing spots are still maintained along the Trinity River. Although these are too numerous to identify in a report of this nature, their continued existence exemplifies this long-standing traditional pattern among the Hupa people.

Table 3.1

HOOPA VALLEY FISHING SITES

Location	*Hupa Name*	*Translation and/or Note*
Sugar Bowl	Xu-yu-me	
Tish-tang Creek	Dis-Ton-o-Ding	"point sticking out"
Matilton Ranch	Medildin	"boat place" fish dam site and the last place where the dam was built circa 1955
Hostler Ranch(eria)	To-ki-mith-ding (Takimildin)	Fish dam site, across the river
Mouth of Hostler Creek	Tcemeta	"rocks between," fish dam site across the river
East side of river, before entering canyon	To-non Nou-lin-ding	"water dripping place," flat rock
East side of river:	Tce Yon-xut	"rock slanting" John Campbell's
	Tce-kya Ning	"rock-big-ridge"
	Ne-co Nou-nou-lin	"long current"
	Tce-Th-Li-Xi	"rock white"
	Thlox T E-L Ue	"salmon swims"
	Do-out Te-Lue	"sucker swims"
West side of river:	Tce X T-Tcu	"rock lucky" Bucket Rock
	Noth-Mil Mi-Ja-Ding	
	Tce Ni-tel	"rock flat"
	Klo Teth-L-Tcung	"grass
	Cha-ki-yoh-ding	swaying place

Source: The Hupa Language, 2nd edition. Hoopa Valley: Hoopa Valley High School, 1971.

Interviewees told the Study Team that a good fishing spot is one "where you have an eddy, below a riffle . . ." as well as places where the water seems deep and is shaded from the sun's strongest rays. In these cooler spots, the migrating salmon are likely to stop for rest and thus become ensnared in trigger and/or gill nets.

Distribution of fishing sites can change, given environmental dislocation or natural catastrophes. Floods, droughts, log jams, reduced water flow, and pollution can all affect the quality and even the location of sites. In the precontact period, such natural dislocations could create a poor man out of a previously prestigious headman. At present, Hupa interviewees express considerable concern for the effects on the salmon habitat caused by gravel, silting, and the reduced water level of the river itself. Indeed, some Hupa assert that in certain places, water levels are too low to permit the construction of a weir, even if regulations permitted. With firsthand knowledge of the Valley's fishing spots, the Hupa see habitat damage and constriction as reflecting more widespread problems and patterns that exist throughout the Klamath-Trinity Drainage.

3.2.3 Fishing Technology

As late as 1916, the date of E.S. Curtis' fieldwork among the Hupa, he was able to report that "In the main, fishing is still carried on in the aboriginal manner." However, in their introduction to *Fishing Among the Indians of Northwestern California*, Kroeber and Barrett (1960:1) note that "no comprehensive accounts of fishing in the [Hupa] area have been published." Thus, they do not present Hupa fishing data to the extent possible for the Yurok and the Karok. Remoteness of the Hupa from the principal Klamath area visited by Kroeber and Barrett, and Kroeber's assumption of marked similarities between Hupa and Yurok cultures and fishing technology most likely account for this.

Interview data reveal that an entire educational process was associated with fishing. This involved not only methods of fishing and the various technologies utilized but also much knowledge of the river itself--its seasonal species to be caught. Hupa boys were taught to dive into riffles and eddy areas to learn firsthand about the flow of water through them and the places where salmon, eels, and other fish resources were likely to rest and hide.

Data available on Hupa fishing technology appear below. Nelson (1978: 16-17) tells us that there were

> *. . . dozens of ways in which the Hupa fishermen caught the salmon, lamprey eels, sturgeon, steelhead, and trout which filled the river and streams in the valley . . . . The men taught the boys the strict rules which governed the use of fishing areas. Then the boys learned to set up weirs and fishing platforms; to make and use both hand-held nets and larger nets which could be anchored in the bed of a river or stream; and to catch fish in basket traps and scooping baskets. The Hupa speared fish with harpoons, shot them with bows and arrows, caught them with hooks and lines . . . . to lure the fish, they used sniggles (balls of hair or plant fiber) and fire.*

Thus, the "harvesting" of the fish resource made use of both communal and individual methods. Two principal methods of communal fishing were applied: the fish dam or weir, and seining.

- *Fish Dams/Weirs.* Kroeber and Barrett (1960), drawing upon Hewes (1940) data, provide details of Hupa weir construction. Weirs were built only when the water did not come above a man's armpits in the early fall. At least three sites are known to have been used for weirs. A site near Mill Creek was used at the beginning of this century and is not believed to have had any religious connections. A great deal of confusion seems to surround these non-religious weirs. How often these were constructed and where they were built is somewhat uncertain and Kroeber and Barrett provide no new data to clarify this aspect. The other two known fish dam sites--Takimildin and Medildin--were Hupa religious sites, and dams built in alternate years at these sites were considered sacred or ceremonial dams. These dams were built following the First Salmon Ceremony, performed by the Medildin formulist. While this ceremony is discussed below in Section 3.4.2, it should be mentioned that separate from the Salmon Ceremony itself, the construction of these sacred weirs involved a formulist and his assistant. As part of this ritual building, the first pole--four or five inches in diameter and about 15 feet in length--was cut and allowed to float in the river, tethered to shore with a hazel withe, for a five-day period prior to actual construction. After these five days, men from the village responsible for building the dam that year would gather on the banks of the river with materials needed for the dam. These included wild iris and wild grapevines for tethering and binding the poles and crotches; fir poles for the vertical portions of the dam, and oak poles for the horizontal braces.

The actual construction utilized the ritually treated pole which was cut in half to yield two posts for the center crotch or apex of the V-shaped weir. Subsequent crotches were placed about eight feet apart in a V-shaped line across the river. Next, "two or more heavy poles forming the walkway on top of the weir were dropped" into place (Kroeber and Barrett 1960: 19) and intervening vertical poles were attached to these at the top with wild grapevine. Other horizontal poles were also stretched across the dam, and workers were obliged to fasten these below the water line. A "slat-matting", woven in sections on shore, was stretched across the dam, making it "quite fish tight." These were not usually bound, since the river current was usually strong enough to hold them in place.

Finally, boughs were placed on the bottom edge of the weir to prevent fish from passing under the weir, and lines of stones bracing the crotches and vertical posts kept the sand from pulling away and thus collapsing the structure (Kroeber and Barrett: 1960: 19).

Kroeber and Barrett also state that these rock lines divided the dam into sections or bays. Center bays were considered the most valuable, and rights to fish from these were hereditary among certain families. Other platforms could be used by anyone participating in the construction, and visitors were often invited to fish from these as well.

In comparing pictures of two Hupa fish dams constructed at the beginning of this century, Kroeber and Barrett note that the dams fit Hewes' data quite well. However, Kroeber and Barrett find the construction of these dams "rather flimsy, especially as regards the scantiness of bracing." They continue, "Even if the Kepel Dam was only half as good as described, it was a much sturdier structure than [these]." (1960:20).

However, Snyder (1924: 166) remarks that "The weir will not withstand the high water following early fall rains." Except for the matter of bracing, it could be that the criticisms of the Hupa dams, as documented in the photographs included in the Kroeber-Barrett analysis, pertain to dams already in the process of destruction.

One further description of the Hupa weirs is provided by Chidester in a letter from Hoopa Valley dated November-December 1892. His account reads in part:

The dams are made of slender poles woven and tied together. It is a sort of strainer to let the water through but not the fish. The fish come up to this then the Indians catch them in dip nets. Each dam has to be made new each year, and they will not use nor save a stick of the old one. 'Twould bring bad luck (Chidester 1892, transcribed by Heffner, p.8).

Examples of Hupa weirs as illustrated by Kroeber and Barrett (1960) appear as Figure 3.2 at the end of this Chapter.

• *Seining*. Seining was another communal method practiced by the Hupa which is currently not practiced to any great extent. Goddard (1903: 24) describes these as:

Sixty feet long and three and a half feet wide. It is provided with sinkers of stone, discs three and a half inches in diameter with holes chipped in the centers. Twelve of these are attached to this net. Floats of wood are provided to buoy up the top edge. When the net had been set, several canoe loads of men went out and drove the fish into the net.

Additional data regarding this technique came from our interview data with elder male members of the tribe. They also told us that "in the old days" these seines were as long as 60 feet, and often stretched across the river. Men from all over the reservation would participate in the seining, and once the nets was dragged ashore, a representative from each family would be given a share of the fish caught proportional to the family's size. Women often watched these proceedings, but they were not allowed to touch the seine in any way, although they would help pull it ashore if "the tail of the net were safely in the hands of a small boy (Hewes 1942:107). Like the fish dam, seining was an extremely efficient way of harvesting the salmon resource.

A number of individual methods were used in fishing as well. These are described in some detail in other chapters of this report, and only information specifically known to apply to the Hupa are presented below.

• *Nets*. Kroeber and Barrett (1960: 19) state that the Hupa fished off their weirs using a "fair sized landing net mounted on an A-frame. It had two mooring lines running back to the weir in order to hold it in place." Hewes (1942) also states that A-frame dip nets were used when fishing from weirs.

In addition, Kroeber and Barrett (1960: 32) state that a conical net, or lifting net, was also used by the Hupa. This consisted of a

very large, woven, conical pouch which is rigged onto a relatively large A-shaped frame of poles and is usually operated by a fisherman from a scaffold or staging built out over an eddy or backwater where the salmon naturally congregate.

This, the most highly distinctive of the nets of this region, was quite evidently developed as a result of the particular environmental conditions existing on the larger streams. . .

. . . It was used in taking salmon, lampreys, and sturgeon, the mesh sizes varying for each species. In essentials this net constituted one type of trap, but one quite complicated in its operation.

According to Kroeber and Barrett (1960: 32), this type of net could only be set "in a strong eddy where the upstream current is sufficient to hold it fully distended and thus provide the fish with an apparently unimpaired opportunity to pass normally on upstream." Eddies tend to be located near the bank of the river, and it is here that the Hupa and others built fishing platforms or stagings that extended over the water, enabling the fisherman to cast their nets directly into the eddy's flow. While Goddard (1903: 23), describes the staging as a partially submerged "crib of logs and rocks," Kroeber and Barrett disagree, believing that this was not the case. They reason that "a frame two meters wide with a purse net five or six meters long needed a pretty clear bottom if it was not to foul." (1960: 32)

Curtis (1924) describes the traditional Hupa dip net as a

bag about seven feet deep and four feet square at the mouth, which is held open on a triangular frame consisting of two divergent poles about ten feet in length and a six-foot pole joining them at the base. From each of the two uprights a rope extends to a stake driven into the ground at the edge of the river, by which the unwieldy contrivance is prevented from being dragged out of the hands of the fisherman, who stands or sits on a board projecting over the water and resting on a structure of logs and rocks. From the mouth of the net to his hand extends a cord, at a light jerk of which he lifts the net, strikes the enmeshed fish on the head with a club, and places it in a net bag.

For the dip-netting season the southern division of the Hupa used to assemble at Sugar Bowl rapids in the southern end of the valley, while the northern division camped at the canyon north of the valley. Each fishing station was the hereditary possession of some family. Men who owned no station begged the use of one from those who were either tired of fishing for the time or had enough salmon for their present need. For this privilege they did not necessarily pay, but usually they brought a fish or two for the owner. (1924(13):14-15).

Smaller trigger nets are used by individuals in catching salmon, sturgeon, and eels. In the course of our interviews with a number of elder tribal fishermen, we were told that the Hupa started using non-Indian twines at the beginning of this century. Interviewees stated that the native twine--made of wild iris shoots and roasted wild grapevines--were superior in strength to non-Indian types. However, native twine was abandoned because the non-Indian types were cheap and easily available. Since the native wild iris has become increasingly difficult to find in Hoopa, it does not seem probable that the Hupa would return to its use.

Hupa nets range in size from small hand-held trigger nets of a few feet in length to very long seines, which even in aboriginal times, reportedly reached between 60 and 100 feet in length. Several tribal elders still make their own nets, and classes in net-making have been taught to Hoopa Valley students. Nets of the traditional wild iris *(Iris macrosiphon)* are displayed in the Hoopa Valley Museum, and are in the possession of tribal members. In addition, Study Team members were shown recently completed trigger nets made in the traditional manner, but using non-Indian twine. As documented in the literature, these varied in mesh size, with 1-1½" meshes used for catching eels, and larger meshes used in nets for salmon or sturgeon fishing.

• *Fish Traps*. Curtis (1924) documents the use of one form of fish trap by the Hupa:

> *This was a receptacle of poles and withes, about ten feet long and four feet wide, which was placed in a riffle below the weir, with the floor of the middle section raised slightly above the surface of the water. Salmon on striking the weir would turn back, and those that entered the trap quickly found themselves carried by the current and their own momentum into the lower end of the trap, whence they were unable to escape. This devise was placed also at the down-stream angle of two converging lines of fence, one of which extended quite to the bank, while the other left a channel around its upper end. Salmon swimming through this passage were driven back into the triangular area between the two wings, and so down into the trap. Trout also were captured in similar fashion, but bone hooks, and dip-nets suspended on triangular frames of sticks, were more commonly used. (Ibid: 15).*

• *Other Methods*. The Hupa also reportedly used hooks, spears, and baskets to capture fish. Curtis (1924 (13):8) describes the hook and spear as follows:

> *The hook was a sharp bone attached by wrapping to a small wooden shaft, which in turn was made fast to the iris-fibre line. It was used for trout, and generally on a multiple-hook set-line. The spear was of the common type, with a long, forked shaft on each prong of which was socketed a detachable, barbed bone point connected with the shaft by a stout cord.*

Finally, Hupa basketry provided another valuable mechanism for catching fish and eels. Eel baskets and fish scooping baskets were usually used along the river banks in shallow areas where fishermen could wade in clear waters and scoop out the fish (Nelson 1978).

3.2.4 Preservation, Storage, and Use

As discussed elsewhere in this Chapter, the wealth of the salmon resource was complicated in part by its seasonality. Even an over-abundance of salmon was of limited good to the tribe if it could not be properly dried, perserved, and stored for future use. Once a harvest was obtained, preservation and storage tasks fell to the women. Hewes collected the following data concerning Hupa methods of preparing salmon for preservation and storage. Kroeber and Barrett (1960:100) reproduced Hewes' data as follows:

> *1. Cut off the tail.*
>
> *2. Cut the head halfway off and allow it to hand, still attached to one side.*
>
> *3. Slit the fish down the back.*
>
> *4. Remove the skin on the left side, beginning along the back and cutting down to the belly.*
>
> *5. Slice the meat itself down from the back to the ends of the ribs.*
>
> *6. Cut "into" the viscera under the ribs. This produces two thinner slices on this side.*
>
> *7. Then reverse the length of the fish so that its tail is now away from the worker.*
>
> *8. Repeat the above skinning and slicing operation on the other side of the fish.*
>
> *9. Next "slice" so as to remove the backbone. Take this out with the viscera hanging to it.*
>
> *10. Now reverse the position of the fish, so that the head is once more away from the worker.*

11. Separate the skin, with some flesh still attached, from the remainder down as far as the tail, and put this aside. . . .

12. Remove the viscera and clotted blood from the the backbone.

13. Remove the [adhering] meat from the bone on both sides, and put the backbone aside.

14. At the tail, make a cut from the dorsal side so as to lay open one side. Turn the fish over and make a similar cut on the opposite side. Thus the two slabs of flesh [two layers of one side of the fish's flesh] are left attached to both the skin and the backbone.

15. In case the tail has not yet been cut off, this may be done at this juncture in the operations.

16. In the male fish the milt is sometimes cooked, though it is not considered by some to be a tasty food. The roe, however, is much esteemed.

17. The jaw sides, or, as they are usually called, "cheeks" are always used. The gristle on the inside of the head and nose of the salmon is esteemed. This gristle is called kininjkitce. A particularly tasty morsel is the bone and flesh located on the under side of the throat.

To this, Goddard's data adds that ferns and leaves were always used to "wipe away the blood and unclean portions (1903: 26)."

Curtis (1924: 15) states that "salmon, sturgeon, and lampreys are dried on racks, formerly in the underground dwellings, and stored in baskets." Goddard (1903: 14) reports that poles were arranged over the fire in the xonta for smoking fish and venison, and Nelson (1978) further substantiates this.

The winter's supply of food was stored in baskets. Hupa women constructed conical baskets for storage of acorns; and deep, rounded baskets for supplies of dried fish (Goddard 1903: 15). In addition, salmon was prepared and served in special disk-shaped baskets which were lined with leaves and wiped clean after every use (Goddard 1903: 26).

The idea of waste was and remains anathema to the Hupa people. We were told that salmon were prepared fresh and preserved in ways that guaranteed the use of all parts. As mentioned above, heads, cheeks, eyes, and gristly sections of the throat were considered delicacies. Kroeber (1960: 100) notes that these parts were not preserved, while Goddard (1903: 26) states that these sections were roasted over wood fires and served fresh. Finally, the roe were dried and reportedly were carried as trail food.

It seems also that the backbone and the viscera, which were not used, were thrown back into the river at the conclusion of the cleaning and cooking

processes. A woman responsible for this in each family was obliged to bathe and remain secluded for a certain period of time after this.

While the mechanics of cutting and curing salmon are faily well documented, other aspects of storage and use deserve special mention here. We are indebted to several Hupa women interviewees for providing us with insights into these processes. The cleaning, preservation, and storage of salmon was a major element in the education of Hupa girls. One interviewee told us that planning how much to store was considered carefully by every family: "Yes, each family knew roughly what it needed for its yearly supply to feed all comfortably." On the other hand, an elderly interviewee told us, "There was never enough. So you put up as much as you could." This statement in historical perspective seems to reflect the much higher level of aboriginal reliance on salmon and the problems associated with white interference with fishing and with the fishery resource as well. In later reservation periods, non-Indian foodstuffs had begun to be used as well, and salmon constituted a high, but not preponderant food staple; thus, planning for storage became an easier and projectable matter.

Finally, the cleaning, preservation, and storage of salmon was a major element in the education of Hupa girls:

> *We had to learn all the ways of doing and helping right from a very young age . . . The mothers had a definite idea of how much, and that was it. They didn't go out and get more and say, 'Well, two is good, but four is better.' They said, 'Two is adequate and it will take care of us and we will leave the rest for the others. . . . [If they had extra fish] they would share wider and then just stop and let nature take its course, more or less . . . .* (Interview data 1981).

3.2.5 Linguistic Derivatives Related to Fish and Fishing

The Hupa people are one of several Athabascan speakers of Native California. Their language, however, reportedly differs considerably from that of other Athabascan speakers in the Pacific area (Goddard 1904: 91). Powers (1877) believed that the Hupa imposed their language on other neighboring tribal groups, at least with respect to trade relations, but substantiation for this is not firmly documented.

The only significant work on the Hupa language was conducted by E. Pliny Goddard in the early years of the 20th century. Goddard worked with several Hupa in recording a number of Hupa myths, tales, and ceremonial

formulas in the Hupa language. In the late 1960s, this work and the knowledge of many tribal elders were utilized by the Humboldt County Community Development Commission which assisted the Hoopa Valley schools in developing a class in the Hupa language. These two sources were extremely helpful in deriving the rudiments of Hupa fishing-related vocabulary. Perhaps the scarcity of sources and materials on the Hupa language makes this vocabulary more startling in light of the number of terms gleaned. Primarily, terms presented relate to fish, marine life, fishing implements, fishing activities, the river, water, and ceremonials. These terms are summarized in Table 3.2.

3.3 Trade Patterns

Trade patterns among the Hupa are not documented to any great level of detail. Other than the Davis (1974) and Sample (1950) studies, very little has been done to document specific trade patterns through Hoopa Valley. However, references to trade in goods and food resources are sprinkled throughout much of the historical data utilized in compiling this study. It is known, for example, that a fairly extensive trade network existed in the Trinity-Klamath drainage. In addition, the Hupa were visited in precontact and contact times by others willing to barter goods in exchange for access to resources. Table 3.3 on the following page summarizes the trade goods documented by Sample and Davis.

3.3.1 General Trade and Exchange

In precontact times and well into the contact period, acorns appear to have been the Hupa's strongest contribution to the marketplace as they traded with others for needed or desired items. Primarily, the Hupa engaged in considerable trade with the Yurok--especially the Coastal Yurok--and other coastal groups for seaweed (providing them with salt), and various types of surf fish and other marine foods. In this connnection, trading and gathering expeditions to the coastal areas appear to be about the only travel the Hupa made outside of their own territory. The Yurok also supplied the Hupa with dugout canoes, since redwoods were not widely found in Hupa territory.

Since their territories were quite similar, the Hupa and Karok carried on very little trade among themselves. From inland groups, the Hupa obtained obsidian for ceremonial blades and arrowheads, dentalia, and

Table 3.2 (Continued).

HUPA LINGUISTIC TERMS RELATED TO THE RIVER AND FISHING

English Terms	Hupa Equivalent
Eel basket	Koloh-xon
Fish dam	ec
Paddles	Kil-to
Fishing board	da-kyu-we-wit-tan
Nets	Ki-xak
Canoe	Medil
Dam	No-te
Net sack	te-mil
Baskets	Kit-loi
River/Water Terms	
Water	Ta-nan
Upriver on the bank	Yin-nuk-kut
Whirlpool	na-wit-dits-tin-nauw
Creek	nil-lin
Creeks would dry up	na-xo-wil-tasai-ye
to the river	to-tuin
River	xun
Damstream	yi-de
Mouth of the Klamath	muk-a-na-do
Swim	men
Klamath	yo-yi-duk-a
The Trinity	Na-tin-nox
Flowed	Kit-te-yon
to come ashore	to-des-del-xo-lun
at Orleans Bar	nil-tewin-a-ka-din
Lake	munk
Waves .	yei-il
Somes Bar	tse-nun-sin-din

Table 3.2

HUPA LINGUISTIC TERMS RELATED TO THE RIVER AND FISHING

English Terms	Hupa Equivalent
Fishing and Marine Life	
Salmon	Lok
Salmon	Xo-lo-ka
Fresh salmon	Lok Xun-nai
My salmon	hwil-lo-ka
Salmon backbone	Mo-nin-o
Salmon fins or nape	Mot-Jol-w-on
Salmon gills	Kit-co-co-on
Salmon tail	Ki-kel
To call as a salmon	Loke
Salmon cheeks, head	Kininjkrtue
Scates	Mit-Le-te
Surf fish smelt	ta-din-dil
Eels	Luw-xan
Seaweed	Lo
Mussels	Ya-ctz-mil
Clams	Te-nec-ng
Food	Kyu-wi-yul
Fishing Activities	
She fished	da-tein-nes-dai
Dressed eels	Kit-te-tats
She cooked fish with sticks between	Ke-wil-nakin-tuk-kai
Dry them	ol-tsai-ne
Someone fishing	da-ya-win-aiye
He always fished	da-tce-it-da
He made a fish dam	Note tcis-towen
Fishing Implements	
Basket plate for serving fish	X-otel

Table 3.3

HUPA TRADE PARTNERS AND TRADE ITEMS

Tribe	Trade Items
Hupa Supplied to:	
Bear River Athabascans (Mattole)	hillgrass for rope; carved pinenuts for beads
Chilula	Salmon fishing rights bartered
Shasta	Acorns, baskets, dentalia, salt
Yurok	inland foods, skins, acorns
Hupa Received from:	
Bear River Athabascans (Mattole)	angelica root; wild tobacco, ablone shells, foodstuffs
Northern Wintun	salt
Shasta	buckskin, pinenuts, horn for spoons
Wiyot	White deerskins
Yurok	woven pack straps, smelt, redwood canoes, dried seafoods, surf fish, mussels, seaweed, dentalia

Sources: Sample (1950:8); Davis (1974:23); Curtis (1924:4).

other ceremonial items such as woodpecker scalps.

Sample comments:

> *It seems apparent that in California as a whole east-west trade was more important than north-south trade. The ecological differences imposed by seacoast, coast range, interior valley, and sierral environments is probably the answer. Important and long-distance trading occurs between those having available a surplus of desirable and contrasting products. For example, the valley people always looked to the mountaineers for those articles needing particularly pliable or strong wood--such as cedar and yew bows; the interior depended on the coast for shells. It is interesting that Pomo clam shell discs that came to the Karok and Hupa did not come up the coast but passed east and then west. Dentalia shells from the north wound their way roundabout and came to the Yuki from the east (Sample 1950: 5).*

3.3.2 Fish in Trade Relations

The Hupa seem to have traded fish or fish products primarily within their own territory to outsiders passing through the area or in barter for temporary fishing rights. Davis notes:

> *Other less common, although not infrequently practiced, methods of securing goods include: the free reciprocal use of at least portions of one another's resources (Merriam 1955: 76; Barrett 1908: 134, 1910: 250; Drucker 1937: 289; Garth 1953: 131, 154; Gifford 1931: 35); the purchase of a favorable locale in another territory which then became the semi-permanently owned property of the purchaser (Waterman 1920: 222); the payment to a 'chief' to allow a one-trip hunting, fishing, or gathering expedition (Garth op cit., 136; Loeb 1926: 1951); a direct clandestine invasion of another's territory to obtain articles by theft, which frequently resulted in warfare (Merriam 1955: 16-17; Kroeber 1925: 236; Loeb op cit. 174) (Davis 1974: 8).*

There is considerable evidence that these "other methods" were commonly practiced among the Hupa and their trading partners. These relate most directly to the barter of food resources--including acorn-gathering rights--but most directly to the use of tributary streams and other fishing locales during the salmon runs.

A key factor in this trade appears to have been the number of salmon runs a tribe received each year. For example, the Chilula received only one run a year and they often either traded with the Hupa for fish or bartered for temporary fishing rights (Curtis 1924: 4). The Chimariko "sometimes paid the Hupa for the privilege of fishing at the falls near Cedar Flats" (Nelson 1978: 25-33).

In addition to these aboriginal patterns, white contact also brought increased trade opportunities--wanted or otherwise. In 1849, while on his expedition in search of Trinidad Bay, Josiah Gregg and his party passed through a South Fork Village. Bledsoe documents their visit and includes the information that the party took smoked salmon from the villagers' homes, leaving venison in its place. In 1850, DeMassey and his company were proffered salmon both as gifts and as trade items, and upon leaving they purchased a two-day supply (Nelson 1978: 43).

Heizer and Elsasser (1980) state that food was never sold; and certainly evidence suggests that this was not widely practiced. The Hupa reverence for food items prevented them from any intercourse involving outright exploitation of these resources. However, exchange for other types of food products was extensive, and Beals and Hester (1974) note that in years of poor salmon runs or acorn harvests, the sale and purchase of food items was not unheard of (Beals and Hester 1974: 22). From Goldschmidt's field notes, they quote one informant who told them:

> *A long time ago people in the valley starved. If they have a deer or a flint [that is, a white deerskin or a ceremonial flint] they will buy a hatful of acorns with it. My people [family] never starved. They had everything. That white deerskin came in for one pair of dried salmon.*

3.4 World View and Ceremony

In speaking about hunting and gathering societies, Odum (1971: 105) remarks that "culture in such a system must include a great knowledge of species properties, of seasonal cycles, and of the network in which [the native person] is imbedded. . ." Swezey and Heizer (1977) extend this analysis to the fishing societies of Native California and state that "various aspects of world view and ritual behavior functioned to organize and adapt [these]. . . . cultures to the ecological permutations of subsistence in California. Heizer and Elsasser (1980: 33-34) are in agreement with this view, and elaborate accordingly:

> *World renewal rites were . . . basically ecological in their purpose. The power of nature to injure man was believed to threaten the stability of the world in its normal operations, and the rituals acknowledged that threat and were intended to ward off any impulse of the powers of nature to act in ways detrimental to human life . . . .[When] failure of the salmon run or the acorn crop occurred, [one Indian explanation was that] the prescribed rituals had been performed incorrectly.*

3.4.1 Relevant Myths and Legends

Both of the major food staples of the Hupa people since earliest times--salmon and acorns--are major elements to be used, celebrated, appreciated, conserved, and replenished throughout the course of the ceremonial cycle. There is no major Hupa ceremonial or ritual that does not utilize these foods in some integral way. Accordingly, it seems only fitting and natural that the slamon, and to a lesser degree, the acorn, appear in the myths and legends of the Hupa people. In addition, a number of ritual formulas involve the use of salmon. Hupa muths and formulas were recorded by E. Pliny Goddard with the help of Sam Brown, Interpreter, and a number of other Hupa speakers who narrated them to Goddard during his fieldwork in the early 20th century.

- *Origin of Salmon and Fishing*. The myth recounting the origin of salmon and how the people learned to fish centers around *Ximantuwinya*. He is the primary divinity of the Hupa people whose name means "the one who is lost across the ocean." It was he who found salmon for the people and taught them all the ways to fish for salmon, eels, and other fish as well. Goddard's translation reveals the extent to which fishing has been elaborated upon in Hupa cosmology.

The Origin of Salmon and Fishing

When Yimantuwinyai came back to Tcoxoitcdwedin it occurred to him that there should be salmon. Someone had them shut up in the world across the ocean toward the north. It was a woman who guarded them. Yimantuwinyai came to the place where she lived, he went in and addressed her as his niece. She gave him fresh salmon for the evening meal. The next day, having spent the night there, he told her he would like some eels. When she went to catch them he followed to spy upon her. Having found out what he wished to know he ran back and went into the sweathouse. The woman brought back the eels and dressed them. When she had them ready she called to him to come in. He went in and ate the eels. After he had remained there two nights he was again hungry for salmon. When she went for them he followed to see what see would do. He saw there the fishing boards projecting out over the water and many nets leaning up near by. There were also nets for surf fish there. He came back to the house.

The next time he was hungry for surf fish. He watched her get them as he had done before. When she had brought them up she cooked them for him between two sticks . . .

Then he went where the fish were. There, in a lake were all kinds which live under water. Beginning at a certain rush he dug an outlet. When the ditch was finished he took out the rush also. Then the water carrying the fish with it ran out encirling the world.

When he came back by the house he picked up his quiver and followed along beside the stream to teach the people how to prepare the fish for food. The woman ran along after the salmon that used to be hers crying "Wut-te Wut'te my salmon." It was salmon's grandmother who used to own the salmon. When Yimantuwinyai came along he saw fish had already been eaten. He saw eels had been cut. "Not that way, this way you should cut them," he said, cutting them with a knife of white stone. At another place he saw they were cutting surf fish which had come ashore. "Not that way," he said, "this way you must dry them"; and he scattered them whole on the grass. He came back to Tcoxoltwedein. Salmon's grandmother came on to Hupa following her fish. She still comes in the fifth month.

• Formulas. Hupa religion and world view are imbued with a reverential attitude to life and all that preserves it. Thus the Hupas have developed formulas that bless everything around them and intercede with Immortals (*Kixuna;*) for continued good luck and prosperity. The formula for salmon medicine relates how two immature brothers became involved with the salmon and learned how to treat it properly.

Formula of the Salmon Medicine

He made the salmon swim down the Trinity and Klamath rivers to the ocean. Then he caused it to swim along the beach southward. Having gone entirely around the world, he came back with it from the north to the mouth of the Klamath again. He made it swim back up the Klamath and Trinity rivers to the starting place.

Then he questioned it. "What will you do if a person with a bad body eats you?" he asked. The salmon swam around in one place. He asked it about every kind of person. After each question it swam for a short time in one place. Finally he asked, "What will you do if a woman who has miscarriage eats you?" It died at once. It rose to the surface of the water. Then he took it and placed it on the shore where it lay for five days.

After the five days, in the morning, the two brothers went down the river and crossed over to the place where it lay. The one who was officiating cut the salmon and cooked it there. He put incense root in the fire with which he cooked it. When the salmon was done they ate it. When they were through they shot at a mark and had all kinds of games. "This is the way Indians will do when they come," he thought.

Then he said, "All of you go away from me." Having built a fire he put incense root in it and prayed. "Indians when they come into existence, will eat this happily," he thought. "They will have plenty of food when the time comes for it to grow. The birds will not bother it. It will be good wherever it grows. Whatever anyone says will happen."

The two brothers went up the river and crossed over to their home. They found the one who had gone up the Klamath was not yet come back. Then they tore down the house and the sweat-house and went back to Xaiyame. There, one on each side of the river, they took their stations to watch their salmon.

When the one who had gone on the journey, came back to Weitchpec and started up the Trinity he was surprised to see salmon scales scattered about. When he got back where they had lived he found they had departed. He tracked them to Xaiyame where he found them. "Well," he said, "I will take my place at Tseyekyauwhwikut. There I will keep watch. The salmon which a bad person would eat, if it were caught, I will take out as it passes up. Indians when they come into existence will make mention of us. 'At that place he did that,' they will say."

3.4.2 Ritual Treatment

Swezey (1975: 9) asserts that there exists a direct, functional relationship between subsistence and conservation activities and world view and religious institutions among the people of Native California:

> *The idealized ecosystem was a set of "feedback" interactions between man and natural forces, such that proper ritual conduct toward natural resources, for example, insured positive response from spirits who controlled the abundance or availability of animal and plant foods.*

In this connection, the Klamath-Trinity tribes all followed a seasonally-based ceremonial cycle which followed the pattern of their subsistence activities. These religious ceremonials included for the Hupa a Winter Dance, the White Deerskin Dance, and the Jump Dance. In addition, the Hupa observed a number of minor rites--such as the First Salmon Ceremony, the First Eel Ceremony and an Acorn Feast (or picnic).

These ceremonials were occasions of heightened religious intensity inspired by native religious belief concerning good and evil and involve the necessary ritual acts to cleanse the world of evil and restore it to an even keel (Beals and Hester 1974: 32).

> *Expressed in positive terms [the purpose of the World Renewal Rites] is to provide an abundance of food, universal good health, and to renew or repair the earth. All the acts of the participants, and especially the restoration of an esoteric formula by the priest or formulist, are thought to facilitate these results.*

Then as a whole, the World Renewal Cult embodies several important elements of aboriginal belief (Gifford, in Beals and Hester 1974: 32).

- the concept of a prehuman race of immortals who established Indian culture;
- formulas--spoken by the shaman or formulist in the belief that spoken words have curative power;
- timing of ceremonies based upon the cyclical nature of resource availability;
- localization of dances at particular sacred sites where they were first enacted by the immortals.

Both the minor "first rites" and the major World Renewal Dances are summarized in sections below and elsewhere in this report.

- *First Rites*. Three major foods of the Hupa were celebrated with first rite ceremonials or formulas: Salmon, eels, and acorns. The Hupa First Salmon Ceremony was much less elaborate than either that of the Yurok or the Karok; although it shared many elements in common with it. The rite was performed near the upstream end of the Sugar Bowl by the religious leader--or in later periods by a trained formulist--from Medildin.

The ceremony was held only when the "silversided salmon" came, somewhere between March and May. Traditionally, the fish was caught in a set net by a man from Xaslindiry and it was cooked either by the man who caught it or by the Medicine Woman who assisted the formulist. For 10 days before the ceremony, the formulist prayed and sweated, gathering wood and meditating during the day and sleeping with angelica root at his head during the night.

There were precise rules about how the first salmon should be killed. Only a green alder stick and green hazel stems could be used to draw him out of the net. At that point, the salmon had to be "laid on a bed of bunch grass and flowers and flake stone." The ritualist was obliged to hold his breath as he made this first cut.

The fish was cooked over coals into which angelica root had been placed in order to give the salmon an unpalatable flavor and this ceremonial salmon was eaten only by the priest. It was believed that the more of this unpleasant tasting salmon he could force himself to eat, the greater luck he would bring to the people and to himself. Following this rite, the formulist fished alone for 5 days while his woman assistant cooked, smoked, and dried his catch for a feast which followed the 10-day waiting period. Only after this feast would the people be permitted to fish.

It is believed that the last Hupa Salmon Ceremony was held around 1910, and was conducted by the father of Shoemaker John, an informant of Gifford. It is Gifford's accounts of this ceremony which provide the data presented on this rite (Kroeber and Gifford 1949).

• *First Eel Ceremony*. The religious leader of Takimildin was responsible for conducting the first eel ceremony. As the eels came upstream, the formulist would catch "as many eels as he could in an eel net or bag. On his way home, he would invite whomever he met on the way as well as his family and friends to join him for a feast of eels which he would, himself, clean and cook over a charcoal fire. Following this, the formulist was not allowed to go upstream for 5 days, for it was believed that the eels would stay wherever he was and would follow him out of the valley if he did.

An interesting remnant of this ceremony remains among some of the elder men at Hoopa. It seems that before fishing for eels in the spring, one man of the tribe takes responsibility for invoking a formula to ensure a good catch. After casting his net, he will throw a stick into the eddy and "make medicine" over it until it goes into his net. Once this has happened, men in the valley will fish for eels.

• *Acorn Feast*. This ceremony, also called the Acorn Picnic, was conducted by the Medicine Woman and several women assistances. The latest confirmed date for this rite is 1942, based upon Gifford's data. However, AITS interview data suggests that it may have survived up through 1950. In late

September or early October when the tan oak acorns ripened, the Medicine Woman and her assistants were responsible for gathering an initial supply--enough to feed all the people. After pounding this first crop of acorns in the hills in the middle of the night, the women would proceed to leach them with water and heated stones along the river banks. At the same time, they would roast fresh salmon on sticks over a coal fire. When all was ready, the people would be called to the feast. Some accounts suggest that this would be done by the formulist, but sources disagree on this. As people walked along the trail to Takimimildin for the feast, each man was expected to throw a handful of pebbles into the river, calling for plenty of salmon. Everyone was expected to wash before leaving the feast. Not to do so, would be "packing away all the acorns so they will be scarce."

After the feast, any remaining acorns and salmon were ceremonially burnt with angelica.

- *Weir Construction*. Only "minor medicine" has been involved in the construction of the Hupa sacred weirs. It is known only that the formulist cut a first post which he blessed, put into the water, tethered to shore with wild iris, and left it floating there for 5 days. After this period, men would assemble all the proper materials on shore, and the first post would be halved for the pieces of the first and center crotch. The formulist continued to direct construction of the dam and after its completion, he walked over it every night for five nights, praying, meditating, and throwing pebbles into the water to ensure that the salmon would come.

- *World Renewal*. As noted above, salmon was also used in all of the Hupa sacred dances. Salmon and acorn soup are served to all in attendance. Participation in these rites is not considered complete until and unless these foods have been eaten.

The Winter Dance, *Xaitoitdilya* was performed in the late Spring to push back the cloud of pestilence at the close of the rainy season. The White Deerskin Dance, *Xonsilteitilya* or Summer Dance, is the principal Hupa ceremonial and included the Boat Dance. A number of major villages are sites for dancing during this 10-day period in August or September. Finally, the Jump Dance, *Tunkteitilya* was held a few weeks later. The White Deerskin and Jump Dances are still celebrated at Hoopa.

3.5 Persistence and Change

Fish and fishing have remained important elements of Hupa life--both as a food resource and in a religious sense. In speaking about their present perspectives on fishing and on the river system in general, Hupa people referenced their cultural heritage and world view with great regularity:

> *. . . if we lose our salmon, well, we're Indians no more after we lose our fishing . . . . if they come around and take things away from us and tell us "no more fishing or no more nets,' that's it; you may as well say no more Indian nation. . .* (Interview data).

Many also bemoaned the effects of ecological imbalances on the river system and the salmon resource, pointing with some pride to the validity of the adjustments their culture system has taught them to make to the environment. Thus, change in Hupa fishing patterns over time has been largely imposed from without and reflects in most cases a "least worse case" strategy on the part of the Hupa in attempting to protect and maintain their rights. The sections below present a few of the parameters along which persistence and change occurred and highlight dimensions of these.

3.5.1 Habitat and Fishery Resource

A comparison of the area inhabited by the Hupa aboriginally and that comprising the Hoopa Valley Reservation reveals that some constriction of Hupa land has taken place over the course of the reservation period. However, the Hupa have retained title to the Valley itself--the center of their homeland--and to many of the surrounding hills and mountainsides. In essence, however, this has proved to be a mixed blessing; for the wealth of forest reserves upon this land has provided a major source of income for the tribe while at the same time it has created some ecological problems. Extensive forestry on the reservation has led to silting and blockage of many salmon streams and ponds. As a result, the Hupa attribute the low salmon runs of the last several years to the inability of the salmon to swim through the debris to their spawning runs.

The absence of eels from the area is also of great concern to many Hupa. Eaten and prized in precontact times, the eel remains a favorite food of many Hupa. In the last few years, eels have not made their annual spring run up the river; and the reasons for this are unknown.

Finally, the low level of water supplied from Lewiston Dam is considered to have had a profound affect on the fishery resources. Water levels in some places are dangerously low to support any of the fish populations that inhabit the waters of the Trinity and the decreased water level has a secondary effect of being warmer as well--too warm, some believe, to support the salmon resource.

3.5.2 Fishing Technology

Cultural persistence is reflected to a very high degree when fishing technology and preferred fishing technology are examined. A principal issue revolves around the controversial traditional fish dam or weir, while the type and sizes of nets used show some evidence of change under pressure. Materials used in making fishing nets have changed in response to white technology while other (non-aboriginal) implements seem to have made some inroads.

Interference with the building of the annual fish dams has been a major element of white disruption since early white settlement of the area. Redick McKee's journal relates how the Klamath-Trinity tribes blamed one outbreak of hostilities on white interference in the construction of the fish dam. In 1885, Agent Captain Charles Porter told the Hupa "that they would have to destroy their traditional fish dam because it violated state law," although at the time he had no legal basis upon which to demand this (Nelson 1978:120). Later in 1908, Superintendent Kyselka "ordered Policemen Arthur Saxon and Charles Finch to see that the fish dam went no further than two-thirds of the way across the river . . . he admitted that he was 'unable to find any legal requirement' that the dam be kept open, but he threatened the Hupa with 'arrest and punishment if they disobeyed.'" (Nelson 1978:148-149). In 1932, Superintendent Boggess reaffirmed the Hupa right to build their dams, stating that "the government had 'no objection' to the dam being built at the upper end of the reservation." (Nelson 1978:168).

However, by 1939, local opposition to the dam was rampant, and the Commissioner of Indian Affairs requested a report on the situation. Superintendent Boggess' response contained the following comments:

[The Dam] had been an annual custom among the Hupa since before the time of the coming of the white man. "Any attempt to deprive the Hupa of that right, he explained 'would be resented by practically every member of the tribe.' The Hupa had always maintained that the dam did not threaten the spawning run or deplete the fish supply. All the same, Boggess found, whenever a non-Indian fisherman 'attempts to catch fish and does not get them . . . he is inclined to lay it on the Hupa fish dam.' Police Chief W. Quimby tested the area above the dam. His tests supported the fact that fish could and did pass through it. After reading these reports, the Commissioner ruled that the dam could remain.

However, controversy over the dam continued until by 1955, the Hupa were obliged to abandon this practice. Both documentary and interview data reveal that the Hupa retained their rights to build the dam longer than any other Klamath-Trinity tribe. Increasingly, gill nets came to replace the traditional weirs and individual platforms. The use of these nets has become a focus of some of the controversy surrounding Indian fishing today. Complaints are that the nets are capable of taking considerable numbers of salmon from the streams, thus depleting the salmon supply. However, many Hupa insist that their nets are coming up close to empty and the problem exists with the resource--not the method employed--in this case. Some Hupa state that if nets are disallowed, they would feel compelled to go back to the fish dam. However, others believe that the waters do not reach high enough to permit reestablishment of this practice (Interview data, 1981).

Currently at Hoopa, at least three of our interviewees stated that they still know how to build the traditional dam. All expressed the wish that they could teach the younger men of the Hoopa Valley tribe the techniques of weir construction so that this knowledge will not be lost.

3.5.3 Ceremonials

The Hupa take great pride in the fact that most of their major ceremonials--the White Deerskin Dance, the Brush Dance, and the Jump Dance--have been performed almost without interruption. The Hupa religious leader believes that interest in the dances has increased over the last 10 years, so the prospects of maintaining this aspect of their culture are quite high. The religious leader also affirms the continued central importance of traditional foods--salmon and acorns--in maintaining the viability of these ceremonials. Their connection with the conduct of ceremony and community

feasting is inextricable and thus, Hupa concern over the salmon resources takes on a religious dimension as well.

Certain of the minor rites, however, are no longer practiced. Primarily, loss of knowledge of the formulas involved seems to account for this. Older tribal members can recall the Acorn Feast; some recall the First Eel Ceremony; but none seem to remember the First Salmon Ceremony. Since this rite was not elaborated and was conducted privately among the Hupa, it is not surprising that this rite is not remembered.

4.2 Tribal Ecology and Food Quest

Territorial concepts of the ecological regime of the Yurok have been discussed in Chapter 2.0 above. Only minor reference to the importance of fishing has been made, however, and only in a descriptive sense. In this section fishing and its integration into Yurok culture are explored more fully as an important tribal subsistence resource. In addition, this section reviews ceremonial rites as a mechanism for the conservation of the fishery resource. These rites extended across tribal lines, especially on the Klamath-Trinity River system.

Besides the fishery resource, the Yurok relied on both vegetable and terrestrial game resources as dietary elements. Of primary importance in this sense are acorns derived from the Tanbark oak (*Lithocarpus densiflora*), and it is estimated that this resource was second in importance only to the salmonid resources (Elmendorf 1960).

4.2.1 Fishery Resources and Their Importance

Fishing among the Yurok and the upriver tribes was directed primarily to the salmon. Salmon and steelhead were preferred, especially since freshwater, nonanadromous fish, (except for trout) were neither abundant nor a favored food fish. An aboriginal technology existed which permitted these native peoples maximum utilization of their fishery resources.

> *In 1850 in this river during the running season, salmon were so plentiful, according to the reports of the early settlers, that in fording the stream it was with difficulty that they could induce their horses to make the attempt, on account of the river being alive with the finny tribe* (cited in Snyder: 1930:19).

Powers provides further descriptive accounts of foods utilized by the Indians in their food quest. Salmon, and both surf and shell fish formed the dietary staple of both the river and coastal Yurok. Of secondary importance were the terrestrial resources--e.g., acorns, game animals, pine nuts, and seeds (1877:47-51).

The importance of salmon as the major caloric constituent of the Yurok diet was analyzed by Baumhoff (1963), and Swezey and Heizer (1977). The sources agree that the abundance of salmon combined with the seasonality of the spawning cycle were the primary factors which permitted resource

Table 4.3

Traditional Ownership of Food Resources

Variety of rights	*"Everybody" ownership*	*Several villages jointly*	*Village ownership*	*Groups of houses*	*"House" or "Family"*	*Individual ownership*	*Fractional individual ownership shares*
Acorn-collecting groves	X		X	X	X	X	X
Snaring places for deer and/or elk		X		X	X		
Eddies for fish-netting salmon	X		X		X	X	X
Eddies for taking eels						X	
Stranded whales on specific beaches	X		X				
Specific whale cuts					X	X	
Whale flippers						X	
Sea-lion hunting grounds use	X				X		
Sea-lion flipper					X	X	
Shellfish-producing rocks	X		X		X	X	
Wild tuber beds			X		X	X	
Grass seed fields		X	X				
Surf fish netting	X						
Water lily seed collecting					X		

SOURCES: Waterman 1920; Spott and Kroeber 1942; Pilling 1967, 1969, 1978.

maximization (Swezey and Heizer 1977:10-11; Baumhoff 1963). In analyzing the ecological and population adjustments of the Yurok, Baumhoff estimated that the river system could support approximately 3,200 persons (1963:163-187).

Citing the prior estimates of Rostlund* that aboriginal anadromous fish production in the Northwestern region of California averaged about 1000 ca/lb., the total calorie production among the Yurok would be equal to 740,000,000 ca/year (7.4×10^7) with a calorie balance of 912,550/ person per year; thus fish production would support a native population as follows:

CALORIE INPUT(%)	NATIVE POPULATION
25	3240
50	1620
100	810

SOURCE: Baumhoff 1963: 178-174.

Rostlund explains that (1) primary streams are the lower courses of larger rivers having either: (a) annual spawning runs of three anadromous species, or, (b) both a spring and fall run of king, or both; (2) secondary streams are the higher courses of the primary streams, and the entire course of lesser streams except the very smallest; (3) tertiary streams are the very smallest streams draining less than 100 sq. mi. Productivity is measured by "fish mile" units, which are linear miles of the course of the salmon stream. Thus, the equation is derived as shown below. Cook (1956) derived a Yurok population estimate of approximately 3,100. Assuming this to be correct, then salmon resources would equal approximately one-fourth of their total diet (Baumhoff 1963:180).

*Rostlund (1952) estimated aboriginal fish production on the basis of his Fish Resource Index (FRI). Accordingly,

$$FRI=(10)\ (2)\ Pfm + Sfm - .5t + Cfm,$$

where

Pfm=Fish miles on Primary Streams
Sfm=Fish miles on Secondary Streams
Cfm=Fish miles on Coast.

Table 4.4 is taken from the Baumhoff paper and provides the total resource index for the Yurok.

Table 4.4

Resource Index for Yurok
Area: 740.9 sq. mi., Population 3,100(Cook 1956 p.84)

Type	Extent	Coefficients			Indices		
		Fish	Acorn	Game	Fish	Acorn	Game
Fishery	(Fish-Miles)						
Ocean.....	14	1/2 x 10	..	..	215	....	....
River (primary)..	44	2 x 10	..	..	880	....	....
River (secondary)	17	1 x 10	..	..	170	....	....
Vegetation	(sq. mi.)						
Redwood forest...	378.0	....	5/8	5/8	....	230.3	230.3
Pine-fir forest..	312.5	....	1	1	....	312.5	312.5
Oak woodland.....	5.0	....	2	2	....	10.0	10.0
Chaparral.....	45.4	....	1/2	1/2	....	22.7	22.7
Total resource index.....					1,205	581.5	649.6

Source: Baumhoff 1963: 180 .

4.2.2 Ownership of Sites and Resources

Fishing sites could be either privately or communally owned among the Yurok. Communal fishing sites were mostly sites of fish dams which ensured the distribution of the resources to most Yurok (Waterman and Kroeber 1938). The dams were especially important to those who owned low-producing sites, or those who did not own a site at all. The best sites, which were privately held, were concentrated on the lower extension below Weitchpec near the river mouth. Moreover, the most valuable sites were those near riffles, pools, or eddies, where salmon would find the least resistance in their upstream migration (Hewes 1942:107). Among the coastal Yurok, communal and private rights existed in beach properties, which became important in the event of beach-stranded whales, or for the hunting of sea lions (Kroeber 1925:33-34).

To the Yurok, fishing sites are ascribed as private property, and are protected through the assemblage of laws regarding retribution in the event of violation or trespass (Kroeber 1925:33-34). Moreover, a person could not establish a new site downstream from an existing site, and bitter feuds were known to erupt when these individuals rights were violated (Hewes 1942:107). It was not uncommon, however, for sites to be jointly owned, or held by several partners. In these events, fractional use rights were usually affixed to the degree of ownership, with use of a site following predetermined rules (Kroeber 1925:33). The ownership of a site did not follow any prescribed geographic or social pattern, but usually aristocrats owned the best sites (Pilling 1978). It was not uncommon for those residing in another district to own a site upstream on the river. The sharing of a site, by friends or family members, was permissible provided that the owner was asked. These events were followed by some form of reciprocity, usually in the sharing of the catch for the day that site usage was permitted (Kroeber 1925:33-34). Often, slaves fished for a master as a condition of their bondage. In return, the slave was provided a share of the salmon; slavery, then, was another mechanism to ensure resource distribution and availability (Ibid;32).

Women could acquire rights to a site through inheritance; or, shamans accepted the rights to a site as payment for their services. They did not exercise these rights directly and often permitted family members

to use the site (Pilling 1978:3-4). A woman could "lease" rights to the site in return for a portion of the catch. Where production at a site was limited, usually the best parts of the salmon were claimed by the owner (Pilling 1978; Snyder 1931).

Yurok beliefs held that a site could be "spoiled" if a person wished to bring harm to his kindred (Waterman 1920:220). Such an act would result in abandonment. What is not clear is how sites lost their importance through floods and silting, or the resultant manner in which they were disposed. Floods were apparently a common occurrence, and the flood of 1862 was reportedly of immense proportion. Floods of such magnitude are capable of modifying a river's course, riffles, and pools. How such changes affected ownership patterns is not specifically stated, but it can be assumed that these sites were abandoned (Waterman 1920:219).

4.2.3 Fishing Technology

Settlement undoubtedly was an important factor in the technology of fish harvesting among the coastal and river Yurok. Both groups reportedly fished for salmon and owned fishing sites. The location of the coastal groups probably increased their accessibility to marine mammals, and to surf and shell fish (Baumhoff 1963:174). Thus, fishing techniques varied based on the different species available. That is, the coastal Yurok who fished both for surf and anadromous fish developed a technology which was more differentiated than their river kindred (Kroeber and Barrett 1960:1).

The coastal Yurok harvested ocean fish through the use of scoop nets used in the surf, and throw-lines off the coastal rocks. There is also discussion by Kroeber and Barrett that the Coastal Yurok took fish by bait-trolling from canoes just off the coast (Ibid:89). The principal fish caught by these methods included smelt, ocean perch, snappers, rock cod, eels, and halibut. Tidal pools proved to be an important source for mussels, clams, crabs and other shellfish. Offshore rocks were important hunting areas for sea lions (Ibid). Whales were also used but were not actively hunted. Rather, stranded animals were disposed of through a formal process derived by village ownership rights (Pilling 1978:147).

The salmon resource was the primary dietary staple of the Yurok. Fishing techniques showed some variation but were generally sufficient to ensure availability to all Yurok kindred. The methods outlined below were the primary techniques utilized in fishing.

• *Weirs*. Weirs are referred to as "fish dams" by the Yurok. These were important both in the harvesting of salmon and in the Yurok ritual cycle. The dam construction consisted of a log frame, lattice, and false frame work. Its effect completely blocks the ascension of the salmon to upstream spawning beds. In Yurok territory, weirs were built at Kepel and Hemoyo or Lo'lego. There is also a legendary reference to a weir at turip; and Falcon (Duck Hawk), *kerenit*, mythically built his weir two miles down from Kepel at *muntse-haa'g* ("white rock") (Kroeber and Barrett 1960:11). The most famous of the Yurok weirs was built at Kepel under the direction of a dam-maker, (Lo) and its construction followed strict ritual observances (Waterman and Kroeber 1938). The construction was perhaps the only major communal enterprise of the Yurok, and most Yurok people benefitted from the fish harvested through this effort.

The effort was massive, and Waterman and Kroeber have estimated that several hundred persons were involved in the construction of the weir (1938:54). Construction was a localized enterprise involving three adjacent villages, with the builders having distinct responsibilities. The weir was constructed under the direction of a formulist known in the Yurok language as *wi-lo-hego*, or *Lo* ("that-one-dam-he-makes"). According to legend, a man at Sa'a possessed the medicine (formula) to perform the rituals in building a dam. Through half-marriage, the rights passed to his son at Meta. These, in turn, passed to the village of Nohtskum. Thus, the office has been in the same family for generations, and probably dates back much further (Ibid:52). Lo was assisted by a helper known as *wokowis-hego* ("stake-maker") who assisted in the rituals as well as the actual supervision of the construction (Ibid).

The engineering features of fish dams are such that the sites selected for construction were at locations where the river was shallow and the bottom of a gravelly texture. This permits the driving of the anchor poles to which frames are attached. A lattice-work of slats and falsework (or staging) is then attached to the frame. There were 10 sections to the dam each containing

a trap which could be opened. When the traps were closed the course of the river was completely blocked so that only a few salmon would escape. Salmon were then easily taken with a dip net.

The dams were used for 10 days, within which time the Yurok could take a share of the salmon. According to one of the interview consultants, the distribution of fish was overseen by Lo, who specified when fishing could occur, and the number of fish that a person was entitled to take. In comparing Twana culture with the Yurok, Kroeber noted that only residents along a certain stretch of the river benefitted from the weir construction by actually sharing in the fish taken at the site. Kroeber believed that this could be explained by the Yurok lack of a true social orientation to link their villages into cohesive units. Thus, men from Weitchpec were invited to visit and to be fed during the construction, but they could not expect a share of fish from the dam (Elmendorf 1960:73).

• *Fish Nets*. Various types of fish nets were used by the Yurok, both in conjunction with A-frame dip-netting and for cross-stream blockage. The most distinctive and common of the nets were the conical pouched nets mounted on A-frames and operated by fishermen. Other types of nets common along the river included seines and gill nets, salmon drag nets, and plunge nets (Kroeber and Barrett 1960:40-41). Gill nets were reported in use between 1850 and 1856 by Loefelholz who resided at Trinidad at the time (Heizer and Mills 1952:175). These became important in the late 19th and early 20th centuries when canneries were established on the Lower Klamath (Snyder 1930). Traditional nets were constructed from the fibers of the *Iris macrosiphon* leaf. The silk-leaf fiber was extracted from the leaf by women, usually with the aid of an artificial thumbnail of mussel shell. The fibers were then rolled into cord on the thigh and woven into nets by men. Mesh spacers of bone or antler were utilized to assure proper knotting of the net (Kroeber 1925:85-86). An interesting note is that Herman Sherman, Sr., still makes the traditional net using twine and showed one to the Study Team at Hoopa. Florence Shaughnessy also possesses one of traditional fiber which was seen during the field visit. Native twine and cord continued to be the primary materials until they were replaced in the

1930s by commercial twine. Nylon monofilament line is currently in use for net material and witnessed during the field visit.

• *Staging Platforms*. Staging platforms were built over the most favorable waters of the river where dip-nets mounted on A-frames were used to catch salmon, steelhead, eels, and sturgeon. Net meshes differed in accordance with the fish being sought. Nets with wider mesh were used to trap sturgeon; smaller mesh were used for eels, with the mesh for other species falling somewhere in between. The staging consisted of a platform or walkway extending from the shore, where a net frame would be lowered into the water. The natural flow of the stream would then extend the net, so that fish could be trapped (Kroeber and Barrett 1960:32). Extensions over the water avoided shoreline snags, thus increasing the efficiency of the netting technique (Ibid).

• *Eel Pots*. Eel pots (*lumun*) were basketry traps used on the river for taking eels. The traps were generally made of hazelwood or willow, and always woven from plain twine (Kroeber and Barrett 1960:70). They were anchored so that the stream flow forced them to face downstream, and when the eels entered they would be trapped. Use of eel pots apparently is an innovation introduced by the Whiteman, and eels were apparently taken in nets in aboriginal times (Ibid:71). According to an interviewee who still makes nets, nets with smaller mesh were still used for taking eels on the river. However, according to a number of Indian fishermen in the Study Area, eels have not appeared in the river over the past several years. In attempting to verify this statement, the Study Team learned that no studies have yet been done to substantiate this. However, the consistency of this statement among those interviewed tends it much credibility (Rankel: Personal Interview 1982).

• *Hooks, Gaffs and Spears*. These items were also used by the Yurok in fish production. Harpoons (single and double prong, and toggle-headed) were used primarily for sea-lion hunting, and enabled the Yurok to recover game, as the heads were generally strung with a line. The construction would allow the heads to become detached from the shaft, thus making the recovery of an animal more efficient. Hooks, while not common on the river, were important in the production of ocean fish, and reportedly gaffs were used for taking eels (Kroeber and Barrett 1960:75).

4.2.4 Preservation, Storage, and Use

Kroeber and Barrett provided extensive treatment of these activities (1960: 92). Primarily, the Yurok split salmon lengthwise for curing and usage. A small flint knife shafted in a wooden handle was used for descaling, splitting, and cutting salmon (Ibid). Lampreys (eels) were also split for drying in the same manner. A division of labor existed among Yurok men and women. The exercise of fishing at communal or private sites was performed exclusively by men, while women transported, cleaned, cut, and cured the catch. The most common method for curing was through a combination of smoking and drying techniques in the confinement of special smokehouses at the river's edge.* Curing also took place at home when transport was not difficult (Ibid: 99). The cured fish were then placed in baskets and stored within the house.

Salmon and acorns were the main staples of the Yurok diet, supplemented by sturgeon, eels, game, and other terrestrial products. All parts of the salmon were used with the exception of the entrails. Tails and heads were used in soup; and, salmon cheeks were considered a delicacy.** Communal feasts were known to occur only during dances associated with the world renewal rites--e.g., White Deerskin and Jumping Dances. During these ceremonies, all visitors were invited to partake in the feasts.

4.2.5 Conservation and Regulation of the Fishery Resource

Substantial documentation on the Yurok material culture relating to fishing is evident in the works of Kroeber (1925), Waterman (1920), Hewes (1942), and Kroeber and Barrett (1960). From these, it is evident that the salmon resource was thoroughly integrated into the social and cosmological elements of Yurok life. Another important perspective (which also has been inferred by the preceding authors) is that of resource

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*Smokehouses are still evident in the same manner in Hoopa Valley. Presumably, they are also used among Yurok settlements on the Lower Klamath. While the use of this technique was not observed in the fieldwork, the Study Team learned that some Indian people still prefer to smoke their salmon. One informant stated that he and his wife were among the few remaining Yurok to use the small brush smokers on the river banks.

**An interesting arrangement developed with respect to commercial fishing at Rekwoi in the late 19th and early 20th centuries. Only Indians could be used as fishermen or as unskilled laborers in the canneries. In addition, the rights to certain parts of the fish, including the heads, were reserved for use by tribal kinsmen (Roberts 1934: 4).

management, as discussed by Hewes (1942), Baumhoff(1958), and Swezey and Heizer (1977). That is, the "ritual injunctions and social control mechanisms" among the Yurok were integrated as part of an overall ecological network, which permitted the continuous development of the resource potential (Swezey and Heizer 1977:6-8).

The salmon of the Klamath-Trinity drainages are concentrated in two discernible spring and fall spawning "runs," with steelhead trout available in the winter months. Adequate water temperatures combined with well aerated waters permit the incubation of eggs in both seasons (Rostlund 1952:15). These seasonal runs increased the availability of the resource for the Yurok and their upstream neighbors (Swezey and Heizer 1977:8), and native technology was developed to the point of enabling their maximum use of the resource, while ensuring adequate propagation of the species. Swezey and Heizer (1977) explain that a process of ritual management of the resource functioned among the Klamath-Trinity tribes. In connection with this, fish production among native fishermen was highly structured and organized. As discussed above, this included both privately owned rights at specific fishing sites and communally owned weirs, which enabled distribution and availability of the resource (Ibid:13-24). Hewes asserts that

> *Economically significant primitive fishing techniques are all mass methods, concentrating fish in small areas from which they can be taken easily in dip nets, with gaffs, or by hand. The sessile forms can be gathered with a pry or dribble. Except for sea mammals and sturgeon, pursuit of single individuals was not economically justifiable . . . Mass fishing is a harvesting operation, though the analogy to agriculture fails in that husbanding of fish resources was unknown aboriginally, if ritual conservation procedures are disregarded. (1942:104).*

Hewes also describes the economic importance of fishing and the effects of aboriginal technology on production. Although he implied conservation aspects, he failed to elaborate specifically on how fishing techniques relate to this dimension (Ibid:107-109).

Waterman and Kroeber (1938) and Hewes (1942) each give accountings of the ceremonies associated with fishing. The importance of the ceremonial rites and associated abstentions (taboos) are also mentioned (1938:56). Swezey and Heizer reference the conservation aspects in which these same abstentions and rituals provide for the escapement of salmon in sufficient

numbers to assure the placement of eggs on stream gravel, incubation, and hatching of young anadromous species (1977:22-24). Moreover, fish production practices on the fish dams all owed for escapement so that upstream tribal people were able to capture the resources which they needed for subsistence (Swezey and Heizer 1977:16). The rites described under Section 4.4 also served as important conservation measures.

4.2.6 Linguistic Derivatives Related To Fishing

The Yurok language is derived from Algonquian (Sapir 1913) and classified by Haas (1973) as Algonquian-Ritwan (Bickel 1979:150-153). The relationship to Algonquian is undeniably distant, however, and two explanations are offered to explain their presence. The first is that the Yurok were, in prehistoric times, a remnant of a pre-Algonquian group living in California that expanded eastward to form the Algonquian proper groups. The other is that the Yurok, Wiyot, and Algonquians are separate branches of a pre-Algonquian line that migrated northward from Central Mexico, and then expanded west and east (Ibid:193-194). In either case, the Yurok and the Wiyot separated from these Algonquian groups at least 3,100 years ago, and are the westernmost extension of the Algonquian expansion. Subsequently, these languages have changed as a result of their isolation and contact with other tribal languages. It is noted, however, that the Yurok and Wiyot separation probably occurred independently of the other (Ibid).

The linguistic perspective further indicates ecological adaptations. This section investigates this dimension and is derived from existing Yurok linguistic documentation developed by Robins (1956), Kroeber (1925), and Waterman (1920).

- *Yurok Phonology*. The Yurok language is not phoetically harsh, although some of the sounds are difficult for English-speakers to master. The language consists of 14 vowel sounds and 19 consonants, for a total of 33 letter sounds within the Yurok language. Some sounds differ slightly from the English equivalent, and there are some sounds which are favored in Yurok phonetics. The following summary has been extrapolated from Waterman's orthography of the Yurok language (1920:179-181).

- Yurok sounds of "r" and "s" are employed both as vowels and consonants. Thus, some sounds can appear in combinations which do not normally appear in English.

- The "vocalic or r" is a favored sound of the Yurok, and is consistently used throughout the vocabulary.

- The Yurok language has only one silibant, exercised as an alveolar process. The "s" and "sh" sounds are much softer than English.

- Fricative sounds (x and g) are made in the same manner as in English, but not quite touching the palate. Fortis consonants ("cracked" or "exploded") occur in a similar fashion as the English consonants "p," "t," and "k".

- Glottal stops--i.e., sounds which appear in English as differentiating two vowels simultaneously, are common in Yurok.

- Yurok vowels are similar to those in English, although some English sounds apparently do not exist--e.g., the double "e" sounding "i," or "a" in pat. Also, most of the Yurok vowels do not sound as flat as the English equivalents.

- Whispered vowels also appear in Yurok orthography--i.e., "i," "e," and "w". These are generally represented by a superior w, i, or u.

Capital letters are often used to identify certain voiceless Yurok sounds. Consequently, lower-case symbols are used for all words, including proper nouns. Anglicized Yurok words will use the capital, especially on proper nouns--e.g. *Orek*, *Requa*, etc. On the Yurok maps, capital lettering has been utilized for graphic reductions. In this section, Robins' lexicon is used (1956:189-30).

- *Fishing Terms*. In summary, the Yurok language is descriptive and highly acclimated to their environment. This is articulated in the extensive nomenclature for nouns and adjectives referencing direction, fish and fishing, and other environmentally intimate concepts (Ibid). Many Yurok terms reference various taxa for fish species. In addition, the relationship of noun concepts and/or application have separate Yurok words to identify the meaning. For example, there are at least 14 singular terms for the Klamath itself--e.g., upstream, downstream, etc. At least six separate singular Yurok words describe salmon in terms of species, fresh salmon, dried fish, spawning, etc. All English terms for fish taxa apparently have a Yurok equivalent, at least for those found in Yurok waters (Kroeber and Barrett 1960:5).

Table 4.5 lists Yurok words and terms that exemplify the richness of the language in terms of fishing. We can assume that with the close proximity of the Yurok to the coast and river, compounding words/terms make them more extensive and descriptive.

Table 4.5

YUROK TERMS ASSOCIATED WITH FISH AND/OR FISHING

English Equivalant	*Yurok Equivalent*
Fish/Fishing	
abalone, small	kʷɹ·mic
,soft shell	metkol
crab	ko?ses
dip net,	tregepa?
eel,	tregepet-
,dried	ke?win
,trap	lumon
eels, to fish for	lemol-
fallfish	cegun
fish	nepe?wisᵛ nunepew nunepuh nunepuy
fish, to	rorowen- so?neken-
,for eels	lemol
,for trout	tɹtk
fish with a net, to	lewet- ?ɹkɹh
fish dam	lo·gin ?umyo?
,chief builder kepel	lo?
,girl helper at ceremony	no? ome?r
girl dancer at ceremony	wolur
fish down house	le?wel
fishing rock	*hekʷol
flounder	lɹpugɹp
head of fish	lu·kun
heart of salmon	tekʷsa?r
fish hook	nɹhɛɹ?

SOURCE: Robins 1956.

Table 4.5 (Continued)

YUROK TERMS ASSOCIATED WITH FISH AND/OR FISHING

English Equivalant	*Yurok Equivalent*
ling (fish)	lohtun
trout,	regork
, to fish	kɹtk-
, to fish with 2 lines	rekewic
, fishing pole	kɹtkɹl
whale	hek^{w}sa?
across the sea	wohpek^{w} wohpew wohpewk
boat	(?)yoc
down river	pulekuk pulek^{w} pulik
net	lewet ?ɹkɹh
net, surf fish	nega?
, to fish with	lewet-
, end of	?umyo?
net meshes, measuring stick	pla?s
salmon	nepuy
salmon, king	?ohpos
salmon, white	tektome?l
sein net	cowon
snapper (fish)	lohtun
split fish, to	kou·k^{w}s-
steelhead	ck^{w}ol
sturgeon	kahkah
surf fish,	keges
river	la·yoh· ra·yoy ume?wo·
river, down	pulekuk pulek^{w} pulik

SOURCE: Robins 1956.

Table 4.5 (continued)

YUROK TERMS ASSOCIATED WITH FISH AND/OR FISHING

English Equivalent	*Yurok Equivalent*
river, lower down the	pul puloyoh
river, up	hipec' pecik' pecku pecow' pecu
river mouth	rek'^{w}oy
river mouth, at the	pulekuk pulek^{w}
ocean, Pacific	tewol tewolew
sea	p^{y}ískah
,across the, over the	wohpek^{w} wohpew wopewk

SOURCE: Robins 1956.

4.3 Trade Patterns

4.3.1 General Trade and Exchange

A general contention in most of the ethnographic literature is that trading among the northwestern tribes was not extensively developed in aboriginal times. Food resources and raw materials for Indian subsistence or industries were basically the same. Thus, the need for developing trade mechanisms were minor and trading was not extensive (Elmendorf 1960:72). In addition,the Yurok world was confined to a narrow ribbon of land coterminous with the Lower Klamath and adjacent coastal lands. Travel beyond was limited by their superstition and the mystery of lands beyond their territorial boundaries (Waterman 1920:186). This essentially meant that trading as a means of materials exchange was derived locally, and was conducted with contiguous neighbors of the Yurok (Sample 1950:3).

These conclusions have been accepted primarily because of the limited ethnographic and archaeological evidence that exists to further explicate the issue (Gould 1968). Pilling (1969, 1970, 1976) believes that trading was much more extensive than the existent documentation suggests. Rather, elaborate exchange partnerships were known to have developed which were highly visible and prestigious (Pilling 1969:12). These partnerships allowed for the exchange of ceremonial ornaments and "nonsecular" partnerships served to fulfill certain economic purposes--i.e., fishing, logging, etc. This latter form seems to have been an important manifestation for food collection, commercial fishing, trapping, and logging which followed the coming of the whiteman (Ibid). Pilling gives the account that such relationships may have extended to aboriginal times (Ibid:12-13).

> *I began to wonder about the antiquity of the partnership pattern, and realized that one of these acorn partners had mentioned that in 1918, these same two women had had a partnership of another type. In my last fortnight of fieldwork, I encountered reference to a similar partnership between two unrelated Yurok men of power about 1857. They had joined forces to kill American troops by stealthy attacks. Then I remembered a feud from the 1880's had told of a similar partnership of three unrelated men, who had joined forces for somewhat different reasons to kill a specific man. Next a third accounting of retaliation by three brothers came to mind, in this case dating from the 1850's or 1860's. Clearly at least some of these partnerships were following a pre-European form.*
> [emphasis added].

These trading partnerships existed among the "great families" and were intertribal as well. For example, such a relationship was verified between the Brooks' house at Requa and a "great house" at Somesbar (in Karok territory). Moreover, balanced reciprocity could have long standing obligations.* Pilling accounted for an event in which a Yurok mother paid for the canoe transportation of a son's friend in 1925, which was repaid in 1968, when the man brought a load of surf fish and was persuaded to sell them back to her at a bargain price (she reminded him of her assistance back in 1925) (Pilling Interview: 1981).

In revealing the general pattern of trade Sample (1950) offered that ecological differences from the coast and inland undoubtedly were a factor in the development of an east-west trading pattern. That is, the Yurok near the Klamath mouth had access to California redwood, from which they developed the canoe. This item became an important factor in travel along the rivers and the coastal areas. Thus, the various tribal groups sought these boats from the Yurok (Sample 1950:5). A value was placed on the item and in exchange, a "purchaser" would pay an amount in other ceremonial ornaments (Kroeber 1925:27).

The coastal Yurok also resided in the only location where ocean surf fish, clams, and other shell fish, and seaweed were available to the river groups. This latter item was an important source of salt as well as food. These commodities were traded with the Yurok's inland neighbors (Davis 1974). That is, the Yurok provided vegetal materials only available within their area, woven straps, surf and shell fish, mussels, seaweed, and dentalia. In return, the Yurok received items of the same nature--items which were not indigeneous to their territory such as foods, skins, acorns, basketry materials, white deerskins, and various decorative shells (1974:45-46). Their main trade item was, of course, the redwood canoe; it was sought by most of the riverine people (Gould 1968:22).

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*The Yurok Law of Ferriage, as described by Kroeber (1925), is an important social aspect on the lower (and wider) stretches of the Klamath. That is, a person cannot be denied ferriage by a boat owner when the request is made. While remuneration is an important consideration, the importance of river crossing is so important that payment can be foregone (1925:35).

The evolution in the use of dentalia as a monetary form, combined with the perceptions of wealth that were integrated into the riverine social structure, undoubtedly influenced aboriginal trade. This permitted the Yurok and/or their upriver neighbors to set a value on dentalium money, and on the items of exchange (Kroeber 1925:27). Moreover, it is quite likely that "balanced reciprocity," involving trading partnerships existed in order to increase accessibility of resources not generally available on the various stretches of the river (Pilling: Interview: 1981).

Following the white incursion and the discovery of gold in northwestern California, new trading and economic opportunities became available to the lower river Yurok. This trade revolved around the transport of equipment for the miners, and supplies for Indians along the coast, and the Klamath River (Gould 1968:17). In discussing Yurok canoes, Powers (1877) reflected their capacity to carry up to five tons of merchandise. Accordingly, an active trade was developed following white settlement by Yurok entrepreneurs, who "[took] many cargoes of fish from the Klamath, shooting the dangerous rapids and surf at the mouth with consummate skill, going boldly to sea in heavy weather and reaching Crescent City, twenty-two miles distant, whence they returned with merchandise" [emphasis added] (1877:48). Gould (1968) further cites that canoes were adapted to provide supplies to miners at Crescent City, the staging area for the Northern California gold fields. Accordingly, these boats were up to 42 feet in length and could carry up to 5 tons of cargo. The Yurok built these boats near the Klamath and they were owned only by the wealthiest men (1968:25). Gould's informant, Florence Shaughnessy, mentioned that Captain Spott had a trading operation, which extended from Crescent City to the Gold Bluffs. Her father (Jimmy Jensaw) operated the boat for Spott, and the voyages were extensive. The operation was last referenced in 1893, and had operated for at least 20 years. The date coincides with the building of the Requa-Crescent City Road, which may have been the reason for its discontinuance (Ibid:22).

4.3.2 Fish In Trade Relations

Fishing with respect to trade relationships is not mentioned in the literature pertaining to the aboriginal period, except as referenced above. Early accountings of euroamerican contact have not been extensive, nor have

they documented the exact relationships that may have occurred with the tribes. It is known, however, that trading did occur between Indian people and the crews of the European and American vessels that first made contact with the tribes. As white exploration and settlement developed, trade became more evident, and chronicles relate the exchange of fish as a trade item. Jedediah Smith's journey, for example, cites the trading that occurred between his party, and the Klamath-Trinity tribes. In Murray's accounting of the journey (1943:54) the following was noted.

> *After traveling over two small points of mountains a distance of about three and one-half miles northwest, they came to the ocean at or near the small lagoon just south of the mouth of Wilson Creek and camped on the flat on the south side of the creek. To those who were familiar with the country about the mouth of the Klamath River thirty-three years ago it may seem strange why Smith, on nearing the mouth of the river where there was a large Indian population, and where plenty of good grass was to be had for their animals on the grassclad mountain slopes facing the ocean, thus lost this opportunity of trading for furs and replenishing the larder, since there was an abundance of salmon, both fresh and smoked, to be had, as it was the season for the spring run of salmon in the Klamath River.* [emphasis added].

In reviewing various accounts of the Smith expedition of 1828, another aspect is evident. The personal hardships of the group were obviously compounded by their lack of understanding of the physical elements of the Klamath-Trinity region. During these occasions, there were ample opportunities to trade, as the tribal people were interested in obtaining items such as knives (Ibid:15). The journal entries reveal a number of occasions where the party obtained fish from the Indians. For example, Smith obtained a few "Lamprey eels and a piece of salmon" on May 25th; on May 26th, the party stopped at a point where the Indians had a "fishing establishment" and Smith "gave them a few beads"(Ibid: 18-19). Of particular interest in these journals was Smith's accounts of June 9th where the party obtained a "few clams and some few dried fish":

> *They were great speculators and never sold their things without dividing them into several small parcels asking more for each of them the whole were worth. They also brought us some blubber not bad tasted but dear as gold dust"* (Ibid:27).

During the several months that the party was in the Klamath-Trinity region, they drew on the knowledge of the Indians for a number of purposes. On several occasions tribal members guided the group to points they were trying to reach (Ibid:18). In others, Indians of the area helped the Smith party by ferrying them across river (Ibid:18). There are also accountings where the party received raspberries and other foods from the tribal groups. These gestures undoubtedly prevented the party from experiencing further hardships than those that they had already experienced.

Trading following white settlement is noted in the preceding section. Powers (1877) noted extensive dried fish being stored at Indian houses along the river. In some cases these stores exceeded a ton of fish (Snyder 1931). Pilling (1981) speculates that when settlement was taking place in the mid 1800s, settlers undoubtedly relied on the Indian for survival. Also, there were certain lean years where salmon did not ascend the river, and in those cases, Indians residing upstream may have obtained dried salmon from those with a more abundant supply (Ibid). This viewpoint, of course, varies from that of Kroeber, who argued that the selling of fish was not well thought-of among the Yurok (Elmendorf 1960:78-79).

As commercial fishing developed on the Klamath River Reservation, the Yurok played an important role in both fishing and in operating the canneries. There were as many as four canneries at Requa at the peak of commercial fishing, which continued from 1877 - 1933 (Snyder 1931). Drift-netting--e.g., the use of gill nets drifting between two boats, became important during this period, although the same method was used less extensively during aboriginal times. Indians were the main fishermen and generally operated in pairs. In later times, Indian fishermen took on white partners, and eventually whitemen operated their own boats. Commercial fishing was discontinued in 1933, with state regulation of the resource (Interview Data).

4.4 World View and Ceremony

4.4.1 Beliefs and Values

To the Yurok, the Klamath River bisects the world which floats upon a large ocean. The earth slowly rises and falls with ". . . gigantic but imperceptible rhythm on the heavily primordial flood" (Waterman 1920:159). Accordingly, the size of the earth makes the undulating movement unnoticeable. Direction is oriented to the river--e.g., upstream and downstream, and cardinal points are meaningless. The entire world, as the Yurok understand it, does not extend beyond a 10-12 day canoe trip upstream, where the river again joins with another sea. Journeys into these regions were viewed with fear and mysticism, which also limited the travel by the Yurok (Ibid). Their earth center was located at *ge'nik* (kenek), which is located below the Klamath-Trinity confluence. It is at this location that *we'sona-me-getol* ("World Maker") fashioned the sky from a fish net. This is the basis for "sky country" (*wo'noiyik*), the place of mythical importance to the Yurok (Ibid:189). More important is the Yurok center of the world which was described by Kroeber (1925:7) as follows:

> *. . .the innermost core of northwestern civilization is more nearly represented by the Yurok than by any other group. Even in a wider view, the center of dispersal or concentration--of this civilization might be described as situated at the confluence of the Trinity and Klamath, from which the three tribes stretch out like the arms of a hugh Y. This spot is Yurok territory. It is occupied by the village of Weitspus, now called Weitchpec, and its suburbs. Either here or at some point in the populous 20 miles of river below must the precise middle of the cultural focus be set, if we are to attempt to draw our perspective to its finest angle.*

The accumulation and maintenance of wealth, was primarily an individual enterprise, embraced by and dependent on these perspectives. While the Yurok had abundant resources many of the restrictions regarding the use of salmon were ritually imposed. This resulted in the distribution of the resource to upriver kindred (Swezey and Heizer 1977:12). The ceremonial assemblage were major functions in this regard. Secondly, the Yurok legal system, which protected individual rights, interceded in the use of the salmonid resource (Kroeber 1925:53-75).

The structure of myths and legends manifests an important element in Yurok culture, which included their perception and interdependence upon their river environment. To the Yurok their occupancy was predated by the mythical supernatural characters (*woge*). These same characters ordered the Yurok world, and left them formulae and rituals that would assist them in maintaining this order. Concepts of good and evil are humanly manifested occurrences, associated in the manner that the Yurok relates to these supernatural factors (Posinsky 1965). Thus, ritual treatment is either intended to maintain world order by maintaining things that are good, to prevent those that are bad, or to "make things right" when they have gone bad (Ibid: 13-16). The site for the Kepel fish dam, expressed this view, as described in Waterman and Kroeber (1938:50-51):

> *. . . [t]he Yurok say that it (the weir) dates back to mythical times, to a period when the myth people, or 'immortals' (wo'ge, as the Yurok call them), were fishing and hunting and celebrating festivals along the Klamath. They relate that these early people tried to erect weirs at various places, but things were not 'right' until they came to Kepel. This 'trial-and-error' method of deciding things is typical of Yurok thought as expressed in myths. The place which was finally found to be 'right' is a wide and shallow one in the river just above a sharp bend.*

The assemblage of ceremonial and religious rites tended to acknowledge the benevolence of the Yurok surroundings as well as to support concepts of individual wealth and prosperity. In *The Handbook of the Indians of California* Kroeber (1925:29) cites the importance that this perspective has on Yurok life.

> *A Yurok myth, which tells of five brothers who made the sky, instituted money and property, and provided for purification from corpse contamination, has them say: 'If human beings own money and valuables they will be pleased and think of them. They will not be vindictive; and they will not kill readily, because they will not wish to pay away what they have and prize.'* [emphasis added].

The belief in evil spirits and witchcraft overshadowed the daily lives of the Yurok (Curtis 1924:28). Through these, every conceivable malady or catastrophe could come about. Illness was generally the consequence of someone's evil desires, requiring the attention of a shaman ("doctor") or formulist (Posinsky 1965). These same beliefs were also attributed to deleterious environmental effects, such as poor salmon production; and the

calendrical cycle of world renewal rites are proferred by the Yurok to "make things right" (Waterman and Kroeber 1938). Floods and earthquakes are consequences of not observing the prescribed rituals. The emphasis on individualism and wealth are interwoven with these beliefs and are manifested by: (1) the compensation of doctors and formulists in the form of fees; (2) fines of retribution for failing to heal an ill person or his eventual death; (3) public displays of wealth during ceremonial rites; and (4) avoidances in the form of taboos to ensure world and social order (Kroeber 1925:35-37, 67-72).

4.4.2 Myths and Legends

Myths and legends have been analyzed by Kroeber and Spott in *Yurok Narratives* (1942); and compiled in the more recent *Yurok Myths* (1976). Sapir (1928) also collected *Yurok Tales*, which reveals the elementary beliefs surrounding the mythical and supernatural heroes of the Yurok. How these relate to the values surrounding the utilization of the fishery resource is investigated in this section. Among the mythical characters important to the Yurok are *Woge*, a spirit race that inhabited the world prior to the coming of man. The "Widower-Across-Ocean" *(Wohpekumeu)*, a mischievous Creator who made the world, caused the salmon to go into the river (Kroeber 1976:267). The monster-slaying deity *(pulekukwerek)*, who made his home in the north *(Pulek)* was also an important mythical character (Kroeber 1976: xxxi-xxxii). Legend also reveals that money (*dentalia*) was brought to the Yurok by *Pelin-tsi·k* ("Personified Dentalium") from *Tsi·k-tsk-ol*, which is in the north. These culture heroes appear repeatedly in Yurok myths. Accordingly, the Yurok came from the northwest and received their riverlands through inheritance. Their decalogue was enforced through their belief in seven devils. Originally, God was an intervenor with the Yurok until they violated these rules (Powers 1877:62).

- *Wohpekumeu*. "Widower-Across-Ocean" made the world and things as they are. He appeared first at Kenek, where he lived until curiosity or "amatory tendencies" led him to his various, and often mischievous adventures (Kroeber 1925:74). The legends state that he liberated salmon for the use of mankind as reflected in the following myth.

Wohpekumeu, because it was he who made the river, went up to see how it ran. He saw many people along it, but all were afraid of him. They did not want him about because whatever woman he saw he took. So he came to the end of the river, to Petskuk. Then he came downstream again. All along the river he saw nobody. They had all run away from him. They did not want to see him because he always desired women. Then he went on across the ocean to Kowetsek. There he saw those who had lived on the river but had gone there because they feared him. They saw him coming. They saw him across the river, and one shouted, "Here he is again.' Wohpekumeu sat down at the river. He thought, 'Why do they fear me? I never do them harm.' He took a stick, set it up in the water, and thought, 'I will make my fishing place here. I will teach them how to catch salmon.' Then his medicine began to talk behind him. He looked back and took it: it was fir needles. He rubbed and crushed them between his hands over the water where he was going to fish, and as the needles fell and touched the water he saw the salmon begin to leap there. (Kroeber:1976:220)

Wohpekemeu's importance is articulated throughout Yurok mythology. It was he who gave the people acorns and instituted birth. His tendencies were not always benevolent and he could be devious or mischievous, as indicated through his amorous pursuits (Kroeber 1925:74).

• *Pulekukwerek*. *Pulekukwerek* (downstream sharply) exists as a monster-riding deity in Yurok mythology. It was he that appeared as an ". . . unconquerable hero, who smoked tobacco but never ate, passed women by for the sweathouse, and by strength and supernatural gifts destroyed monster after monster" (Kroeber 1925:74). Numerous stories of *Pelekukwerek* exist about his efforts to improve fishing by making boats, but they always cracked. In his attempts he invented the wedge, but determined that since redwood would be used for boats, wedges were not to be used. He retired to Pulek, the "far-away land of dentalia and everlasting dances" (Ibid).

• *Woge*. *Woge* are described by Kroeber as the pre-world supernatural humanoids that existed prior to the coming of man to the world. They reluctantly and sadly relinquished their place to man, and either turned into landmarks or departed into the hills and across the sea. The Yurok refer to the *Woge* with compassion and melancholy; and, it is evident that the *Woge* have a revered place in their minds (Kroeber 1976:xxxi). The departure of *Woge* and other mythical beings apparently coincides with the coming of human beings to the world. According to the legends *Woge* relunctantly yielded their land and retreated into the mountains, across the ocean, or turned into landmarks

within Yurok territory (Ibid). Yet there was a sense of spiritual ever presence of these beings among the Yurok. *Woge*, for example, built the first fishweir at Turip, but things "weren't right," and the dam was moved to Kepel (Waterman and Kroeber 1938:50). These beings are often relied upon for the ritual formulae, thus remaining an important part of Yurok cosmology (Gifford and Kroeber 1949).

4.4.3 Ritual Treatment

The mythical beings above are deeply integrated into the world view and ritual cycles of the Yurok. From them, most of the ceremonies, rites, and formulae were derived to maintain or restore order in the world. The communal manifestations are in the calendrical rites of world renewal, by which the Yurok petitioned for the return of the salmon, world cleansing, and good fortune. The ceremonies were not performed to appease any spiritual being, but the consequences for avoidance of a ceremony are floods or earthquakes (Kroeber and Gifford 1949).

The rituals are explained by esoteric and exoteric divisions. The esoteric are performed by a single priest who recited formulae at certain specified spots--at the ceremonial sites--and performed mimetic magic. The formulist abided by a series of abstensions, including avoidance of water, profane acts, and sexual contact. These rituals were also accompanied by smoking (Kroeber 1925:53).

The exoteric aspect is the public part of world renewal, which consists of White Deerskin Dance and the Jump Dance. Both occur in the fall and are accompanied by public displays of personal wealth in the form of ceremonial garb. Much prestige is associated with the person that could outfit a complete ceremony (Pilling 1978:140-141).

Most of the Yurok districts (with the exception of one) had at least one ceremonial site. *Welkwäw*, at the mouth of the Klamath, was the site of the First Salmon Ceremony and a Deerskin Dance; Rekwoi, also at the mouth, had a Jumping Dance. The Deerskin Dance was performed at Pekwan (*pe'kwan*), while both dances were held at Weitspec (*we'its·pʊs*). Turip-erner was the only Yurok district which did not have a ceremonial center. (Waterman 1920: 200).

• *First Salmon Ceremonies*. The spring run of salmon begins about April and runs through July of the year (Kroeber and Barrett 1960:5). Prior to the season, the Yurok observed the river for the first fish to enter its course. No person was allowed to eat the salmon that first appeared until after the First Salmon Ceremony had been conducted at Welkwaw which is near the mouth of the river. It is reported that convulsions and death could occur for breaking these abstention rules (Waterman and Kroeber 1938:52).

The basis of the ritual was the belief that the ascension of the salmon on the river could be blocked through witchcraft or magic, and the performance of the ceremony effectively removed these obstructions, thus permitting the salmon to proceed upstream (Waterman 1920:228). Interestingly, these important spirits represented some environmental "mystery" to the Yurok---that is, the place that a deity either originated from or retired to, represented some mythological concept. *Woge* and *Wohpekumeu* generally retired across the ocean. This place across the sea was where *Woge* went to find the "salmon house", *Kowetsek*, to free the salmon and to bring back the first salmon rite (Elmendorf 1960:60). The ritual was observed by a formulist, who ceremonially speared the first salmon. This, in turn, was taken to a sweathouse where it was cooked and eaten by the formulist's assistant (Kroeber and Gifford 1949). This ceremony was not accompanied by dancing, but by observance of the rites, abstentions, and the recitations of prescribed formulae. As with all Yurok rites, the first salmon rites are accompanied by bathing in the sweathouse. The ceremony culminates in the ritual spearing, preparation and eating of the "first salmon" (Waterman and Kroeber 1938:52). Completion of the ceremony satisfactorily removed the abstention requirement, and signalled the time that the fish dam ceremonies could begin (Waterman and Kroeber 1938). The ceremony at Welkwaw was also observed among the Karok, Hupa, and Shasta, who would not begin their fish harvesting until word was received that the ceremony was complete (Interview Data).

• *Kepel Fish Dam*. The Kepel Fish Dam Dance has been called by Kroeber and Gifford the single most important communal undertaking by the Yurok (1949:5-6). The rituals surrounding the dam took approximately 60 days to complete, although the actual construction itself did not last for more than 10 days. Rather, the observance of strict religious rituals

surrounded dam construction. As cited above, these ceremonies could begin only after the First Salmon Ceremony had been performed at Welkwaw.

The construction was supervised by a formulist (*Lo*) and several helpers who ensured that the dam would follow the prescribed formulae. The chief of the dam is usually from Meta, having gained an office because his medicine passed to him through inheritance. His position was always inherited. In turn, he was assisted by ceremonial helpers from Notskum, Mūrak, Rur, Wasek, and Waase (Waterman and Kroeber 1938:15).

According to Yurok legend, the dam dates back to mythical times when *Woge* inhabited the earth. They had erected weirs at various locations along the river, but could not find the exact right spot until they came to *Kepe-sa'-a* (Ibid:50). A prescribed sequence of ritual events followed which included: calling downriver, hiding and formulae, cutting of materials, construction, Deerskin Dance at *Sa'a;* and Jumping Dance at Meritswòu. Throughout the period observances of various restrictions took place as well as ceremonies as materials were collected (Ibid:78). A calendar of approximately 60 days was prescribed and it was of utmost importance that the actual construction was completed in ten days (Ibid: 56). During this time the course of the river was not blocked. This effectively permitted the salmon continued ascension upstream to spawning areas. Moreover, the construction did not begin until the early summer, following a sequence of prescribed observances and rituals, culminating in the actual construction of the weir (Waterman and Kroeber 1938:52-54). The fish weir was actually developed to enhance the overall production effort and yield results. Swezey and Heizer propose that while the resource was abundant, it was seasonally variable (1977:11). The weir, when in operation, blocked the river to the ascending salmon, and concentrated them so that they could be taken by dip netting. The weir was engineered in 10 segments, each with an opening trap, allowing for the escapement of the salmon when fishing was not being done. The dam was operated for exactly 10 days, after which the structure was removed. Moreover, the traps were opened when the dam was not in use (Ibid).

4.5 Persistence and Change

Prior to 1850, Yurok contact with euroamericans was minor. These consisted primarily of contacts by the coastal Yurok with a few voyagers or fur traders (Heizer and Mills 1952). The first significant contact was with Jedediah Smith in 1828, during his expedition through the Klamath-Trinity region (Chase 1958). After the Gregg and Reading gold discoveries on the river in 1849, the region was inundated by miners and settlers. This was followed by a period of unrest and warfare, in which Yurok life was severely disrupted (Bearss 1981). These disruptions were the result of a combination of factors, including attempts of California to achieve statehood; the establishment of Indian reservations and the subsequent removal of the tribes to these lands; disruption of food production; illness and disease, and warfare and hostilities committed against the tribes (Ibid). Many of these events are discussed in Chapter 2, above, and are referenced only as required within this section.

In the federal government's attempts to establish reservations in the region, a number of Indian people in Northwestern California were uprooted and moved to different places--i.e., the Hoopa Valley, Fort Humboldt and Smith River reservations. Most of the Yurok, however, remained in their aboriginal lands throughout the reservation establishment of 1850-1880. The establishment of a permanent Klamath River Reservation emerged in a number of governmental proposals, and on November 12, 1855, President Pierce signed the Executive Order establishing the reservation (Bearss 1981:68).

The effects of white settlement were most profound near the Klamath mouth. Settlers often took possession of land where Indians had traditionally settled. These led to outbreaks of violence as antagonisms resulted between the two groups. Following President Grant's reaffirmation of the reservation in 1876, the military removed white "squatters" from the reservation lands. The military post at Requa (near the Yurok village of Rekwoi) was established for this purpose (Bearss 1981:122, 142). The "Hoopa Extension" was added to connect the Klamath Reservation to the Hoopa Valley by the Act of October 16, 1891 (Ibid:214). Following this, the Act of June 17, 1892, allowed for Indian allotments with excess lands disposed of through public sale (Ibid:217).

The exercise of trade partnerships continued until the present. Pilling's field work (1969) revealed that the laws of ownership still remained effective. Moreover, balanced reciprocity had not lost its importance and still held an important role among the Yurok. Pilling also reports that these relationships were extremely important in lean years when salmon could not get past the Klamath mouth. Because salmon were less abundant and available to upriver people at these times, visiting and trading became an important mechanism through which the resources could be distributed.

4.5.1 Territories and Populations

Yurok land has been defined in the Executive Orders of 1856 as a "strip of territory commencing at the Pacific Ocean and extending 1 mile in width on each side of the Klamath River, for a distance of 20 miles." There was originally a 25,000 acre limitation in the Order, to be removed from the upper territorial limit once a survey had been completed (Bearss 1981:68). This was changed when the Act of October 16, 1891, granted the Hoopa Extension (Ibid:217). The original land area has subsequently changed through allotments and land sales. The lands did, however, approximate the original aboriginal limits of the Yurok.

Habitat restrictions followed white settlement, as cattle were introduced into the area. These were not liked by the Yurok and there were fears that they would destroy the acorn groves (Bearss 1981:141). Log and board cabins replaced the traditional plank houses, thus diminishing the reliance on conifers. The fishery was affected especially during the early mining periods (Ibid:131-137). Later in the twentieth century the fishery was affected by logging, mining and reduced water flows because of upriver dams (Rankel 1980:1-3, 79).

4.5.2 Fishery Resource

Restricted use of habitat to the Yurok became evident during and following white contact. Upriver Yurok at first were influenced somewhat less. However, white population pressure and a diminished salmon resource

near the turn of the 20th century had essentially the same effects. The establishment of the port towns of Klamath City and Trinidad also limited the availability of resources by delimiting the natural areas that were available. Following the initial stages of contact, aboriginal concepts of fishing changed, as evidenced by the flourishing commercial salmon industry which developed with the establishment of a saltery and the canneries late in the 1880s. A. Bomhoff, through an agreement with the Yurok and approval of the Indian Bureau, introduced the commercial salmon industry locally at Requa (Roberts 1934).

With reservation establishment, the right to fish was not diminished and was always considered to belong to the Yurok. This was reflected in the report of Lt. George S. Wilson of the 12th U.S. Infantry following his reconnaissance of 1875. He related that serious trouble could occur "if the whites continued to trespass on the Yurok's fishing rights at the mouth of the Klamath" (Bearss 1981 :141). Indeed, this did occur sometime later when R.D. Hume attempted to establish a barge at the Klamath mouth for the purpose of gill netting salmon. Reportedly, Captain Spott knocked one of Hume's men down with a rock following one such confrontation (Ibid: 165-166). When Baumhoff established his cannery in 1877, he negotiated an agreement with the Yurok. This agreement was approved by the Indian Bureau before the terms actually commenced (Roberts 1934). Pilling maintains that part of the agreement with the Yurok included a stipulation that certain parts of the salmon that might be discarded in a canning operation were to be given to the Indians. One of these parts was the head, as salmon cheeks were considered a delicacy by the Yurok (*California vs. Eberhardt, Appeal* 1977:58).

Adversities from agriculture and technological developments occurring later in the 20th century have affected the use of the fishery resource. Demands for irrigation and regulated flowage from the Iron Gate Dam, forestry, and mining reportedly have caused siltation of the salmon spawning beds on the Klamath (Interview data 1981). This problem combined with the drought experienced in the last several years and offshore fishing have detracted from the stocking of salmon for adequate reproduction and propagation (Rankel 1980:248).

4.5.3 Technology and Fish Production

The factors identified above, for the most part, affected Yurok technology and ability to maximize the use of the salmon resource as well. The most serious effect, however, came with impositions against the building of weirs. Reportedly, the last use of the Kepel fish dam was probably in the early 1930s. Indian fishing rights are still exercised on the river, presumably at old family-owned fishing spots. The question of how these rights are to be exercised is a major controversial issue in Northwestern California which has made its way into both Federal and State courts (e.g., *California v. Eberhardts; Arnett v. Mattz; Arnett v. Five Gill Nets)*. One way that decisions on some of these controversies have been resolved is totally contrary to Yurok beliefs or restrictions. For example, women in traditional Yurok society were forbidden to exercise their rights at a fishing spot, or to be on a weir. Regulations now require that only an Indian holding a permit can exercise a fishing right. The interpretation of this has been so narrow that non-Indian husbands cannot help their wives; and sons have been arrested for helping fathers to remove or replace nets.

4.5.4 Ceremonial Decline and Revitalization

The ceremonial cycle of the Yurok perhaps has been most severely affected. The First Salmon Ceremony at Welkwaw has not been practiced in this century, and the Kepel Fish Dam Dance ceased in the earlier part of this century (Interview data 1981). Other dances are being revitalized, such as the White Deerskin Dance and Jumping Dance, both important to the Yurok as world renewal rites. However, certain stretches of the river no longer have formulists to perform the rituals and people in these areas must rely on visiting formulists from Hoopa Valley Reservation. The problem is severe at places such as Requa, and a dance has not been held for some time, due to the high payments that are now demanded (Interview data 1981).

5.2 Tribal Ecology and Food Quest

Inhabiting one of the most complex geographical areas in North America, the Karok benefitted from great diversity in flora and fauna. The number of species supported by the Klamath Mountain province is reported to be among the highest of any comparably sized region on the continent (Jepson 1963, cited in Chartkoff and Chartkoff 1975:174).

The two most abundant and important species in Karok livelihood were the king salmon (*Oncorhynchus tschawytscha*) and tanbark oak (*Lithocarpus densiflora*). To the Karok, salmon and acorn soup were "the best food," *pa'avahayêshiip* (Harrington 1932a:5). To that category might be added--by some informants--venison, principally from the fairly abundant Columbia black-tailed deer (*Odocoileus hemionis*).

Other foods of secondary importance or preference included silver salmon (*O.kisutch*), steelhead trout (*Salmo gairdnerii*), sturgeon (*Acipenser*, 2 species), Pacific lamprey eels (*Entosphenus trideotatus*), Roosevelt elk (*Crevus canadensis roosevelti*), black bear (*Eurarctos americanus*), hares (several species), sugar pine nuts (*Pinus lambertiana*), tiger lily bulbs (*Lilium pardalinum*), and acorns from the Oregon, Deer, Maul, and black oak (all members of the *Quercus* species).

Additional nutritional variety and insurance were provided by smaller fishes (suckers, minnows, and sculpins), various forest birds and rodents, and wild seeds, bulbs, roots, greens, nuts, and berries. In their ethnobotany survey, Schenk and Gifford (1952) describe 239 species utilized by the Karok. Of these, at least 60 were identified as food plants, including rye grass, wild oats, grass seeds (*Bromus nordeaceus*), soap plant bulbs, hazel nuts, squaw root, wild onion, raspberries, choke-cherries, huckleberries, wild peas, winter hemp seeds, madrone berries, and straggly gooseberries. Half a dozen food plants also served as medicines for a variety of ailments. Thirty other species were described as medicines only. The domestication and use of native tobacco (*Nicotiana bigelovii*) in daily life, ceremonies, and curing have been documented extensively by Harrington (1932a). "Animals never eaten included the dog, coyote, wolf, fox, wildcat, gopher, mole, bat, eagle, hawk, vulture, crow, raven, owl, meadowlark, bluejay, snake, lizard, frog, grasshopper, and caterpillar. There was a taboo against eating bear meat and fresh salmon together" (Bright 1978: 182).

Karok livelihood was linked directly to the seasonal availability of fish, game, and wild plant crops. Acorns, for instance, ripened and had to be harvested during a several-week period around October. Salmon ascended the Klamath between late March and November, generally in two major waves in spring and midsummer. The critical period for eels was early spring. Few species could be hunted or gathered during the winter. The drying of salmon, more than any other food-producing technique, made it possible for the Karok, unlike many hunting-and-gathering societies elsewhere, to overcome the seasonal vagaries of food availability. Properly preserved salmon could be stored for a year or more, and, combined with acorn meal, it normally sustained the population through the difficult winter months.

While riverine fishermen generally enjoyed a higher level of subsistence security than other nonfarming groups, they still faced periodic privation. Karok country was subject to major fluctuations in precipitation--from violent flooding to searing drought--and other factors affected annual biotic cycles. Salmon runs did not always occur, or were poor; acorn crops sometimes failed. During these times, villagers no doubt sought foods that were normally of secondary importance. Village sites were semipermanent at best and shifted with the changing eddies, channels, and sandbars. Many consecutively good seasons were occasionally followed by famine (Beals and Hester 1974: 1,22).

5.2.1 Fishery Resources and Their Importance

Karok livelihood and welfare revolved around the availability of fresh and smoke-dried fish--principally salmon--throughout the year. The following aquatic species--more or less in decreasing order of abundance and importance--were utilized:

Primary

Chinook (King) Salmon (*Oncorhynchus tschawytscha*)--spring run
Chinook (King) Salmon (*Oncorhynchus tschawytscha*)--summer/fall run

Secondary

Coho (Silver) Salmon (*O.kisutch*)--fall run
Pacific Lamprey Eel (*Entosphenus tridentatus*)--early spring run
Steelhead Trout (*Salmo gairdneri*)--fall run
Sturgeon (*Acipenser transmontanus*; "white")--spring and summer

Tertiary

Sturgeon (*Acipenser medirostris*; "green")--summer
Surf fish (*Spirinchus starksi; Allosmorus attenuatus*)--dried, obtained in trade with coastal people
Sockeye Salmon (*O.nerka*)--summer; rare
Humpback Salmon (*O.gorbuscha*)--summer; rare
Chum Salmon (*O.keta*)--summer; rare
Suckers (*Catostomus rimiculus; C.luxatus*)
Sculpins (*Cottus klamathensis*)
Minnows
Sticklebacks

Fish later introduced into the Klamath River by whites include the brook trout, carp, catfish, bullheads, black and striped bass, sunfish, crappie, shad, and American eel. Their distribution and numbers along the middle Klamath are unclear, but their economic importance to the Karok has always been negligible (Hewes 1942:108; Kroeber and Barrett 1960:5).

The fish most important to the Karok are anadromous; they are born in the river drainage, migrate to sea to mature, and return several years later to the Klamath and its tributaries to spawn. The seasonal timing of their return and their success in reproduction is conditioned by a number of critical factors, including water level and temperature, presence of barriers across stream beds, and both water oxygen content and stream bottom characteristics at the spawning beds.

Adult Chinook salmon ascend the Klamath to spawn between late March and late November. While Chinook were, until recently, always present during this 7-month period, they typically came in two major waves in the spring and late summer. These periods were marked by both ceremony and intense fishing activity. Unlike those of many other major rivers, environmental conditions along the Klamath favored a run of Chinook in late March/early April. Sexually immature and lacking breeding colors, these early arrivals at one time appeared in considerable numbers along the Klamath and main tributaries where they matured before spawning in late fall. Arriving in the Happy Camp area somewhat later (May/June), they averaged about 11 pounds and were considered tastier than the older Chinook that ascended later in the summer. Conditions along the Salmon River apparently did not favor a spring migration up that tributary (Snyder 1931:18-31; Kroeber and Barrett 1960:5; Van Kirk n.d.:4-5).

The summer/fall run of older and generally larger (up to 50 pounds or more) Chinook began on the middle Klamath in late July, peaked in late August, and tapered off through September and October. Silver salmon made their appearance and peaked in September. Somewhat smaller than Chinook, they and steelhead trout, which appeared about the same time and lasted through the fall, sought headwaters and smaller tributaries for spawning. Thus, their distribution overlapped but did not duplicate that of Chinook. Sturgeon (up to six feet in length) spawned in the spring. Of the two species, the "white" sturgeon was much more common than the "green." Both forms were effectively stopped in their migration by Ike's Falls, downriver from Somesbar. Lamprey eels, a popular and usually abundant source of food, usually appeared and were caught in greatest numbers in early spring prior to the spring Chinook run. Sockeye, Humpback, and Chum salmon--important species elsewhere in the northwest--occasionally found their way into the Klamath. They were not numerous enough to have been economically important, and they were not perceptually or linguistically differentiated by the Karok (Snyder 1931:16, 18, 31; Kroeber and Barrett 1960:5; VanKirk n.d.:4-5).

The importance of salmon and other aquatic resources in Karok culture can be assessed in several ways. The elaboration of fishing technology (e.g., the numerous components involved in the construction of weirs, nets, and harpoons) compared to the simpler hunting and plant gathering tool kits certainly is one indication (Chartkoff and Chartkoff 1975:174). Linguistic diversification also reflects the importance of fishing and fish products in daily life (Bright 1981:personal communication). The religious importance of salmon in particular has been noted by virtually all observers (see especially Kroeber and Gifford 1949). In terms of man-hours and calories expended, overall communal involvement, and nutritional contribution, fishing clearly was the dominant subsistence activity, although these variables have never been measured systematically.

The clearest demonstration of the primacy of salmon and other fish as a determinant of Karok population and settlement is found in the studies of Baumhoff (1963) and Chartkoff and Chartkoff (1975). Both validate the strong relationship between fish resources, magnitude of population, and distribution of settlements along the river.

Baumhoff's thesis and methodology have been discussed earlier in this study. Essentially, he devises precontact resource indices for salmon, acorns, and game, and correlates these figures with estimated population size and density for northwestern and other California societies. His index for salmon among the Karok is based on the assumption that only 10 of the 78 river miles held by the Karok were primary in yield because Karok settlements were clustered at and below the mouth of the Salmon River. His measure of acorn resources is based on areal estimates of yield derived from standardized vegetation maps (1963:175-6; 180).

Baumhoff subjects his tribal resource values to statistical analysis and finds that although

> . . . *population seems to have a random scatter when plotted against acorn or game resources, it is a remarkably stable reflection of fish resources . . . thus the limiting factor on population in the Lower Klamath culture province is the fish resource* (1963:185).

Chartkoff and Chartkoff's Karok settlement pattern study (1975) generally supports Baumhoff's general hypothesis, while suggesting some refinements and qualifications. Their analysis of 160 prehistoric habitation sites leads to the following conclusions:

> (1) Fish resources probably were more abundant than Baumhoff's index indicates; conversely, wild plant and animal foods perhaps were less abundant.
>
> (2) Population density and distribution along the middle Klamath were influenced to a major extent by fish resources and topography.
>
> (3) Physiographic features (i.e., steep slopes and scarcity of flat land) asserted a negative constraint on selection of living sites.
>
> (4) Favorable fishing spots (eddies, falls, rapids, confluences of tributaries, etc.) exerted a positive influence on the distribution of population and settlements.
>
> (5) Lower population density (less than 1/4 of the total population) in the upstream half of Karok territory reflects a linear relationship between fish supply and population distribution as one moves upstream.
>
> (6) All of Karok territory must be surveyed before fish resources can be verified as the sole biotic determinant of Karok population and distribution.
>
> (7) Comparisons of the Karok with other societies whose primary food staple was anadromous fish should generate a "series of general propositions accounting for settlement patterns among people dependent upon anadromous fish" (178).

5.2.2 Ownership of Sites and Resources

While a half million or more salmon once migrated into the Klamath drainage each year, they were not caught and consumed in equal numbers by all tribes, villages, families, and individuals. Ecological, biological, and social determinants guaranteed differential access to fish and fish products.

As one proceeds upriver beyond 30 or so miles from its mouth, the total number of salmon and other anadromous species declines as tributaries are ascended and spawning beds reached. Since they stop feeding once they leave the ocean and biochemically adjust to fresh water, these species gradually diminish in weight, firmness, and nutritional value the farther they are upstream, and the longer they remain in the water. Once they spawn, salmon particularly are spent and die. Upstream river conditions, too, are generally less favorable for mass harvesting techniques (weirs, seining, set nets, etc.). The overall effect of this unequal distribution of fish on population size and density from the coast to the inland mountains has been demonstrated by Baumhoff (1963) and Chartkoff and Chartkoff (1975).

Thus, while salmon were relatively abundant and their predictable concentration assured stability and security most years, their quantity and quality varied from locality to locality throughout the Klamath region. As a consequence, the production and distribution of salmon resources were governed, as were other commodities, by an elaborate economic code based (like the legal code) on clearly defined standards for individual enterprise, private ownership of property, and payment for goods and services. As in other areas of Karok culture, published details concerning rights, exchange, and trade patterns are few. Many reasonable inferences can be made, however, from the literature on Hupa and Yurok customs.

Fish were but one group of resources subject to controlled management through private ownership of productive subsistence sites. Favored acorn plots also were owned by "individuals and families" (Harrington 1932a:4). Since acorns and salmon were the most important foods, right to these items were stricter and more pervasive. Other types of resource sites, however, no doubt were privately owned as they were among the Hupa and Yurok. The most comprehensive breakdown of ownership patterns has been compiled by Pilling for the Yurok (1978:147). His research (1967-69) along with that of Waterman (1920) and Spott and Kroeber (1942) has revealed several types of

food (salmon, eels, acorns, game, whales, sea lions, mussels, wild tubers, grass seeds, and water lily seeds) subject to exclusive ownership at specific sites by villages (singly or jointly), house groups, single "houses" or families, individuals, and one or more individuals on a fractional basis.

Private ownership of subsistence sites carried the privilege of controlling the products and the right to sell, rent, loan, and give away the property. It also entailed responsibility and liability for damages or injuries suffered by others while on the premises (Goldschmidt 1951:507-08). The distinction between "individual" and "family" ownership is not in all cases clear. Summarizing Hupa patterns, Beals and Hester (1974, 1:25-6) state that hunting and fishing spots more clearly belonged to individuals, while plant gathering spots were more familial. Women as well as men could inherit or otherwise gain title to fishing spots, although they themselves could not fish there.

With respect to fishing rights specifically in Northwest California, Kroeber and Barrett (1960:3) find an

> *. . . elaborate system of rights assuming the force of law. The best places . . . were privately owned, sometimes by single individuals, sometimes jointly by several . . . personal property of real and recognized value . . . could be sold or given away . . . and could be passed on by inheritance . . . a place or right was worth from one to three strings of dentalia.*

The ownership by one family or individual of several sites widely separated throughout a region was noted specifically by Waterman for the Yurok (1920:225) but presumably occurred among the Hupa and Karok as well. Such accumulations of scattered holdings resulted from several possible transfer mechanisms, including intervillage and intertribal marriage, inheritance, payment for wives, weregild, compensation for injury or curing, gambling, and outright purchase.

Among the Karok, suitable sites for set, lift, and dip netting were always privately owned, particularly when the resource involved was salmon or eels. It is not known exactly what kind of ownership rules applied to dam sites and the weirs built there. They presumably were held and maintained collectively by specified groups of villages. Gifford's field notes (1939-40) afford some insight into the character of fishery rights, at

least as expressed in more recent times. An informant told him of a half-mile stretch of river called *pawat andjsununam* meaning "where they start fishing for Chinook salmon," where only owners could fish. Owning land along that stretch did not confer rights to fish, but fishermen would give away fish if the catch were sufficiently large. In 1940, a man named Happy Jack sold a share in his fishery at Katimin to "Emily" for six dollars. She was then entitled to use that spot every third night and day from afternoon to afternoon. Since women were not allowed to fish, she could have a male relative fish for her (Kroeber and Barrett 1960:3-4). Two Karok interviewed in 1981 confirmed that owned sites could be sold or rented.

At Ishi Pishi Falls there is one large, flat rock that affords a commanding view and access to several productive pools. Ownership of that site and several others nearby apparently was divided among a number of "high" families living in the area. Each held rights to fish at a specific location on a specific day, from "the time the sun came halfway across the big rock . . . until the next day when the sun again crossed the big rock." Fish caught were divided equally among shareholders, while any surplus was distributed among people waiting at the "big rock." At least ten families at any given time had ownership rights at the Falls (Davis 1971:6-7).

Fractionalization of ownership rights among two or more owners of favorable fishing sites and oak groves is another indication of the importance of salmon and acorns in Karok life. The possible variations in "dividing up" fishing sites and fishing were numerous. Rotating rights of access could be determined by specified times (hours in a day, days in a week, day/night, etc.) or agreed upon quotas per turn. Some rights were perpetual, others could terminate with a person's death, still others might be temporary. Subordinate shareholders apparently were not limited to certain species or fish sizes (Pilling, in *California vs. Eberhardt, Appeal* 1977).

Pilling also has elaborated on patterns of food consumption and exchange among the Yurok elite (1978:141). His generalizations apply to the Karok as well (Interview 1981). Comparing their distinctive speech, clothing, possessions, social influences, and other traits to those of European aristocracy, he adds that their diet normally included the choicest foods, including gourmet cuts and parts, such as salmon cheeks. (Hewes noted that the frontal pectoral fins of the sturgeon were

reserved for Karok of wealth and rank and that these morsels were taboo for others (Kroeber and Barrett 1960:107).) Such items were passed around readily among the higher families, whose fortunes were commonly linked by intermarriage and reciprocal trading partnerships between the male heads of household. These interfamily bonds, which buffered the wealthier people from periodic famines, operated on an intertribal level as well.

Owners of fishing sites and platforms controlled but did not ordinarily monopolize either the fishing activity or resources captured there. Nonowners might "borrow" a site for a specified length of time with the owner's permission. Sites could also be rented in exchange for "money" or, more likely, a part of the catch (Bright 1978:181). Although it is not described in the literature, balanced reciprocity undoubtedly entered into the utilization of owned sites. In exchange for favors, goods, and services at one time, use of one's site would be granted at another. Reference has already been made to the distribution of surplus fish among nonowners. Generosity was a prized virtue, and undoubtedly during good times especially there was much generalized reciprocity and sharing of food with those who needed it.

Most Karok interviewed for this report stress the tradition of sharing salmon and other foods with everyone in the group. "No one went without" is a common theme in their recollections. In a similar vein, the Hupa author Jack Norton has stated that positions of wealth and honor among the Hupa, Yurok, and Karok were "not gained at the expense of others. Individual exploitation was not tolerated within the communal system of values" (1979:9). Public feasts following ceremonials certainly functioned to decentralize centralized and/or exclusive harvesting efforts, thus "facilitating distribution of fish resources to all members of the community" (Swezey and Heizer 1977:23). As noted by Bright (1978:181, 186), however, there were circumstances, perhaps extreme, when money or other valuables might be used to purchase food, or when a poor person would commit himself to voluntary servitude in exchange for food. In the early 1930s, Harrington collected the following statement from one of his older Karok-speaking informants. References to the "living house" and shell money payment imply quite strongly that the custom described was precontact in origin.

When a person has lots of food, when he knows that he can not use it all up, then he sells some; they buy it from him. It is the woman that they buy food from. They tell one: "No; buy it from the woman in the living house." She always counts how many storage baskets of food there is. Sometimes the man does not know how much food he has . . . But the man is the one that sells tobacco . . . He measures the tobacco with a basket hat. They pay him a . . . dentalium for a hat full of tobacco. . . The woman is the one that they buy the food from, but the money she only touches; she gives it to her husband. The man takes care of money. . . (Harrington 1932a:133).

5.2.3 Fishing Technology

Traditional Karok fishing techniques, like those of other Northwestern California societies, were characterized by their efficiency, specialization, and "endless local variations, for which geographical conditions are chiefly responsible" (Hewes 1942:105). The Klamath River, one of the wildest on the west coast, courses swiftly through precipitous terrain marked by steep and narrow gorges. These features coupled with annual flooding of varying magnitude led to constant changes in the configuration of channels, shallows, rapids, falls, eddies, riffles, and tributary confluences. Specific conditions called for specific methods and tools. These in turn had social correlates. Thus, for example, favorable "permanent" eddies generally were privately owned by wealthier individuals and families, who constructed platforms over these spots and captured salmon and eels with large lifting nets and dip nets. Shallows, on the other hand, which generally shifted more quickly, were not privately owned and the fish there were accessible to anyone, rich or poor, with a harpoon.

Most details concerning aboriginal Karok fishing have been compiled by Kroeber and Barrett in their 1960 survey of *Fishing Among the Indians of Northwestern California*. Most of the information presented in this section is drawn from this work, which should be consulted for more detailed discussions of specific points.

Over 70 fishing "traits" are identified, discussed, and plotted on tribal maps by Kroeber and Barrett. The most important traits distinguishing the Karok fishery include large, communally constructed weirs, fishing platforms, A-frame lifting nets, plunge nets, set nets, harpoons, basketry trough traps, smoke drying of fish and eels, and "first salmon" rites. Traits found elsewhere in California but absent among the Karok include

moveable weirs, hoop nets, cylindrical and box basketry traps, fish spears, and fish poisons. Strict division of labor governed most fishing activities. Only men fished, and women under most circumstances were prohibited (by religious taboos) from visiting fishing spots, walking on platforms and weirs, and otherwise being present during actual fishing. Women normally were responsible for cleaning, drying, storing, and cooking fish products (Kroeber and Barrett 1960:95).

• *Weirs*. The construction of large weirs blocking the entire river was perhaps the most notable feature of Northwest California fisheries. Weirs were built by several tribal groups living along the Klamath, Trinity, Salmon, Smith, Mad, Eel, Bear, and Mattole Rivers, and Redwood Creek.

Information about Karok weirs and their locations is much sketchier than that for Yurok and Hupa weirs, which were still being built well into the 1900s. Early interference from whites forced the Karok, on the other hand, to stop erecting their weirs well before 1900. Two of Gifford's informants around 1940 described from memory six weir locations, all within a 25-mile stretch of river between Redcap and Irving Creeks (Map 4). Four were built across the Klamath; two on the Salmon near its confluence with the Klamath. The stream at these locations was presumably shallow and uniform with a gravel bottom deep enough for driving support posts. Only one weir was built in any given year at one of the following described locations: (1) above the mouth of Irving Creek, about 10 miles upriver from the mouth of the Salmon River; (2) on the lower Salmon River, below the bridge at Somesbar; (3) at Oak Bottom Flat, about a mile above Somesbar; (4) at Orleans (Panamnik), about 7 miles below the Salmon River; (5) at Ullathorn Creek and Bar (Afsuf), three miles below Orleans; and (6) at the village site of Wupam (Red Cap), approximately 7 miles below Orleans. In addition to these sites, Karok legend tells of ancient weirs at Yutimin (Ike's Falls) and Katimin (Ishi Pishi Falls), where actual weirs would have been extremely difficult to build (Kroeber and Barrett 1960:10, 20). Mythological reference is also made to a Coyote Creek (Wilder Gulch) where coyote had his fish dam at its mouth (Bright 1957:184-5).

Karok weirs were virtually identical in design and construction to those built by the Yurok and Hupa (See these Chapters for descriptions and illustrations.). The only published description of an observed weir is that by George Gibbs, who accompanied Redick McKee's military party through Karok country in 1851. In October of that year, Gibbs saw a weir near Panamnik (Orleans) and the mouth of Camp Creek. It was similar to the one observed at Yurok Heyom on the Lower Klamath and was "in every respect its equal" (Kroeber and Barrett 1960:20):

> *It crossed the entire river, here about seventy-five yards wide, elbowing upstream in the deepest part. It was built by first driving stout posts into the bed of the river, at a distance of some two feet apart, having a moderate slope, and supported from below, at intervals of ten or twelve feet, by two braces; the one coming to the surface of the water, the other reaching to the string pieces. These last were heavy spars, about thirty feet in length, and were secured to each post by withes. The whole dam was faced with twigs, carefully peeled, and placed so close together as to prevent the fish from passing up. The top, at this stage of the water, was two or three feet above the surface. The labor of constructing this work must, with the few and insufficient tools of the Indians, have been immense. Slight scaffolds were built out below it, from which the fish are taken in scoop-nets; they also employ drag-nets, or spear them, the spear having the barb movable, and fastened to the shaft with a string, in order to afford the salmon play* (Heizer 1972:48).

According to Gifford, considerable labor was involved in building Karok weirs, which when completed were wide enough to form a walkway for the fishermen. Woven matting made from lashed poles and withes was strung between the vertical stakes to form the barrier blocking the passage of salmon. When the weir was not in actual use, some of these mats were removed to allow fish to escape upstream. From the walkway and platform extensions, fishermen used landing nets on the downstream side. Harpoons probably were also used from these vantage points (Kroeber and Barrett 1960:20-21).

Around 1940, Hewes collected a description of procedures for building a straight weir across the river. Such a weir might reach 200 feet in length and require two weeks for completion. It was a communal effort not attended by any special ceremony or formality. Men did not fish from the walkway but from canoes moored to the crossed supports of the weir. A winter's supply for hundreds of people was reportedly caught during the several weeks of the weir's operation (Kroeber and Barrett 1960:21).

Gifford's notes state that weir construction at two sites was marked by some ceremony but that such procedures were not as elaborate as those performed by the Yurok at Kepel:

> *The weir at Afsuf was made only after completion of the Amaikiara Jumping Dance on a ridge near Orleans in the month of July, the formulist for the weir remaining for four days in the sweathouse at Panamnik. If the weir was built at Wupam (Red Cap), the formulist stayed in the sweathouse there for five days. These two dams were said to be rather ceremonial, and differed therein from those at other points in Karok territory, which were built without formality* (Kroeber and Barrett 1960:20).

The various accounts of Karok weirs do not specify how many Karok settlements or people were involved in their construction and operation, the manner in which fish were distributed to participants, or how long the weirs were used during the summer and fall salmon runs. Presumably Karok villagers from the upstream half of Karok territory (where apparently no weirs were built) benefitted directly or indirectly from weir building, but in what way cannot be stated. Hewes states that weirs were left standing until washed away by high water in early winter, although they must have been partially dismantled or breached by the swift current before the run was over (Kroeber and Barrett 1960:21). An implication of early abandonment of weir building and the relative lack of information about them is that weirs were not as useful or important to the Karok as they were to the Yurok and Hupa. Bright, for instance, does not even mention weirs in his summary discussion of Karok subsistence, technology, and structures (1978: 181-4).

Nets. The Karok made a variety of nets for a variety of tasks and conditions. The preparation of net cord and the weaving and repairing of nets were done by men, usually in the sweathouse at night or during rainy days. String for nets, bags, snares, and fasteners was made almost exclusively from the leaf fibers of *Iris macrosiphon*. (Other materials from which rough cordage for netting could be made included grapevine, strips of willow bark, hazel withes, and sinew.) Women extracted the fine, silky fibers from Iris leaves and men then rolled and twisted them into strong, multiple

cord. Using measured mesh gauges of elk antler or bone and the weaver's knot (also known as the sheet bend or hawser bend), men wove nets and bags of varying dimensions, shapes, and mesh sizes depending on their intended use. When completed, nets could be expected to provide "five or six years of active service" (Kroeber and Barrett 1960:57-8).

The following types of nets were used by the Karok:

Conical

- Lifting Net
- Plunge (Thrusting Net)
- Hoop Dip Net

Flat

- Seine Net
- Gill Net/Set Net

Next to weirs in terms of labor and efficiency were the large lifting and plunge nets wielded from platforms extending from the river bank over eddies and pools. Of all nets used, the A-frame lifting net was the most complex. The Karok lifting net was virtually identical in design to the Yurok version (illustrated above, Figure 4.2) but was reportedly larger. The essential features of this net are a trapezoidal frame of poles to which a long, tapering net (over 18 feet in length) of decreasing meshes is attached with cord. The opening, generally over six feet in width, was crossed with a series of cords that formed a "trigger" to alert the fishermen (who held a trigger string and button in one hand) to fish entering the net. When inserted into the water, this apparatus was held in place by anchoring one of the frame's side poles (which extended beyond the bottom of the frame) into the stream bottom. A guide pole lashed to the fishing platform and inserted through a ring on the net frame, and a guy line attached to the other side of the frame and tied to the shore also aided in keeping the net properly positioned.

According to Hewes, the trapezoidal opening in Karok lifting nets had a spread of as much as 12 feet. The length of the corresponding nets is not reported but presumably exceeded 25 or even 30 feet. Smaller A-frame nets without guide poles and rings were used to haul in lamprey eels. Lifting nets made especially for sturgeon, reported for the Yurok and Hupa, are not mentioned for the Karok. If they existed they could have been used only below Ike's Falls, the limit of sturgeon migration.

In most instances, the lifting net was manipulated from a scaffold or platform erected over pools and eddies formed by rocks or bars deflecting the current. The design of this staging varied with each location but always consisted of several planks and support poles anchored to the river bottom and shore in such a way to allow the fishermen to stand or sit directly over the fishing spot:

> *The fishing platform was supported upon crossed poles driven into the river bottom and bound securely with hazel withes at the points of crossing. These crossed poles were further strengthened by piling rocks about their bases, if needed. A plank, usually of spruce . . . ran out from the shore and a second plank was added out toward the end to make a more commodious platform upon which to operate. The inshore end of this longer plank was supported on a pair of short, crossed stakes, and it was further made firm by being weighted with rocks and with live-oak timbers . . . Finally, at the outer end of the platform the pole which was to carry the guide ring of the lifting net was driven into the river bed with a stone maul* (Kroeber and Barrett 1960:38).

Another important feature of the platform complex was the wooden net hook, about 8 inches in length, lashed to one of the horizontal support poles. As the net was lifted from the water, it was thrown over this hook to stop it from slipping back. Fish caught in the net were then stunned with a wooden club before being taken out. Platform fishing with a lifting net could be very productive, and it was said that in a matter of days at the height of the salmon run a man could secure a "winter's supply" of fish (Kroeber and Barrett 1960:36, 38). Several photos taken by Grover Sanderson in 1932 showing Karok platforms and the operation of lifting nets are reproduced (in Figure 5.1) from Kroeber and Barrett(1960:206).

The plunge net (also called thrusting or dip net) was cast from platforms also or just as commonly from boulders jutting into the river. It was particularly suited to turbulent, foamy water--common in Karok territory--which hid fish from view. To the present day, dip-netting has been the principal mode of fishing at Ishi Pishi Falls, where the river cascades through a narrow boulder-lined channel in a spectacular series of churning rapids past legendary Sugar Loaf Mountain. Here and at other falls, rapids, and riffles, the dip net was used to capture salmon, steelhead trout, and eels.

Figures 5.2 through 5.5 illustrate the form and operation of the plunge net. Two fir side poles, up to 12 feet or more in length, are joined together at one end to form an acute angle. A semicircular withe of oak, hazel, or other supple wood is joined (sometimes in two pieces) to the other ends of the side poles to complete the frame. Formerly, a "head bar" was formed by attaching a cross piece near the apex of the side poles. Around the curved loop the net is strung by means of its loops. When completed, the conical shaped net is about a yard wide at its mouth and about a yard deep.

Kroeber and Barrett describe two ways by which the plunge net is manipulated:

> *(1) it may be plunged or thrust almost straight down by a fisherman standing on the bank above a deep place in the stream. In this case he is said by informants to actually stand between the long side poles. The net and frame descend until the crossbar strikes the back of the fisherman's head, where the basketry cap cushions the blow as the frame is stopped. The frame, with the net and its catch are hauled up by alternately lifting on first one and then the other of the side poles.*
>
> *(2) When the net is being used in a foamy rapids, the fisherman does not stand between the side poles, but behind them. He grasps the frame up near the crossbar, perhaps only two or three feet from the apex of the triangle. He throws or casts the whole apparatus out in front of him, sometimes almost horizontally, in such a manner that the net goes as far as possible out from the bank. He then pulls it in and up. In doing so, first the apex of the frame rests on his forehead, which is protected by his basketry cap. Then, as he pulls . . .one or the other of the side poles rests upon his head, even at times sliding on the forehead; which is, of course, always protected by the basketry cap. In pulling back the plunge net in this manner the head bar may or may not touch the head depending on the circumstances of the pull. (1960:42)*

In the summer of 1957, Barrett filmed a Karok using a plunge net in the second manner at Ishi Pishi Falls. In October 1981, the same method was observed by a Study Team member at the same location, where two fishermen "made the rounds" of a half dozen pools. The dip net frames in use today do not include the head bar, and neither of the fishermen--both young men--wore protective headgear.

Another type of dip net, called a hoop dip net, is described by Driver (1939:312). This was a small net strung on a circular, pliable withe. It was primarily used for fishing in smaller creeks.

Flat nets of varying lengths and meshes were employed widely in Northwest California as seines, set or gill nets, drag nets, and bag nets. Their use among the Karok is not documented to any extent, and it is not clear how important they were in the fishery. Seining was not frequently attempted along the middle Klamath, presumably because of the swifter current. Both Gifford and Hewes, however, describe a fishing technique involving a "single drifting bag seine." This method, intended primarily for capturing salmon, called for stretching a single seine between two canoes, which drifted downstream. The current caused the net to bulge, creating a bag-like pouch that trapped fish swimming upstream. Gifford states that women sometimes paddled the canoes while the men handled the nets. Hewes' description is essentially the same as Gifford's, except that he says a gill net was stretched between the canoes. He agrees with Gifford that the net ends were anchored in the canoes with grooved anchor stones and adds that the bottom edge of the net was also weighted at regular intervals with flat sinkers (Kroeber and Barrett 1960:49, 54).

Gill or set nets were commonly used by the Karok, Yurok, and Hupa. A 63-foot specimen collected at Weitchpec around 1900, complete with stone sinkers and wooden floats, is described in detail by Kroeber and Barrett (1960:50). They state that

> *. . . set nets or gill nets were quite generally used wherever the body of water was sufficiently large and wherever the current was not too swift to make their use impracticable. Usually such a net was used in conjunction with a fish drive which made the whole operation more or less of a communal affair* (1960:51).

The Karok gill net was, according to Gifford, generally shorter than that found downriver where streams were wider. One net described was about 30 feet in length and 9 feet in width and was reportedly stretched across a portion of the Salmon River. Set nets were moored to each bank or to one bank and held at the other end by a man in a canoe (Figure 5.6). Others on shore would throw stones in the water, frightening the fish into the net (Kroeber and Barrett 1960:51-2).

In October 1981, two Karok interviewed asserted that gill nets were not "traditional" (among Karok, Hupa, or Yurok) but were obtained from whites for purposes of commercial fishing. Two others agreed that gill netting has created a "problem" in recent time, but they did not disagree with the notion that gill nets were part of the precontact repertoire. (In recent years the practice of gill netting has become an intensely emotional issue along the Klamath and Trinity Rivers because of its perceived effect on the salmon population. As will be discussed later, gill netting has never been of primary importance in Karok fishing, and contemporary views about its proliferation in the modern era on the lower Klamath are universally negative.).

• *Basketry Traps*. Commonly found outside the "core area" of Northwest California (the Klamath-Trinity drainage), basketry traps of most types were not manufactured or used by the Karok. No cylindrical or box-like traps have been recorded for the middle Klamath, nor were pens or traps a component of weirs. Only one form of trap--the trough trap--has been reported in use among the Karok. This device (Figure 5.8) was 6 to 7 feet in length and was constructed of split spruce poles coarsely woven together with hazel withes. It was made primarily for trapping fish in creeks during high water in the winter. The opening of the trap was secured under water, while the upper portion was elevated above the water line on a rock or bank. Wide spacing between the spruce slats permitted smaller species (trout, suckers, etc.) to escape. Smaller versions of the trough trap were also made to catch these smaller fish. Both types were left in creeks continuously and were checked periodically to remove any trapped fish. The only other basketry device used in fishing was the common burden basket, which was sometimes used to scoop smaller fish from creeks or shallow pools (Kroeber and Barrett 1960: 68-9).

• *Harpoons, Spears, and Gaffs*. Single and multipointed spears were seldom used in Northwest California for fishing, and their use has not been recorded for the Karok. Harpoons, on the other hand, were employed throughout the core area for spearing salmon and steelhead, primarily in creeks and river shallows. Because these sites were easily altered by natural conditions, their productivity was relatively lower and more unpredictable, and they were not privately owned. Hence, during the salmon runs at least, harpooning was the "common man's" mode of fishing--one that yielded fewer fish per unit of effort than mass harvesting with nets and weirs.

Harpoons common to the general region are illustrated in Figure 5.7. There were two basic versions, single- and double-pronged. Fir shafts were usually 10 to 12 feet in length; the foreshafts into which the points were socketed were made primarily from western service berry wood *(Amelanchier alnifolia)*. Points were secured with iris string and pitch. The detachable heads were tied to the main shaft with toggle lines of rawhide and heavy cord (Kroeber and Barrett 1960:75-7; Schenk and Gifford 1952:385).

Gaffs with wooden hooks were used mainly to secure eels, less often fish. In late winter/early spring eels congregate in pools and attach themselves to rocks. While some could be picked off the rocks by hand, many others in and out of the water could more easily be gaffed and tossed into the fisherman's everpresent net bag for transport to the cleaning site (Kroeber and Barrett 1960:81, 95).

- *Other Methods*. Subsidiary techniques for capturing fish (sometimes as sport) included hooking (with acute-angle wooden or thorn hooks), sniggling (with insect lures), snaring (particularly sturgeon), and diving to catch fish with one's hands. Shooting fish with bow and arrow was reportedly tabooed, yet Driver records it as an incidental practice throughout the region (1939:313, 379). Northwest streams were too swift to make poisoning fish practical (Kroeber and Barrett 1960:82-3).

5.2.4 Preservation, Storage, and Use

Throughout Northwest California men caught the fish while women normally were responsible for the other aspects of fish treatment once they were landed and deposited on shore. "Men did, upon occasion, carry some of the fish home, but under ordinary circumstances even this task was done by the women" (Kroeber and Barrett 1960:95).

A notable feature of Karok, Yurok, and Hupa fish-processing is the utilization of most or all of each fish captured. Whether eaten fresh, preserved, or used for ceremonial or utilitarian purposes (e.g., glue), few fish parts were discarded or intentionally wasted. This custom has prevailed to the present day.

The preparation of salmon, eels, and other fish were determined by their size, anatomy, and intended use. Specific and specialized cutting

methods, a few of which are described in Kroeber and Barrett's study (1960: 92-3, 99-100), were developed for readying fish for immediate consumption and drying and storing. Fish were cut and cleaned with special flint knives; quartz flakes were commonly used to split and clean eels.

It is not clear from these preparation accounts--all of which were collected after 1900--which methods prevailed in the precontact era and which were post-contact modifications. Thus, for instance, it is stated that salmon to be consumed fresh initially were opened up along the belly. Yet, at least one informant (Yurok) told Hewes that in "pre-white days" all salmon were cut along the back, whether eaten fresh or smoke-dried (Kroeber and Barrett 1960:101).

Gifford's field notes (1939-42) contain two descriptions of preparing salmon for drying among the Karok, one "modern" and the other "old." Following the modern procedure,

> *. . . the tail of the salmon is first cut off in order to drain out the blood, the fish being laid on a layer of brakens (Pteris aquilina var. lanuginosa) during this time. After removal of the head, the fish is cut up the belly--split its full length--and has its backbone removed. This produces two slabs of half a fish each. Each is spitted on a willow rod and placed horizontally on a rack of poles, either in an outdoor brush shelter or on the racks of poles permanently hung over the fire in the dwelling house. As soon as the preliminary drying is finished, these slabs are turned and hung vertically so that their oil will drip in a continuous trickle from the end of the slab into the steatite dishes set to catch it.*
>
> *. . . the old method was somewhat different, the salmon being split along the back and the backbone removed. This left the fish in one whole wide slab. The flesh of each side was next split so as to widen the slab further, for these new sections were left attached. Thus there was a very wide slab consisting of four thinnish sections. These slabs were then draped over horizontal poles where they remained for the first day. They were then turned over for the second day of preliminary drying. Each slab was then flattened out and held so by means of two or three cross sticks of proper length (evidently pinned through the salmon flesh). One informant specified that these should be unpeeled poison oak* (Kroeber and Barrett 1960:99).

In sum, it is apparent from these other available accounts that salmon and other fish to be dried were cut in special ways to produce slices thin enough for thorough and effective drying.

The preservation of fish and other foods was an important and on-going task in the daily round throughout the summer and fall--an activity vital to family security during the winter. The Karok reportedly smoked several kinds of foods, including game and even acorns, as well as salmon, sturgeon, lampreys, steelhead, and other fish. Not all fish are equally suitable for smoking and storage. Steelhead trout, for example, are fatter and more susceptible to mold and deterioration. They were generally eaten fresh, or, if dried, consumed before other dried varieties. When cut for drying, they were not, like larger fish, cut into slices but were opened, laid out flat, stretched with skewers, and hung vertically on a pole over the smoldering fire (Kroeber and Barrett 1960:99-101).

Fish usually were first smoke-dried in temporary shelters at fish camps along the river or in lean-to smoke houses found in every village. Before the final stages of drying, most fish were moved to family houses, where they were hung over the large drying rack. Fish were often spitted with poison oak or willow twigs during the curing process. Steatite dishes were placed under the salmon to catch the oil that now trickled out. The preferred wood for smoking fish was white alder (*Alnus rhombifolia*), which imparted a distinctive flavor (Kroeber and Barrett 1960:99; Schenk and Gifford 1952:382, 385).

Properly handled, salmon was completely cured and ready for storage in about 10 days. It was then kept in open-work storage baskets or pits dug in the house floor. When stored in baskets, fish layers were separated by maple leaf mats and topped with madrone leaves. Better storage was provided by pine needle-lined and covered pits, which protected the fish from insects and mold, especially in warmer weather. Correctly cured and stored, dried salmon could last for over a year. Sometimes dried salmon was stone-boiled in baskets before eating, or it could be skewered and reheated over the fire. Usually it was eaten without further preparation, although some Karok women pulverized dried salmon into "fish flour," (Kroeber and Barrett 1960:99-100; Schenk and Gifford 1952:385).

The principal ways of cooking fresh salmon and other fish were roasting and broiling over an open fire or coals, and baking on hot stones. Fish slabs commonly were skewered on willow rods stuck in the ground close

to a fire and turned occasionally to obtain an even broil. In most instances, except for the viscera, the entire fish--including heads, tails, backbone, and even gills--was consumed. Informants interviewed in October 1981 stressed that heads and tails have always been considered delicacies. Most confirmed Pilling's finding (1977:58-9) that salmon cheeks especially were prized. Even eyes were eaten. Heads generally were roasted slowly for several hours on a *babracot*--a rack of sticks placed over the coals. Backbones were usually saved for winter, when they were boiled or pulverized and added to soups. (Whether the Karok saved the notochords from eels as insurance against famine, as did the Yurok, is not recorded although not unlikely.) Eggs, always saved, were usually sun-dried and then sometimes pulverized before being eaten (Kroeber and Barrett 1960:101, 104-05).

Several fish by-products were utilized by the Karok for purposes other than food. Ceremonial uses were important and will be discussed below. Effective adhesives were made from combined fish parts, particularly sturgeon. One recipe called for chewed salmon skin mixed with the glandular substance from a sturgeon throat; it was wrapped in madrone leaves and cured in ashes. Another recipe involved a mixture of chokecherry or fir gum mixed with fish skin (Kroeber and Barrett 1960:103-04). Dentalium shells were commonly wrapped with snake skin, but fish skin might be substituted. Today cured salmon eggs are used widely as fish bait (Interview data, 1981). Whether they were used as such formerly is not known. This is not unlikely, since various other lures were developed.

5.2.5 Linguistic Derivatives Related to Fish and Fishing

The Karok language is not closely related to any other California language. It does share distant affinities with several widely scattered California languages, all members of the Hokan family. Bright (1954) has renamed Sapir's Northern Hokan subgroup (including Chimariko, Shasta, Atsugewi, and Achumawi) "Kahi." In 1957 Bright estimated that surviving Karok-speakers numbered "perhaps a hundred" (1957:1).

Semantically the Karok language reflects a deep "sense of place" (Palmer 1980:3) noted by many observers of Karok culture. Kroeber and Gifford (1949:3) refer to "an impulse toward localization which pervades the system and in fact the whole culture." Bright reaffirms this observation when he writes of ". . . the intense feeling which the Karok have for places, particularly the places where they were born and raised" (1954:11). Citing Kroeber's and Bright's ability to collect extensive lists of early Karok village sites, Palmer remarks:

> *. . . the fact that the majority of village sites, some of which were burned and abandoned as early as 1852, were still remembered by name in the mid-20th century, and indeed are still remembered, testifies spectacularly to the significance of these sites in Karok culture* (1980:6).

Karok geographical and psychological orientation to the Klamath River and its tributaries is manifested in the abundance of names given to stream-related localities and features. In his study of Karok names, Bright states that

> *. . . names are given not only to mountains, ridges, streams, ponds, fishing-spots, acorn-groves, and villages, but also to sections of villages, to sweat-houses, to dwelling houses, and to large numbers of mere rocks, hardly noticeable to an outsider* (1958:172, emphasis added).

Bright adds that at the time of his study it seemed "no longer possible to collect Karok place-names in the quantities which Waterman published for Yurok" (172). If such a study had been conducted in the past, it no doubt would have revealed numerous names for specific stream features such as rapids, riffles, bars, river bends, and other significant configurations. Harrington certainly implies this when he writes that the Karok "know and named every rock and pool by the river, every gully and fallen tree upslope" (1932b:1).

Many of the 275 place names collected and analyzed by Bright are stream-related referents. Significantly, Karok directional terms are derived from roots *ka-* "upriver" and *yu-* "downriver" (also *ma-* "uphill" and *sa-* "downhill") rather than terms meaning north, south, east, and west. These roots were combined with general and specific names to refer to certain locations relative to the speaker (e.g., terms translated as "uphill river," "a little upriver from 'x' creek," "across-stream upriver side of 'y,'" and "little downriver edge").

Several village sites are named after characteristic water features--e.g., "flowing in under a rock," "flowing under a cliff," "new rapids," "pond-end," "little river-crossing," and "downriver creek." One village name refers to the mythical origina of salmon (*amekyaram*, "salmon-making place"), and another site is named for a fishing activity (*takripak*, "at dip netting"). Karok names of creeks, which end in the word for "creek," usually refer to neighboring villages (Bright 1958:172-76).

If Karok place names and directional terms reflect an abiding spatial orientation to streams and their features, the range and specificity of terms related to fishing suggest the overwhelming importance of this subsistence activity in their culture. Table 5.1 is a short lexicon of terms for fish and fish parts, fishing technology and activities, and ceremonial associations. It must be emphasized that this list is incomplete. The words listed were compiled from several published sources, the most important being Bright's *Karok Language* (1957). Most of the terms presented here were corrected and standardized by Bright for this report. He suggests two possible reasons for his unfamiliarity with some terms (indicated by a "?" in the table):

> *I tried to check all the technical terms in Kroeber and Gifford with my consultants, but often drew a blank--partly because Gifford's transcriptions were so inaccurate as to be frequently unrecognizable, and partly because most of my informants were women, and didn't know all the details of fishing* (1981: personal communication).

No one has studied systematically the relationship between fishing and language in Northwest California. The collection of a complete fishing lexicon would be only one dimension of such a study, since historical changes syntactic features, and psycholinguistic aspects should all be explored as well. At the least, a straightforward exposition of fishing in Karok culture

similar to Harrington's treatment of tobacco (1932a) would demonstrate the primacy of fishing and fish resources in Karok language, thought, technology, and food quest. The attention to detail, the sheer number of referents implied by the specificity of the few terms collected, even the lack of a generic term for "fish," strongly support the centrality of fishing--a cultural interest akin to that paid to cows by the African Nuer, and to snow and ice conditions by Eskimos.

Table 5.1 KAROK TERMS ASSOCIATED WITH FISHING

ENGLISH TERM	*KAROK TERM*	*SOURCE*
Fish/Salmon/Parts		
fresh fish	púuchishara	1
fish gills	áthan	1
fin	tíit	1
best food (salmon and acorns)	pa'avahayéshiip	4
salmon	áama	1,2,5
chinook/king salmon	áat	1
first arrivals/spring salmon	ishyáat	1,2,5
hookbill/dog salmon	achvuun, yumaará'aama	1,2
chub	chuskáakach	1
small salmon	yufkumuru (?)	3
salmon, finger length	tivaak (?)	3
salmon, 6" long	ashkupan (?)	3
salmon, 8-9" ('redfish')	chiipich	3
salmon head, split open	yúfmaan	1
salmon roe	átay	1
salmon roe baked with powdered manzanita berries	atáyxuum	1
salmon, male sex organs	fithihíkpak	1
hookbill, inner slices	picpán (?)	2
salmon cut for drying	weraípun (?)	2
salmon, dried	amveváxrah	2
salmon, a certain cut	achip'óraayva	1
salmon, a part of	achpuus	1
salmon, backbone	ót	1,2
salmon, breast/meat	takvaax	1,5
salmon, back meat	átish, atishuuf	1,5
salmon, tail meat	ípun	1
salmon 'liver'	at'waf (?)	5
salmon, special part ('heart') in throat	tiuik'nupatch	5

SOURCES: (1) Bright 1957; (2) Kroeber and Barrett 1960; (3) Kroeber and Gifford 1949; (4) Harrington 1932a; (5) Roberts 1932; (6) Palmer 1980.

Table 5.1 (continued)

ENGLISH TERM	*KAROK TERM*	*SOURCE*
salmon cooked on babracot	tanikixwa (?)	2
salmon cooked in pieces over fire	wutupic (?)	2
salmon cooked whole over fire	topsirukit (?)	2
trout	askuup	1
sucker	chamuxich	1,3
surf-fish	yuhaskuup	1
sturgeon	ishxikihar	1,2
sturgeon eggs	crigera-atai(?),	2
	ishxikihar-atay	1
steelhead	saap	1
steelhead, dried	sap-ivaxrah	2
mussel	axthah	1
minnows	askuptunvech	1
eel	akraah	1
eel's gills	achnuuk	1
Fishing Activities		
fish/hunt in general	ahavishkaanva	1
go fishing	ikrihar	1
fish with a set net	ikriihva	1
fish with a hook and line	ishxay	1
fish with a dip net	taramniihva	1
fish with a small dip net	takik	1
fish with a large dip net	ahavishkaanva	1
to spear fish	itkaanva, takripaa	1
to roast fish	ikiikva	1
to dry fish	pimnaaniha	1
fish for eels	tachur	1
Fishing Implements		
fishery	imvir	1,2
fishing platform	ikrihak, ikrihraam	1

SOURCES: (1) Bright 1957; (2) Kroeber and Barrett 1960; (3) Kroeber and Gifford 1949; (4) Harrington 1932a; (5) Roberts 1932; (6) Palmer 1980.

Table 5.1 (continued)

ENGLISH TERM	*KAROK TERM*	*SOURCE*
ground behind platform	pattir	1
fish weir/dam	ithyaah	1,2
fish camp	pimnanihraam	1
hook	taxvuk	1,2
net	uripi	1,2
dip net/plunge net	takikar	1,2
dip net frame	urutvaap	1
lifting net	amvaurlpa (?)	2
lifting net guide pole	ivakakuri (?)	2
lifting net for lamprey eels	akrauripa (?)	2
lifting net ring	ikwinipkuni (?)	2
drifting net	icipkan (?)	2
woven (eel) bag	tatcura (?)	2
trigger string ('to quiver')	muuyha	1
harpoon shaft	itakanowo (?)	2
harpoon, socketed heads	sakau (?)	2
fish spear (harpoon ?)	itkaanvar	1
sinker	arankurihvar	1
fish trap	ikrihar	1
trough trap	pichimvaru (?)	2
fish pole	ishxaar	1
dip netting hat ('dipper hat')	taripan'apxaan	1,2
Ceremonial Terms		
immortals/first spirit-race	ikxareyav	1,3,4
ordained by the spirit-race	ikxariyakuupha	3
world renewal rites ('pikiawish')	irahiv	1,3
	ithivthaanen upikyavish	1,3
village site for mythic origin of salmon ('salmon making place')	Amekyaram	1,3
first-salmon rites	idurumva	3.6
	sarukamkuuf	4,5

SOURCES: (1) Bright 1957; (2) Kroeber and Barrett 1960; (3) Kroeber and Gifford 1949; (4) Harrington 1932a; (5) Roberts 1932; (6) Palmer 1980.

Table 5.1 (continued)

ENGLISH TERM	*KAROK TERM*	*SOURCE*
sixth moon (alternative name)	amekyaràmkuusra	1,4
salmon smoke from ritual fire	saruk'àmkuuf	5
"salmon" before first rites	inayàre (?)	5
priest, first salmon rites	fatavenaan ikxariya'araar	3,6 3
assistant priest	saruk'àmvaan	1
female assistant/wood gatherer	ahup'ikyavaan	1,3
cook for first-salmon priests	pishish'ikyavaan	6
sacred sweathouse, Amekyaram	venaram'ikmahachraam	6
sacred living house, Amekyaram	venaram	3.6
sacred stones on top of sweathouse	ekaniyakuna (?)	3
medicine (plant) for cooking forst salmon	màhanaw (?)	5
immortals' knife washing pond below Ishi Pishi Falls	Otiabixanam (?)	3
oak tree at Katimin fed leftover food during 'pikiawish'	Xuntaiwananamhiti (?)	3
rock from which priest fishes during first-salmon rites	hivnukwaraishvaiikam	6

SOURCES: (1)Bright 1957; (2) Kroeber and Barrett 1960; (3) Kroeber and Gifford 1949; (4) Harrington 1932a; (5) Roberts 1932; (6) Palmer 1980.

5.3 Trade Patterns

5.3.1 General Trade and Exchange

The elaboration and efficiency characteristic of the distribution of fish and other foods among the Karok was matched by a "sophisticated system of commodities exchange" between the Karok and neighboring tribes (Norton 1979:9). Roberts states that this reciprocal flow of trade goods among the Klamath area tribes "amounted to a commerce which provided all groups with such supplies as they were in need of" (1932:284). The character of this commerce is discussed in earlier chapters. While Goldschmidt (1951:507) states that ownership of resource sites (thus implying fishing spots, as well) might include sites in other tribal "territories," James and Graziani say that Northwest California tribes "appeared to trade rather than to grant reciprocal gathering rights," as did California societies in other areas (1961:56). Intertribal trade included both direct barter and shell money payments based on standardized valuations (Norton 1979:11).

Davis (1974:24-5) has tabulated trade items typically exchanged between the Karok and several other groups. With the exception of smelt, fish products are not listed. His compilation includes the following items supplied to and received from the Karok:

Supplied to:

Shasta:	tobacco seeds, baskets, dentalia, salt, seaweed, tan oak acorns, canoes, pods for hair dressing, pepperwood, *Haliotis* ornaments, *Haliotis* shells, whole *Olivella* shells
Tolowa:	soaproot, pine nut beads
Konomihu:	dentalia, baskets
Yurok:	dentalia

Received from:

Shasta:	basketry caps, juniper beads, salt, dentalia, white deer skins, woodpecker scalps, obsidian, sugar pine nuts, wolf skins, large obsidian blades, horn for spoons
Wailaki:	dentalia
Coast Yuki:	whole clam shells

Yurok:	whole Olivella shells, tobacco seeds, dugout canoes, clam shells, pipes, bows
Tolowa:	smelt, dentalia
Nongatl:	salt
Konomihu:	furs, deer skin clothing

Davis' list, based on nine authors, is not exhaustive. Norton states that the Yurok traded with the Hupa and Karok for "inland foods and materials such as bows, arrows, ceremonial feathers, and obsidian" (1974:11, emphasis added). From the Yurok, the Karok and Shasta obtained seaweed and other foods in exchange for dried deer and elk, berries, and woodpecker scalps (Bright 1978:183; Warburton and Endert 1966:103). Trading between the Karok and Hupa was apparently limited due to the similarity of their foods and manufactured products (Beals and Hester 1974: 1:61).

5.3.2 Fish in Trade Relations

To what extent salmon and other fish specifically were exchanged or purchased under normal circumstances is not clear from published sources. Endert, much of whose material dates from the turn of the century, states that the Karok and Shasta traded with the Yurok for smoked salmon, eels, sturgeon, mussels, and surf-fish (Warburton and Endert 1966:101-02). Pilling agrees that these items regularly were sought by the Karok. He adds that among sea foods, seaweed was in heaviest demand, followed by nonpoisonous mussels and surf-fish. (Poisonous mussels were also in great demand for use as a general anaesthetic in extracting teeth and other minor surgery.) Of the fresh water species, eels were most preferred, followed by sturgeon and salmon (1981: personal communication). Given the variations in quantity and quality of salmon and other fish along the Klamath river system, it is a reasonable assumption that intertribal commerce regularly included the exchange of these items, especially choice cuts and parts.

Many of these exchanges took place in the context of established intertribal alliances and trading partnerships between high families. Pilling (1981: personal communication) notes, for example, the longstanding economic bond, reaffirmed through periodic intermarriage, between two "great houses," one at Requa, the other near present-day Somesbar. Such ties covered even greater distances--e.g., from the mouth of the Klamath to

present-day Etna on the Salmon River. Between these families balanced reciprocity operated to maximize mutual welfare. In times of scarcity, these families could turn to each other for support and a share of stored foods. Ceremonials were also occasions during which intertribal exchange of goods took place. Harrington (1932a:162) collected the following brief but informative text from one of his informants. It is entitled "How our kind of people used to trade with the upriver people at Clear Creek New Year Ceremony":

> *Each new year ceremony my deceased mother would go to Clear Creek to attend the new year ceremony. She would pack upriver two pack basket loads of bowl baskets and openwork plates, and dipper baskets; she would trade them for blankets, Indian blankets, and upriver hats, and juniper seeds, for all kinds of things, upriver things. They used to give up those upriver hats sometimes, but we did not wear them, it does not look right on us.*

When whites first ventured into the Klamath region, their initial contacts with the residents invariably included the exchange of goods. Accounts of the expeditions of Jedediah Smith (1828), Wilkes (1841), and Redick McKee (1851), among others, all contain references to trading for or purchasing food items, included eels and fish, from the villagers (Murray 1943; Roberts 1932:287; Gibbs in Schoolcraft 1853, 3:99-177).

In Gibbs' account of the activities of the McKee party there appears a fascinating passage that alludes to the sale of salmon to miners living in the Orleans area. The subject of this account was an eminent Karok authority figure named Red Cap.

> *He is a man of considerable influence, friendly to the whites, and enjoying a high character for honesty. An instance of his justice, coupled with a display of financial ability, was related to us, as exercised on the occasion of a gun being stolen by one of his band. The weapon could not be found, but Red-Cap promised that it should be paid for, the price being fixed at thirty dollars. To raise this, he imposed an excise on all salmon sold to the packers and miners, of fifty cents; which, besides the usual price in beads, was to be exacted in "waugie chick," or silver white man's money. The amount was soon raised and handed over, and the oppressive tax abated.* (Heizer 1972:51)

During occasional lean years following poor salmon runs or acorn crops, the disparity in salmon distribution had a greater impact on Indian welfare since there was no surplus to share within tribes or to distribute between tribes in the usual ways. Those who owned fishing spots were better protected

from privation and even famine. Others were not so fortunate and had to purchase food with money, other valuables, or debt service. Goldschmidt's notes on the Hupa contain passages on the occurrence of famine in the region and cite the sale of "a hatful of acorns for two deerskins" and "a pair of dried salmon for a white deerskin" (cited in Beals and Hester 1974: 1:22).

5.4 World View and Ceremony

To the Karok and other Northwest California peoples, salmon is the staff of life in a sacred as well as ordinary sense. Throughout their existence in the Klamath region, the Karok, Yurok, and Hupa have acknowledged the fundamental importance of salmon in their values, myths, personal spiritual quests, esoteric rituals, and communal ceremonies. To this day, salmon (along with acorn soup) is regarded as a necessary ingredient in the spiritual welfare of the people as well as their diet.

Mythical and ritualistic treatments of salmon and other fish among the Karok are fairly well documented and interpreted (Kroeber and Gifford 1949, 1980; Drucker 1936; Bright 1957; DeAngulo and Freeland 1931; Roberts 1932; Harrington 1932b; Swezey and Heizer 1977; Palmer 1980). These sources should be consulted for complete texts and detailed descriptions of ceremonies. Only those aspects that relate directly to the religious treatment of fish will be outlined here.

5.4.1 Relevant Myths and Legends

The Karok world view never has been described systematically. No comprehensive origin myth was ever collected, leading Bright to suggest that none was ever formulated (1978:188). Numerous texts collected reflect an abiding interest in the creation of the features and workings of the immediate Karok world and its inhabitants by the *ikxareyav*. This spirit-race of "immortals" populated the earth prior to humans and ordained the things, rules, and techniques crucial to human existence. Many myths end with the appearance of mankind and the transformation of the *ikxareyav* into animals, natural features (such as prominent rocks), and disembodied spirits. Another large and popular group of myths recount the exploits of the trickster-hero Coyote (Bright 1978:187-8).

Karok myths are part of a rich oral literature whose full import was realized only in its expressive narration before a live audience. Myths generally were recounted during the winter (Bright 1978:187; Davis 1971:9), not merely as stories but as sacred chronicles embodying ultimate concerns and explanations regarding the nature of the world. As such they were and remain important repositories of Karok thought and sentiment. There

are many myths in which various fish, including eels, are featured. Only the more sacred motifs involving salmon will be presented here.

* *Origin of Salmon*. Like most myths there are several accounts of the origin of salmon. Below is a representative version collected and translated by Bright (1957:205-07):

COYOTE GIVES SALMON AND ACORNS TO MANKIND

Two women, sisters, once lived at ame.kya.ra.m. And they said "Nobody will eat salmon, we have hidden the salmon." And Coyote thought, "They can't do that." And he thought, "Let me go see." And he picked up his quiver. And he peeled off alder bark. And he put it in the quiver. Then he arrived there. He sat down in the back of the house. And they asked him, "Why are you wandering around?" And he said, "I'm going upriver to the end of the world." So he sat there. And he said, "I'm hungry. Let me eat salmon for a moment." And he took out the alder bark. So then he ate it. (Alder bark is similar to salmon flesh in color.) Then the women thought, "Where is it that he comes from? They're eating salmon there!" Then one said to her sister, "Let's cook!" So one struck with her elbow on the uphill side (of the house), under a wall-board. And water flowed out. And salmon fell out. And so they cooked it. And they ate it. Coyote was watching this. Then they said, "Go on again! We're going to pick acorns." And Coyote said, "Let me go along!" And they said, "All right." So they went there. Then the women gathered the acorns. And Coyote picked up a stick. And he beat the tan-oak trees everywhere, uphillward, downhillward, downriverward, upriverward. And he scattered the acorns. That's why the acorns grow everywhere now. Then he ran back downhill to where the women lived. And he tore out the wall-boards. And the water flowed out, and all the salmon came out. That's why (the water) flows downstream, and that's why salmon run up the river. Then the women came back down. And they said, "There Coyote has spoiled it. All right, let's go. Let's be transformed. A different people is going to come into existence." So they went away again. And they climbed uphill downriver from asanna.mkarak. And one said, "I forgot my knife. Let me go back after it! You wait here!" So when she turned around, she went downhill. When she looked around, she saw her sister had turned to quartz. And a little downhill, their dog had turned to quartz. A different people was coming into existence. When she looked across-river, she saw the jump dance lining up, she heard them shouting. Then she turned to quartz there. However long the world exists, so long will they use (her) knife. They will clean the spring salmon with that, when they fix the world.

In another version (De Angulo and Freeland 1931:202-06), a spirit-man from Katimin is the hero responsible for freeing the salmon. The other

elements are essentially the same. *Amekyaram* is recognized in most instances as the place where salmon were first made and therefore the proper place to perform the spring first-salmon rites. Even some Yurok and Hupa myths acknowledge the importance of *Amekyaram* (Winter and Hefner 1978:3). In yet another version, collected by Powers around 1877, the ikxarayev (called *Chareya* by Powers) make salmon and a large dam at the mouth of the Klamath. The "keys" to the dam blocking the fish are kept by two old women, who are befriended by Coyote and then deceived into giving up the keys, which are then used to unlock the dam freeing the salmon to travel upriver to the starving people (Powers 1975:17-18). The myth collected by Kroeber (Kroeber and Gifford 1949: 116-17) explicitly states the importance of the spring first-salmon rites. Just before their transformation on the hillside one sister remarks,

> *As long as people live we shall be angry if they do not cut our salmon properly; if they do not eat it well. We shall sit here forever . . . Now they are two white rocks, and their dog is a smaller rock below; they sit with their backs to the river. When people make New Year at Amaikiaram, when the first salmon is caught, they look down, once every year, and watch their salmon, to see how it is cut up and how it is eaten.*

• *The Origin of Fishing Implements.* Karok myths also explain how the immortals established the means and methods for catching salmon and other fish. In the following text, collected by Kroeber (Kroeber and Gifford 1980:68-70), a number of things about fishing are described. The origin of sturgeon is also included as well as the mythic rationale for its migratory limit at Ike's Falls.

A'U'ICH, SALMON, AND STURGEON

The mountain A'u'ich (Sugar Loaf) at Katimin was a man, an immortal (ikhareya). His children were rocks. He made salmon in a little pool: there he kept them while they were small. When they grew, he turned them into the river; the salmon went down, stayed in the ocean, and when they were larger came upriver again. They were nearly full grown but not quite, so A'u'ich told them to go downriver again. When they came up the next time he made a lifting net and a scoop net and a scaffolding to fish from and everything needed to catch them. "Ukunii," he said. When he caught salmon, he made a net sack (uburiv) and put them into it, and carried them to the house. And he made a basketry cap

(aphan) to be used with the scoop net, and a wooden club with which to kill the salmon (while still) in the net. Then he made the suckers (chamohich) and the ashkuu (hook-fish) in the creeks by causing wood to fall into the streams and turning into these smaller fish. At first he had no knife: he could do nothing with his salmon except to put a whole fish into the fire to cook. Then Fish Hawk (Chukchuk) said, "I am the one who will use rock. I will make knife of stone." He split cobbles to a sharp edge. Then he cut salmon with them: he cut up suckers too. Then many people came to him. He cut up their fish for them. He gave each one a piece of rock. Then A'u'ich said, "Ukunii," and made sturgeon (ishihikir). He made them small. After a time he looked at them again and they had grown. The ikhareya said to each other, "We shall have sturgeon for food." Then A'u'ich said, "Sturgeon will come back upriver. But when it comes up the river as far as here and people eat it, they will die. Whoever eats it when it is caught here where I made it (at A'u'ich) will die." Then he took ten little sticks, each as long as two joints of a finger, and put them into the river. They swam downstream, and over the fall at Amaikiaram (Ike's Fall). They swam in the large eddy there, around and around. After a while they had turned into sturgeon. Then they grew large. Then A'u'ich told them, "Come upriver as far as this place (Amaikiaram). Do not come farther. If you are caught and eaten here at the mountain people will die."

Another myth (Kroeber and Gifford 1980:72) recounts the making of salmon spears (harpoons) and their usefulness to people who do not own fishing spots:

FISH HAWK INVENTS IMPLEMENTS

Fish Hawk (or Eagle, Chukchuk) thought of another way to kill salmon. He took a long stick. At the end of it he fastened two small ones. He thought, "I will spear salmon. Let me make that kind. Let me make it so that if a man has no fishing place and he sees salmon he can catch them. If he has no net he will kill them in this way." So now if people own no fishing place they spear salmon. Chukchuk was the one who made it thus. And that was the time when he made a flint knife (yuhirim) with a flint maker (taharatar). He took a stone point, set it to a stick, and tied it. He thought, "When that knife becomes dull, then they will take up this flaker to make it sharp. That is the way people will do when they come into being. They will use a flint knife and a flaker."

Salmon and Acorns Ordained as Most Important Foods. After salmon and acorns were created and made available, the immortals ordained that these foods were always to be eaten by humans:

JUST FOLLOWING THE *IKXAREYAVS*

All did the same, the way that the Ikxareyavs used to do. And what the Ikxareyavs ate, that was all that they ate. They told them: "Ye must eat this kind." The Ikxareyavs ate salmon, they spooned acorn soup, salmon along with acorn soup. And they ate deer meat. And they claimed that the Ikxareyavs had two meals a day, and they also did only that way (Harrington 1932b:74).

• *Salmon Used to Revive the Dead and Prevent Death.* Salmon apparently were not used in making medicines to cure specific ailments. (Salmon broth was, like chicken soup, standard fare for those who were ill.) There is an important myth, however, in which salmon figures as a substance used to revive the dead. This Orpheus-like tale, usually entitled something like "a visit to heaven" or "a trip to the land of the dead," involves a girl's journey (sometimes two girls) to the region where souls of the dead reside. Grieving, she seeks her dead lover, whom (in some versions) she finds but cannot bring back with her. While in the other world she meets someone who tells her she cannot stay but who also gives her salmon with restorative powers to take back to the land of the living. All versions end with a temporary triumph over death:

> *Then they were told, "Go back home." And they were given dried salmon. There it was dog salmon. You see, they call dog salmon "dead-man's salmon." And they were told, "When a person dies, you must rub this on his lips. You see, he will come back to life." So (the girls) went back home. They traveled back again that way. The buzzard brought them back. So when they returned to this world, they are the ones who did as it is done in the land of the dead. Finally, no person died, finally the people filled up the earth. Then when the salmon was all gone, they died* (Bright 1957:267-9).

• *Salmon in World Renewal.* The propagation of salmon is a major purpose of the annual world-renewal ceremonies. Salmon play a part in the origin of these rites:

THE ORIGIN OF *PIKIAWISH*

The gods did this. Coyote did this. He said, "(The priest) will build a fire." Then he built the fire, and then they saw him lying there. And when he came back, then he ate. He was without food for two days. And the next year there were a lot of people living. (But) they didn't do it (hold a world-renewal) the same way. (Finally) one old woman and a child were left. She taught her grandchild (how to hold the world-renewal). The next year there were more people. I look down over (the bank) there where the river flows down from upstream. I look again into the water as the river flows down from upstream. This is what they will do. The salmon will overflow the river there as it flows down from upstream. And I climb up there. I climb up there on the Ridge of Long Acorn-Meats Young-Woman. The next year many acorns will grow. (Bright 1957:249)

The myths presented above reflect the fundamental importance of salmon in Karok cosmology; they give substance to a religious life in which salmon play a key role. To eat salmon is to partake of the food of the gods and, by doing so, to symbolically recreate and reaffirm the ways ordained by the *ikxareyav*.

KAROK CEREMONIAL CALENDAR

Month	*Karok Moon*	*Ceremony*	*Location*	*Days*	*Treatment of Salmon/Fish*
March ----- April	ikrivkihaan or amekyaramkuusra	First Salmon Rites saruk'amkuuf or idurumva	Amekyaram	20	Prayers/medicine for salmon Ritual catching, cleaning, cooking eating, burning, and disposal of "first salmon" Salmon smoke Proscription against eating salmon until rites are completed
July	ahavarakuusra	Jump Dance --- Alter Building for irahiv	Amekyaram --- Inam	20 --- 5	General prayers for salmon and other foods and good fortune Linked to weir construction at Afchufich --- Ritual catching of crayfish
August	karuk vakkuusra	World Renewal (irahiv) with Dearskin Dance Boat Dance War Dance	Inam	13	Prayers/medicine for salmon Salmon a ceremonial food in sweathouse Salmon in communal feasts Priest represents spirit-person responsible for luck in fishing
Sept.	okwakuusra	World Renewal (irahiv) with Deerskin Dance Boat Dance --- World Renewal (irahiv) with Deerskin Dance War Dance	Panamnik --- Katimin	14-19 --- 15-20	Prayers/medicine for salmon Salmon a ceremonial food Salmon in communal feasts Driving-the-salmon-upriver formula Burial of ceremonial food beneath oak --- Prayers/medicine for salmon Salmon a ceremonial food Salmon in communal feasts Offering of ceremonial food to oak tree Steelhead/trout taboo

5.4.2 Ritual Treatment

In Karok ritual observances, salmon were featured in many different ways: they were prayed for, spoken to, magically influenced, used as offerings, solemnly eaten in secluded settings, joyfully eaten during public ceremonies, ritually caught, cleaned, and consumed in a special manner, burned to produce a distinctive "salmon smoke," and during specified periods left uncaught and uneaten. In all cases, the underlying intention was the same: to acknowledge salmon's kinship (through the *ikxareyav*) to mankind and mankind's dependence on this vital resource. Salmon, though usually bountiful, could not be taken for granted, and their propitiation in both esoteric and exoteric rites resulted partly from the responsibility assumed by humans for keeping the world in balance by acting and thinking in proper ways ordained by the immortals.

At specified times each year special ritual activities were performed to "fix the world," to restore it, including human society, to its rightful, harmonious condition. This ceremonial complex--involving four village ceremonial centers, three esoteric ritual sequences, four public dances (Deerskin, War, Boat, and Jumping), and separate first-fruits rites--constitutes what has been called the "world renewal cult system" (Kroeber and Gifford 1949).

The Karok world renewal calendar, indicating rites, locations, associated dances, and major forms of salmon treatment, is shown in Table 5.2. The timing of these rituals was determined by the lunar phases, with the upriver Karok "new year" beginning a moon earlier (at Inam) in August than that of the downriver Karok (at Katimin and Panamnik). The spring salmon rites occurred in the sixth moon in late March or early April (Harrington 1932a:81).

The new year rites at Inam, Katimin, and Panamnik are all termed *'irahiv*, or *'ithivthaanen 'upikyavish*, "it will make the world new." (Whites derived the name "Pikiawish," which the Karok in turn borrowed back, and which is in general use today [Bright 1981: personal communication]). The structure of these rites was very similar at the three sites, each of which, however, contributed localized content and interpretation. There were three main parts to the ritual sequence. During the first phase of not more than ten days, personifying one or more immortals, the priest maintained a vigil in the sweathouse, fasted, prayed, and daily visited designated sacred spots

Fasting and the eating of small portions of salmon and acorn soup by the officiants is seen in all Karok ceremonies. A Karok medicine man interviewed in 1981 confirmed the statement of a Yurok religious leader, whom we also interviewed, that salmon and acorn soup were critical to the proper completion of ceremonials. In priests especially, salmon has to be inside one in order to communicate with the immortals and spirit beings observing human life. One of Gifford's informants stated that at one time special acorns (supposedly piled up by water salamanders) and specially preserved salmon were kept by women to feed to the ceremonial specialists: ". . .this salmon was supposed to be specially pure and lucky" (Gifford 1958:249).

Panamnik. Panamnik, today partially covered by the town of Orleans, was the mythological home of the immortal Coyote, who established the War Dance, stole fire for mankind, decided how humans would be born, and decreed proper activities for women (pounding acorns, avoiding the sweathouse) and men (fishing for salmon and using woodpecker scalps for brideprice -- Harrington 1932b). Coyote's fishery was located at nearby Wilder Gulch (Bright 1957: 184-5). The *irahiv* rites at Panamnik began several days before those at Katimin, whose rites were very similar. Several distinctive features involving salmon are found in the literature. According to one of Drucker's informants, on his fifth day of pilgrimages, the priest went downriver below the mouth of Camp Creek, then retraced his steps "driving the salmon upriver and into Camp Creek" by means of a verbal formula (1936:26). One of Gifford's informants stated that

> *. . . on the last day, before the fatawenan (priest) stepped on the world, he shouted from a hill on the west side of the river to his two ikiyavan (female assistants), who were bringing wood on the east side of the river, to "tip the wood basket down," then to "tip the wood basket up." This referred to salmon, so there would be many salmon downstream and upstream . . .* (Kroeber and Gifford 1949:50).

Another feature reported involved the left-over food (ceremonially prepared food not eaten the previous evening by the priest and his assistants). Each morning the ceremonial cook would bury these remains, including salmon, under a specially designated "fertility" oak tree (Kroeber and Gifford 1949:51).

Katimin. The center of the Karok world is Katimin. Situated in a spectacular setting near Ishi Pishi Falls and Sugar Loaf Mountain (Auyich, home of the Immortal Duck Hawk), Katimin was until contact part of the largest

population cluster in Karok territory. It has always been the sacred center in myth and ritual, and it was here that world renewal was completed last and decisively. Karok identity is tied directly to this spot, whose "old and correct tribal designation is . . . *Ithivthanenachip Vaarar*, Middle of the World Person . . ." (Harrington 1932a:2).

The ten-day regimen of the priest preceding the vigil facing the sacred Mount Offield was very similar to that of the priests at Inam and Panamnik, including daily bathing and body painting, treks to sacred spots (where various Immortals had disappeared), fire building, foot stamping to put the world in proper position, and praying for salmon and acorns. During the entire time, he spoke to no one and was addressed by no one (Palmer 1980:42). While completing his sacred itinerary, the priest would at times gaze into the river water and pray -- e.g., "You have been still there for a long, long time. You will make the power stay fast and there will be plenty of salmon." Left-over ceremonial food was taken by the ritual cook to a special oak tree *(Xuntaiwananamhiti*, "much mush waste") where it was not buried as at Panamnik but thrown up into the foliage with the words, "I am giving to you what the priest has left over from his meal. I am feeding you, too, so all the pepole will have the same good luck as the priest has" (Kroeber and Gifford 1949:24, 28).

A special taboo affecting everyone is mentioned for the Katimin rite. No one was allowed to eat steelhead until the priest completed his all night vigil facing Mount Offield. To do so could bring retribution in the form of a snakebite, burns, or some other accident (Kroeber and Gifford 1949:21).

• *Amekyaram.* The mythological site for the origin (or releasing) of salmon, Amekyaram was also the only location for the all-important first-salmon rites in late March or early April. One name for the rites, *idurumva*, refers to the people "running away and hiding" before the priest commenced his ritual tasks at the stone altar by the river. Another designation, *saruk'amkuuf*, refers to the smoke that rose from cooking the salmon during those secret activities. Like the *irahiv* rites (but unlike the associated Deerskin dances, the first-salmon ceremony was not "owned" or regulated by individual sponsors or regalia owners. There were no public dances associated with *idurumva*, unless one counts the Jumping Dance, which followed three moons later (Kroeber and Gifford 1949: 35).

The first-salmon ceremony priest was assisted in his duties by a male assistant, a female cook, and a female wood-gatherer. The assistant priest was painted with sweathouse soot to represent fish-eating Racoon, the assistant priest in mythical times. Two sacred structures, a living house and the sweathouse, were used during the course of the 20-day ceremony (Kroeber and Gifford 1949: 36).

> For ten days the priest spent most of his time in the sweathouse, *sitting impassively, thinking, and wishing for the abundance of salmon, acorns, and other food in the coming year . . . . While officiating, the priest ate only acorn soup. He did not eat of the ceremonially cooked first salmon; that was the function of the assistant priest* (Kroeber and Gifford 1949: 36).

He did not, as the *irahiv* priest did, trek to sacred spots to light fires. He swept away diseases when sweeping out the sweathouse, and when he bathed he said, "I am getting into salmon blood." At night the priest was joined in the sweathouse by men who sang songs about various "salmon"--dog salmon, steelhead, and Chinook (Kroeber and Gifford 1949: 37-38). According to Roberts's informants, the priest once a day partook of both acorn soup and salmon, the latter "preserved from the previous season." During his daily bath in the river, he would pray for salmon using archaic language (Roberts 1932: 429).

The climax of the first-salmon ceremony came on the tenth day when the priest and his assistant rowed to the opposite shore to clean and cook the first salmon on the stone altar. Before their departure, the villagers retreated to the hills to avoid seeing the ensuing ritual or smoke. Up to this point few men actually fished for or touched the advance salmon in the run for fear of supernatural retribution. Most preferred to wait

until the "salmon smoke," after which the fishing season was officially open to all.

As one of Roberts's informants expressed it, "the good old people who belonged only to the neighborhood appointed themselves to fish for the first salmon (that is, those who were conscious of tribal dignity and leadership)" (Roberts 1932:430). In any event, some fishing took place to ensure the availability of a salmon for the priest and his assistant to prepare.

At the altar, the salmon was cut, cleaned, partially cooked over a fire, and partially consumed by the assistant. The remains were then burned in the fire along with a special root to produce a dense smoke, of which it was said, "it is just like an arrow sticking up, that smoke, it reaches to heaven." The villagers were forbidden to view it, and even the priests avoided watching it ascend and disperse (Harrington 1932a:7). After this ceremony, the priest and his assistant retreated to the sweathouse, where they remained in seclusion for ten more days, avoiding fresh salmon. After the fifth day, the people were allowed to prepare salmon in the normal way. About the time of the Jumping Dance in July, the priest and assistant were said to bathe in a pond about two miles downriver from Ishi Pishi Falls called Otiabixanam where the immortal salmon owners washed their flint or obsidian knives used to cut salmon (Kroeber and Gifford 1949: 37-38; Roberts 1932: 434-439).

The Jumping Dance may also have signalled the time for constructing the fish dam at the downstream village of Afchufich (Afsuf). Kroeber and Barrett (1960:20) state that according to Gifford's notes, the dam could be built only after completion of the dance and the weir formulist's seclusion for four days in the sweathouse at Panamnik.

• *Miscellaneous Taboos and Rituals.* A number of taboos and ritual acts unrelated to the first-salmon rites and the fall world renewal ceremonies have been recorded. One of the most interesting, observed only by Harrington, involve the ritual burning of salmon following someone's death. Vigils were kept at the grave site for five days until the ghost of the deceased ascended. Harrington reports that each evening during the vigil, a fire was built at the head of the grave, and acorns, dried salmon, and perhaps

other foods were placed on an openwork plate and placed in the fire and burned. No other details are provided (1932a:7).

Around 1872, Powers noted the Karok belief that no salmon could be captured if the poles used to construct platforms were gathered on the riverside where the salmon might have seen them or if those poles were used more than one season, "because the old salmon will have told the young ones about them." Commenting on this observation, Heizer notes its consistency with Northwest California Indians' ideas generally about the intelligence of salmon and the necessity for ceremonial purity of equipment used to capture them (Powers 1877:15, 212).

The fact that women were not allowed to fish or to approach fishing spots has been widely noted. Bright states that there was a general taboo against eating bear meat and fresh salmon together. Other people in various states of contamination or spiritual readiness (women after giving birth, gravediggers, priests during training or ceremonies) also were enjoined from eating certain kinds of food, including fresh meat and fish (Bright 1978: 182, 186).

As stated before salmon and other fish were not used in making medicines, although Gifford's field notes include the statement that a Karok women living at Oak Bottom "known Amaikiara salmon medicines, but wants $5 to tell them." Another of his informants told him of a medicine for good luck involving eels (Kroeber and Gifford 1980: 264, 293).

• *Ritual Management of Salmon Harvest*. The fact that the major Karok ceremonials were associated with the onset of major fishing activities raises interesting questions regarding the ecological correlates of Karok ritual. The implications are even more significant in light of the apparent interarticulation of ceremonies and fishing activities among the several tribes occupying the Klamath-Trinity -Salmon drainage. It is specifically reported, for example, that the Shasta believed that the first salmon to ascend in the spring brought "salmon medicine" from the Yurok at the river mouth and must be allowed to pass (Dixon 1907: 430-431). Later, before the summer/fall run, the Shasta did not eat fresh salmon or steelhead until the Karok completed their Deerskin Dance at Katamin (Holt 1946: 310). This

may not be, as Swezey and Heizer state (1977: 19), the "only example in California of one tribe regulating consumption of fish based on the ceremonial calendar of another downstream group." Pilling feels that the fall world renewal calendar and possibly the first-salmon rites as well of all the tribes along the river system were interlinked and coordinated with subsistence activities in such a way to maximize the harvest of salmon while allowing sufficient numbers of salmon to reach their spawning beds (1981: personal communication). His observations generally support the statement made by a Karok medicine man (Interview, 1981) that all the tribes were aware of each others' ceremonies and fishing activities, which were timed according to the salmon's progress upstream.

Further research would be necessary to validate and clarify these coordinated efforts. If substantiated, they would certainly strengthen the propositions set forth by Swezey (1975) and Swezey and Heizer (1977) concerning the adaptive consequences of the ritual management of anadromous resources in California fishing societies. They would confirm, for instance, Rostlund's contention that such rituals served a distinct conservational purpose--i.e., initial prohibitions against catching salmon ensured adequate escapement to spawning beds and successful reproduction ratios, while mass harvesting later during run peaks probably benefitted the salmon stock by preventing overcrowding at the spawning beds (1952: 16).

5.5 Persistence and Change in Karok Fishing Practices

To the present day fish and fishing have remained vital elements in Karok livelihood. Many aspects of fishing have changed with time and modernization, while other features have persisted essentially unchanged. The Karok are not unlike many aboriginal cultures throughout the world that have experienced dramatic and often traumatic changes in recent history. Characteristically, the major changes have been economic and technological, while to a lesser extent social and religious beliefs and practices have been modified. Outwardly the Karok appear to have changed a great deal. Many would claim that they have been entirely assimilated into the dominant white society along the central Klamath and in other places where Karok descendants now reside. Others who look deeper, however, as well as many Karok themselves, will maintain that appearances merely mask the persistence of much that is fundamentally and distinctly Karok.

Relatively few historical changes and their effects on Karok land and life have been documented. Undoubtedly many changes were observed and recorded in the published field notes of Kroeber, Gifford, Hewes, Harrington, and others, whose primary interest was describing traditional culture as remembered by early 20th-century informants. What can be stated and inferred about changes and continuities in Karok fishing will be outlined here.

5.5.1 Habitat and Population

With the exception of several introduced trade items obtained through diffusion along the established trade network, the Karok were virtually untouched by Euroamerican culture until the California gold rush. Then they were invaded, and, like most California Indian societies, much of their territory was overrun and taken away in a few short years. For the Karok, the invasion and inevitable "wars" lasted only about 10 years, beginning in 1850. By the time they ended, the Karok had been dispossessed of nearly all of their land.

How many miners came in contact with Karok villagers is unknown. Arnold and Reed, who lived among the Karok in 1908-09, claimed that by 1852, 500 to 1,000 miners were in the Orleans area (Panamnik). They also state that a measles epidemic in 1852 claimed half the Indian population "in Klamath

country" (1957:35,111). Bright (1978:188) succinctly summarizes the tumultuous effects of this period:

> *The impact of this invasion was greater on the Karok than on their neighbors since Yurok territory offered less rewarding prospects for mining. Karok land was "overrun by unscrupulous individuals who had no intention of settling or establishing cordial relations with the natives" (Barnett 1940:23). In 1852, after clashes between Whites and Indians around panámni·k, the Whites burned most of the Indian towns as far north as the Salmon River, and the Indians fled to the hills: the White town of Orleans was then founded. When the Indians returned, they found Whites' houses and farms on their village sites. Military operations in that year cleaimed 15 Karok lives, and 75 more in 1855. But subsequently, "some of the refugees were given permission to build houses in unoccupied places near the farms, and thus began their unattached existence, which in most cases has continued to the present day"* (Curtis 1924:(13):58).

No treaties with the Karok were ever ratified, nor was a reservation ever established specifically for them. Karok representatives signed Captain McKee's proposed treaties both at Weitchpec and Amekyaram in 1851, but these plans were never officially approved (Heizer 1972:47-51). Proposals to remove the Karok, along with other tribes, to the Lower Klamath Reservation (Wau-kell) (est. 1855), the Smith River Reservation (est. 1862), and the Hoopa Reservation (est. 1864) were never adopted. By the mid 1860s, ten years after the Red Cap War (Bledsoe 1885:84-5) the "Klamath Indians" (presumably including the Karok) were reported to be "'peaceable and well disposed' and had, through isolation, preserved their identity" (Bearss 1981:122-3).

Left to fend for themselves, the Karok gradually adapted to a tenuous peaceful coexistence with the whites who stayed to homestead, raise stock, trade, and work in the mining operations along the river. Frequent intermarriage was one adaptive response that eventually resulted in a significant population of Indian-white ancestry. Many contemporary Indian family names, such as Wilder, Tripp, Donahue, Allen, Ferris, and Sanderson, can be traced to this period (Winter 1978:5). Orleans was the county seat, and already by 1856 some 70 whites lived there (Melendy 1960:54).

Diverse residential and commercial developments continued to erode what remained of the Karok land base. Mining operations continued until late in the century (the Pearch hydralic mine actually operated until the 1930s) and were perhaps foremost in the destrucion of former village sites, ceremonial areas, and food resource spots. As late as 1893, large mines

operated on both sides of Amekyaram, and resentment among the Karok was pronounced (Winter and Heffner 1978:8). In the 20th-century, particularly within the past 20 years, lumbering has become the biggest industry in the Klamath region. In the early 1900s, most land comprising the original Karok territory was claimed by the federal government as the Klamath National Forest. In 1947 the lower section of Karok country was made part of the Six Rivers National Forest, with a District Office in Orleans. Since that time, lumbering has become the dominant industry, employing at one time or another a majority of Karok men. The effects of lumbering practices as well as Forest Service control over sites and resources important to the Karok have been important issues in recent times.

Winter (1978:16) summarizes the effects of white settlement and commerce on the Karok habitat:

> *The sites in and around Orleans are also representative of the cultural changes which have occurred within the past 125 years above and beyond the physical conflict between white and Native American. Numerous changes in resource base, population structure, settlement pattern, social organization, and technological approach, to mention a few, have occurred locally and are reflected by the sites . . . Where the miners moved in, many of the Karok sites were destroyed by mines, flumes and camps. Homesteads and ranches were built, trading posts, dance halls and hotels were added, and eventually roads were constructed. Within the past 29 years the region has become a timber area, as mills, cutting units, yarding areas, and access roads have appeared. The Orleans area, its resources and the sites within it therefore reflect the changing economy of the area, as one land use pattern after another has been superimposed on the earlier ones.*

The Karok population, estimated at 2,700 in 1848 (Cook 1956:98), declined rather drastically following the incursion of miners. Hostilities, privation resulting from subsistence disruption, and disease (especially introduced syphilis) accounted for the rapid drop. The population recovered, but after 1900 the "ethnically identifiable" Indians again declined with increasing assimilation and migration to towns outside Karok territory. Bright (1978:189) tabulates Karok population figures over a 116-year period. All estimates but that for 1905 are from Cook (1943b:98, 105):

Year	Population	Year	Population
1851	1,050	1905	994
1866	1,800	1910	775
1876	1,300	1915	870
1880	1,000		

In 1972, the Bureau of Indian Affairs office in Sacramento identified over 3,700 individuals having some Karok ancestry (Bright 1978:189). By 1978 there were some 4,500 persons on the unofficial roles of the Karok Tribe of California (Palmer 1980:1).

5.5.2 Fishery Resources

The cumulative effects of white entry, settlement, commerce, and regulatory statutes on Karok fish resources and fishing practices have been profound. Since contact two types of changes have been paramount. First, the number of fish, especially salmon, has declined. Second, access to the available fish resources has been restricted--at times severely--by government regulations banning mass harvesting and by trespassing on or outright control of fishing sites by white fishermen and landowners.

The 1850-52 invasion of miners along the central Klamath had an immediate and devestating impact on the Karok fishery. Most of the villagers from the mouth of the Salmon down past Orleans were forced to flee into the hills to avoid hostility and death. The timing, communal effort, and technological preparation necessary for successful weir building, net fishing, acorn gathering, and other subsistence pursuits were disrupted repeatedly during a five to ten-year period, perhaps longer. Not only were villagers driven away from critical fish resources, much of the food they did manage to procure and store often was deliberately destroyed by white settlers and miners, many of whom "thought it brave to assert by word and deed that an Indian had no rights" (Bledsoe 1885:76).

The depredations of hostile whites further were augmented by fences blocking access to resource sites and livestock, including hogs, which consumed important plant foods. This sustained attack on native livelihood produced both immediate and long-range negative impacts on Karok diet and nutrition, resistance to disease, birthrate, vitality, and, of course, the mortality rate (Cook 1943b:26-45).

The cessation of overt hostilities led to a resumption of fishing but not to its precontact extent or with free access to all former fishing spots. Weir building was discouraged (as much perhaps by lack of communal effort as by white opposition) and was abandoned early. Growing numbers of white-owned ranches and homesteads effectively took many previously owned fishing sites out of circulation, forcing some fishermen to seek less productive sites. A few others, like the notable Red Cap, were able to utilize their authority and remaining resources to capitalize on the new conditions by selling fish and perhaps other items to the miners and settlers (see Section 5.3.2). Much of the river did remain accessible, particularly after the establishment of the National Forest.

Fish and game laws have imposed another kind of restriction, effectively discouraging and even prohibiting the majority of Karok from mass harvesting of salmon with nets and weirs. As early as 1852, the California General Assembly passed laws that exempted Indians from the general prohibition against weirs and selling fresh salmon (Bearss 1981:319). For many years the Karok continued to erect platforms and harvest their salmon and eels with lifting nets and dip nets. However, since they possessed no officially recognized treaty rights governing Indian hunting and fishing, it was only a matter of time and growing statewide concern over the declining salmon population before they were forced to give up fishing with nets and comply with the evolving state and federal fish and game laws specifying allowable tackle and bag limits (Bearss 1981:319-34).

A letter written in 1928 by Finn Jacobs, a Karok medicine man, expresses the resentment caused by state and federal restrictions imposed on fishing along the central Klamath. In describing the Inam Pikiawish ceremony, Jacob writes that the priest at that time had only acorns to eat because "the White Man will not let Indian get his salmon." He ends by saying, "the White Man will not allow us Indians to have our food that is salmon and deer. We want our food, and our rules (for Pikiawish) carried out. We do what the White Man commands us, so why can't they do as we say?" (Graves 1934:71-2). Arnold and Reed's critical view of game laws in 1908-08 is also informative (1957:98).

The Karok never agreed with or fully complied with regulation of their fishing activity. There were several instances of noncompliance followed by arrests and seizures of "illegal" gear, especially in the 1950s. While dip-netting at Ishi Pishi Falls epitomizes Karok traditional fishing, it was considered illegal as late as 1968 when Pilling conducted fieldwork in the area (Pilling 1981: personal communication). (The legal status of dip-netting in 1957 when Barrett obtained his motion pictures cannot be stated here with any certainty.). Since 1970, however, the State Department of Fish and Game has come to an agreement with the emerging Karok Tribe that allows unrestricted dip-netting at the Falls by those "listed on the current Karok Tribal Roll" (1981 California Sport Fishing Regulations). (Some individuals of Karok descent enjoy Indian fishing privileges on the Hoopa Reservation. They are, however, officially members of the Hoopa Tribe, not the Karok Tribe, and are not, therefore, entitled to fish at Ishi Pishi as well.) Elsewhere on the central Klamath, fishing is governed by sport fishing hours, hook types and sizes, catch methods, and daily bag limits (generally three to five salmon and trout in combination).

The overall decline in the number of salmon in the Klamath River over the past 130 years is the result of several factors, none of which have been decisively quantified. The negative impact of mining operations was noted by several early observers, including Dr. Moffatt, a surgeon stationed at Hoopa around 1865. He reported that people familiar with the Klamath and Trinity rivers around 1850 had told him how these streams once flowed crystal clear and were thronged with salmon. By 1865 these favorable conditions had been dramatically altered. Indians no longer "sported on the banks . .(but) gaze(d) sadly into the muddy waters despoiled almost of their finney prey by impurities from the sluice-boxes of the miners at the heads of the streams" (Bearss 1981:126). In other words, mining silt and dirt dumped into streams covered and destroyed many spawning beds, and the muddy waters often made it impossible for Indians to capture fish by spearing them (Cook 1943b:33-4).

As the regional economy developed, other industries began to exert pressure on the salmon stocks; these included commercial fishing on the lower Klamath, sport fishing, and the timber industry, one of whose side effects was the blocking of many smaller streams and tributaries. Dams constructed on the Klamath at Copco (1913) and later at Iron Gate (1961), coupled with

water use by farmers in the Klamath basin to the north have affected river water levels, which in turn influence water temperatures so critical in the salmon life-cycle (Ken Gallagher 1981: interview; Bearss 1981:266-75). Most significantly perhaps, recent studies by fish biologists have shown that over 80 percent of the Klamath-bound adult Chinook salmon have been captured over the past decade by off-shore commercial trolling operations (Rankel 1980:91).

Whatever the causes responsible for the decline in the salmon population, they have been beyond Karok control (but not their concern). Together with regulatory and land tenure restrictions on access, these extraneous forces have resulted in a significant reduction in the annual average salmon harvest by the Karok people as a whole. Catch statistics in recent times have not been collected for the Karok. The total annual average take of all inland sportfishermen (including most Karok fishermen) on the Klamath is estimated to have been about 10,000 Chinook, or somewhat over 3 percent of the total harvest (ocean and inland) during the 1970s. Indian netting (Ishi Pishi not included) during the same period ranged between 15,000 and 25,000 Chinook annually (Rankel 1980:255). Overall, the number of Chinook harvested by the Karok for subsistence and ceremonial purposes probably has not exceeded on average more then 6,000 per year.

5.5.3 Fish Technology and Production

Today dip-netting is carried on at Ishi Pishi Falls in a manner very similar to that reported in earlier times. The dip nets in use are of similar construction and dimension (see Section 5.2.3). Nylon netting has replaced the former iris cord.

Dip-netting at the Falls is the only method of fish and eel harvesting that has maintained its "traditional" character. Women, who otherwise can and do fish with modern gear elsewhere, do not fish at the Falls. A Karok man interviewed (1981) said simply that women were not allowed to fish there, in accordance with the old ways. Only at the Falls apparently have traditional ownership rights continued to operate in recent times with any degree of authority. The privileges of lending, renting, and selling such rights were still in evidence around 1940 when Gifford recorded a transaction involving six dollars for a share in ownership at Katimin (Kroeber and Barrett 1960:3-4).

Interviews with several Karok in 1981 confirmed that specific fishing rights in the recent past are well remembered and that reciprocity in contemporary fishing and fish distribution are conditioned to a significant degree by the persistent recognition of those ownership patterns.

Platform and lift net fishing, as well as harpooning, were maintained until well into the present century, but gradually they were given up as traditional technological lore was lost with the passing of full-blood elders and the imposition of fish and game laws. Grover Sanderson's photos of Karok platform fishing in the early 1930s (Figure 5.1) show that techniques's survival to that time. Weirs more than likely were not built after 1870; Powers (1877) does not mention them. Set nets continued in use past 1900, but, like other forms of netting, were eventually disallowed.

Writing in 1942, Hewes stated that in Northern California generally the "elaborate trout angling complex with artificial flies, rods and reels . . .(had) not spread to the natives"(1942:106). The 1940s, however, saw a transition from older to newer methods for reasons previously cited. In short, most Karok have had little choice during the past 30 years or so with respect to fishing methods. Those who wanted to fish and who willingly complied with fishing regulations had to adopt angling technology. Not all, however, have felt it necessary to apply for the standard fishing license (Interview data).

Few Karok residing along the central Klamath engaged in legalized commercial fishing on the lower Klamath or utilized the technology designed for it. Pilling knows of only one Karok, a Hoopa tribal member, who actively participated in commercial fishing operations at Requa around 1930 (1981: personal communication). The large gill nets associated with this enterprise were not practical for the conditions in Karok territory, and along with the canneries they were always perceived as a threat to an adequate salmon run on the middle stretches of the river. As one Karok man told Arnold and Reed in 1908, "there are always dances going on in heaven, and plenty of hunting and fishing with no game laws or canneries down river to interfere with you" (1957:117).

Contemporary opposition to commercial fishing and on-going gill netting downriver is universal among the Karok. One individual interviewed (1981) insisted that gill netting was not "traditional" and therefore not proper. Another Karok man told us that the Orleans Tribal Council a few years ago passed a resolution opposed to commercial fishing under present

rules and conditions. The Karok Tribe, representing the three regional councils, has yet to take an official position.

The Karok have continued to cut, preserve, and cook salmon and other fish in ways similar to the "old ways." Modern methods of cutting and cleaning fish were described by Gifford around 1940 (Kroeber and Barrett 1960:99; see Section 5.2.4 above). Fish are smoked and kippered in small smokehouses near living houses. Roasting and broiling fish over open fires are still favored methods for preparing fish, although frying and boiling are also common. The old customs and tastes that ensured the utilization of virtually the entire fish are still in evidence (Interview data).

A recent and notable feature of contemporary Karok fisheries management is a salmon-rearing project designed to enhance to Chinook population in future runs. Begun in 1978 as a cooperative venture between the Karok Tribe and the State Fish and Game Deaprtment, this program currently consists of seven rearing ponds established on tributary streams in the vicinity of Happy Camp and Orleans. Two more ponds are planned by 1982. Over 200,000 Chinook fry (obtained from Iron Gate hatchery) have been raised for release into the Klamath as yearlings. As explained by the project supervisor, Ken Gallagher of the Fish and Game Department (Interview 1981), the return rate of these yearlings should be ten times greater than that of "wild" salmon (whose rate is 2.25 fish per spawning female).

The ponds are tended and the fish fed daily by part-time Karok employees paid with funds from a CETA grant and the BIA. Major funding for the $200,000 project has been provided by the Tri-County Indian Development Association.

Most Karok seem supportive of this contribution to the salmon resource. Others are skeptical of its success or consequences. One man thought all salmon would be gone from the Klamath within ten years. As for the rearing project, he felt it would fail because it was not "natural." Also, salmon were being released in some creeks that supposedly never supported salmon. Another expressed misgivings about the possible consequences of a successful project. He reasoned that if in ten years all the salmon running upriver were from raised stock (shown by tagging), the State might then argue it owned the fish (because it paid for raising them) and that the Indians no longer had special rights to harvest them. His argument also suggests that raised salmon are not a "natural" resource.

5.5.4 Ceremonial Decline and Revitalization

Precontact Karok religion and fishing were both multidimensional complexes involving specialized knowledge, coordinated social activities, and technological elaboration. Each system was finely tuned to environmental receptive to the intricate information they entailed. Both systems were intertwined: fishing was on one level a religious activity ordained by the immortals; in turn, religious activities, both secret and public, relied on salmon as a common denominator for their successful completion.

The disruption and modification of Karok habitat, livelihood, and society following contact inevitably resulted in corresponding religious changes. Many sacred spots and ceremonial sites were damaged, destroyed, or fenced off by miners, homesteaders, and other commercial developers. Entire ritual complexes disappeared along with associated subsistence activities and events--e.g., weir building at Afchufich and the first-salmon rites/spring salmon run. Ceremonial regalia was often sold to buy food and other necessities. Wage labor interfered with spiritual training and preparation. World Renewal ceremonies, normally conducted in an atmosphere of social harmony, were marred in the early 1900s by excessive drinking, violence, and disrespect exhibited by increasing numbers of disaffected mixed-bloods (Arnold and Reed 1957:276-7; Kennedy 1949:15). Important localized sacred lore was lost with each decreasing generation of full-bloods. New religions and other assimilation pressures further undermined community interest in the old ways. One by one the rituals and ceremonials lapsed:

BIBLIOGRAPHY - KEY TO ABBREVIATIONS

AA	American Anthropologist
A Ant	American Antiquity
AQ	Anthropological Quarterly
AR	Anthropological Records
BAE-B	Bureau of American Ethnology, Bulletins
GSA	General Service Administration
ICAES	International Congress of the Anthropological and Ethnological Sciences
KASP	Kroeber Anthropological Society Papers
UCARF	University of California Archaeological Research Facility
UCAS-R	University of California Archaeological Survey - Reports
UCPAAE	University of California Publications in American Archaeology & Ethnology
UCPL	University of California Publications in Linguistics
USDA-FS	U.S. Department of Agriculture, Forest Service
USDI-BIA	U.S. Department of the Interior, Bureau of Indian Affairs
USDA-NPS	U.S. Department of the Interior, National Park Service
USDI-PSFC	U.S. Department of the Interior, Pacific Southwest Field Committee
USGPO	U.S. Government Printing Office

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