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The Distribution of Oceangoing Canoes on the North Coast of California

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IN 1968, Richard Gould presented ethnographic evidence that certain canoes were specifically made for ocean navigation among native groups along California's northern coast. In his paper, "Seagoing Canoes Among The Indians Of Northwesten California," he postulated that oceangoing canoes did in fact exist, contrary to doubt expressed by certain scholars (Gould 1968:11-13). He further provided detailed information regarding their manufacture and physical/functional characteristics. This paper is an attempt to clarify certain points not thoroughly addressed by Gould and, subsequently, broaden the scope of his study. Three lines of evidence will be examined concerning the distribution of oceangoing canoes in an effort to define their southern geographical and cultural boundaries. Using this evidence, a descriptive model will be developed to characterize the occurrence of canoes used on the ocean along the north coast.

In determining the distribution of oceangoing canoes, the first step lies in a reexamination of the ethnographic accounts for the six

aboriginal groups under consideration in this study (Fig. 1). Secondly, the ethnographic evidence is compared to the distribution of those marine resources of economic importance, principally marine mammals. The last consideration is an analysis of the technology required to procure those resources under certain environmental limitations.

ETHNOGRAPHIC STRUCTURE

Along California's north coast from Shelter Cove north to the California-Oregon border, six ethnographic groups were recorded to possess roughly four varieties of water craft (cf. Kroeber 1922, 1925; Driver 1939; Heizer and Massey 1953; Hewes 1947; Baumhoff 1958; Nomland 1935, 1938; Gould 1966, 1968, 1976; Elsasser 1978; Powers 1877). These types were large redwood dugout canoes, two variations of smaller redwood dugout river canoes, log rafts, and large baskets. Of these, the *large* redwood dugout canoe forms the subject of this essay.

Digressing for a moment, a brief discussion on what *oceangoing* is should be outlined. Definitions of oceangoing canoes are not always clear in the ethnographic literature, and because of this it is important to develop a

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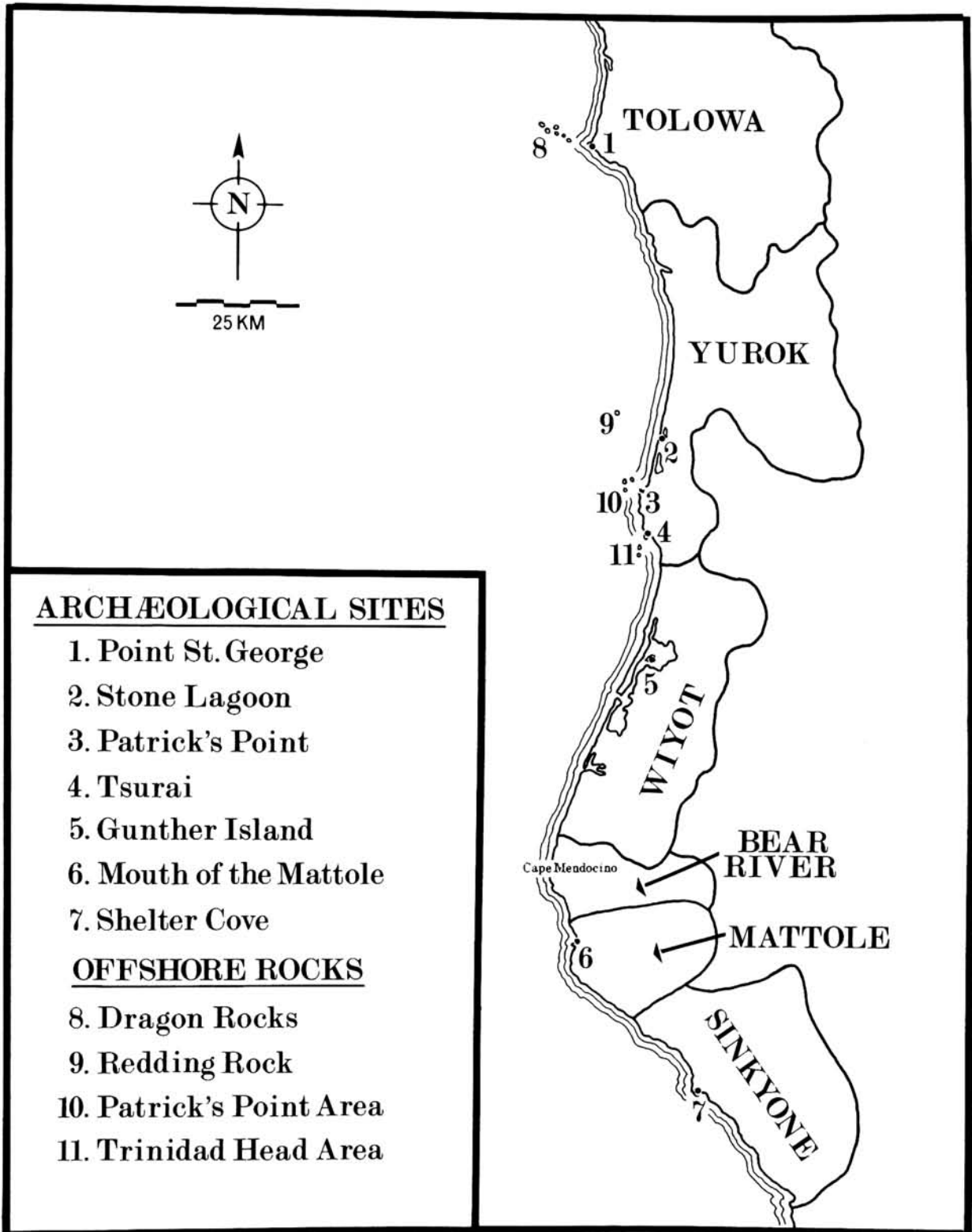


Fig. 1. Distribution of ethnographic groups, archaeological sites, and marine mammal habitats discussed in text.

working definition to identify this activity wherever it presents itself, so that a clear comparative distinction can be made between oceangoing canoes and canoes used for other purposes. As will become apparent below, an underlying assumption made about oceangoing canoes is that there is a correspondence between their form and function. This is to help avoid confusion between something that merely floats on the ocean and, in the sense used here, oceangoing canoes.

What is meant here by the term "oceangoing" is the act of safely traveling out substantial distances on the ocean; "substantial distances" being a qualitative judgment in this instance. (Reliable success of executing excursions out on the ocean may be taken as a rough index to safety.) While the act of oceangoing discussed in the present context would by no means be a *seafarer's* definition of oceangoing (i.e., traveling on the open sea), we think it appropriate to use this term to impart substantial differences in distances which various canoes can safely travel out on the ocean. For example, we do not want to compare the distances that a canoe can travel with that of a modern schooner; rather, we want to identify and compare those cases where one sort of canoe is used to travel, say, 10 km. out on the ocean, with that of other sorts of crafts designed for and used to travel, say, only 0.2 km. or less on the ocean, if they are used on the ocean at all. Here, the former canoes would be performing the act of oceangoing, the latter watercrafts performing an act of "non-oceangoing," or, at the very least, being *much less* oceangoing than the former case. Therefore, in this relative sense, the distinction here is between those watercrafts that are oceangoing and those that are not based on the distances these crafts travel out onto the ocean. As suggested above and illustrated below, the form (size) of canoes plays a strong role in limiting distance safely traveled out on the ocean.

Getting back to the point though, Gould

outlines the form and function of oceangoing canoes and other canoes with ethnographic documentation from the Tolowa and Yurok groups as follows:

They [redwood dugout canoes] were of two principal types: the river canoes and the seagoing canoe. The river canoes were about 15 feet long and, in aboriginal times, were blunt ended with peaked prows . . . The seagoing canoes described by the informants were all of the same general shape as the post-contact river canoes . . . but of course, *were much larger*. The Tolowa, Tututi, and Yurok informants all agreed that they were very large boats, on the order of 30 to 40 feet long and 5 to 10 feet in beam . . . [emphasis added][Gould 1968:14-16].

If we assume the veracity of the informants has integrity, then there is a clear distinction between oceangoing canoes and other sorts of canoes based on differences of sheer size—the oceangoing canoes being roughly twice as large as the others.

As to the function of the oceangoing canoes, Gould reports that among the Tolowa trips of 10 to 20 km. were made within the time span of a single day. While the sea mammals killed on the offshore rocks could be towed behind the canoes, the size of these crafts could and did allow the hunters to bring the prey directly aboard. Furthermore, according to Gould (1968:25, 30) and Powers (1877:69) the weight capacity of these canoes ranged from one to five tons and thus could have transported several sea mammals of varying size at once. The inference here is obvious: these canoes were quite large and they traveled considerable distance out on the ocean.

Other than hunting, a second type of use for oceangoing canoes was recorded in historical accounts of trade activities taking place in the Wiyot territory where the Yurok transported goods and people as far south as Humboldt Bay (also see Powers 1877:69). Gould states in this matter:

If this account is accurate¹ the Yurok (Figure 1, #4) were already in possession of quite large canoes at the time of their first encounter with Europeans. Certainly there is ample evidence, both ethnographic and documentary, to demonstrate that large, seagoing canoes were used by the Yurok in historic times to haul freight (for whites) as well as passengers (usually other Indians) along the coast [Gould 1968:21-22].

Moreover, Waterman (1920:220, 225) clearly states that different family groups among the Yurok owned portions of Redding Rock (Fig. 1), a primary site for hunting sea mammals. As this offshore habitat is approximately 11 km. from shore, the Yurok would have necessarily used large oceangoing canoes similar to those observed to be used for coastal transport.

In summary then, the ethnographic literature for the northern groups clearly distinguishes between oceangoing canoes and other canoes on the basis of size as predicated by function.

As initially suggested, the principal area of concern lies to the south within the territories of the Bear River, Mattole, and Shelter Cove Sinkyone. While the ethnographic evidence is considerably less clear than for the northern groups, there is nevertheless a general, yet distinct pattern of canoe use for these southern groups. Nomland (1935:153) reported that among the Shelter Cove Sinkyone ". . . seal and sealion (were) speared from large redwood canoes; killed with cascara-wood club; towed to shore . . ."

In searching for a more precise definition of the term "large" in Nomland's report, several clues can be gained from a rough description of the watercraft manufactured and employed by this group:

Rafts of logs lashed together with iris rope; poled. Canoes of whole logs burned inside, dugout, shaped with obsidian knives; bow pointed, stern flat, seats fore and aft, poled and paddled [Nomland 1935:155].

Although both forms of watercraft noted above are reported to have been used on the ocean, the marine mammal kills were always towed to shore and never carried. It follows then, that the Sinkyone probably employed river canoes "on the ocean" only for very limited distances out, most often within protected/marginal coastal waters. This conclusion is also supported by Kroeber (1922:9; 1925:147) and Baumhoff (1958:194).

For the Bear River there is also record of canoes being used on the ocean. However, the evidence seems comparable with that of the Sinkyone. While Goddard (1929:299) briefly reports that there were no canoes at all among the Bear River Athapascans, Nomland's later account of this group is more revealing:

Seals and sealion were hunted for their flesh and oil. Unstable canoes and primitive equipment made their capture a very hard pursuit. The fact that the hunter must venture into the ocean where the seal and sealion could demolish or overturn his boat, made this type of hunting so dangerous that all possible precautions were taken² [Nomland 1938:111].

Obviously, the canoes dispatched in this case were not seaworthy. Not only did the ocean present a threat, but the sea mammals were also considered dangerous. This suggests that the canoes were neither large nor stable enough to be taken out onto the ocean for any appreciable distance. Moreover, it should be noted that the Bear River, similar to the Sinkyone, towed marine mammal kills to shore and never carried them aboard the craft. Furthermore, while the northernmost groups could accomplish their transports in one long trip, Nomland (1938:111-112) reports that the Bear River often made several trips in one day, towing individual kills, thus inferring very short distances traveled. Consequently, the canoes used by the Bear River and Shelter Cove Sinkyone groups are considered to be

neither substantially nor functionally the same as those of the Tolowa and Yurok.

The use of canoes by the Mattole, the last group to be considered, figures very little in the ethnographic record. Instead, this group hunted sea mammals using a considerably different method. Baumhoff (1958) presented notes collected by Goddard that outline that approach:

On a bench 1/2 mile long in a cove a mi N [a mile north] of the mouth of the Mattole river . . . [there is offshore]³ a large flat rock (*teiyaticise*) occupied by sea lions. The Indians used to swim to it and club the sea lions to death [Baumhoff 1958:196].

In summary then, the ethnographic literature presents well-documented evidence that

all the aboriginal groups on California's north coast exploited marine mammals. It is clear however, that the use of watercraft in their pursuit varied greatly. When the above information is combined with the distribution of sea mammal habitats and the archaeological record, a general pattern of process emerges that more precisely delimits the cultural and environmental context of oceangoing canoes.

ENVIRONMENTAL AND ARCHAEOLOGICAL STRUCTURE

The following variables are considered: (1) the distribution of environments containing intensively occupied marine mammal haulout grounds beyond the normal range of swimmers (greater than 500 meters out), and (2) the occur-

Table 1
OCEANGOING ETHNOGRAPHIC GROUPS CORRELATED WITH ARCHAEOLOGICAL SITES, OFFSHORE MARINE MAMMAL HABITATS AND THEIR DISTANCES OFFSHORE, AND HARPOON FREQUENCIES (REFERENCES GIVEN FOR SITES)

| Group | Sites | Habitats | Distance (km.) | Harpoon Frequencies | References |
|------------|----------------|----------------------|----------------|---------------------|-----------------------------------|
| Tolowa | Pt. St. George | Dragon Rocks | 11 | 17 | Gould (1966) |
| Yurok | Stone Lagoon | Redding Rock | 11 | 9 | Milburn <i>et al.</i> (1979) |
| | Patrick's Pt. | Turtle Rock Flatiron | 1.9 0.9 | 15 | Elsasser and Heizer (1966) |
| | Tsurai | Black Rock | 0.5 | 13 | Elsasser and Heizer (1966) |
| Wiyot | Gunther Island | No habitat | 0 | 0 | Loud (1918) |
| Bear River | No sites | Sugarloaf Rock | 0.2 | | |
| Mattole | Mattole River | Seal Rock | 0.2 | | |
| | Hum-177 | | | 0 | Levulett (personal communication) |
| | Hum-176 | | | 0 | |
| | Hum-175 | | | 0 | |
| Sinkyou | Shelter Cove* | No habitat | 0 | | |
| | Hum-186 | | | 0 | |
| | Hum-182 | | | 0 | Levulett (1979) |
| | Hum-183 | | | 0 | |
| | Hum-184 | | | 0 | |

*A possible composite harpoon tip was recovered from Site Ca-Hum-248. Although resembling stylistically harpoons from the northern sites, it is very much smaller. In addition, the site is located one mile from the coast. As a result it was not considered in this study.

rence and frequency of archaeologically recovered composite stone harpoon tips associated with the hunting of marine mammals (Gould 1966:56-57). When viewing the distribution of these two variables, a general trend is apparent, that is, both offshore habitats and composite harpoon tips increase in abundance to the north (see Figs. 1 and 2 and Table 1).

The Tolowa and Yurok sites all contain composite harpoon tips within a clear environmental context. On the other hand, the Bear River, Mattole, and Sinkyone occupy regions of the coast with no extensive offshore habitats and show a lack of harpoon tips. At Cape Mendocino the most notable offshore habitat is only 200 m. from shore (Sugarloaf Rock). Similarly, at the mouth of the Mattole river, Seal Rock is approximately 200 meters from shore. Within the Sinkyone territory, offshore habitats are practically nonexistent.

Within the Wiyot territory there are no offshore habitats and no archaeologically recovered composite harpoon tips. Likewise, there is no ethnographic evidence leading us to think that the Wiyot used oceangoing canoes. The only instance when oceangoing canoes were sighted in this area is where the *Tolowa* and *Yurok* brought them down the coast (cf. Powers 1877:69). Given these data in conjunction with the previously mentioned ethnographic information, it follows that these oceangoing canoes were not used by the Wiyot in any capacity (but especially for the offshore procurement of marine resources). Hence, the Wiyot follow the general pattern fairly well.

By combining the technological and environmental data presented, a more general statement may be postulated to define the distribution of oceangoing technology.

A DESCRIPTIVE MODEL

This model is an attempt to structure the information presented into a single working statement that describes and predicts the distribution and occurrence of oceangoing canoes.

This is to say, when there are resources located at various distances offshore, and if those resources are to play a role in the economy of a group of people, it is expected then that those people will have the technological means of exploiting those offshore resources. From this we postulate, in the present context, that smaller crafts would be fit only for use in exploiting those resources very close to the mainland, if their use would be necessary at all; and that as the distance of resources from shore increases, larger, more stable canoes would be required to exploit those resources. The general method of modelling these relationships is closely related to other "descriptive models" in that some form of "interaction" between human groups and resources diminishes as a function of distance (cf. Renfrew 1977; Jochim 1976).

For the purposes of this discussion, distance and risk are considered to be directly related. That is, risk is directly proportional to the distance of a resource from shore. Both Gould (1968:27-30) and Nomland (1938:111) cite the dangers involved in taking *any* of these canoes onto the ocean. Thus, as distance increases, so does the risk involved in traveling that distance, and as a consequence the "pull" of that resource diminishes. This relationship existed because: (1) greater distances required more time on the water, thus increasing the risk of changes in ocean conditions, (2) length of daylight hours constrained distances traveled because navigation did not occur at night (Gould 1968), and (3) the distance to the horizon was the outer limit for ocean navigation because it did not occur in the absence of visual landmarks (Gould 1968).⁴

Before describing the model, two shortcomings should be pointed out. First, all resources are considered equal in size and availability. This assumption is made due to our inability at this point in time to quantify the relative abundances of the marine mammal resources in all areas considered. However, the

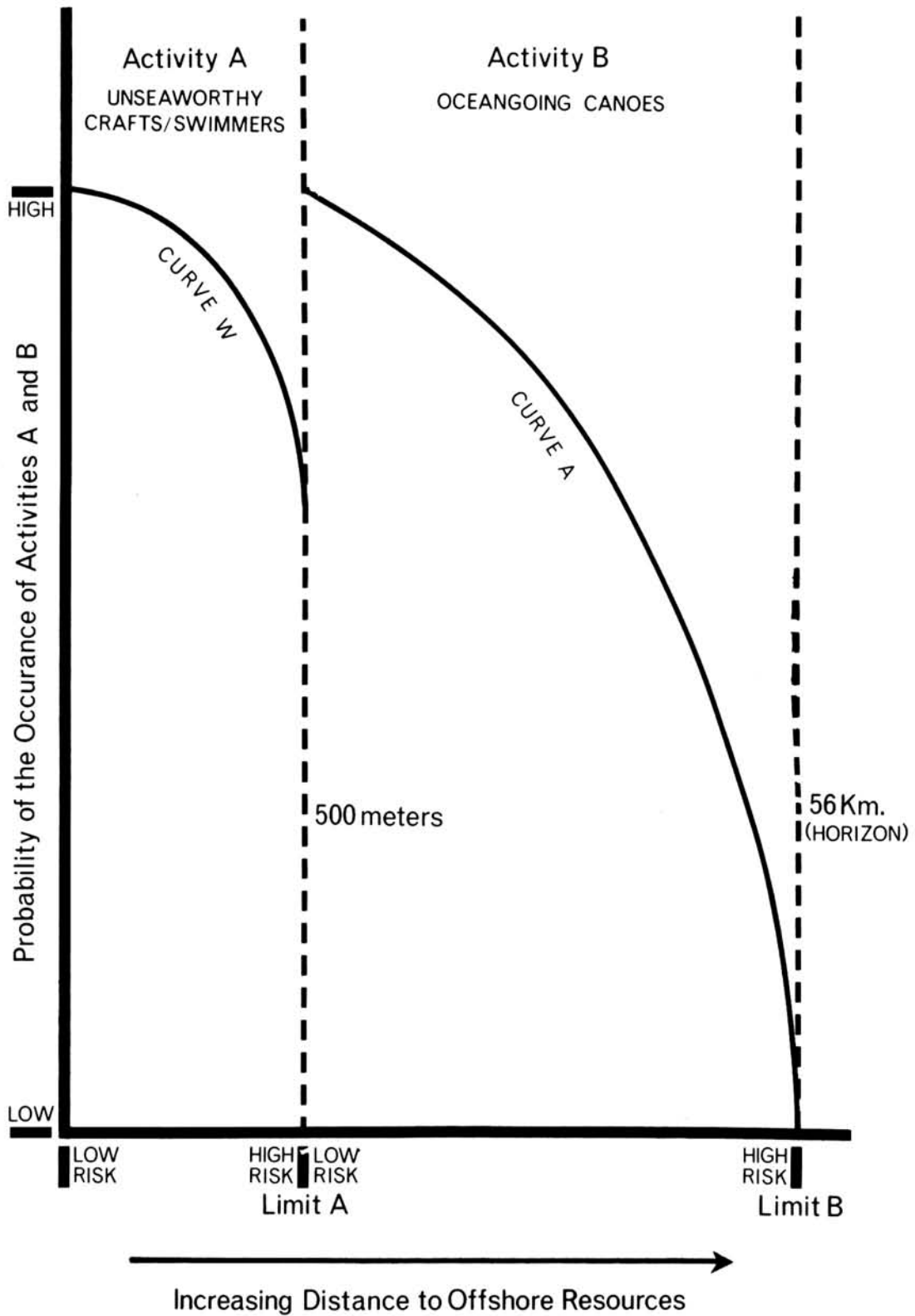


Fig. 2. Descriptive model discussed in text.

preliminary quantitative data accumulated thus far do not change the results in any way. Second, and largely the result of the above problem, it should be emphasized that the relationships described by the forthcoming curves are idealized, representing trends between ethnographically and archaeologically documented correspondences with the environment. It should be viewed therefore as a tentative proposition subject to further tests.

The horizontal axis in Figure 2 represents the distance of offshore resources from the mainland; specifically, the model assumes the presence of resources offshore. The vertical axis represents the probability of the occurrence of a particular type of activity. Limit A (500 meters) is the farthest distance which unseaworthy crafts and/or swimmers would be likely to venture out to sea. This distance is derived from the ethnographic literature (Baumhoff 1958:196; Nomland 1938:111-112). Curve W indicates when the resource distance approaches Limit A, the probability of observing smaller crafts and/or swimmers in pursuit of that resource diminishes toward zero. Limit A is the point where the "pull" of a resource is the weakest and the risk of getting it is the highest when appropriate canoes are not employed.

Past the point of Limit A, there is an implied technological threshold that must be overcome, that is, oceangoing canoes are necessary. Limit B is simply defined by the horizon since navigation was based on the visual identification of landmarks. The shape of the idealized curves are based on the previous discussion of risk.

CONCLUSIONS

As a final comment, it should be pointed out that additional areas of investigation would help confirm or falsify the fundamental relationships presented here between the location of marine resources and appropriate technology. For example, fish remains from Point

St. George indicate that deep water fishing was a common practice among the Tolowa (Gould 1966, 1968). And as expected, fish remains from the Mattole and Sinkyone sites show an abundance of intertidal species with a marked absence of deep water fishes (Levulett, personal communication). Although fish data are not yet available for the Yurok, Wiyot, or Bear River, the evidence that does exist lends additional independent support to the argument presented here. Furthermore, the model can be tested for more general applicability through the analysis of a wider range of ethnographic, archaeological, and environmental data. A preliminary review of pertinent California literature indicates that its ability to account for the distribution of canoes used on the ocean may be wide ranging (cf. Levy 1978:492-493; Hester 1978:500-501; Grant 1978a:505-506; Greenwood 1978:522; Grant 1978b:524-527; Bean and Smith 1978:538-540; Bean and Shipek 1978:552; Hudson 1976).

Although there is the possibility of general application, at present, the model is designed specifically for the north coast of California. Assuming that we have correctly assessed the ethnographic, archaeological, and environmental data, it follows that the model is a good approximating device. As a result, we conclude that the use of oceangoing canoes for hunting marine mammals extended no further south than somewhere in the vicinity north of Humboldt Bay.

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NOTES

1. The account that Gould cites is derived from the diary of *Bodega y Quadra* (1865:285):

The savages observing my movements, and perhaps realizing the few persons who remained with me, and being moreover encouraged by the smallness of the sloop, embarked in about 10 canoes with 28 or 30 Indians in each, and approached my vessel with the object of impeding my departure . . . [Gould 1968:20].

2. Precautions generally took the form of ceremonial observations (e.g., sexual abstinence, cleansings) and setting forth only on calm, windless days (Nomland 1938:111).

3. Goddard reported that the large flat rock (Seal Rock) was some 500 to 800 yards out. However, personal observation and consequent measurements from a 15' Geologic Survey Map, revealed that the distance is actually 200 m. from shore.

4. There may be some dispute concerning the actual distance over which the horizon (i.e., the coastline) presents itself while at sea. For the purposes of this paper, we have arbitrarily chosen a distance of roughly 30 to 35 miles (56 km.) which the horizon may present itself under optimal visual conditions. It may be, however, a much shorter distance than is presented here. In any case, even though some people cannot see past their nose, the concept "horizon" as it is used here still obtains the same effect, whether it is defined as being 35 miles or 8 miles.

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