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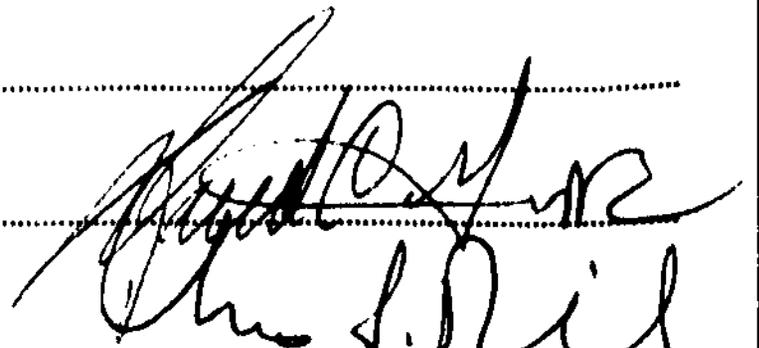
Robert Anthony Hare

ENTITLED A New Model for the Pleistocene Peopling of the Americas

Using a Prehistoric Migration as a Basis for the Original Migration into the New World

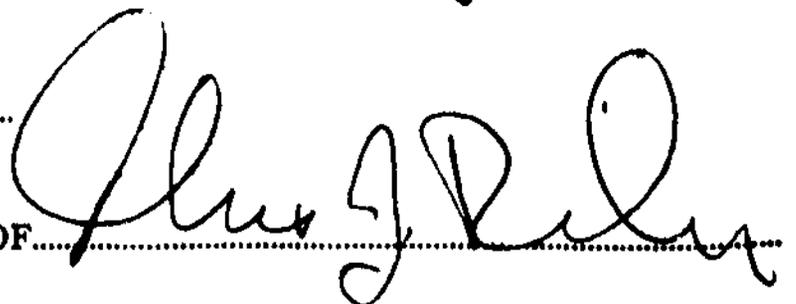
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**A  
New Model for the Pleistocene Peopling  
of the  
Americas Using a Prehistoric Migration  
as a  
Basis for the  
Original Migration into the New World**

**By**

**Robert Anthony Ware**  
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**Thesis**

**for the**

**Degree of Bachelor of Science**

**in**

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## **INTRODUCTION**

From the time the European explorers first "discovered" the "New World" and its inhabitants, questions have been asked concerning the origins of the indigenous peoples of the Americas. Early conjecture had the Native Americans as descendents of many different groups. Such groups included the lost tribes of Israel, lost legions of Roman soldiers and recently as the survivors from the fictitious continent of Mu (Fagan 1987: 27). These origin myths as well as others have since been discarded as our archaeological research and knowledge of ancient Native Americans has increased.

Great advances have been made since the formative years of American archaeology. In the early years it was proposed that human entry into the continent was quite recent. Proponents of this school of thought felt that distinct markers such as tool traditions and good stratigraphic context were needed to make an arrival estimate. Two of the strongest proponents in this area were William Holmes and Ales Hrdlicka. Hrdlicka placed man's arrival around 4000 BP (Fagan 1987: 50). At the time Hrdlicka's political power in the field of anthropology was so great that his viewpoint was virtually uncontestable. This prevented anyone else's ideas or evidence for an earlier arrival from even being considered. With the discovery of Folsom and Clovis cultures the arrival date was pushed back several thousand years to a time between 10,000 and 12,000 BP.

From that point to the present archaeologists have been trying to pinpoint the "actual" time of man's arrival into the New World.

Archaeologists were able to take a step closer to this objective after finding that ocean levels have not been static. During periods of severe glaciation such as the Wisconsinian glaciation, sea levels dropped considerably lower than modern ocean levels. The lower oceans exposed additional masses of land. It is from this data that archaeologists and geologists have formalized the theory that a land bridge existed between Siberia and Alaska. This land bridge is known as Beringia (Fagan 1987:102). (see figure 1)

Beringia has given archaeologists a time frame in which to work. There are only certain periods of time in which the land bridge existed. By looking at the times of glaciation we may estimate a fair chronology of land exposures and inundations. (see figure 2) Today the Bering Land Bridge is almost universally accepted as the entry point for man into the Americas (West 1981: 3). Although the theory is agreed upon, due to the repeated times of exposures and inundations, a definite time of entry is difficult to discern. This fact alone has led to a division in the field of anthropology dealing with the theories of the peopling of the New World.

There are two lines of thought concerning the peopling of the Americas. One line follows the belief that humans first arrived between 60,000 and 30,000 years ago. They propose a very slow rate of expansion and movement across the Continent (Lathrap: personal communication). This argument is countered by those who believe that man entered the Americas relatively recently between 12,000 and 25,000 BP. They then proceeded

to expand and to populate the New World "quickly". In this thesis, I plan to show that the possibility for a recent arrival into North America circa 25,000 to 18,000 BP is well within reason. I will show that not only is the rate of movement acceptable but that the rate of growth and expansion is acceptable as well.

### ARGUMENTS FOR THE PEOPLING OF THE NEW WORLD

At the forefront of the argument for an arrival prior 33,000 BP are archaeologists such as Alan L. Bryan, Tom Dillehay, J. M. Adovasio and Robsen Bonnichsen all of whom one may find in some of Alan L. Bryan's publications. The following is a summary of some of the sites proposed as evidence for the hypothesis of an early entry.

The first area to be discussed is that of Old Crow Basin located in the northern Yukon Territory under Robsen Bonnichsen's direction. At this site bone material was found that showed initial dating of 27,000 BP. The most intriguing bone artifact found was a caribou bone flesher that was partially fossilized (Bonnichsen 1978: 102). These finds led to the hypothesis of a bone tool tradition pre-dating a lithic tradition. This fell right in line with the pre-projectile theory that was earlier proposed by Krieger(1964: 26). However, the conclusions that were drawn from this data have since been discredited. The material was found in a layer of redeposited alluvium which led to problems with the stratigraphic chronology(Morlan 1988: 33). The bone material was dated using a bone apatite method which has been found to be unreliable. After further study

and the use of accelerator assays, the dates were brought down into the 1300 BP range. Even though the bone flesher was not from an early period, there are great quantities of faunal material here that is from the pre-20,000 year time range. The faunal material found here does suggest that if man were present food resources would be abundant. With this evidence Old Crow is proposed as a "good" example for a very early site.

Looking southward one may find a site that has drawn much debate, Calico Hills. This site was even visited by the late Dr. Louis Leakey and endorsed by him. The Calico Hills Project directed by Ruth D. Simpson has drawn much attention due to the early dates of 200,000 BP attributed to the proposed archaeological sites located there (Fagan 1987: 64). It was due to this date and the "primitiveness" of the "artifacts" found there that Dr. Leakey visited and "approved" the site as genuine (Simpson 1980:12). His estimation that the lithics resembled paleolithic artifacts such as the ones found at his African sites legitimized the claims being made. Even though the site was "approved" by such a prominent person as Dr. Leakey, the site is considered quite questionable. Some hold that the lithics are not artifacts but "geofacts", naturally created, and that this is not a site at all (Carlson 1983: 74). However, if this site is that old, then one might expect to find that the artifacts do resemble geofacts. All of this leads to great speculation about the validity of the site designation and dismissal of it as a site by some.

One site that does seem to promote the hypothesis for an early arrival is located in the eastern United States. The site, Meadowcroft Rock Shelter, near Pittsburgh, Pennsylvania was excavated with great care that

seems to have paid off. J.M. Adovasio and his crew were able to perform a small miracle. His excavation is one of the few well documented early sites. He established a thorough working record of use from the 19<sup>th</sup> century all the way back to approximately 20,000 BP. Good material for radiocarbon dating was recovered as well as good stratigraphy. Dates of 19,650 + or - 2400 BP were taken from a bark woven basket and 21,430 + or - 800 BP on charcoal at the lowest level(Adovasio 1982: 83). The generally accepted date of early occupation is 16,500 BP.

Two problems have arisen with this site. The first is the presence of coal in the surrounding areas. Coal has already proved itself to be a hazard when making radiocarbon tests as is seen in the revised dates of age at the Lewisville site in Texas(Wormington 1983:195). At this site lignite was being utilized by the paleo-inhabitants. This resulted in the radiocarbon dates being older than the artifacts actually were. If coal or humic contamination has occurred then these test results might also be wrong. The second problem with this site is that only modern faunal and floral evidence exists(Adovasio 1983: 76). Even if the site's dates are correct, the possibility for a later arrival is still plausible.

Many sites have been found in Mexico, Central and South America that have been proposed as proof for an early peopling. Sites such as Tlapacoya, Mexico; Pikimachay, Peru; and El Bosque, Nicaragua. At Tlapacoya radiocarbon dating shows "occupation" around 21,700 + or - 500(Mirambell 1978: 224). At El Bosque bone apatite dating has given dates between 32,000 and 26,000 BP(Page 1978: 255). However, as it has been shown earlier, for instance at Old Crow Basin, bone apatite dating is not as

reliable as one would like.

The one site that does hold great promise as an early habitation site is located in lower Chile. Tom Dillehay's work at this site, Monte Verde, has shown the site to have "great" antiquity. The work he has done here suggests that man has existed in the region before 33,000 BP (Dillehay 1986: 336). This date was based upon wood charcoal found in lowest stratum MV-7. A lithic assemblage consisting of edge-battered stones, a percussion-split pebble and one flake was found in association with these organic specimens adding support to the argument for human occupation at the site during the time established from the radiocarbon dates (Dillehay 1986: 336). Another component at this site yielded dates suggesting occupancy between 14,100 and 12,000 BP. Due to the size and nature of these sites, there are many problems that place a site's status. It should be noted, however, that a few sites do hold great promise for early human occupation. This concludes a brief overview of the evidence supporting an early peopling of the Americas.

The argument for a moderate/late arrival seems to be favored by more researchers than that of an early peopling of the Continent. Some of the researchers in this camp are Jesse D. Jennings, Brian Fagan and Paul S. Martin. Sites that are proposed for their evidence are varied and numerous. Two types of sites may be proposed for evidence, those that fit a described tradition and those that do not and date somewhat earlier in time..

The first are those sites fall under the heading of Folsom and Clovis. The dates associated with these types of sites are between 12,000 and 10,000 BP. The Blackwater Draw site in New Mexico as well as the

**Lewisville site in Texas are examples of these types of sites. It should be noted that Clovis sites are not restricted to one central area in the Plains. One has only to look at the Vail site in Maine or the Debert site in Nova Scotia to prove otherwise(West 1983: 389). These exhibit ample proof that this culture type was not restricted to the plains.**

**The second type of sites to be considered are those that shortly predate Folsom and Clovis but do not exceed 16,000 BP. The area around Lake Mohave located in Southeastern California has given dates as early 14,550 + or - 140 BP. Wilson Butte Cave is another example of man's inhabitation of Idaho around 14,500 BP(Jennings 1989: 77). Waldo Wedel also brings forth evidence with the Lamb Spring site and its faunal material which dated to approximately 13,140 BP(Stanford 1983: 67). These are just a few of the sites being used in the argument for a moderate arrival. This group of researchers does enjoy one benefit that the other school of thought does not. Their material is generally accepted whereas those arguing for an early arrival have material that is more difficult to validate. It would appear that the bias is in the favor of a "moderate" time depth for the arrival of humans in the New World.**

### **ARGUMENTS FOR THE ROUTES USED TO ENTER THE NEW WORLD**

**Now that both schools of thought concerning the time of arrival have been "reviewed", another controversial topic concerning the peopling of the Americas must be discussed. The topic in question concerns the route followed into the Americas from Beringia. There are two generally**

accepted theories concerning the routes taken into the rest of the New World from Beringia. One proposal is that early man followed the coastline and used the coast as entry points into the Americas while the other proposal states that early man crossed through an "ice-free" corridor into the rest of the New World.

Knut Fladmark has proposed that the possibility existed for a migration following the coastline. He has migrants making use of watercraft and settling the shoreline (Fladmark 1978: 126). The basis of Fladmark's hypothesis relies upon the same principles as the theory that Beringia, glaciation allowed the submerged coastal areas to be exposed just as Beringia was exposed. He dismisses the arguments that glaciers extended past the continental shelf (Fladmark 1978: 123). Just as the "ice-free" corridor varied, so did the glaciers on the continent's edge, and the exposed continental shelf would have afforded them ample landing areas for shelter and foraging. (see figure 3) Conditions found on the Terminal Pliocene Northwest Pacific coast are considered analogous to those conditions found in present day Greenland where "major glaciers spill out to the ocean through trunk valleys, but separated and flanked by ice-free coast, unglaciated headlands and off-shore islands" (Fladmark 1978: 124).

Two considerations are necessary for this theory to work. The first consideration is that the glaciers could not be of the continental type expanding out past the continental shelf. The second consideration is that early man had the watercraft that could be used in the North Pacific. The first problem cannot be readily solved without numerous ocean floor core samples. The second is somewhat more clear and solvable. Watercraft of

some type ~~were~~ used in the peopling of Australia somewhere around 50,000 to 30,000 years ago (Fagan 1987: 74). If these proto-Australians possessed such knowledge, it should not be an unacceptable assumption that their distant relatives to the North should also possess it.

The alternate to the ocean route is, of course, a land route. This route is referred to as the "ice-free" corridor. This corridor is basically an area between the glaciers that was free of any great covering of ice. (see figure 4) This corridor existed intermittently during periods of glacial advances and retreats of the Cordilleran and Laurentide ice sheets. This pathway into the heartland of North America has come under much scrutiny. Each author has his or her own opinions concerning this issue. Some feel that the corridor did not open up until 12,000 BP while at the other end of the spectrum we have those people who feel that it did not close at all.

Modern theory now places the opening of the corridor from 25,000 - 20,000 BP and from 14,000 BP to present (Jennings 1989: 53). There is also the possibility that the Cordilleran ice sheet was restricted to the mountains and foothills and did not touch the Laurentide ice sheet (Fladmark 1983: 28). If this holds true, and if the Laurentide ice sheet did not expand as wide as first thought, then the corridor's existence is quite plausible.

The major problems associated with the corridor is whether men could survive in it. Some authors such as Richard Shutler, Knut Fladmark and Brian Fagan point out that the area around glaciers is quite inhospitable to say the least. It's stated best in the literature as an area that was "at best, one of the most barren and impoverished landscapes that human beings could possibly exploit" (Fagan 1987: 140). It can be a barren, rocky

plateau in which survival is impossible. This view is countered by Jesse D. Jennings and B.O.K. Reeves who show that this corridor could not have been absolutely uninhabitable. The ice-free corridor "rather than a barren wasteland was a steppe tundra / grassland throughout its length with productive terrestrial and aquatic habitats exploitable by man"(Reeves 1983: 400). This may sound like an exaggeration but palynological and paleontological evidence does lend support for his statement. Evidence for this comes from Medicine Hat, Alberta, Canada. Here animals such as bison, mammoth and horse have been found in glacial tills dating to around 17,000 BP. The presence of these animals suggests a grassland type of environment, their preferred habitat(Jennings 1989: 55). From these two simple reviews one gets a rough idea of the possible routes of entry into Middle North America and the rest of the New World.

#### ANALOGIES USED TO EXPLAIN THE PEOPLING OF THE NEW WORLD

At this point we arrive at the main topic of my thesis, models for the expansion and movement into the New World from Beringia. My model has its roots in Paul S. Martin's work on demographic and wavefront hypothesis. To get a better understanding of my model I will first briefly discuss Martin's model.

Martin bases his model on the assumption that the peopling of the Americas took place rapidly. Upon entrance into Beringia and North America the immigrants encountered unlimited faunal resources. This provided a catalyst for rapid growth and dispersal. These people spread

out on a "fast moving" wavefront in what Martin refers to as a "Blitzkrieg" . Like a ripple on a pond, these people spread out as wave does, possibly following new food sources such as mega-fauna.(see figure 6)

In support of this hypothesis, Martin uses one model to show how fast humans can populate an area. He does this by using population growth figures from the Pitcairn Islands after the arrival of the mutineers from H.M.S. Bounty. He points out a 3.4% growth per year in this population(Fagan 1987: 190). This type of growth was established on an island's limited resources. Armed with this data Martin postulates a wave front density of 160 kilometers in depth with a population density of .4 person per square kilometer. Caution should be used when looking at this data. One must keep in mind that the Pitcairn population estimates were based upon a small founding population that resulted in a small final population which was located on a small and isolated landmass. Applying this data to the Americas, a large area of virgin territory that was quite exploitable, Martin proposes that man could reach the Gulf of Mexico in 350 years and the tip of Chile in about 1000 years(Hassan 1981: 201). (see figure 5)

Whereas Martin supports his model on an historic population's growth, I base my model upon a prehistoric population's migration. The group that I use is one of the Athapaskan speaking peoples who migrated from the Northwest Plains in Canada to the southwestern United States near the "Four-corners" region and New Mexico. It is with this group that I have developed a new analogy for the peopling of the Americas. In order to do this I have made some assumptions that will be discussed presently.

In order to proceed with my analogy, one must first establish a time of departure of these people from their home range and their arrival into the new territory. I am doing this because it is my belief that this information can then be extrapolated to fit into the migration of people into the rest of the New World from Beringia. J.L. Haskell(1987: 5) places the departure around 200 A.D. and the arrival before 1700 A.D. Jesse D. Jennings places the Athapaskan speaking peoples arrival before 1500 A.D.(Jennings 1968: 315). Paul S. Martin places a group of migrating people arriving between A.D. 1200 to 1300 or 1400(?)(Martin 1947: 226). From this data I assume that the migration took between 1000 and 1200 years from start to finish.

Within this time span both movement and population growth occurred. The fact that the migration took place is obvious. This is seen from refuse found during archaeological excavations. Inferring population growth is a little more difficult. If these migrants were not reproducing, then their population would either dwindle in numbers until extinction occurred or be absorbed into other native groups. Since we find archaeological evidence and historic Athapaskan speakers in the Southwest United States and Northern Mexico, we know that extinction did not occur. We can also rule out an absorption of the population since we find that they do not lose their distinct language base, one that is still found today in the Navajo, Jicarilla Apache and the Kiowa Apache of the Southwestern United States and Northern Mexico.

In order to estimate the rate of movement of the migration, the distances travelled must be known. Since the area of departure is not

known, I place the point of departure in the central area of the Northwest Plains of Canada, where Athapaskan speakers were found and tentatively identified archaeologically. (see figure 6) As for the time of departure, Haskell(1987: 22) states that this group had migrated south around 200 A.D. into the Swift Current area of Saskatchewan Province of Canada. They possibly came from the Peace River area. The most probable route they followed would be from the Plains of Canada south into the the Great Plains of the United States. They might have possibly followed the Colorado River southward into the "Four Corners" region of the United States and New Mexico. If this were the route taken, then I estimate a distance travelled of roughly 2581 kilometers(1600 miles ).(see figure 7)

Through the magic of simple division, one finds that at a minimum the migration would proceed at a rate of 2.08 kilometers / year (1.3 miles / years) and at a maximum rate of 2.58 kilometers / year (1.6 miles / year). If one applies these rates of movement to early human migration from Beringia, then at the minimum rate it would require on the order of 2308 years to travel a distance of 4839 kilometers (3000 miles). This is a distance roughly equivalent of the distance from Fairbanks, Alaska to the northern border of Mexico near El Paso, Texas. If one uses an estimated distance from Fairbanks, Alaska to the tip of Chile of 16935 kilometers (10,500 miles) and a rate of movement of 2.08 kilometers / year(1.3 miles/ year), then it would take approximately 8078 years to make the journey. If the initial departure occurred at 23,000 BP, then man could possibly be found at both ends of the continent by 14,900 BP.

I support my hypothesis with work that has been performed by Fekri

Hassan in Demographic Archaeology. By utilizing wave front, logistic growth, and carrying capacity models different rates for the peopling of the Americas can be computed. For instance, if the initial population were 100 individuals at a growth rate of .5%, then the optimum population--.47-2.1 million people in North America--would be reached between 1690 and 1990 years(Hassan 1981: 202). A slower rate of growth of approximately .1% would result in the peopling requiring between 8455 and 9952 years. These estimates are based on a rate of movement of approximately 1 kilometer per year. Hassan(1981: 202) leaves room for error and gives an overall time estimate for the peopling between 8000 and 10,000 years. One will recall that my expansion rate is estimated to be between 2.08 and 2.58 kilometers per mile and an estimated 8078 years to populate the New World. This is quite close to Hassan's estimates and leads me to assume that the growth rate is close to the same or a little less than Hassans rate at .1% with my movement rate making up for the difference in growth rates.. One may also recall that the Athapaskan speakers who I am using in my analysis were hunter-gatherers not unlike the first men to explore the Continent. I assume that the Athapaskan migrators were behaving in a like manner as their very early predecessors. Initially the Athapaskans followed the herds of Bison, mega-fauna just as early man is thought to have followed mega-fauna such as Mammoth and Bison. They both traversed the same general latitudinal range. It would also follow that both groups had the same population controls in effect just as we find in modern hunter-gatherers as Hassan points out quite well(Hassan 1981: 146-148). Relying on these similarities I propose one

may use the rates of movement from the Athapaskan as analogous to the peopling of the Americas since population growth rate is inherent in the rate of movement of the Athapaskan migration. I say this because growth must be occurring to enable the population to continue its movement as well as to survive as a population. Since the Athapaskans grew and migrated, the growth rate is already included into the rate of movement.

It is with these two arguments that I support my analogy for the peopling of the New World. It should be noted that my analogy does have its problems. As one may have noticed many assumptions have been made which may possibly be invalid. The wave front model has its own problems in that a wave may not have been formed and "uniform" growth did not occur. The growth rate and the movement rate are problematical also because the two are averaged. Instead of constant growth the rates may have been in surges. Despite these problems, I believe that the Athapaskan analogy holds great promise for further study of the issue of the peopling of the Americas.

### CONCLUDING STATEMENTS

Throughout this thesis I have tried to present as much information as possible for evidence of a "late" Pleistocene migration into the New World. I have reviewed the sites used as evidence for both schools of thought, early and late migration. I have reviewed the topic of which routes of migration were used. By examining these areas of study and looking at the modern theories concerning the subject of the peopling of the Americas, I

have been able to apply my own views on the subject and draw conclusions for a "late" entrance into the New World. By using the Athapaskan migration analogy, I have been able to propose another model for the peopling of the Americas sometime after 25,000 BP. Hassan also collaborates this estimated time with his own work(Hassan 1981: 202).

In conclusion I feel that I can state that the peopling of the New World was not as rushed as Martin and others would have one believe yet not as slow as others such as Bryan propose. It occurred over a period of approximately 8100 years between 25,000 and 18,000 BP and could easily have people living in Chile and Nova Scotia maximally by 17,000 BP. This issue is one of great controversy that can only be resolved after both sides stop bickering and start working together open-mindedly towards a unified goal of when the peopling took place which will also depend on more excavations and well developed additional evidence. Hopefully this new model will be applicable to the solution and help settle the dispute.

FIGURE 1

BERINGIA(FAGAN 1987: 100)

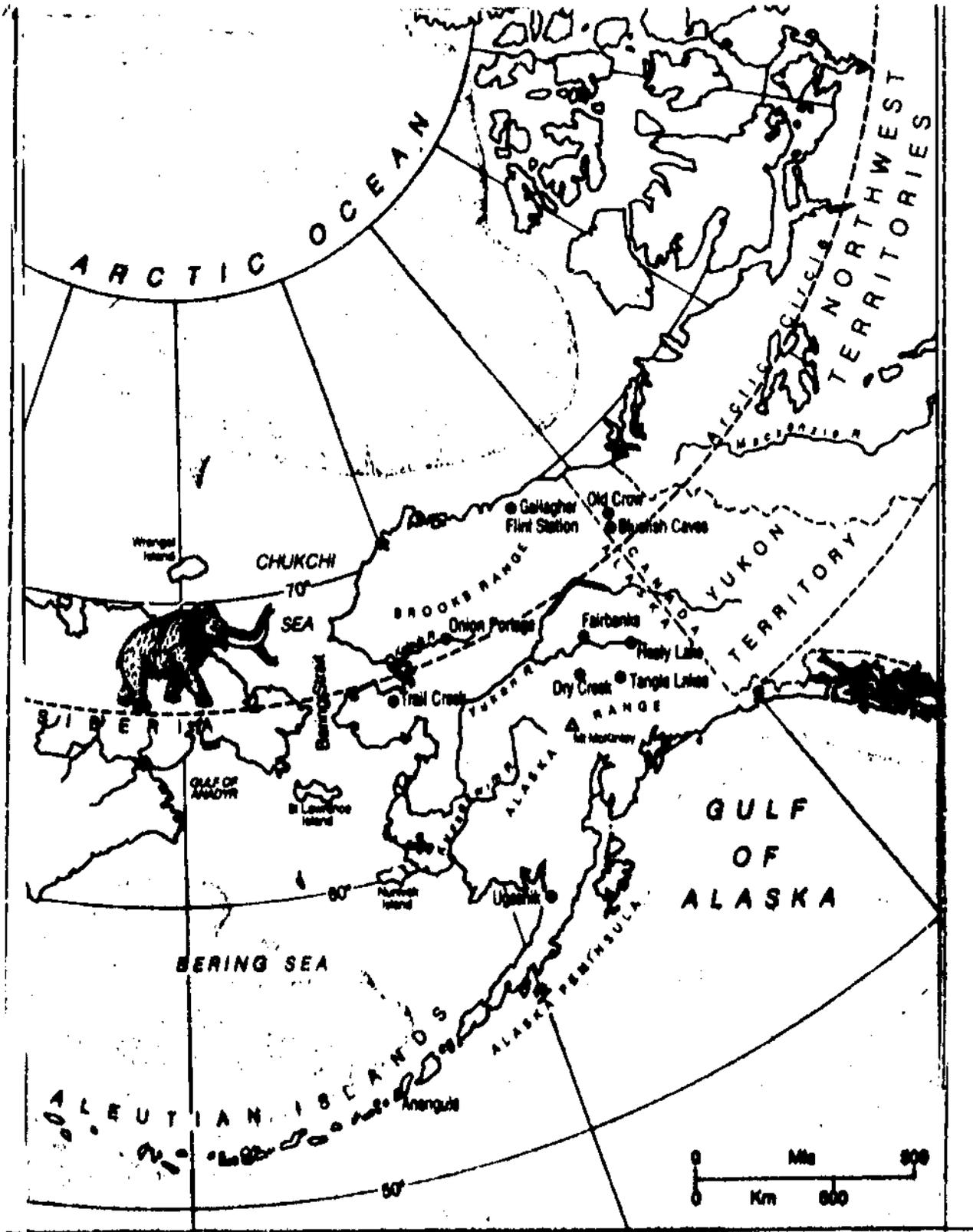


FIGURE 2

PERIODS OF INUNDATIONS AND EXPOSURE (JENNINGS 1989: 52)

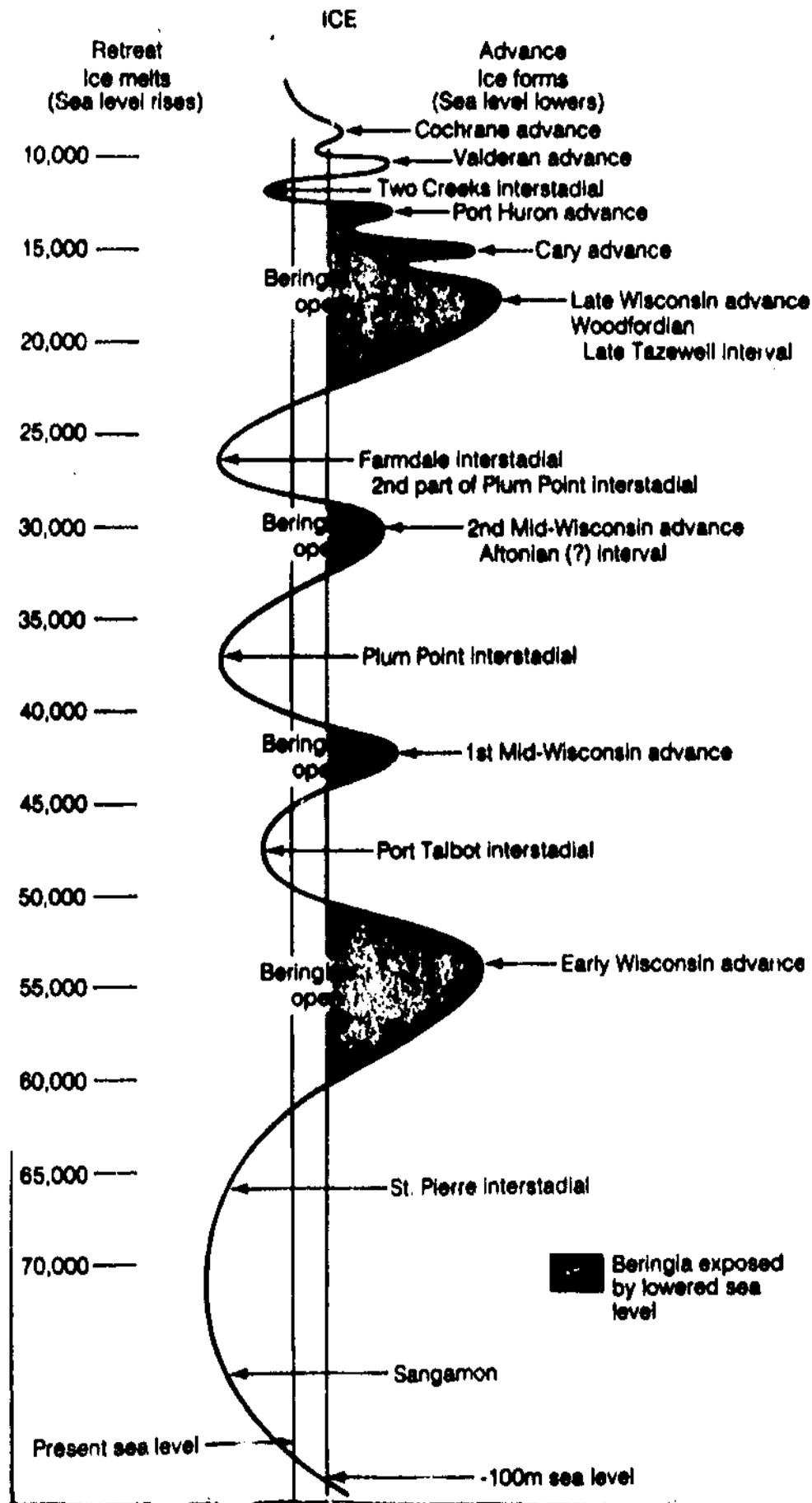


FIGURE 3

EXPOSED COASTLINES(Fladmark 1978: 125)

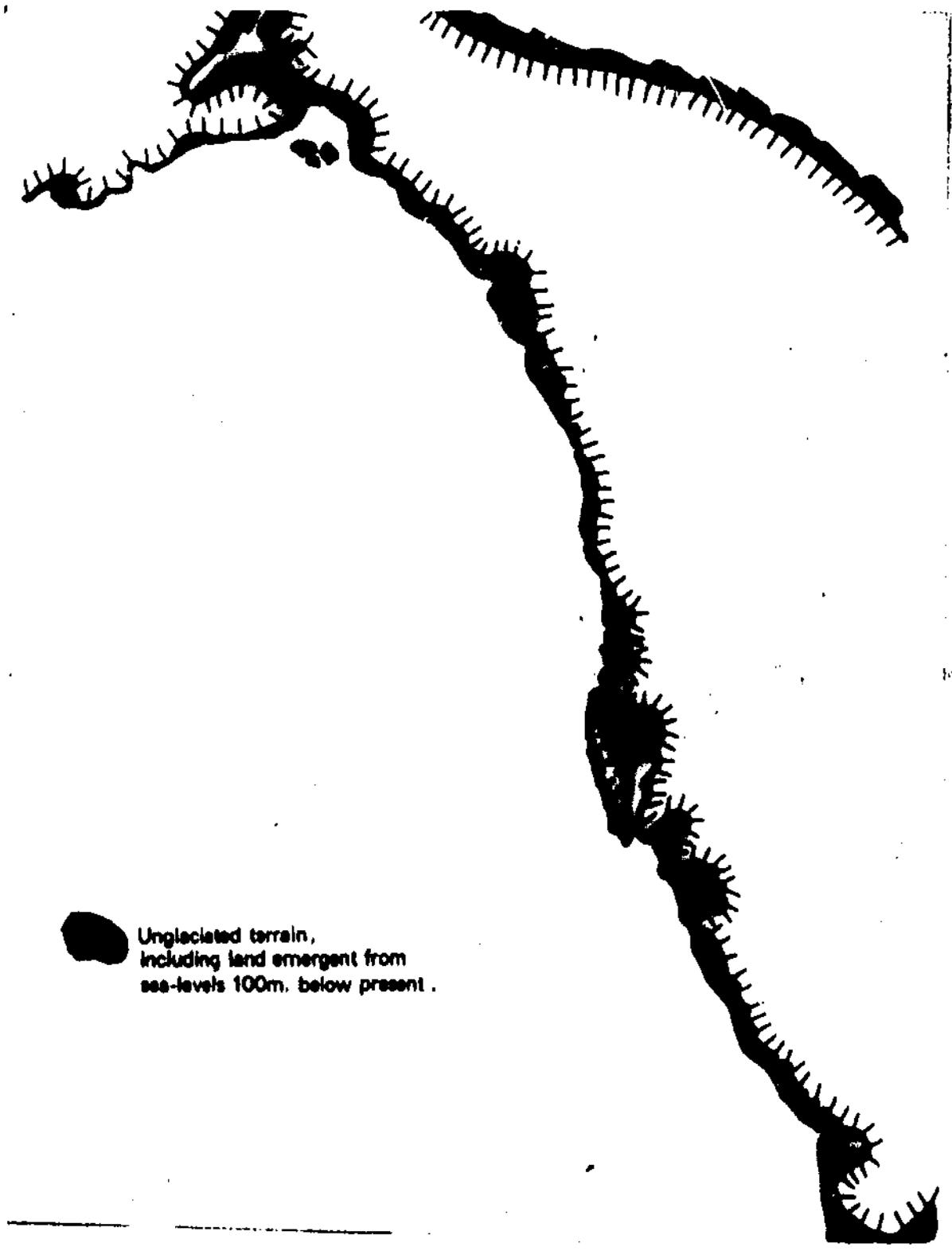


FIGURE 4

"ICE-FREE" CORRIDOR(Reeves 1983: 397)

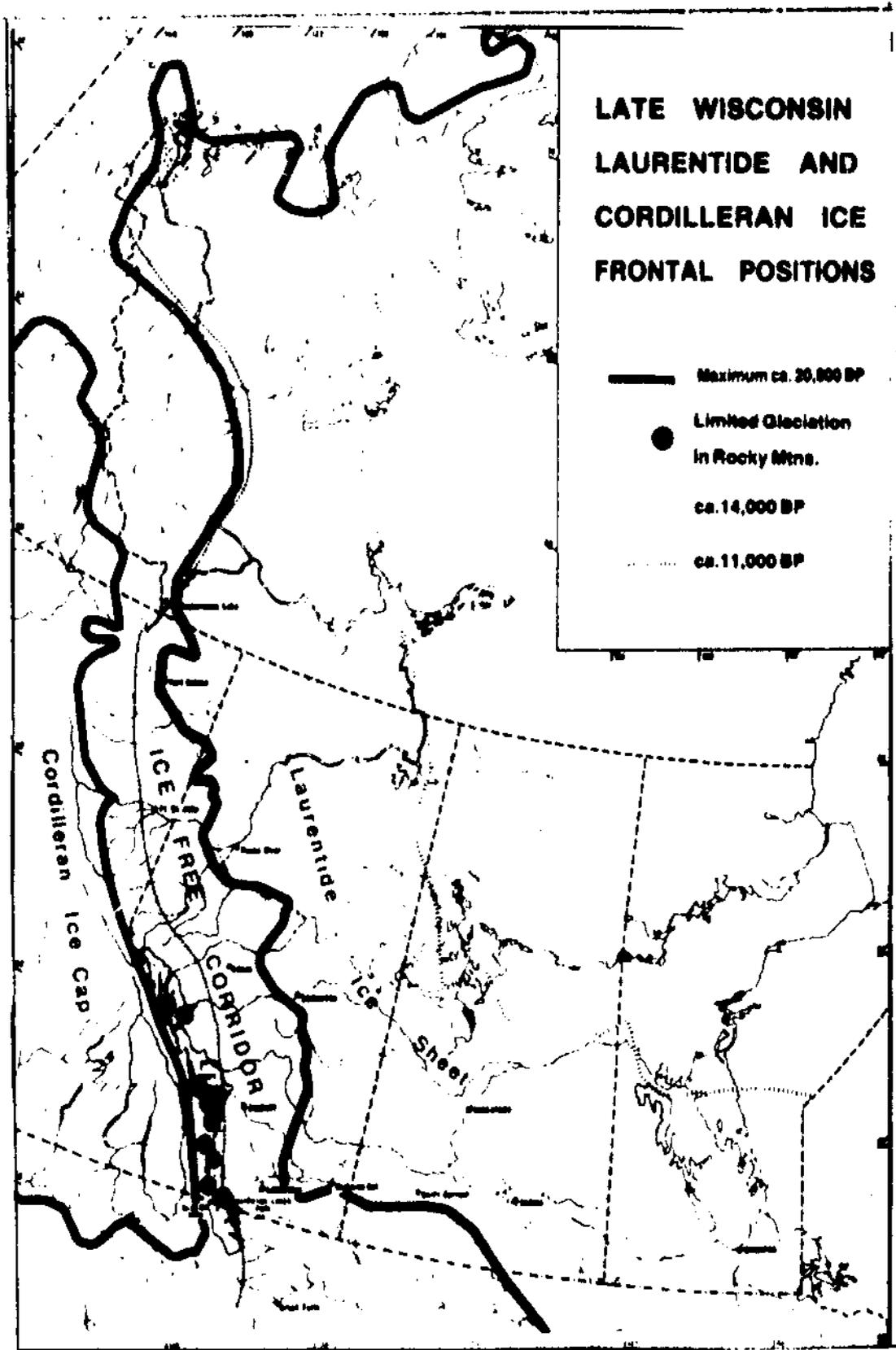


FIGURE 5

MARTIN'S "BLITZKRIEG" MODEL(Fagan 1987: 191)

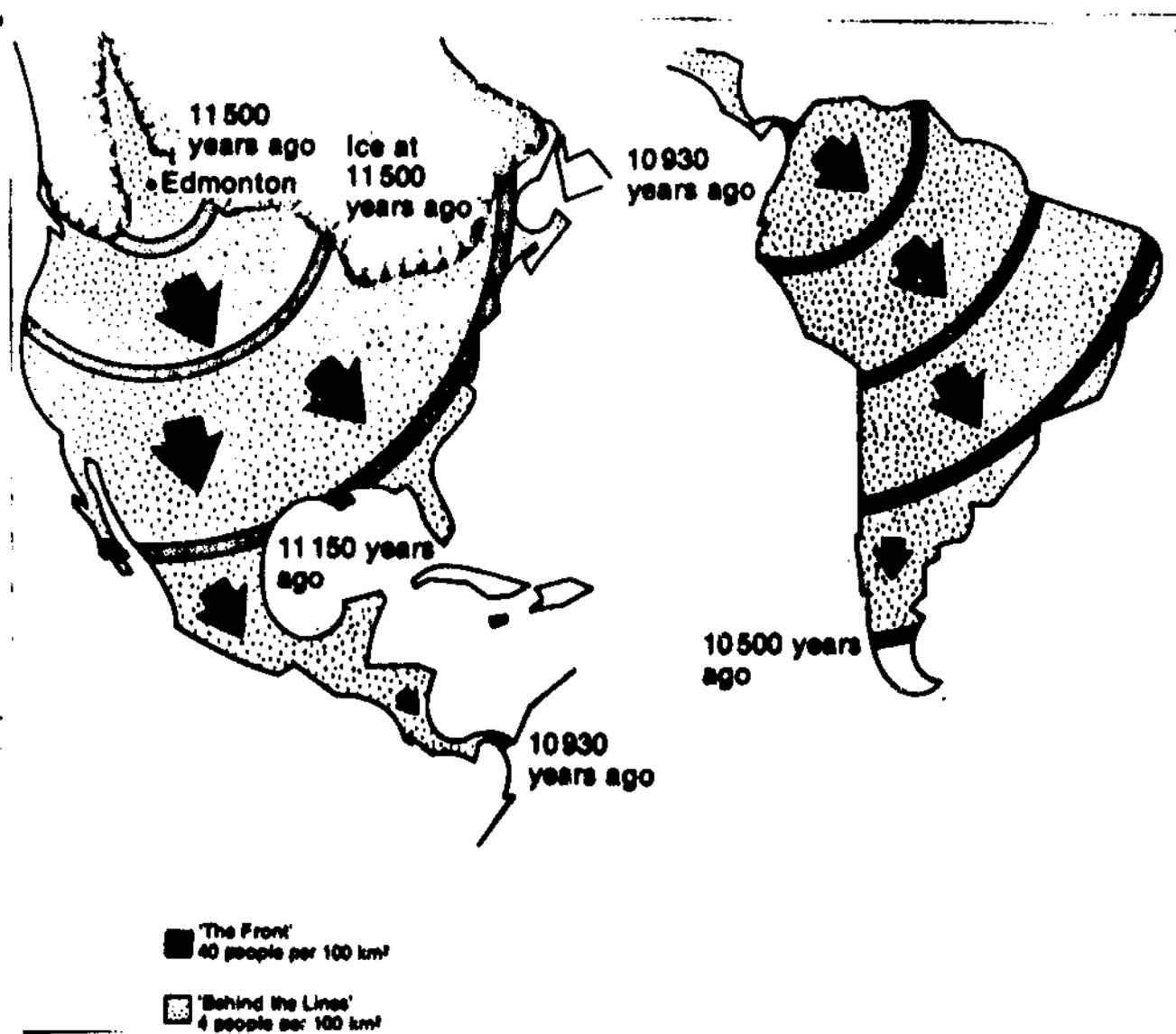


FIGURE 6

AREAS OF ATHAPASKAN SPEAKING PEOPLE (HASKELL 1987: 10)

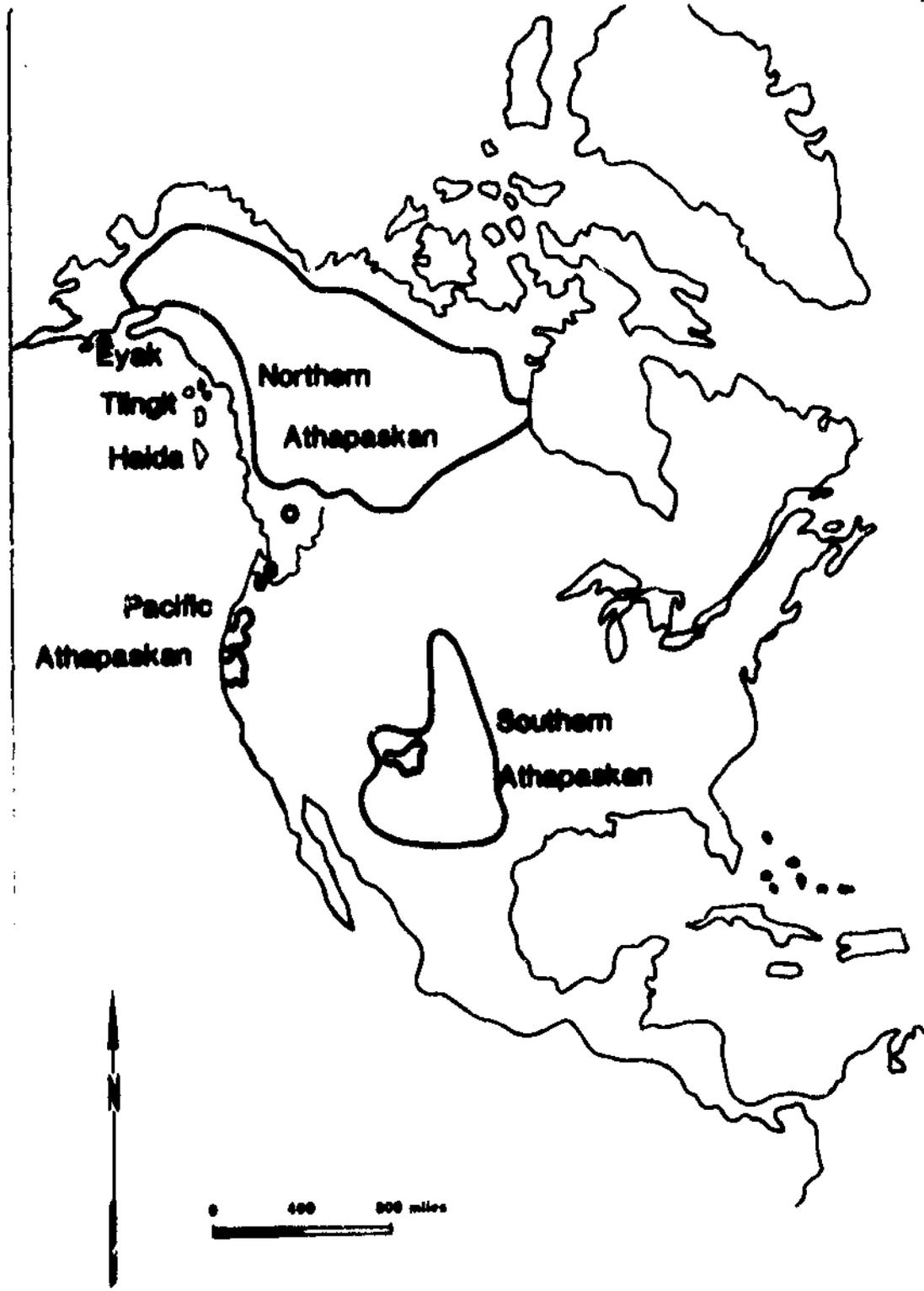


FIGURE 7

PROPOSED ROUTE OF ATHAPASKAN MIGRATION

(NATIONAL GEOGRAPHIC 1988: 910A)



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