



## READING THE ENTRAILS: AN ALBERTA ECOHISTORY

by Norman C. Conrad

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# FIRST PEOPLES

## ADRIFT

**A**bout 200 million years ago, the supercontinent Pangaea broke up. Its pieces, the continents—Antarctica, Africa, the Americas, Australia and Eurasia—separated, drifting apart, sailing their own courses out into the single global ocean. With continental drift came biological drift. Plants and animals floated off atop their respective plates, disconnecting their common root, each tacking on toward its particular evolutionary destination. Stretches of water isolated the continents, insulating each one's terrestrial life forms from the others. As a result, each continent evolved its unique convention of complex, dynamic, interdependent life. Isolated in Africa and Eurasia were the lines that would evolve to *Homo sapiens sapiens*. But that would not last.

Early humans migrated out of Africa over the land bridge to the Middle East, until, as in Africa, they reached limits and had to innovate or emigrate. When emigrating, their technology, cultures, ambitions and dispositions moved with them. More potent replaced the more benign in a rough “red in tooth and claw” technological and cultural evolution. Itinerant biological baggage—dependent, domesticated or habituated species of disease, parasites, plants and animals—came along in what would become a rule of human migration; the export of exotics and the displacement and destruction of the indigenous.

Like the gigantic dome of ice centred over Hudson Bay during the Wisconsinan, the Middle East became humanity's great dome on Earth, a hub of trade and traffic. It too pressed many out and away; waves of people flowed to distant lands and inhospitable climes. Some went northwest to Europe and on to the Atlantic. Others went to the Far East, then southeast until reaching insular seas protecting Australia, or northeast to hit the Bering Sea or Beringia and its barricade of ice. Natural impediments at land's end—oceans of water and continents of ice—blocked further migration.

Technology and changing natural conditions, boats and Beringia, finally enabled mankind to breach the barriers and vault the abyss, Pangaea's seams, to Australia, the New World and more.

## COMMUNITY

All species have their associated communities: predators, parasites, symbionts, commensuralists or mutualists. Humans do as well. When hominid populations were small, dispersed and disconnected, this related stream of life also was. As *Homo sapiens sapiens* became keystone, common and continuous, its biological community shared its success. Agriculture helped. Farming introduced exotic plant species, crops, to lands taken from the wild. Husbandry introduced exotic animal species, domesticated animals such as sheep, cattle, pigs, goats, chickens, dogs and cats to non-arable lands. Rodents joined the entourage. Ever since and nearly everywhere, rats and mice nest aside humans. The English sparrow and common starlings among others, hitched their genetic fortunes to the rising human star. Insects adopted similar strategies. Silverfish and roaches, fleas, lice and motley assortment of others joined the host. Those nurtured species and opportunistic others, weeds, pests and a rich microscopic world of parasites and pathogens, gathered in human-dependent biomes. Smallpox is one disease particularly important to this story.

Each human migration brought with it, in baggage and tow, these enlarging biological communities. All constellated around the emerging biological superstar, to share his destiny in suffusing the planet. The ultimate generalist and opportunist, humans migrated to and exploited nearly every habitat on Earth. The more "civilized" man became, it seems, the more biological baggage he carried with him. First Americans carried little of this baggage with them.

## FIRST ALBERTANS

Possibly they were fleeing: escaping hunger, cold, natural disaster or hostilities. Along with their few physical possessions—weapons, clothing, moveable shelter and food preparation pieces—they brought tool making and survival techniques, their culture, language and religion. In all things they travelled lightly.

Or it may have been different. Not in flight, they may have followed prosperity, one that seduced them from valley to valley, or meadow to meadow with an increasing natural abundance. Following herds of grazers, flights of fowl or the ripening of berries, they came to new lands. Which-



ever way, with the retreat of ice, a new species advanced into the Americas. Humans certainly inhabited the subarctic Americas by 11,500 years BP, the beginning of the so-called Clovis culture and likely much earlier.<sup>1</sup>

Some studies suggest at least three separate migrations before the European influx.<sup>2</sup> The last, occurring some 4,000 to 6,000 years ago, was the Aleutian or Inuit people, the people of the north. The middle migration was of the Na-Dene or Athapaskans, a people who arrived in the Americas well after glacial retreat. Today they live in northwestern Canada and, disjunctively, in several regions of the American Southwest. It appears they originated from central Asia. The earliest migration was of the Amerinds, the probable human discoverers of America. They explored and occupied all of South and Central America, nearly all of eastern North America and most of western North America below the Canadian Shield. In their time they evolved the most diversified cultures and traditions; elaborate civilizations like those of Africa and Eurasia.

Beringia was a likely migration route for large terrestrial mammals until 15,500 years BP, when the Bering Sea breached the Beringian bridge. If satisfactory for prey, it sufficed for predators. First Americans likely crossed Beringia and, when glacial retreat permitted and corridors allowed they followed open land south onto the continental body. This corridor's narrows may have led through Alberta and opened into a commodious fan. If so, Alberta was the gateway to a paradise, swarming with magnificent creatures. Ice-weary Beringian travelers might have lurched on first seeing, feeling, touching and tasting mature, ample America. It was a wonder, a vision of plenty.

Little evidence remains of these first travellers, but about 11,500 years ago, things changed. Sophisticated methods of finishing stone spear points appeared. By fluting a spearhead's base, the stone could be made thin enough to insert into the split-end of a wooden spear shaft and bound in place. Secured, the point became a structural part of the spear and a far more effective hunting instrument. "Clovis technology," often found with mammoth kills, gave clear advantage in killing large mammals. Then Americas' archaeological record sprang to life, evidence abounding of the human presence. Shortly after, many large mammals vanished.

## QUATERNARY EXTINCTIONS

After the last ice age, mega-faunal life seized those formerly glaciated lands, populating the north widely and diversely. Over the succeeding several thousand years large life collapsed and many species disappeared. Extinctions appear generally to increase after the end of any glaciation, but this event was unusual.<sup>3</sup> Some 35 to 40 species of large mammals went extinct while



only about five species of small mammals did. The top was lopped off the trophic hierarchy. Somehow the king of beasts was toppled. Circumstances more extraordinary than a mere ice age were required to eliminate these Pleistocene behemoths.

In the “why?” debate, theories stretch from human to environmental causes. Those advocating environmental causes argue that extreme climatological, atmospheric chemistry change or cataclysmic events disrupted the fragile circumstances for large life forms.<sup>4</sup> Species responded by die-off. Others argue the “human hypothesis” or the “human overkill” theories—that, directly for some and indirectly for others, human beings played a determinative role.

Clearly humans witnessed the extinction event. Not only had they occupied all of the Americas by that time, their density of population was increasing. With clovis technology, humans had new and improved means for hunting large mammals. Whether for food, defence or elimination of competitors, they had motives. The introduction of a new top-level predator to any ecosystem has significant consequences; humans as the highest, have the most consequences.

Early Americans hunted mammoths and mastodons until they became extinct less than 11,000 years BP. Ground sloths and giant beaver may have been an easy kill, but for what purpose? Extinct members of the deer family were food. Undoubtedly tasty, hunting pressure by itself may not have sufficed to eliminate the savvy and prolific giant peccary. Llama, camel, horse, shrub ox and wood muskox, all extinct, were less savoury. In all, 12 genera of grazers and browsers went extinct in this end of Pleistocene event. Off to oblivion went the several species of mammoth, the mastodon, some species of deer and horses, antelope, camel and llamas, the beavers, peccary and sloths and other giant vegetarians of North America.

Predator extinctions are more complex. The largest most fearsome predators disappeared. Nature’s economy dictates that large populations of prey are required to sustain her few predators. If a narrowly specialized predator’s prey goes extinct, the predator soon follows. Sabretooth tigers might not have survived without mammoths or they might have died off for other reasons, whether anthropogenic, environmental or both.

Human rewards from hunting predators are more remote than hunting herbivores—elimination of competition or security enhancement rather than feast. A giant short-faced bear in one’s neighbourhood would be distracting. Before long humans and bear would be stalking each other. And puny humans, with organization, numbers and weapons, were enough to dispatch the terrifying bear. Then, as it is now, humans routinely eliminated competing predators. Off to the unrelenting past went several members of



the cat family (the American lion, the cheetah and the sabretooth tiger), dire wolves and giant short-faced bears. Consistently, it was the larger birds, predators and scavengers that accompanied them into extinction during this period—condors, teratorns, eagles and vultures.

If first Americans arrived via Beringia at its submergence, they departed a land where animals were regularly hunted by bipeds using weapons, to arrive in a land full of unwary, unconditioned yet bizarrely rich wildlife. If, at the same time, technological improvements enabled them to better hunt and kill the largest of mammals, first New World exploitations would have been prodigiously fruitful and ridiculously easy; as easy as bludgeoning dodo birds or the great auk.

Some see parallels between human arrivals in the Americas and in other new lands. In those places that maintain mega-faunal diversity alongside evolving humans (Africa and Eurasia), humans co-evolved with large mammals and, it is reasoned, each developed survival strategies conditioned to the other. Not so for lands where humans—a new, powerful, adaptive predator—thrust themselves on unprepared and unresponsive wildlife. Shortly after man came to Australia and the large islands, many large mammals went extinct.<sup>5</sup> American moose, grey wolf, grizzly bear, bison, elk, caribou, deer, muskox, bighorn sheep and mountain goat, all were Eurasian emigre mammals that had co-evolutionary experience with hunting hominids. With that Old World experience (at the genetic level) appropriate predispositions for fight, flight and stealth might have enabled those species to withstand humans in the New World.

One theory is that human populations increased after the end of the ice age, perhaps reflecting the short-term surfeit from their primordial hunt. As faunal decline turned to extinction, first people's abundance ground down, perhaps convulsing into their own decline. It appears that human populations contracted at the episode's end so that a shrunken human population then shifted dependency to smaller game and gathering.

It was substantially over by the beginning of the Holocene. Some species survived for another millennium.<sup>6</sup> Thereafter, at least until the arrival of Europeans some 9,000 years later, few North American species went extinct. Causes of the Quaternary extinction episode may never be definitively known. While there is no smoking gun, a suspect clovis-tipped spear lies close by some casualties. With the episode over, healing and harmony began.

## HARMONY AND INTERLUDE

Malinkovitch tells us the sun's power hit its cyclical high 10,000 years BP. Inertial features, cool glaciers and wet proglacial conditions, retarded the



heating of the land to its maximum until about 7,500 years ago when Alberta's climate reached its warmest. Temperatures during the period from about 8,500 years BP to 5,000 years BP, the Hypsithermal, averaged several degrees higher than today. Land dried. Prairie grasses advanced to higher latitudes and altitudes, driving treelines higher up the mountainside and farther north. Populations of many creatures, including bison and humans, thinned in response to the new limiting conditions. Drought has its own destructive ways.

## BISON ADAPTATION

Bison migrated from Asia to America several times. Some earlier migrants possessed great size, monstrous straight horns and slower maturation. Smaller size, curved horns and early sexual maturity mark recent bison. How did the changes occur? Some prefer the idea of rapid evolution within one species. Others claim this to be the result of competition between several species that migrated from Eurasia of which only one survived. The one-species proponents point to the archaeological record, observing that it has yet to reveal any two bison species co-resident in America at one time. If there was only one species in the Americas since the end of glaciation (the one-species thesis), its evolutionary transformation, from what was known as *Bison priscus* to *Bison bison*, was rapid. Archaeology suggests anthropogenic influences; men *most* altered the evolutionary course of bison.

Bison were at the centre of culture and economy for plains peoples. As the source of most important materials—food, clothing, shelter—the bison's welfare was theirs also. As bison moved and migrated so did the people. In the "dog days" (before the introduction of horses, when dogs pulled travois), the hunt required extreme stealth or ambush to kill the great animals. Spearing demands very close proximity. Technological evolution empowered greater kill numbers, often mass kills—drives to natural traps, constructed pounds and over jumps. Later, bow and arrows permitted killing at even greater distances.<sup>7</sup> Mass means of harvest created new predator benefits and new prey costs.

In buffalo jump digs, archaeologists found average ages of bison to be considerably younger than expected. That suggests high rates of mortality in the general population. The hypothesis is this: regular mass harvesting of herd animals over the long term tends to select for reproduction those who reproduce younger. The sooner the bison sexually matures and breeds, the more likely it is to reproduce. Earlier sexual maturity also tends to result in reduced adult body size. The fossil record indicates that bison of



recent times are significantly smaller than earlier animals and reproduce one year earlier. Long term, hunting shrank the bison.<sup>8</sup>

With time, predator/prey relationships change both predator and prey. The habits and practice of the buffalo shaped human culture; humans, as with all regular and consistent predators, shaped the bison's body and culture. Sometimes their relationship was nearly pastoralist. When it went well for the bison, it went well for the bison people. Generally, it went well for both for many thousands of years.

## OTHER EFFECTS

Human predation affected other prey species—elk, deer, moose. Range management and modification altered wildlife species mix and numbers. Like bison people, others engaged in near pastoralist relationships with chosen game animals, enhancing habitat through use of fire or promotion of select vegetation. Fire served several purposes: to stop animal movements, to limit forest advance, to promote early successional plant species preferred by grazers and otherwise modify vegetative regimes.<sup>9</sup> Fire had few long-term effects.

Evidence also exists of opportunistic feeding on waterfowl and other birds in old Alberta. Gathering eggs, capturing fledglings and hunting had only local effect. Similarly, fishing played a secondary role in many early cultures so pressure was modest. Agriculture, so important to the civilizations of South and Central America, did not reach Alberta before White people. Gathering of fruits, seeds and bulbs occurred regularly but not on a large scale or with the intrusiveness of horticultural practices. Consumption was generally sustainable and the footprint left from thousands of years of aboriginal occupation was small.

Early Americans brought man's best friend, the domestic dog, from Eurasia. Dog remains were unearthed at Old Crow in the Yukon (probable date 20,000 years BP).<sup>10</sup> Did man adopt dog or dog adopt man, a kind of turncoat wolf? Whichever way, the dog was one of many creatures to desert the wild to team up with man. Millennia later, a profusion of exotics would descend on the Americas, following in the domestic dog's pioneering tracks.

Technological advances—changes in hunting, tools and techniques—increased the scale of the bison hunt from that of isolated individual kills for local use to more organized, mass kills (pounds, traps and jumps). Product-preservation technology—pemmican—enabled trade into distant markets, through well-established networks in which bison based trade products were exchanged for flint, chert, obsidian, sea shells and other goods. Even then, markets exerted modest but growing influence over local biology





and culture, reshaping human/wildlife relationships. These influences began the bison's metamorphosis from another life form to a mere trade product. As well, these refinements in hunting and food preparation permitted increases in per capita consumption, well-being and populations.

Notions of early Americans living in "smothering ignorance, cloistered by fear to their own tribal campfires" are wrong. Aboriginal people had a growing sense of their world. They knew of lands and peoples far beyond their own. Pre-contact tourism saw plains people going to the coast and down the Mississippi. Plains people drafted maps, relied on by early White explorers, that showed the Pacific Ocean. While life had risks, it had abundance, meaning and rewards. People commonly enjoyed large, long and healthy lives strongly connected to their land, people and metaphysics.<sup>11</sup> And each baby had the hope for as good a future as his parents. That held true for over 400 generations. But it was not to be forever. There were distant rumblings. 

