Predator pits or biological deserts in Siberia and North America

Valerius Geist, Professor Emeritus of Environmental Science, The University of Calgary.

The ideas and work of Sergei Zimov and his son Nikita pertaining to their Pleistocene Park, are interesting and significant[1], and well explained in interviews (https://www.youtube.com/watch?v=9vP7DiQSPbc. However, the taiga beyond the boundaries of the park, is labeled a *biological desert*. And we have not only the Zimovs word for it, but also of such renowned authorities on Siberian ecology as Dr. Leonid M. Baskin. It is - *now* - an ecological desert. In Siberia, that is! In the Upper Paleolithic, prior to post-glacial mega-fauna extinctions, it was a productive *mammoth steppe* with a high bio-divesity of mega-fauna.

However, do look closer at this current *biological desert*. You see well-spaced coniferous trees in a sea of shrubbery, mainly willow bushes, here and there fire weeds, some dwarf birch, a mosaic of taiga, sedge meadows, lakes, and rivers. It looks to me, based on my Canadian experience in the Yukon and northern British Columbia, like great moose country. However, we are informed that the Zimovs will have to import moose into their Pleistocene Park. We also see that there are still some ungulates in this taiga, reindeer, herded and protected by native tribesmen. Please note: The tribesmen mention troubles with wolves and brown bears (same as North American grizzlies). Now, in virtually the same ecological landscape in North America, in the central Yukon, we can find dense moose populations and caribou. When colleagues and I were looking for potential ecological reserves in the 1970”s, I saw during one overflight in late November one group of moose, all young bulls, 19 in numbers. I saw next a group of massive antlered old bulls, seven in numbers. Such post-rut groupings of bulls *segregated by age* are found only in dense moose populations.[2] And I also saw that day lots of big Osborn's caribou, as well as – at least - the tracks of Stone's sheep (very close relatives of snow sheep) in the adjacent mountains. Our Super-cub kept flushing out coveys of willow ptarmigan. And we saw a pack of five wolves. No biological desert here in this taiga, almost identical to the empty Siberian taiga![3]

I watched recently - with growing interests - the hunts by Jim Shockey for three subspecies of snow sheep in Eastern Siberia. In every one of the three cases, superlative sheep habitat as far as the eye could reach, and range after range of it. The hunting party walked – <u>days</u> - without seeing a single head of wildlife. When they did see sheep, it was a handful of ewes and lambs, and tiny clusters of rams, 2-4 in number. (By comparison, in the Spatsizi of north-western British Columbia, with virtually identical

landscape, the first ram band I found and studied for about 8 weeks, uninterrupted, in summer 1961, numbered 22 rams. Another ram band about 5 miles away numbered 15. In September 1961 my wife and I saw in one day hundreds of Osborn's caribou bulls in rut. In 1963-65 in Banff National Park, then wolf free, the largest spring bighorn ram congregation was over 90 rams). However, Jim Shockey's party saw two brown bears and shot one - for food. And there were the parallel trails on the mountain slopes that revealed that migratory reindeer used to pass through these - vast – mountain ranges. In each case Jim got his ram – but barely. And, of course, all these vast Siberian landscapes were free of people, which is another important point to note. I subsequently found two more YouTube shows about hunting snow sheep in the Koryak Mountains [J. Alain Smith} and Kamchatka [Asif Ilyasov] respectively. Again, fantastic habitat void of wildlife. Each party saw only on ram band, 4 in one, 3 in the other, respectively. And they saw one reindeer. And these were pre-scouted hunts! A Canadian colleague, Ken Sumanick, a highly experienced field biologist, was able to visit extensively the back country in eastern Siberia with snow-sheep habitat. He noted the same, huge areas of excellent habitat totally void of wildlife or even signs of wildlife. I next saw a Russian film of two biologists studying year round in the Putorana Mountains of north-central Siberia. The Putoranas are the western most mountains with snow sheep. The Putoranas are from the Bering Straights as far as Point Barrow in Alaska is from the tip of Baja California in Mexico. The film showed the very same barrenness of wilderness without wildlife, but punctuated by brief pass-throughs of migratory reindeer. Then there is the YouTube series about self reliant life in central Siberia, on the Yenisei River, filmed year round https://www.youtube.com/watch?v=fbhPIK-oBvA. The people depend almost entirely on very abundant fish. A capercaillie (giant forest grouse) is brought back for Christmas out of the taiga where the trappers stay and trap otherwise. Nobody eats moose or reindeer. Bears are mentioned, but not shown or eaten. There is great moose country everywhere – to my eyes – but no moose. Kaj Granlund and Will graves reported in Kazakhstan the complete depopulation of wildlife by wolves over vast areas, similar to Siberia, except that in Kazakhstan it was officially recognized that the depopulation of wildlife was caused by wolves.[4]

Then came a breakthrough: it was again an excellent film by Jim Shockey, but this time hunting Dall's sheep in the Yukon Territory of Canada. The aim of the expedition was to check out a *traditional native tale* that, way up a certain drainage there was a spot that always had sheep. The journey, again, went for days along mountain ranges free of wildlife, along a classical valley dug by a glacier. The mountains were made of shale that in weathering generate gentle contours. The journey took place, clearly, in a predator-pit as no wildlife was sighted. Then the party reached the mountains natives claimed contained

sheep. These mountains, however, were not of shale but of an intrusive rock-type that weathered in drastically different fashion from shale. This rock weathered into many steep, deeply incised walls, with a patchwork of green meadows interspersed among steep, jagged cliffs and steep scree slopes. *It was excellent sheep escape terrain.* And there were Dall's sheep present including a ram band of eight. Moreover, there were also present a few caribou and moose. In other words *traditional* native knowledge had identified areas in which the predator-pit was permanently broken. The reason was a change in topography that heavily favored sheep to survive wolf predation. And caribou as well. Anybody observing caribou on steep slopes knows how well and rapidly they can scamper through cliffs. The important point is that there are mountain ranges with an intrusive rock type, whose weathering creates a landscape in which wolves can hunt only with very great difficulty. And these are known traditionally to native people.

We are thus looking in Siberia at **enormous predator pits**, caused initially by uncontrolled wolf populations, but ultimately maintained by brown bears (grizzly bears) due to their effective calf-, fawn- or lamb-killing [5]. One Alaska study noted: "*Overall, the bears killed an average of 34.4 moose and caribou calves over 45 days. The new study also found wide variation in the number of calves killed by any one bear, with one killing 44 calves in 25 days and another killing just seven in 27 days. More than half of their meals came from moose or caribou calves, whereas vegetation made up nearly 20%, and adult moose made up just over 12%, But there were also some unusual items on the menu: snowshoe hares, swans, and even other brown bears. In one case, a 10-year-old male killed—and ate—a 6-year-old female bear."*[6] Consequently, while wolves *create* the predator pit, brown or grizzly bears, *maintain* it. Bears live off the massive unconsumed vegetation that covers the land, but also go in search of calves, fawns, lambs and kids during the birth season of ungulates. Being exceedingly good at catching neonates – grizzly bears finding caribou calving concentrations have been seen going into binge-killing of caribou calves. Grizzly or brown bear may thus keep the populations of ungulates very low, which in turn keeps wolf populations low. However, because of the very low population density, the trophy quality of male reindeer or moose tends to be exceptional. My Russian colleague, Leonid Baskin, a life-long student of Siberian ecology especially that of ungulates agrees, but adds, that in addition, there are virtual biological deserts covered by larch and some low conifer forests. The Siberian landscapes is largely unpopulated by people so that the wolves and bears do not conflict seriously with peoples interests over large stretches of land.

The predator pit can be understood as follows: in the late Pleistocene, as best as we can determine,

wolves were controlled by cave lions, tigers, scimitar cats, leopards and in North America, besides by huge lions, by saber-toothed and scimitar cats, jaguars, predacious short-faced bears and probably by the large Dire wolves. In addition: wolves suffered a severe genetic bottle neck with the entry of modern people into Eurasia about 40,000 years ago.[7] This implies effective wolf control by people. If so, the massive release of prey populations from predation (about a ten fold increase or much more)[8] should allow not only a luxury life style for people[9] as well as a massive population increase of modern humans[10], but also a superlative body growth for the few remaining wolves. That is also found.[11] It also explains the scarcity of wolves in the Pleistocene fossil record. The dense late Pleistocene big game populations, 30,000 years ago, in Siberia, that the Zimovs refers to, could be in part a consequence of the control of wolves and cave hyenas along the southern edge of the Pleistocene mammoth steppe by large cats, but also by people (the 56th parallel north in Siberia).

We have had or also have predator pits in Canada and the US. Chadwick hunted his famous record Stone's ram in 1936 in a predator pit on the Prophet and Muskwa Rivers of British Columbia. The German count Lothar Graf Hoensbroech and his party hunted in a predator pit on the Prophet and Muskwa Rivers in 1939. So did my friend Alex on both, bis bighorn hunt in Alberta's northern Rockies, and on his Dall's sheep hunt in the Yukon Territory. A predator pit had developed in Yellowstone and Banff national parks after wolf entry, with moose quickly going extinct in both parks. I was there. We rode through and about Yellowstone National Park on horse back, for a week, from morning till night. While never out of sight of the finest moose habitat imaginable, we saw not a single moose. And that during the rutting season when bulls moose travel widely! However, please note, before the return of wolves in both national parks, there were high ungulate density and diversity despite uncontrolled grizzly bear and mountain lion populations. Is the wolf a super-predator?

Predator pits are caused not only by wolves, but also by other large predators as vividly analyzed and described in a review by Eric Rominger.[12] In fact, his analysis covers examples from Africa and north America that exceed those covered so far in Siberia and Canada. The most outstanding example is from the New Mexican desert where uncontrolled mountain lion populations have taken down mule deer numbers to 10-20 per 100 square kilometers, while in adjacent west Texas, where mountain lions are controlled, it is about 1,200 deer per 100 square kilometers. He furthermore makes a vitally important point, namely, that in the deserts of Arizona and new Mexico mountain lions switch readily from natural prey to domestic cattle, targeting calves. Agriculture, in his words, thus “subsidizes “ mountain lions.

5 Geist, V. 8/23/2019 B**iological predator deserts in Siberia and North America**

So what is the explanation for the very high numbers of wildlife in the 1950's and 60's in western Canada which we then took for granted?

There are three principle ways in which the predator-pit is broken.

A. Native wolf control breaks the predator pit. The traditional method of controlling wolves by native people was to visit dens and kill, and consume most of the wolf pups. (One or two would be left, probably to preclude the wolf female from abandoning the den the following year).

Here is a message I received from Carmen Purdey, ex-president (1985/87) of the British Columbia Wildlife Federation in an e-mail of February 29th 2011 to V. Geist. "*The best education on the subject of wolf control came from Sachs Harbour, Banks island, from two very well educated {masters @ Queens/ masters@ McGill} Eskimo/Inuit gentlemen, Mr.Roy Goose and Mr. Roy Cuptana. Unfortunately we didn't have the funds. I did however have repeated excellent verbal exchanges with them on the "arctic wolf vs Eskimo survival". They claimed that historically on Banks Island the Eskimos have a spring ritual where they travel to identified wolf springtime den sites. Wolves use the same dens year after year due to difficulty digging dens in the frozen land. They bring the entire family on this spring time adventure. Crawling into the wolf dens they extract the pups, killing all but two of them, skinning them for baby clothes, eating them on the spot as they are young and tender. They leave two pups at each den, as this holds the "Pack" together. With no pups they claim the pack will split. These folks also trap and shoot Arctic wolves during the long winter months. Both gentlemen specified that this method of controlling wolf numbers is historic amongst the people of the high north, for without such activity, the caribou, muskox, arctic fox, arctic hare, polar bear and the people are in danger of elimination, the people by starvation, as the arctic wolf will eat everything and they in turn starve*".

In North America, at the time of contact with Europeans, the Spanish nobleman and officer Alvares Cabeza de Vaca did not encounter wolves or coyotes during his 1527 to 1535 expedition.[13] He found a densely settled landscapes with much starvation and very little wildlife that rimmed the southern edge of the North American Continent.[14] What may have been wolves were encountered by the next Spanish expedition, the deSoto expedition of 1539, but only in landscapes in Lousiana, in which people lived in palisaded villages, with each village in sight of the next.[15] That is, de Soto encountered a nondescript

canid in a landscape with no-mans-land between warring villages. Wildlife survived in the no-mans land between villages as villagers were loath to go there. And that is exactly what Lewis and Clark found in their travels, according to Charles Kay, namely, that wildlife, wolves included, existed almost entirely in the no-mans land between warring tribes.[16] Ceremonial and mythical recognition of wolves today not withstanding, in pre-columbian North America, as in Europe, Mongolia or Japan, the wolves were still controlled or eliminated.

B, Wide spread trapping in 19th century Canada's north dependent on dog-teams for transportation. Peter Freuchen, an explorer and resident of Greenland, in *Arctic Adventure*[17] reports that his meteorological outpost could not be provisioned during the long Arctic night by dog sled teams as every attempt was halted by wolf attacks. He nearly starved to death. He reported an observation made by a long-time resident and hunter in Greenland: where there are wolves, there are no people and vice versa! He also lost a companion to wolves (p. 23, pp. 329, 332); he had harrowing experiences with wolves who were trying to break into his cabin to get at him (pp. 16-19); and he shot a wolf stalking his children (pp. 347-348). Greenlanders exterminated wolves, but Canadian wolves from Ellesmere Land have since crossed into Greenland.

1. Northern Canada was home in winter to some 60,000 trappers, and - then – probably not more than 30,000 wolves. That's not counting native people, residents and seasonal hunters and outfitters. The mode of transportation then was with dog sled, well before the age of the snowmobile. Sled dogs and wolves do not get along. In addition, wolves follow trap lines destroying fur and they alienate game, causing hardship for trappers. Wolves were thus constantly meeting hostile people.
2. There was no closed season and no bag limit for wolves.
3. In settled lands, wolves and coyotes were controlled or exterminated by government paid predator control officers. Killing wolves with poison was then allowed.
4. There were bounties on wolves. After the hunting season, game wardens often went wolf trapping. There was an incentive for everyone to kill wolves.
5. In addition, there was the government sponsored aerial broadcasting of poisoned horse meat, dropped on frozen lakes and rivers, trying to control wolves, to minimize the spread of hydatid disease. This was terminated in British Columbia in 1964.

C. Outfitters and guided brought horses into their guiding territory, often at great cost and under

difficult conditions. They could not afford loosing horses to wolves in winter. Horses used in guided hunts need protection from wolves in winter. Moreover, the guardians of the wintering horses used dog sleds for transportation.

Note: replacing horses and dog sleds with mechanical transportation leads to reduced wildlife populations.

In short: humans took over locally the role of controlling wolves, which was previously done for millions of years by large cats and bears. The result of human predator control was very abundant wildlife, as the release of prey form wolf predation results in about a ten-fold increase in prey species. This predator control resulted in shy wolves, shunning all contact with humans. Because of the now abundant wildlife, the remaining wolves grew into giants and still lived in packs, so there was no hybridization of wolves and coyotes, as wolves in packs kill coyotes. There was no depredation of ranched livestock, and confrontations between people and wolves were totally unheard of. Ironically, in areas where wolves were subject to long-standing control there are wolves present in packs, Whereas in predator pits maintained by bears, wolves are extremely scarce.

The Spatsizi, my study area, in 1961-1965 was a wildlife paradise as long as it was under the control of guide and outfitter Tommy Walker, whose horses needed protection and care in winter by guardians using dog sleds. It then became a provincial park, including a large ecological reserve, and wolf control ceased. Today it is a predator pit, a wildlife desert,.

Bottom line: Post-Pleistocene wildlife and biodiversity in North America and Siberia will thrive only in the shadow of man through intense, knowledgeable hands-on management of carnivores. Protectionism, on the other hand, will give you biologic deserts of unimaginable size and reduced biodiversity, as witnessed today in Siberia, and parts of North America, where wolves and grizzlies are de facto freed from human interference.

---

[1] Sergey A. Zimov 2005. Pleistocene Park: Return of the Mammoth's Ecosystem. Science, 6 May 2005, vol. 308, no. 5723, pp. 796–798. DOI: 10.1126/science.1113442

[2]See Geist, V. 1998. Chapter 9 Moose pp. 223-254 in *Deer of the World*. Mechanicsburg PA . Stackpole Books.

[3]I have written one book about moose, one major review of moose biology in my 1998 book *Deer of the World*, one Encyclopedia entry together with my Russian colleague and friend Leni Baskin, three popular articles and reviews, and I also testified in five court cases as an expert witness on moose ecology and behavior.

[4]Granlund, Kaj and Will Graves. 2019. *The Gray Wolf Revealed*.. wolf@granlund.eu

---

[5] Brockman C. J., W. B. Collins, J. M. Welker, D. E. Spalinger and B. W. Dale. 2017, Determining kill rates of ungulate calves by brown bears using neck-mounted cameras. *Wildlife Society Bulletin*, First published: 09 March 2017, https://doi.org/10.1002/wsb.73. Joshua Rapp Learn 2017. Bears are bigger killers than thought, gruesome video footage reveals. *Science* Mar. 17, 2017 , 3:00 AM https://www.sciencemag.org/news/2017/03/bears-are-bigger-killers-thought-gruesome-video-footage-reveals. Posted in: *Plants & Animals*, doi:10.1126/science.aal0913. Boertje R. D., W. C. Gasaway, , D. V. Grangaard, and , D. G. Kelleyhouse. 1988. Predation on moose and caribou by radio-collared grizzly bears in east central Alaska. *Canadian Journal of Zoology*, 66(11): 2492-2499,https://doi.org/10.1139/z88-369.

[6]Lear, Josha Rapp, 2017. Bears are bigger killers than thought, gruesome video footage reveals. Science-nature. https://www.sciencemag.org/news/2017/03/bears-are-bigger-killers-thought-gruesome-video-footage-reveals

[7]Zhenxin Fan et al. 2016. Worldwide patterns of genomic variation and admixture in grey wolves. Genome Research. 26:163-173. Published in AdvanceDecember 17, 2015, doi:10.1101/gr.197517.115

[8] Rominger Eric 2014.Top-down versus bottom-up 35 years as a field biologist. *Fair Chase* Winter 2014, pp. 28-31. file:///C:/Users/Owner/Downloads/Fairchase2014.pdf

[9] Geist, V. 1978. *Life Strategies, Human Evolution, Environmental Design*. New York, Springer Verlag. pp. 304-314.

[10]Klein, R. G. 1969. Mousterian cultures in in Europe and Russia. *Science* 165, 257-246. Mellars, P and J. C. French. 2011Tenfold Population Increase in Western Europe at the Neandertal-to-Modern Human Transition. *Science*, 333 (6042): 623 DOI: 10.1126/science.1206930

[11] Boudadi-Maligne, Myriam (2012). "Une nouvelle sous-espèce de loup (Canis lupus maximus nov. Subsp.) dans le Pléistocène supérieur d'Europe occidentale [A new subspecies of wolf (Canis lupus maximus nov. subsp.) from the upper Pleistocene of Western Europe]". Comptes Rendus Palevol. 11 (7): 475. doi:10.1016/j.crpv.2012.04.003. Cited from Wikipedia.

[12] Rominger Eric 2014. ibid.

[13] Cabeza de Vaca, Alvar Nunez. 1961 Adventures in the Unknown Interior of America.(Translated by Cyclone Covey). Lexington KY. The Cromwell-Collier Publishing Company. www.americanjourneys.org/aj-070/.

[14] Geist, V. 2018. Human Use of Wildlife and Landscapes in pre – Contact Southern North America, as Recorded by Alvar Nunez Cabeza de Vaca 1527-1536. *Beiträge zue Jagd- und Wildforschung* 43:397-406.

[15] Oviedo y Valdés, Gonzalo Fernández de, 1904. Narrative of De Soto¿s Expedition Based on the Diary of Rodrigo Ranjel, His Private Secretary AJ-023, Bourne, Edward Gaylord (editor) and Buckingham Smith (translator). Narratives of the Career of Hernando de Soto in the Conquest of Florida as Told by a Knight of Elvas and in a Relation by Luys Hernandez de Beidma, Factor of the Expedition. Together with an Account of de Soto's Expedition Based on the Diary of Rodrigo Ranjel, His Private Secretary Translated from Oviedo's Historia General y Natural de las Indias. (New York: A.S. Barnes and Company, 1904). Volume 2, pages 41-157. www.americanjourneys.org/aj-023/

[16] Kay, C. E. 2007. Were Native People Keystone Predators? A Continuous-Time Analysis of Wildlife Observations Made by Lewis and Clark in 1804-1806. Canadian Field-Naturalist Volume 121(1) :1-16, https://web.archive.org/web/20091229121059/http://rliv.com/pic/LewisClark.pdf

[17]Freuchen, P. 1935. *Arctic Adventure*. Farrah & Rinehart, New York.