

WOLVES, BEARS AND HUMAN ANTI-PREDATOR ADAPTATIONS

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Introduction

The conservation of large carnivores and an increase in their numbers leads to increased confrontations with humans (Hererro 1985, 2002; McNay 2002). An analysis of their behavior helps to prevent such incidents. In the long history of our evolution, large predators forced on us unique behavioral security adaptations. In their early stages of evolution, hominids used mainly escaping behavior, but later created mutualism, commensalisms, and even cooperation (Sludsky, 1962) via sophisticated means of avoiding or thwarting predatory attacks (Geist 1978). While zoologists and some anthropologists such as Adrian Kortland recognized early the significance of predation in the evolution of humans, this insight is rather recent to conventional anthropology (Hart and Sussmann 2009). In time humans not only successfully avoided or thwarted predators, but also hunt them. Nevertheless, predators may systematically hunt humans to this day (Corbett 1991, Capstick 1981; Pavlov 1982, 2007; Loe, J. and E. Röskeft 2004; Lappalainen 2005; Frump 2006; Graves 2007; Moriceau 2007; Geist 2008 a, b).

One can trace the origin of the American “harmless wolf” myth to a respected Canadian biologist, Dr. C. H. Doug Clarke (1971). He investigated the killing of people by wolves in Europe and concluded, that while such attacks were real, rabid wolves essentially caused them all (Rutter and Pimlott 1968; Mech 1970). In exonerating healthy wolves, Clarke fell back on his experience with the notoriously shy Canadian continental wilderness wolves. Even so, rabid wolves are lethal (Moriceau 2007; Graves 2007). Clarke failed to notice that in the days before modern medicine normal survivors of wolf attacks could not have been bitten by rabid wolves. What is puzzling is why Clark did not see this distinction where as others, who examined much the same material, scientists, historians even laypersons (Oriani and Comincini 2002; Moriceau 2007), did differentiate between the attacks of rabid and non-rabid wolves? Flemming (1724 p. 113) in Germany, even described how the tracks and habits of such deranged wolves differed from those of healthy wolves. In pre-revolutionary France Moriceau (2007) identified over 3,000 deaths by wolves. During the 18th century in a county in northern Italy (Oriani and Comincini, 2002) there were ca. 90 cases of human mortality from wolf’s attacks. In Eastern Europe numerous cases of wolf’s killing humans have been collected (Pavlov, 1982, 2007; Graves, 2007, Stubbe 2008). Most of them occurred in Belorussia in 19th century, and in Western Urals in 1945-1949. However, wolf attacks and killings of people also happened currently, as do brown bear attacks people in Siberia (Zavatsky, 1982 Mordosov, 1993; Mordosov, 2005) as well as in North America (Hererro 1985). Wolf’s attacks happen in our days. In November 2005, an adult man was killed in by wolves in Canada (Geist, 2008a). In January 2009, in Perm’ Oblast’ (Western Urals) ten-years-old boy was caught, carried away, and killed. It is important to underline that Western Urals (Perm’ and Kirov oblast’) are inhabited by the largest wolves of Russia. Lethal wolf attacks are recorded from Finland (Lappalainen 2005), Germany (Flemming 1717); Iran (Baltazard and Ghodssi 1954), India (Jahala and Sharma 1997; Jahala 2003; Rajpurohit 1999), Japan (Walker 2005) and other countries (Linnell et al 2002). Ironically, while there are good publications in North America about bears dangerous to humans (Hererro 1985; Stringham 2007; 2009), such detailed analysis for wolves are missing.

Evolutionary of relationships

With the spread of large predators in North America and Europe, both natural and re-introduced, with the first well-investigated case of a person killed by wolves in North America (Geist, 2008) with severe depredation or extinction of prey populations (Bergerud et al 2007, 2008; Garrott et al 2008; Klein 1995; Carbyn et al. 1998), as well as destruction of dogs and livestock, rancorous controversy has been sparked in the news media and internet about the nature and the “management” of predators. Incidence between large predators and people are on the increase in North America (McNay 2002). Although predators pose, statistically, a minuscule danger, those experiencing the confrontations and depredation are alarmed. In view of the fact that the famous introductions of wolves into Yellowstone National Park were based on two false premises, namely, that prey populations were food, not predators limited, and that free living, healthy wolves do not harm people, the lethal “myth of the harmless wolf”, it is imperative to examine experiences with wolves and bears in more than North America.

To large predators humans are prey. It was our ancient fate to be killed and eaten (Kortland 1980; Geist 1978, 1989; Hart and Sussman 2009), and it was our foremost goal to escape such. Geist (1978) argued that hominids could not have evolved into humans until they survived consistently on the ground, away from trees, while surrounded nightly by large predators - despite being almost blind at night and helpless. We have no obvious adaptations to night vision and lack effective biological weapons. That we succeeded is self evident, as we are the only primate, which does not require trees for its nightly survival and who's morphological climbing adaptations have regressed (Oxnard 1975). Even the gorilla needs trees as a baby for security. It's not only that so many fossilized remains of our ancient ancestors are meals consumed by large predators in secluded caves or rock niches, but also that we speciated like large herbivores. That is, our pattern and timing of forming species, of adapting to landscapes from equator to pole, mimics and coincides with that of deer, caprids or cattle (Geist 1971, 1978, 1987, 1998), but not with that of omnivores, let alone of carnivores. And that despite our fondness for meat, despite “man the hunter”, despite our carnivore-like ability to digest elastin, or metabolize trans-fats of ruminant origins into Conjugated Linoleic Acid, or our reliance on vitamin B12, all three of which are produced by animals only, and despite the fact that at least on species of humans, Neanderthal man, grew into a super predator (Geist 1978, 1983). That is, despite very strong evidence that we descended from meat eaters, we still speciated like large herbivores, and remain in supreme need of effective anti-predator adaptations – even today!.

Geist (1978, 1989) detailed the anti-predator strategies and tactics as hominids made the transition from the treed savanna to tree-less steppe, and in the process evolved into humans. He differentiated between daytime and nighttime anti-predator adaptations. In speciation, *ancestral* adaptations are transformed. Consequently, one recognizes in humans adaptations that must have been those of their australopithecine ancestors, who must have lived in an open landscape with trees always close by. Herbivores in open landscapes gravitate for security towards the *selfish-herd*, always recognizable by change in weaponry, in our case by the reduction of canines. This can also be seen in the comparable speciation of deer, horses, rhinos and various extinct lineages of large herbivores. Other ancestral anti-predator adaptations are our upright (periscope) posture, long limbs, keen vision, and noisiness, originally highly adaptive for spotting predators across a barrier of high savanna grasses and alerting the group for flight to trees. To this were added adaptations that exploited the weaknesses of predators. Such were pertinent when escaping predation on the ground at night. Here we took advantage of such factors as the unwillingness of predators to penetrate a wall, the extreme aversion of predators to thorns (Kortland 1980), their sensitivity to threat vocalizations of their own species, and their strong aversion to injury. We could escape predators at night by building on the ground a *thorn-covered*, domed-over *enclosure* and reinforce the aversion of predators to such with *imitations of their threat sounds*, aided by a sharp jab with pointed stick

through the thorn walls, if need be. Crucial here is the refinement of our ancestral australopithecine vocalization into *vocal mimicry*, which is the biological prerequisite to language and music.

To succeed in the open steppe away from trees, selection for large body size, dark skin, and the use of weapons as tools, opened new opportunities to intimidate, harass large predators in daylight, while intellectual forethought and planning allowed for the *systematic destruction of their helpless young*. Only consistent intimidation and reduction of predators would allow foraging by women and children, or the hunters ability to retain prey after a hunt, without predators contesting such, or the safe portage to camp of prey without a string of predators following, or the presence of meat and bones overnight in camps. Large body size allowed sufficient power to effectively use clubs, dark body color is a universal in species that confront predators; “mobbing” of predators is common in large prey, especially if done assertively by a group together with aggressive vocalizations that targeted specific predators. This was postulated by Geist (1978, 1989) as the basic within-Africa anti predator adaptations of early humans, and they work to this day. However, even today humans can become prey, while predators quickly re-gain the skills and appetite to hunt humans (Corbet 1991; Frump 2006).

With the Pleistocene out-of-Africa dispersals of hominids, came new problems of anti-predator adaptations. Such dispersals could occur during warm, moist interglacials (followed by extinction during cold, dry glacials). The challenge was to escape not only African predators that co-dispersed, but also new predators, especially wolf packs and bears. We note that human dispersal into Eurasia in the Pleistocene is sporadic, and seems to be consistent only towards the end of the existence of *Homo erectus*. It thus appears that meeting a new predator fauna delayed human colonization. And we meet this once again as humans attempt to colonize Pleistocene North America with its fauna of diverse, giant, assertive predators (Geist 1989). After the out-of-Africa venture by modern man during the first glacial maximum of the Wuerm/Wisconsinian glaciations about 60,000 years ago, and the swift colonization of coastlines of southern Asia and Australia, it took almost 50,000 years before humans’ manage to colonize North America. They did so only during and after the extinction of North America’s megafauna. Earlier colonization ventures succeeded temporarily in South America, which did not have a contingent of predators comparable to those in North America. Colonization of North America proceeded slowly, as the megafauna decreased. In short, it took some 6,000 years after humans entered North America to create a landscape safe for human occupation (Geist 1989).

Clearly, it is important to discover just how people with primitive weapons were able to consistently escape predation by wolf packs and bears. Here research in North America and modern Europe may be in part misleading. For instance, Asiatic black bears, which may chase tigers from their kills (Corbet 1991) may not be like the smart, circumspect, docile American black bear, while timidity in European brown bears may well be a selection product of severe prosecution for millennia. Moreover, modern North American but also European writings (Linnell et al 2002) about wolves stress the benign nature of wolves, a misconception based on gaps in scholarship.

Behavior of predators towards humans

In North America there is great interest in bear attacks on humans and their causes. Stephen Stringham (2007) gives a most informative annotated bibliography of nineteen (19!) books dealing with bear attacks, and this does not cover books in which bear attacks are described incidentally to bear biology. Stringham (2002, 2007, 2009) followed long after the pioneering work by Stephen Herrero (1985, 2002), and greatly expands upon our understanding of bear ethology, discovered during some forty years of field work with bears. His systematic treatment of how to deal with bears not merely to avoid attacks, but to live peacefully with such is the most insightful writing on this

topic to date. He synthesizes all available information by current bear experts. In addition are experiences in raising bears that give deep insights into their nature, including such by frontiers men like Ben Lilly who lived with subjugated grizzly bears in the wilderness, but also brought them to exhibits and into circuses (Storer and Tavis 1955, Schullery 1988). Then there is the extensive experience of frontier bear hunters (Schullery 1988). One of these, William H. Wright (1909), graduated from a hunter to a photographer to a talented naturalist who wrote an informative book about his long experiences with grizzly bears. Furthermore, there is an industry developing of bear viewing by tourists. Such can only thrive if bears are neither spooked nor enraged. Also, cities in North America are trying to minimize bear encounters with various ongoing “bear smart” programs dealing with how to minimize bear attractants, how to negatively condition bears and how to act so as not provoke attacks.

In contrast to bears, there is no such detailed understanding pertaining to human-wolf relationships in North America. Ironically, there is a better understanding of the dangers to children posed by coyotes living in urban areas (Baker and Timm 1998), than of the dangers from wolves. So deeply ingrained is the notion that wolves are not dangerous to people, that at least three persons in North America fell victim to wolves, free living and captive. The only abstraction of how wolf, stepwise, target humans as alternative prey is, ironically, Appendix B in Graves 2007 written by V. Geist. This stepwise progression of wolves slowly, and thoroughly exploring us as alternative prey, has been dubbed in Scandinavian, subsequently as “*seven steps to heaven*”

Concluding insights.

Based on our collective experience with the literature, but above all from our encounters with bears and wolves in wilderness, farming and suburban settlements, we would like to add the following:

- a) In wilderness that is virtually free of humans, both bears and wolves frequently explore lone humans by observing such from hiding, by following human tracks, as well as sitting close to cabins and apparently listening to the human occupant. This is exactly what is expected from basic theory of animal behavior: organisms strive to make the unfamiliar familiar.
- b) Bears and wolves distinguish between the actions and sounds made by confident, armed humans and not-so-confident unarmed hikers. Armed individuals walk boldly and carelessly, and do not normally show fright responses when encountering bears or wolves. These sensitive animals, which are easily frightened, can differentiate the differences in human behavior. Moreover, because wolves and bears may be victims of cannibalism, they are exceedingly sensitive to being stalked and hunted and are easily frightened by such. However, bears on rare occasion may hide and ambush hunters. The propensity of predators to flee and hide from humans where there is prolonged, inefficient hunting, conveys on society an unearned good, “*freedom of the woods*”, freedom from fear of predation when camping and hiking where large predators are prevalent.
- c) Habituation by large predators sets in where they meet humans routinely, and such do not harm. Habituation is a state of incomplete exploration by the animal. Eventually, habituation ends by the bear or wolf approaching humans and investigating such, most likely by testing the human for edibility. Consequently, habituated predators are in principle dangerous. However, it is possible to condition habituated animals by acting early, and teaching them systematically and redundantly to avoid close encounters with humans. Confident humans tend to be frightening to both species.
- d) The removal, not of merely habituated wolves, but of wolves actively observing and exploring humans is imperative. Such behavior indicates that the wolf or wolves are targeting humans as prey (see Geist 2007). Wolves habituating to humans about garbage dumps, no matter how well fed, will eventually target humans. Normally humans are safe from wolves as long as they are buffered by livestock and pets. Dogs are targeted by wolf packs preferentially, and these may pursue such despite lively counter measures by their owner.

e) Wolves injured by gunfire may instantly attack the shooter. So may a wolf pack upon hearing a member scream after being hit. Consequently, it is best not to shoot and never shoot with underpowered, inaccurate weapons incapable of rapid fire. For bears, pepper spray has statistically a better performance than firearms, as fewer users of bear spray are mauled and killed than users of firearms.

f) An attacking *lone* wolf can be defeated by an *aggressive counter attack*. Strong men can strangle wolves. Stabbing a wolf with a knife may not slow the attack, unless the person uses the knife knowingly. Assertive action and an unafraid demeanor, real or pretended, is important in all encounters, including in surprise meetings. In areas where bears avoid humans even such meetings may result in the bear fleeing. At very close range a defensive bear may merely cuff the human and then run. Bears in national parks, conditioned to defenseless humans, are not as likely to run.

g) Both in North America and in Siberia there are observations on bears cleverly taking advantage of people and their food, but also of small, subordinate bears and wolves seeking out humans to avoided dominant bears or wolves. Humans have great difficulties reading the body language of bears, and may fall victim to their ignorance of bear behavior. We note that habituation in carnivores is, eventually, terminated by an attack. Food conditioning merely hastens such. Also, following prolonged contact, the animal may treat the familiar human eventually as it would a conspecific. That is, it will test if the human can be defeated. The death of four professional photographers -Michio Hoshino, Vitaly Nikolaenko, Timothy Treadwell, Igor' Shpilenok – may be interpreted as such. Bears recognize individual humans and thus acted differently towards the photographers that followed them continually, as opposed to casual visitors. The photographers could approach to the habituated bears closer than could other people. The animals acted indifferently, fed and rested in view of the photographers. The three first were killed by the habituated bears probably while being treated as bears. In an “intra specific” attack the animal protects its territory and individual distance. The bear which had been followed by Michio Hoshino on Kamchatka, found him during a night in camp, killed him in the tent (the bear located Michio head and punched trough tent wall), then carried away and devoured the body in the shrubs. In this case, the bear demonstrated the typical bear behavior – cannibalism. In the Nikolaenko's case the bear was looking for his winter den during a snow storm. Grizzly bears choose snowstorms to slip away and occupy their wintering dens. Nikolaenko followed him. The bear probably recognized the photographer personally, and reacted as it would towards another bear with a lethal attack. It is well known that big bears look for small bears in dens, then kill and eat them.

h) Our experience matches much of the historical record pertaining to bears and wolves attacking livestock and humans. In Siberian winters lean bears unable to sleep in their dens attack and chase humans, even bursting into houses. There are significant population differences in aggressiveness of bears in European Russia and Siberia. The latter are more bold. According to Zavatsky (1993), from 248 meetings the bears attacked him in 1.6% and investigated him closely in 14.9% of the cases. The numerous meetings with bears by Zavatsky's testify the boldness of Siberian bears; European researchers meet bears rarely. In Siberia, bears regularly destroy hunters' storages and huts where there is food.

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