

VALERIUS GEIST, CALGARY/CANADA

Human Use of Wildlife and Landscapes in pre-Contact Southern North America, as Recorded by Alvar Nunez Cabeza de Vaca 1527–1536

A prevailing paradigm about North America, is that prior to European contact in 1492 it was unspoiled wilderness, teeming with wildlife and occupied by a sparse native population (LENZ 2000, KAY and SIMMONS 2002, DENEVAN 2011, 2016). That image became the goal towards which environmentalists were working, an image that was remarkably resistant to facts to the contrary (ROOSEVELT 2002, DENEVAN 2011, 2016). However, even the most careful studies underestimated the human impact on the landscape, by focusing on floral communities and land-uses millennial after megafaunal extinctions, that is, long after humans had to deal with the uncontrolled vegetation growth after the native mega-herbivores had disappeared (WILLIAMS 2002). Forests can recover in centuries or less (PORTER 2016, GAMMAGE 2011), so that studies looking at floral patterns on landscapes millennial after mega-faunal extinctions, already deal with human-made, that is *unnatural* floral conditions (ROBERTS et al. 2017).

Natives had to learn to use fire as a management tool in order, initially, to escape massive conflagrations (BURNEY and FLANNERY 2005). Subsequently, it became a dominant tool with aboriginal-set fires becoming 270 to 35,000 times more frequent than fires started by lightning (KAY 2007). The purported abundance of wildlife in pre-Columbian North America is mistakenly based on the abundance of wildlife in the 18th and 19th centuries, especially buffalo

(ROE 1951) and passenger pigeons (MURRAY et al. 2017) (while ignoring real wildlife shortages experienced by explorers) (BUCKLEY and NOKES 2016). Detailed, meticulous archaeological (WRIGHT 1884) and historical investigations, paint a very different picture (KAY 1994). Prior to European contact, a large native population exploited the continent fully, be it terrestrial, aquatic or inter-tidal ecosystems, (HILDEBRANDT and JONES 2002) and leaving very few large vertebrates, while the kills were so well utilized, as to indicating hardship conditions (i. e. the crushing of deer phalanges to boil out the last fat). In the archaeological record bones of passenger pigeons were very scarce (NEUMANN 2002). Aboriginal diets tended to contain less than ten percent ungulate foods (KAY 1994, 1998). Left were only deer or mountain sheep and traces of other big game species. Decreases in abundance of large game and fish due to native hunting efficiency are associated with a decline in human skeletal size and health, and an increase in violence (BROUGHTON 2002). Severe wildlife depletion via native hunting was also apparent in later centuries (SCHWATKA 1988, DECKER 2018). After Europeans entered North America in 1492, the native population was largely destroyed through European diseases and genocide (DOBYNS 1983). When the hand of native people came off the North American landscape, wildlife, freed from human predation, exploded in numbers (PRESTON 2002) and

spread geographically (BROUGHTON, 2002, KAY 2002). Heavy predation by large predators, let alone by humans, reduces herbivores to a tiny fraction of the population density ecologically possible without predation (KAY 2002). Consequently, there would be very rapid, explosive change from great scarcity of wildlife to superabundance. 50 years, let alone 100, would make an enormous difference. Native people also staged a – slow – comeback (ACUNA-SOTO et al. 2002). One finds something similar in Australia (GAMMAGE 2011). By the 18th century the North American continent was locally teeming with wildlife, and observers falsely assumed that this is what pre-Columbian North America looked like.

How did the pre-Columbian natives live in North America? And what was their relation to wildlife and landscape?

We get a glimpse from the unvarnished account of Alvar Nunez Cabeza de Vaca (CABEZA DE VACA 1961), the first European to not only make contact, but live for years with natives be it as a guest, a captive, a slave, a trader or as a healer and surgeon, while he traversed the southern part of the continent from Florida to Mexico in an epic journey from 1527 to 1536. His account is so important because he saw the land and its inhabitants before the introduced European diseases and genocide devastated North American native populations. And that began already only 12 years later with the DeSoto expedition (1539–1543) (RAMENOVSKI and GALLOWAY 2005). In reading Cabeza de Vaca's account one has to keep in mind a number of factors.

As a nobleman he would have participated in the then passion of nobility in Europe for hunting and especially for falconry (Frederick II of HOHENSTAUFEN 1248). And he was addressing his account to the emperor, Charles the V, an experienced hunter and falconer (ESPINOSA 2009) and thus interested in wildlife. Thus Cabeza de Vaca saw the distinction between rabbits and hares, as he would have customarily done in Spain, and he lists species of hawks (marsh hawk, sparrow hawk, goshawk) and falcons, as well as a favourite quarry of European nobility in falconry, namely the herons. Consequently, his account of herons, egrets and ibis. He mentions

no eagles, which is significant, as that's a bird beloved by European royalty. (It may be that, granted the dense human population, a passion for feathers by natives kept this bird in short supply). Consequently, what Cabeza de Vaca does NOT see in his travels, is as important as what he does see. For instance, had he seen elk, he would have commented on the great similarity to the red deer of Europe, as did later travellers that saw the elk. European nobility was crazy about red deer (RAESFELD VON 1898). Had he see it, he would have given fair treatment to the peccary because of its resemblance to European wild boar, another favourite quarry of European nobility (FLEMMING VON 1749). He reports three kind of deer in Florida, and there are indeed three subspecies of white-tail deer in that state, but they differ little except in size. This suggests keen power of observation as well as substantial hunting experience. He makes a point of describing to the emperor wildlife not seen in Spain, i.e. the opossum.

Cabeza de Vaca's must have been acquainted with agricultural estates dedicated to raising cattle and horses, and he must have had an eye for raising cattle. He makes reference repeatedly to the fine meadows he found in his traversing of Florida suitable for cattle.

Cabeza de Vaca was an experienced and distinguished combat officer who was almost certainly familiar with emergency battle-field surgery and medicine. He gives an account of him extracting a deep-seated arrow from a native, where efforts by natives had failed. The remarkable thing is not his willingness to operate and his skill in surgery, but the fact that the native survived the operation. In short, Alvar Nunez Cabeza de Vaca, knew something about treating large wounds, such as soldiers suffered that he had commanded in battle in Europe.

In their years of travel crossing many lakes, creeks and rivers in Florida, Louisiana, etc., the Spaniards never encountered an alligator. Even the translator remarked on this remarkable deficit. Note the observations that native people did not eat every day, that food was often scarce and hunger common, that there were rituals to make hunger bearable, that Alvar himself lived that very hunger for years as a captive, slave or guest of natives, and that children were being nursed into their teen age years, which the na-

tives themselves ascribed to sporadic food availability. Given that Cabeza de Vaca companions died of hunger and that he resorted to eating dogs and adopted binge-eating when food was available, as did natives, given such chronic, widespread hunger, is it likely that natives would have passed up an alligator to eat while they ate lizards, snakes, insects and spiders?

The chief weapon of the natives was a rather massive long-bow, which they used with great mastery, hitting accurately out to 200 paces. The body armour carried by the Spaniards was no protection against these arrows, which readily passed through the armour, leading to a considerable loss in men. These arrows penetrated tree trunks a thick as a man's calf, and readily killed horses. The natives carried, however, only a few arrows. In other words, they expected results with few shots and the ability to retrieve the very valuable arrows. These were flint tipped. Arrows were valued as gifts of friendship, indicating that good arrows were held in high esteem. Granted accurate shooting as well as a dense human population and frequent hunger, then natives could severely depress or exterminate wildlife populations, relatively small birds included. Only in the west, for instance, did natives present Cabeza de Vaca with quail. From personal experience I can vouch that a skilled archer hunting small game does not do much worse than a hunter armed with a ca. 22 rifle. Cabeza de Vaca noted that the native archers were tall, well-built, muscular and rather intimidating. He admires their vision and hearing, as well as their ability to withstand hunger, thirst and cold. He expressed admiration for their skills in warfare and in hunting. Consequently, native archers had a weapon powerful enough to kill all conceivable big game and accurate enough to deplete small game.

David Jones makes a point that native north Americans had developed a sophisticated culture in making and using poisoned arrows (JONES 2009). Cabeza de Vaca, however, makes only a passing comment to arrow poison, namely that arrows were stuck into a poisonous fruit. That would be most likely the highly toxic fruit of the Machineel tree (*Hippomane mancinella*), the world's most dangerous tree, which does grow in Florida. Arrows poisoned with toxin from this tree apparently killed the Spanish Explorer Juan Ponce de Leon in 1521 (NOSOWITZ

2016). However, the powerful bows and accurate, deeply-penetrating arrows, as seen by Cabeza de Vaca, were more than adequate for quick kills on big game via exsanguination and organ damage, avoiding the complications of removing poisoned meat from kills, and thus increasing the efficiency of utilization with the benefit of reduced labour and care of processing carcasses. It's an understandable trade off where food is scarce. When natives expected attacks, they increased the number of arrows they carried. Traditional war bows used with poisoned arrows were small and not very powerful, but such were not reported by Cabeza de Vaca, nor the presence of weapons, such as war clubs, though clubs were used to hunt jack rabbits.

In short, the absence of alligators is significant, but so is the absence of other predators such as the red wolf in Florida or the lobo wolf in what is today Texas and Mexico, where this predator was found in the 18th century (DOBIE 1941). There is no mention of coyotes, whose presence, like that of lobo wolves, is difficult to overlook. There is no mention of grizzly bears or black bears in the west. Cabeza de Vaca did not see beavers or turkeys. Nor does he report seeing passenger pigeons, ever, let alone swarms of such blotting out the sky (MURRAY 2017). That was to follow after native people all but died out and their food became available to the passenger pigeons (NEUMANN 1985, 2002). And it followed quickly, within 50 years of the onset of that human mass mortality (JOHNSTON 2002). Nor did Cabeza de Vaca see pronghorns.

The most common big game animal was the white-tailed deer, which was avidly hunted, and whose hides were widely used for cover and warmth. However, the availability of venison was not common, and such had to be consumed quickly lest a native took it away by force. Natives also pounded and ate bones. Deer were not common enough to suppress black berry growth, for black berry was a major human food, consumed by natives in sessions of binge-eating (on a personal note: I timed myself picking black berries at five pounds an hour). Only in west Texas does Cabeza de Vaca encounter areas rich in wildlife, and this may be no-man's land between warring tribes. Deer were so uncommon, so efficiently hunted, that natives made "expeditions for such" into areas where the na-

tives themselves had to carry wood and water. Upon arrival in these inhospitable places, they quickly killed deer, consumed such, and used them for provision on their home journey. In short, where there was wood and water, natives were occupying the land and there were no deer. Moreover, a hunting method of natives, namely running down deer, cannot be practised – I suggest – were deer are abundant. The abundance and sole presence of white-tailed deer (and mule deer in the west which Cabeza de Vaca also mentions), but not of other expected big game such as elk or peccaries is also confirmed in the pre-Columbian archaeological record. The lack of big game is also emphasized by the fact that Cabeza de Vaca does not mention vultures or eagles, that is, scavengers on dead wildlife. Nor does he mention ospreys, but he does mention – by species – *small* hawks and falcons, as well as waterfowl and herons, egrets and ibis. All wildlife that could compete with people for food is absent or, like deer, very scarce.

While in Florida, Cabeza de Vaca does mention black bear and puma. He notes only that the skin of pumas was used together with skins from what were most likely mink in ceremonial clothing, which he found attractive. However, there is no mention of black bear hides, which I can vouch for are exceptionally warm and useful when temperatures plummet, as they did in the winters experienced by the Spaniards. (In northern British Columbia native Tahltan used untanned scraped and dried black bear hides taken in spring, and used these feather-light skins for insulation even in winter while travelling with dog teams.) Cabeza de Vaca mentions no wolf, coyote or fox skins, yet good furs were treasured possessions. So, black bears were present, but so rare, that their hides were not in evidence. Given the virtual absence of large predators including eagles, the scarcity of white-tailed deer reflects that severe exploration experienced by that species. In the west, however, it is reflected in an abundance of mule deer, and in an super-abundance of jack rabbits. This raises the possibility that he observed this abundance between hostile tribes, as was observed also by other explorers of North America (KAY 1994). The virtual absence of large predators such as wolves, bears, coyotes, cougar and even foxes, would reflect itself in a high abundance of

meso-predators (RIPPLE et al. 2013) that is, in small-bodied predators such as mink. Clothing of mink was worn by natives, but only by those of high rank. Much of the time natives went about totally naked, as eventually was done by Cabeza de Vaca and his surviving mates. So, even meso-predators were not overly abundant.

If the absence of large predators reflects itself in a high abundance meso-predators, such as skunk, raccoon, otter, weasels, mink, etc., then the prey of meso-predators should become scarce, such as nesting waterfowl, spawning freshwater fish, and eggs and babies of alligators and turtles. Quite in line with these expectations, Cabeza de Vaca makes no reference to any noteworthy harvest or consumption of waterfowl. However, there is an additional explanation: the human population was not only dense, but spread out over the continent, concentrated in mid-continent at best in small mound cities and villages, but not in huge cities as it is today. Consequently, there was little area that escaped the prying eyes of men hunting, women gathering, as well as children searching for – among others – bird nests. Searching for food and fire wood was an ongoing, intensive daily activity. Furthermore, America's natives were very good creating small-scale water-craft. Granted the well-spread, dense human population and expected high densities meso-predator populations, there would be few safe places for waterfowl, turkeys, snapping turtles or alligators to nest.

Still, there was apparently enough bird-life for Cabeza de Vaca reporting ducks, royal duck (tree-duck?), geese and partridges (bob white quail?). Note that he saw small hawks and falcons, no big birds of prey including buteos. A falconer would not miss such. It appears that waterfowl lacked the abundance to generate systems of mass trapping, followed by a notable consumption of such. Moreover, Cabeza de Vaca noted that natives ate sea-fish because they were close to the coast. There is no mention of native eating freshwater fish or snapping turtles. Consequently, the apparent absence of waterfowl and fresh water fish in the native diet matches the expectations from the absence of large predators (alligators, wolves, bears, cougars) and a dense, spread-out human population of very hungry hunter-gatherers.

Three times Cabeza de Vaca makes contact with buffalo, which he notes were heavily and successfully hunted, generating a trade in “incredible” numbers of buffalo hides. Like others Europeans that followed him, so Cabeza de Vaca praised the culinary qualities of buffalo meat (presumably the hump) compared to European domestic cattle. Different tribes differed in stature, which suggests that each tribe lived to the edge of available food. This was not only obtained from hunting, fishing, and gathering of shellfish and plants, but also by some agricultural activity growing corn, beans and squash. The best built natives Cabeza de Vaca encountered were buffalo hunters, a phenomenon that was repeated in the 18th and 19th centuries in the American west, where the natives living off buffalo were exceptionally developed physically (STECKEL and PRICE 2001, PRICE and STECKEL 2003) very healthy, and superior fighters to the US cavalry. That’s why the buffalo had to be destroyed (WESTON 2016).

From Cabeza de Vaca’s account it is understandable that in the absence of large predators people could go about freely on land and into water, make no special preparation guarding oneself against predators at night, as well as adopt a pattern of wildlife use that reflects the absence of large predators. It substantiates Charles Kay’s native overkill hypothesis as well as the archaeological record. Cabeza de Vaca reports that natives ate a lot of low-quality plant food that was hard to prepare, and they went into binge-eating when fruits or nuts ripen. There was some drying and storing of cactus fruits. Corn was stored. There was little animal food (venison), except along the sea such as oysters, crabs, seaweed, some fish – but no sea turtles, seals, manatee, dolphins or whales.

Cabeza de Vaca, in all his eight years of the closest of contact with native tribes, did not experience wild fires, that is, big uncontrolled forest or prairie fires. He experiences fires set by natives, which he considers a disgusting habit, done, so he thinks, to control mosquito, create pastures to attract deer or drive out deer and reptiles, or kill deer in a surround with fire. The natives burned meadows, but also some forest. The landscape had vast forests of tall (old) trees with many species of nuts (black walnut, hickory, pines, beech, acorns [laurel-, red- and

live oak], trees for medicinal uses (sweet gum, junipers, cedars) and low palmettos. (A central European of his age would have recognized the significance of the well-spaced, old trees – called “mother trees” – for mast production). In the forests of big, tall, old trees, he comments, that many were deeply scarred by lightning (which he reports as common) which, obviously, did not lead to wildfires, indicating, that when forests were fired, it was to control fuel build up and undergrowth, leaving the trees alive to age. This suggests that such were cultivated. The lack of massive forest fires could also be a function of a very large contingent of people gathering daily wood for cooking and warmth and thereby removing effectively in an ongoing fashion the fuel for forest fires. There were many open meadows which Cabeza de Vaca judged would be good for cattle grazing.

The absence of wildfires is thus in line with expectations, namely, that natives gathered fire wood massively, diminishing the fuel supply, then skillfully burned the landscape so as to diminish uncontrollable conflagrations, as well as shifted the vegetation towards species useful to humans and to control noxious insect pests. They had *civilized* the continent, while the dense human population utilized its food resources closely. The massive die off of native tribes began already with the subsequent De Soto expedition to enter Florida (SMALLWOOD 2004, CONSER 2006).

The account of Alvar Nunez Cabeza de Vaca is a complete repudiation of the notion that North America was wilderness, rich in wildlife, and inhabited by a very few natives. It was a continent thoroughly civilized by human hands, closely exploited by a dense human population, with great deficits in wildlife. Cabeza de Vaca encountered more tribes than he could remember. Tribes were closely packed. Natives had the means and the motive to kill all available wildlife. The frequent use of fire resulted not only in open, productive meadows, but also in large tract of fire-proof old forests of diverse fruit bearing trees, with little undergrowth. In addition there was limited agriculture. All large mammals, especially predators, had been virtually eliminated, except for deer which, however, flourished only far away from human occupation. However, migratory buffalo came into reach

of these dense southern populations and were thoroughly exploited with notable benefits to natives. There is not only a marked deficit in large mammals, but also of aerial scavengers. Passenger pigeons remain unmentioned. This is in line with the hypothesis that passenger pigeon, feeding on the same fruit and nut foods as did people, exploded its super-abundance following the demise of native populations from European diseases (NEUMANN 1985, 2002). In short, some species of wildlife were in direct competition for food with humans, such as deer, turkeys, passenger pigeons, raccoons and were kept down in numbers or eliminated in pre-contact times, but exploded in numbers after native people died massively of European diseases.

The lack of large predators did result in the expected ecological effects by meso-predators. The detailed observations of Cabeza de Vaca are entirely in line with what is expected from a dense human population, as well as with Charles Kay's overkill hypothesis and the archaeological record. Only in the highly advanced, sophisticated culture of the Maya of central America is there evidence that white-tailed deer were hunted sustainable for some 2,000 years (EMERY and BROWN 2011). "Wilderness" is an ecological artifact of European colonization of North America.

It turns out, however, that wolves were not entirely absent when Alvar Nunez Cabeza de Vaca was in Florida. Juan Ortiz, a native of Sevilla, was one of a crew of a ship sent to Florida from Cuba to make contact with the Narváez expedition. However, he was captured by Indians, but by good fortune survived, and was picked up by the De Soto expedition 12 years later. The chief of the tribe had spared Juan Ortiz' life, and put him to guard a temple at night against wolves, as the temple contained corpses. A wolf came and snatched the corpse of a child of an important man. Juan Ortiz threw a spear, wounding the wolf, who dropped the dead child and ran away to die. Finding the dead wolf by chief Utica saved Ortiz' life and endeared him to the chief (FIDALGO OF ELVAS and HERNANDEZ DE BIEDMA 1904). Clearly, there were a few shy wolves alive in Florida with an appetite for human flesh.

It is important to note, that when explorers do mention turkeys, alligators, wild dogs (Johnston 2002), as well as plenty of wildlife (OVIEDO Y

VALDÉS, GONZALO FERNÁNDEZ DE 1904) beginning with De Soto, it is in areas with fortified settlements and natives armed with war clubs. This again supports Charles Kay's aboriginal overkill hypotheses, namely, that wildlife thrives in the no-man's land between warring tribes or settlements (KAY 2003). Entry into these highly desirable areas by foragers and hunters was fraught with mortal danger, as they may fall victim to an enemy patrol. Consequently, the ecology of fear generates sanctuaries leaving wildlife largely unmolested, allowing it to thrive. And the ongoing fear of attack was justified (CHACON and MENDOZA 2007). It led on occasions to severe resource deprivation within palisaded structures, as revealed in archaeological excavations as poorly grown, mutilated, diseased skeletons (EMERSON 2007). In his journey along the southern edge of the North American continent, Cabeza de Vaca clearly missed warlike urbanized natives, but encountered such that lived off the land as hunter-gatherers and small-scale agriculturists, who, while not above the use of violence, practices such evidently with restraint.

Cabeza de Vaca's observations are important in illustrating a very low-point in wildlife abundance, in a pattern of historic highs and lows, beginning with an all-time high in wildlife abundance and diversity during the late Pleistocene, prior to human arrival during the Bølling-Allerød Interstadial, followed by the low of mega-faunal extinction (GEIST 2016, GEIST 2017), followed by a partial recovery due to migrants entering North America from Siberia and Central America, followed by a depletion as human populations grew, followed by a resurgence after native people were decimated by epidemics brought about by European diseases and genocide, followed in the 19th century by a severe continental depletion due to military policy implementing efficient market hunting, followed in the 20th century by a Continental recovery under the North American Model of Wildlife Conservation (GEIST 1995, ORGAN et al. 2012).

Abstract

The widespread assumption that North America before European contact was a wilderness rich with diverse wildlife, with unending swarms

of passenger pigeons blotting out the sun, and thinly populated by primitive hunter gatherers, has been found wanting by paleontological, archaeological and historical research. It suggested that pre-1491 North America was densely populated by a wide range of cultures, including such of great sophistication, that the landscape was closely utilized and managed by humans and that wildlife was scarce and heavily utilized. These divergent views can be contrasted against the first-person observations of the very first Europeans that entered North America, before the native populations were virtually swept away by European diseases and genocide. Since these disease quickly affected American natives, and wildlife and landscapes respond quickly to abandonment, only the very earliest of European observers made cogent observations. One of these was a Spanish officer and nobleman Alvar Nunez Cabeza de Vaca, second in command of the Pamfilo de Narváez expedition, which entered Florida in 1527 with 300 men. Of these only four survived after they crossed the very southern part of the North American continent and arrived in Mexico in 1536. Cabeza de Vaca's was not only a conqueror of natives, but also a guest, a captive, a slave, a trader, a faith healer and a surgeon, who thus experienced the life style of the many tribes he met, down to searching for his own food, fire wood and shelter, while walking about naked as did the natives. As a nobleman, he was familiar with Emperor's Charles the V passion as a falconer and hunter, and thus his interest in wildlife. What Cabeza de Vaca saw, as well as what he did not see, is both noteworthy. He found a landscape densely populated and heavily exploited, with food availability reflected in the body size of tribes. Hunger was pervasive. Wildlife that could compete with humans for food was virtually absent. It appears that the landscape had been civilized via controlled burning and agriculture, that is, put into human service, so as to generate food and materials primarily or exclusively for humans. Deer survived only away from people, forcing hunters to carry fire-wood and water to the places to hunt deer. Large predators and scavengers, mammalian and avian, were virtual absent, and even the expected spread of meso-predators was controlled. His observation vindicate Charles

Kay's hypothesis of native people as key-stone predators. Their bow and arrow technology was so highly developed, that their arrows penetrated the body armour of Spanish soldiers as well as the bodies of horses, and were accurate up to 200 paces. The observations also support Thomas Neumann's hypothesis that passenger pigeons, a scarce bird, exploded in numbers only after the massive mortality of native people, freeing the massive mast and fruit crops earlier consumed by humans to passenger pigeons. Observations by subsequent expeditions found an association between palisaded, walled cities, warlike natives and an abundance of wildlife, as expected, if wildlife was thriving in the nomans land between warring factions.

Zusammenfassung

Die weitverbreitete Meinung, dass Nordamerika vor Columbus, ein wildreiches, mit Wildnis bedecktes Land und spärlich von primitiven Stämmen bewohnt war, wurde durch paleontologische, archäologische und historische Untersuchungen untergraben. Diese zeigten, dass Nordamerika vor 1491 von verschiedenen Kulturen, inklusiven Hochkulturen dicht besiedelt war, dass die Landschaft eng und geschickt bewirtschaftet wurde und das Wild selten war und extrem ausgenutzt wurde. Diese unterschiedlichen Ansichten kann man mit den Beobachtungen der ersten Europäer, welche nach Nordamerika kamen bevor die Eingeborenen durch europäische Krankheiten und Verfolgung nahezu vernichtet wurden, vergleichen. Da diese Vernichtung schnell und massiv einsetzte, und weil in ganz kurzer Zeit Wild und Landschaft sich von menschlichen Eingriffen erholen, sind die Beobachtungen der allerersten Europäer von großer Wichtigkeit. Einer von diesen war der Spanische Offizier und Adelige Alvar Nunez Cabeza de Vaca, zweiter befehlshabender Offizier der Pamfilo de Narváez Expedition, welche in Florida im Jahr 1527 mit 300 Mann landete. Vier Mann überlebten nachdem sie den Südrand des Kontinentes überquerten und in Mexico 1536 ankamen. Cabeza de Vaca war nicht nur Eroberer, er war auch Gast, Gefangener und Sklave der Eingeborenen und agierte als Händler, Schamane, Glaubensheiler

und Chirurg. Somit erlebte und praktizierte er die Lebensweisen der vielen eingebornen Gruppen, deren Territorium er durchkreuzte, inklusiv deren Art der Nahrungssuche, Holzlese und Übernachtung, während er genau so unbekleidet ging, wie die Eingeborenen selbst. Als Adliger war ihm die Passion der Falknerei und Jagd von Kaiser Karl V und dessen Interesse an der Tierwelt bekannt. Es ist somit bemerkenswert was er beobachtete, aber was er auch nicht sah. Er fand eine sehr dicht bewohnte und intensiv genutzte Landschaft, in welcher sich das Nahrungsangebot in der Körpergröße der Eingeborenen wieder spiegelte. Hunger war weit verbreitet. Wildtiere, welche als menschliche Nahrungskonkurrenten agieren konnten, waren praktisch ausgerottet. Es ist ersichtlich, dass die Landschaft durch geschickte Anwendung von Feuer und Landwirtschaft kultiviert wurde, um ein Höchstmaß an Nahrung exklusiv für Menschen zu erwirtschaften. Weißwedelhirsche überlebten nur dort wo keine Menschen lebten, so dass Jäger gezwungen waren Wasser und Brennholz mit auf die Jagd zu nehmen. Große Raubtiere und Aasfresser, auch Adler und Geier, existierten nur ganz ausnahmsweise, und selbst die zu erwartende Ausbreitung von Kleinraubtieren war scharf begrenzt. Diese Beobachtungen rechtfertigen die Hypothese von Charles Kay, dass Eingeborene als key-stone Raubtiere oder Jäger agierten. Ihre Pfeil-und-Bogen-Technologie war so hoch entwickelt, dass die Pfeile die Panzerung der spanischen Soldaten, sowie die Körper der Pferde durchschlugen und bis 200 Schritt zielsicher waren. Seine Beobachtungen bekräftigen ebenfalls die Hypothese von Thomas Neumann, dass die Wandertaube, archäologisch ein seltener Vogel, sich erst dann explosivartig verbreitete, als die massive Sterblichkeit der Eingeborenen durch europäische Krankheiten und Verfolgungen einsetzte, und somit die Ernte und Fruchtproduktion, welche vorher von Menschen verzehrt wurde, nun den Tauben freistand. Die Beobachtungen nachfolgender Expeditionen fanden einen Zusammenhang zwischen von Festungsmauern umzingelten Städten, kriegerischen Bewohnern und zahlreichem, artenreichem Wild, was zu erwarten war, da Wild im Niemandsland zwischen kriegerischen Stämmen gedeiht.

Literature

- ACUNA-SOTO, R.; STAHLE, D.W.; CLEAVELAND, M.K.; THERRELL, M.D. (2002): Megadrought and Megadeath in 16th Century Mexico. – *Emerging Infectious Diseases*, **8**(4): 360–362. <https://dx.doi.org/10.3201/eid0804.010175>.
- BROUGHTON, J.M. (2002): Pre-Columbian Impact on California Vertebrates. pp. 44–71. in C.E. Kay and R.T. Simmons (eds.): *Wilderness and Political Ecology*. – Salt Lake City. University of Utah Press.
- BUCKLEY, J.H.; NOKES, J.D. (2016): *Explorers of the American West*. – Santa Barbara, ABS-CLIO, LLC.
- BURNEY, D.A.; FLANNERY, T.F. (2005): Fifty millennia of catastrophic extinctions after human contact. – *Trends in Ecology and Evolution* **20**: 395–401.
- 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/.
- CHACON, R.J.; MENDOZA, R.G. (2007): Ethical Considerations and Conclusions Regarding Indigenous Warfare and Violence in North America. – pp. 222–232 in Richard J. Chacon and Rubén G. Mendoza (eds) 2007: *North American Indigenous Warfare and Ritual Violence*. – Tucson, University of Arizona Press.
- COOK, N.D. (1998): *Born to Die*. – Cambridge. Cambridge University Press.
- CONSER, W.H. JR. (2006): *A Coat of Many Colors. Religion and Society along the Cape Fear River of North Carolina*. – The University Press of Kentucky Lexington, Ky. (p. 31).
- DECKER, T. (2018): First nation band to hunt Jasper National Park. *Nature Alberta*. **47**(4): 6.
- DENEVAN, W.M. (2011): The “pristine myth” revisited. *The Geographical Review*. **101**(4): 576–591.
- DENEVAN, W.M. (2016): After 1492. *Nature Rebounds*. *Geographical Review* 106 pp. 381–389.
- DOBIE, F.J. (1941): *The Longhorns*. – Boston. Little, Brown and Company.
- DOBIE, F.J. (1952): *The Mustangs*. – Boston, Little, Brown and Company.
- DOBYNS, H. (1983): *Their Number Become Thinned: Native American Dynamics in Eastern North America*. – Knoxville: University of Tennessee Press.
- EMERY, K.F.; BROWN, L.A. (2011): Maya Hunting Sustainability: Perspectives from Past and Present. In: Chacon R., Mendoza R. (eds): *The Ethics of Anthropology and Amerindian Research*. pp. 79–116. Springer, New York, NY. https://doi.org/10.1007/978-1-4614-1065-2_6.
- EMERSON, T.E. (2007): Cahokia and the Evidence for late pre-Columbian War in the North American Mid-continent. pp. 129–148. in Richard J. Chacon and Rubén G. Mendoza (eds.): *North American Indigenous Warfare and ritual Violence*. Tucson, University of Arizona Press.
- FLEMMING, H.F. VON (1749): *Der Vollkommene Teutsche Jäger*. – Leipzig, Germany. See also 1717 and 1724 editions. Republished 1971 by Akademische Druck und Verlagsanstalt, Graz, Austria. Vol. **1**, 400 pp. Plus

- Addendum 102 pp. and Registry (Dictionary) 111 pp. Vol. 2, 500 pp. and Registry (Dictionary) 24 pp.
- FREDERICK II OF HOHENSTAUFEN 1248 *The Art of Falconry being De Arte Venandi cum Avibus*. Translated and edited by Casey A. Wood and F. Marjorie Fyfe. Stanford, Stanford University Press.
- GAMMAGE, B. (2011): *The Biggest Estate on Earth. How Aborigines made Australia*. – Crows Nest NSW Australia, Allen and Unwin.
- GEIST, V. (1995): North American Policies of Wildlife Conservation. Chapter 3 pp. 75–129 in Geist, V. and I. McTaggart-Cowan: *Wildlife Conservation Policy*. – Calgary, Detselig Enterprises.
- GEIST, V. (2016): A Brief History of Human-Predator Conflicts and Potent Lessons. – Proc. 27th Vetebr. Pest. Conf. (R. M. Tim and R. A. Baldwin, Eds.) Published at U. Of California, Davis. pp. 3–12.
- GEIST, V. (2017): Eine kurze Geschichte der Konflikte zwischen Menschen und Raubtieren. – Beitr. Jagd- u. Wildforsch. **42**: 61–80.
- HILDEBRANDT, W. R.; JONES, T. L. (2002): Depletion of Pre-historic Pinniped Populations along the California and Oregon Coast. pp. 72–110. in C. E. Kay and R. T. Simmons (eds.): *Wilderness and Political Ecology*. – Salt Lake City. University of Utah Press.
- JONES, D. E. (2009): *Poison Arrows. North American Indian hunting and warfare*. – University of Texas Press. 136 pp. ISBN 978-0-292-72229-3.
- JOHNSTON, D. W. 2002. Additional 16th century bird reports from Florida. *Florida Field Naturalist* 30(1):1–20. https://sora.unm.edu/sites/default/files/FFN_30-1p1-8Johnston%5B1%5D.pdf
- KAY, C. E. (1994): Aboriginal overkill: The role of native Americans in structuring western ecosystems. – *Human Nature* **5**: 359–398.
- KAY, C. 1998. Are ecosystems structured from the top-down or bottom-up? A new look at an old debate. *Wildlife Society Bulletin* **26**: 484–498.
- KAY, C. (2002): Afterword. False Gods, Ecological Myths, and Biological Reality. pp. 238–261, in C. E. Kay and R. T. Simmons (eds.): *Wilderness and Political Ecology*. – Salt Lake City. University of Utah Press
- KAY, C. E. (2003): Lewis and Clark, aboriginal overkill, and the myth of once abundant wildlife. Pages 103–109. In *A Confluence of Cultures: Native Americans and the Expedition of Lewis and Clark*, Proceedings of the Symposium. University Printing and Publication Services, University of Montana, Missoula, MT. ISBN XXX-0-9727122-4-0.
- KAY, C. E. (2007): Are lightning fires unnatural? A comparison of aboriginal and lightning ignition rates in the United States. – Tall Timbers Fire Ecology Conference **23**: 16–28.
- KAY, C. E.; SIMMONS, R. T. (2002): Preface. pp. xi–xix in. C. E. Kay and R. T. Simmons (eds.): *Wilderness and Political Ecology*. – Salt Lake City. University of Utah Press.
- FIDALGO OF ELVAS, K.; HERNANDEZ DE BIEDMA, L. (1904): pp 28–29. *Narratives of the Career of Hernandez de Soto. True Relation of the Vicissitudes That Attended the Governor Don Hernando de Soto and Some Nobles of Portugal in the Discovery of the Province of Florida Now Just Given by a Fidalgo of Elvas* Edward Gaylord Burne (ed.) Volume **1**. New York, A. S. Barnes and Company. www.americanjourneys.org/aj-021/.
- LENZ, D. L. (2000): Introduction. pp. 1–11 and Summary and Conclusions pp. 493–505 in David L. Lenz (ed.): *Imperfect Balance. Landscape Transformations in the Precolumbian Americas*. – New York. Columbia University Press.
- MANN, C. C. (2005): *1491. New Revelations of the Americas Before Columbus*. – New York. Alfred A. Knopf.
- Murray, G. G. R., et al. (2017): Natural selection shaped the rise and fall of passenger pigeon genomic diversity. – *Science* **358** (6365): 951–954. DOI: 10.1126/science.aao0960.
- NEUMANN, T. W. (1985): Human wildlife competition and the passenger pigeon: Population growth from systems destabilization. – *Human Ecology* **13**: 389–410.
- NEUMANN, T. W. (2002): The role of prehistoric people in shaping Ecosystems in the Eastern United states. pp. 141–178. in C. E. Kay and R. T. Simmons (eds.): *Wilderness and Political Ecology*. – Salt Lake City. University of Utah Press.
- NOSOWITZ, D. (2016): Do Not Eat, Touch, Or Even Inhale the Air Around the Manchineel Tree. Meet America's deadliest tree. Found in Florida, of course. – *Atlas Obscura*. May 19, 2016. https://www.atlasobscura.com/articles/whatever-you-do-do-not-eat-touch-or-even-inhale-the-air-HYPERLINK_https://www.atlasobscura.com/articles/whatever-you-do-do-not-eat-touch-or-even-inhale-the-air-around-the-manchineel-tree „around-the-manchineel-tree.
- ORGAN, J. F.; GEIST, V.; MAHONEY, S. P.; WILLIAMS, S.; KRAUSMAN, P. R.; BATCHELLER, G. R. DECKER, T. A.; CARMICHAEL, R.; NANJAPPA, P.; REGAN, R.; MEDELLIN, R. A.; CANTU, R.; MCCABE, R. E.; CRAVEN, S.; VECELIO, G. M.; DECKER, D. J. (2012): *The North American Model of Wildlife Conservation*. (PDF). – The Wildlife Society Technical Review 12–04. Bethesda, Maryland: The Wildlife Society. ISBN 978-0-9830402-3-1.
- OVIEDO Y VALDÉS, GONZALO FERNÁNDEZ DE (1904): *Narrative of De Soto's Expedition Based on the Diary of Rodrigo Rangel, 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 Rangel, His Private Secretary Translated from Oviedo's Historia General y Natural de las Indias*. (New York: A.S. Barnes and Company, 1904). Volume **2**: 41–157. www.americanjourneys.org/aj-023/
- PORTER, L., et al. (2016): Biomass resilience of Neotropical secondary forests. – *Nature* **530**: 211–214. doi:10.1038/nature16512.
- PRINCE, J. M.; STECKEL, R. H. (2003): Nutritional success on the great plains: Nineteenth-century equestrian nomads. – *Journal of Interdisciplinary History* **33**: 353–384.
- PRESTON, W. L. (2002): *Post-Colombian Wildlife Irruptions in California: implications for Cultural and En-*

- vironmental Understanding. pp. 111–140. in C. E. Kay and R. T. Simmons (eds.): *Wilderness and Political Ecology*. – Salt Lake City. University of Utah Press.
- RAESFELD, F. VON (1898): *Das Rotwild*. – Berlin, Verlagsbuchhandlung Paul Parey.
- RAMENOVSKI A. F.; GALLOWAY, P. (2005): Diseases and the Soto Entrada pp. 259–282. in Patricia Galloway (ed): *The Hernando de Soto Expedition History, Historiography and “Discovery” in the Southeast*. – Lincoln, University of Nevada Press.
- RIPPLE, W. J.; WIRSING, A. J.; WILMERS, C. C.; LENTIC, M. (2013): Widespread mesopredator effects after wolf extirpation. – *Biological Conservation* **160**: 70–79.
- ROBERTS, P.; HUNT, C.; ARROYO-KALIN, M.; EVANS, D.; BOIVIN, N. (2017): The deep human prehistory of global tropical forests and its relevance for modern conservation. *Nature Plants*, 2017; 3 (8): 17093 DOI: 10.1038/nplants.2017.93.
- ROE, F. G. (1951): *The North American Buffalo: A Critical Study of the Species in its Wild State*. Toronto, University of Toronto Press.
- ROOSEVELT, A. C. (2000): The lower Amazon. A dynamic human habitat. pp. 455–491. in David L. Lenz ed. *Imperfect Balance. Landscape Transformations in the Pre-columbian Americas*. New York. Columbia University Press.
- STECKEL, R. H.; PRINCE, J. M. (2001): Tallest in the world: Native Americans of the great plains in the nineteenth century. – *American Economic Review* **91**: 287–294.
- SCHWATKA, F. (1888): *A summer in Alaska in the 1880’s*. Castle Books.
- SMALLWOOD, J. M. (2004): *The Indian Texans*. – College Station, Texas A & M University Press. (p.43) (p. 31).
- WESTON, J. (2016): Kill Every Buffalo You Can. Every Buffalo Dead Is an Indian Gone. *The Atlantic*. May 13, 2016. <https://www.theatlantic.com/national/archive/2016/05/the-buffalo-killers/482349/>.
- WILLIAMS, G. W. (2002): Aboriginal use of Fire: Are there any Natural Plant Communities? pp. 79–214. in C. E. Kay and R. T. Simmons (eds.): *Wilderness and Political Ecology*. – Salt Lake City. University of Utah Press.
- WRIGHT, G. A. (1984): *People of the high country: Jackson Hole before the settlers*. – Peter Lang, New York, NY.

Anschrift des Verfassers:

VALERIUS GEIST,
Professor Emeritus of Environmental Science,
The University of Calgary/Canada
E-Mail: kendulf@shaw.ca

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Beiträge zur Jagd- und Wildforschung](#)

Jahr/Year: 2018

Band/Volume: [43](#)

Autor(en)/Author(s): Geist Valerius

Artikel/Article: [Human Use of Wildlife and Landscapes in pre-Contact Southern North America, as Recorded by Alvar Nunez Cabeza de Vaca 1527–1536 397-406](#)