

ANCIENT WILD GAME MANAGEMENT IN ARID REGIONS: NEW EVIDENCES FROM THE NORTHERN USTYURT PLATEAU (KAZAKHSTAN)

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1 - Human ecology of the Ustyurt plateau during history

The Ustyurt plateau is a very desertic region spanning for 200 x 300 km between the Aral and Caspian lakes and, surprisingly, presents signs of human presence during all historical periods: a very high number of Paleolithic and Neolithic camps, Eneolithic-Bronze age settlements (Toksanbai), sophisticated Early Iron funerary mounds and steles attributed to Massagetic and Sarmatian tribes, followed by cemeteries of Medieval Turk Oguz and Kazakh Adai tribes (Samashev, Olkhovskiy 1996). Several authors, facing the contradictory coexistence of extreme arid conditions on one side and a rich monumental park on the other, oversaw the problem or proposed most fantastic explanations. Only the analysis of the ecological potential of the territory and more precise geo-archaeological surveys of the region could solve the enigma by adding new lights on early forms of global management of wildlife resources by part Medieval, Early Iron and possibly even earlier human communities.

The wildlife stock of the Ustyurt consists of saiga and jairan antelopes, mouflon (or urial, a wild sheep with a reddish coat), kulan (asiatic wild ass). During Soviet times, in just the Kazakh part of the plateau, the following numbers of wild ungulates have been inventoried: saiga have been counted in number of 300.000, jairan of 100.000, urial of 10.000. Here the last kulan had been killed in 1931, the last cheetah in 1974. Today, after the massacre of wild game that accompanied the perestroika times, the livestock of the region is reduced to less than 40000 heads.

During the pluvial phase and Caspian transgression that characterized the I^o millennium BC, the number of wild ungulates seasonally crossing the whole Ustyurt plateau could easily range between the 500.000 and 1.000.000 heads. Being that a selected 25% can be yearly killed without undermining the level of the animal park, an optimal hunting of 250.000 animals per year could have been performed, sustaining a population of 20-30.000 peoples, i.e. a large tribe.

This is a convincing hypothesis that could explain the presence of powerful hunting communities in the region, as documented by historical sources. But have we some proofs that such a global management of wildlife stock had really been implemented, constituting the economical basis of the Ustyurt human cultures and warriors?

2 - Archaeological monuments of wild game management in the Ustyurt

During the June 2007 aero-survey of the northern chink of the Ustyurt plateau dedicated to the documentation of Adai cemeteries, we have been impressed by some Nazca-like gigantic geoglyphs located in coincidence with natural access-routes to the plateau or with piedmont springs and ponds (Figs. 02-04;06). Subsequent geomorphological consideration and land-surveys revealed the function of these gigantic implementations: traps for wild ungulates.

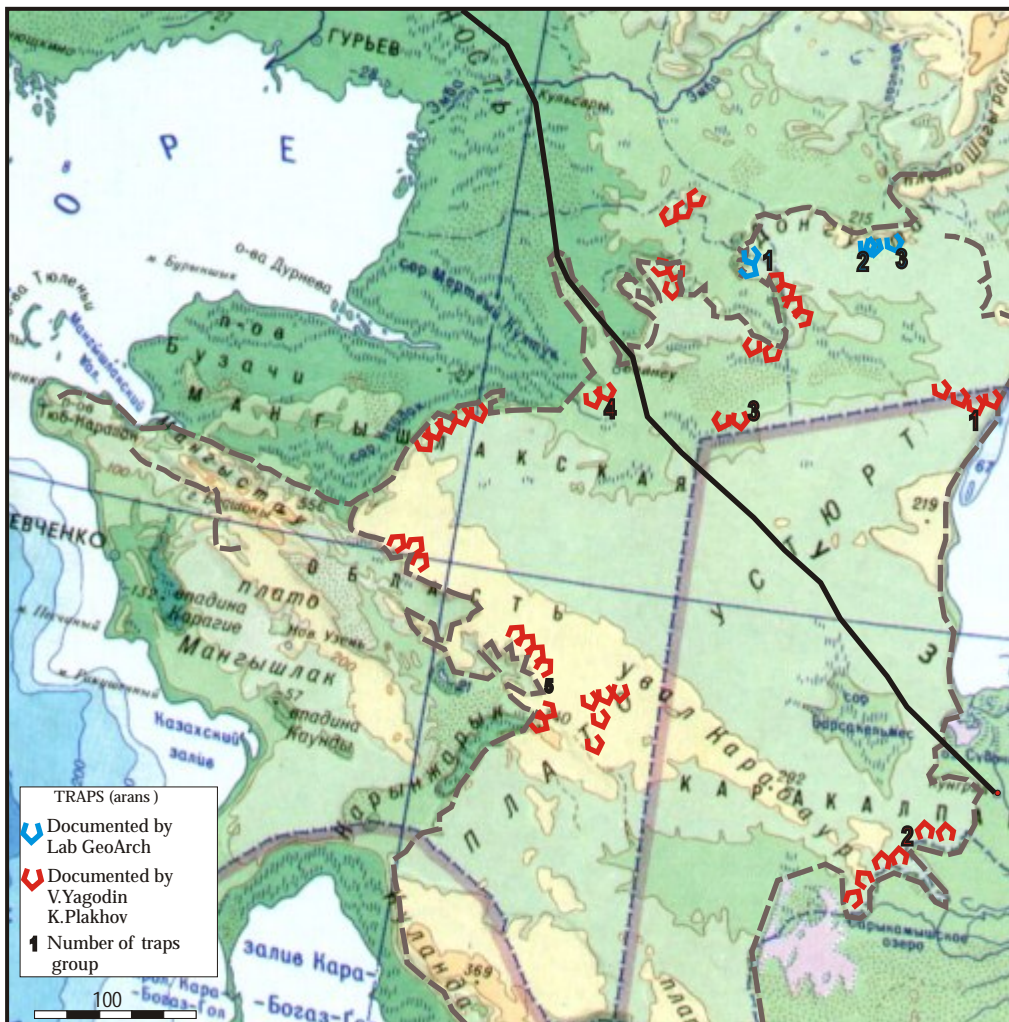


Fig 01 - Topographic map of the Ustyurt plateau with the animal traps.



Fig 02 - Aerial photo of saiga trap at the borders of a pond / Dongyzstau-1, northern chink of the Ustyurt plateau (photo Sala R)

The traps located on access routes are funnel shaped with dimensions of several hundred meters, oriented in a way to favor the entrance and impede the exit, with corners provided of pits or towers for hiding archers (Fig. 04); the ones encircling springs develop for several kilometers following the ridges of the local relief.

Further bibliographic researches (the Ustyurt traps are quoted in few publications among which in Samashev 2000) and discussions with zoologists sorted out additional information. Three large herds of saiga, avoiding extreme drought as well as snow deeper than 40 cm and so characterized by long north-south migratory routes, are crossing the Ustyurt plateau from different directions and in different regions: one northern group (Ustyurtski) migrates between the pre-Ural region and the Ustyurt, reaching the northern chink of the plateau by winter; two southern groups (Karakalpaksy and Turkmensky) migrate between the Ustyurt and the Uzboi depression, reaching respectively the southern chink of the plateau by mid-spring and the western chink by late spring. The displacement of jairan happens along moistened depressions and reaches the western chink of the plateau by early summer. Urial herds, wandering with shorter itineraries between the Ustyurt, the Mangishlak peninsula and the pre-Caspian region, are reaching the western side of the plateau repeatedly in different times of the year. Such migratory patterns allow in the Ustyurt hunting activity all the year round. The funnel-shaped traps on the access-routes to the northern and western chink are intended for saiga and jairan. Similar funnel-shaped traps located on the western chink are intended for urial and in that case, to avoid scaring the animals, are not built with continuous walls but with intermittent proximate vertical stones supporting horizontal slabs (Fig. 05). The walls encircling springs are intended as large traps for kulans (but could also be interpreted as fences for protecting cultivated areas from domesticated and wild animals) (Victorov 1971, Plakov 1994).

The existence of traps for wild ungulates is well attested along the chink of the Ustyurt plateau, they have been researched by the archaeologist Yagodin during the 1970 and 1980's who identified 5 groups (1-North Ustyurt, 2- Aibuyirsko-PreSarykamysh, 3-Zharynkuduk, 4-Kendyrlisor, 5-Beineu) and by the zoologist Plakhov who discovered new traps for mouflons along the western chink during the census of the Ustyurt mouflons in the end 1980's.

The traps discovered by the Laboratory of Geoarchaeology are concentrated in 3 groups along the northern chink of Dongyzstau. The first group is located along the western edge of Dongyzstau above the salt marsh of Manaisor where 4 traps have been identified, the second group is located in the northeastern chink of Dongyztau near the ravine of Kuruksai where 3 traps have been discovered and the third group is located in the same area at the east of the ravine Aksai and consists of a giant trap-funnel placed across a narrow appendix of the chink.

Land surveys by part of the authors detected medieval ceramics and even microliths around some traps of the northern chink. In the 80s the archaeologist Yagodin excavated few traps (aran) located in the Uzbek part of the Ustyurt, attributed the earliest of them to the III-IV century AD and suspected even earlier constructions, falling in that way within the boundaries of the Sarmatian period (Yagodin 1991). Analogous constructions have been discovered in Syria, interpreted as jairan traps and attributed to the stone age (Legg, Rouli-Konwy 1987)

3 - Ecology and cultural management of the saiga population

The recent catastrophic shrinking of the saiga populations all over its Central Asian habitats gives information about the ecological factors regulating their number and the basic principles that must be necessarily followed in order to manage their herds today and all along history.

The species *Saiga tatarica* (family Bovidae, suborder Ruminantia, order Artiodactyla) is characterized by few most significant adaptations: skeletal adaptations for running; digestive adaptations for dealing with plant food; social adaptations by living in large herds of thousands of individuals for transmission of ecological habits and protection against predators; and climatic adaptations by seasonal migration. Females normally bear twins so that under optimal conditions the population number can almost increase by two times per year. Males have long horns increasing all life long: with these they compete each other by head contact out-wrestling; or they protect the herd by opposing predators, so that only solitary old males end up as preys of groups of wolves. Saigas cannot move in snow deeper than 40 cm and cannot dig through even a



Fig 03- Aerial photo of saiga trap / Dongyzstau-2, northern chink of the Ustyurt plateau (photo Sala R)



Fig 04- Aerial photo of saiga trap / Dongyzstau-3 northern chink of the Ustyurt plateau (photo Sala R)



Fig 05- Photo of urial trap, with complex stone walls / western chink of the Ustyurt plateau (photo by Plakov K)

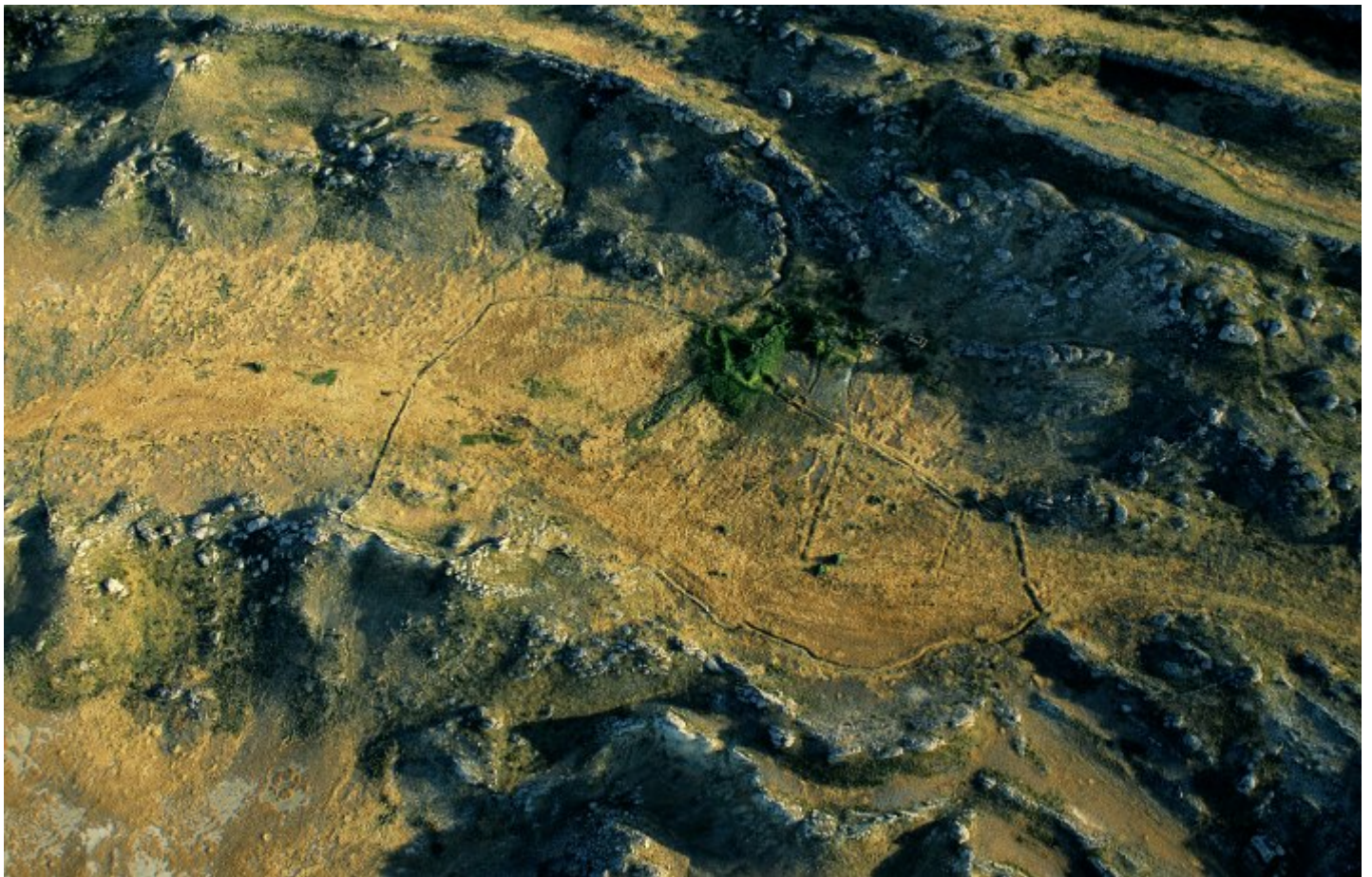


Fig 06- Aerial photo of series of walls around spring and cultural-living complex / Zheltau, northern chink of the Ustyurt plateau (photo Sala R)

shallow layer of compact snow. Hoarfrost on vegetation would be very dangerous when prolonged, so that saiga adapted to that crises by avoiding deep snow, snow storms and area where vegetation is too short. This is done by seasonal migrations to desert zones snow-free or covered by high shrubs.

The saigas are located in treeless landscapes (steppe and desert) and the plugging of steppe areas parted them in five practically independent populations: the ones of Kalmikya, Volga-Ural region, Ustyurt, Betpak-Dala and Western Mongolia. To Western Mongolia pertains to the subspecies *Saiga tatarica mongolica*, to all the other regions the subspecies *Saiga tatarica tatarica*. Three groups inhabit the Ustyurt: the Ustyurtsky, Turkmensky and Karakalpaksky groups, of which the optimal dimensions can reach respectively the 600.000, 500.000 and 50.000 heads. They migrate by routes more than 500 km long, wintering in the south and summering in the north: the Ustyurtsky group from the Pre-Ural to the Northern chink in late autumn; the Karakalpaksky group from the Karakalpak plain to the southern chink in April-May, the Tukmensky group from the Uzboi to the southwestern chink of the Ustyurt in April and to the Mangishlak peninsula in May. Traps are located on all the main access routed to the Ustyurt plateau.

The population number of saigas at the beginning of the 20th century was of several millions. During the Soviet revolution it dropped to a few thousands (isolated in reserves) so that a ban on hunting was issued in 1919 by the Communist regime. By the 30s the number started to rise again helped a rise and by the end of the 70's reached back the peak of a couple of millions. After that the saiga population started again to decrease under commercial hunting, poaching and wolf predation. In the early 90's their total number was of 1-1.2 millions; in 96-98 dropped to 800.000 (260000 in Kalmikya, 104000 in Ural, 248000 in Betpak-Dala, 246000 in Ustyurt); in 2000 to 175000 (of which 116000 in the Ustyurt); in 2001 to 100000 (18000 in kalmikya, 10000 in Ural, 10-15000 in Betpak-Dala, 60000 in Ustyurt). By 2002 the entire population of saigas was reduced to just 60000 (40000 in the Ustyurt, 2000 in the Betpak-Dala), of which the 0.8% represented by males.

The massacre that happened between the 1998 and 2002 was implemented by poachers collecting horns of male saiga for the Chinese market. That brought to the killing of the almost totality of the males, after which the female half of the herds was left undefended and decimated by wolves. Urgent protection measures were implemented in the 2002 and thanks to that, by the 2005, the saiga population of the Betpak-Dala rose already to a number of 10000 heads.

So, the population levels of saiga antelopes are very sensitive to climatic environmental fluctuations, to the internal proportion of males and females and to anthropogenic land-use and hunting. On the basis of these ecological considerations it is possible to suppose that the saiga traps of the Ustyurt were not just used as a butchery field but as areas of sustainable and selected killing.

Conclusions

The subject of the ancient traps of the Ustyurt is interesting from the ecological, archaeological, historical and ethnographic points of view; and suggests the following considerations:

- The transition from a collecting to a productive economy, from hunting of wild game to pastoralism of domesticated species, is not a sudden phenomenon but crosses stages of increasing technology, rationality and social organization in the management of natural resources. The case of the Ustyurt traps witnesses a deep knowledge of ethological habits and itineraries of wild ungulates concerning a territory of 500.000 km² and the capacity to manage entire populations.

- The saiga antelope is highly reproductive but quite vulnerable to few ecological factors, which must respected in order to sustain a hunting economy in a specific territory. The presence of large systems of trap constructions is witness of a skilful collective management of wildlife resources through catching and selecting animals once a year in hundreds of funnel-like enclosures (strelovidnie planirovki) by part of semi-sedentary clans and territorialized tribes. Gradients of mobility between a nomadic and a sedentary life must be distinguished in order to classify the intermediate forms of life and social organization.

- The legendary military power of the human cultures of the Ustyurt and of other arid regions of Kazakhstan can be partly attributed to the presence, from the Early Iron age up to Ethnographic times, of large populations of wild ungulates supporting socially organized hunting communities well protected by a desert environment.
- Cyclical crises of the animal biomass of the Ustyurt and consequent migration of human communities can be attributed to climatic changes and, starting from the 1st millennium AD, also to bad management of wildlife resources.
- The absolute predominance of hunting archers among the anthropomorphic representations of the petroglyph repertory of Kazakhstan from Bronze age to Medieval times can be interpreted as archetypical reference to that primary source of economical, social and military power.
- In the same way as the indigenous communities of the Amazonian basin, the modern people inhabiting West Kazakhstan faces today, with the abrupt collapse of the population of wild ungulates, the sudden annihilation in few years of the traditional natural cultural landscape that for millennia supported their culture.

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Original published in Russian:

Deom J-M, Sala R. 2009. 'Regulirovanie pogolovya dikikh zivotnykh v aridnykh regionakh v drevnosti: novye svidetelstva iz Severnogo Ustyurta' In: *Nauchnye chteniya pamyati N.E. Masanova: sbornik materialov nauchno-prakticheskoi konferentsii Almaty, 25-26 Aprelya 2008*, Almaty, Daik-Press: 135-141.