

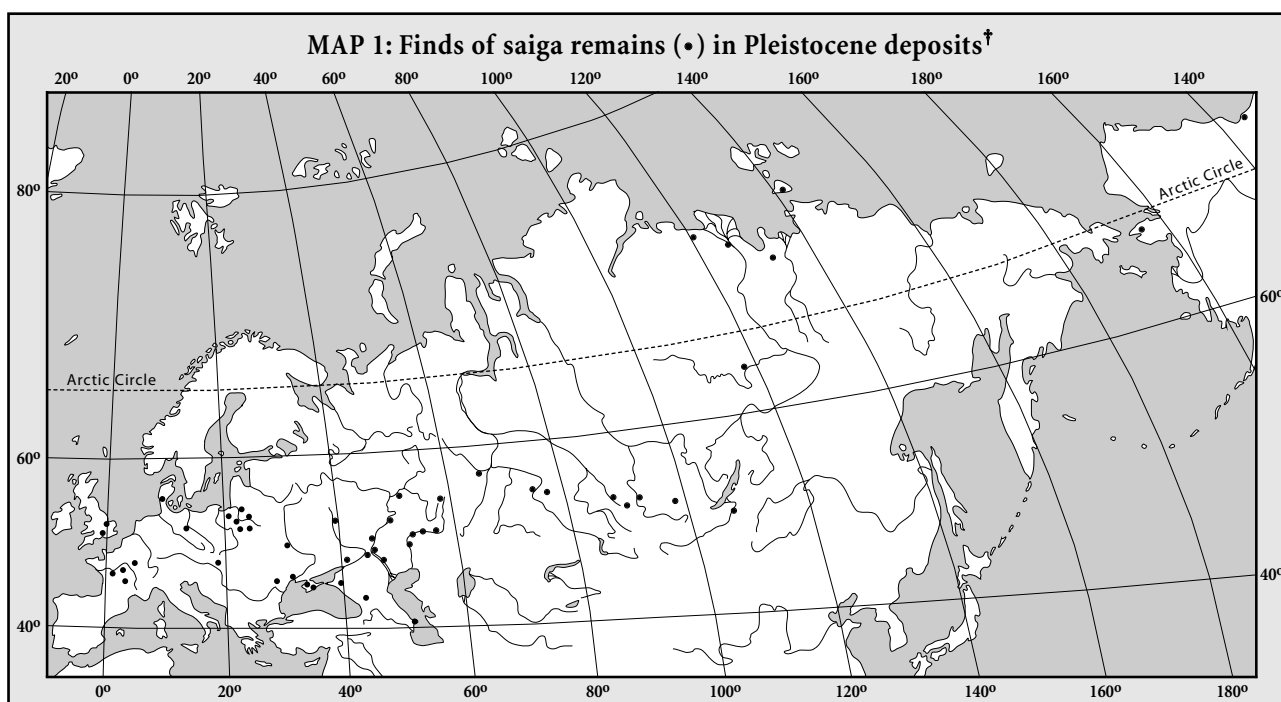
THE SAIGA ANTELOPE IN EUROPE: ONCE AGAIN ON THE BRINK?

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In the Quaternary Period, when the ice sheets, covering much of the Northern Hemisphere, were embraced by a broad belt of arid tundra-steppe communities, the saiga antelope occupied an area far more extensive than its present range. The animal's bones have been found in Ice Age deposits scattered from the British Isles to Alaska and the Northwest Territories of Canada, all the way to the New Siberian Islands in the north and the Caucasus region in the south (see map 1).

largest population is practically confined to Kalmykia, a small province of Russia in the far southeastern corner of Europe.

While the global reduction in its range is believed to have been caused primarily by the great climatic changes that engulfed the plains of Northern Eurasia some 10 thousand years ago, melting the ice sheets and dissolving the neighboring grasslands (Vereshchagin 1975), the main reason why the *European* population of the saiga is now so limited in its distribution has



Today, the principal strongholds of this “living fossil” are the dry steppe and semi-desert regions of Kazakhstan, which harbor over 80% of its overall range and number. A tiny fraction of the species lingers in Mongolia,¹ while its second

doubtless been the ever-growing human impact on the continent's steppe regions. Up through the 17th and 18th centuries A.D., the animal still had a broad enough range in Europe, reaching as far as the Carpathian foothills in the

[†] Based on Sokolov and Zhirnov, *Saigak: filogeniya, sistematika, ekologiya, okhrana i ispol'zovanie* [The Saiga Antelope: Phylogeny, Systematics, Ecology, Conservation, and Use] (Moscow: Russian Academy of Sciences, 1998).

¹ The Mongolian saiga (*S. tatarica mongolica*) is smaller than the nominate form (*S. tatarica tatarica*) found in Kazakhstan and Kalmykia, and differs from it by a number of ecological and behavioral traits. Scientists are still in some doubt about its evolutionary history, and the question of whether this animal should be considered as a separate species is as yet unresolved.

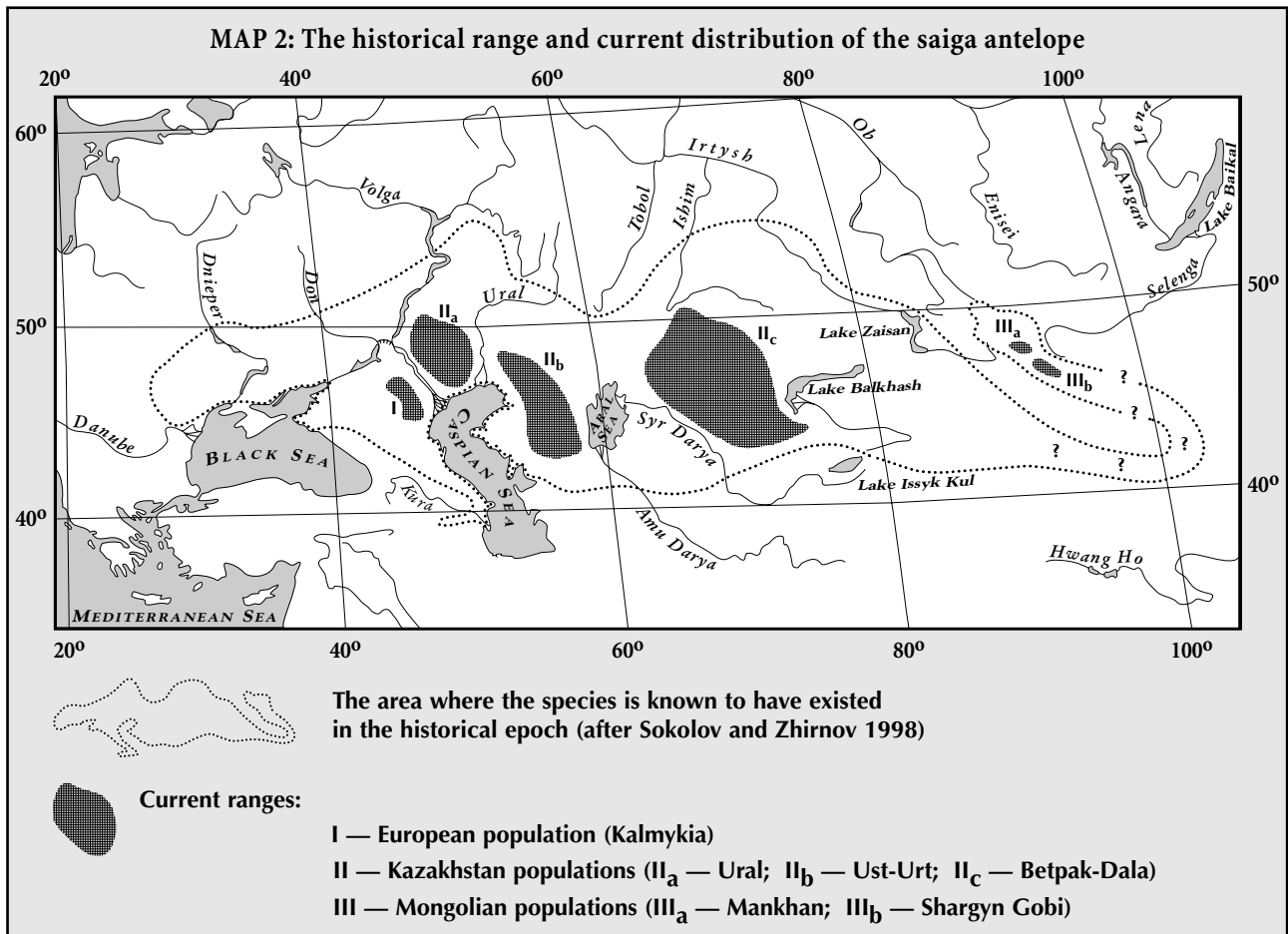
west and the environs of Kiev in the north (Sokolov and Zhirnov 1998; see map 2). By the late 19th century, however, the blitzkrieg of agricultural development nearly wiped it from the face of the continent, leaving but a few sparse flocks on the plains along the north-western shore of the Caspian Sea.

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The twisted fortune of the saiga in the south-eastern corner of Europe reflects the circumstances of human settlement in this area dating back to the early 17th century, when a branch of Oirat Mongols, migrating from Dzungaria in search of new pastures and trade markets for their livestock, reached the steppes west of the Volga delta. Much impressed with the wide open space which extended in every direction to an unbroken horizon, and caring little for the lingering bands of the once powerful Golden Horde, the Oirats established themselves at the border of Russia and came to be known as the

Kalmyk people, deriving their name from the Turkish word *kalmuck*, a term for “those who remained.” By the 1650s, the Kalmyk nomads firmly allied with the Russian state, pledging to guard its southeastern frontier and support its army in military campaigns. In return, they were entitled to hold the near-Caspian plains for free pasturing.

“Friends of the steppes,” as the poet Alexander Pushkin would call them, the Kalmyks owed their distinction among the nationalities of the Russian Empire as much to their superb stocks as to their famous cavalry. By adopting a pattern of seasonal migrations and by rearing mixed herds of horses, cattle, sheep, goats, and camels, differing from one another in their foraging habits, these people were able to make the best of this driest corner of Europe. In the 18th century, for example, both meat and draft cattle raised in Kalmykia ranked highest on the Russian markets (Lepekhin 1795, quoted in Kirikov 1983).



No less significant for our purposes is to note the attention they paid to the conservation of game animals, especially the saiga. Even though the species was quite plentiful on the near-Caspian plains when they moved in and their chief economic activity was, not hunting, but stock raising, as early as 1640 an assembly of Oirat Mongols adopted special regulations to promote its well-being. These prescribed, among other things, the establishment of refuges off limits to hunting and livestock grazing. Those who trespassed on such areas in search of game or pasture for their flocks were punished by a heavy fine: a camel plus nine head of cattle (Kirikov 1983).

Toward the end of the 18th century, the Kalmyk plains witnessed the first demographic upheaval since the arrival of “those who remained.” Dismayed with the heavy losses that his people had to suffer in the all-too-frequent wars of Russia and the mounting desire of the imperial government to hold the largely autonomous Kalmyk Khanate in vassalage, its ruler Ubashi Khan resolved that they should better return to their historic homeland. In 1771, over 150 thousand Kalmyks (about two-thirds of their entire population) set out back to Dzungaria. Most of them were not able to make it, destroyed on the route by Kazakh and Kirgiz mobs (see Pushkin 1954). Those who chose to stay were to face the sunset of their autonomy and the dawn of a brand-new colonial order.

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The Russian authorities did not envisage a sparse tribe of “uncivilized” nomads roaming with their herds over what seemed like a great mass of inhabitable land. As they saw it, the southeastern frontier had to be settled by a fixed agricultural population. By the mid-19th century, this vision translated into a policy which triggered a stream of colonists from central European Russia (see Bakinova 2000).

Unfamiliar with the harsh environment they came to settle in and ignorant of the pastoral traditions attuned to its seasonal changes, the newcomers were quick to take hold of what they

perceived as “surplus” Kalmyk land, some of which they put to vigorous new uses. First to be taken were its northern and western margins, fringing the route between the cities of Tsaritsyn (present-day Volgograd) and Stavropol. More abundant in rainfall and surface water than the rest of their land, these areas served the Kalmyks as occasional summer pastures while their core grazing lands several hundred kilometers south and east would be seared by the heat. The colonists found these ranges perfectly suitable to grow grain and eagerly took to plowing. Consequently, those of them who made their living as stock growers ventured deeper into the near-Caspian plains, further disturbing the local grazing patterns. Most affected by the invasion were the areas traditionally used for winter pasturing thanks to their scarce snow cover, such as the Black Lands in southeastern Kalmykia, which increasingly came to be grazed all year round.

All too soon the colonists faced the consequences of their maladaptation to the new environment. As noted by one student of the region’s history, by 1915 over 80 percent of their settlements in the Kalmyk steppes had to abandon animal husbandry and seek other sources of living, because the “deterioration of plant cover, eaten and tramped down to roots by livestock, was turning steppe pastures into deserts and sand dunes” (Pal’mov 1932, quoted in Bakinova 2000).

But it was not just themselves that the settlers put in peril. Indeed, one of the most appalling results of their advent into the area was the crushing decline of its saiga population. In the middle of the 19th century, although already gone from the plains west of the Don, the species was still quite plentiful in the Kalmyk steppes. In the winter of 1848/49, for example, when the near-Caspian plains suffered a wave of severe blizzards and heavy snows, forcing the saiga herds out to the foothills of the Caucasus, a curious landholder in the area of their retreat estimated the total number of incoming animals at several hundred thousand (see Kirikov 1983).

The early 20th century, however, saw the European population of the saiga reduced to a few hundred individuals barely lingering on in the innermost parts of the Kalmyk land (Sokolov and Zhirnov 1998).

Certainly the deterioration of the pastures the saiga shared with the growing masses of livestock must have played a role in the animal's demise. In those days, however, it was neither so rapid nor so massive as to drive the hitherto prosperous population to near extinction in so short a time. The main cause was different, but it was related to advancing civilization as well. Unlike the Kalmyk nomads, the "civilized" colonists did not bother about preserving the great herds that held the tenancy of this land from time immemorial. Quite the contrary: "It was the appearance of a settled population along the route between Tsaritsyn and Stavropol in the second half of the 19th century which... marked the beginning of a rampant assault on the saiga in the northwest Caspian plains" (Bakeev and Formozov 1955).

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The Russian Revolution of 1917 propelled a new flurry of changes in the Kalmyk steppes. Up through the early 1920, the region witnessed the Civil War that ensued in its aftermath, taking a heavy toll of their human population. In addition to those who perished — either in the fighting itself or from diseases provoked by the wartime destruction, the losses included a portion of the Kalmyk people that sided with the anti-Bolshevik troops and joined them in leaving the country when the Soviet Army advanced into the area. This calamity, coupled with the devastating drought and famine that swept over the lower Volga basin in 1921–1922, played havoc with the pastoral economy of the Kalmyk land. On the eve of the Revolution, it held about 1.4 million head of livestock; by the early 1920s, it was left with less than 300 thousand (see Rogovin 1999).

The decimation of livestock herds could not fail to halt the degradation of steppe pastures; yet, it is likely that the revolutionary turmoil did take its toll of the saiga population as well. Indeed, for most of the twenties it is known to have been extremely sparse and confined to the wildest corners of Kalmykia (Sokolov and Zhirnov 1998).

In fairness to the Bolshevik regime, it must be noted that as early as 1919 the new Soviet government adopted a special decree which absolutely prohibited the hunting of the saiga. No doubt this prohibition — which lasted, uninterrupted, until 1951 (in Kalmykia) and even up to 1954 (in Kazakhstan) — proved a blessing to its lingering populations throughout the USSR. However, the evaluation of the hunting ban as the one decisive cause of the animal's revival (frequently found in Soviet conservation literature) must be taken with a grain of salt.

For one thing, it was only a decade or so after the ban was put into force that both the European and Asiatic populations of the saiga started showing the signs of recovery (Sokolov and Zhirnov 1998). Another thing to note is that the start of their growth was simultaneous with the onset of a new policy for the Soviet countryside.

Adopted in early 1929, this policy was aimed at transforming the myriad of "primitive" family-based peasant units and small agricultural communes dispersed around the country into the nationwide network of large-scale collective farms operating like industrial enterprises. The campaign of collectivization, as it was officially called, was an upheaval of the magnitude never witnessed by the Russian countryside before: by 1936, 90 percent of its village households were collectivized; the 25 million peasant homesteads had become 240,000 collective farms (Malia 1994). The status of an "autonomous region," granted Kalmykia by the Bolshevik government in late 1920,² did not protect it from the col-

² In October 1935, it was transformed into the Kalmyk Autonomous Soviet Socialist Republic.

lectivization drive. Indeed, its very intervention in the culture of nomadic herders was a clear sign that this “autonomy” was but a fiction.

Once the collectivization drive had begun, the Kalmyk herders were increasingly forced to abandon their nomadic ways and settle in villages. Parallel with this, they were expropriated from their livestock. Even though historical sources tell us little both about the violence involved in implanting this policy and the resistance it was met with in Kalmykia, it is plausible that much of the local population opposed it in essentially the same way as was common for the rest of the country, that is, by destroying their property in order to avoid surrendering it to the state. Indeed, it is hard to think of any other factor (including the famine of 1932–1933 in the Volga valley) which could have accounted for such a great crisis in animal husbandry that befell Kalmykia in the course of collectivization: between 1928 and 1935, the overall amount of livestock in the area had dropped from 1.5 million to 700 thousand head.

Another important thing about collectivization in Kalmykia was its departure from the age-old tradition of keeping mixed herds: the “collectivized” animals were increasingly split into single-species units. The general decline in livestock numbers notwithstanding, these units were gathered into far bigger congregations than this land had known before³; as a result, it became common to keep different animals in different locations so as to match their specific food habits in the best possible way. Furthermore, the growing size of herds made inevitable their increasing concentration on the most productive pastureland. At the same time, extensive tracts of leaner land, especially in the semi-desert inte-

rior of Kalmykia, which could hardly sustain the growing livestock congregations without large-scale melioration efforts, were largely retired from use, in some cases for several decades. And since these areas suited the needs of the saiga quite well,⁴ their lasting retirement, coupled with the overall decline in livestock numbers, must be regarded as collectivization’s inadvertent gift to the animal, which was as instrumental to its revival as a respite from hunting.

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During the 1930s, although on the rise, the European population of the saiga recovered rather slowly, probably because it was still too rare to do any better. Its growth is known to have remarkably accelerated in the forties, reaching the level of 100,000 animals, an estimate based on the first aerial census in the summer of 1950.⁵

It is quite plausible that this acceleration was largely a by-product of the Second World War which left Kalmykia nearly devoid of human population. Both the exodus of 1771 and the revolutionary turmoil of 1918–1920 pale in comparison with its devastating impact on the Kalmyk people, which, however, had little to do with the warfare itself. Its immediate cause was the brief and partial occupation of their land by the German troops (from November 1942 to January 1943). Yet it was not the Germans who crushed them, but the Soviet government. Giving practical effect to Stalin’s idea that those of the small nationalities which had been invaded by the enemy could no longer be trusted, on December 27, 1943 the Presidium of the Supreme Council of the USSR ordered the dissolution of the Kalmyk Autonomous Republic. On the following day, the Council of People’s Commissars decreed that the Kalmyk population

³ Prior to the Soviet period, an average pastoral holding in the Kalmyk steppes consisted of 20 to 50 head of livestock (Bakinova 2000); in the 1930s, the number of animals kept by a single collective farm already reached 1,000 or even more (Neronov 1998).

⁴ Indeed, some authors argue that semi-desert habitats are optimal for saiga, especially for the reason that their plant assemblage, dominated by dwarf shrubs (such as *Artemisia*, *Ephedra*, *Kochia*, and *Salsola*) and rich with ephemeral plants in spring, best matches its food preferences (Sokolov and Zhirnov 1998).

⁵ All the primary data referring to saiga numbers and hunting levels over the period from 1950 through 1994 are taken from Sokolov and Zhirnov (1998). The data for 1995–2001 were provided by the Department for Conservation, Monitoring, and Management of Game Resources of the Kalmykia Republic.

must be deported from its land. Within the next twenty-four hours, over 90,000 of its members — nearly all the Kalmyk nationals of the abolished republic — were packed in freight cars that would scatter them over Siberia, with great loss of life. Several thousand political police carried out the operation practically without resistance, not only because the people were taken by surprise, but also due to the scarcity of those who could fight back, since most of the Kalmyk men had been recruited into the Soviet Army or held captive by the Germans outside the area. It must have been difficult for them to even imagine that their families were driven to exile for putatively supporting the invaders; yet, many of them would eventually share the same fate: indeed, a total of 4,105 Kalmyk veterans were dispatched to Siberia following their demobilization from the Soviet Army (Polyan 2001).

Its people deported and land partitioned among the adjacent divisions of Russia, the economy of the former Kalmykia was left in shambles. Up to the end of the 1940s, the area was essentially a no man's land, and this certainly couldn't fail to have a great effect on the restoration of its wildlife, including the saiga. By the fifties, the species clearly had a flourishing population in the northwest Caspian plains: neither the severe drought of 1946–1948, nor the exceptionally cold and snowy winters of 1949/50 and 1953/54, not even the start of commercial hunting in 1951 could prevent it from rising to a total of over 800,000 animals recorded in the summer of 1958.

It so happened that the years 1957 and 1958 witnessed not only the peak of the saiga, but also the comeback of the Kalmyk people, who were permitted to resettle their land in the not-so-immediate aftermath of Stalin's death. Some of the repatriates recalled that by the time of their return the animal was already so plentiful that they saw its herds venturing into the main town of the Black Lands District. What they probably found still more surprising, however, was an assorted *human* population that had been

amassing in the area from the early 1950s, most of it originating from the Northern Caucasus. In contrast to their own forced stay in Siberia, these people came here by their own will, attracted by the vacant land at hand. In fact, their immigration was promoted by the government in the hope that it would be instrumental for transforming Kalmykia from an economic backwater into a region of thriving agriculture.

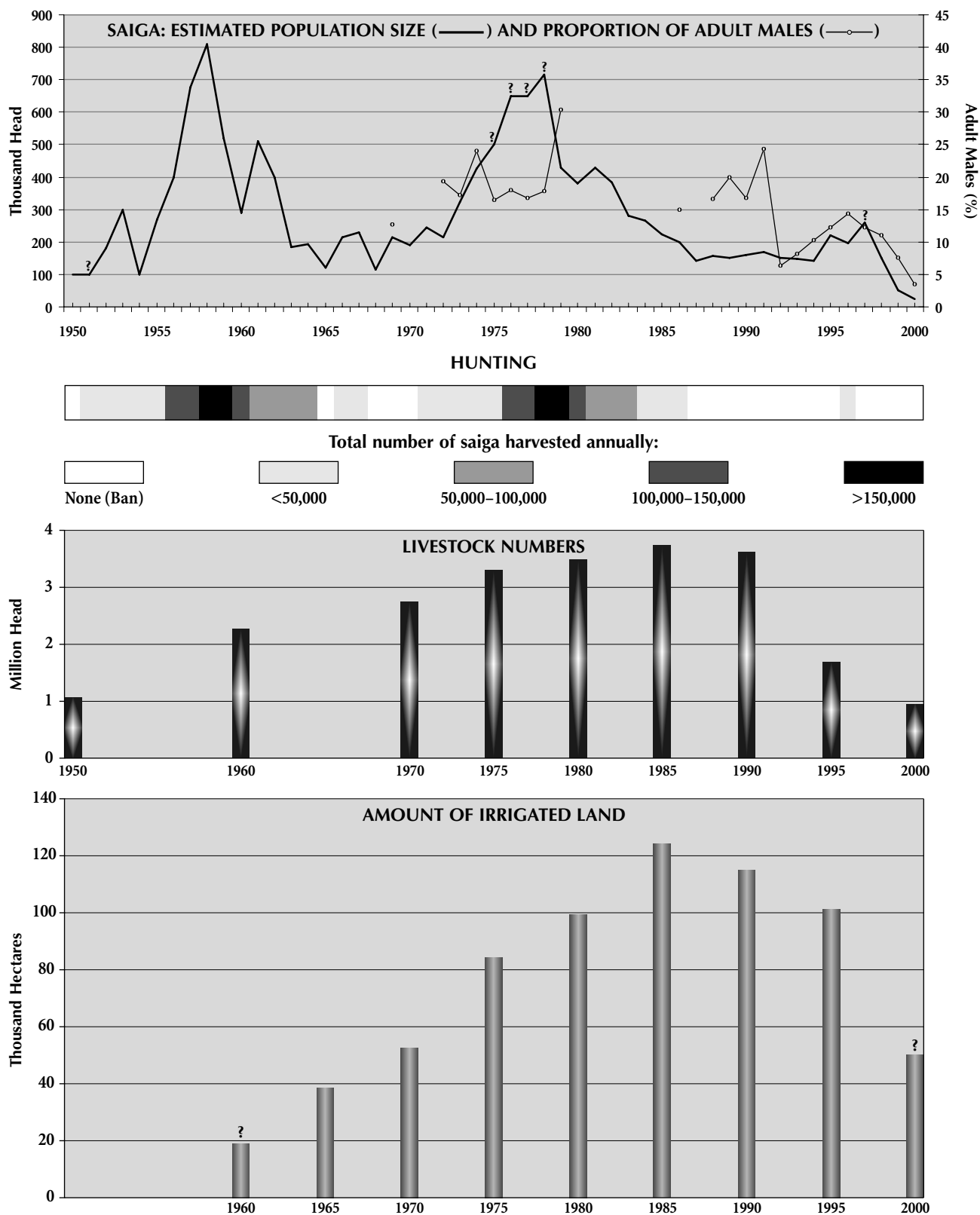
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Impressive as it was, the peak of the saiga's prosperity was not to last for long. Between 1958 and 1960, its population had declined by almost 65%; by 1965, it had dropped to just over 100,000 animals, showing a decline of 85% during the seven-year period. Taking a look at the charts (see figure), it is hard to avoid the conclusion that this decline was largely provoked by a massive hunting pressure. Suffice it to say that the number of the saiga harvested in Kalmykia during a single hunting season from October 1958 to February 1959 amounted to 185,000 animals. Worse yet, the volume of harvesting was not cut short immediately after the population had apparently started declining, reaching some 300,000 animals taken during 1962–1964, which was equivalent to eliminating almost 40% of their total number by the year.

These figures only account for legal hunting. In addition, there also was no small amount of poaching. In the late 1950s and early 1960s, its impact on the saiga population in the northwest Caspian plains was estimated at 10 to 12% of what was legally harvested, representing an additional annual loss of 25,000 to 30,000 animals (Bannikov et al. 1961).

By the mid-1960s, the officials in charge of saiga management were finally made to see that its rapidly declining population must be given a respite. From 1965 through 1975, commercial hunting was kept at low levels or even prohibited (in 1965, 1968, 1969, and 1970). The overall amount of the saiga harvested during this period (247,700 animals) represented an average yearly loss of less than 9% of its population.

FIGURE: Dynamics of the saiga population and human-related pressures in Kalmykia, 1950–2000†

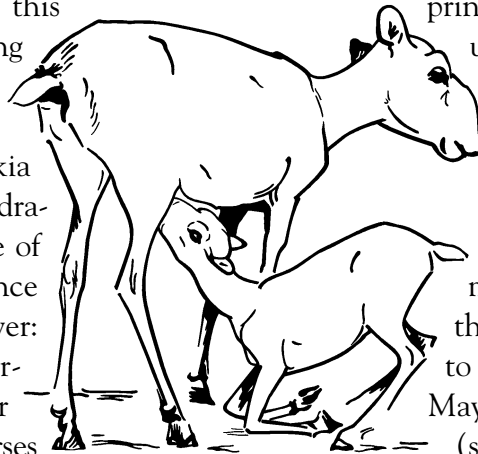


† Data sources: a) for the saiga population and hunting levels — Sokolov and Zhirnov (1998) and the Department for Conservation, Monitoring, and Management of Game Resources of the Kalmykia Republic; b) for livestock numbers — *Kalmykia...* (2000); c) for the amount of irrigated land — Dudakov (1998) and Bakinova (2000).

The population did, indeed, stabilize; however, it was not until 1973 that it really started growing again, nine years after the pressure of commercial harvesting had been substantially lowered. Bearing in mind that the saiga is a highly reproductive animal,⁶ one is led to think of some additional pressures, other than hunting, which must have impeded its recovery for almost a decade.

In the 1960s, the postwar restoration of the area's economy, boosted by a massive immigration, worked itself into a frenzy of modernization. Although permitted to come back to their re-established "autonomous republic," the Kalmyk people had no way of returning to their pastoral traditions. All the livestock and pastureland were now the property of state-owned collective farms, most of them ordered to focus on sheep.

On the eve of the Bolshevik Revolution, sheep comprised about two-thirds of the entire livestock population in the area, followed by cattle (~20%) and horses (~13%). During the 1920s, the sheep section grew up to 74%, while those of cattle and horses dropped, respectively, to 16% and 7.5%. The collectivization drive of the thirties furthered this tendency a little bit, by pushing sheep up, and horses down, a few percent more. But it was during the 1960s that Kalmykia was subjected to the most dramatic changes in the structure of its livestock population ever since the advent of the Soviet power: in just one decade, the percentage of sheep reached 85 or more, while the fraction of horses sunk below the level of one percent (see Rogovin 1999).



A female saiga with her fawn
Drawing by Vladimir Smirin

The unprecedented explosion of sheep in the area⁷ soon resulted in forage deficits, which provoked haphazard attempts to "improve" its natural pastures by turning them into fields to cultivate more fodder. During the 1960s, Kalmykia saw over 150 thousand hectares of its pastureland plowed under in pursuit of this goal; by the early 1970s, every bit of this land had been destroyed by wind erosion to the point of having no vegetation whatsoever (Neronov 1998).

Apart from this, the mid-1960s witnessed the beginnings of a large-scale irrigation network in the north of Kalmykia, aimed at turning the lake-rich Sarpa Depression into a region of intensive agriculture. Prior to that, this area, particularly its northern part, had been good for the saiga, especially so in the spring, when it would grow lush with ephemeral plants. Providing an abundant supply of its favorite seasonal forage (such as *Alyssum*, *Bromus*, *Euphorbia*, and *Poa* species) and harboring large tracts of the still undeveloped flat terrain — the type of habitat where female saiga prefer to deliver their young, the northern part of the

Sarpa Depression had been the animal's principal calving area in Kalmykia up through the early 1960s (Sokolov and Zhirnov 1998). The construction of Sarpa Irrigation Facilities, brought into operation by the mid-1960s (Dudakov 1998), quickly made this region unsuitable for the saiga, forcing its population to spend the birth season (April—May) in central parts of Kalmykia (see map 3), where foraging conditions were notably worse.⁸

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⁶ Saiga females are known to start giving birth as early as at the age of one year, and twinning is not uncommon: according to extensive studies conducted in Kalmykia in the 1970s and 1980s, its rate was 20–70%, while only 3 to 25% females remained barren (Sokolov and Zhirnov 1998).

⁷ In the early 1960s, the total number of sheep in Kalmykia was somewhere about 2 million head, over two times more than it had been just one decade ago.

⁸ Compared to the northern part of the Sarpa Depression, the plant cover of these areas is seared earlier in the year; moreover, its dominant species (*Salsola*, *Artemisia*, and *Stipa*) hardly meet the saiga's food preferences in the spring season (see Sokolov and Zhirnov 1998).

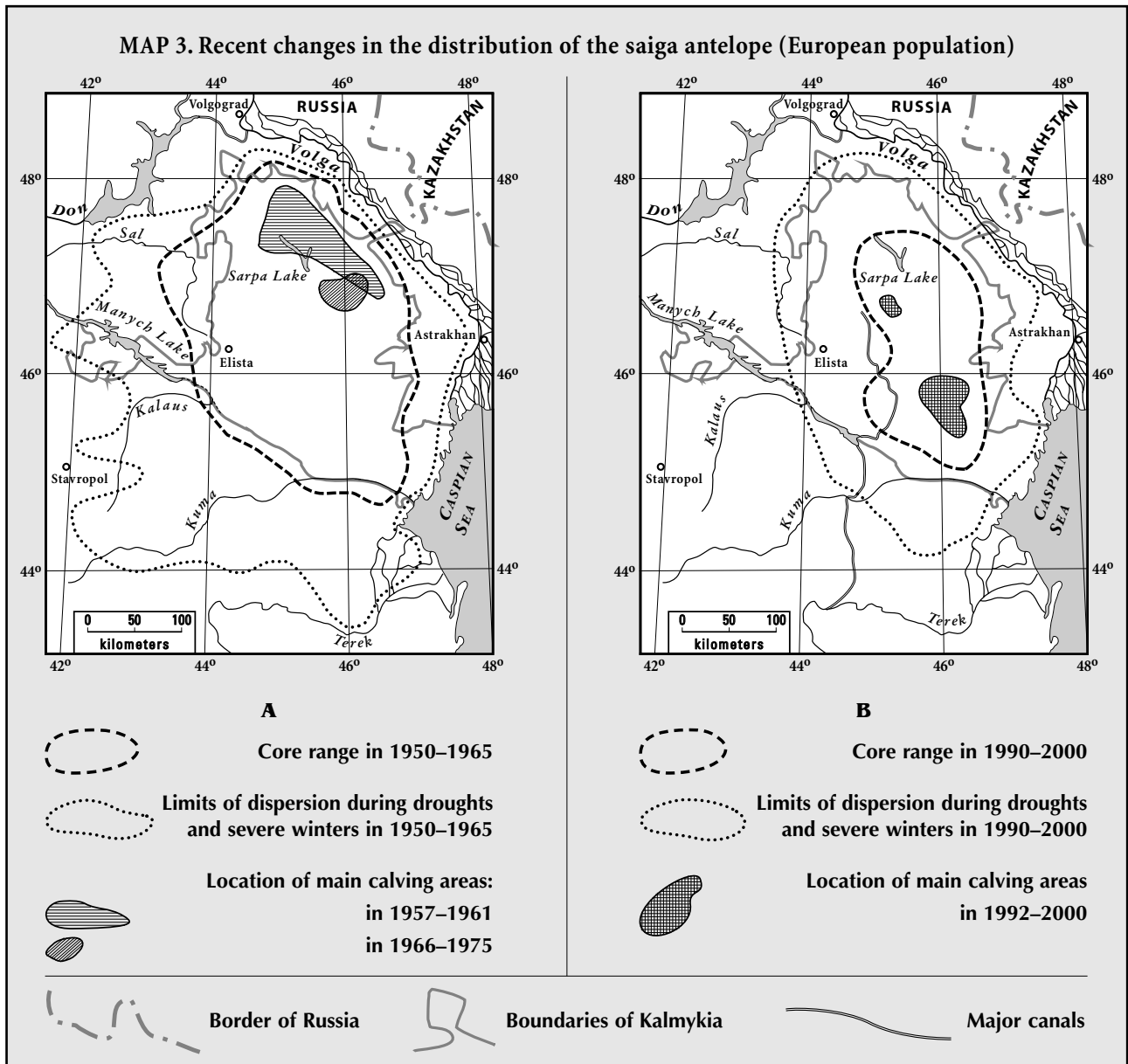
Viewed against this background, the fact that the saiga soon showed another great population increase should come as a surprise. Yet, the year 1973 did mark the beginning of a rise almost as steep and as high in its ultimate reach as the previous growth, and even surpassing it in duration. It would seem that such an impressive recovery in the face of relentlessly growing human pressures should have won the “living fossil” at least some respect on the part of those who defined the levels of “sustainable harvesting.” This, however, was not to happen. On the contrary, an essential similarity between the patterns of hunting and their relationship to the animal’s population dynamics in 1956–1964 and 1976–1983 (see figure) reinforces our earlier conclusion, suggesting that it was an excessive hunting pressure again which triggered its new decline after the peak of 1978.

As in the early 1960s, hunting continued to be heavy in the early 1980s, precipitating the already declining population further into a grave depression. Meantime, the spasm of economic reconstruction in the region was growing more and more frenetic. In the late 1970s, the Sarpa Depression saw the launch of a new irrigation project, the Kalmyk-Astrakhan Facilities aimed at transforming this area into a rice estate. While this mammoth establishment was rapidly devouring what was left of the saiga’s favorite spring pastures, the remaining steppe tracts in the western parts of Kalmykia and adjacent provinces were turned into a uniform mass of plowed fields, interrupted only by the newly-built canals and roads. As a result, the animal’s usual summer retreats in such areas as the Ergeni Heights and the Kuma-Manych interfluvium were practically eliminated.

The development of irrigated agriculture in these regions, coupled with the building of artificial waterways and reservoirs to “improve” the quality of natural pastures in the drier central and southern parts of Kalmykia, affected its saiga population in a number of ways. Apart from depriving it of important habitats, irrigation

facilities reduced its usual summer mobility by creating additional sources of drinking water. And since the animals came to stay about them in large numbers, the nearby pastures were increasingly overgrazed. Moreover, an expanding network of water distribution channels (which eventually reached a total of over 1,300 km) vastly impaired their seasonal migrations. Built without paying heed to the existence of wildlife, irrigation trenches are known to have caused heavy casualties among the saiga, most of which occurred among the newborns accompanying their mothers on the way from the birth sites. In May of 1977, for example, over 14,000 saiga, most of them infants 3 to 10 days old, were found dead along a 5-kilometer-long portion of an irrigation trench in central Kalmykia, having failed to make it through the water that was being pumped into its bed while they tried to cross it (Sokolov and Zhirnov 1998). As the irrigation network was growing more and more dense, so was the network of transportation routes. In 1960, the total length of paved roads in Kalmykia was just about 100 kilometers; by 1986, it was 1,604 km. Like canals, the roads increasingly hampered the animal’s migrations and became a powerful eliminative factor.

But the chief player in keeping the saiga in a state of continuous depression until as late as 1995 was probably its principal domestic competitor — namely, the sheep. The linchpin of Soviet agricultural policy for Kalmykia, its sheep industry was growing more and more massive: by 1980, it already held over 3 million animals, and kept above this level until the very dissolution of the USSR in 1991. And it must be noted that this estimate is gathered from official statistics which only took account of state-owned sheep. To appreciate their real number in the area during the 1980s, one should add what was held by individual owners — both legally (the permitted share was 15% of the state-owned amount) and illegally (up to 1.5 million head — see Vinogradov 1993), which results in a total of about 5 million head (cf. Rogovin 1999).



In addition, the late 1970s and the 1980s saw the culmination of an all-out campaign to do away with nomadic existence. Initially waged against the Kalmyk herders, it finally turned to the very heart of the matter: the animals themselves. Amassed at huge collective farms (some of them already numbering tens of thousands animals), sheep were now reared in a new “sedentary” manner, with little, if any, seasonal change in the use of pastures. As a result, the levels of livestock grazing throughout Kalmykia typically came to exceed the limits of sustainability by two to three times (Bakinova 2000).

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The overused natural pastures reacted by turning into a land of moving dunes, while the irrigated forage fields were rapidly transformed into salt pans. The combined effect of overgrazing, wind erosion, and evaporation was most pronounced in the core pastoral region of Kalmykia, the Black Lands, which in the 1980s was deteriorating into desert at the rate of 30,000 to 50,000 hectares a year (Rogovin 1999). Eventually, the livestock responded in a horrifying manner, by starting to die in large numbers, as in the winter of 1986/87, when over 800,000 sheep in Kalmykia collapsed from hunger (Bakinova 2000).

In the light of such calamity, the “living fossil” proved amazingly viable. While 1987 did witness a 30-percent decline in its population against the previous year,⁹ the remaining number of the saiga (143 thousand animals) was still above the bottom of its former depression (116 thousand, in 1968), when the overall magnitude of human-related pressures had been not nearly as great as in the late eighties. Furthermore, the following seven-year period (up to 1995) saw very little changes in its population size (see figure).

Perhaps it was not an accidental coincidence that this period of stability commenced in the immediate aftermath of the first notable step to halt the deterioration of the Black Lands, taken in response to the disaster of 1986/87, when the republican authorities decreed that some 700 thousand sheep be moved elsewhere. In consequence of this decision, a total of over 800,000 hectares of natural pastures in the Black Lands was altogether retired from use by 1990 (Sokolov and Zhirnov 1998). Paradoxical as it may seem, the same area that was devastated by livestock to the point of becoming its curse, proved a blessing for the saiga. Thanks to a massive exodus of its domestic competitors and their human attendants, the Black Lands became its haven of refuge, the safest place it could find in Kalmykia and the nearby regions.

The dissolution of the Soviet Union in late 1991 put a sharp end to the command system of economic planning that was looming over Kalmykia during the previous decades. From that time on, its livestock population has experienced a steady decline, most notable in the sheep section which decreased by 80 percent between 1992 and 2000, from over 3 million head to just over 600 thousand. In the late

1990s, the crude wool produced in Kalmykia was sold to textile manufacturers at an average price of 4 rubles (~\$0.7 at the then exchange rate) per kilogram, making most of its sheep industry the game not worth the candle (Rogovin 1999). The construction of new irrigation facilities has been practically terminated, too, because the costs of water transportation (which Kalmykia now has to pay from its own budget) have become too great a burden.

These changes, together with the hunting ban (reintroduced in 1987), were favorable for the saiga, and beginning with 1995, the resilient antelope seemed to be on the rise again. But shortly thereafter, things took another turn for the worse, and a very sharp one indeed: from an estimated total of 150 thousand animals in 1987, the population plunged to 50 thousand in 1999, and then to 25 thousand in 2000.¹⁰

What kind of power could have caused this downfall? While these years have witnessed some harsh environmental conditions (strong winter frosts and summer droughts), they have been not nearly as bad as to account for such heavy losses. Nor is the saiga population in Kalmykia known to have recently suffered from any epidemic. The alleged relationship between its decimation and the current growth in wolf numbers has not been verified. The impact of hunting has been insignificant from 1987 on, amounting to 13,000 saiga harvested in 1996 (the only year when the ban was lifted). What, then, is that violent force which has come to the fore in the complex interplay of factors dictating the fortune of the saiga in Kalmykia?

There is little doubt that the current decline of the saiga has much to do with poaching. In fact, its rise was already observed in Kalmykia in the last years of the Soviet Union's existence,

⁹ This rate had much to do with hunting which eliminated 15–20 thousand animals in the winter of 1986/1987 (Teer et al. 1996).

¹⁰ It must be noted that the circumstances of saiga population counts in 1997–2000 were different from the former years. The estimates for the period from 1951 through 1996 are based on the aerial surveys conducted in summer, after the end of the animal's birth period. In 1997, there was no aerial survey, and the data were obtained from a series of ground motor-vehicle surveys. Beginning from 1998, aerial surveys have been conducted in spring, before the peak of the saiga's birth period, which may have resulted in a certain underestimation of their number. However, even if we wish to multiply the data for 1998–2000 by 1.5 (a rough coefficient based on the data of those past years in which aerial surveys were conducted both in spring and summer — cf. Sokolov and Zhirnov 1998), the resulting numbers would still reveal a catastrophic decline.

when the state monopoly on international trade was dissolved and the customs regulations became lax, stimulating a massive illegal hunt for saiga horns and their subsequent transportation to the Oriental markets, to be used for medicinal purposes. By the turn of the 1990s, one kilogram of its horns (~4 pairs) could be sold in Kalmykia for \$30. This is a great deal of money by local standards, so one shouldn't be surprised to hear that the amount of poaching in those years is believed to have reached no less than 15,000 to 20,000 animals a year (Sokolov and Zhirnov 1998). The recent social and economic changes must have worked to make it much heavier. For one thing, a dramatic decline in livestock numbers beginning from 1992¹¹ has certainly increased the local interest in the saiga as a source of meat. Indeed, its meat can now be bought on food markets even in the capital of Kalmykia. For another thing, the fact that the proportion of adult males in its population has been steadily declining from 1997 makes it plausible that the hunt for saiga horns has grown more intense as well. In support of this suggestion, it should be noted that their price in Kalmykia has by now reached as much as \$100 per kilo, a great incentive for the impoverished population of its pastoral regions.

* * *

Its adult male fraction reduced to less than five percent (a survey in November 2000 gave an estimate of 0.89%), the saiga population of Kalmykia is now greatly impaired in its reproductive capacity. Field observations taken in the winter of 1999/2000 showed that the males, instead of keeping, as they had used to, separate harems numbering one or two dozen females, were now mating in large herds, amounting to 500 or more animals each. The result of this change is not only that many female saiga remain barren, but also that breeding becomes a far more exhausting process for the males, with

the inevitable negative impact on their ability to survive the winter months ahead (the rutting takes place in December). And, bearing in mind that the population on the whole has been so drastically curtailed, we must conclude that its future is in peril.

In telling the story of the saiga antelope in Kalmykia, we have taken almost no notice of the impact of such natural factors as weather or epidemics, for the simple reason that, during the last one-hundred-and-fifty years at least, they have never proved capable of challenging the very existence of the animal, as opposed to human policies. It should be mentioned, however, that this land did see such calamities as the winter famine of 1953/54, which cost its saiga population at least 150 thousand lives, or the outbreak of foot-and-mouth disease in May 1957, which killed some 40 thousand saiga (Sokolov and Zhirnov 1998). A disaster of smaller proportion, should it occur today, could put the population on the verge of extinction.

While we can hope that this resilient animal will be able to somehow cope with the natural challenges that have been part and parcel of its existence for ages, it would be farcical to project this hope to human-related disasters. The rate of its current decline requires immediate actions.

It is now clear that a handful of protected areas existing in Kalmykia today, including the "Black Lands" Biosphere Reserve (established in 1990) as well as the three federal refuges created primarily to conserve saiga habitats, cannot safeguard the population. The problem is not only that they cover too small a portion of its range; it is also that they are fixed in space, while the animals are not. Once out of protected areas, poachers pursue them on motorcycles and by car. And the rangers responsible for protecting the saiga beyond their borders are too few and poorly equipped to always be in the right place at the right moment.

¹¹ Significantly, its culmination (a decrease of 40% over a two-year period), observed in 1997–1998, was immediately followed by a sharp decrease in saiga numbers from 1998 onwards.

On this view, the most urgent problem to deal with is the combination of powerful economic incentives for poaching and poor ranger service in the region. Thanks to the funds provided by the Netherlands Government through WWF's Large Herbivore Initiative for Europe, the anti-poaching teams in Kalmykia have recently obtained some field equipment which hopefully will make their work more efficient. This, and other efforts to halt the ongoing massacre (namely, the inclusion of the saiga in CITES Appendix II, in force since November 1994) are very important beginnings and should be pursued further on; but it is just as necessary that they be complemented with a set of *positive* incentives that will reward local people for protecting the species and its habitats. Generating such incentives will require a great deal of imaginative work, with the necessary assistance of international conservation community.

* * *

Almost four hundred years ago, the people who came to stay in the land since known as Kalmykia decided that it would make good sense to keep their own demands in check by taking into account the well-being of the then plentiful antelope that shared this harsh country with them and their flocks. Had it not been for the straightforward rules they designed for its protection, it is likely that the fate of the saiga in this corner of Europe would have been no different from the one that befell it throughout the rest of the continent's steppe belt. In any case, the subsequent "civilization" of the Kalmyk land has clearly shown the consequences of building an economy without counting the cost to its indigenous inhabitants. The colonizing policies of the 19th and 20th centuries have left the Kalmyk people all but deprived of their pastoral traditions, while creating a catch-as-catch-can atmosphere which has proved disastrous for both sides of the age-long partnership between their culture and its natural environment. The glittering coats of the saiga that can still be seen on the open plains of Kalmykia bring to us

a living fragment of this partnership, and a call to help retrieve it from the brink.

AFTERWORD

An aerial survey conducted in May 2001 by the Department for Conservation, Monitoring, and Management of Game Resources of the Kalmykia Republic and the Main Administration for Hunting of the Russian Federation yielded an estimate of only 17,800 saiga remaining in Kalmykia, indicating that the population is continuing to decline. Still, it seems a good news that the rate of its decline has become somewhat slower, perhaps thanks to better anti-poaching operations. Another encouraging news is a special decree on joint police and ranger anti-poaching services, signed by the President of Kalmykia in this summer. Let us hope it will make a difference.

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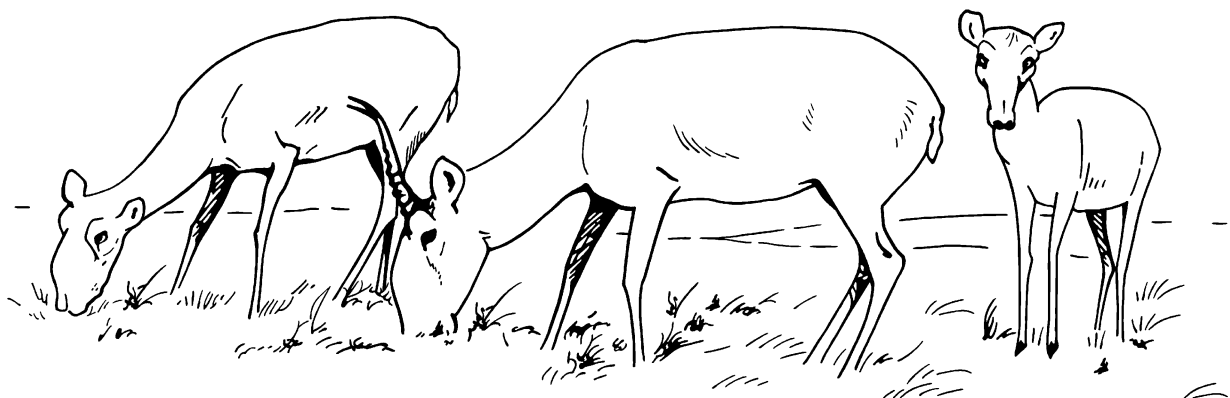
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A group of saiga on the steppe
Drawing by Vladimir Smirin