Odessa centre | Pastoralism
Research, Policy and Practice

TYPE Original Research
PUBLISHED 27 January 2026
DOI 10.3389/past.2025.15396

OPEN ACCESS

EDITED BY
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RECEIVED 07 August 2025
REVISED 08 December 2025
ACCEPTED 30 December 2025
PUBLISHED 27 January 2026

CITATION
Istomin KV and Habeck JO (2026) Reindeer-herding science in the Soviet Union and Russia: a short historical overview.
Pastoralism 15:15396.
doi: 10.3389/past.2025.15396

Reindeer-herding science in the Soviet Union and Russia: a short historical overview

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This article describes the history of Soviet/Russian research into methods, techniques, and ecology of reindeer herding as a productive economy (rather than a cultural phenomenon). This direction of research can be subsumed under the term "reindeer-herding science." Content analysis of publications in Russian language and selected other sources allows for a nuanced institutional history of this field of study. Particular attention is paid to the political milieus in which this direction of research developed, its organizational forms, and the intellectual orientations of its key personalities. The article shows how these fast-changing sociopolitical conditions came to shape and reshape the aims of the research, its agenda and methods. These links are used to explain strengths and weaknesses of contemporary reindeer-herding science in Russia, along with specific problems and misunderstandings that often occur in scientific cooperation between Russian and Western specialists in this field.

KEYWORDS

agricultural science, lysenkoism, reindeer husbandry, reindeer zootechnics, Soviet Union

Introduction

The basic aim of this article is to supply readers with a general framework for understanding research in the Soviet/Russian tradition of reindeer-herding science by explaining its history. Although we list the topics of research in which Russian specialists were involved at different stages of this discipline's history, our aim here is not to make a comprehensive review of their results: other contributors to this special issue are going to do this. The issue contains review articles on the most important topics – reindeer breeds and selection, reindeer veterinary science, and reindeer pastureland research – written by scholars directly involved in them. Rather, our aim is to provide a framework for anyone interested in knowing how this field of science came to develop in Russia.

It may seem odd that this review is written by two cultural anthropologists (rather than biologists, zootechnicians, or veterinarians). However, there are good reasons for that. Firstly, cultural anthropologists have a long legacy of studying human-animal relations in Siberia in general, and human-reindeer relations in particular. In the process of ethnographic fieldwork, many an anthropologist has encountered zootechnicians, veterinarians, and other experts on reindeer biology and pasturelands.

It thus feels natural to enter into dialogue across interdisciplinary borders (e.g., Kantanen and Stammler, 2025). Both authors of this article repeatedly came across the names of the early protagonists of reindeer-herding research; retrieving their biographies and scientific studies proved important to make sense of reindeer herding culturally and economically. Other cultural anthropologists have also started to pursue the history of reindeer-herding science, juxtaposing scientific knowledge with Indigenous ways of knowing, and scientific calls for "rational" resource use with more local (and more reciprocal) ways of human-animal interaction (e.g., Vladimirova, 2020).

Secondly, both authors participated in a transdisciplinary research project with the acronym CHARTER,[1] which from 2020 to 2025 investigated the role of reindeer and reindeer herding in Arctic terrestrial biodiversity. Many discussions with colleagues from Finland and Norway pointed to the hypothesis that Fennoscandian reindeer-herding scientists took some inspiration from Soviet colleagues in the 1960s (see the introductory remarks to this special issue). In the process of corroborating this hypothesis, it was necessary to establish just what Soviet reindeer-herding science was about, which turns and twists it went through, how it went about formulating recommendations, and how it assessed the geographic scope of such recommendations. We invite our colleagues to complement this review on the history of Soviet reindeer-herding science with a closer look at cross-border contacts (as exemplified by Mathiesen et al., 2024).

Thirdly, to the best of our knowledge, no one else has thus far tried to publish in English language a history of reindeer-herding science in the Soviet Union and post-Soviet Russia. Even though scholars working in this sphere and publishing in Russian language do have international contacts, their experience of publishing through English is thus far somewhat limited, for reasons explained in later sections of this article. Moreover, as cultural anthropologists we have long been sensitized to the question how socio-political settings influence scientific practice, and we find it worthwhile to explore this topic in the sphere of life-, health-, and applied sciences.

In this overview, we pay particular attention to the change of the organizational forms, main approaches, perceived aims, and intellectual orientations of the key actors in Soviet/Russian reindeer-herding science. We hope that this overview will give the readers some impression about the changing research paradigms, intellectual milieus and, most importantly, the opportunities and constraints which largely determined the activities and study directions of Russian reindeer-herding scientists.

Materials and methods

Our review is based mostly on available literature in Russian as well as on some archive documents. We use content analysis of these publications and documents to build up a nuanced institutional history of this field of study and establish how it was influenced by ideas and ideologies proposed both iside and outside it. In some cases, We also relay on our personal communication with two leading reindeer herding scientists in modern Russia, Alexandr Yuzhakov and Kasim Laishev. Both of the colleagues knew about our research and willingly assisted in it, for which we are greatly indebted to them. We also indebted to these colleagues for literature suggestions they made to us concerning our research.

Results

Studies on reindeer herding in Czarist Russia

In Soviet literature, it was usually claimed that scientific studies on reindeer herding as well as hunting and other branches of "Arctic agriculture"[2] seriously started only after the Communist revolution, when the state "abandoned the colonial policies of czarism and finally turned its face to the needs of the People of the North" (Gul'chak 1954, 9–10). Thus, Mikhail Sergeev in his monumental monograph (1955) claims that the founding father (*osnovopolozhnik)* of reindeer-herding science was Sergei Kertselli, who established the discipline in the 1920s and early 1930s. As we will demonstrate below, the contribution by Sergei Kertselli to Russian reindeer-herding science is indeed quite exceptional; however, one should not ignore the fact that its roots go further back in history.

Some information on practices of keeping reindeer and its use for meat, skins, and transport can be found already in the

1 CHARTER is the acronym of "Drivers and Feedbacks of Changes in Arctic Terrestrial Biodiversity", a research project funded by the European Commission under the EU Horizon 2020 Research and Innovations Program (grant no. 869471). The authors gratefully acknowledge the financial support and the intellectual exchange that became possible thanks to this research grant. The manuscript of this article started off from discussions with our Fennoscandian colleagues under CHARTER Deliverable 3.5 "Socio-economic processes in selected communities: the interplay of formal and informal institutions and practices in reindeer herding".

2 The word "agriculture" is used here to translate the Russian term *"sel'skoe khoziaistvo"* (literally, "rural economy"). This translation is quite usual and even has official status in translations of diplomas and official documents. It should be remembered, however, that the Russian term covers plant production, animal husbandry, mobile pastoralism, and also hunting and fishing. Thus, the "Arctic agricultural sciences" include studies of reindeer herding, commercial trapping and subsistence hunting, fur animal farming, and several other branches. To be sure, studies on possibilities of commercial plant growing and cattle farming in the Arctic have been present, but they never played a decisive role.

materials of the expeditions organized by the Imperial Academy of Science in the 18th century (e.g., Lepekhin, 1805) and in works analyzing and summarizing their results (e.g., Georgi, 1799). In 1844, the Imperial Ministry of State Properties sent one of its officers, Vladimir Islavin (1818–1895), to the northeast of the European part of Russia specifically to study reindeer herding. This expedition resulted not only in a detailed description of the reindeer-keeping practices of local Nenets and Komi, but also in the first statistical assessment of the total number of reindeer in the region, the sizes of individual herds, the labor requirements of the business (and the related practices of labor hiring and pooling), its expenses, and the productivity in monetary equivalent (Islavin, 1847). A little bit earlier (1837), the same region was visited by His Majesty's Chief Botanist Alexander Gustav von Schrenck (1816–1876), who, besides producing another description of local herding practices, made the first description of the seasonal reindeer pasturelands with a focus on vegetation, soils, and landscape (Schrenck, 1848). If anything, it would be just to start the history of reindeer-herding science in Russia from these two works.

In the following decades, expeditions dealing exclusively or partly with studying reindeer herding continued: their geographic scope and sophistication steadily increased. Despite his claim that reindeer-herding science started in earnest after the Communist revolution, Fedor Gul'chak (Gul'chak, 1954, 9) counted 100 or more expeditions with reindeer-related questions (as part of their agenda) to different regions of Russia between 1830 and 1917. Some of these expeditions, among other things, took measures of reindeer bodies, weighed reindeer corpses, tried to measure territories needed for keeping reindeer herds of certain size, etc. – that is, they were involved in a kind of research that later became part and parcel of the Soviet reindeer-herding science. However, most of the expeditions were relatively short, the number of measures taken was low, and Gul'chak was certainly right to say that their work was mainly descriptive: they recorded reindeer-herding and reindeer-breeding techniques used by different pastoralist groups in various areas, their ways of using and slaughtering reindeer, organizing their herds, etc. The amount of information of this sort collected by the first decades of the 20th century was such that it allowed comparisons and classifications (such as Kertselli, 1921, about which more below) and even some recommendations for the further development of the industry. Longer and sometimes more detailed studies of reindeer herding were attempted by veterinary specialists. Thus, Sergei Griuner (1864–1931), the "father" of Russian reindeer veterinary medicine and a renowned world specialist in reindeer diseases, spent 5 years (1912–1917) studying reindeer in Kamchatka at a veterinary station he founded there. His study resulted in the first description of reindeer necrobacillosis (foot rot or *kopytka*) and discovery of its cause, *Fusobacterium necrophorum*. However, longitudinal studies involving large number of animals, needed for sufficient understanding of reindeer ecology and requirements, were possible only in specialized long-term research stations – a fact that many Russian scholars of the time fully recognized.

Sergei Kertselli as protagonist of reindeer-herding research in the early 20th century

The first scholar who moved the Russian reindeer herding research beyond the "expedition mode" was Sergei Kertselli (1869–1935). Like Griuner, he was trained as veterinary specialist. Before his first journey to the North, he had worked almost a decade as a vet and a zootechnician[3] in farming. After an epizootic of anthrax that hit the tundra of the northeast of European Russia in 1905–1907 – not the first and, unfortunately, not the last outbreak of the disease that regularly devastated local reindeer herding and occasionally led to mass migrations of pastoralists to neighboring regions – he was hired by the governor of Arkhangel'sk to try and develop ideas of how to improve the situation. Kertselli took the task seriously and spent the next 2 years (1908 and 1909) migrating with the local reindeer-herding nomads and studying in detail all aspects of their economy.

The duration of the study, which was several times longer than was usual at the time and covered two full year cycles, his previous training and experience in zootechnics, and the strong interest towards reindeer herding have all contributed to the great success of his work: by 1910, Kertselli was able to submit a plan of measures, which would lead eventually to protecting the local reindeer herding from epizootics and to increasing its productivity. The central element of this plan was organizing a veterinary and zootechnical station where new methods of veterinary treatment and reindeer-keeping techniques could be developed. The plan was accepted: the station opened already in the same year in Oksino (on the lower Pechora) with Kertselli as its head. This was the first stationary institution for the scientific study of reindeer in Russia (Griuner's station was founded 2 years later). Importantly, its scope was not restricted to veterinary research, but included working out measures for improving reindeer herding in the entire country. Soon after, Kertselli published a book on the results of his 2-year work in the tundra (Kertselli, 1911), which established his fame as one of the best Russian specialists on reindeer herding. It is unclear, however, if any experimental work in reindeer herding actually took place at Oksino: Kertselli spent the next one and half years in an expedition to Vaigach and Kolguev islands to study local reindeer herding and writing up academic and popular articles on reindeer herding and ways to develop it.

3 Zootechnician (*zootekhnik* in Russian) is a specialist in *zootekhniia*, a sub-discipline of agricultural/farming science dealing with techniques of keeping and rising domestic animals. The word "zootechnic" with meaning very close to *zootekhniia* exists in English as well. In Russia, "zootechnician" can refer both to a researcher in the field of zootechnic and a specialist supervising practical application of the zootechnic techniques in enterprises and by private farmers.

Enter the opponent: Andrei Zhuravskii

Among Kertselli's earliest and most prominent opponents was Andrei Zhuravskii, another important actor in what was later called Arctic agricultural science. In 1906, Zhuravskii secured funds from the Imperial government to establish a research station in Ust'-Tsil'ma (a small town on the Pechora River several hundred kilometers up from Oksino) with the primary aim to study natural resources of the North and ways of utilizing them. The station performed large-scale botanical, geological, and some ethnographic research, but its main activity, at least from the viewpoint of Zhuravskii himself, consisted in research on plant growing and farming, with the aim to intensify and expand them in Arctic areas. Zhuravskii's position towards reindeer herding was rather special: he argued, referring to his first-hand knowledge obtained from numerous fieldworks in the tundra, that reindeer herding was a "primitive" economy, capable of supporting the traditional way of life of Northern peoples and indeed valuable as such. However, he held that it could not be developed into a sustainable commercial economy. Furthermore, any attempt to do so or even to think of reindeer herding in commercial terms was, in his opinion, deeply colonialist, immoral, and devastating for the natural environment of tundra. Zhuravskii criticized in particular Izhma-Komi commercial reindeer herding, which, in his opinion, caused degradation of tundra vegetation and led to the spread of anthrax (Zhuravskii, 1907). Despite the criticism mounted by Kertselli against these claims, Zhuravskii was probably right, as far as the Izhma-Komi reindeer herding of that particular time was concerned (see Dwyer and Istomin, 2006). This led Zhuravskii to propose a new legislation for the tundra in European Russia, which would ban Komi, Russians, and anyone else except Nenets, Saami, and Khanty to practice reindeer herding, remove Komi pastoralists from the tundra,[4] and create a reservation in the core area of the tundra for the three Indigenous pastoralist groups with strictly controlled access (Zhuravskii, 1908; 1909a; 1909b). Interestingly, this legislative initiative strongly resembled the "indigenization of reindeer herding" legally enforced later in Sweden and Norway (Beach, 1990) as well as, by the means of the Reindeer Act of 1937, in Alaska.[5]

The debate between Zhuravskii and Kertselli was formally focused on this legislative initiative, but actually more general issues were at stake: In this debate, Kertselli first formulated a set of ideas that became his credo for the rest of his life and importantly informed later Russian reindeer-herding science. Thus, he argued that the only reason reindeer herding might look "primitive" and not very productive at the moment was that this economy was still very young, proceeding through the first stages of its development. With time, it would develop into a highly productive and sophisticated commercial economy on a par with cattle or sheep breeding (Kertselli and Khudadov, 1919; see also Sergeev, 1955, 56–57). In Kertselli's opinion, the commercialized and highly profitable (in terms of its monetary output) Izhma-Komi reindeer herding demonstrated this (Kertselli, 1921), although he did see its shortcomings and the need of further development (Kertselli, 1911). This development, he argued, could be sped up greatly if it was led by a sound scientific research, which he deemed important because reindeer herding seemed to be the only possible way of food production in the Arctic (Kertselli, 1921). Economic development and population growth in the vast areas of Russia's Arctic would require the proper development of reindeer herding. Rather than removing Komi from the tundra and allocating reservations to Nenets pastoralists, he recommended to develop their reindeer herding into a highly productive business, which would give these groups a decisive role in contributing to the future of the Russian state (Kertselli, 1911).

In 1911, the central government cut down support for Zhuravskii's station. Zhuravskii was advised to focus exclusively on his agricultural studies; his station was reformed and renamed as Pechora Experimental Agricultural Station, to be financed by the budget of Arkhangel'sk province. To cut on funds, the provincial administration decided to amalgamate the veterinary-zootechnical station in Oksino with the Ust'-Tsil'ma agricultural station. Knowing that his approach to reindeer-herding research would be completely out of place under Zhuravskii's supervision, Kertselli left the station and returned to St Petersburg (1912), where he took the newly created position of an inspector (specialist) on reindeer herding at the Imperial Ministry of State Properties. The history of the first station for reindeer-herding research was short-lived.[6] However, Kertselli traveled to the Far East of Russia in 1916–1918 (Sochava, 1934, 4; Schulz et al., 1972, 265–266) to get acquainted with reindeer-herding practices there. It must have been in these years that he came to develop his ideas on reindeer herding with stationary camps (*izbennoe olenevodstvo*) and meat- and hide-processing industries (Kertselli and Khudadov, 1919; Kertselli, 1933).

4 Historically being agriculturalists and commercial trappers, Komi borrowed nomadic reindeer herding from Nenets in the 18th (on other accounts in the late 17th) century and developed it into a market-oriented economy.

5 In Alaska, the Indigenous monopoly on reindeer herding was significantly weakened in 1997.

6 In fact, another veterinarian was hired as director of the station and he indeed moved it from Oksino to Ust'-Tsil'ma. However, for the lack of reindeer at the place, its work became focused on cattle diseases and remained small-scale. In August 1914, Zhuravskii was assassinated by a local inhabitant, while many of the station staff were mobilized for the World War that had just started. In 1915, what was left of the Ust'-Tsil'ma station was moved to Vologda, where its descendant, Vologda Experimental Agricultural Station, still exists, although its activity has nothing to do with the Arctic.

Activities by Kertselli and his colleagues in the 1920s and 1930s

In the early 1920s, research on reindeer herding resumed. In 1921, the so-called Northern Research and Trade Expedition was established by the newly established Communist government.[7] During its first years (1921–1922), the Expedition had a reindeer-herding department (*sektsiia olenevodstva*) led by Sergei Kertselli. It did field research mainly in the Kola Peninsula, just abandoned by British troops, and in the Archangel'sk tundra areas (Chistiakov, 2020, 542). As the head of the reindeer herding department of the Expedition, Kertselli published his programmatic work "Materials for the study of reindeer herding" (Kertselli, 1921), which remains famous mainly for offering a thorough economic and technological classification of different reindeer-herding systems in Russia and beyond, based on the research conducted in the 19th century. However, the work contains much more than that. Kertselli started by summarizing his arguments about the economic perspectives of reindeer herding and its role in the development of northern territories as he had devised in his debate with Zhuravskii. He proceeded by offering his typology of the different reindeer-herding systems and specifying the respective economic role of each, and how it can contribute to economic development of the North. Finally, he described how reindeer-herding research in Russia should be organized and which tasks it should solve first. Thus, of major importance was the struggle with reindeer epizootics, particularly anthrax, which would necessitate opening several veterinary stations and conducting further work on an anthrax vaccine. Moreover, he recommended organizing several reindeer-herding research stations with experimental herds of 600–800 reindeer each. The task of these stations would be research on reindeer diet, its seasonal changes, and forage requirements, thereby trying to establish how many reindeer could be kept in different regions. The research stations were also to conduct experimental research on artificial selection and the breeding of reindeer.

The text suggests that the reindeer-herding department was just going to organize one of these stations near Imandra Lake, Kola Peninsula. However, it seems that the plans were not realized: in 1922, Kertselli left the Expedition for reasons not quite known and returned to Petrograd (St Petersburg/Leningrad), while the reindeer-herding department was abolished. In Petrograd, Kertselli joined Vladimir Bogoraz and Lev Sternberg, two famous Russian ethnographers, in their work on creating a legal and administrative framework of the Soviet state vis-à-vis the Indigenous peoples of the North (Sergeev, 1955). When the legislation was enforced and the Committee of the North (*Komitet Severa*) was established in 1925, Kertselli joined the latter as the chief reindeer-herding specialist and immediately used his new position to carry out his plan for stationary experimental research. In 1926, the first two veterinary stations – the Pechora station in Izhma and the Obdorsk station in what is now Salekhard, were established by professors Tikhon Manuilov and Sergei Griuner respectively. Neither of them stayed for long, however: Griuner returned to Omsk the same year to establish a reindeer-herding department (the first department of this kind in the world) at the Agricultural Faculty of the Siberian University; Manuilov stayed for 3 years and then handed the station over to Fedor Terent'ev (1891–1984), a talented specialist of local origin, who indeed managed to make a decisive contribution to stopping anthrax outbreaks through vaccination.

It is worth mentioning here that the vaccine against anthrax is one of the oldest vaccines known: the first such vaccine based on weakened living spores was developed by Louis Pasteur himself already in 1880. This vaccine, modified by Tsinkovskii in 1883, was actively used in Russia in the late 19th and early 20th century on different agricultural animals including reindeer (Supotnytskyi et al., 2015). Its use on reindeer, however, was extremely difficult: it necessitated two injections per year, in spring and in autumn (which was by itself rather difficult, given the vast territories of the tundra and the nomadic life of its population). The spring injection caused significant mortality among the animals weakened after the long winter and, still worse, a huge number of miscarriages and births of weakened calves by female reindeer who were in the last stage of pregnancy. Therefore, usually only male reindeer (if any) were properly vaccinated, which failed to prevent epizootics. In 1933, Terent'ev and his colleague Yel'tsov modified the vaccine further by adding an adjuvant (saponin solution). This allowed limiting the number of injections to one per year and, even more importantly, flexibility in the timing of injections (Supotnytskyi et al., 2015). The Terent'ev-Yel'tsov vaccine still caused a certain number of deaths among the vaccinated animals, was notoriously difficult to store and transport and, most importantly, it was dangerous for the veterinarians themselves: there were cases of deaths among people who accidentally injected it into themselves. Very soon it was replaced by a more modern vaccine, which did not include living spores of anthrax. However, it was indeed the application of the Terent'ev-Yel'tsov vaccine that finally stopped the regular anthrax outbreaks, which had killed tens and sometimes even hundreds of thousands of reindeer. Since the 1940s and until 2015, when an unexpected and rather mysterious outbreak of reindeer anthrax occurred in the Yamal tundra, no cases of Siberian anthrax were registered among domestic reindeer in Russia.

7 Later (in 1925) this expedition was re-formed into the famous All-Union Arctic Institute (Vsesoiuznyi Arkticheskii institut).

(See the contribution by Laishev and Yuzhakov to this Special Issue for details on Russian reindeer veterinary and veterinary service).

Implementing the "stationary method": Serafimida and Ivan Druri

Probably even more important for Russian agricultural science was the opening of the first station to focus on reindeer-related research in full, i.e., not only on veterinary issues. It was established by Kertselli in Lovozero, Kola Peninsula, also in 1926 and entrusted to a young couple of researchers, Ivan Druri (?–1963) and Serafimida Druri (?–1976, maiden name Ivanova) (Terent'eva, 2021, 75–76).

The Druri couple came to attain a role in research almost as significant as that of Kertselli. It is even more of a pity, therefore, that we do not have information on their origin and how they and Kertselli came to know each other. One can only guess that this happened when Kertselli visited Kola Peninsula in 1921–1922. In close correspondence to Kertselli's plan, the station commenced its work in 1926 by studying reindeer diet – mainly through analyzing content of rumens of slaughtered reindeer. The researchers also tagged reindeer in private herds in order to trace their growth and seasonal changes in their body mass and external appearence (Terent'eva, 2021, 75–76). The work, however, was hindered by the absence of reindeer that would belong to the station: the initial plan to buy a sizeable herd of reindeer failed because local reindeer herders refused to sell their animals.

In 1929, the Druri couple temporarily left the Kola Peninsula and accompanied Kertselli to Chukotka with the aim of establishing the first reindeer-herding research station in the Far East (Druri, 1989). This station was located on the Anadyr' River about 220 km from the future administrative center of Chukotka (the town of Anadyr') and gave rise to the modern village of Snezhnoe. As was the case in Kola Peninsula, the initial plan to buy a sizeable experimental herd of reindeer failed: even though the attempts to buy the animals started in 1925, at the time of its inauguration, the station had only about 200 reindeer (Tserkovnikova, 2014).

However, the researchers benefited from the Soviet government's struggle against *kulaks* (wealthy herders) that started in the North in 1930: the main instrument of this struggle was subjecting such herders to the so-called "solid tax" (*tverdyi nalog*), i.e., the obligation to supply a fixed amount of reindeer or reindeer-herding produce as well as that of hunting and/or fishing. In case of failure to meet this obligation – and the obligation was designed in such a way that meeting it was notoriously difficult – all the property of *kulaks* was confiscated by the state and the reindeer became transferred to state-owned enterprises (*sovkhozes,* which at that time ere markedly different from collective farms – *kolkhozes* – in their status and inner structure). Having lost their means of existence, the former owners of the herds had only one choice: to get hired by such enterprises for rather meagre salaries and herd their former animals at the will of the state.

In Chukotka, the first *sovkhoz* was deliberately organized in a place later called Snezhnoe, using the experience of the reindeer-herding specialists to organize the work of the enterprise (in any case they understood reindeer herding much better than the local state officials). The researchers were given *carte blanche* to use the *sovkhoz* reindeer for their research. Ivan Druri (Kertselli left Chukotka in 1931) was appointed the director of the newly created *sovkhoz*, Serafimida Druri became its chief zootechnic, while both kept their positions as researchers (Druri, 1989). The practice of expropriation, by the way, became standard. Thus, in Kola Peninsula, the research station acquired the large reindeer herd that used to belong to the wealthy Anufriev family (Terent'eva, 2021, 71–73). New research stations were organized already in conjuncture with *sovkhozes*. By the same token, sovkhozes were supposed to be staffed with at least one veterinarian and three to four zootechnics (Vladimirova, 2020, 255–256). This gave Russian reindeer-herding scientists almost unlimited possibilities for research work: By 1932, the total herd of Druri's *sovkhoz* on Chukotka reached 13 thousand reindeer divided into 7 reindeer-herding brigades (Tserkovnikova, 2014). Soviet reindeer-herding research, therefore, could prosper on the basis of the state's expropriative policy.

Fruition of Kertselli's plans: the Institute of Reindeer Herding

Meanwhile Kertselli returned to Leningrad to learn that his ideas about developing reindeer herding as a keystone of economic development in the North and his call for intensifying reindeer-herding research had positively impressed the state officials[8] and that the decision was made to organize a state-sponsored research institute of reindeer herding in Leningrad. The Scientific Research Institute of Reindeer Herding (*Nauchno-issledovatel'skii institut olenevodstva*) was officially opened in 1931. It was divided into three departments – a structure that later would become standard for reindeer-herding research institutions and stations. The department of zootechnics and reindeer biology was headed

8 It seems like Kertselli submitted a special letter to the Council of the People's Commissars (*Sovnarkom*) describing his ideas about the future of reindeer herding before his departure to Chukotka in 1929 (Sergeev, 1955). The exact content of this letter is unknown to us, but one can guess that it described approximately the same ideas as specified in his article published as part of a series edited by the Committee of the North, which itself was part of the Soviet governmental structure (Kertselli, 1921).

by Ivan Druri, who was called away from Chukotka in 1932. The department of reindeer veterinary studies was headed by Manuilov, who by that time returned from the vet station of Izhma. Finally, the department of geobotany of pasturelands was headed by Viktor Sochava (1905–1978), who was later to become a well-known geobotanist, one of the founders of ecological science in the USSR, and a renowned scientist in reindeer-herding research (see below).

Interestingly, almost all members of the institute were very young, but Kertselli knew how to choose people: most of them already did have some experience of research work in the tundra and became renowned specialists later. Kertselli was appointed the director of the institute. The institute acquired the two reindeer-herding research stations that already existed and was given funds to organize another two. These stations were organized in 1932: the Nar'ian-Mar research station on the lower Pechora was attached to the First Nenets Reindeer Sovkhoz; the Yamal research station, initially organized in a settlement called Numgi (non-existent today), was attached to the Nadym Sovkhoz (Rochev, 2014; Riabkova, 2022). The Nar'ian-Mar station was headed by Gul'chak, the future first director of the Institute of Arctic Agriculture. It seems like the organization of the stations and preparing for the experimental work (labeling reindeer, creating animal passports for the experimental animals, etc.) represented the main activity of the Institute of Reindeer Herding in these initial years. The researchers conducted extensive fieldwork: the Druris, as it seems, spent most of their time in Kola Peninsula, at the station that was their first place of work,[9] and continued their research on changes in reindeer related to age and season, reindeer diet, and herding techniques (including the use of fences), while the botanists worked mainly in the tundra areas east and west of Pechora River on botanical characteristics of pastures in different seasons and on carrying capacities of different types of pastures. Indeed, the collectivization of reindeer herding required allocation of land to new enterprises, and methodologies for assessing the carrying capacities of pasturelands were urgently needed.

Institutional merger, a new leadership, and new opportunities

In May 1935, Kertselli died. A few months later, the Institute of Reindeer Herding was merged with the Arctic Institute of the Soviet Union as its new Department of Reindeer Herding, headed by Viktor Sochava. In the process of amalgamation, the Institute lost its veterinary department, but kept the geobotanic and zootechnic research groups (both turned into sub-departments) and acquired two more: the sub-department of technologies (involved mainly in the improvement of equipment, designing fences and corrals, improving nomadic tents, sledges, etc.) and the sub-department of economics, which dealt with budgets, infrastructure of transportation, and realization of the produce (Emelina, 2021).

Despite the loss of independence, the opportunities for research work in the field of reindeer herding most probably increased: the Arctic Institute represented in fact the scientific department of the powerful *Glavnoe upravlenie Severnogo morskogo puti* (GUSMP, the Chief Administration of the Northern Sea Route, responsible for administration and development of all northern regions of the country) and enjoyed particular attention of the government. Thus, its research funds and possibilities were at that time almost unlimited (see Belov, 1959). Furthermore, being members of the Arctic Institute, reindeer herding researchers could publish their results in its proceedings, which was one of the few scholarly journals in the Soviet Union that published extended summaries of its articles in English. They used this possibility frequently; most references to Russian reindeer-herding studies that one can find in Fennoscandian literature refer to authors affiliated with the Arctic Institute. Finally, the Arctic Institute was truly interdisciplinary: the reindeer-herding specialists could work together with experts in other scientific disciplines, most notably ecologists, geographers, and scholars in fundamental zoology and botany.

Sochava believed that the main task of reindeer herding research was the study of reindeer pastures and collecting and analyzing techniques of their use – that is, of controlling reindeer grazing *per se*. He therefore re-introduced the practice of expeditions to various reindeer-herding locations to produce complex descriptions of local pasturelands and pasturing techniques. This practice was rather similar to that of pre-Soviet times and, furthermore, it was exactly the practice Sergei Kertselli, the great enthusiast of research stations, had spent so much time arguing against during the previous decades. And yet, this practice dovetailed with the general philosophy of the Arctic Institute, which was famous exactly for its expeditions. Besides that, the new expeditions were performed by people well-acquainted with diverse aspects of reindeer-herding research and, it can be suggested, much better prepared for collecting the relevant data in comparison to the researchers of the late imperial time, who, in most cases, were not focused on reindeer herding in their research.

This is exemplified by an expedition to Kolguev Island in 1936, headed by Igor' Dobrotvorskii (Dobrotvorskii and Bogdanovskaia-Guiheneuf, 1938). The report on the expedition consists of two large parts. In the first part, botanist Irina Bogdanovskaia-Guiheneuf (1885 - 1968) described in detail the local climate,

9 At some point between 1932 and 1936, Serafimida Druri was appointed as director of the Kola station and officially left the main institute in Leningrad. She kept this position until 1941, when the advance of German and Finnish troops forced the research staff to evacuate to the Nar'ian-Mar station (Terent'eva, 2021).

snow and ice dynamics, plant composition and conditions of pasturelands, thereby calculating their carrying capacity in different seasons. This is followed by the part by Igor' Dobrotvorskii (1907 - ?) on what he and later Soviet and Russian reindeer-herding specialists called "reindeer zootechnics" (*zootekhniia*) – methods of keeping reindeer, including herd composition, techniques of pasturing, strategies of slaughtering, methods of castration, techniques of using reindeer for transport, etc. All these approaches are illustrated by and discussed with reference to the First Nenets Sovkhoz near the Nar'ian-Mar reindeer-herding research station, where Dobrotvorskii had previously spent 2 years doing stationary research. This experience enabled him to produce a very insightful and well-rounded description: the level of detail in his Kolguev report suggests that he knew where to look and what to ask the local reindeer herders about. It seems like interviewing herders played an important role in the research of Russian reindeer herding scientists of the time: it is difficult to see how they could have otherwise collected data on the whole annual cycle despite spending just several months in the field. However, the names of their informants never appeared in their reports, let alone any formal recognition of the contribution made by these informants.

As the example of Dobrotvorskii suggests, the work at the research stations did not stop. It consisted mostly in studying reindeer diet, assessing pasturing behavior, and botanical work on reindeer pasturelands. The latter topic was, as mentioned, of particular interest for Viktor Sochava, the director of the department. He and Vladimir Andreev (1907–1987, later to become an acknowledged expert on pasture vegetation) conducted extended research on lichen pasturelands, their use by reindeer under different pasturing regimes, and their regeneration. The work resulted in a theoretical model that makes it possible to assess the carrying capacity of a lichen pastureland, in some suggestions for their use, and in a set of methods to assess the conditions and quality of lichen pasturelands, including remote observation by airplane. Since lichen pasturelands are the key winter pasturelands and constitute a bottleneck in reindeer herding, these studies meant an important achievement in Soviet reindeer-herding science. Lichen pastureland science in Russia is still based on the studies by Sochava and Andreev and shares their strengths as well as their main shortcoming: underestimating and ignoring Indigenous knowledge about reindeer pastures. Even modern pastureland specialists rarely if at all refer to this knowledge (see the contribution by Elsakov to this special issue).

Reindeer-herding scientists trying to come to terms with Lysenko's dogmatic views

The short but very productive period of reindeer herding research at the Arctic Institute ended abruptly in late 1937, when the reindeer herding department and its research stations were unexpectedly excluded from the Arctic Institute and transferred to a new organization, the Polar Agricultural Institute (*Institut poliarnogo zemledeliia*)[10] of the All-Union Academy of Agricultural Science named after Lenin (*Vsesoiuznaia Akademiia sel'skokhoziaistvennykh nauk imeni Lenina*), abbreviated as VASKhNIL.

In order to understand the reasons and consequences of this development, some information on VASKhNIL is necessary. Created in 1929, immediately before the collectivization, it was designed to supply the newly created collective farms (*kolkhozes*) with the most advanced farming methods and best breeds of agricultural plants and animals. Indeed, one of advantages of collective farms repeatedly stressed by the official propaganda was that they would enable easy and fast implementation of the most up-to-date methods and techniques, thereby eliminating Russia's backwardness in food-production. It was held that collectivization would increase agricultural production country-wide by at least 35 per cent (Joravsky, 1986, 64). Reality was quite different, however: the immediate effect of the collectivization was a 14 per cent decrease in agricultural production (Joravsky, 1986, 65), which contributed greatly to the famine in Ukraine and some parts of Russia and Kazakhstan in 1931–1933, leading to millions of victims.[11] Since the Communist government could not blame itself for the failure, the agricultural scientists were to bear the responsibility. In 1932–1935, several of them were arrested and accused of "wreckage" (Joravsky, 1986, 70).

Besides that, state officials started to openly mistrust the older generation of scientists and to side with their younger colleagues, who expressed dissatisfaction with the ways and methods of the "old" agricultural science (which consisted mostly of rigorous research and experimenting), and whose ideas about new agricultural techniques, despite being not scientifically proven and often based on shaky theories, promised huge productivity effects for little cost (Joravsky, 1986, 88–96). Among those young colleagues, the person who took the best advantage from this development was Trofim Lysenko (1898–1976), whose academic ignorance could be equated only by his keen sense to what the officials wanted to hear and see from him. In December 1936, state officials literally ordered VASKhNIL to accept Lysenko's ideas as mainstream and grant him the leading role in the Academy. He immediately used this role to push the

10 The full name of the institute in Russian was *Nauchno-issledovatel'skii institut poliarnogo zemledeliia, skotovodstva i promyslovogo khoziaistva*. Probably the most adequate translation into English would be "Institute for Scientific Research on Polar Crop Farming, Animal Farming, Hunting, and Fishing".

11 This event became known as *Holodomor*. Most historians think that its main cause was the exceptionally high grain quotas the state demanded from the newly organized collective farms, but almost all of them agree that it was greatly aggravated by the drop of agricultural production (see Applebaum, 2017).

institution, establish its independence from the USSR Academy of Science, and to subordinate all research in the sphere of food production to his domain (Joravsky, 1986, 103–105). It can be guessed that transferring reindeer herding studies to the new institute subordinated to VASKhNIL was part of this process. When, in 1938, Lysenko officially became the president of VASKhNIL, he already ruled a huge network of scientific institutes, where his ideas and methods of work dominated, while anyone who disagreed faced dismissal or, in the worst case, arrest.

In the history of Soviet Science, Lysenko is best known for his pseudo-Lamarckism and his war against geneticists, which led to the official ban of "Mendelism-Weissmannism", as Lysenkovites called genetic theory, in the Soviet Union in 1948. In accordance to Lysenko, genes as units of inheritance do not exist and any changes acquired by an organism during its lifetime can be inherited by its offspring. For VASKhNIL researchers, the rejection of genetic theory became mandatory already in the 1930s. Less known outside the community of agricultural researchers are Lysenko's equally scandalous ideas on plant physiology and plant hybridization (Joravsky, 1986, 187–201). Luckily, Lysenko was not particularly interested in animal farming and those who studied reindeer herding enjoyed larger freedom of thought in comparison to their colleagues in the field of agronomy. However, the community of reindeer-herding researchers also experienced losses: Viktor Sochava, who had headed the department of reindeer herding at the Arctic Institute, found it impossible to reconcile himself with Lysenkovite ideas and left reindeer-herding studies forever. He spent the rest of his academic carrier conducting research in fundamental biology and ecology and made remarkable achievements in that field. Sochava's distaste for Lysenkoism contributed significantly to its defeat in 1964.[12] Instead of Sochava, Fedor Gul'chak was appointed as the head of the newly established institute and retained this position until 1953.

It looks like Gul'chak was the kind of scientist a research institute needed at that difficult time. Some of his writings (e.g., Gul'chak 1954) and public speeches contain declarations of his adherence to "Michurinism" as Lysenkovites named their credo, but one can suppose that this was lip service to the bosses rather than a honest position. Indeed, his publications, at least in the parts directly dealing with scientific research, its theoretical foundation and interpretation of its results, contain neither references to nor mentioning of Lysenko, his followers and their ideas. Admittedly, they also contain neither reference to nor any mentioning of the genetic theory and literature related to it. The only aspect of his thinking where one possibly could suspect the influence of pseudo-Lamarckism consisted in his outward denial of the idea of cross-breeding reindeer from distant areas of the Soviet Arctic, for example, Chukchi and Nenets reindeer. In his opinion, it was "the local conditions that the local reindeer are adapted to" that made up "good local breeds" (Gul'chak, 1951, 49). Therefore, the experiments with crossbreeding between distant reindeer populations were not started in the USSR until the late 1960s. Simultaneously, Gul'chak was definitely skeptical and even ironic about experiments with adapting certain grain species to the Arctic, which a group of Lysenkovites performed in his institute. Probably, during the whole period he headed the Institute, Gul'chak firmly believed that reindeer herding was the main focus of its research, whatever other departments he had to open.[13] In some instances, Gul'chak even went against the officials in support of cases he considered right. Thus, he insisted on making Ivan Druri, who was at the time under suspicion due to his origin,[14] the head of reindeer-herding department of the institute – a move that, one can suppose, saved Druri from arrest.

The impact of Lysenkoism on Soviet agricultural science was not limited to the bizarre theories which all VASKhNIL researchers were obliged to accept and keep beyond criticism. Probably even more consequential was the ignorance or outright denial of Lysenko and his followers vis-à-vis some well-established principles in empirical science. Among these are: basic procedures of theory building, indication of methods, of the sample, assessment of the representativeness of findings, variation of results, and indication whether a control group was considered in the research (Joravsky, 1986, 187–227). A detailed discussion of the Lysenkovite approach to science is beyond the scope of this article. The cornerstone of these views

12 Sochava was one of the 300 brave Soviet scientists who signed a letter to Khrushchev in 1955, which demanded removing the ban on genetics, "dethroning" Lysenko and re-establishing academic freedom (Soyfer, 1994, 236–39, for the complete list of those who signed the letter see https://ru.wikipedia.org/wiki/%D0%9F%D0%B8%D1%81%D1%8C%D0%BC%D0%BE_%D1%82%D1%80%D1%91%D1%85%D1%81%D0%BE%D1%82#%D0%9B%D0%B8%D1%82%D0%B5%D1%80%D0%B0%D1%82%D1%83%D1%80%D0%B0) (accessed 7 November 2025). The letter did not have the planned effect and its signatories were punished, but, fortunately, not fired or arrested, as it would probably happen in the time of Stalin. In 1964, Sochava, at that time already a full member of the Academy of Science, took part in the voting against Lysenkoism at the Academy, which ended the 30-year long reign of Lysenko in the Soviet science (Soyfer, 1994, 278–279).

13 Apart from the Department of Reindeer Herding with its sub-departments inherited from the previous organizations, the new institute comprised the Department of Arctic Agronomy (staffed by the Lysenkovites) and the Department of Hunting and Fishing (Otdel promyslovogo khoziaistva).

14 It is not clear what was actually wrong with Druri's origin in the eyes of the Soviet officials of the 1930s. His surname indicates some relation to Britain, but probably in a distant past, which by itself could hardly be suspicious. On the other hand, there was at least one Russian noble family with the same surname in the beginning of the 20th century.

was the maxim once dropped by Iosif Stalin and then repeated by Lysenko numerous times and in numerous contexts: "practice is the sole criterion of the truth"[15] (Joravsky, 1986, 243). For Lysenkovites, any research should be focused on practical tasks rather than on acquiring new knowledge, which made sense only as far as it could be used for solving other practical tasks. An astonishing thing about publications in agricultural science of the 1930s–1950s is that many of them did not report the number of experimental subjects, the way the subjects were ascribed to groups and the variations in results observed in each group. The author(s) simply reported that such and such particular *kolkhoz* or *sovkhoz* or such and such particular brigade (usually the name of the brigadier was reported) tried the recommendation and managed to improve their results (for example, the survival of reindeer calves) by such and such percent (see e.g., chapters in Zhigunov and Terent'ev, 1948). Of course, it looked even better if several *kolkhozes* or brigades with good results could be reported, but it seems like even one would be enough. No information on the existence of *kolkhozes* or brigades that tried the recommendation but did not obtain the expected result was provided.

Reindeer herding studies, while luckily avoiding the most devastating ramifications of Lysenkovite theories, could not avoid this methodological influence, which is quite visible in the journal of the institute.[16] Thus, since about 1938, publications in the *Transactions of the Institute of Polar Agriculture* conspicuously switched from those mainly focused on research results to those heavily or almost exclusively focused on practical advice on how reindeer herding should be improved. They only vaguely reported what sort of research this advice was based on (see above); the theoretical framework as well as theoretical implications of the research were barely mentioned at all. It was only as late as the early 1960s that the switch back to a more scientific style of writing started, but this switch has in fact never been completed: Throughout the Soviet period and up until now, "recommendations for practical applications" have been not only an obligatory element, which is true also for the western agricultural sciences, but actually the most important part of any publication, without going into too much detail about the underpinning research proper. Having said that, the quality of its reporting has been gradually improving. Publications in English were rare; they characteristically focused on recommendations (e.g., Koshelev and Mukhachev, 1986). Because of the focus on practical application and the specific style of academic writing, Russian agricultural scientists, including specialists in reindeer herding, had significant problems in finding colleagues in western countries and establishing contacts with them after the collapse of the Iron Curtain in the 1990s (Yuzhakov, pers. communication).

Scholarly fame for "Rational Techniques" in reindeer herding

Notwithstanding all these negative processes, the study of reindeer herding at the institute and its research stations continued. Even the start of the Second World War slowed down this research but did not stop it completely. After the Soviet Union was attacked by Germany (1941), many researchers of the institute, including its director Gul'chak, took part in the war.[17] The institute itself was moved to Khanty-Mansiisk in western Siberia (it returned to Leningrad in 1945). The reindeer-herding research station in Kola Peninsula was temporarily closed and its staff, including Serafimida Druri, migrated to Nar'ian-Mar. In this context, Serafimida started her research on reindeer herding in the Komi Republic and the Nenets Autonomous Okrug, which she continued after the war.

Despite all these difficulties, by the end of the first decade of Gul'chak's institute (1947) and in strict correspondence to the research plan, research activities resulted in an elaborate document called "Rational Techniques of Practicing Reindeer Herding Economy" (*Ratsional'nye priëmy vedeniia olenevodcheskogo khoziaistva*) published the following year in somewhat shortened form as a book entitled "Reindeer Herding" (*Severnoe olenevodstvo*–Zhigunov and Terent'ev 1948). Four years later (1951), this work and the five researchers who arguably contributed most to its creation (Gul'chak, Andreev, Ivan Druri, Nikolai D'iachenko, and Boris Preobrazhenskii) were awarded the Stalin Prize, which was the highest scientific award in the Soviet Union at that time.

15 In fact, the statement that practice was a criterion of truth could be found also in works of Marx and Lenin. But only Stalin spoke about practice as the *single* criterion of truth.

16 The first journal of reindeer-herding studies was initiated in 1933 by Kertselli's Institute under the name "Soviet Reindeer Herding" (*Sovetskoe olenevodstvo*). In the period when reindeer-herding research was concentrated in the Arctic Institute, the journal continued; its last issue (issue number 10) was published in late 1937. In 1938, the journal was replaced by the *Transactions of the Institute of Polar Agriculture* (*Trudy Instituta poliarnogo zemledeliia, zhivotnovodstva i promyslovogo khoziaistva*), which was divided into three (later four) series, one for each department of the institute. The reindeer-herding series was the most prolific, published on average twice per year.

17 The entry on Filipp Gul'chak in the Russian Wikipedia says that he was not mobilized but volunteered for the military service. Although we could not find proof for that, this may well be true, since institute directors as well as scientists whose research was thought to represent vital interest for the state were not mobilized. Thus, Ivan Druri, as it seems, avoided mobilization in this fashion. As for Gul'chak, he served in the army as political agitator (*politruk*) and then as head of the political administration of a military division (*nachal'nik politotdela divizii)* from July 1941 (that is, the first days of the war) to June 1945 (Documents of the "Pamiat' Naroda" project, https://pamyat-naroda.ru/heroes/podvig-chelovek_nagrazhdenie1536029890/– accessed 7 November 2025). Gul'chak thus belonged to the 10 per cent of Soviet soldiers who were in service and survived the entire war.

Indeed, the "Rational Techniques" present the practical recommendations worked out during the first and, as it appears, most productive two decades of scientific research on reindeer herding; it effectively summarizes what Fennoscandian colleagues often call the "Russian way" or "Russian system" of practicing reindeer herding as far as this system exists as a coherent whole (see Habeck and Istomin, this issue; Mathiesen et al., 2024). It describes the methods and techniques of pastureland assessment, planning of grazing, organization of pasturing, zootechnics, reindeer selection, veterinary work, reindeer slaughtering and utilization of reindeer produce, and predation control, all of which have been later introduced in reindeer-herding enterprises throughout the Soviet Union and, with some local modifications, are still very much in use. Furthermore, the "Rational Techniques" formed the basis for training reindeer-herding specialists: study books (e.g., Druri and Mitiushev, 1963) and curricula that have been used for such training up to now are mostly based on them, with only few modifications coming from new research. It can be said that the "Rational Techniques" have formed the basis on which virtually all later research on reindeer herding in Russia elaborated and built up–without questioning the political and epistemological preconditions under which the landmark publication of 1948 came into existence. It is enough to say that many of the recommendations first stated and justified in this work have reached the "state of anonymity" (Latour and Woolgar, 1986) – that is, many modern reindeer-herding scientists in Russia refer to them as "common knowledge" and have difficulties explaining who formulated them and on which basis. Some of these recommendations are discussed in our introduction to this special issue of *Pastoralism*.

The Stalin Prize of 1951 did not only signify the recognition of reindeer-herding science at the highest possible administrative level of the Soviet Union, but also marked the highest point in the history of Gul'chak's institute. Gul'chak himself was not destined to enjoy the recognition for long: the very next year he became seriously ill, had to leave the institute, and died in 1954. His successor, D'iachenko, had to organize its research in a completely different social and political context.

Relocation to Noril'sk

The death of Stalin (1953) and the ascent to power of Nikita Khrushchev marked a significant liberation of thought in the Soviet Union – scientific thought included. Khrushchev took a particular interest in agriculture and organized several political campaigns, seeking to turn it into a modern, highly mechanized, and rationalized economic branch. Among these campaigns, the amalgamation (*ukrupnenie*) of small collective farms to large enterprises, the agricultural expansion to virgin lands (*osvoenie tseliny*), the maize campaign, and the organization of machine tractor stations (MTS) are particularly widely known. Less known is the campaign of "bringing agricultural science close to the people", which encouraged agricultural scientists to leave their offices in Moscow and Leningrad and come to live and work at the places where their advice was particularly needed: to the fields and farms. In this way, it was said, agricultural science could take a more active part in the reforms. In 1957, as a part of this campaign, the Institute of Polar Agriculture was moved from Leningrad to Noril'sk, a former GULAG city in the Russian Arctic (Taimyr Peninsula). Just as Khrushchev's agricultural reforms in general, the transfer of the Institute to the Arctic had dubious results, to say the least. Some researchers, most notably the Druri couple, refused to move from Leningrad to the Arctic and left the Institute of Reindeer Herding for other organizations, where they could not focus exclusively on questions related to reindeer herding. Those who followed their director D'iachenko to Noril'sk were mostly young researchers. Even those few colleagues from among the older generation who also followed (most notably, the botanist Andreev) soon left the institute. This produced a rather abrupt generation change at the institute and in reindeer-herding science in general.

The new generation of reindeer-herding scientists at the Institute is represented by Anatolii Mukhachev, Eduard Borozdin, Pëtr Vostriakov, and others. They were born mostly in the late 1930s. Their understanding of the aims and tasks of the reindeer-herding science were somewhat different to that of the previous generation. While the latter generally agreed with Sergei Kertselli's opinion that traditional reindeer herding was inherently backward and needed to be rationalized and reformed in order to become highly productive, the new generation held reindeer-herding tradition and established practices in much higher esteem. In private conversations, many of them stated now and then that reindeer herders knew much better than the scientists how to keep and pasture reindeer and that, instead of "rationalizing" their ways of herding animals, the scientists should rather learn from them; it was, however, only after the collapse of the Soviet Union that they could express these ideas openly and show their deep respect for the reindeer herding tradition publicly (for example, Mukhachev, 2001).

One of the factors that surely contributed to this change of attitude was that in the late 1950s and 1960s, reindeer-herding science emerged also outside the Institute of Polar Agriculture.[18] Several local and regional research centers were newly founded or greatly expanded in this period thanks to considerable state assistance. Some highly talented reindeer-herding researchers who started their work in these centers – most notably Semën

18 In 1957, after the Institute was moved to Noril'sk, its Russian name once again changed from *Institut Poliarnogo zemledeliia, zhivotnovodstva i promyslovogo khoziaistva* to *Institut sel'skogo khoziaistva Krainego Severa* (lit. "Institute of Far Northern Agriculture").

Pomishin and Dmitrii Syrovatskii – originated from reindeer-herding groups themselves. Although it took another decade before these regional research centers could successfully challenge the monopoly of the Institute of Polar Agriculture in reindeer-herding research, the great potential of the new generation became visible much earlier.

One of the consequences of the mentioned developments was the change of research priorities. Reindeer zootechnics, including the methods of reindeer keeping and pasturing, herd composition, selecting animals for slaughter, etc. lost priority, although research on it, of course, continued. Thus, in the 1970s and 1980s, large-scale research on part-time and full-time herding reindeer in fences was performed in order to discover new pasturing techniques in the taiga zone, particularly in the Evenki Autonomous Okrug and the Yakut ASSR (Syrovatskii, 1979; Koshelev and Mukhachev, 1986; Mukhachev, 1981; 1990). The results were interpreted ambivalently (Habeck and Istomin, this issue). However, generally the focus of research moved towards reindeer breeding, identification of reindeer breeds and selection work (see the article by Yuzhakov, this issue) as well as to veterinary work (see the article by Yuzhakov and Laishev, this issue).

Updating the key reference book

In 1979, the Institute in Norilsk presented the new book containing recommendations on organizing and practicing reindeer herding (Borozdin et al., 1979). Published 30 years after the previous recommendations and named, just like the original book, "Northern reindeer herding" (*Severnoe olenevodstvo*), this book was supposed to summarize the progress made by reindeer-herding scientists during this period. Indeed, only one of its six authors, the pastureland scientist Andreev,[19] had taken part in writing the original recommendations of 1947–1948. All the other authors belonged to what we henceforward call "the second generation" of reindeer-herding scientists. It is even more significant, therefore, that a significant part of the new book in fact simply repeats the old one without reference to the latter. Thus, the section on reindeer zootechnics replicates the original section by Druri with significant omissions: transport and meat-skin reindeer herding were excluded; instead, a long discussion of fenced reindeer herding was added. The section on pasturelands did not change much. Most modifications can be found in sections on veterinary, processing reindeer products and "movable and stationary constructions in reindeer herding" (here, projects of wagons, metal sledges as well as movable and stationary fences and corrals are described).

However, the most notable difference to the old book is a large section on reindeer herding outside Russia. In this section, which, for some reason, is published using a much smaller font than in the rest of the book, Alaskan, Norwegian, Swedish and Finnish methods of keeping and pasturing reindeer are reviewed. The review seems to be outdated for the time of its publication (for example, it does not mention the famous Røros model of herding – see Lenvik, 2005; Holand, 2007; Marin et al., 2020), does not contain references and, one can guess, is largely based on the contacts (including several mutual visits) between Soviet and Western reindeer herding scientists in the late 1950s and the 1960s (see Mathiesen et al., 2024 for an overview). This proves the great interest the Soviet scientists had towards the Western experience in reindeer herding and makes it even more probable that the Soviet work on fenced reindeer herding (see our introductory paper) was started under Fennoscandian influence. In any case, the comparison of the volumes of 1948 and 1979 can supply an interested reader with a good sense of what the second generation of Soviet reindeer herding scientists was occupied with.

Conspicuously absent in the 1979 book is the work on reindeer selection, identification and standardization of the four reindeer breeds and the start of systematic breeding work that moden Russian reindeer-herding scientists usually indicate as the most important achievement of the second half of the 20th century. It is likely that the work on identifying reindeer breeds was not yet finished: the official recognition of these breeds by the USSR Ministry of Agriculture occurred in 1984 – that is, 5 years after the new recommendations were published. At the same time, being the result of two decades of research and practical work (1964–1984), this achievement did not only mark the final and radical rejection of Lysenkoism by the discipline but also meant a turn away from "correcting" and "rationalizing" traditional reindeer-herding methods.

Indeed, the second generation of Soviet reindeer-herding scientists (most notably Mukhachev) and their younger colleagues such as Yuzhakov and Laishev moved away from the tradition of one-sidedly teaching Indigenous reindeer herders how they should go about the business they did for millennia. Instead, they showed deep respect and admiration to *narodnaia selektsiia* (folk selection) – that is, how reindeer herders themselves sought to select animals for certain traits (Kantanen and Stammler, 2025) – and the Indigenous knowledge related to it. As the contribution by Yuzhakov to this special issue shows, Russian reindeer herding scientists still believe that their own contribution to the reindeer breeds and reindeer breeding is rather limited (see also Yuzhakov et al., 2023). We can only add that the identification of reindeer breeds

19 Interestingly, Andreev also was the only author of the new recommendations, who was not formally affiliated with the Institute: as mentioned, he moved from Norilsk to Yakutsk in the early 1960s.

with names derived from ethnic groups (for example, the Evenki breed of reindeer in 1985) has led to new alliances between reindeer-herding scientists and Indigenous spokespeople, and the discourse has gradually shifted from "rational" resource use towards emphasis of people's and animals' connectedness with the land (Vladimirova, 2020, 260–263).

New centers and new takes on domestic/wild reindeer

Meanwhile, the academic landscape in which reindeer-herding science was practiced, continued to change. Two processes contributed to that. Firstly, the network of regional research centers mentioned above expanded even further. Sponsored by the state as a step towards rising the scientific potential of the country, bringing science closer to people, and making better use of talented local cadres, this expansion was often performed on the expense of already established institutes. Thus, in the early 1970s, most of the reindeer research stations that had been created already by Kertselli and had belonged to the Institute of Reindeer Herding and its successors ever since, were confiscated from the Institute of Polar Agriculture and transferred to local agricultural institutes organized in Magadan (Magadan Zonal North-Eastern Agricultural Institute), Yakutsk (Yakutian Agricultural Institute), and Tiumen' (Agricultural Institute of the Northern Urals) (Shelepov et al., 2019, 77). These institutes became new centers of reindeer-herding science. Besides that, significant research related to reindeer herding was started by the Ural and Siberian Divisions of the Academy of Science; most of the research on reindeer pasturelands and their ecology since 1970 has been performed there, particularly in the Yakutian Institute of Biology where Andreev established his school after he had left Noril'sk (see Solomonov 2007 for an overview).

Secondly, there was a change of research priorities inside the Institute of Polar Agriculture itself. Although D'iachenko, director of the institute until 1962, was first and foremost a specialist in reindeer herding – and so were Pëtr Vostriakov and Vasilii Zabrodin, who headed the institute from 1965 until 1980 – the institute in Noril'sk gradually lost its focus on reindeer-herding research.[20] In the late 1960s and early 1970s, fur animal farming emerged as an important topic, while since the late 1970s, the focus of research moved towards hunting wild reindeer and led to the concept of so-called "reindeer herding-hunting" (*promyslovoe olenevodstvo*) as a means of economic use of the large Taimyr population of wild reindeer. These two processes were in fact interrelated. On the one hand, the expansion of local institutions led to a certain regionalization of research: the main territories of reindeer herding – in North-Eastern Europe, the Yamal area, Chukotka, and Kamchatka – came to be more and more studied by local scientists at research stations situated there to investigate locally important problems[21]; as for the institute in Noril'sk, it increasingly had to focus on the Taimyr area itself, where reindeer herding as such was relatively little developed, but a huge population of wild reindeer was present. In 1980, Aleksei Solomakha, a specialist in veterinary science, was appointed as the director of the Noril'sk institute and headed it until 1993. Under his directorship and with his participation, the Institute was awarded its second significant prize (the Prize of USSR Council of Ministers) for the "reindeer herding-hunting" concept.

This concept referred to the type of economy combining reindeer herding proper and hunting wild reindeer, that was proposed for northern and central Taimyr in order to adapt to regular fluctuations of the Taimyr wild reindeer population, the biggest population of wild reindeer in modern Eurasia. In periods of rising wild reindeer population, the local reindeer herders, it was suggested, decreased their domestic herds (in order to make them more manageable and decrease the probability of their being led away by wild reindeer) and focus on hunting wild reindeer. As the wild population decreased, the herders slowly increased their domestic herd and switched to reindeer herding as their main activity again. In this way, the balance between the total reindeer population and fodder resources would be kept, the mass loss of reindeer avoided, and the output of reindeer products (meat and skins) kept stable (Syroechkovskii, 1986). This fluctuation from herding to hunting and back closely resembles theoretical models suggested by western scientists in about the same time to describe the transition from hunting and gathering to food production (e.g., Layton et al., 1991) as well as described for both ancient and modern reindeer herding groups (Ingold, 1988; Ventsel, 2006). It should be noted, however, that in the "reindeer herding-hunting" system, these fluctuations were supposed to be planned and their timing adjusted carefully by reindeer-herding scientists.

Reindeer-herding science in Russia from the perestroika to the present

In the late 1970s and 1980s, yet another generation of reindeer-herding scientists started to enter the stage. This

20 Between 1962 and 1965 the institute was headed by Georgii Purtov, a late Lysenkovite and a specialist on plant farming. D'iachenko, on the other hand, became the head of the institute's reindeer herding department and kept this position until the 1970s.

21 A good example can be the journal *Magadanskii olenevod* ("Magadan Reindeer Herder"), that was published by the Chukotka reindeer herding research station and its successor, the Magadan Zonal Institute of Agriculture, since the early 1960s till the early 1990s. This journal published results of studies by local reindeer herding scientists as well as by scientists from other areas on local reindeer herding (e.g., Andreev, 1989; Moriakov, 1990).

generation was born in the 1950s or early 1960s and was numerically rather small, even when considering that reindeer-herding science is a rather small discipline. Among the representatives of this generation are Dmitrii Syrovatskii (already mentioned before) as well as Aleksandr Yuzhakov and Kasim Laishev. Unfortunately, the sociopolitical situation was not merciful to this generation of researchers: the collapse of the USSR in 1991 and the subsequent economic crisis almost completely suspended any scientific research in Russia, including research on reindeer herding. Scientific institutes were chronically underfinanced; many researchers had to quit academia and take employment in administration or the private sector temporarily or permanently. Those who stayed rarely could do any field research. Simultaneously, researchers from abroad found Siberia and the Russian North a fertile ground for their research, for example, in ethnographic studies related to reindeer herding as a livelihood. Researchers from within Russia were perplexed by the advent of foreigners, often with rather unconventional approaches to field research, and by the lack of support for continuing their own academic career (see Gray et al., 2003).

Still, even in this difficult situation, scholars from within Russia tried to respond to the new situation and its challenges, working out and publishing recommendations on how reindeer herding could adapt to market economy, identify new market opportunities (e.g., "velvet antler reindeer herding" (*pantovoe olenevodstvo*) as a specific type of reindeer herding), and get more profit from its production (utilizing endocrine materials). The work by Dmitrii Syrovatskii, a scholar from Sakha, is particularly exemplary here. He started as a specialist in *zootekniia* and took active part in working out the fenced reindeer herding techniques. However, after the collapse of the USSR, he embarked on finding out how they can solve their economic problems, particularly those related to the collapse of the *sovkhoz* system. Therefore, he switched to economy, got a Ph.D. in this science and, in 2000, published his *opus magnum* with detailed recommendations on how reindeer herding could be practiced as a business in the new market conditions (Syrovatskii, 2000). Admittedly, few of these recommendations were actually tried out, but they still played a positive role by assuring administrators and lay people that reindeer herding *could* be a profitable industry.

It was only in the early 2000s that reindeer-herding research gained momentum again. This happened primarily in those local research centers that gained additional financing from local administrations, most notably in the Yamal-Nenets Autonomous Okrug and the Republic of Sakha (Yakutia). During the first decade of the 21st century, a certain resurrection of research on reindeer herding occurred also at the Noril'sk Institute, which in this period was headed by two specialists of the third generation: Laishev and Yuzhakov. Most notably, the researchers of the third generation and those of the second generation who were still active made a significant attempt to re-animate the selectionist work and continue their work on reindeer breeds. They expanded this research by bringing in the methods and results of genetic studies (e.g., Yuzhakov et al., 2020), which also coincided with the rising interest towards such studies in the west (e.g., Anderson et al., 2017; Røed et al., 2020; Røed et al., 2022; Kantanen and Stammler, 2025). At the same time, the shift from "rationalizing" reindeer herding towards a more balanced approach to it, which would recognize reindeer herders as partners rather than objects of study, continued. The studies on ethnic reindeer herding initiated by Yuzhakov and Mukhachev (2001) are a good example (see also Yuzhakov, 2005; 2020).

In the 2010s, representatives of the second generation of the reindeer herding researchers one after another retired, while representatives of the third generation left the North and moved to central cities, where scientific work was much better financed and, more importantly, there were possibilities to get beyond locally relevant themes and problems and do general research. At the moment, many reindeer-herding scholars are employed by the North-Western Center of Interdisciplinary Researches on Problems of Food Maintenance (*Severo-zapadnyi Tsentr mezhdistsiplinarnykh issledovanii problem prodovol'stvennogo obespecheniia*) in St Petersburg. A sub-unit of the Russian Academy of Science, this center has emerged as the currently most important place of reindeer-herding science in the country. It can look rather ironic, but Russian reindeer-herding science seems to have made a full circle and returned to the place where it was located almost 100 years ago. The return is more than just geographic, by the way. Currently, in a new context and situation, reindeer-herding scientists face basically the same problem the "founding father" of Russian reindeer herding science, Kertselli, faced in the 1920s: to prove that reindeer herding is not just a survival of some distant past, destined either to disappear or to provide an exotic scenery for Northern tourism. Rather, it is an economy and livelihood for Indigenous peoples who see the Arctic and Sub-Arctic as their homeland. Simultaneously, reindeer herding is of significance to sub-Arctic landscapes and can contribute to curbing certain effects of climate change (Spiegel et al., 2023; Ivanov et al., 2024; Terekhina et al., 2024). One needs only to figure out how. Now as well as 100 years ago, Russian agricultural science contributes to exactly that goal.

Discussion and conclusions

In this article, we tried to describe the main trajectories and achievements of reindeer-herding science in Russia, looking at pre-Soviet, Soviet, and post-Soviet periods without positing that their temporal borders can be drawn clearly. We would like to finish this article by pointing to some lessons that emerge from

this overview and enable us to identify the strengths and challenges of reindeer-herding research in Russia nowadays.

First, Russian reindeer herding research has in several respects been in a privileged position in comparison to reindeer-herding research in Fennoscandia. Reindeer-herding specialists in Russia could draw on a much greater diversity of reindeer populations and traditional reindeer-herding practices as well as systems of knowledge to work with and learn from. By the same token, they felt in need to classify this perplexing diversity, to work out regionally meaningful recommendations. What from the outside of Russia may appear to be a single "Russian way" of reindeer herding was in fact a multitude of approaches and strategies, as perceived by reindeer-herding scientists working in Russia or the Soviet Union.

Second, since the 1930s, due to forced collectivization and the government's fight against *kulaks*, Soviet researchers had much greater possibilities of experimenting and testing new ideas on the basis of large numbers of reindeer that had just come under state-farm ownership. The scientists made indeed use of all this, particularly in the sphere of selection and breeding (see the paper by Yuzhakov in this volume). Similarly, many significant achievements of Russian pastureland science and even zootechnics were facilitated – initially, at least – by expropriation of Indigenous resources. How such appropriation of Indigenous lands and resources "for the common good" and the state's zest for modernization perpetuated colonial attitudes has been discussed by others (e.g., Slezkine, 1994; Belolyubskaya, 2025). Clearly, reindeer-herding experts were involved and partly benefited from such top-down measures.

This leads us to the third point. The discussion made in this article suggests that, just like earlier generations of Fennoscandian reindeer-herding scientists, early Russian reindeer-herding specialists did not escape certain colonial attitudes: Kertselli and the first generation treated traditional reindeer herding as inherently "primitive" and "irrational" and saw their task in rationalizing it (Kertselli, 1921; Sergeev, 1955). It was only in the 1960s that the second generation of Russian reindeer-herding scientists adopted a respectful position towards reindeer-herding traditions. However, they could rarely express this attitude openly: it comes to the fore only in their post-Soviet publications and stories by their younger colleagues (Yuzhakov, pers. communication). This precluded collaborative projects with reindeer herders. It should also be noted that collaborations between reindeer-herding science and cultural anthropology did not occur in Russia until relatively recently, i.e., in the 1990s (Yuzhakov and Mukhachev, 2001). The reason was that Soviet *etnografiia* positioned itself as a historical science, interested in how people lived in the past (Vaté and Habeck, in press). Thus, it paid little attention to the contemporary economic practices in which reindeer-herding experts were interested.

However, and this is the fourth lesson, Russian specialists had to do their work in a much less favorable intellectual milieu. In this sense, they were significantly less lucky not only in comparison to their western colleagues, but also in comparison to natural scientists working in the Soviet Union. In fact, their position was rather comparable to that of social scientists under Soviet rule. The 30-year long reign of Lysenkoism was, of course, the most significant hazard, particularly because, in contrast to fundamental biology, it affected not only ideas (which is already bad enough) but also the methods and practices of Russian agricultural science. It seems that many of the current problems of Russian reindeer-herding specialists, including their problems with establishing international cooperation, are related to this historic heritage. At the same time, it can be suggested that reindeer-herding science in the Soviet Union fared better than, for example, agronomy, where the pressure of pseudo-Lamarckist ideas was much more palpable: Lysenko simply had much more to say about agronomy than about animal farming. We suggest that for this reason Russian reindeer-herding scientists had more leeway to avoid the political repressions of the 1930s–1950s.

Fifth, it turns out that Russian reindeer-herding science was quite segmented. Thus, starting from Kertselli's institute, research on reindeer pastures (pastureland science) was separated from the research on zootechnics, which, in its own turn, was separated from reindeer selection and breeding. Russian specialists did feel that this division was quite artificial and tried to overcome it. However, breaking internal borders was never easy. Thus, in contrast to what Øystein Holand (2007: 24) argued, Russian reindeer-herding scientists never came to study properly the impact of different herd structures on pastureland: such research would have demanded an inroad of zootechnicians into the pastureland science territory, which was highly difficult to do. It was only in the 1970s that zootechnicians and pastureland researchers started working together, for example, on developing the fenced reindeer herding techniques. However, at that time, herd composition was considered already an outdated topic.

Sixth, Russian agricultural science was always significantly affected by the formal structures and managemental policies developed by the state. The transfer of the Institute of Polar Agriculture from Leningrad (St Petersburg) to Noril'sk is a good example. The preferential development of regional science is another one. The effects of these policies were ambivalent: detrimental for some researchers and sub-fields, favorable for others. But in any case, they caused sudden twists in research methods and priorities, which somewhat hampered cumulative and transdisciplinary development of knowledge.

All this, of course, affected the research results. These results can be sometimes strange and sometimes surprising for colleagues working in Fennoscandia or elsewhere outside Russia. However, all of them can be well understood if one keeps in mind that the people who worked towards these results tried to do their best under the political circumstances, which affected themselves as well as the object of their research. These circumstances were quite specific and could change rapidly. And although it may be true that reindeer-herding scientists in Russia did less than was needed, it is also true that they did more than they could be expected to.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

The idea of the MS was worked out by KI, who also wrote up the first draft of the MS. JH contributed decisively to sharpening the idea, collecting literature, editing and building up the text on the basis of the first draft.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. This research was supported by CHARTER (Drivers and Feedbacks of Changes in Arctic Terrestrial Biodiversity), a research project by the European Commission under the EU Horizon 2020 Research and Innovations Program (grant no. 869471).

Conflict of interest

The authors(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declared that generative AI was not used in the creation of this manuscript.

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