

THE FATE OF FISHING IN THE TSARIST RUSSIA: THE HUMAN-FISH NEXUS IN LAKE BAIKAL

An NCEEER Working Paper by

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Executive Summary

This paper explores the history of fishing on Lake Baikal in an effort to understand the fish-human nexus, to expand our understandings of the Russian relationship to the environment before the 20th century, and to think about the colonial encounter in Siberia from an environmental angle. Fishing has long been a crucial, life-sustaining, and culturally important component of life at Baikal; and fish and people have long existed in mutually influential and intertwined webs of relations. Fish stocks declined markedly in Baikal from the late 18th century on—a drop that Soviet fishers and policymakers struggled with throughout the 20th century. Notably, this massive population decrease came about before any industrial change affected the area. The changing fate of the fish was more the result of an increase in the Slavic population and of the tax-farming economic structures that the new settlers brought to the practice of fishing. Humans, this story shows, do not need to have industrial machines with their extractive capabilities and pollution by-products in order to bring about systemic ecological changes.

In the early days of spring 1918, a small group of men, led by K.K. Panteleev, met in Irkutsk with the goal of bringing about a revolution in the relationship between fish and humans in the Lake Baikal region. As the Civil War erupted around them, they darted through the streets to meet clandestinely in damp, barely-lit basements. They courted daily danger in their work and expected Bolsheviks to break through the doors and arrest them at any moment. Many were indeed arrested in the streets on their way to and from meetings (and the usually soon released). The Irkutsk Provincial Soviet power had declared their work to be “counter-revolutionary” and ordered them to stop all their functions forthwith.¹ Yet, in the heady if deeply troubled days of the post-1917 struggle for power, the Regional Baikal Fishing Committee (KBRK), as they styled themselves, refused to honor the order. They worked, in their own words, “conspiratorially” to recalibrate the processes of fishing on Baikal and with it the fish-human nexus that had played such an important ecological and human role for centuries.²

The goals of the KBRK were two-fold. First, they wanted fundamentally to transform the ownership structures of fishing rights that had existed under the tsarist system for more than two centuries. In tsarist times, the rights to fish certain locations were granted to specific people and institutions (such as monasteries and favored nobles) who then subcontracted those rights to local merchants who themselves then sub-subcontracted their rights to fish to artels (made up of

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¹ The Bolsheviks had no opposition to these fish policies, per se, but considered their work unacceptable because their meetings had not been approved by the All-Siberian Congress of Soviets but rather by “counter-revolutionary” forces.

² Gosudarstvennyi Arkhiv Irkutskoi Oblasti (GAIO, Irkutsk, Russia) R-330/1/2/1918, ll. 1-1ob, 7ob, 13. The story that follows is drawn from GAIO R-330/1/3/1918, GAIO R-330/1/5/1918-19, GAIO R-330/1/9/1919, GAIO R-330/1/11/1919, and GAIO R-330/1/13/1919.

more well-to-do peasants in the area) and other fishers. This was a system that markedly restricted access to fishing to the poorest levels of society. The KBRK sought to overthrow this old structure, “to recognize fishing and nerpa³ hunting on Baikal and its basin to be free and open for all the people of the region.” Fish, they argued, were part of the common good and should not be—could not be—treated as the personal property of the social elites. Reflecting the deeply egalitarian ethos of the KBRK members, fishing, and the miraculous food that fishing produced, was to be unrestricted and open to all inhabitants. They saw social inequality and class conflict as inherent to the fish-human relationship that tsarist elites had constructed. Here they strove to alter the calculus of who was permitted to access to the fish and at what stage in the food production/delivery process: whether to obtain the food at its watery source unimpeded by social contracts or enter into market relations to purchase the fish.

The second goal—in some ways mutually exclusive to the first—was to step in as quickly and as radically as they could to protect what they believed were clearly and disturbingly dwindling fish stocks in the lake. “Given the importance of the fish to the region,” they wrote, “it is impossible to ignore the reduction in catch size.” By preserving and even increasing the fish population in the Lake, and shifting who possessed the rights to fish, they strove to give “the needy class of the population the possibility tolerably to feed themselves.”⁴ The KBRK championed three means to achieve these conservation ends (timing, enforcement, and approach to fishing): 1) severely restrict fishing on the main rivers flowing into Baikal during the annual spawning run of the omul (the most important commercial and nutritional fish at the time), between August 1 and October 1; 2) greatly enhance police surveillance of fishing in an effort to

³ The freshwater seals that inhabit Lake Baikal.

⁴ GAIO R-330/1/2/1918, l. 8ob.

enforce sustainable fishing practices⁵; and, 3) following on the first goal, to end what they considered the “rapacious” fishing practices of the large owners of fishing allotments, who tended to grab all they could from the water to sell for profit to the growing urban population around Baikal.

The KBRK was anxious to get their new policies into place right away. In part, they could see the spawning period approaching in a matter of weeks and they wanted the rules and enforcement mechanisms in place to save the fish. If they were going to begin to preserve the omul from the threat of eradication, then now was the time to act. At the same time, the KBRK was concerned to ensure enough food for the working population in the coming months. The preceding years of war and revolution had led to major disruptions in food production. And, the omul (and other Baikal fish) were, in the Committee’s estimation, the “foundational,” staple, and least expensive food for the poorer classes. If the needy were to be fed in these times of troubles, fish was to be it. However, with the drop in fish catches almost every year since the early nineteenth century, the price of fish had increased dramatically, taking these fish out of the price range of the poorer people and leaving them in hunger. In the KBRK’s estimation, only four years previously an average omul might cost 25-30 kopeks, but by 1918 the price had skyrocketed to between 5 and ten rubles per fish. Something immediate had to be done, the KBRK argued, to save these people from hunger. Allowing the poor the right to fish would give them direct access to this important food source. “Omul is his blood interest and for that reason all the water of Baikal should go to the use of the people.” At the same time, vigorous and immediate efforts at conservation of the omul would also ensure the long-term abundance for the

⁵ This is my anachronistic use of “sustainable.”

peasants and nomads of the region, the ultimate, future goal.⁶

During the short interregnum between the different moments of Bolshevik control, the KBRK strove to fulfill their goals, albeit at times unsuccessfully. They drafted detailed rules and regulations about who could fish, when and how.⁷ However, as would plague those who came before and after them, implementation was huge problem. The KBRK felt itself to suffer from insufficient funds to pay for police and others to enforce the rules, or to pay for boats and other equipment for them. All too often, even when the police drove up in their boats to fine or arrest those who were improperly fishing, the fishers rapidly disappeared or paid off the agents with bribes. Efforts to confiscate fish and fishing equipment from those in breach of the laws led to conflict and violence that the significantly outnumbered agents could not handle. At the same time, magnanimously handing over “ownership” of the fish to all working people—“democratizing” the waters and the fish in them—did little to reduce the “rapacious” catching practices, especially in such times when fish prices were so high and so much profit could be made even for the most modest fisher.⁸

The men in the KBRK strove to bring about a foundational change in the relationship 1) between people and fish in Lake Baikal 2) between economic and ownership structures and Baikal’s ecological systems, and 3) among different peoples in the region (socially, ethnically, and spatially) over the question of access to and the process of fishing. This would be neither

⁶ GAIO R-330/1/2/1918, l. 8ob-9ob.

⁷ GAIO R-330/1/3/1918, GAIO R-330/1/5/1918-19, GAIO R-330/1/9/1919, GAIO R-330/1/11/1919, and GAIO R-330/1/13/1919.

⁸ I use the gender neutral terms “fisher” here, which has become standard discourse. In the Baikal case, almost all of the fishers were indeed *fishermen*. On the terms, see David F. Arnold, *The Fishermen’s Frontier: People and Salmon in Southeast Alaska* (University of Washington Press, 2008), and Mansel Blackford, “A Tale of Two Fisheries: Fishing and Over-Fishing in American Waters,” *Origins: Current Events in Historical Perspective* 1, no. 12 (September 2008), <http://ehistory.osu.edu/osu/origins/article.cfm?articleid=18> [accessed October 31, 2011]

the first nor the last such “revolution” in human-fish relations. Fishing has been a crucial, human life-sustaining, and culturally important component of life at Lake Baikal for as long as we have records. And fish (of various species) and people (of differing social, ethnic, gender, and religious characteristics, among others) around Lake Baikal have long existed in mutually influential/transformational and intertwined webs of relations. Humans and fish have lived for most of their connected existence in a predator-prey relationship (until approximately the middle part of the 20th century when efforts at fish farming began to be undertaken, albeit haltingly and without complete success from the vantage of the humans involved). Humans have turned to the Lake’s fish as an indispensable source of protein and fat; and the fish have been a primary reason for the survival of communities around the lake for these past several thousand years. And like fish through much of human history, they have been an almost magical bounty of food that—unlike livestock or grains—requires little input on the part of the humans, other than to stay out of the way of the fish life cycle/reproduction and then the effort needed to catch and then preserve the fish. In the case of the omul, it is a bounty that reappears almost every year in the rivers at predictable times for spawning and, until the 19th century, in generally predictable numbers (much like Salmon runs).⁹

For centuries, human communities in the Baikal region structured their annual and seasonal activities around the life cycles of the fish. Communities migrated late each summer to the rivers up which the spawning omul would run, there to catch as much of a year’s supply of fish as they could. They worked furiously to dry, smoke, salt, or otherwise preserve the fish to last through the winter until the next annual run came through. Humans might fish at other times of year—and especially ice fish in the winter months to catch sturgeon—but this fishing

⁹ There was, of course, natural variability in the timing and quantities of fish each year. For comparison, see Richard White, *The Organic Machine: The Remaking of the Columbia River* (Hill and Wang: 1995); Arnold, *The Fisherman’s Frontier*; and Paul Greenberg, *Four Fish: The Future of the Last Wild Food* (Penguin: 2010) .

was more difficult and returned less with each catch in comparison to the sheer abundance of fish that flowed upstream each year.

The deep impact of fish on human life is seen too in cultural and social patterns. Fishing (and the concern that the fish might not come in sufficient numbers in any one year) did much to define and shape human religious, cultural, and artistic practices. Moreover, access to fish—who received the right to fish, where, and how—not only reflected the relations of power (social, ethnic, and gender, in particular) both within communities and between different communities, but also helped to determine and structure those relations of power. In this way, the story of the intertwined fates of fish and human species on Baikal offers an entrée to understanding the different views on nature that different communities took at different times. It also offers a new vantage from which to think about the colonial encounter and the relations between the peoples of different faith in the region.

If much of human existence in the region was centered around or defined by the cyclical patterns of fish life, the fate of omul and other fish in Baikal has come in the last 200 years to be all too perilously connected to human activity. Fish stocks declined markedly in Lake Baikal (and in the rivers to which they returned to spawn) beginning particularly in the late 18th century, and dropping precipitously over the course of the 19th—sturgeon, which had long been abundant and an important source of winter food, all but disappeared, and the omul population was in free fall for much of the nineteenth century (to name but two of the more important fish). This was the precipitous drop that Panteleev and the others on the KBRK were so concerned about—and a drop that Soviet fishers and policymakers struggled with throughout the twentieth century.

At the same time, increasing rates of human fishing also transformed the genetic stock of the fish. In the case of the omul, not only did all signs indicate that the overall fish population

dropped from the 18th century to today, but the physical size of the fish has been altered by human interventions. Initially, Russians used nets that tended to catch only the larger (and therefore more profitable) omul. Very quickly these larger varieties of omul, not being given the chance to reproduce, began to disappear from the lake, with their smaller brethren appearing with greater frequency.

Notably, this massive drop in the abundance came about well before any industrial change affected the area. The changing fate of the fish was more the result of an increase in Slavic population, who imported different understandings of property and natural abundance to the region, and of the tax-farming economic structures that the new settlers brought to the practice of fishing. Humans, this story shows, do not need to have industrial machines with their extractive capabilities and pollution by-products in order to bring about systemic ecological changes. All that is needed are growing concentrations of human population, especially in urban conglomerations, with a commercial approach to fishing.¹⁰

Fishing Baikal and its Rivers

There are numerous different types of fish that swim through Baikal's waters, many of them endemic to the lake (not to mention the iconic nerpa, the world's only freshwater seal). These include omul, sturgeon, golomyanka, kharius, sig, bychek, soroga, and many others. Perhaps the best known of these fish are the omul, a white-meat fish of the Salmon family. For much of the last few centuries, the omul has made up as much as 2/3 of all fish catches from the lake, but has been considered an endangered species since 2004 and offered greater protections (although it is still widely eaten throughout the region). The sturgeon was for generations the

¹⁰ Compare to Paul R. Josephson, *Industrialized Nature: Brute Force Technology and the Transformation of the Natural World* (Washington: Island Press/Shearwater Books, 2002).

big fish of the lake, but witnessed a huge drop in numbers in the 18th and 19th centuries. The largest fish biomass in the lake belongs to the remarkable golomyanka. More than 40% of their body weight is made up of oil and fat, and they have an almost singular ability to withstand extreme changes in the ambient pressure, which allows them to move vertically from shallow to very deep in Baikal's waters. They are extremely hard to catch because they melt in temperatures about 10 degrees C. and are difficult to catch at the depths to which they often drop. However, they have been much prized over the years for their high levels of vitamin A and their coveted use in Tibetan traditional medicine.¹¹ The human relationship with fish was highly variegated depending on which fish one talks about (that is, just as the fish varied markedly in physical makeup and life patterns, so too did the human-fish relationship that resulted). While humans were deeply affected by the omul and its annual spawning runs, the human-golomyanka relationship was entirely different—a wistful desire to capture these elusive creatures and, in the 20th century, a series of failed efforts to turn them into a commercial fish.

Fishing has been a human activity for millennia along the lake. The earliest archaeological findings include fishing implements and fish bones, among other remains. And the various petroglyphs in and around the lake speak to fishing (along with hunting) as a central human activities 4000 and more years ago. For centuries, fishing appears to have followed similar sorts of patterns with generally consistent tools. Different communities around the lake focused their fishing efforts on certain rivers, and on some close-to-shore spots on lake Baikal itself (although the difficulties and dangers of fishing on the lake itself tended to direct fishers towards river fishing at spawning time). Indeed, the abundance of fish that flowed through the Selenga, Barguzin, and Upper Angara rivers, among many smaller ones, was so great that a

¹¹ While humans rarely caught golomyanka themselves, occasionally finding them washed up on the rocky Baikal shores, golomyanka represent the most important food source for the nerpa. So, when humans caught the nerpa, they were eating and otherwise utilizing the energy of the golomyanka as transferred up the food chain.

year's worth of fishing could be accomplished without too much strain and over several days or at most weeks. The volume of fish coming through these rivers at certain times of year was large enough that fishers could use relatively simple tools to catch them. Many caught with their hands standing in the flowing water, others used rods with hooks, harpoons, small nets, and small artificial fish traps to gather the fish. When the ice came in, fishers would also engage in ice fishing, but the majority of their fish catch came in the August to October period during the omul spawning runs.¹²

Fishing was not just an activity designed to ensure communal sustenance and survival. It was simultaneously an integral component of the cultural, religious, familial, and social lives of the local population. Much of the artwork of the people who lived around the lake in earlier times centered around fishing, with sculptures and petroglyphs of various fish and nerpa.¹³

Fishing was a core component of shamanist belief and practice—and in this way, the fish-human relationship was (from the human perspective at least) a human-spirit-fish nexus of mutual relations. According to Buriat beliefs, the spirits who inhabit the lake, nearby springs and rivers, and surrounding trees, rocks and mountains, all require honor if humans are to receive advantageous treatment from them. The result of these views is a series of daily life practices—and an annual cycle of community-wide rituals—to pay respect to these spirits. For instance, for the severe master spirit of Baikal, the people of Ol'khon carried out a regular summer *tailgan*—community ritual sacrifice — of sheep or goat in order to “feed” and honor the master water spirit (and this practice has been revived since 1991). First, they sprinkled milk, then milk mixed with vodka, and then other milk products into the lake. They then killed and prepared the

¹² *Sbornik materialov po istorii Buriatii XVIII i nachala XIX veka*, (Verkhne-Udinsk), vol. 26: 1, 17, 34, 37. VI. Girchenko, “Iz proshlogo Baikal'skikh rybnykh promyslov,” *Zhizn' Buriatii*, 5, no. 1-3 (1928): 81.

¹³ A. G. Egorov and M. D. Klimenchenko, “Ocherk istorii rybolovstva na Baikale i prilezhashchikh vodoemakh,” *Izvestiia Biologo-geograficheskogo nauchno-issledovatel'skogo instituta pri Irkutskom gosudarstvennom universitete im. A.A. Zhdanova* (Irkutsk, 1971): 193-231.

meat, placed it in a wash tub, and offered it to the water with calls for assistance and protection. Men, women, and children all went together to talk to the lake, asking for mercy and bounty from the lake (especially fish and nerpa). They then took the bones and incinerated them with special rites.¹⁴

The notion that the spirits need to be honored and respected in order to keep them at peace (and keep the spiritual and physical worlds in balance), combined with the Buriat concept of *Tegsh* (which involves the idea of “being in balance” and that “nothing should be taken from nature without providing a gift in return.”¹⁵), affected how both Russians and Buriats approached fishing, hunting, collecting wood, and other activities. In the late nineteenth century, Russian fishermen and hunters believed in the supreme power of the spirit-masters over the outcome of their activities. As such they were careful to follow highly scripted rituals in advance of setting out to fish or hunt. (These ritual moments were different from the *tailgan*, and more every day in their practice and content.) For instance, before hunting nerpa in the winter, they would drink a toast to the Baikal master spirit, giving the spirit a drop of the drink as part of the exchange (i.e. that something must be given in order to receive something), honoring the spirit, and then asking permission to hunt. Sometimes, the hunters/fishers brought meat or other foods to offer the master-spirits in exchange. A similar practice was carried out by fishermen heading off to fish. However, it was extremely important to follow the details of these scripted rituals. For instance, one could not bring fish to give to water spirits, or eggs. These were things

¹⁴ S. G. Zhambalova, “Baikal i Ol’khon v traditsionnom mirovozzrenii Buriat,” in *Priroda i tsivilizatsiia: reki i kul’tury* (St. Petersburg, 1997), 94. For a 19th century description of a *Tailgan*, see Jeremiah Curtin, *A Journey in Southern Siberia, the Mongols, their Religion and their Myths* (1909), 38-52.

¹⁵ Katherine Metzo, “Articulating a Baikal Environmental Ethic,” *Anthropology and Humanism* 30, no. 1, 40-41; **Andrei A. Znamenski**, *Shamanism and Christianity : native encounters with Russian Orthodox missions in Siberia and Alaska, 1820-1917* (Westport: Greenwood Press, 1999). Nicholas Breyfogle, “Sacred Waters: The Spiritual World of Lake Baikal,” “unpublished paper presented at the National Convention of the American Association for the Advancement of Slavic Studies, Boston, November 12, 2009.

that the spirit could obtain himself from the waters he controlled. To properly fulfill the exchange, one needed to give the spirit something different and distinct. Meat or milk products one could give to the water spirits, and fish could be offered to the spirits in the forest. In a different variant, sometimes the hunters or fishers would carry out the ritual after the first catch, that is they would throw back in the first fish they caught so the spirit would be fed; and throw back in parts of the first nerpa that had been caught (after ritually carving up and eating parts of the body).¹⁶ In addition, the spirit-masters watched the fishers and hunters after they had started out in order to ensure proper conduct and treatment of the animals and landscape. In particular, one could not spill the blood of fish on the ice (as it would anger the spirits), call the hunted animals by name, or use inappropriate language.

The example of the Russian fishers and hunters taking up the practices of spirit worship/respect from the Buriats whom they encountered is one of many examples of how the meeting of different religious traditions and peoples resulted in spiritual synthesis. Here, Russian migrants to the Baikal area, happy to take on any practices and beliefs if it meant a larger catch or a better hunt (and if one avoided the wrath of wavy and stormy Baikal in the process) willingly appropriated (in form and in content) the rituals and beliefs of the native peoples. And the evidence is clear that the Russian migrants often went directly to the Buriats and Evenks to gather information about the spirits and ensure their economic success and proper spiritual/ritual practice.

That said, this did not mean a wholesale reversal or abandonment of past practice but rather a meshing of beliefs and practices from different spiritual traditions. On one hand, the practice of working with and placating spirits and little devils had been part of Russian peasant

¹⁶ I. P. Basharov, *Russkaia promyslovaia kul'tura vostochnogo pribaikalia (konets XIX – nachalo XX v.)* (Ulan-Ude, 2005), 93-95.

culture for centuries, and so the shift here was one of degree rather than of kind as traditional practices became reconfigured in the new cultural and geological context of Lake Baikal.¹⁷ Moreover, the appropriation of rituals to feed and honor the water and forest spirits around Baikal did not preclude an active Orthodox life, and certainly many fishers and hunters took with them crosses, icons, and religious books and manuscripts in order to read and in order to protect and assist them while off on the hunt.¹⁸

The Russian Arrival and the Transformation of the Fish

The arrival of the Russians, beginning in 1644 with Kurbat Ivanov, had a dramatic impact on the fish-human nexus at Baikal. The Russians brought with them different fishing tools and an extractive approach to thinking about nature and natural resources (one that came hand in glove with the predatory approaches they used in chasing the sable and other fur bearers across Siberia and on into America, exhausting the population as they went¹⁹). They also arrived with a more commercial and property-based approach to fishing and a state apparatus that played an active economic role through, for instance, the regulation of markets and the granting of monopolies. The communities of people around Baikal people had over time determined and distributed fishing sites to various families, clans, and communities (sometimes as a result of violence) and had incorporated the use of fish as part of local tribute paying systems among the Evenks and Buriats. The arriving Russians, by contrast, introduced entirely new notions of ownership of the rights to fish certain sites and a previously unknown tax-farming system. They

¹⁷ Leonid Heretz, *Russia on the Eve of Modernity: Popular Religion and Traditional Culture Under the Last Tsars* (Cambridge: Cambridge University Press, 2008)

¹⁸ Basharov, *Russkaia promyslovaia kul'tura*, 113.

¹⁹ Ryan Jones, "Empire of Extinction: Nature and natural history in the Russian North Pacific, 1739-1799," (Ph.D. diss., Columbia University, 2008).

also linked those rights to the market economy as the sites could be sub-leased for cash or other payments—and fish made their way to growing urban markets to those who did not produce food for themselves. Indeed, the Russians who came to settle the region generated a substantial increase in demand for fish—and demand for fish from a population that would pay in money for that food. In this way, the Russian arrival made the fishing process a commercial, economic one as well as a cultural-religious-sustenance activity.

The Water's Bounty

Russians and those who came with them across Siberia told stories of a staggering abundance of fish in Baikal.²⁰ Perhaps the most iconic is that of the Old Rite Archpriest Avvakum who, coming upon Lake Baikal during his exiled travels in Siberia, was deeply struck by the beauty and bounty of the Lake.

I have wandered over the face of the earth 20,000 *versts* and more, but never have I seen [high mountains such as these]. On their summit are tents and earthen huts, portals and towers, stone walls and courts, all neatly fashioned. Onions grow on them and garlic, bigger than the Romanov onion, and exceeding sweet to the taste; there also grows wild hemp, and in the gardens fine grass and exceeding fragrant flowers, and there is great quantity of birds—geese and swans that fly over the lake like snow. And there are fishes—sturgeon and trout, starlet and salmon-trout and whiting and many other kinds; it is fresh water and in that mighty ocean lake there are sea-calves and great sea-hares. I saw none such during all the time I was living on the Mezen; and the fish in it are of a great weight, the sturgeon and salmon-trout are exceeding fleshy—they are not for frying, for it would be naught but fat. And all this has been fashioned by our sweet Christ for man, so that, with a mind at last at rest, he might give praise to God.²¹

²⁰ The Russian stories of abundance are of course not sui generis to the global history of European expansion across the oceans and continents in the early modern period. For example, William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (Hill and Wang: 1983); and Mark Kurlansky, *Cod: A Biography of the Fish that Changed the World* (Penguin, 1998).

²¹ *The Life of the Archpriest Avvakum by Himself*, trans. Jane Harrison and Hope Mirrlees (Hamden, CT, 1963), 96-97. On one level, it is hard to fault Avvakum his hyperbole. He arrived at Baikal after a long, arduous, and hungry journey from Dauria, only one stage in fourteen years of imprisonment and wandering in the far reaches of Russia in spiritual torment

Others echoed Avvakum's depiction of plenty (although not always with this religious focus). Traveling through the region in 1675, on a diplomatic mission to China, Nikolai Sparafii was struck by the well-developed fishing on the rivers flowing into Baikal, noting the "uncountable plenty."²² At other times, travelers Pallas and Georgi reported that the quantity of omul available was so vast that large-scale fishers simply ignored fishing them in summer time (catching only sturgeon then, which were also abundant in those days), and turned to catch the masses of omul in autumn, when they made their way up the rivers to spawn. The prices at that time reflect this sense of plenty. A barrel containing between 1600 and 2000 fish would cost about 30 kopeks at the site of fishing, and about 5 rubles in Irkutsk. Frozen omul were sold for about 1000 fish per ruble.²³ P.A. Slovtsov reported in the early 19th century, that during the annual omul run, in ten days alone fishers could pull from the Selenga River a thousand barrels filled with 1,200 fish each.²⁴ Looking back longingly on another time, the local population in mid-19th century recounted how in the preceding generations, the fish had been so numerous that at the time of spawning, one could walk across the Selenga on a "bridge" of fish, so full were the waters. Dogs, they reminisced, would bark from the unnerving noise of the fish swimming upstream.²⁵

from the Nikonian reforms. On another level, one can also find in Avvakum's euphoria a view of nature—and of water in particular—that was characteristic of Christian thought (whatever its denomination). Here, the lake, its mountains, and its flora and fauna were a manifestation of God's sacred power and beneficence. The natural world was built by God to fulfill humanity's needs in order that they would then best serve and revere the one and only God—the singular source of divine power in the universe. Here too, the extent of the bounty was a reflection of God's attitudes and moods towards humans: lands of plenty reflected God's goodwill towards humanity; an absence of food, or various natural disasters, were taken as manifestations of God's displeasure with the humans there

²² Girchenko, "Iz proshlogo," 80.

²³ GAIO R-330, 1, 2, 1918, ll. 11-11ob

²⁴ Cited in Mark Soderstrom, "Enlightening the Land of Midnight: Peter Slovtsov, Ivan Kalashnikov, and the Saga of Russian Siberia (Ph.D. dissertation, Ohio State University, 2011), 240.

²⁵ Girchenko, "Iz proshlogo," 80; and Gagemeister, *Statisticheskoe obozrenie Sibiri, sostavlenoe na osnovanii svedenii, pocherpnutykh iz aktov pravitel'stva i drugikh dostovernnykh istochnikov* (St. Petersburg, 1854), vol. II, 229-230.

The End to the Bounty

The result of Russian fishing practices was in many respects dire for the fish populations, as evidenced by drops in fish catches despite intensified catching efforts and technologies.²⁶ In some cases, like the Sturgeon—a relatively stable fish for generations—catches of different fish communities dwindled. As for the omul, by the middle part of the nineteenth century, fish catches had dropped rapidly and markedly (see figure 1).



Figure 1. ²⁷

According to Pezhemskii, who wrote regularly about Baikal fishing, the catch level dropped markedly from 1840s to 1870 (as a result, in his view, of an overall collapse in the fish population). In the 1840s, he notes that about 7000 barrels of omul were caught on the Upper Angara and another 1500 barrels on the Selenga. By 1869, fishers caught only 2225 barrels on the Upper Angara (and Kicher) rivers—a decline of about 70%. By 1907, he reported, the

²⁶ Consistently reliable statistics of fish numbers, with a baseline study to use for comparison, are hard to find in the eighteenth and nineteenth centuries. Contemporaries based their concerns that fish stocks were plummeting on the marked declines that they noted in their catches each year.

²⁷ Display at the Baikal Museum (Listvianka, Irkutsk oblast', Russia).

decline in catch had reached 85% of the 1840s baseline.²⁸

Similar patterns were seen on the Barguzin River, where one observer argued that, over a 50-year period, the catch of omul on the Barguzin dropped by 140 times.²⁹

1835: 1238 barrels of omul with 1500 fish in each barrel, total 928,500 fish were caught (using 124 seine nets and nets)
1840: 147 barrels
1841: 114 barrels
1842: 20 barrels
1843: 20 barrels
1844: 58 barrels
1845: 35 barrels
1846: 22 barrels
1847: 25 barrels
1848: 27 barrels
1849: no data
1850: 29.5 barrels.
1887: the catch had dropped to 9 barrels of 750 omul each, total 6,800 fish

Significantly, it was not just a drop in the size of the catches that worried observers but also a marked drop in the physical size of each fish caught. Here the impact of humans on the species was clear to observers in the nineteenth century: by taking out the largest ones in great numbers and preventing them from reproducing, the smaller varieties of the fish were given a selective advantage in reproduction (at least in the short term). At the end of the 18th century, omul reached a length of 402 millimeters. However, according to the research of Saburov in 1886, which examined a catch of 10,000 fish taken for sale at the Ol'khon fair, the very largest omul was only 345 millimeters, and about 5% of the fish were at the very small end of the spectrum, from 10 to 220 mm. According to these results, the size of the fish fell by 20%.³⁰

²⁸ GAIO R-330/1/2/1918, ll. 11ob-12.

²⁹ "Ischeznovenie omulei v basseine oz Baikala," *Vestnik rybopromyshlennosti* (1888), 126

³⁰ GAIO R-330/1/2/1918, ll. 11ob-12.

Explaining the Drop in Fish Population

There appear to be several reasons for the drop in fish population: changes in technology and technique, the new tax-farming and ownership structures of rights to fish, and the “predatory” approaches to fishing carried out by Russian fishers.

Ownership Structures and Tax Farming

Perhaps the greatest effect on the process of fishing that took place with the Russian arrival (along with the appearance of Russian and other Slavic fishers on the shores of Baikal for the first time) was a fundamental restructuring of how access to fishing was allotted and divided among the peoples of the region. Russian state officials granted control over fishing to the two most important political and economic forces in Siberia at the time: the state treasury and eastern Siberian Monasteries. The latter, in particular, received a disproportionate share of the wealth flowing from Baikal. Quite suddenly from the perspective of the native peoples, the lake’s astonishing bounty had been taken from them and handed over to these agents of Christianity with no restitution.³¹

For instance, in 1682, when the Selenga Troitskoe monastery was created, it was given the rights to fish catches in Baikal and the Prorva (a place that was the popular among fishers at the time) and on the Selenga river.³² In 1714, the fishing rights to the Prorva and the Selenga were handed over to the Posol’skii monastery, and the Troitskii monastery received in fishing rights in Lake Kotokel (and some good spots on Baikal as well). The Selenga Troitskoe monastery continued to expand its fishing holdings over the course of the eighteenth and

³¹ On monasteries as colonial agents, see Matthew Romaniello, “Controlling the Frontier: Monasteries and Infrastructure in the Volga Region, 1552-1682,” *Central Asian Survey*, 19:3-4 (2000): 429-443; and Valerie Kivelson, *Cartographies of Tsardom: The Land and its Meanings in Seventeenth-Century Russia* (Ithaca: Cornell University Press, 2006).

³² *Dopolneniia k akтам istoricheskim* (St. Petersburg, 1862), vol VIII, no. 91, pp. 314-316; and Girchenko, “Iz proshlogo,” 80.

nineteenth centuries.³³

There was a brief foray in another direction during the reign of Elizabeth when she shifted a large portion of the fishing rights to Baikal from the monasteries to Count Shuvalov on a tax-farming basis (he apparently had similar arrangements on the White Sea).³⁴ However, this structure did not last and with the *ukaz* of August 10, 1762, Catherine returned the fish to their “spiritual owners.” And the monasteries would continue to hold control of the fishing rights to the best fishing sites in the Baikal region for the remainder of the 18th and 19th centuries. In addition to two Zabaikal monasteries (Troitskoe and Posol’skoe), fishing rights were given to Monasteries in Irkutsk (Voznesenskii), Iakutsk, and Kirensk, and to the Bishops’ houses in Irkutsk and Chita.³⁵ Other parts of the fishing waters remained in the hands of the treasury and then a small amount of direct access was granted, in areas of the poorest fishing quality and generally in insufficient quantities, to the coastal inhabitants who, for lack of land for agriculture, relied most heavily on fishing for survival.

Realizing the potential bounty that control of the access to fish entailed, Monasteries went out of their way to expand control over fishing, especially gathering in the isolated fishing allotments of different villages, artels, and individual peasants. For instance, in response to entreaties from the local priest, the Kudara villagers “in order to save their souls” gave all of the fishing allotments that they possessed at the mouths of the Selenga River and on Baikal to the local Kudara church, which then gave that gift to the Kirenskii monastery. The villagers of Kudara then had to pay approximately 1000 rubles per year in rent to be able to access their old

³³ Natsional’nyi Arkiv Respublika Buriatii (NARB, Ulan-Ude, Russia), 262/1/ dd. 1 and 509.

³⁴ Girchenko, “Iz proshlogo,” 80-81. Notably, this period was known for its so-called “piracy” where fishers and merchant boats went out on the waters of Baikal armed with “unicorns” sticking off their bows.

³⁵ GAIO 121/2/11; GAIO 51/1/dd. 30, 39, 40, 68, 69, 76, 83, among many others in this fond; and Girchenko, “Iz proshlogo,” 80-81.

fishing allotments.

The Posol'skoe monastery made similar efforts, but with less ultimate success. In the beginning part of the 19th century, the Father-Superior of the Posol'skoe monastery Peter arranged matters so that the peasants of the Posol'skoe village would, by special legal arrangement, give to the monastery “in eternal ownership” the fishing rights belonging to the villagers in the Karginsk Sor in return for spiritual blessings and God's beneficence. Ultimately, the transaction was considered so one-sided that the administration found themselves required to annul it.³⁶

The large lease-holders generally subcontracted the rights to fish out to middlemen, usually local merchants from Irkutsk who would then sub-subcontract the rights to fish to local fishing artels made up of Russian and Buriat peasants. Those poor peasants who were not part of an artel found their access to the better fishing spots restricted and were left to catch the remaining scraps of fish that might come through to less desirable fishing locations.

The artel was the foundational communal structure for fishing—large groups of families and villages working together towards the catch, sharing their tools and their catch according to predetermined norms. Here, fishing was a communal, hierarchical, and well-orchestrated affair. Artels tended to be firmly hierarchical, which a chosen leader who made most of the decisions about who worked where and when, and where they would focus their fishing efforts. The artel leaders—and indeed the artels themselves—were the repositories of generations of knowledge about how best to fish the lake and its rivers. They were particularly concerned not to impede in any fashion the omul spawning run.³⁷

In this commercial arrangement of leases and sub-leases, it was often the middlemen who

³⁶ Girchenko, “Iz proshlogo,” 82

³⁷ Gagesiter, *Statisticheskoe obozrenie*, vol. II, 236-7; and Girchenko, “Iz proshlogo,” 82.

profited most. The monasteries frequently had such large allotments of fishing rights that they would sub-lease these to the middlemen at relatively cheap prices. The middlemen would then subdivide the leased areas into small batches and charge the artels a much higher rate for the opportunity to fish.³⁸ In the early 19th century, for instance, there were two well-known merchants who sub-contracted as much as sixty kilometers of fishing allotments for only 200 rubles per year. Raking in thousands upon thousands of rubles in fish profits—no one knows for sure the full value—they became fabulously wealthy.³⁹ Merchant middlemen often bought, sold, and speculated on fishing leases as part of a high-stakes financial structure. So profitable were the leases that huge bribes were regularly handed over to those who controlled the allotments in order to ensure that their wealth flowed in their direction.

Not unexpectedly, intense struggles erupted between the Russian and Buriat peasant fishers, on one hand, and the officials, merchants, and monasteries, on the other hand, who leased them access to the fish. For many Buriats, the question of fishing was one of the primary loci of contact with the tsarist state well into the 19th century. As such, how access to fishing was divided up and allocated was a central component of how Buriats experience tsarist control. The archives are filled with instances of peasants writing to complain that they had been unfairly treated in their contractual fishing relations, while merchants just as often petitioned for state intervention when they felt that the fishers had not supplied them with the fish that they were due.⁴⁰ For instance, in 1798, the peasants of Il'inskoe vedomstvo, on the lower Selenga, petitioned complaining about the fishing sites that they leased from the treasury through the Verkhneudinsk inhabitant Sedykh. The peasants protested that Sedykh was leasing the fishing

³⁸ Girchenko, "Iz proshlogo," 81

³⁹ Girchenko, "Iz proshlogo," 82.

⁴⁰ The Buriat National Archives, NARB, have preserved hundreds of these cases.

spot to numerous different people, each for around the sum of 100 rubles, a very significant amount for these fishers. Sedykh had other run-ins for exploiting his fishing allotments unfairly and exploitatively. In another complaint from around the same time, a certain Stepanov from the Verkhneudinsk treasury leased between 1795 and 1800 a vast swath of fishing allotments along the eastern shore of Baikal, from the mouth of the Selenga all the way up to the mouth of the Kika River. Such lease speculation gave him a monopoly over access to fishing for much of the Buriat population and allowed him to dictate the terms of any sub-lease at rates dramatically favorable to himself.

In addition to petitions, Buriat and Russian peasants often just took matters into their own hands when it came to fishing. While they might buy sub-leases to access the fish, they might also take advantage of the great difficulty in enforcing fishing rules and simply head to the waters to fish at the right times.

Predatory Techniques

The lease-allotment, tax-farming structure of fishing—which fundamentally redefined the relationship between local fishers and their watery prey—often led to highly aggressive and exploitative fishing practices. Monasteries and the treasury would sub-lease only for term-defined periods. As such, any leaser could not be sure that he would re-gain access to the fish wealth after the end of his lease. As such, the clear incentive for all merchants was to grab all they could from their allotments as quickly as they could. Especially in the second half of the 18th century and early 19th century, they sub-contracted out their fishing allotments to the Buriats, Evenki, and Russians with demands for a huge (and unsustainable it turns out) quantity of fish. In many respects the drop in fish stocks and in catches that became more and more

noticeable from the 1830s and 1840s on came as a result of the unsustainable fishing practices that the lease-allotment system of fishing rights ownership fostered.

To make matters worse, in abundant fish years, when fishers might be pulling large quantities of fish out of the water with relative ease, there simply weren't enough people available to salt them all to preserve them. As a result, the fishers—usually Russians in the documents, who seem to have been more inclined than Buriats to extract masses of fish needlessly and heedlessly—often threw the excess fish back into the river. Reports noted that the rivers were choked with the carcasses and debris of these unwanted fish. The clogging up got to the point, apparently, that fishers would be required to go into the various rivers to clear the river mouths to allow the fish to take their spawning runs unimpeded.⁴¹

Any efforts to protect the fish through police or other surveillance tended to lead to naught because of the lack of appropriate cadres to control the situation and the willingness of so many of those officials who did work surveillance to receive bribes as and turn a blind eye.⁴²

Response to Drop in Fish Catches

As the declines in catches accelerated over the 19th century and demand for the fish only increased (from lease-holders demanding greater returns and from increasingly larger numbers of urban dwellers requiring the fish to eat), fishers adapted their fishing practices in order to gather more fish. Rather than focus their efforts almost exclusively on the easier catches to be had on the main rivers during spawning times, they expanded their operations out into Lake Baikal itself (and this was an expansion of fishing territory that would continue on well into the 20th century). They also increased the amount of time they would fish throughout the year (rather than focusing

⁴¹ Girchenko, "Iz proshlogo," 83.

⁴² GAIO R-330/1/2/1918, l. 9, 12ob.

on the late summer, early autumn period). Thus, rather than a seasonal event, fishing came increasingly to be a year-round type of activity and one carried out throughout the waters of Baikal and its rivers. Fishing more regularly on Baikal was both more dangerous to fishers, who perished from Baikal's unpredictable and rapidly changing weather,⁴³ and it also meant that more and more fish were caught before they even had a chance to head in the direction of the river mouths to spawn. (Those that escaped the expanding Baikal fishing process tended again to be the smaller fish that were not captured in the larger-spaced nets used from the boats.) Fishers not only moved into Baikal but also started to fish other rivers that had not seen the same attention in previous generations. Thus, as the fishing stocks declined rapidly and noticeably by the 1830s, fishers who were unhappy with their catches in the Selenga and Barguzin rivers began to shift their attention to the more remote Upper Angara River, among others.⁴⁴

At the same time, the fishers changed the fishing equipment that they used to catch these fish. In particular, as catch sizes dropped in the early 19th century, we see a turn to using larger boats and larger nets to catch the fish, to using seine nets, and nets with much smaller apertures in order to catch ever smaller fish to fill their goals. Here there was an “arms” race of sorts to change equipment in order to confront the diminishing size and quantity of fish, yet meet the growing human demand. For instance, the seine nets in the 1840s generally had a length between 100 and 300 *sazhen* and, because they were short enough, needed only two people to work them. By the time of the 1917 revolutions, however, seine nets were at least 600 *sazhen* and often 1500 *sazhen* in size.⁴⁵

Fishing throughout the year also meant an increase in and transformation in the patterns

⁴³ Of many examples, see, for instance, NARB 5/1/1226/1901-1902, ll. 2-3; and 12/1/856/1872, ll. 1-8ob. See also Valentin Rasputin, “Lake Baikal,” in *Siberia, Siberia* (Evanston, IL, 1996), 123.

⁴⁴ GAIO R-330/1/2/1918, l. 11ob.

⁴⁵ GAIO R-330/1/2/1918, ll. 11ob-12.

of ice fishing. Ice fishers erected elaborate transportation routes and preservation methods to get the fish to Irkutsk. Some fish were frozen and moved in hard form. Others, however, were pulled from the water and dropped into water-filled barrels (that were prevented from freezing). The barrels were then taken immediately across the ice to the mouth of the Angara River (which did not freeze in winter time). There, the fish were dropped into pre-erected pens in the water, and they were kept there until they were sold fresh in Irkutsk.

Given these changes in the technology and timing of fishing, one might have expected the levels of catches to increase from the increased effort. Nonetheless, despite these human adaptations, the catch levels continued to fall during the nineteenth century. And it was not until the Soviet period when fishing technology took a leap forward with motorized boats and large, narrow-gauge drift nets that the catch levels began to rise again. (See Figure 1.)

Conservation

In addition to these efforts on the part of fishers to gather more fish, representatives of the tsarist state also began to take notice of the declining stocks and made legislative and administrative efforts to control the fishing process to ensure catches in the long term.

Already by the early part of the nineteenth century it was becoming apparent that fish catches were dropping significantly and that something needed to be done.

A moment of change in approach to fishing came in 1813, when the Irkutsk government began a fact-finding mission about the fishing situation. Before that, in the words of one 19th century observer, “not only the dark fishers but also the enlightened locals were short-sighted, believing that the fish riches in the Baikal basin would never be exhausted.” However, by 1813, the Irkutsk administration was becoming concerned that the pleasant notion of endless aquatic

riches was plainly belied by drops in fish catches.

The result of this fact finding was the first substantive legal efforts to regulate the fishing catches came with the “Statute on Omul Fishing in the Selenga River” of November 1816. These laws controlled the use of specific types of fishing tackle and also controlled the location of where fishing could take place during the annual spawning runs. While not barring fishing during those months (as would come later) the administration attempted to move the points fishing upstream from the river mouths in order to give the fish a greater chance of making it at least part of the way upriver to spawn.⁴⁶

The laws of 1816 (which were developed in active consultation with the heads of many fishing artels) attempted—in ways not dissimilar to the attempts of Panteleev in 1918-19—both to preserve the fishing catches and to democratize access to fishing rights during the peak fishing times of each year (that is, trying to combine both conservation with access). In terms of access, the 1816 statute ensured that “at the time of the spawning run of the omul in the Selenga River all of the fishing allotments owned by the monasteries and the treasury, and rented from them by private individuals, would be assigned as free trade for all.” This rule reflected the discontent of the peasant fishing population with the monopolies of the monasteries and treasury. It also represented an effort on the part of the fishers to return to the (to some degree imagined) practices of a time before the Russian arrival—what many Buriats described with the phrase “from the earliest times”—in which fishing was open to all who might want to join during the spawning run.⁴⁷

In addition to trying to expand access to fishing to even the poorest peasants and Buriats by making the spawning run an open season of sorts for all in the region, the 1816 statute also

⁴⁶ GAIO R-330, 1, 2, 1918, ll. 11ob.

⁴⁷ Girchenko, “Iz proshlogo,” 31.

attempted to re-legalize certain fishing tools (especially the *sak*, a small net or wicker bag attached to a handle for scooping fish from the water, not dissimilar to a butterfly net in shape). In allowing the poorer people to use the fishing tools (such as the *sak*) that were most readily available to them (simplest to construct and least expensive), these regulations attempted to re-empower these people in their relationship with fish and to tackle, if not head on, the structure of monopoly over fishing rights.

All this said, the framers of the Statute were concerned not to allow a free-for-all in fishing. They were aware that catches were not what they had been in the 18th century. As such, they drew a line across the Selenga River, downstream from which fishing with *saks* was forbidden “under the threat of punishment.” Surveillance was left in the hands of the “nedvodchiki”—the fishers who used larger nets and were generally part of *artels*.⁴⁸

The effort to protect fish stocks and to enhance access for fishers of various social backgrounds led to an ethnic-based conflict. As part of the statutes, the Kudara Buriats were barred from fishing or migrating to the mouths of the Selenga, even to territories that were considered sacred to them. Police surveillance was to be used to ensure that no Buriat broke these laws. In part this was an effort to protect the flow of fish upstream from Buriat fishers working in traditional fishing territory (and places where they brought their livestock for summer pasturage) as well as to decrease the competition from Buriat fishers for the Russians who wanted to take more from the rivers.⁴⁹

Indeed, as with many efforts at controlling who could fish, and when and how, these rules worked in the interests of certain groups (the more well-off fishers around Baikal who led the

⁴⁸ In 1818, when the Selenga flooded and the fish coming in from Baikal only swam a small way upstream because of the current of water coming down river, the fishers petitioned and received the right to fish below the line of demarcation (since the fishing was meager upstream). Girchenko, “Iz proshlogo,” 84.

⁴⁹ Girchenko, “Iz proshlogo,” 84.

larger artels and the town *meshchanstvo* and merchantry), while the poorer peasants received fewer concessions or fishing opportunities, and the leaseholders felt their rights somewhat restricted also. One of the dividing factors between these different fishers was the type of equipment they used. The more well-off fishers who benefitted from these regulations tended to work larger, seine nets (that required two or more men to manipulate) in contrast to the poorer fishers who used the *sak* net—small, single person hand-held nets. In this way, the process of fishing, and the conservation rules that humans created around fishing, not only reflected social difference but helped to define and reinforce certain types of social difference—and access to more elaborate forms of fishing tools and tackle was at the crux of these distinctions.

Later efforts to control “rapacious” fishing also focused on controlling the tools used. In the 1820s, peasants from the Kudara region petitioned the administration to ask it to forbid College Secretary Sysoliatin, who was sub-leasing fishing sites, from fishing using a *samolov* system at the mouth of the Selenga.⁵⁰ The petitioners argued, and the Irkutsk Duma agreed, that this form of fishing was extremely “harmful” to the fishing community broadly because the rows of hook-infested lines that ran across the river mouths prevented many of the fish from swimming any distance up the river to where the poorer fishers waited for them to come. The official representatives sent to examine the situation and determine the veracity of the petition noted that the fish, “breaking lose from the hook and being injured, runs out of strength from the loss of blood, perishes and is carried away back down the length of the river.” As a result, *samolov* fishing was outlawed by the Duma and any such fishing equipment found by inspectors in the future was to be destroyed.

1878 marks a further shift in local administrative policy when officials turned to one of

⁵⁰ *Samolov*: comprised of hooks, fastened to a long rope/cord; the hooks were tied to floats so that the hooks held the fish (often sturgeon) at the top of the water.

the methods of conservation that would dominate discussions until the present day. They moved away from the notion of trying to mark the borders of the locations where fishers might work and instead ordered that all fishing thenceforth cease on the major rivers flowing into Baikal during the spawning run of the omul. Indeed, by this time, reduced fish catches were creating a sense of desperation among both fishers and administrators alike that serious action needed to be taken if the fish of the lake—that had produced so much wealth for some and sustained so many others nutritionally—were not to disappear forever.

Over time, and especially from 1878 on, experts and fishers who worked the waters, came to similar conclusions as (later) Panteleev and the KBRK over then need 1) to change the ownership structure of access to fishing and 2) to conserve fish stocks through regulations concerning where and when fishers might fish (especially not at spawning times) and through strict surveillance and oversight of the fishing process.

Epilogue: Soviet Fish

In the end, Panteleev and the other members of the KBRK never had the opportunity to fulfill their plan to both preserve and democratize Baikal's fish. They had some months to apply their laws, but time and again they fell short of their goals because of a lack of financial and human resources to enforce their legislation. At the same time the desire to make fish available to all "working people" often came to loggerheads with their goal of preservation. All too often, when peasants were found to be in breach of the laws, Panteleev allowed their fines to be dropped or reduced in order to allow them to access the fish they needed to live.⁵¹

That said, many of the basic patterns of the human-fish relationship that Panteleev

⁵¹ GAIO R-330/1/11/1919, for instance.

enunciated –and that had been part of the discussion in tsarist legal and scientific circles since the Statutes of 1816 (particularly access and preservation)—remained at the forefront of the fishing policy in the 20th-century Soviet Union. Over the Soviet years, omul and other fish came to be viewed as social property, belonging to all not just to a small number of monopolists. At the same time, until the 1960s, Soviet authorities struggled to preserve fish catches through many of the same ways as their predecessors had done for a century and a half: prevent all fishing at spawning time, control what tools and tackle was used to fish with, and strictly regulate who had access to fish through *kolkhozy* and *sovkhozy* (with similar patterns of enforcement as in the tsarist and revolutionary periods).

However, over the Soviet years, the need to preserve fish from eradication came to dominate the desire to democratize access to the fish. Despite years of conservation efforts, Baikal's fish faced a host of new challenges in the 20th century that continued to decimate their numbers. New technologies—especially motor-powered boats and drift nets—fundamentally changed the relationship between predator and prey by allowing humans to drag large quantities of fish from the lake itself without having to wait for the fish to make their way inshore and upstream. Efforts to develop fish farming among some of Baikal's fish re-cast (to a degree) the human-fish relationship from predator-prey to farmer-livestock. New social organizations—the formation of fishing *sovkhozy* and *kolkhozy*—transformed the fishing experience for individuals and communities of fishers.⁵² And the impact of industrialization and pollution from the 1950s onward on fish stocks was immense. This was especially true in the case of the building of the Irkutsk Hydroelectric Dam that raised the average level of Baikal permanently (at least for the foreseeable future) and was accompanied by a huge drop in fish

⁵² Gosudarstvennyi Arkhiv Noveishei Istorii Irkutskoi Oblasti (GANIIO, Irkutsk), 572/1/dd.1-6, for example.

catches because former areas of spawning in the shallows were now inundated with water.⁵³ Finally, the wars of the Soviet years have done their part to deplete fish stocks. As Panteleev lamented in 1918, the local population was in desperate need of fish because of the war- and revolutionary-time shortages. The same was true during the Second World War when a desperate Soviet Union scooped out more fish than ever from Baikal in an effort to feed its starving people. In the end, Soviet officials and scientists in the late 1960s found themselves required to ban all but subsistence fishing—a ban, which with some ups and downs—continues in different form today.

⁵³ T. P. Kalikhman, “Adaptatsiia ekosistem iuga ozera Baikal k antropogennym vozdaistviyam,” in *Global’nye i regional’nye osobennosti transformatsii ekosistem Baikal’skogo regiona* (Ulan-Bator, 2008), 115-122; A. K. Tulolkhonov, ed., *Gidroenergetika i sostoianie ekosistemy ozera Baikal* (Novosibirsk, 1999); and *Ryby i rybnoe khoziaistvo v basseine ozera Baikal* (Irkutsk, 1958).