

RESEARCH ARTICLE

River of fire and ice: infrastructure, territoriality, and the colonization of eastern Hokkaido, Japan, 1600s–1900s

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Abstract

From the seventeenth to the twentieth century, rivers played a key role in the colonization of Hokkaido, a northern island in the Japanese archipelago. The Kushiro River, in eastern Hokkaido, was transformed into infrastructure, a process which shaped the institutions, strategies, and practices of territorial control during the transition from the Tokugawa shogunate (1603–1868) to Imperial Japan (1868–1947). Trade between local Ainu communities and the shogunate's vassals contributed to a river-based territoriality. Later in the 1800s, as the island became territory of the modern state, the river was further converted into infrastructure through settler colonialism, industrial development, land reclamation, and the dispossession of indigenous communities. This transformation empowered the state to probe territories, exert control over labor, and access natural resources. Drawing on research on the political ecology of rivers, this paper focuses on two hydrosocial functions that emerged during the process of reworking river basins into legible and governable spaces: the transportation conduit and the water delivery system. The river's transition from a living system to infrastructure coincided with and furthered the establishment of colonial settlements and the expansion of the Japanese state's imperial reach.

Keywords: colonialism; Hokkaido; infrastructure; Japan; river; territoriality; the Kushiro River

Introduction

States shape rivers, but how do rivers enable and resist states? From the seventeenth to the twentieth century, rivers played a major role in the modern colonization of Hokkaido, a northern island in the Japanese archipelago. The Kushiro River, in eastern Hokkaido, was transformed into infrastructure, and in the process contributed to the shaping of the institutions, strategies, and practices of territorial control during the transition from the Tokugawa shogunate (1603–1868) to Imperial Japan (1868–1947). The river was central to the process of state formation, starting from the 1600s, with increased trading activity, to the late 1800s when the island was annexed as a colony of the new modern state. Through settler colonization, industrial development, land reclamation, and ultimately the dispossession of the indigenous communities from their land and life-worlds, the river became an infrastructure that enabled the state to probe these territories and exert more control over labor and natural resources in the area. While rivers moved people and goods, people also moved rivers through construction projects. The process of colonization in eastern Hokkaido required the state to first usurp the local river-based territoriality, shaped by centuries of trade, only to render the river into an inert object of technocratic management.

The Kushiro is a 154-kilometer long river that starts in Lake Kussharo, a volcanic crater lake surrounded by hydrothermal vents and hot springs. Fed by water from a drainage area of forests and wetlands, the river meanders through an alluvial plain that contains the Kushiro Wetland, before

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emptying into the Pacific Ocean. The river's gradual gradient creates a lattice-like system of tributaries, distributaries, ponds, and wetlands, turning it into a diverse mosaic of water-based habitat types and also makes the area prone to flooding. Although some tributaries freeze due to the northern climate, heat from the volcanic activities keeps sections of the river system, including the natural harbor at its mouth, ice-free. As such, the Kushiro Port is the northernmost year-round port in the Japanese archipelago, setting it apart from other regional ports that close during winter.

Kushiro's strategic value as a warm port in the north would have been on the mind of Matsudaira Tadaaki (1759–1805), an architect of the shogunate's direct rule over Ezochi, the name for Hokkaido during that period. A report from his expedition in 1801 documented the following as he traveled down the Kushiro River:

June 16. After six, go down the Kusuri [Kushiro] River on boat. This river flows from a lake in the mountains twenty *ri* [about seventy-eight kilometers] upstream [...]. The river width is about ten *kan* [about eighteen meters], and boats can suffer damage when they snag on large driftwoods beneath.

Recently, our boat piloted by a servant had snagged on a tree and capsized. He lost his master's broadsword, which fell in the river and was never recovered. Riverbanks on both sides are thick with trees and beard lichen hanging from the branches in the river reminds me of scenes in Chinese-style pictures. (Isoya 1961, p. 58)

The above is an account of the river before the modern era, at a time when the shogunate began asserting territorial control over the region. Matsudaira was returning from Shari, following a path newly constructed by a regiment of samurai-farmers who had recently arrived from Edo. Along the river were settlements inhabited by the Ainu, the island's indigenous people, who used these waterways to travel downstream to the Kushiro trading post. Matsudaira's destination was also Kushiro, where he would have encountered Wajin merchants – “Wajin” referring to those from the shogunate and its vassal domains – as well as Ainu headmen who represented his territory in trade negotiations. These trading posts served as outlying hubs of state power. Perhaps the sword dropped into the river by the servant, likely an Ainu worker at a fishery workshop in Shari, was symbolic of how the river, while enabling the shogunate's territorial expansion, also posed a formidable challenge.

Fast forward a century, and the river would be well on its way to becoming a modern infrastructure. This river segment would be cleared of woody debris and overhanging canopy, and its course dredged and channelized to accommodate larger ships. Through a system of sluices and levees, greater control over flood risks would be achieved. The beard lichen, likened to Chinese art by the author, would later be gone, probably due to the toxic fumes that would snake downstream from a sulfur refinery (Purvis 2010).

Matsudaira's expedition marked an early moment in the Kushiro River's transformation as a modern waterway infrastructure. Until the early 1800s, trade operated with minimal state interference in the jurisdictional region of eastern Ezochi, located in the southeastern section of what is now referred to as Hokkaido. The shogunate's territorial interest, highlighted by expeditions such as that of Matsudaira, gradually dislodged the river from subsistence practices and kinship-based political cosmologies, as trading intensified along with Edo's demand for resources such as salmon and bear gall. Local revolts and foreign threats, particularly concerns about Russian incursion in the north, prompted Edo to assume control, establish a transportation network, and build settlements. In response, magistrates were dispatched to map, plan, and govern the area. Rivers were central to this early phase of state territorialization, but they remained unmanageable due to wetlands, animal predators, and harsh subarctic conditions. The political geography resembled an informal trade network with minimal oversight, with Ainu leaders acting as intermediaries between Wajin merchants and local riverine communities.

In 1868, when Imperial Japan assumed power, Hokkaido was integrated within its borders. The new state, recognizing its strategic importance as a military stronghold and a resource repository

for empire-building, implemented large-scale land development plans. During this phase of modern colonization, the state continued to regard the river as a transportation network: the Kushiro River was dredged and cleared of debris so steamboats can ferry goods and colonists to new settlements upstream. Evolving from a landform of cosmological significance to a pliable water infrastructure, the river enabled access to inland and strengthened the state's authority in the territory. These changes also mirrored a shift from trade-centric territoriality to one characterized by cartographic legibility, settler colonialism, and modern civil engineering. With the establishment of a new rail network, the river's transition to an infrastructure for water and sediment delivery was complete. The state zoned off the river as an amalgam of water, geology, and ecological dynamics, allowing for the state to engineer the flow of the water through the basin. Thus, it also developed into a tool for regulating the movement of people and goods while installing new political infrastructure that naturalized power hierarchies through resource accumulation, land dispossession, and colonial settlements.

This history of the Kushiro River is an example of how states use infrastructure to manage territories. States exerted control over spaces through infrastructure projects that involve the construction and management of large-scale, technical, and coordinated network of physical structures that are essential for the smooth functioning of society. These include transportation networks, communication systems, and utilities, which enable states to organize space, manage resources, and regulate population movements (Larkin 2013; Massey 1993; Vandergeest and Peluso 1995). James Scott's work emphasizes the importance of systematic surveying and planning efforts in this process, which simplify complex, natural, and "wild" landscapes by rendering them orderly and legible for better control (Scott 1998). Such projects enhance the state's "infrastructure power," a term used by Michael Mann (1988) to describe its capacity to enforce laws and regulations within its domain. Transportation and communication infrastructures are particularly important to the process of state territorialization, reshaping, and sustaining the relationship between space and inhabitants of that space, including people and also components of the ecosystem such as water, wildlife, and mineral resources. However, infrastructure-driven production of these spaces can result in social inequities, displacement of communities, and ecological harm – circumstances most pronounced in colonial contexts, along borders, and in frontiers (Harvey and Knox 2012; Lefebvre 1991; Rippa 2022; Schouten and Bachmann 2022; Smith 1984).

We chronicle the Kushiro River as a socationatural hybrid, targeted by the state as both an object of territorial control and an instrument to shape into infrastructure. Here we embrace the works on hydrosocial territories, whose approach attends to how "water and society make and remake each other over space and time" (Linton and Budd 2014, p. 1). This approach regards the relationship between water and society as mutually constitutive and addresses how divergent views, knowledges, claims, and forms of control over water resources are created, enacted, and contested by differentially empowered actors (Barnes and Alatout 2012; Boelens *et al.* 2016; Gotz and Middleton 2020; Hoogesteger, Boelens, and Baud 2016; Perramond 2019). Rivers, therefore, can be understood as geomorphological features that are "(re)created through the interactions amongst human practices, water flows, hydraulic technologies, biophysical elements, socio-economic structures and cultural-political institutions" (Boelens *et al.* 2016, p. 1). Moreover, these studies argue that technocratic water management tends to overlook social inequities and power dynamics by depicting water challenges as addressable through technical solutions or social engineering. This representation simplifies and standardizes nature, reinforcing existing political orders and legitimizing property rights claims. We recognize that the reworking of nature is a political act, involving the state's reordering of nature and its ability to exclude others from access and use (Hall, Hirsch, and Li 2011; Lund 2020; Ribot and Peluso 2003; Scott 1998; Swyngedouw 2014).

Accordingly, we emphasize the co-constitutive relationship between the Kushiro River and state formation. Historians of human–river relations have explored how water infrastructure shapes and reflects modern political institutions in various cultural and historical contexts (Biggs 2012; Carroll 2012; Gandy 2002; Jones 2010; Pritchard 2011; White 1995; Worster 1985). Similarly, scholars of technocratic water management systems have analyzed the unequal power dynamics intrinsic to

state formation and water flows (Anand 2017; Bakker 2012; Gergan and McCreary 2022; Kooy and Bakker 2008; Mosse 2003; Radmacher 2011; Swyngedouw 2004). Additionally, scholars have investigated the relationship between rural communities and rivers, focusing on water ecologies in the context of expanding agricultural and resource extraction industries (Huijbens and Páisson 2009; Scaramelli 2021; Wilson 2011). Recent studies of indigenous groups and their connection with rivers have also gained saliency (Lahiri-Dutt and Samanta 2013; Salmond 2014; Strang 2004; Wagner and Jacka 2018).

Building on these works, this article describes the Kushiro River as both a tool for and the target of state territorial ambitions in eastern Hokkaido. It examines the Ainu–Wajin trade in the seventeenth and eighteenth centuries and its impact on local, river-based territorial arrangements, as well as the response of the Matsumae Domain, the shogunate’s vassal in charge of Ezochi, to foreign threats and social tensions. This is followed by a section on modern colonization in the late nineteenth to the early twentieth century, when the engineering of the river as a navigable route required the confiscation of territories, the reordering of indigenous communities, the use of convict labor, and land-use changes. This land-based transportation network marked a new phase for the Kushiro River as technocratically managed, socionatural infrastructure.

River-based political geography of the Ainu–Wajin trade

During the first two centuries of Tokugawa shogunate’s reign, the trade between the Matsumae Domain and Ainu communities reinforced the centrality of rivers in local territorial arrangements in Ezochi (“Ezochi” will be used when referring to the area in the Tokugawa period, switching to “Hokkaido” in the modern era). With approval to manage trade in Ezochi, Matsumae began extending its network by establishing trading posts along the southeastern coast. This expansion triggered significant changes in existing social structures, political alliances, residency patterns, and economic practices of the Ainu communities, integrating local systems of natural resource procurement into the broader economy of the Tokugawa shogunate (Walker 2001). In eastern Ezochi, the Kushiro River emerged as a vital route inland to resource-rich areas, empowering the headman residing at the trading post by the river mouth, further shaping the dynamics of territorial influence in the region.

Scholars have noted the significance of rivers in Ainu societies for territorial claims, resource governance, and social organization. Anthropologist Hitoshi Watanabe’s study of oral histories and residential patterns of Ainu communities in the Tokachi region during the 1950s revealed that “river groups” under a patrilineal headman asserted exclusive rights over resources in a river basin. These groups, connected by kinship as well as subsistence activities and ritual practice, claimed autochthony and defended their resources with surveillance and arms. Venturing beyond one’s group’s territory required a visit to the headman, gift payment, and the approval of the local gods (Watanabe 1972, pp. 16–17, 67–68, 77–78). Irimoto Takashi added to Watanabe’s claims by exploring the connection between territoriality and trade. Comparing river groups in the Tokachi region, Irimoto argued that trade strengthened territorial exclusivity, centralized authority, and deepened social stratification. This process also led to a more elaborate and exclusive “system management” that involved permission and punishment for trespassing and entry fees to catch game, ultimately resulting in “a territoriality that is area-oriented with a permanent basis” (Irimoto 1992, p. 78).

These works highlight the historical importance of river-based trade in this region’s territorial practices and institutions. For these local communities, rivers provided subsistence resources, both directly as habitat for riverine biomass such as salmon, and indirectly as a key component of local ecosystem dynamics that support other fauna and flora. Rivers also served as a transportation and communication route, connecting riverine settlements that formed governance units. Residences, religious structures, and military outposts also appeared along rivers (Utagawa 1981, pp. 127–182). The physical contours of a river also shaped these units, which also served as organizing metaphors that anchored their community in both the physical landscape and their cosmological worldview. The tree-like hierarchy of tributaries and parent streams gave shape to local political hierarchies, while many

charismatic species drawn to rivers and wetlands, such as bears, cranes, and owls, were incorporated into belief systems and institutional arrangements (Kaiho 1996, p. 157). In sum, rivers facilitated the local territorialization of these local, subsistence-based communities.

In eastern Ezochi, this river-centered, subsistence-based territoriality either originated in or was reinforced by the Ainu–Wajin trade of the Tokugawa period (1603–1868). Local groups were engaged in long-distance maritime trade as early as the tenth century (Segawa 2007, p. 253), and by the Tokugawa period (1603–1868), the island’s northern region served as a gateway for goods moving between the Amur River and Sakhalin Island, while island’s eastern region was linked to Kamchatka via the Kuril Islands (Kaiho 1987; Minoshima 2015; Segawa 2007). Matsumae Domain, following the Shakushain’s War (1669–1672), began appointing vassals to trading posts. Transactions involved Wajin items such as iron and bronze weapons, lacquerware, rice, sake, and silk, which were exchanged with Ainu products such as herring, kelp, and salmon, as well as medicinal products such as bear galls and components for arms manufacturing, such as raptor feathers for helmets and arrows. By the end of the 1700s, over sixty posts had been established throughout Ezochi and many posts began to function as administrative centers (Howell 1995, p. 31; Kaiho 1978; Segawa 2007, pp. 45–47; Walker 2001, pp. 38–39). This trade system spurred greater integration of Ainu communities into the trade network and fostered dependence on goods from the mainland for their subsistence.

As this trade network grew, so did the power of the headmen and their territorial claims over the river basin. Often residing in the trade post area, trade strengthened the authority of headmen, who typically headed a household with wives and slaves and were responsible for defending territory from rival clans, punishing criminals, managing labor, adjudicating conflicts, presiding over religious ceremonies, and administering common resources. This shift coincided with the use of Wajin goods as talismans of political authority (Segawa 2007, pp. 52–92). Headmen who gained prominence through trade displayed goods such as swords, silk, and lacquerware, as symbols of authority and prestige. Accruing symbolic power, these Wajin goods were incorporated into ceremonial practices such the bear sacrificial rite, which would feature ceremonial arms, lacquerware to store offerings, and sake (Utagawa 1992). Headmen and their lieges also began to wear imported swords as emblems of power. These goods were associated with the Wajin trade and used in trade meetings, during which these objects were displayed as signs of authority and exchanged as pledges of agreement and subjugation (Howell 1994; Walker 2001, pp. 204–226). Ainu leaders began to use these objects to pay debt, seal contracts, and help resolve conflicts (Iwasaki 1998, pp. 139–167). In turn, these objects, as tokens of what may be described as fiduciary agreements with Matsumae vassals, enabled the headmen to claim control over rivers. Trade converted the surplus value from resource extraction into talismanic items of Wajin origin that symbolized power, wealth, and alliance.

Trade, however, depended on the ability of local communities to extract river resources and convert them into tradable goods. Salmon was one such trade item, with an oversized impact on Ainu territoriality. Local communities took advantage of the species’ instinct to return to their natal rivers to spawn in fall. Winter camps were built upstream to catch and dry salmon, as the species tends to spawn near river sources with a gravel riverbed habitat and sufficient groundwater flow – conditions that are found more upstream (Ito and Watanabe 2020). Thus, in eastern Ezochi, Ainu migrated seasonally along rivers: in the warmer seasons, they moved coastward for marine species, such as cod, ray, and herring in the spring, and sea cucumbers and kelp in the summer, while in the colder months they relocated upstream for salmon and game hunting such as deer, eagles, and bear, as well as repairing boats and knitting nets and ropes, in preparation for warmer months (Ashikaga 1968, pp. 42–43). Trade records from the early 1800s, for example, report the following:

In spring, late March, men caught cod, skate, shark, shiitake. In summer, kombu is harvested. In autumn, salmon is caught at the mouth of the Kusuri [Kushiro] River. In winter, they move to Nishibetsu to catch salmon [...] and hunt eagles, all as trade goods. Women help at the fisheries [at the coast] or weave halibut-skin cloth, as trade goods. (Author unknown 1961, p. 115)

This record tracks the seasonal and gendered relocation from the coast to the upstream forests of Nishibetsu in the winter.

The Kushiro River, due to its length and access to the inland headwaters of other streams, was particularly suited for the salmon trade. Archaeologist Segawa Takuro argues that salmon trade in Ezochi only existed along longer rivers, since the only type of salmon suitable for drying and trading were the lean salmon that expended their fat to travel upstream for spawning (Segawa 2007, pp. 123–129).¹ These upstream winter camps served as workshops for salmon catching and drying. Although they may have resembled the facilities for processing herring and other marine goods associated with coastal trading posts, they were locally managed with little oversight from Wajin merchants. The impact of salmon trade can also be seen in residential patterns. According to travelogues from the 1850s, an Ainu community of seventy-two households was located near the Kushiro trading post. Several salmon fishing camps were located upstream, and that the Kushiro headman had territorial claims over the headwaters of the Nishibetsu and Abashiri rivers – both renowned salmon rivers (Ashikaga 1968, pp. 60–63). Control over longer rivers or areas with many river sources gave greater economic leverage and political power to the Kushiro river group.

Thus, headmen's influence over the length of rivers and their adjacent lands enabled them to act as a mediator between Wajin merchants and riverine communities. The headmen oversaw the procurement and transportation of trade items that moved through settlements and down along the river, where they were gathered and sold at trading posts in exchange for goods, such as rice and sake, which were then distributed back to local settlements. Trading posts became the entry point for market and state forces, disrupting existing social hierarchies and exerting greater pressure on the local ecosystem. Over time, headmen's dependence on trade led to the increased exploitation of rivers, and ultimately, to an inter-watershed dispute.

A dispute over a salmon river

In 1853, the same year that Matthew Perry's US Navy fleet arrived in Tokyo Bay, a conflict ensued between two Ainu river groups in eastern Ezochi. The dispute arose when Ainu contractors trading at the Nemuro post set a salmon net at the mouth of the Nishibetsu River, whose forested headwaters were accessible via the Kushiro River and was a key hunting and fishing area for the Kushiro river group. Although the economic volatility during this time likely triggered this dispute, its underlying cause was the local leaderships' dependency on the Ainu–Wajin trade and the depletion of resources due to rapacious exploitation. This local conflict, occurring at the fraying edges of Pax Tokugawa, was not an isolated event. It reflected the shogunate's effort to fortify its position in Ezochi against the perceived threat of foreign invasion. The shogunate sought to strategically link the river to the vast network of roads, rivers, and maritime routes, with post stations and highways linking navigable waterways.

Wajin administrators' efforts to gain greater control over these regions were prompted by two late-eighteenth-century developments in eastern Ezochi: an Ainu rebellion against Wajin proprietors and the encroachment of Russians. First, a local insurrection disrupted trade and raised fears of widespread insurgency. The Menashi–Kunashir Rebellion of 1789, led by Ainu workers on Kunashir Island and resulted in seventy-one Wajin deaths, signaled potential trouble in a region with weak administrative oversight (Iwasaki 1998; Tanimoto 2020). Until this time, Ainu–Wajin trade in eastern Ezochi was primarily handled by merchants paying trading rights from Matsumae administrators. Many merchants, aside from engaging in trade, also operated fisheries and processing facilities for which they introduced new technologies, such as large fishnets, and adopted new ways to procure labor, such as debt servitude and peonage. Increasing dependence on commercial fisheries contributed to instances of intimidation and violence against Ainu workers (Hirano 2015; Howell 1995).

The specter of Ainu unrest grew larger with the arrival of foreign envoys on northern shores. Backed by Imperial Russia, envoys such as Adam Laxman (1766–1806) reached Nemuro in 1792

¹Since fat tends to oxidize, leaner salmon are more suitable for drying.

with two Japanese castaways to request a fur trade agreement (Azuma 2017; Koller 2004). Habuto Masayasu (1752–1817), one of the three shogunal magistrates assigned to Ezochi, reported that “Russians approached Kamchatka, encroached upon and renamed dozens of islands, and established offices there.” He further documented a series of Russian arrivals on the northern shores, starting with one such encroachment in 1765 (Habuto 1985, p. 32). For the shogunate, these Russian incursions heightened the urgency for cultivating ties with local Ainu communities.

These two problems pushed the shogunate to seek greater territorial control by strengthening the existing trade system and establishing Wajin settlements.² In the years to follow, shogunate officials seized control over eastern Ezochi. A 1799 decree appointed officers to Hakodate, Matsumae’s administrative center that was also used by the shogunate’s magistrate, and called for “guarding the border with foreign countries” and to “further investigate the land [...], educate the barbarians to change their customs, ways of trading, and gain their obedience in opening the land.”³ Recognizing Ezochi as the domain of Ainu “barbarians,” the magistrate envisioned a colonization plan that included the expansion of the existing trade network. Trading posts were recast as not only centers of economic activity but also hubs of administrative control, where the vassals sought to promote Japanese language usage, farming, and the use of money, while also banning practices such as polygamy, thus aligning with Habuto’s vision that “in 100 years all of Ezochi will be transformed into a land similar to that of our country” (Habuto, p. 38). To achieve this goal, the magistrate supported the establishment of Wajin settlements and the construction of a transportation network.

The Kushiro River was central to these efforts because the waterway, aside from offering access to rich inland resources, connected to Shari Pass, a road that reached the Sea of Okhotsk. This shortcut, a footpath that was already well-trodden by locals, became a part of the shogunate’s extensive transport network (Vaporis 1995) when Wajin settlers built a road that connected the Kushiro and Shari rivers (Tanimoto 1988). In 1800, the shogunate’s Hachiōji Office, near Edo, sent fifty samurai-farmers with thirty-five rifles to settle in Shiranuka, near the mouth of the Kushiro River (Kushiro shi 1931, p. 197). The group’s leader, Hara Hanzaemon Taneatsu (1749–1827), proposed that in addition to defending the north, his unit would “open the land to the ways of farming” (Habuto, p. 65). Made up of samurai families who had experience serving as security officers and tenant farmers in the outskirts of Edo, they arrived in 1800 and constructed Shari Pass, which began in Shibechea, a settlement along the Kushiro River, and continued to Shari, a trading post that was part of western Ezochi and therefore gave access to the trading post in Soya, the northernmost settlement on the island. This new road thereby bridged the far corners of eastern and western Ezochi, thus closing the circle of control around the island and shortening the voyage from Soya to Hakodate.

For Shari Pass to be a viable shortcut to the Sea of Okhotsk, however, a safe passage via the Kushiro River was essential. In the first recorded instance, Habuto traveled from Hakodate along the island’s southern coast, rounded Cape Nosappu in the east, around Kunashir Island, and then trekked from Shibetsu along the Shibetsu River, through Nishibetsu, to Shibechea (Fukui 1961). The expedition then traveled downstream along the Kushiro River by foot and midway embarked on a boat to travel to Kushiro Port. A month later, Matsudaira Tadaaki, the aforementioned shogunal magistrate, circumnavigated most of the island via the Kushiro River (Isoya 1961). In this 1801 mission, Matsudaira’s group, which included Isoya Norikichi, who left a record of this trip, a porter, and two Ainu guides, traveled clockwise from Hakodate, cutting northward from Yufutsu to Ishikari to the Sea of Japan, then rounding Cape Soya to the Sea of Okhotsk. On June 13th, they left Shari, located west of Shiretoko Peninsula, to travel upstream on Shari River by boat. Midway up the river, the group disembarked to hike on the newly constructed Shari Pass. Isoya noted that they “traveled on the newly opened mountain road, marching through a thick forest with a swarm of mosquitoes and horseflies” (Isoya 1961, p. 57). Along the path was “a makeshift shack built by the Hachiōji soldier-farmers,” where they stayed the night, and arrived in Shibechea on the 15th. On the 16th, they traveled down the Kushiro River, during which a sword was lost

²The territorial claims of the shogunate overlapped with geographies of social identities. See Howell (1998).

³“Ezochi torishimari goyōkakarī ninmei” 1799, January 16th. The decree is reprinted in Hakodate Shi (1974, pp. 419–420).

when the ship capsized. Our scribe mentions several tributaries and a lake, until they arrived in the Kushiro trading post, where some 200 Ainu households resided.

Similar survey expeditions occurred after 1802. For example, accounts of travels and trading were recorded by Arai Heibei (1770–1830), a shogunate vassal assigned to Hakodate in 1807 who later became the key financial officer of Ezochi. His account, dated 1809, tells of a shipment from Kushiro that included kombu from Nishibetsu, which probably meant that the kombu originated from a post on the Okhotsk via the Shari Pass–Kushiro River route. Other items, such as raptor feathers and sturgeon, from the far end of the Shari Pass (Arai 1961, p. 77),⁴ are also noted to have come through Nishibetsu’s “raptor feather store” (ibid., p. 84). There were also Wajin-led efforts to introduce agriculture to locally produce tradable goods. For example, Arai mentions a time when “millet yield was insufficient” and therefore the Wajin merchants were “unable to pay the barbarians” (ibid., p. 81). One such group of farm plots, “2 *ri* (8 km) upstream [from Kushiro] constructed by the Shiranuka settlers” (ibid., p. 81), produced crops such as daikon, millet, beans, and burdock, which the farmers would sell at the post. In exchange, the farmers purchased “rice from Edo,” as well as sake made locally in Kushiro or shipped from Echigo, or present-day Niigata (ibid., p. 70). Arai’s account tells of the importance of Nishibetsu, an area that was connected to the Tokugawa transportation network via the Shari Pass and the Kushiro River.

Despite the effort to oversee the area, the interiors of eastern Ezochi remained primarily in control of Ainu river groups, as Wajin merchants relied on local leaders to procure and deliver inland resources. The Nishibetsu River dispute sheds light on this political geography. In this incident, river rights were central to this territorial dispute. In 1853, an Ainu contractor in Nemuro cast a net at the Nishibetsu River’s mouth to catch salmon. This angered Menkakushi (Japanese name: Sei’ichirō), the Ainu headman from Kushiro, who petitioned that his group had rights to the Nishibetsu River’s headwaters, which was accessible via the Shari Pass. Between 1856 and 1860, despite episodes of sabotage and destruction of property, the two river groups resolved their differences through negotiations mediated by Wajin trading post officials. In an 1857 report, Menkakushi claimed that his grandfather, Bekerinishi, sent a sword and sheath, along with six silver cups, to the grandfather of his Nemuro counterpart Ikashunte, in exchange for “overseeing the river from the mouth to the headwater” (Akiba 1989, p. 406). The Nemuro leader, while admitting possession of these “treasures,” denied knowledge of the agreement they represented. The magistrate at Akkeshi, a nearby trading port, ruled in favor of the Kushiro group and imposed a ban on rigging nets across the river.

Of note is the Wajin intervention and how Wajin items served as evidence for territorial claims. Although the exchange of river rights with trade items is not strictly a purchase, it indicates that high-value ritual objects, when underwritten by oral narratives that recount past contractual ceremonies, functioned as pledges for the transfer of rights. The trade-driven system of politics, ritual, and territoriality persisted due to the consistently high market value of local fauna as items of luxury and refinement throughout the shogunate (Iwasaki 1998, p. 175; Segawa 2007). However, the disputing river groups also served as subcontracted bosses for the respective trade posts of Kushiro and Nemuro. Post officials were likely concerned about the halted flow of goods due to the stalled negotiations and the destruction of processing workshops. Still, a crucial factor for the ruling in favor of the Kushiro group may have been that Kushiro’s port was accessible year-round, while Nemuro’s port would be icebound and therefore inaccessible during winter.

This dispute may have also been influenced by the instability of the Tokugawa monetary system, triggered by the demand by foreign powers to begin trading internationally (Crawcour and Yamamura 2012). In 1854, the shogunate reassumed control over Ezochi, while Hakodate was granted permission for international trade. The new magistrate also sent surveyors to explore the land, including Enomoto Takeaki (1836–1908), who later to become a naval commander of the shogunate forces, and Matsuura Takeshiro (1818–1888), a scholar-monk turned explorer who coined the name

⁴Although the document explicitly states “Nishibetsu,” since Nishibetsu is inland, it can be deduced that the kombu came from the far end of the Shari Pass. Today, the area around Shari is known for konbu harvesting.

“Hokkaido” as the modern designation of the island. What enabled these surveys, and thus rendered the land legible to the emerging state institutions, was the trade network that connected Hakodate through eastern Ezochi and reaching to the Kuril Islands. On this eastward route, the Kushiro River provided access to inland regions and the island’s northern coast (Kushiro sōsho henshū iinkai 1994, pp. 16–18). In the modern era, the river’s function as a transportation route intensified, as it was enlisted in the efforts to build the Japanese Empire.

River, dispossessed by design

In 1868, the new Meiji government declared itself a new nation based on democracy and science, while also launching the modern colonization of Ezochi, subsequently annexed and renamed “Hokkaido.” The Hokkaido Colonization Commission (hereafter “the Commission”) was established in 1869 through a series of decrees that mandated it to build infrastructure, establish settlements, and develop industries in the newly claimed territories. Colonization necessitated the transformation of Ezochi into a legible territory, involving the parceling and conversion of land into transferrable plots and the introduction of policies to spur migration from the mainland. During this transitional phase, the Kushiro River continued to facilitate the hauling of goods and providing access to the island’s interior for surveyors and geologists in search of resources and settlement sites. Although the river offered only a limited view of the land from its waters, it played a crucial role in making the area accessible to state actors. Surveyors, seeking to excise what they deemed as wild and “barbarian” elements from the region, re-imagining Ezochi as *terra nullius*, and to do so required the engineering of rivers. In the quest to establish settlements and develop the land, the river was dredged and channelized to allow for the passage of ships. This strategic alteration of the river mirrored the broader objectives of the Commission at the onset of Hokkaido’s colonization.

In this initial phase, the Commission aimed to strengthen the empire’s northern defenses by founding settlements and developing the infrastructure, technology, and industry needed for harnessing the region’s resources. Viewing Hokkaido as an untapped frontier, the emerging state invited experts, mostly from the USA, to plan civil engineering projects and introduce agricultural, mining, and forestry practices. The establishment of colonial settlements served as a key strategy for national defense, a justification publicly stated during a government session with the Meiji Emperor on June 30, 1869, just weeks after the defeat of the last anti-imperial forces in Hakodate. The statement, in presenting Hokkaido as “the Northern Gates of the Imperium,” admonished the geopolitical fallout caused by the prior maltreatment of the Ainu:

In the past, government vassals had harshly treated the natives [Ainu]. Foreigners [Russians], however, treated them compassionately, thereby fomenting hatred against us Japanese and instilling in them respect for the foreigners. The natives have been stirred into rebelling against us, and it is our duty to prevent these types of incidents from spreading to Hakodate. [...] It is imperative to quickly adopt a means of colonizing and establish it as an area for the propagation of national subjects.⁵

This statement discursively tied the northern defenses to the creation of colonial settlements. Simultaneously, the Commission promoted agriculture and sedentism through “education” as a way to convert Ainu people into imperial subjects.

This molding of indigenous people was closely linked to the expropriation of rivers in Hokkaido. In 1871, the same year that the Household Registry Law recognized Ainu individuals as Japanese nationals (Chapman 2011), the newly established Nemuro Prefecture enacted a law against poaching in “salmon seed rivers,” which included the Nishibetsu River.⁶ At the time, the Meiji state adopted a policy of resource propagation – a commanding concept for modernizing natural resource extraction

⁵“Saisei itchi chihanji ninmei Ezochi kaitaku no sanjō gokamon sho.”

⁶“Nemuro Shichō futatsu,” Hokkaido Prefectural Archives, March 1871. See also “Hokkaido suisanbutsu torishimari kisoku” (1888), reprinted in Motonaga (1897, pp. 32–36).

(Takahashi 2007). With a focus on salmon as a key source of foreign currency, the Commission initially granted fishery rights, prohibited poaching, relocated Ainu villages along rivers, and, in 1878, erected a salmon cannery at the river's mouth. The enclosure of Nishibetsu was completed with the founding of the Nemuro Salmon Fishery Cooperative, deployment of prefectural guards along the river, and the construction of a salmon hatchery at the headwaters (Akiba 1980). The prohibition against salmon fishing and the dispossession of rivers from indigenous communities were part of the Meiji state's strategy to expand its control over natural resources, thus complementing cultural and linguistic assimilation policies.

Similar changes unfolded with the Kushiro River. Despite the official dissolution of the trading post system in 1869,⁷ in practice, the closure of trading posts resulted in an administrative void that enabled merchants to continue their operations and to benefit from the state's reappropriation of land and fishery grounds. One influential figure in the river's development was Sano Magoemon (?–1881), a merchant who headed the Kushiro trading post. He assumed control of his Matsumae-based merchant family in 1856 and expanded its fishery business in Ezochi, initially focusing on the kelp trade, for which he retained rights into the modern era. It was sulfur deposits near volcanic vents, however, that drove Sano upstream. In 1876, Sano secured a 15-year permit for the Atosanupuri Sulfur Mine near the river's headwater and constructed a road connecting the mine to Shibechea, which linked it to the Kushiro Port via the river. Completed in 1878 to transport sulfur ore by horses, it was also intended to be used for establishing settlements inland, with little effect (Kushiro sōsho henshu iinkai 1988, p. 107; Shibechea chōshi hensan iinkai 1998, p. 716). But sulfur production laid the groundwork for future development of the Kushiro River.

In 1882, the Commission was dissolved due to a scandal involving a land purchase in Hokkaido, political assassinations, and a constitutional crisis spurred by the Freedom and People's Rights Movement. Consequently, Hokkaido underwent reorganization into three prefectures, each entrusted with establishing settlements for former samurai families (Takahashi *et al.* 1958). In the subsequent year, Nemuro Prefecture dispatched two surveyors to find potential settlement sites along the Kushiro River. Their report included their observation of the river, as they journeyed upstream, disembarked midway in Shibechea, and trekked to the sulfur mine.

This expedition marked the start of several state surveys of the Kushiro River. Reports based on these survey expeditions echoed the Meiji State's goals for colonizing Hokkaido: prioritize agriculture, identify resources for industrial growth, and secure a reliable transportation route. Focused on establishing inland settlements, their recommendations became a blueprint for subsequent plans, reflecting elements of "high modernist ideology" as described by James Scott – designed spaces based on science, a preference for small-scale prototypes, and a modernist aesthetic of grids and lines (Scott 1998, pp. 4–5). The surveyors pinpointed four potential settlement sites that promised "fertile soil conducive to land development and the ease of traveling," but they also acknowledged the challenges of "very muddy" wetland conditions unsuitable to habitation.⁸ One settler encountered difficulties when converting his assigned area into farmland because it was already occupied by Ainu locals (Shibechea chōshi hensan iinkai 1998, pp. 718–719). The report also noted trees that may hinder land reclamation but has potential use for match production, due to the nearby sulfur source (a match factory was built there in the 1890s) (Shibechea chōshi hensan iinkai 1966, pp. 156–158). The report also foresaw the growth of a livestock industry, advising that that "grass from the fields" could feed workhorses.

The report also recommended changes to the Kushiro River, anticipating future flood-control measures. It evaluated the river's potential as a shipping route and suggested "dredging of shallow beds, removal of woody debris, and the cutting through of the meandering sections" to accommodate "the passage of steamships of 150 *koku* capacity" in one section and "70 to 80 *koku* ships" in another.⁹

⁷"Sho basho ukeoinin meikoku wo hassu"; "Hokkaidō sanbutsu hankenka kaku minato he yu'nyū no setsu aratamekata."

⁸"Meiji 17nen fukumeisho kangyōka nōshōkakari."

⁹*Koku* is equivalent to about 180 liters of rice. A 150-*koku* ship had the capacity to carry the equivalent of about 22,500 kilograms in weight, or 27,000 liters in volume.

Additionally, the report proposed that it would “cost an extremely small sum to open a road for horse-drawn carriage” from Shibecha to the sulfur mine (Shibecha chōshi hensan iinkai 1998, pp. 719–720). Although some of the engineering techniques recommended by the surveyors, such as dredging, debris removal, and channelization, were used during the Tokugawa period (Wilson 2021), and Ainu communities deployed minor and temporary river modification for salmon fishing, the proposed construction plans were unprecedented in scale and permanence.

Establishing settlements in Hokkaido required the implementation of new river management and engineering methods, as well as large-scale modifications such as draining wetlands and logging forests. These projects not only reflected the colonial policy of imposing Japanese agricultural practices but also the introduction of water technologies and management plans to Kushiro’s riverine landscape. The surveyors’ vision for the future river encapsulated Imperial Japan’s urgent need to construct both social and physical infrastructure essential for Hokkaido’s colonization thus accelerating the transformation of the river from a key component of ecological dynamics to an infrastructure.

Coercing settlements by steam power

This colonial vision reframed the Kushiro River, shifting its primary use from a transportation route to a flood-control infrastructure. Stripped of local lore and leadership, the river was reworked for boat travel, which enabled the establishment of settlements and industry. Notably, a penal colony was central to the effort to populate the region and develop the land. This mobilization of forced labor bore deep consequences for the riverine ecosystem. The “settlement” of prisoners, coupled with the dispossession experienced by indigenous communities, underscored the colonial state’s approach to territorial control through the forced restructuring of entire communities. When the penal colony supplied free labor for dredging rivers and draining wetlands, unintended consequences began to emerge. Unwittingly, the plans for harnessing the land’s resources heightened the risks of floods as riverside settlements expanded, thus highlighting the complex interplay between state-driven land development and the region’s hydrologic dynamics. The completion of the railway network marked a major shift, transforming the river into a precisely controlled and managed infrastructural asset, poised to further propel the region’s economic development.

Establishing a penal colony was a state strategy to facilitate northward Japanese migration. Initially, settlers encountered harsh conditions and high taxes, leading to the abandonment of their new homes and return to the mainland. This setback caught the attention of Japan’s highest authorities. Recognizing these impediments to colonization, Itō Hirobumi (1841–1909), then the head of the Great Council of State, the most influential ministry of Imperial Japan, advocated for the creation of penal colonies in Hokkaido. He reasoned that penal colonies in the north would address two pressing issues: the overcrowded prisons on the mainland and the difficulties in establishing settlements in Hokkaido.¹⁰ Few years later, when serving as Prime Minister, Itō dispatched his secretary on a three-month survey mission to evaluate the progress of colonization in Hokkaido. The resulting report, which led to the 1886 decree to re-unify Hokkaido into one administrative unit, confirmed that many settlers were leaving Hokkaido.¹¹ In a petition included in the report, a local man named Kentarō, writing in part about the Kushiro area, expressed his indignation at paying heavy taxes when farming in his adopted land proved unprofitable (Hokkaido chō 1991, pp. 602–603). Based on this report, Itō issued a directive in 1880 to relocate prisoners to Hokkaido, marking the beginning of the Commission’s founding of penal colonies (Joliffe 2019; Sakata 2018).

A prison in Shibecha made possible the implementation of the colonial policy on the Kushiro River and the surrounding basin. Military families had already begun to settle along the coast and by the river’s mouth, but the upstream regions were avoided. In 1884, an engineer scouted for an optimal location for the colony and identified Shibecha as an ideal site, citing that “the Kushiro River flows

¹⁰“Zuryū ryōin hakkenchi yotei no ken.”

¹¹“Hokkaidō sanken junshi fukumei sho,” reprinted in Hokkaido chō (1991, pp. 591–644).

through the middle [of the site], flanked by forests and endowed with soil of the highest quality, and the water sufficiently deep to make [boat] travel easy” (Shibechea chōshi hensan iinkai 1966, p. 60). The Kushiro Penal Colony, which became operational in 1885, was built on riparian land and designed to detain over 1,000 convicts for hard labor. Throughout its 16-year operation, prisoners worked in the sulfur mine, excavated drainage canals, developed farmland and residential areas, and engaged in river infrastructure work. Between 1887 and 1899, inmates dredged and cleared debris along a stretch of about 23 kilometers of the river to ensure navigability from Shibechea to the coast. Prison labor made possible Shibechea’s emergence as a key river port that connected Kushiro to the island’s northern coast.

By this time, plans were in motion to replace the river with a land-based, railway-centered network. The 1885 report suggested assigning the work of “clearing thick forests,” “flattening steep mountain peaks,” and “draining marshes,” needed to construct roads and railway tracks, to the penal colony (Hokkaido chō 1991, p. 618). Roads posed a particular challenge, given that “much of the land in Hokkaido are inundated fields and marshes,” making it “impassable for people and horses alike” (*ibid.*, p. 618). Without proper drainage, farms and pastures would remain “soaked in bad water, and it would be impossible to create a long-lasting farming industry.” The report recommended constructing “a large drainage channel to redirect water [from the marsh] before building a road” and proposed that “sediment removed to dig drainage channels could be used for road construction, while the drainage itself could be widened to accommodate shipping” (*ibid.*, p. 619).

The unsuitability of this boggy land for development continued to worry the colonial administration. In 1887, with the establishment of the Hokkaido Agency to replace the three prefectures, Iwamura Michitoshi (1840–1915), a military officer and later a colonial administrator in Okinawa, Japan’s southern colony, was appointed as the first governor. In his appointment speech, he underlined the importance of building a transportation network as a basis for a more durable settlement program. He proposed to select potential sites through careful land surveys that investigated “the locations of mountain peaks, the shapes of rivers, and the borders of the provinces.” He listed items that needed investigation for a better colonization plan:

We need to select the most suitable land for colonial settlements by measuring, with great precision, the following: the width of fields and valleys; the soil and geology; the density of forests; the types of grass and trees; the depth of rivers; existence of fish species; whether the water is potable; where the mountains and rivers meet; changes in temperature; and the land and water conditions for hauling goods. We shall then create maps to the benefit of the immigrants who will engage in agriculture, forestry, husbandry, and other such work.¹²

Here, the governor proposed to bring order to the land and create a clearly defined geography that could facilitate greater control and manipulation of nature. Additionally, these policies legitimized scientific survey data as the preferred source of knowledge, presenting the practice of data gathering as an extension of government procedure and portraying these categories as politically neutral. The detailed surveys also had the discursive effect of granting the state the authority to subsume local communities and their life-worlds under large-scale hierarchies of infrastructure and the natural landscape.

During the same year as Iwamura’s appointment, steam power modernized the route for hauling sulfur in eastern Hokkaido: the railway tracks from the mine to Shibechea were completed, thereby replacing horses with locomotives, and steamboats commenced travel between Shibechea and Kushiro. This coincided with two major developments. First, the Commission, anticipating the area’s potential for industrial growth, planned the Kushiro Port to be a major port due to its geopolitical and economic importance as the northernmost ice-free port in the Japanese Empire. It was designated as a special export port in 1890 and a trading port in 1899 (Kushiro sōsho henshū iinkai 1994, pp. 31–33; Sakai 1993). Second, steamboat and locomotive use increased the demand for coal. Yasuda

¹²“Iwamura chōkan shisei hōshin enzetsusho,” reprinted in Hokkaido chō (1991, pp. 645–660). The quote is from p. 654.

Zenjirō (1838–1921), founder of a major business conglomerate, purchased the Atosanupuri Sulfur Mine and oversaw the mine, railroad, and steamboat operations. He gained rights to Harutori Coal Mine, located near Kushiro, and began mining in 1888, thus completing the vertical integration of sulfur production (Ijichi 1969). The mechanization of transportation enhanced the river's key function as a shipping route, spurring the growth of several stopping points along the river, including police stations, inns, and the 1887 opening of a post office in Shibeche (Shibeche chōshi hensan iinkai 1966, pp. 28–30).

Even after the closure of the sulfur mine in 1896 and the penal colony in 1901, the river gave rise to other industries that further impacted the basin. Steam and machines accelerated the movement of goods and people, and they also helped engineered the terrain for faster water flow. Reclaiming productive lands required the construction of drainages in wetlands, expediting the movement of water away from desired lands and into the river's mainstem. Among those industries that benefitted from land reclamation, horse husbandry and forestry played a significant role. Originally for raising military horses, horse husbandry also supplied draft horses for construction, forestry, and agricultural work, as well as for transportation duties such as pulling ships and hauling freight on land routes, eventually leading to the development of dairy agriculture (Kushiro sōsho henshū iinkai 1988, p. 161). Another key beneficiary was the forestry industry, which relied on the Kushiro River to float logs downstream and gather them by the port for timber and paper production (Yamaguchi 2012). In the Kushiro River basin, intensive logging first occurred along the lower reaches of Beppo and Akan rivers, Kushiro's tributaries, and later reached the island's interior via the river system. Railroad ties, manufactured with oak from the basin and shipped from Kushiro, became a significant export for railroad constructions in China and India, sometimes accounting for over 90% of the port's total exports (Kushiro sōsho henshū iinkai 1969, p. 367).

The river's coal-fueled mechanization also catalyzed the construction of a railway network and consequently diminished the waterway's role as a transportation conduit. The 1896, Hokkaido Railroad Construction Law mandated the construction of a major railway hub in eastern Hokkaido,¹³ with Kushiro serving as the starting point for railway lines along the coast (Kushiro sōsho henshū iinkai 1988, p. 205). Upon the completion of rail tracks to Asahikawa in 1907, Kushiro became linked to Sapporo, Hokkaido's prefectural capital, and other southern industrial cities (Kushiro sōsho henshū iinkai 1994, p. 24). Although railway lines did not reach Shibeche until 1927, it gradually freed the river from its transportation role, allowing planners to address water drainage and flooding issues.

When the Kushiro River shifted primarily to a water delivery infrastructure, engineers proposed large-scale, comprehensive alterations to the river system. Land-use changes resulted in drier lands and topsoil erosion, causing sediment buildup that clogged the Kushiro Port, much to the dismay of shipping and fishery operators. These hydrologic changes also heightened flooding risks in urban and industrial areas. By this time, the River Law had been passed in 1897, which under Article 23 had granted government agencies the right to "immediately use the necessary land" and "corvee labor" for "defense against imminent dangers of flooding."¹⁴ Legally, therefore, the "defense" against flood risks was prioritized over private property claims and other uses of the river, thus paving the way for an integrated solution that would be aligned with "Japan's modern river regime" (Wilson 2021).

To address these issues of flooding and sediment release, the Akan River was diverted from the Kushiro River in a project that mimicked the common engineering solution at that time for flood-proofing cities. Planning began with the installation of a hydrometric station in 1903, and construction began in 1914 (Hokkaido kaihatasukyoku kushiro kaihatu kensetsu bu 1983, p. 75). Despite the meticulous planning, Akan violently severed itself from the mainstem during a 1920 flood, which broke the riverbanks and permanently altered the river's path (Kushiro sōsho henshū iinkai 1969, pp. 304–310). Another major project involved the construction of an 11.2-kilometer channel to redirecting the river away from the port and the city's center. Begun in 1921 and completed a decade later,

¹³"Hokkaidō tetsudō fusetsu hō."

¹⁴"Kasenhō."

the new channel effectively became the mainstem, as a sluice blocked the water from returning to the river's original path. The construction of these two diversion channels protected the port city but also altered the region's hydrology.

The modern transformation of the Kushiro River stemmed from the colonial policies aimed at bolstering its geopolitical presence in the Pacific North by developing land and populating it with imperial subjects. Initially used as a transportation artery, the river's role shifted with the establishment of a penal colony in Shibechea. This decision, driven by the imperative to populate and develop the region, mobilized prison labor to initiate extensive river infrastructure projects. However, as industrialization and land development advanced, unintended consequences emerged, exacerbating flood risks and reshaping the region's hydrological dynamics. The completion of a railway network further reshaped the river's function as an infrastructure safeguarding the growing port city of Kushiro by controlling water and sediment flow. Through these changes, the Kushiro River evolved into a measurable and manageable infrastructure, facilitating increased land reclamation, urbanization, and the intensification of agricultural and industrial production. It became emblematic of the intricate relationship between human intervention and natural landscapes, revealing the lasting impacts of colonial policies and technological innovation on regional ecosystems and communities.

Conclusion

Rivers shape the physical terrain and, with it, institutions of territorial control. As water courses through the land, it delivers both sustenance and harm to those living along its banks, weaving together their daily practices, beliefs, histories, and assertions over its use. The Kushiro River's history attests to society's evolving relationship to nature. Its deification by river-based groups gradually gave way to modern colonial practices that redefined the river as a tool and target of technocratic control. Colonial settlements required a navigable river and drained land, facilitating the state's penetration into the island's interior. But these alterations gave rise to issues such as flooding and sediment flow that stymied the growth of the port city at the river's mouth. The prevailing approach of the colonial state was utilitarian and imperial, viewing the river as infrastructure and prioritizing stability and control over its ebbs and flows. Government mandates and engineering plans, while seeking to ensure a friction-free flow of both water and commodities, estranged local communities from their life-worlds and disrupted vital ecological processes essential for a thriving habitat (Wohl 2004).

Two key features emerged as the Kushiro River became a malleable, alienated landform. First, despite the vast changes, what persisted was the scale of territoriality, which remained at the level of the river system. For Ainu communities, rivers held a significant role in their subsistence practices and political cosmology. The Ainu-Wajin trade intensified the role of rivers in territorial imaginings, as resource extraction led to inter-watershed conflicts. The modern state, despite dispossessing the local communities from their access to the river, inherited the remnants of this spatial organization, as it framed the Kushiro River at the basin level. The modern state remained fixed on the entire river system, from source to mouth, as a unit of analysis and planning, thus underscoring its enduring significance in shaping territorial boundaries and governance.

Second, nature underwent a process of naturalization and disenchantment, which enhanced its governability. The technocratic treatment of the Kushiro River as infrastructure led to its portrayal as an inert assemblage of biotic and abiotic elements, departing from the more traditional perspective that imbues it with intentionality and moral value. Instead, a new understanding of cause and effect, agency and power, and property regimes was embraced. Engineering principles guided plans for more extensive modifications, while surveys and maps increased the river's legibility, and laws designated the state as the river's new overseer. Most importantly, the Kushiro River transitioned into a tool, a landform envisioned and engineered not in piecemeal but in totality. The deployment of these modern categories marginalized indigenous practices, granting the colonial state the authority to reshape the river in a way that served the interests of the empire over the needs of local communities and

ecologies. The river's metamorphosis into a neutral, governable entity also depoliticized the river and the larger hydrologic cycle.

In reframing the Kushiro River as a watershed system devoid of politics, two hydrosocial functions became important for state territorial control: transportation and water delivery. The Kushiro River's gentle gradient lent itself as a transportation route, enabling the growth of resource extractive industries but divesting riverine communities from access to it. The Matsumae Domain first leased trading rights to merchants for commerce with those communities, but over time, these traders, with the help of local leaders, compelled people into labor arrangements that benefited the Edo-centered market. During the Meiji period, state officials embraced a moral geography that mythologized the large-scale engineering of Hokkaido as a civilizing mission. Their policies promised the ravenous extraction of natural resources, construction of ports, and draining of wetlands as helping cement modern Japan's foothold in the North Pacific and they did so by using prison labor. These directives framed the establishment of settlements on reclaimed land as a form of territorialization that, through agricultural food production and industrial development, would contribute to border fortification against foreign threats and providing labor and resources for empire-building.

The river served another key hydrosocial function as a water and sediment delivery system. In the late-eighteenth century, perceived threats of foreign aggression and economic disruption spurred the shogunate to assert greater control over the island. This expansion laid the foundation for Japan's involvement in the North Pacific, encompassing events like the Sino-Japanese War and the Russo-Japanese War, as well as mining, forestry, and fishery activities stretching from the Sea of Okhotsk to the shores of Alaska. Drainage, in particular, played a significant role in territorialization. The Land Tax Reform of 1873, which modernized the tax system and promoted land ownership, established that only land that is productive and on a cadastral map is also taxable. However, watery lands posed challenges to introducing private property regimes into the region. Colonial settlers enhanced the river's drainage function by constructing channels, an initiative later expanded by the colonial administration through more comprehensive projects that severed and straightened rivers. These policies furthered the terracentric tendencies of state policies by ensuring a distinct separation of land and water, thus resulting in the creation of new lands by destroying terraqueous ecotones such as wetlands and floodplains (Kada 2004).

The Kushiro River, once free and bursting with salmon, now flows at the behest of the modern state. Maps depict its form in detail, while engineers have subdued its currents to extract value from human labor and natural resources. In this transformation, the river has been envisioned as a drainage infrastructure, spliced and sutured by ferroconcrete, and severed from river-based subsistence practices and cosmologies. Yet the river still holds within its waters a resistance to the state's vision. When the river floods, as it increasingly does due to climate-induced downpours, it serves as a reminder of its power. Its ever-changing shape and flow, its role in nurturing a mosaic of habitat types, and its multi-scalar links to ecospheric dynamics – they all challenge the state's grand plans. The river remains a living entity, sometimes surging against the state's attempts to fully control it.

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