



Shadow ecologies of conservation: Co-production of salmon landscapes in Hokkaido, Japan, and southern Chile



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ABSTRACT

Japan has long been infamous for what political scientist Dauvergne (1997) has called its “shadow ecologies,” the effects of its natural resource consumption on environments beyond its borders. What has drawn little attention, however, are the ways in which resource exploitation abroad also affects the ecologies that lie within the borders of Japan. This paper explores these secondary effects – what one might call the “shadow” of Dauvergne’s “shadow ecologies” – through ethnographic and historical research on the Chile–Japan salmon trade. This commodity chain exports the environmental burdens of salmon farming, such as water pollution, to southern Chile. Yet, at the same time, this trade has enabled unexpected changes in Japanese salmon worlds, including new forms of “eco-friendly” fisheries management, citizen-based conservation projects, and indigenous rights movements.

Examining the linkages between environmental decline in Chile and environmental restoration in Japan, this article asks how geographically distant ecologies and species become intimately connected through political economic processes. By focusing on multispecies landscapes, rather than commodities, *per se*, it argues for additional attention to how the environments of “core” regions are affected by transnational trade. As it does so, it highlights a need to attend more carefully to the countryside–countryside connections that existing work on city–hinterland relations tends to miss.

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Introduction

Geographically minded scholars have developed a range of concepts to articulate the links between zones of production and consumption. For example, Wallerstein’s “core-periphery” relations (1974 and 2004) have helped us to understand how the extraction of raw materials from colonial regions has fueled the concentration of wealth in the metropolises of the “global North” (see also Wolf, 1982), while Massey’s work (2007) has urged us to rethink how world cities are built on accumulation from their globe-spanning hinterlands. Increasingly, scholars have drawn our focus not only to the inequalities of wealth, but also to the unequal environmental burdens that such connections create. Rees’ “ecological footprints” have highlighted the out-sized marks that urban areas leave on their surrounding rural landscapes (1992, see also Cronon, 1991). Johnson and Lewis’ “sacrifice zones” have similarly focused attention on how places become prosperous by destroying other locales – either by stripping them of natural resources or contaminating them with waste (2007 [1995]). Such

concepts have been critically important for raising questions of environmental justice: they have shown how regions made “peripheral” or “marginal” disproportionately bear the harmful environmental impacts of prosperity enjoyed elsewhere.¹

Yet, while such scholarship has revealed vitally important patterns of landscape change, it has done so with a marked geographical bias: it has focused primarily on the environmental effects of political-economic relations on hinterland source-areas. In this article, I aim to broaden the range of landscapes we study by asking: How are the environments of core regions (not only peripheral ones) remade through transnational exchange? I address this question by exploring how the trade in farmed salmon between Chile and Japan produces changes in the landscapes of Japan, where the fish are imported and consumed – not merely in southern Chile, where they are produced. In doing so, I argue that the ecological effects of Chilean fish extend far beyond their regional environs. This case, I propose, highlights a pressing need to expand the frames we use to think about the consequences of long-distance relations on landscape ecologies.

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¹ I want to emphasize that places are not naturally “peripheral”; rather, they are made so in the context of particular geo-political relations (see Tsing, 1993).

The questions that guide this article were sparked by 15 months of ethnographic research in Hokkaido, Japan. When I traveled to Hokkaido to study the region's salmon fishing industry, I was shocked by what I saw on local plates. In the middle of Japan's largest salmon region, the majority of the salmon at supermarkets and sushi bars was imported from Chile. As I conducted long-term participant observation and more than 100 interviews with salmon fishermen, scientists, government officials, ecological restoration leaders, fish mongers, and consumers across northern Japan, I came to realize that Chilean salmon imports and, in turn, the impact of salmon imports on the price of salmon in Japan constituted one of the driving forces in the reconfiguration of Japanese salmon management practices. I found that I could not understand Hokkaido's salmon industry without attention to Chilean fish. While the majority of this article is based on my study of Chilean salmon from within Japan, I also followed the fish to Chile, where I conducted one month of fieldwork in Santiago, the Puerto Monte/Chiloe area, and the Aysen region, interviewing salmon farmers, exporters, and labor leaders.

"Shadow ecologies" and their shadows

Japan has long been infamous for what political scientist [Dauvergne](#) has called its "shadow ecologies," the effects of its natural resource consumption on environments beyond its borders (1997, 2009). Dauvergne uses "shadow ecologies" – a conceptual relative of the ecological footprint – to trace how Japanese demands for wood products drive Southeast Asian forest exploitation (1997). In doing so, he shows how, while there is little direct Japanese investment in the region's timber industry today, Japanese supply chains are "part of a complex process of interlocked indirect and proximate causes that drive unsustainable production and provide incentives and opportunities for illegal and destructive logging" (1997: 9). Such processes are "not a result of a guided or conscious plan," but rather "of both intended and unintended consequences of government, corporate, and bank actions" (1997: 11).

The ecological effects of supply chains that Dauvergne describes are part of a pattern that exceeds the cases of both timber and Japan. The configuration that "shadow ecologies" describes has been central to scholarship on commodities and empire (e.g. [Freidberg, 2004](#); [Hopkins and Wallerstein, 1986](#); [Mintz, 1985](#); [Pomeranz and Topik, 1999](#); [Wolf, 1982](#)). Yet the specificity of Japan also matters: since the end of World War II, its trading firms have played an out-sized role in developing forms of "supply-chain capitalism" that build on imperial legacies ([Tsing, 2015](#)). Many of these chains extend to Southeast Asia, where Japanese consumption alters countless landscapes by fueling unsustainable forms of mangrove shrimp farming, tuna fishing, and banana and palm oil production (see, for example, [Tsurumi, 1982](#) and [Murai, 1988, 2007](#)).

What has drawn little attention, however, are the ways that such Japanese resource exploitation abroad also affects the ecologies that lie within the borders of Japan. Like Dauvergne, I begin by showing how Japanese appetites for farmed salmon are casting a growing ecological shadow on southern Chile's coastal ecosystems. However, I do not stop there. Instead, I trace the reverberations of this trade back to the landscapes of northern Japan. Expanding on Dauvergne's work, I shift our focus to the "shadows" of his shadows, i.e., the ricocheting effects of resource extraction abroad on Japanese environments.² As cheap Chilean salmon has flooded Japanese markets, the price of domestic salmon has plummeted. While this price decline has proved difficult for Japanese

fishing communities, it has also opened up spaces for new salmon-human relations in northern Japan. With a global glut of farmed fish, Japanese salmon are no longer viewed as a critical food security resource that must be strictly managed by the state. The resulting decentralization and privatization of salmon management has spawned new forms of "eco-friendly" fisheries management, citizen-based conservation projects, and indigenous rights movements – all of which are remaking the landscapes of northern Japan.

In focusing on the proliferation of Japanese salmon conservation projects in the shadow of the farmed salmon trade, this article highlights a more general problem: how conservation projects can be indirectly entangled with practices of environmental destruction in geographically distant locales. I am not the first person to take note of this phenomenon. [Berlik et al. \(2002\)](#) have poignantly described how forest conservation in the United States has led to a rise in timber imports, and thus, to an increase in logging in other parts of the world. When the U.S. limits domestic timber harvests, they argue, it shifts wood production from secondary forests in places like New England to previously roadless primary forests in Asia, South America, Africa, and Russia ([Berlik et al., 2002: 1559](#)).³ Conservation may be flourishing in the backyard woodlots of Massachusetts, but with unexpected and unintended consequences elsewhere. In a world of transnational trade, [Berlik et al.](#) argue, conservation efforts must be considered within more expansive, global frames (see also [Meyfroidt et al., 2010](#) and [Foster and Labich, 2008](#)). However, it is precisely this kind of analysis of how "core" landscapes are shaped by transnational connections that continues to receive too little attention.

At present, the need for such analysis of "core" landscapes is intensifying, in part because practices of conservation are themselves changing. As conservation expands beyond the preservation of seemingly untouched "wilderness" to encompass explicitly anthropogenic landscapes, former sacrifice zones are becoming sites for environmental restoration. Once the valuable resources are gone – or no longer worth what they once were – abandoned mining sites, decommissioned military bases, and shuttered factory grounds can come to harbor important ecological relations. Conservationists are taking notice and making the most of the opportunities that these sites present. The problem, however, is that as former sacrifice zones become sites for conservation, the "sacrifice" is rarely ameliorated. More often, the "zone" is simply moving elsewhere. In Europe, for example, "rewilding" – a restoration approach that focuses on the re-introduction of large mammals to restore ecological functions – is increasingly implemented on farmland that has fallen out of production ([Navarro and Pereira, 2012](#)). While uncultivated European agricultural lands may offer up opportunities for dynamic environmental projects, they are also a symptom of the continent's increasing reliance on food imports. The environmental burdens of agriculture aren't going away; they are just going somewhere else.⁴

As environmental projects increasingly move into less "pristine" spaces, these kinds of dilemmas are bound to proliferate. The renewal of once-degraded sites – the "success" stories to which we like to cling in the mist of general environmental declension – are the very locales where we must closely attend to issues of displacement. Where has the degradation gone? How are these conservation projects made possible by shifting sacrifice zones?

³ [Berlik et al.](#) cite another study ([Sohngen et al., 1999](#)) that indicates that "c. 1 ha of primary forest (i.e. forest that has never been harvested before) in Asia, South America, Africa and Russia is logged for every 20 ha of forest protected from harvest in North America and Europe" (2002: 1559).

⁴ [Grau et al. \(2013\)](#) emphasize this point: "[F]ood importing countries are exporting their environmental impacts. Implementing conservation policies in one place, whether by maintaining wildlife-friendly practices with a potential yield penalty or by keeping land out of agricultural production, risks shifting the problems that agriculture creates out of sight" (480).

² [Ishikawa and Ishikawa \(2013\)](#) have made a similar move, showing how the transnational wood products trade has altered Japanese forest ecologies by reducing domestic timber harvests.

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