How Tokyo Invented Sushi

Jordan Sand

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For further information, contact the author at sandj@georgetown.edu

The first time I had sushi was in New York in the summer of 1980. Sushi in New York at the time was an avant garde dining experience. It made the ideal date: “Have you had sushi? They serve the fish raw.” “You’re kidding—won’t we get sick?” “No, and it tastes unbelievable.” With a conversation starter like this, you already had the other party off balance, intrigued. When you went, you shared an exotic experience, breaking down inhibitions together. And the rawness of the fish was itself erotic. Yet it took place in a scrupulously clean, pleasing and reassuring environment, with a chef personally attending to you. The food was light, finger food, more like fast food than what one got in a proper restaurant. Everything was right there in front of you: no courses, no sauces or wine pairings, no complicated menus in French, just fish on rice, soy for dipping, a little heap of pickled ginger. Haute and casual at the same time, accompanied by small cups of sake, it was the height of chic.¹

¹ Sushi restaurants had already appeared on the west coast of the United States in the 1960s. The large Japanese-American population there was one reason for sushi’s early arrival.
Since then sushi has globalized and, in the process, transformed itself. In the United States today it’s about as exotic as pizza. At the same time, the combination of ingredients one finds in the new, hybridized sushi has taken on rococo complexity. Sushi has long since lost the aura of freshness—both gustatory and cultural—that surrounded it when it first began to appear among cosmopolitan restaurant options. But the traits that made it so appealing when it was exotic and new in the West—minus perhaps the exoticism—are closely tied to sushi’s origins, and offer a good starting point for explaining how it was that the city of Tokyo invented the sushi that we think of as the original sushi today. For the history of sushi is intimately connected to the social and environmental history of Tokyo.

The sushi I will be focusing on here is known in Japanese as nigirizushi, meaning literally “grasped sushi.” The “grasp” (nigiri) refers to the fact that the chef takes a lump of rice in his hand and shapes it lightly before putting the fish, egg, or other topping on it. This sushi—the type that made an exciting date in 1980s New York and the type most people today would think of as ordinary sushi—can be dated through reasonably reliable sources to a restaurateur’s invention of the 1810s or 1820s in Tokyo (then known as Edo), although, as with most food concoctions, there is some fuzziness about precisely what was being invented. What Japanese call sushi, on the other hand, is a broader category of foods, and more ancient. The word means simply pickled rice; the rice need not have raw fish, or anything else, on top of it. Mixing vinegar into cooked rice—the usual practice in sushi restaurants—preserves it. Vinegared or salted cooked rice in turn makes a good medium for preserving other foods. A variety of preserved fish dishes can be found in Japan and elsewhere in east and southeast Asia that use cooked rice this way; it is likely that some date to prehistoric times. Typically the fish is laid on top or buried between layers of fermenting rice and pressed under weights for days, weeks, or even years.
Sushi thus originally signified not rawness but a preserving technique. Pressing removed the oil from the fish while fermentation of the rice, in essence, “cooked” its proteins.²

Techniques for preserving proteins have special importance in the context of a peasant’s subsistence economy, in which people must ration their food consumption carefully over long periods. Of course, prior to modern refrigeration technology, fermentation was vital to maintaining foodstuffs in cities too. But where a large urban market develops, it becomes possible for quantities of food to move rapidly and reliably enough from producers to market to the mouths of consumers that long-term preservation of at least some of it is no longer necessary. As long as the city’s productive hinterland can keep channeling fresh foodstuffs into town, there may be shortages or surpluses and some amount of waste, but there is also likely to be a steady market. This is the first sense in which the nigirizushi that swept through restaurants internationally in the late twentieth century belongs to the story of Edo-Tokyo: among the various forms of sushi that already existed in Japan at the beginning of the nineteenth century, the simple nigirizushi, dependent on fresh ingredients, was an urban version, food for the evolved consumer society of Japan’s largest city.

At the time of its founding in 1590 by the first shogun of the Tokugawa dynasty, Edo was little more than a military encampment in a sparsely populated and undeveloped region of the country. By 1700, it had grown to a population of one million. Roughly half of that population comprised members of the ruling samurai class, gathered in the city originally as military vassals and retainers to the shoguns, but in an era of peace, serving primarily as bureaucrats in an increasingly complex national system of government. The samurai in Edo ranged from men of great wealth and leisure to men eking out a livelihood, but since most subsisted on stipends and

salary, and they themselves did not produce food or other basic goods, their disproportionately large presence in the city made it a consumption capital.

In retrospect, it is remarkable that a city of this size could be effectively supplied with food when all transport relied on human and animal energy, and the regime severely restricted the use even of wheeled vehicles. It is even more remarkable that in an age without refrigeration, the city was supplied with copious amounts of fresh fish—so fresh that some of it, at least, could be eaten raw. The bay on which the Tokugawa shoguns chose to site their capital provided much of this bounty, as well as a safe harbor for transport of provisions, protected from the open sea. The inner portion of Tokyo Bay is an area of 920 square kilometers, roughly 21 kilometers across at the mouth (figure 1). Most of the inner bay is shallow and was originally surrounded by sandy beaches and tidal mud flats, but the outer bay plunges abruptly to a depth of over five hundred meters. Before motor transport, rapid cargo boats (oshiokuri bune) that combined sails and oars brought fish caught in the outer bay and on the Pacific coast to the market at Nihonbashi in the center of the city. In order to minimize the time to market, these boats were permitted to enter the bay without stopping for inspection at the guard house where other ships were inspected before entering.

The thousands of samurai who constituted the city’s political elite were for the most part required to leave their families in their provincial fiefs when they came to Edo on tours of duty (which were nominally scheduled for a year or two, but often lasted longer).³ Like New York and many other modern cities, Edo thus housed a large number of singles—particularly single men. Indeed, the sex ratio was badly skewed through much of the 258 years of Tokugawa rule.

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³ Constantine Vaporis, "Tour of Duty: Samurai, Military Service in Edo, and the Culture of Early Modern Japan" (University of Hawai‘i Press, 2008). The families of the provincial lords known as daimyo lived in the capital year round. Each daimyo was attended, however, by a vassal band of hundreds or thousands of men.
recorded as high as two to one at the time of the first census in the 1730s. This created a market for convenience food, fast food, and street food—as well as for prostitutes. One of the founding stories of *nigirizushi* describes an itinerant merchant selling his invention on the streets of one of the city’s many prostitution quarters, so already at the outset, we are not far from my later association of sushi with dating.

Although two Edo restaurants were famous in the nineteenth century as claimants to the title of inventor of *nigirizushi*, something recognizably like modern *nigirizushi*—fish on vinegared rice—was already sold in the streets by the mid-eighteenth century, so the idea of an “invention” should be viewed at least in part as a marketing claim. Essayist Kitamura Tokinobu reported in 1830 that in the beginning of the Bunka period (1804-1818), the restaurant Matsuga Sushi (also called Matsuno Sushi) opened in Fukagawa, “transforming the style of sushi.” It is unclear exactly what Matsuga Sushi did that altered the sushi Edoites had been eating, but it appears that in essence the restaurant took a street food and made it fancy. Other accounts from the time indicate that Matsuga Sushi was extravagantly expensive. To attract the custom of wealthy households, sample boxes were delivered as gifts, some containing hidden silver coins. Some of the sushi at the restaurant reportedly cost as much as three gold pieces. Matsuga Sushi’s rival, more commonly credited subsequently with the invention, was Yohei Zushi, which probably opened in the late 1810s. Hanaya Yohei started business selling his sushi on the streets in the Matsui-chō brothel district, but made his reputation by assembling a list of clients among the samurai houses. In both cases, most of the business probably derived from take-out,

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presented in elegantly wrapped boxes.\textsuperscript{7} If Matsuga took street food and made it fancy, Yohei took fancy food and made it fast. Until this time, sushi in the capital had been made in accordance with traditional preservation methods by pressing the vinegared rice and fish for a few hours or longer. Yohei skipped this step, simply laying the fish on top of the hand-shaped lump of vinegared rice. He reportedly rejected the traditional process because it was time-consuming and because pressing the oil out of the fish made it less flavorful.\textsuperscript{8} Yohei’s new method produced something like the *nigirizushi* of today (figure 2).

Fancy, fast sushi spread. The Tokugawa shogunate, which in the name of moral rule, sought to constrain luxurious habits through sumptuary edicts and periodic market interventions, did not view the trend favorably. During an infamous government crackdown in the 1830s, over two hundred sushi merchants were put in chains for charging high prices. For a period after this, all merchants reportedly returned to the original street price of eight coppers per piece.\textsuperscript{9} More than merely elegant shops or packaging had made fancy sushi fancy, however. Another critical thing that set apart what the new sushi shops sold in the nineteenth century from the earlier street food was the types of fish used. As part of its transformation into a restaurant food, sushi combined the usual fare of commoners with the more expensive fish eaten by the ruling elite. The samurai houses demanded white-fleshed fish: flounder, sea bass, and particularly sea bream (*tai*). These lighter, less oily, white-fleshed fish accorded with elite tastes. Sushi made with these fish appeared on Yohei’s menu. They were expensive (in part because of elite demand), difficult to preserve fresh once cut, and too large to make a single portion. None of them was street fare.

\begin{footnotesize}
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\item \textsuperscript{7} Yoshino, *Sushi, sushi, sushi no jiten*, 60.
\item \textsuperscript{8} Koizumi, *Katei sushi no tsukekata*, 158-9.
\item \textsuperscript{9} Morisada mankō, quoted in Yoshino, *Sushi, sushi, sushi no jiten*, 63.
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This use of fancy fish in fast food points toward the central social issue in Tokyo’s invention of sushi: the complex interplay between elite and popular culture that developed in Tokugawa Japan’s bureaucratic and consumption capital. Locally-born commoners—the fishmongers, rice brokers, lumber dealers, and other merchants and artisans who provisioned the samurai houses—adopted some of the manners of the military class. The men affected a rough and free-spending style, disdaining the ordinary merchant’s propensity to count his money. One of the best known sayings about the “child of Edo” (*Edokko*) was that he didn’t let money stay in his pocket overnight. Yet at the same time, as the finances of the shogun’s government and of the samurai houses worsened, some commoners surpassed their samurai neighbors in wealth. The shogunate depended on the merchant population and the maintenance of a strong market, but regarded commerce as a necessary evil rather than a social good to be fostered. The combination of a ruling class steeped in status-based consumption practices and commoner provisioners who not only absorbed ruling-class habits but often outdid the ruling class in luxury contributed to the creation of a hybrid culture embraced by all classes. *Nigirizushi* embodied this fusion of high and low in a bite-size package.

Sushi restaurants today serve both sushi and sashimi, but the origins of the two are distinct. Sashimi—sliced raw fish—had been a feature of samurai banqueting for centuries. The chef displayed his knife skills in a ceremonial performance, carving a whole fish (or fowl) into decorative pieces without touching it with his hands. Whole bream and carp were the customary fish for this display (figure 3). Since the entire fish was served, there was no question of preservation or storage of leftovers. In the fancy *nigirizushi* of the early

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nineteenth century, the two merged for the first time: the elite taste for delicate white-fleshed fish in its raw form combined with the popular pickled snack. As an added gesture of Edokko bravado, this fancy fast food—derived in part from a culinary ritual in which the chef himself did not touch the food—was eaten with the fingers. Enjoying one’s sushi without chopsticks is still a point of pride among some Tokyoites, particularly at the central fish market in Tsukiji.

Along with carp (a freshwater fish), bream was the standard banquet fish, considered the most auspicious food for a wide range of ceremonial purposes. Most of Edo’s sea bream came from Pacific coast waters near Sunpu, the ancestral home of the Tokugawa family. The shogunate required large quantities of fresh bream for both everyday and special occasions. High government officials (rōjū) carrying out their duties at the castle were provided lunch at work, of which bream was a common ingredient. In major ceremonial events such as the accession of a new shogun or the marriage of a member of his family, the orders rose. For a shogunal accession in 1837, the government reportedly demanded over five thousand bream. Monopolies were licensed to two merchants who brought bream to Edo, transporting the fish live in submerged bamboo cages.\(^\text{12}\) What they didn’t sell to the shogunate, these merchants were allowed to put on the market. This was the usual practice for other fish provided to the government. Licensed provisioners enjoyed special privileges in Edo’s hierarchical society, their delivery carts claiming right of way, for example, over the entourage of any samurai house. The status of “fishmonger to the shogun’s table” also added value to the shop’s name. As market prices rose and the shogunate’s finances worsened in the late seventeenth century, however, selling one’s best fish at fixed prices to shogunal officials became a hardship. By the early eighteenth century, the

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shogunate was paying only one tenth of the market rate. Fish merchants took to hiding their fish, claiming shortages, and delivering inferior merchandise to the shogunate. Eventually, in 1792, the shogunate established a procurer’s office next to the fish market (known colloquially as the Live Bream House) and sent buyer-inspectors not only into the market but into the basements of the wholesaler’s houses and onto the arriving barges to requisition fish according to the government’s orders. Efforts at deception persisted, including, apparently, hiding fish in the toilet, where even if found it would be deemed unfit for the shogun’s table. Since the procuring officials had to return with their orders filled, as a last resort they would collar any fishmonger they could find, declare him official provisioner for the day, and take all his merchandise.13

Merchants anxious to avoid the dubious privilege of being made official provisioners did well to deal in either certain varieties of low-status small fish or in the definitive big fish, tuna, which had no place in the samurai banquet.14 The chronicle Morisada Mankō, compiled over several decades beginning in 1837, listed the common varieties of Edo’s sushi as egg omelet, shrimp, ground shrimp, icefish (shirauo), tuna, kohada (a relative of herring, caught when the size of a small sardine), and sweet-stewed conger eel (anago).15 With the exception of icefish, the fish in this list were all considered “vulgar” fish, which seldom appeared on the provisions lists of the shogunate and samurai houses. Smaller fish like the shrimp, conger eel, kohada, and icefish listed as common sushi fish in Morisada Mankō were all plentiful in local waters. Kohada,
one of the signature fish in Tokyo sushi, appears to have been particularly abundant and easy for vendors to manage, since there were specialist street peddlers who sold nothing else. In the mid-nineteenth century, these kohada sushi men were known for their rakish manner of dress. The admiration for their masculine style reflected the distinctive culture born of Edo’s mixing of samurai and commoners. Since they were associated, however marginally, with the Nihonbashi fish market, a central site of the proud Edokko culture, sushi merchants were more than mere peddlers.16

Tuna was caught near the mouth of the bay and in the adjoining Sagami Bay, then carried by rapid boats to Edo, or caught on the Pacific coast and carried up the Tone River. The ocean-wide migrations of the various Pacific tuna species brought them to Japanese coastal waters seasonally. When they were sighted off the Miura peninsula, fishers from Kanata village would corral them toward shore with seine nets until they were in water shallow enough that they could be caught by hand or grappling hook. This was practiced until the late nineteenth century. Elsewhere, they were caught by line.17 It was often quicker—although costlier—to transport the fish the last leg of the journey to the capital on horseback, one large tuna wrapped in bamboo and straw strapped on either side of the horse’s saddle. Long pack trains carrying tuna were sometimes seen along the highways (figure 4).18

According to one source, tuna sushi was started by a shop in the central Nihonbashi district, near the market, after a huge catch glutted the market in the early 1840s. This story may be apocryphal.19 However, this much is clear: first, that the invention of nigirizushi had a large impact on tuna demand; and second, that at the same time, the practice of fishing only along the

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16 Koizumi, Katei sushi no tsukekata 163-5.
17 Tanabe Satoru, Maguro no bunkashi (Keiyūsha, 2010), 88.
18 Tanabe, Maguro no bunkashi, 52-55.
19 Yoshino, Sushi, sushi, sushi no jiten, 114.
coasts combined with continued dependence on human- and animal-labor intensive methods of extraction and transport left tuna stocks unaffected by the increase in consumption.

By the beginning of the twentieth century, tuna was a sushi standard and tuna fisheries were expanding. “Tuna sells well,” the author of one of the first modern texts on sushi reported, “whether it comes from Sendai [in the north] or Shimonoseki [the southern extreme of Japan’s main island of Honshū], as long as it is red.” The red flesh was lightly marinated in soy sauce before being served. The fatty *toro* flesh that is prized today was not eaten, since it didn’t keep well enough to survive the trip to market. Only since the 1960s, with modern refrigeration technology and a growing taste among Japanese for fatty foods, has fatty tuna come to be considered a delicacy. Nineteenth-century elites had branded tuna in general as vulgar in part because it was alien to the traditional carving arts of *sashimi*, and because, relatedly, it was not carved and eaten together in one sitting. Yet in an era before refrigeration, merchants valued it as one of the few large fish that kept for a few days in a raw state, even improving in flavor with age, like beef (figure 5).

The popular sushi fish on the streets and in lesser-known restaurants were thus either large fish that kept or small local fish that could be quickly consumed with relatively little waste. That most of these fish went on to become established sushi standards in restaurants at all levels reveals the large contribution of popular taste and street food to the city’s culinary culture. Meanwhile, although sea bream continued to be associated with banquets and special occasions, at some time in the twentieth century, bream and other white flesh fish became commonplace alongside tuna, shrimp and the small darker-flesh fish of the bay in sushi restaurants. Beginning

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at elite restaurants and caterers early in the century, refrigeration made what had been unthinkable ordinary: keeping these delicate large fish in sliced chunks and filets. Refrigeration was the final equalizer of class differences, leveling the distinctions among types of fish. At the same time, as artificial refrigeration technology improved and diffused in the mid-twentieth century, greater concern for food hygiene accompanied it. In the early nineteenth century, every street in the city reportedly had one or two sushi stalls. There were still some eight hundred in Tokyo when street vending of sushi was banned by the health authorities in 1939 (figure 6).

**Tokyo Bay as Productive Landscape**

Edoites had no special concern for sustainable fisheries; they doubtless wanted to eat bream *sashimi* like lords, or barring that, to enjoy as much tuna and other vulgar fish in *nigirizushi* as they could afford, as fresh as possible, raw or lightly marinated. Happily for them, Edo Bay from the mid-seventeenth through the nineteenth centuries was one of the richest environments for marine life in the Japanese archipelago. A guide to Edo published in 1736 noted that the city was famous for its locally caught fish, known as *Edomae*, meaning “from in front of Edo”: “Edomae horse mackerel (*aji*) is said to have a fat belly. It is the finest local product. Generally, not only the bream and flounder, but all fish caught in front of Edo are called *mae* fish, and all these fish are of good quality.” The words “not only the bream and flounder” suggest that the author of this guidebook anticipated readers who would not think fish other than these white-flesh *sashimi* fish worthy of special note. The message seems to be: “here in Edo we esteem all locally caught fish,” elite and popular. The 1805 guide to local products,

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22 The website of the Housen Refrigeration Company records that Japan’s first artificially cooled refrigeration room for keeping fresh fish was constructed in 1899. http://www.housen.co.jp/history/index.html.
23 Yoshino, *Sushi, sushi, sushi no jiten*, 64, 67.
*Edo meibutsu ōrai*, offered a longer list of famous Edo fish, including Shiba shrimp, *ami* shrimp, icefish, small horse mackerel, red skate, sole, goby, grey mullet, sea bass, and blowfish.

The bay was fertile due to causes both natural and artificial. In the tidal flats and shallows that lined the shore, fresh water and silt from the rivers that flowed into the bay mixed with a branch of the kuroshio sea current off the Pacific, creating a rich and variegated seascape welcoming to many species of marine life. But the bay’s richness derived in part from the presence of the city itself. Run-off from farms and urban neighborhoods along the rivers (Tamagawa, Furukawa, Sumidagawa, and Edogawa) that flowed through the city and around its perimeter into the bay attracted fish. Since the city’s human waste was sold to surrounding farms to be fermented and used as fertilizer, there was little problem of pollution from raw sewage. The densely populated and cultivated landscape of the city and its hinterland thus provided exceptional quantities of nutrients for the marine habitat but not to the level of toxicity. The other major source of fertilizer was fishcake, made commonly with sardines from the bay. The bay and the city thus literally nourished one another, just as the city’s location on the bay nurtured the culture of sushi.

Nor was the symbiosis between human habitation and marine life fortuitous. From the time of the city’s founding, the bay was a human-produced and cultivated landscape as well as a productive one. The founding story of Edo-Tokyo fisheries reflects this. Tokyo’s great fish market, originally in Nihonbashi and relocated after 1923 to Tsukiji, claims its roots in the arrival of 33 fishermen in 1590 as special retainers to Ieyasu, the first Tokugawa shogun. Ieyasu is said to have brought them from the village of Tsukuda in western Japan to catch fish for his

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table. In 1613, they were granted monopoly rights over the bay’s icefish (shirauo) between the twelfth and the third months. Icefish had not been commonly caught in the region previously, but the Tsukuda fishermen themselves seeded the Sumida River and soon the catches were abundant. In 1644, the shogunate granted them a small landfill island in the mouth of the Sumida River, dubbed Tsukuda Island. They fished by torchlight in the river and the shallows of the bay, close by the shore, making them a popular sight of the capital (figure 7). The practice may be considered close to aquaculture since, along with the fishers, the fish themselves had originally been transplanted from western Japan.27

Most other fish were not seeded in this way, but the bay was made a productive landscape through common patterns of patronage and cultivation. Encouraged by the shogunate, other fishers from western Japan came to the new capital in the early seventeenth century, bringing more sophisticated nets and techniques than local inhabitants possessed. According to Miura Shigemasa’s Keichō kenmonshū, an account of the first years of the Tokugawa shogunate written in the early seventeenth century, they used large dragnets known as “hell nets” (jigoku amī) that dredged up everything on the bay floor. Within twenty years, Miura wrote, the catch dwindled to a tenth of what it had been. Rather than targeting catches, however, the government managed fisheries by imposing restrictions on consumption and limiting fishing rights to residents of select villages. An edict issued in 1665 fixed which fish could be eaten in each month. Market records suggest that the edict was enforced.28 In addition to the fishermen of Tsukuda, the shogunate recognized forty-four other full-time fishing villages with rights in the bay—each using certain nets in certain seasons—and eight founding villages given the privilege

27 The first shirauo were transplanted from Ise Bay. The Tsukuda fishermen’s descendants still bring ceremonial gifts of shirauo to descendants of the Tokugawa family each year in a symbolic commemoration of the old patronage relationship. See Tsukahara Rokurō, Tsukudajima no konjaku: Tsukudajima no shakai to bunka (Sekkasha, 1972).

28 Uogashi hyakunen, 51-2.
to supply fish directly to the shogunate and to represent the other villages in official matters.\textsuperscript{29} Until a change of the law in 1792, these specialized fishing villages paid no taxes, although they were required to sell the government a portion of their catch. Even after taxes were imposed in 1792, they often received tax relief. Fish that could not be supplied entirely locally (like the sea bream that the shogunate consumed so much of) were provided by licensed wholesalers given monopoly rights in other coastal regions. There was no deep-sea fishing since under the so-called “closed country” (\textit{sakoku}) edicts issued in the 1630s in order to prevent the introduction of Christianity and control international trade, the government prohibited construction of vessels large enough to leave the archipelago. Villages with shorefront on Edo Bay that engaged in farming as well as fishing and other marine harvesting were sharply restricted in their use of the sea, being permitted only small skiffs and forbidden to take anything from beyond a point of three feet depth at low tide. This limited them mainly to seaweed and shellfish. Since taxes were paid in rice, which functioned effectively not only as the national staple but as the only unified national currency, the government imposed these restrictions in order to guarantee stable levels of rice production by keeping rice farmers from engaging in occupations other than rice farming.\textsuperscript{30}

Here let me include a brief and somewhat speculative excursus on the relationship between Japanese productive landscapes and the picturesque. At the end of the nineteenth century, modern nationalism transformed the rice-farming peasant into an archetype of the national subject, while plein-air school painting, imported from France, led some artists into the western suburbs of Tokyo to depict farmland and the “real life” of ordinary people.\textsuperscript{31} But for

\textsuperscript{29} \textit{Tōkyōto naiwan gyōgō kōbōshi}, 108.
\textsuperscript{30} \textit{Tōkyōto naiwan gyōgō kōbōshi}, 104.
\textsuperscript{31} Aoki Shigeru, \textit{Shizen o utsusu: Higashi no sansuiga, Nishi no fūkeiga, suisaiga} (Iwanami shoten, 1996).
most urbanites prior to this time, scenes of rice farming had relatively little picturesque appeal. Rice farming was prosaic because some eighty percent of the national population engaged in it. More importantly, it was imbricated in feudal social relations of the village and the samurai lord’s domain. The land was measured and marked out, its value determined in yields, and the transfer of a fixed part of that harvest to domain coffers carefully managed. The ruling class lived in the cities, away from the farm villages that sustained them, so unlike aristocracies in most of Europe, lords did not “command a prospect” each morning over the rural acreage that embodied their wealth. Japanese of the Tokugawa period ate wild game but not domesticated mammals. Horses and oxen served as draft animals, but with limited animal husbandry, there was little pasture land to form the kind of productive and picturesque landscape found in European pastoral art and poetry.32

Fishing, by contrast, took place in what to the non-fisherman’s eye appeared to be an unmarked common space. It involved luck and mystery, as well as the skills of the fisherman. There was no knowing in advance what the waters would yield. Although the resources of the bay were in fact carefully cultivated and access to them was managed, when compared to the farming peasant, the fisherman appeared to range freely in a wild nature that demanded bravery. Today’s most famous of all Edo woodblock prints, Katsushika Hokusai’s “Under a Wave Off Kanagawa” (commonly known as “The Great Wave”) depicts rapid fish transport boats plying precariously amid the waves in Edo bay (figure 8). Fishing had romance and excitement, like hunting, and for the same reasons was enjoyed by the ruling classes recreationally as well. Ruling-class recreational fishing and the picturesque appeal of fisherfolk at work were even combined: in 1731 and 1734, the government granted Tsukuda fisherfolk permission to make

large six-man nets in order to demonstrate their use for the pleasure of the shogun while he was on recreational fishing outings on the bay.\textsuperscript{33}

The productive landscape of the bay was seen as picturesque by Edo commoners as well, as Hokusai’s “Great Wave” and other examples from popular woodblock prints attest. The bay and the Sumida River that fed it appear in numerous guises as an intimate part of the life of the city in Hiroshige’s series “One Hundred Famous Views of Edo” (\textit{Meisho Edo hyakkei}, 1856-58). Fishermen and their nets are conspicuous in several of the prints, and boatmen abound. In contrast, the many verdant scenes of suburban locations that Hiroshige depicted show farms only as expanses of color criss-crossed with lines representing the ridges between rice paddies. Hiroshige chose not to include the figures of laboring peasants, despite the fact that the city was dotted with small farms, many within a short walk of commercial centers and close by famous tourist spots. Certainly Tokugawa-period painters depicted farming, and there are important exceptions in the print tradition as well, like Hokusai’s unfinished \textit{Hyakunin isshu} series, but the overall corpus of prints of the capital and its surroundings suggest that fisherfolk and the bay were regarded as more attractive, or more iconic of Edo’s scenic pleasures, than the farmers and paddies that also constituted an important part of the city’s productive landscape (figure 9).\textsuperscript{34}

Like the villages on the Dutch coast whose life was vividly depicted in genre paintings of the seventeenth century, which in turn inspired tourists to visit and see for themselves, the fishing villages of Edo bay became both popular subjects of art and the destination of urban tourists, who came to dig for clams as well as to wander among the nets and savor the exotic surroundings (figure 10).\textsuperscript{35} The guidebook \textit{Zoku Edo sunago}, published in 1735, evoked the

\textsuperscript{33} \textit{Tōkyōto naiwan gyōgyō kōbōshi}, 108-9.
\textsuperscript{34} Christine Guth and Henry Smith, personal communication.
\textsuperscript{35} Alain Corbin describes the awakening of interest in Dutch fishing villages in \textit{The Lure of the Sea}, 35-40.
scene on the tiny island of Tsukuda in the mouth of the Sumida: “Everyone on the island makes a living by fishing, and although it’s called part of town, it feels faraway and rustic...Narrow paths pass under drying nets, and the everywhere one hears the waves on the eastern and southern shores...while just a block away from the city, this place affords the delightful lonely sensation of having come ten miles over the sea.”

Just as their bold and free-ranging occupation allowed fishermen to cut a figure distinct from other commoners, fishermen’s eating habits put them in the company of the elite as much as of the peasant. For whereas peasants survived by scrimping and saving, measuring out their harvest and storing what they could, giving the majority of their rice to their lord or selling it while subsisting on less desirable grains, fisherfolk harvested a perishable luxury product and dined on it liberally themselves whenever the catch was good. Tsukuda Island fisherman Orimoto Masamichi, in an interview conducted in 1994, described the irregular lifestyle when he fished as a youth with his father in the early twentieth century, setting out at midday or midnight, whenever the tide and winds were right, bringing along a bowl of rice with some soy sauce, and cutting up some of the fish they caught and eating it on rice right in the boat, five or six times in an outing (with the addition of vinegar to the rice this would have been a *chirashi zushi*). Of course, most of the fish went to market. When the catch was good, the fishers found themselves suddenly flush. Orimoto’s Tsukuda Island neighbor Nakazawa Hiroshi noted proudly, “There’s no better business. Owning a boat is as good as having a boat full of cash—you don’t have to bow to anyone. There were times our nets got so full we’d come home slowly, careful not to sink the boat.” There must also have been times when they came home empty-handed. Like all hunters and gatherers of wild food, fisherfolk had to inure themselves to eating irregularly, either

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feasting or starving. Yet in the abundant waters of Tokyo bay, most of the time they would have found enough fish to have their fill, taking for granted a luxury that few living inland could enjoy. In this casual enjoyment of an elite pleasure, the bay’s fisherfolk were archetypal Edo-Tokyo natives.

Despite the steady demand for fish generally and the increasingly popular fashion for fresh fish eaten raw or close to raw—which called for both a constant supply and rapid delivery—after the initial depletion reported in *Keichō kenmonshū*, fish stocks in the bay appear to have recovered and remained strong until the end of Tokugawa rule in the 1860s. Agreement among the fishers themselves to manage the marine commons probably played the largest role in this success.\(^{38}\) In 1816, representatives of the 44 full-time fishing villages (*ura*) of Edo bay drew up a covenant, calling on representatives to meet annually and restricting the types of nets and devices that could be used in the bay to thirty eight (the so-called *sanjū hasshiki*).\(^{39}\) This number excluded the dredging “hell nets” and other large and environmentally damaging technologies, including several types of fixed gillnets. The language of the covenant makes clear that it put into writing agreements that had been reached among villages considerably earlier. In fact, the established group of villages recognized by the shogunate as specializing in fishing appears to have been formalizing in this covenant an arrangement that had been their accepted practice, in order to respond to the challenge presented by fishers from the part-time fishing villages (called *isotsuki mura*) who weren’t playing by the rules.\(^{40}\)

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\(^{38}\) Since no quantitative data exist for the Tokugawa period, we are compelled to rely on anecdotal evidence like the *Keichō kenmonshū* and on studies conducted under the Meiji government in the late nineteenth and twentieth centuries.

\(^{39}\) Some sources state that the number was thirty five, increased to thirty eight in the Meiji period.

\(^{40}\) *Tōkyōto naiwan gyogyō kōbōshi*, 119-120.
Tokugawa patronage undergirded this system of commons management among select villages. Only the recognized full-time fishermen were referred to as ryōshi, a term for a fisher or hunter that implied a specialist, a status distinct from that of an ordinary peasant. The word designating their fishing villages, ura, was also distinct from the ordinary term for a village. In a society governed by status, these matters of nomenclature bore considerable weight. When disputes came before the Edo magistrate, for example, the interests of ryōshi and the covenant among the recognized ura took precedence over the interests of others using the bay. In 1840, five ura brought suit against eighteen part-time fishing villages for encroaching on their fishing grounds. The suit noted that the plaintiffs had been delivering fish to the shogun since the founding of the city and that they possessed no fields on land—“the sea is our field,” the plaintiffs asserted. Other villages were not supposed to use boats or sell the catch, they claimed. The Edo magistrate’s 1842 ruling resolved the case in favor of the five ura.41

The covenant of 1816 fell apart during the political upheaval following the Meiji Restoration in 1868, which brought a top-to-bottom restructuring of legal, social and economic systems. As the birth of a new regime appears to have done at the beginning of the seventeenth century, once again, political change precipitated rapid depletion of fish in the bay and nearby coastal waters. A long history of suits among fishing villages, both before and after the covenant of 1816, makes clear that Tokugawa rule did not guarantee peace and harmony on Edo bay, but the consequences of the breakdown of traditional status relations, patronage, and associated restrictions of the commons after 1868 reveal how effectively these constraints had functioned overall during more than two centuries prior to this. Liberated from feudal obligations, sardine fishermen near the mouth of the bay, for example, ignored the past ban on specialized sardine

41 Tōkyōto naiwan gyogyō kōbōshi, 107.
nets called kozarashiami during the first seven months of the year, with the result that few sardines were caught in the inner bay until the courts intervened in 1882.\textsuperscript{42} Under the guidance of the new national government’s Home Ministry, the covenant was reinstated in 1881 and expanded to include forty additional fishing villages on the east side of the bay. Yet changes taking place in the local and national economies, along with overfishing, prevented a return to the conditions of the Tokugawa era.\textsuperscript{43} A study of the Nihonbashi fish market published in 1889, more than two decades after the demise of the old regime, noted that fisheries around the capital had still not recovered. This study reported that the village (ura) of Amatsu on the Pacific Coast side of Chiba, the nearest open sea to the capital and an important source for the Nihonbashi market, had had over two hundred boats before the Restoration but in recent years had dropped to a bare twenty-two or twenty-three boats due to bad catches, fishing bosses unable to afford loans from wholesalers to pay wages, and fishermen abandoning their occupation.\textsuperscript{44} Among the eight Edo villages that had enjoyed special Tokugawa privileges, Hon-Shiba and Kanasugi together had docked 245 boats in 1715 but had only 53 in 1878.\textsuperscript{45}

What eventually revived Tokyo bay fisheries, at least in economic terms, and sustained them until the early 1960s, was not a fish at all, but a mode of farming that government offices classified in fisheries: seaweed cultivation. Inhabitants of the lowlands around the Sumida River and near the bay had been gathering nori seaweed (porphyra tenera, an algae) for both fertilizer and direct consumption as food since the time of the city’s founding. The local product was named Asakusa nori for the Asakusa district, along the Sumida, where it was often gathered. Nori was turned into an industry in the early eighteenth century by the discovery of basic

\textsuperscript{42} Tōkyōto naiwan gyogyō kōbāshi, 141.  
\textsuperscript{43} Tōkyōto naiwan gyogyō kōbāshi, 131.  
\textsuperscript{44} Nihonbashi gyokaijo ed., Nihonbashi uo ichiba enkaku kiyō dai ni kan furoku (Nihonbashi gyokaijo, 1889), 11-12.  
\textsuperscript{45} Tōkyōto naiwan gyogyō kōbāshi, 143.
methods of cultivation. It was found to reproduce well around stakes driven into the riverbed or the shallows of the bay for fishermen’s nets. Imitating these stakes, nori cultivators constructed beds lined with bundles of bamboo and brushwood set at even intervals. By mid-century, nori cultivation was sufficiently established to come under government regulation. A standard bed was set at 30x50 ken (approximately 180x300 feet) and taxed at a fixed cash rate beginning in 1747. A second major innovation around the same time transformed nori into an ingredient of modern sushi. Drawing in part on techniques used in the manufacture of rice paper, cultivators devised a method to take the seaweed, which had previously been eaten wet, and dry it into crisp, flat sheets, suitable for wrapping rice, as in sushi (figure 11). The cultivation method was unreliable, so seaweed paper remained something of a luxury. Nevertheless, for several villages and city neighborhoods near the mouths of rivers entering the bay, nori became a cottage industry, involving all hands in the household and multiple steps in manufacture. Meanwhile, nori maki—rolls of sushi rice wrapped in seaweed paper—found a place immediately on the menu of the sushi restaurants that exploded on the scene after the 1810s.

Nori production began to transform the bay itself after 1878, when it was discovered that contrary to the past practice of starting the seaweed on stakes in the mouth of rivers, the spores began their reproduction cycle best in deeper salt water, but bloomed afterward in the mixed shallows near the rivers. Villages around the bay began to contract with one another to set up seed beds in saltier offshore sites then transplant the seeded stakes to shallows across the bay, with the result that harvests became more reliable and the industry took off. By the beginning of

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47 Okamura Kintarō, Asakusa nori (Hakubunkan, 1909), 348, 224-5.
the twentieth century nori cultivation involved practically every village on the bay (figure 12). Along with the disarray it caused in bay fisheries, the Meiji restoration had brought a sharp tack toward a capitalist economy that reached throughout society. The Meiji government had made the commons of the bay into public property, which the nori cultivators leased, like tenant farmers. Unlike fishing, nori cultivation and nori paper-making had a modern regularity to it. With its uniform beds and preservable product it created an economy built around planning and accumulation. Once it became possible to estimate yields reliably, nori took on the character of a modern capitalist industry, and a lucrative one. At the industry’s mid-twentieth century peak, the Tokyo Bay nori beds produced over 40% of the country’s total annual output (figure 13).

In the end, the most serious challenge Tokyo bay fishers faced came neither from the unregulated incursions of outside fishers nor from nori farmers, but from state-promoted port development. Beginning in the late 1930s and escalating after World War II, dredging and landfill to make Tokyo accessible to deep-drawing modern ships and to create land for heavy industry and port facilities altered the coastline and devastated marine habitat. Rice and vegetable farms in the city’s hinterland continued to absorb most human waste until the 1940s, but subsequently artificial fertilizer replaced organic, with the result that chemical run-off from farms and sewage from the city, along with factory waste, destroyed many fish populations. Nori proved more pollution tolerant. Outputs continued to grow until 1962, when the national government offered fishing cooperatives and nori producers compensation to give up all rights in the bay and open the way for further port construction.

The Recovery of Tokyo Bay

49 Yamato, “Tōkyōwan ni okeru Asakusa nori yōshoku,” 151.
50 Kikuchi, Tōkyōwan shi, 139.
Heavy industry did not maintain its hegemony over Tokyo Bay for long, however. Sickness and death due to mercury poisoning in Kyushu’s Minamata Bay and other instances of industrial water contamination in the 1960s made clear to the Japanese public the horrifying results of uncontrolled release of effluents into coastal waters. The government acted in 1970 with the Water Quality Control Law, which set national effluent standards. In the decade following, the Japanese economy began its shift from heavy industry to high tech, and industrial plants moved overseas. Port facilities continued to expand, but the role of the worst industrial polluters on the bay receded. Construction of sewage treatment facilities reduced the impact of organic waste. By the mid-1980s, windsurfing and other recreational uses of the Tokyo waterfront had become popular, and it was commonly observed that Tokyo Bay had become cleaner. There were even signs that fish stocks might be returning. Record catches of conger eel (anago) were reported between 1987 and 1992. The bay appeared to be on the road to recovery. Since the late 1990s, a number of national and local government bodies as well as non-governmental organizations have published Tokyo Bay recovery plans, usually making reference to the rich tradition of Edomae fishing and fish consumption. Their projections for the future of the bay tend to be optimistic.\(^51\)

The actual situation for Edomae fish appears murkier. Some fish populations have proved surprisingly resilient; others less so. The greatest cause of damage to Tokyo Bay’s preindustrial fishing stocks remains the most difficult to reverse: the replacement of tidal flats with artificial coastline. By the time the biggest landfill projects were complete in the early 1980s, 138 square kilometers of tidal flats had been reduced to 10. Only 8% of the bay’s coastline remained in its natural state. This eliminated breeding and feeding grounds for many species and limited the

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\(^51\) For review of a few such initiatives, see Kawabe Midori and Kawano Hiroshi eds., Edomae no kankyōgaku: umi o tanoshimu, kangaeru, manabiau 12 shō (Tōkyō daigaku shuppankai, 2012), 89-91. For criticism of the claims of recovery, see Mochizuki Kenji “Tōkyōwan saisei keikaku” in Komatsu Masayuki, Ogami Kazuaki and Mochizuki Kenji, Tōkyōwan saisei keikaku: yomigaeru Edomae no sakanatachi (Yūzankaku, 2010), 118-119.
bay’s capacity to absorb pollutants. With one quarter of the population of Japan living in the Tone River watershed that flows into Tokyo Bay, inorganic mineral nutrients such as phosphorus and nitrogen still frequently overwhelm the bay, feeding phytoplankton and causing oxygen-depleted dead zones annually. The phenomenon is seasonal, worst in the summer. Reports of algal blooms (so-called “red tides”) have decreased little since their peak in 1980.\(^{52}\)

A quick overview of the state of the classic *Edomae* sushi fish in Tokyo Bay at the beginning of the twenty-first century can be gained from a 2005 study sponsored by the government-affiliated Fisheries Research Agency. The big hauls of conger eel, according to the report’s authors, had not been the result of recovered stocks but of more intensive eel fishing methods and more people in the business. Catches fell off again in the mid-1990s. Icefish (*shirauo*), the basis of a 300-year patronage relationship between Tsukuda island fishers and the family of the Tokugawa shogunate, has not been reported in Tokyo Bay since 1955. Horse mackerel (*aji*) plummeted in the 1970s, but has shown steady recovery since 1982. The bream (*tai, madai*) catch fluctuated widely in the 1980s and 1990s, but has generally been on the rise. This is partly due to successful annual releases of tens of thousands of hatchlings.\(^{53}\) The humble *kohada*, perhaps the city’s original sushi fish, was not reported in this study. Like sardines and herring, *kohada* are widespread and show a natural cycle of wide population fluctuations with little clear relation to the human impact on the environment. They have been caught in Tokyo Bay relatively continuously, with peak catches in the 1980s. Overfishing to compensate for a drop in the sardine population reportedly threatened *kohada* in the late 1990s. Additionally, a 2000 report found signs of changes in the sex organs of males in the inner bay, possibly caused


\(^{53}\) *Tōkyōwan no gyōgyō to shigen: sono ima to mukashi*, 156-7, 168-9, 178-9, 180.
by endocrine disruptive chemicals in sewage. The picture has been bleakest of all for shellfish and shrimp, since their lack of mobility prevents them from escaping oxygen-depleted dead spots. Yields of the popular red clam (akagai) dropped close to zero in the mid-1970s and remained there until at least 2004. Shibaebi, formerly the most common variety of shrimp in the bay, disappeared in the late 1960s. Hopes for its reappearance were kindled briefly with a catch in 1999, but subsequent years yielded none.

**Conclusion: Tuna Pastures?**

Despite these mixed signs, the prospects for Tokyo Bay fisheries appear brighter now than at any time since World War II, thanks to pollution regulation, better sewage treatment, and the retreat of heavy industry. But before concluding on the optimistic note that characterizes much of the recent writing on Edomae fish and its environment, we must follow Japan’s fishing boats further out to sea in pursuit of the number one sushi fish in the world today: tuna. Introduction of larger, screw-propelled steel boats in the first two decades of the twentieth century allowed Japanese tuna fishers to stay out for longer and to move further south into the Pacific. In 1936 it was found that there were huge catches to be had off the island of Saipan, which by this time was Japanese territory. Nationwide competition among fishing businesses to exploit the new fishing ground accelerated the shift to mechanized steel boats, and prompted the construction of ice-making facilities on Saipan. Research revealed rich tuna fishing grounds along the equator yet further south. Japan’s South Seas Colonial Ministry funded these developments, along with the improvement of long-line fishing technology, capable of catching hundreds of tuna on one line, and construction of the first refrigeration ships. By 1941, the

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majority of Japan’s tuna were coming from Saipan and points south, more than 1500 miles from Tokyo.  

The Japanese tuna industry had thus already shifted its focus toward the South Seas before the Pacific War. But it was in the 1950s that the new technologies and the new fishing grounds brought radical increases in the tuna catch. Japanese government and FAO statistics show the tonnage almost doubling every three years from 1950 to 1960. By the early 1970s, a system for extraction and long-distance provisioning was in place. Boats plying equatorial waters and drawing lines as long as 100 kilometers brought up thousands of tuna at a time. The fish were stored in super-cold freezers aboard a mothership, to be sold to middlemen who in turn kept them frozen and brought them to market when the price was right. The new freezer technology made it possible for the first time to deliver sushi-quality tuna caught anywhere on the globe at any time of year, precipitating a shift in Japanese tuna fisheries toward bigeye and bluefin, the species that commanded higher prices as sushi and sashimi. In the 1980s, an unprecedented luxury trade for fresh tuna began to emerge in the Tokyo central fish market at Tsukiji, with buyers paying tens of thousands of dollars per fish for bluefin air-freighted in from the North Atlantic. Meanwhile, thanks to freezer technology, fatty tuna (toro) emerged as a new taste phenomenon with global appeal. Indeed, it is impossible to imagine the global sushi boom


57 Okamoto “Taiheiyō sensō izen oyobi shūsengo no Nihon no maguro gyogyō deeta ni tansaku,” figure 5, p19.

58 Tanabe, Maguro no bunkashi, 166, 168.

without onboard deep-freezing. No fish contributed more to the globalization of sushi than tuna, and no sushi ingredient had a greater impact on world fish stocks.\textsuperscript{60}

The first captive-born and bred bluefin tuna went on sale in Japan in 2004. The event made front-page news. It represented the fruition of a government-sponsored research effort spanning over thirty years. The fish were a modest 20 kilograms, but 90\% \textit{toro}. Since then, breeders have balanced the diet to moderate the fat content and the fish have been brought to market typically at 30-40 kilograms.\textsuperscript{61} Since that time, the market has grown steadily. Researchers hope that domesticated tuna will preserve threatened species from extinction or provide the alternative once they are extinct. Perhaps the bay of the future will be a great tuna pasture. But domesticating any large animal has long-term consequences for the species and for its environment. Cage-raised tuna consume fifteen times their weight in feed, for example, which makes the ratio of energy input to yield comparable to that for cattle.\textsuperscript{62} It remains to be seen whether tuna aquaculture will offer an environmentally sustainable means to continue eating raw fish in the prodigious quantities that the developed world has recently come to take for granted.

Let me return to summer 1980. By this time, Japanese ships had been chasing tuna deep into the South Pacific for several decades. Yet in culinary terms there were still traces of sushi’s Edo roots at sushi bars like the one I visited in New York. A California roll was the cutting edge of fusion in 1980—everything else being served would have been recognizable in the nineteenth century. The chef shaped lumps of vinegared rice in his bare hands (U.S. health authorities did

\textsuperscript{60} Suisan hakusho. http://www.jfa.maff.go.jp/j/kikaku/wpaper/h21_h/index.html
\textsuperscript{61} Kumai, \textit{Kyūkyoku no kuromaguro kanzen yōshoku monogatari}, 114-15.
\textsuperscript{62} Kumai, \textit{Kyūkyoku no kuromaguro kanzen yōshoku monogatari}, 96. Kumai is a booster for tuna farming, since he has been one of the central researchers in the project. Nevertheless, he acknowledges that the feed necessary to raise tuna makes it half as efficient as other farmed fish. The great unaddressed question in Kumai’s account is why the project has focused on raising tuna until they reach a marketable size rather than releasing hatchlings. The answer presumably is that since tuna migrate across the full expanse of the ocean, released juveniles cannot be guaranteed to contribute to the Japanese tuna catch.
not yet require that sushi chefs wear surgical gloves), and sliced the fish in front of his customers as a show of its freshness. The typical assortment was a mix of the old elite white-flesh fish and vulgar tuna. And of course, the same simple chic character of the meal that had appealed to Edoites appealed to modern New Yorkers. The mix of elite and commoner populations in Edo, competing with one another in fashion and appropriating tastes from one another, had created this casual haute cuisine. Since it was a cuisine completely dependent on freshness and variety, it required rapid delivery of ingredients from a rich marine environment, partly cultivated and partly wild. Even the erotic novelty of raw flesh that I remember as part of the excitement of sushi in 1980 belongs in a sense to Edo-Tokyo culture—not only because of the long and well deserved notoriety of the city’s flesh trade, but because of the city’s elevation of sensuality over delicate refinement, an attitude appropriate to a city where fisherfolk enjoyed a social status exceeding what either feudal society or modern bourgeois society ordinarily accords the laboring classes. The one essential element of nineteenth-century Edo’s sushi that was missing from the New York sushi bar menu in 1980, or at least largely absent and unnoted, was small fish from local waters. We have learned the world over to eat like Edoites. Now we must learn to husband our wild marine resources as well as they did.