

The Social Life of American Crayfish in Asia

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Abstract

Recent anthropological studies on foodways have highlighted the globalization of local foodways as well as the localization of foreign foodways in various countries, reminding us that foodways are simultaneously local and global in terms of production, manufacturing, and marketing. This paper seeks to examine the influences brought by the move of crayfish (freshwater crustacean resembling lobster) from the southern United States to Asia, especially to Lake Akan, Hokkaido in Japan and Xuyi, Jiangsu in mainland China, and investigate individual and community responses toward adaptation, consumption and conservation since the coming of crayfish in the 1920s. In this paper, I will describe how the introduction and cultivation of a new non-local food species has contributed to changes in farming methods, trading network and conservation efforts in contemporary Asia. We have seen many adventive species bring negative impacts to their new environments. A few examples are Nile perch in Australia/Tanzania, black bass in Japan, janitor fish in the Philippines, bullfrog in South Korea, and grass carp and snakehead in North America, while there are also species bringing new foodways to their new place, such as the popular tilapia in Asia and the red swamp crayfish (*Procambarus clarkii*) in China. Of these, tracking down the spread of the red swamp crayfish both in Japan and China provides a wonderful case study, as it has spread globally and brought various impacts to the two different countries in many ways. By making use of the two paths of the red swamp crayfish, a native species in Southern United States, I will discuss how it was widely accepted as a delicacy in China while it also became a phasing-out local food in Japan after it was introduced more than a half century ago.

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Introduction

Recent anthropological studies on foodways have brought attention to changes in the local dynamics of production, representation, identity construction, post-modern consumerism, and several other changes. In particular, they have highlighted the globalization of local foodways as well as the localization of foreign foodways in various countries, reminding us that foodways are simultaneously local and global in terms of production, manufacturing, and marketing. Much scholarly attention has been given to the social and cultural construction of foodways; yet, a truly comprehensive view of food cannot neglect the politics of food production (Nestle 2002). Nor should we overlook the global movement of ingredients that travel from region to region and even across oceans from continent to continent (see Phillips 2006). The travels of these ingredients not only reminds us of how objects and materials travel, but also of how (our) concepts of food are changing, especially eating and cooking styles among various human groups.

The historical movement of sugar helps to illustrate this point, as well as meanings associated with sugar in various social contexts. Mintz (1985) has shown that the consumption of this commodity is actually a complicated social development in the modern history of cultural interaction, and has inspired detailed studies on such items as tea, tobacco, coffee, etc., all of which have brought significant contributions to the understanding of our modern economy and politics. As the global network of fish for Japanese sushi, Bestor (2004) has demonstrated even a local fish market (Tsukiji in Tokyo) has affected the social economy of the world. By focusing on food to better understand the socio-cultural practices of globalization, we have also seen recent studies on soy bean products, improvising Chinese cuisine, American fast food, etc., among Asian countries (also see Cwiertka and Walraven 2000; Du Bois, Tan and Mintz 2008; Watson 1997; Wu and Cheung 2002).

In this paper, I seek to examine the influences brought about by the movement of the red swamp crayfish (*Procambarus clarkii* and *Pacifastacus leniusculus*) from North America to Asia, especially to Lake Akan, Hokkaido (Japan) and Xuyi, Jiangsu in Mainland China, and investigate individual and community responses toward adaptation, consumption and conservation since the introduction of crayfish in the 1920s. Crayfish, also known as crawfish, are freshwater crustaceans resembling marine lobster but smaller in size. Different from those previous studies on cuisines or processed products, the introduction of crayfish to areas which originally did not exist helps us to investigate the impact brought by the American crayfish in Asia. In the process, I will describe how the introduction and cultivation of a foreign species has contributed to changes in the agricultural system of these regions as well as

the trade network in mainland China and environmental conservation in Japan. We have seen how many invasive (exotic or alien) freshwater fish have had enormous negative impacts on their new environments. A few examples are the Nile perch in Australia and Tanzania, the black bass in Japan, janitor fish in the Philippines, the bullfrog in South Korea, and grass carp and snakehead in North America. However, there are some species that have brought new foodways to their new habitat, such as the popular tilapia (an African food fish) in Asia, rainbow trout in Japan and the red swamp crayfish (*Procambarus clarkii*) in China. Of these, tracking down the spread of the red swamp crayfish both in Japan and China provides a wonderful case study, as it has spread globally and impacted two different countries in many ways. By focusing on the two Asian journeys of the red swamp crayfish, a native species from southern United States, this proposed research examines how it was widely accepted as a delicacy and a “new” agricultural product in mainland China while conversely it became a destructive, invasive creature “excluded” from agricultural production in Hokkaido’s freshwater lakes after being introduced more than seven decades ago.

Crayfish live in freshwater while lobsters live in the sea. However, crayfish resemble the appearance of marine lobsters and have been marketed as “little lobsters” particularly in mainland China because of the upscale image of lobsters there. In fact, there are more than 500 varieties of crayfish in the world and in some countries they are a popular food item. The most well known culinary style would be the spicy Cajun cuisine, which originated in Louisiana and is widely considered a working class food in the southern part of the United States. Apart from the Cajun cuisine, many Americans still consider crayfish too “dirty and muddy” for eating. However, crayfish is a popular ingredient in both Sweden and Australia. For example, I was told that Swedish people hold crayfish parties at the end of summer, while *yabby* and *marron* are commonly eaten in Australia. The *marron*, for that matter, is considered an expensive ingredient for upscale restaurants. In my own experience, I found some Australian *yabby* and *marron* kept alive and sold in a Hong Kong upscale supermarket.

How did crayfish get to Japan in the early 20th century?

Historically speaking, the introduction of food in the form of agricultural product to certain developing countries was mostly for nutritional reasons, and Japan was not exceptional in the early 20th century. Beginning in the Meiji period, the Japanese government had plans for changing Japanese diets in order to improve nutrition and health, and milk and bread were introduced as part of the change. Also, the nutritional policy that was taking place within the armed forces in the 1920s was considered the turning point of Japanese dietary change (Cwierka 1999). On the other hand, the ecological changes brought through the Food Increase Project should

not be overlooked; rainbow trout, bullfrogs and the Uchida crayfish (*Pacifastacus leniusculus*) were just a few foreign water species that were introduced to Japan from North America in the pre-war period, together with the red swamp crayfish to feed the bullfrogs.

Yet, the bullfrog died out mostly in the 1960s because of the excessive use of agricultural pesticides. Meanwhile, both kinds of crayfish stayed and grew rapidly all over Japan, especially in Hokkaido. One might ask why Hokkaido has more American crayfish compared to other regions. First, we need to understand that Hokkaido was renamed from *Ezo-chi* after the Meiji Restoration in 1868 and was designated as the largest piece of land by the Meiji government for experimentation with imported western agricultural technologies (Morris-Suzuki 1994). At that time, western technologies included the production of dairy products, salmon aquaculture, and canned product processing. These imported modern technologies enabled the steady supply of food to mainland Japan, thus justifying the idea of colonizing Hokkaido during the early Meiji period (1868-1912). It was within this context that American crayfish were introduced into several self-contained lakes in Hokkaido.

Japan has its own native crayfish (*Cambaroides japonicus*), which is relatively small compared to those from North America. However, Japanese did not eat crayfish except in some parts of Hokkaido until two decades ago. The imported species—red swamp crayfish (*P. clarkii* which was introduced to Japan in 1930 as feed for the American bullfrog) and Uchida crayfish (*Pacifastacus leniusculus*, which was introduced to Hokkaido in 1926 as food for human consumption and also as feed for rainbow trout). These species competed with the Japanese native crayfish (*C. japonicus*) and won in the test of survival (Nisikawa, Motohara and Nakano 2001). Yet, recent data shows that the overgrowth of the exotic Uchida crayfish in the Lake Akan was related to a serious decrease in the amount of rainbow trout in the area

(see Figure 1). More importantly, *marimo* (a kind of spherical algae found at the bottom of Lake Akan and a government-recognized natural heritage in Japan) was also damaged by crayfish (Cheung 2005).



Figure 1. Uchida crayfish found in Lake Akan
Photo by Sidney C. H. Cheung



Figure 2. Boiled crayfish in Akan
Photo by Sidney C. H. Cheung

Most Japanese think crayfish carry some muddy taste and is considered dirty as a freshwater creature. Yet, practically speaking, some Japanese do eat the crayfish in a simple way of cooking. I only had a chance to eat boiled crayfish in a small restaurant in Lake Akan, which is run by some local fishermen (see Figure 2). Lake Akan and Lake Toro in Kushiro area are the only two locations where fishery cooperatives gained rights to collect and catch Uchida crayfish for commercial usage, starting from 15-16 years ago. Uchida crayfish is caught for food consumption, and sold for both canned soup processing and seafood for some local restaurants (see Figure 3). After 2004, Uchida crayfish was labeled as an “invasive” species, and the demand dropped significantly since 2004. Until 2004, five to six tons of Uchida crayfish were caught in Lake Akan by local fishermen, but during the last few years, the total amount caught from Lake Akan is three to four tons yearly. A representative of the Lake Akan Fisheries Cooperatives stated in an interview that there were two major reasons for the decline of crayfish demand in Hokkaido. First, the image of “invasiveness” gave a kind of negative influence. However, that might not be the major factor. Once Uchida crayfish was labeled as an “invasive” species, they could not be transported alive and had to be cooked or frozen before transport. Therefore, some hotels and restaurants that used to order live crayfish for cooking stopped buying from the suppliers as well as fisheries cooperatives.



Figure 3. Cooking Uchida crayfish in Akan
Photo by Sidney C. H. Cheung



Figure 4. Five cans of “lobster” soup in a gift set
Photo by Sidney C. H. Cheung

Besides being served as a boiled dish, crayfish has been processed into canned “lobster soup” for domestic consumption. As I was told, about one ton of Uchida crayfish is needed for ten thousand cans of “lobster soup” which is sold at 500-600 yen per can in retail stores in the Lake Akan area (see Figure 4). This soup is often sold as a gift set for visitors to

Akan who bring them back home as souvenirs. Aside from the situation at Lake Akan and Lake Toro, Lake Toya provides a different case showing how Uchida crayfish was treated as invasive. According to my informant, at Lake Toya crayfish cannot be sold because there is no permit. Therefore, the only way to get rid of them (to maintain the ecological balance) is to continue catching them and then throwing them away.

Making crayfish into lobster in mainland China

P. clarkii was brought to Jiangsu area by the Japanese in 1930, although the reason is still unclear. According to my informants, local Jiangsu people tended to believe that there was a Japanese conspiracy to use the crayfish to destroy their rice paddies, since crayfish like to eat the roots of crops, and more importantly, they dig holes which drain water away from the rice paddies. Therefore, the local people did not welcome the crayfish at all. Given that crayfish brought no benefits to the people, and that they could still survive in dirty water, it was not considered edible by most people. Even now, it is not difficult to hear that even Chinese people in Jiangsu are surprised to know that eating crayfish has become a popular dish in the mainland. Again, for some who enjoy eating crayfish in Jiangsu, they told me that they only consider buying the live green shell ones at the market for home cooking

instead of eating them in restaurants, because once cooked it is difficult to single out the “dirty” ones after they turn into red. Yet, local villagers in Xuyi told me that in the past they caught crayfish in the river as a kind of leisure-time activity and ate them in a simple cooking style—mainly boiling. As a commercial item, for a long time no one paid any attention to it. Then came the emergence of a dish called “Nanjing little lobster (longxia),” which appeared in the early 1990s, and its rapid growth in popularity was not limited to Nanjing but extended to large cities such as Shanghai, Wuhan, Beijing, and so on, during the last decade. Starting from 1992, the redclaw crayfish (*Cherax quadricarinatus*) from North Australia was also introduced to China (Chen and Edgerton 2001). It is important to investigate how the demand has been expanding and what the impact has been on red swamp crayfish farming in the local context. In Louisiana, crayfish aquaculture is dominated by *P. clarkii* (red swamp crayfish) and *P. zonangulus* (white river crayfish), while the species that has become popular in the Jiangsu area is the red swamp variety, which is cooked in a hot spicy way (Huner 1992).

My first encounter (in 2006) with red swamp crayfish in China was at a local restaurant in Nanjing city, where the “little lobster” was cooked in Sichuan, as well, in a hot and spicy style. It was sold at relatively low price at about one RMB each at that time. When I visited Nanjing again in 2008, however, I was brought to an upscale restaurant for this dish and was surprised to find that the price was RMB 128 for a dish in which there were about 20-30 cooked crayfish prepared in a hot, spicy style. Many people in Xuyi told me that eating crayfish in restaurants was becoming too luxurious and they could no longer afford it. Interestingly, I noticed at the above Nanjing restaurant a small leaflet on our table mentioning that “Today I am a little lobster, but one day I will be an Australian lobster.” Obviously, we know this slogan is wrong because freshwater crayfish will not grow into a marine lobster. With its rising prices in the last decade, however, spicy crayfish has become a welcome dish offered by the local hosts for their guests visiting Nanjing.

What had happened in Nanjing demonstrates not only the rising price of crayfish marketed as “little lobster,” but also the upscale move of crayfish from a peasant’s food of unknown origin to a luxurious gourmet food that represents new Nanjing foodways. With this surprising upward mobility, I consider this as a timely example for the investigation of land use and agricultural changes brought by China’s emerging rural enterprises. Regarding the nationwide catching of “little lobster” for food consumption, it is mentioned that only 6,700 tons were harvested in the early 1990s; subsequently it was recorded that 6.55 million tons were harvested in 1995 and increased to around 10 million tons in 1999 (Xia 2007, 3). If we only consider the production in the Jiangsu area, the amount of “little lobster” harvested in 1995 was 3 million tons, while it increased to 6 million tons in 1999 (Xia 2007, 3). In order to

understand the local production of crayfish from the farmers' perspectives, I made two visits to Xuyi and interviewed several farmers regarding their experiences in crayfish farming and relevant ideas about the future of their business.



Figure 5. Crayfish fed by corn powder in Xuyi
Photo by Sidney C. H. Cheung



Figure 6. Farming crayfish in a lotus pond
Photo by Sidney C. H. Cheung

The first farmer I met in Xuyi used to be a crab farmer who explained that “Crab easily gets diseased and the feed for crab is much more expensive compared to the feed for crayfish.” I realized how cheap the feed for crayfish could be upon visiting the second farmer who used to be a lotus root farmer. He said that, apart from some corn powder, leftover parts from butchering chicken and duck was purchased to feed the crayfish (see Figures 5 & 6). The reason for him to start cultivating crayfish was his discovery of the crayfish’s habits of



Figure 7. Crayfish cultivated in Xuyi
Photo by Sidney C. H. Cheung

hiding beneath the lotus leaves in order to seek shelter from the heat (see Figure 7).

However, when I interviewed another crayfish farmer (a former necktie trader from Zhejiang who moved to Xuyi to invest in crayfish cultivation), I was told that crayfish farming was not such an easy job as most local farmer thought, which was essentially that crayfish can grow anywhere. In fact, the Zhejiang trader was not the only one to say so. Another investor from a nearby county

said that the reason they needed to have a large-scale operation for good quality crayfish was that the harvest rate they could expect was far less than the estimation of many local farmers. Therefore, they made a total investment of RMB 50 million for the 2,000 mows (1 mow is equivalent to 7,274 sq. feet) farming area in Xuyi in 2007, and planned to develop tourism together with food production as a kind of ecological-friendly resort project. Another crayfish farm I visited having a similar idea in development was a joint venture between a local company and an Australian company that occupied far more space. Their business was obviously much larger than any fishpond I had ever seen in Xuyi. The total farming capacity is estimated to be 50,000 mows, 10,000 mows run by the company and 40,000 mows designated as supporting areas cultivated by other farmers for the same brand. My question here is how much of the rice paddy was turned into a crayfish pond, and how will the production of a stable food be affected in the long run. I do not have the answer at this time but am sure this is going to be an important issue for the Jiangsu area in the coming decade.

Together with the establishment of the Xuyi Lobster Museum in 2005 and the outdoor stadium with an audience capacity of 50,000, which is only used for the International Lobster Festival (It started in 2001 as a local festival and was developed into an international one by inviting delegation from other countries to participate.), we can realize the positive support from the government in building up Xuyi as the City of Lobster. On the other hand, I was told by some local people that there was a serious shortage of crayfish in terms of supply, and many of the crayfish consumed during the festival were actually transported from other areas. Therefore, if Xuyi is going to be developed as the trade center for crayfish, it should consider maintaining stability of supply, fair pricing and food safety issues of the business. As far as I have heard from different farmers in Xuyi, there is no standardization of feed, or official

technical support, or quality control in crayfish cultivation. Of course, there is not even a control on crayfish that comes from outside of Xuyi, even though these imports are branded as “Xuyi Longxia.” Another farmer I interviewed in Xuyi acknowledged that negative news about the cleanliness of the crayfish could adversely affect their business. However, they felt that nothing could be done regarding the spread of negative information.

Technically speaking, biologists have given the alert concerning excessive production based on a small genetic pool, and this is a kind of worry for those involved with mass production of *P. clarkii* in the Jiangsu area. In 2004, biologists discovered a common bacteria existing in both crayfish and Shanghai mitten crab (Wang, Gu, Ding, Ren, Chen and Hou 2005). Therefore, the information I found over the Internet about bacteria carried by crayfish and the fact that crayfish can survive in contaminated water not suitable for human consumption should not be overlooked. In the future, I would like to know how crayfish farming will be affected by these circumstances as they try to maintain economic returns from mitten crab farming, and more importantly, deal with the safety issue of crayfish consumption in China. Finally, in addition to the local consumption of crayfish in China, large amounts of frozen crayfish tails are exported “back” to the United States, causing political responses by Louisiana crayfish producers which could affect international trade policy. The exportation of frozen crayfish back to the United States and such European countries as Sweden has been an important debate in relation to foreign trade policy, protectionism, and the intervention of the state government. Through this issue we can see the meanings of foodways from a political perspectives (Thies and Porche 2007).

Concluding remarks

To conclude, we have seen two stories of crayfish harvesting in Japan and China and can see how the impact upon local communities is very different. The problem in Hokkaido is obviously an environmental issue, which will be a challenging matter for the government, the fishery cooperative, restaurants, and the local fishing community. Therefore, it is important for us to keep an eye on its development and investigate how various interests (farmers, investors, consumers, and the government) can work together for natural conservation and safety. As for the problem in mainland China, I would like to focus on the negative image people have about the dirtiness of crayfish with the recognition, while they also have their own ways to choose and consume the clean ones. With the socio-economic changes taking place in mainland China affected by its Open Door policy since 1978, it is important to understand how the concept of food production has changed, especially from the basic daily necessities to luxurious gourmet eating among local people, and from domestic consumption to

international exports. Regarding the changing foodways in Asian societies, Watson and Caldwell (2005) remind us that the major concern of food security is no more about whether we have enough food to eat, but whether our food is up to safety standards, and whether the supply is sustainable and the quality can be maintained. By combining my field research on the development of crayfish farming with an ethnographic study of a new agricultural economy resulting from state policies on rural reform, a further understanding of mainland China's changing lifestyles both in the urban and rural areas will be expected.

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