

## FARMING IN FISHING COMMUNITIES IN JAPAN CASE STUDY IN THE SANRIKU REGION

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**Abstract:** Farming in fishing communities has been little investigated in Japan up to now. Agriculture and fisheries are sectionalized and treated as different industries, and the farming situations in fishing households have not been studied statistically since 2003. For this paper, the ways in which farming in Japanese fishing communities has changed was investigated. Farming in fishing communities will be described, looking at cases from the Sanriku region, and the meaning of farming in fishing communities will be explored. In the Sanriku region, fishing-cum-farming households were more than 80% of farming households in 1968. By 2003, the percentages had decreased to 15% and below. For fishing-cum-farming households, whether one owns paddy fields or not is significant because rice has been the dominant staple food in Japan. It was fortunate for fishermen to live in communities where paddies could be cultivated, but paddy fields were owned by a limited number of households. The total area of paddy fields increased as the northern limit of paddy production was extended.

**Keywords:** Fishing-cum-farming households; fishing community, Sanriku, subsistence, sharing, elderly welfare, social capital

### 1. Introduction

A Farming in fishing communities has been little investigated in Japan up to now. Agriculture and fisheries are treated as different industries and sectionalized, and the situations of farming in fishing households have not been studied statistically since 2003. Studies on farming in fishing communities are limited. Most of the research on fishing farmers/farming fishermen is found in African studies. Morand et al. (2005) reflected on the historical changes in fisheries in Western Africa and found that only a few ethnic groups were specialized in fishing. Since the 1970s, the migration of professional fishermen has increased, and by interacting with these migrant fishermen, local people have come to be specialized in fishing, as well. This process is of interest in regard to the origin of professional fishers. Geheb and Binns (1997) studied an ethnic group located near Lake Victoria and discovered that the people combined farming, fishing and herding, and the combination provided economic and nutritional security.

Begossi et al. (1993) focused on the change in the pattern of plant utilization on an island in Brazil, and found that despite the increased importance of market-oriented fishing and the decline of agriculture, people were still highly dependent on local plant resources for a variety of uses, and local plants played an essential role in the economy of the community. In Japan, Kobayashi conducted a series of studies on farming in fishing communities in the 1990s, and found that in *Saga* Prefecture, which he considered to have the most active farming in fishing areas, the income from farming consisted of around 10% of total income, which amounts to a stable source of secondary income (Kobayashi, 2002). Kobayashi's studies are from twenty years ago, when statistics on farming in fishing communities were kept. The fact that these statistics are no longer kept suggests that they are no longer part of national policy, but a question arises: is farming really unnecessary for fishers? When passing through fishing communities in Sanriku, small plots of fields can be seen. Are they just relics of the past, or do they have any positive meaning to the residents?

This study focuses on the changes and present situation of farming fishers in the Sanriku region. Sanriku is located in the northern part of Japan, and is not favored for rice cultivation, the staple crop of Japan. Sanriku is also a tsunami-prone area. Taking such natural conditions into consideration, the development of and changes in farming in fishing communities in Sanriku will be explored, on the basis of the fisheries and agricultural censuses. Then, the meaning of farming in contemporary fishing communities will be considered from a case study of a village not suited for agriculture, including paddy cultivation.

## 2. Research Methods

### 2.1. Research area

The coastline of the Sanriku area is deeply indented, stretching from the northern border of *Iwate* Prefecture to Mangoku-ura Lake in *Miyagi* Prefecture. Each community in Sanriku is separated by steep valleys and mountains, and people had no means of transportation other than boats before the 1960s.

The seashores of this area are often rocky, with rich marine products such as abalone and other seashells, urchins, seaweeds, lobsters, octopuses, and rocky fish. The Sanriku area has repeatedly suffered severe tsunami damage. The tsunamis in 1896, 1933, and 2011 were devastating, costing thousands of lives and imparting severe damage to buildings and means of production.<sup>1</sup>

The study village (village A hereinafter) is at the tip of a peninsula in the southern part of the Sanriku region. In 2015, there were 349 inhabitants in 160 households. The aging rate (the percentage of inhabitants 65 years and over) was 48%. Small-scale artisanal fishing, which is the collecting of natural resources in coastal areas, is the main form of the fisheries.

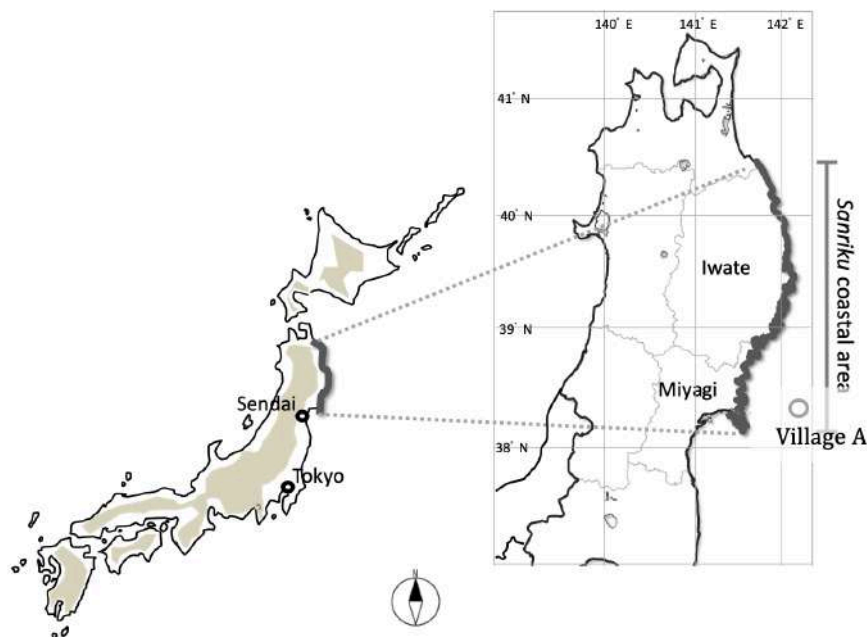


Figure 1. Research area  
(Source: Revised Yoshino, 2017)

## 2.2. Methods

Two methods were applied in this paper. In one, the general changes in farming in fishing communities in Sanriku were grasped by analyzing various censuses from 1911 to 2015, including the fishery census, agriculture census and prefectural census. Changes in the area of farmland were traced and the factors influencing the increase or decrease were examined, taking technology development, changes in demand, policy changes, and damage due to disasters into consideration.

In the other method, the changes were analyzed by focusing on a case village—village A—from interviews and questionnaire surveys. Interviews with men and women in village A have been conducted repeatedly since 2012. Two questionnaire surveys were conducted with the inhabitants in 2017; one was about the livelihood of the

households (respondents: 80 households, 51%), and the other was about individuals and the present situation and concerns of the villagers (respondents: 163 persons, 56%).

### 3. Results and discussions

#### 3.1. Farming fishers in Sanriku

As mentioned above, the fishery census in 2003 was the most recent one to show the situation of farming in fishing communities. It provides the number of fishing households that considered agriculture to be their main source of secondary income.<sup>2</sup> According to the 2003 census, the rate of fishing-cum-farming households was 11.5% nationwide, 11.6% in Iwate, and 15.9% in Miyagi.

#### 3.2. Changes in farming in the Sanriku fishing communities.

To understand the conditions of natural agricultural production in the fishing community, let us look at farming in 1911 from the census, before large-scale modern civil engineering work had begun. Figure 2 shows the per household average area of paddy fields and upland fields of each fishing community. The average paddy field area of fishing communities was 0.14 ha for paddy fields and 0.57 ha for other fields. The national average of land holdings by farming households was 0.53 ha for paddy fields and 0.51 ha for other fields. The small size of paddy fields in the Sanriku fishing communities is quite striking.

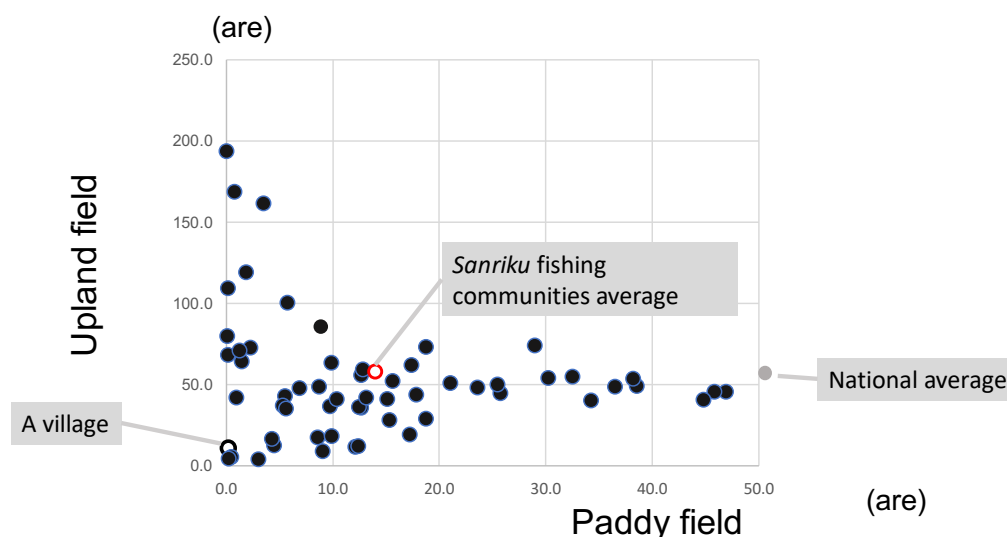


Figure 2. Per household average area of paddy fields and upland fields by community in 1911

Remark: the round white mark is the data of village A

(source: compiled by author from prefectural censuses in Iwate and Miyagi)

Among the total of 60 fishing communities, nine had less than one hectare of paddy fields, and 16 (27%) had less than five hectares. The Sanriku region is located in the northern part of Japan, and the northernmost regions were not suitable for rice production because, aside from the high latitude, this area is subject to cold weather damage caused by *yamase* (cold pacific winds during summer). Rice production in this area was gradually made possible by new varieties created through breeding (*Rikuu-132-Go* in 1921, and *Fujisaka-5-Go* in 1949) and the introduction of a “protected semi-irrigated rice nursery” in the 1950s. In addition, food shortages after World War II accelerated the expansion of rice production. Paddy field reclamation was promoted by the government mainly in the northern part of Japan, including the Sanriku region. Upland fields where cereals used to be cultivated were converted to paddy fields through the installation of irrigation systems from the middle of the 1960s to the middle of the 1970s until the acreage-reduction policy was enacted (Hasegawa 2006; Nakajo 2010).

Fishing communities that had paddy fields were fortunate, but not all the households of those communities owned paddy fields. In one village, there were 30 ha of paddy fields in 1911 and they were owned by three old prestigious families, and the other families helped with the labor to obtain a share of the harvest. Poor families used to visit the rice field owners to beg for rice. In the fishing communities without paddy fields, people cultivated wheat, millet, and root vegetables as the staple crops. To acquire rice, the main staple food, and to trade marine products, communities in Sanriku were deeply connected with the market economy, but because of their remote locations, they tried to provide for themselves as much as possible. New fields were reclaimed until the 1960s when the roads were improved and the distribution system was drastically changed.

In the case of village A, the areas of paddy fields and upland fields in 1911 are shown as the round white mark in Figure 2. As this figure shows, village A is situated on narrow slopes, which are not suitable for farming. To secure daily food, however, the villagers tried to expand their plowland by applying for a transfer of the government-owned forest to the village. The land was evenly distributed to the villagers for reclamation. Sweet potatoes are resilient to sea winds that contain saline water. Sweet potatoes grew well in village A. Their production was actively promoted, and the villagers sold them collectively. Figure 3 shows an aerial photograph of village A taken in 1947 (left) and in 2012 (right). The photo taken in 1947 shows how the reclamation extended, from near the residential zone to as wide as humanly possible. The 2012 photo shows that the area of fields had drastically shrunk.

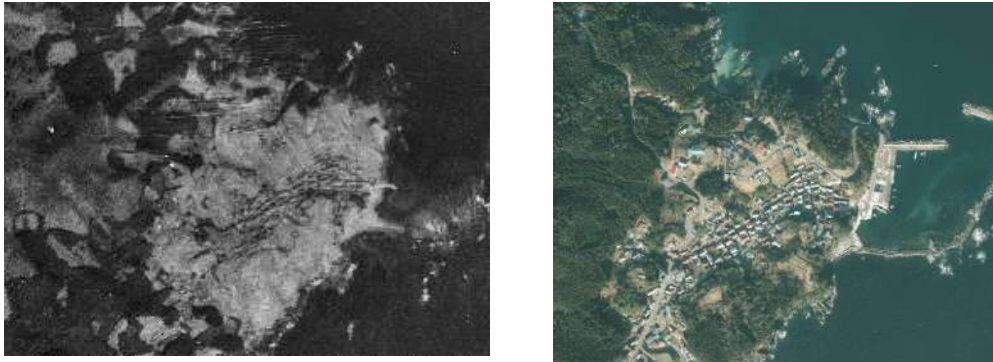


Figure 3: Aerial photographs of village A taken in 1947 (left) and in 2012 (right)

(source: The Geospatial Information Authority of Japan HP)

Let us see how the field area in Sanriku has changed since 1911 (Table 1). The paddy field area increased continuously until 1970, but the upland field area decreased after 1960. This may be due to the expansion of paddy production area, as the villagers became more inclined to paddy production. Paddy field area in Japan was at its peak in the 1930s and the upland field area peaked was before 1910. In Sanriku, endeavors to expand fields continued until later. In twelve communities, paddy field area tripled or more than tripled between 1911 and 1960, and all of these communities were located in the northern part of Sanriku. In 1911, paddy production was very small. In addition, after the severe damage caused by the great Showa tsunami in 1933, several communities relocated to safer, higher ground and converted the lower tsunami-affected areas to paddy fields, increasing the area of the paddy fields. A strong desire by fishing households to provide food stuffs for themselves, most desirably rice, which is the staple food, expanded the area of plowland.

Such fields located on the lower coastline area suffered damage from saline water at the time of the great tsunami in 2011. In Iwate, among 153,900 ha of total fields, which included 1172 ha of paddy fields and 666 ha of upland fields, were washed away or inundated (MAFF, 2011). Some fields were reconstructed by removing saline soil, but other fields were abandoned, further decreasing field area. (According to the 2010 data, some of the municipalities in Iwate saw a drastic increase in pasture, which is difficult to understand.)

Table 1: Changes in field area in *Sanriku* fishing communities

| year | paddy fields (ha) | upland fields (ha) |
|------|-------------------|--------------------|
| 1911 | 3,785             | 13,892             |
| 1930 | 4,326             | 14,921             |
| 1939 | 4,841             | 13,172             |
| 1950 | 5,068             | 11,959             |
| 1960 | 5,540             | 13,330             |
| 1970 | 5,974             | 9,381              |
| 1980 | 5,192             | 6,806              |
| 1990 | 4,424             | 5,045              |
| 2000 | 3,331             | 3,450              |
| 2015 | 1,718             | 2,858              |

(source: compiled by authors from agricultural census)

### 3.3. Changes in the percentage of fishing-cum-farming households

In the fishery census, the percentages of fishing-cum-farming households are available up to 1983. Table 2 compares the percentages in 1958 and 1983.<sup>3</sup> In 1958, the percentage of fishing-cum-farming households was quite high (80.7% in Iwate and 90.1% in Miyagi). About half of them did not sell their produce but consumed it. As mentioned above, the remoteness of their location urged the villagers to try to provide for themselves as much as possible. Farming had an important economic purpose even if it was not for selling produce.

By 1983, the percentage of fishing-cum-farming households decreased (38.7% in Iwate, and 43.0% in Miyagi). In Japan, the percentage of fishing-cum-farming households was 68% in 1953, and this decreased to 32% in 1983 (Kobayashi, 2000). The *Sanriku* data is not from 1953 but 1958, but the percentage was probably higher in 1953. In both years, the percentage of fishing-cum-farming households in *Sanriku* was higher than the national percentage.

Table 2: The percentages of fishing-cum-farming households

| Year          | 1958   |   | 1983   |
|---------------|--|---|--|
|               | percentage of fishing-cum-farming households | percentage of subsistence farm households | percentage of fishing-cum-farming households |
| <i>Iwate</i>  | 80.7%  | 49.0%                                     | 38.7%  |
| <i>Miyagi</i> | 90.1%  | 45.7%                                     | 43.0%  |
| Total         | 84.9%  | 47.4%                                     | 40.2%  |

(source: compiled by authors from fishery census)

### 3.4. Farming for self-sustenance: case study of village A with sloping upland fields

As mentioned above, geographically, village A is not suitable for farming. There was only one fishing-cum-farming household in 1983. It seems that agriculture is no longer important for the villagers.

In reality, however, many villagers still own small patches of upland fields near the residential area and are engaged in farming. According to the questionnaire survey, 31 households out of 58 households that responded cultivated their fields. The main supporters of farming have traditionally been women, because men were engaged in fishing. These days, both women and men are engaged in farming. The main products are vegetables and flowers for offerings. For those who honor their ancestors, flowers are indispensable. Currently, no household sells agricultural products. Various vegetables such as sweet potatoes and leafy vegetables were listed by the residents as delicacies of the village along with the marine products that are regarded as the main products of the village. Eighty percent of the respondents answered that the local farm products are delicious. The farm products are for self-consumption and sharing within the community. As has been observed in farming communities (Yoshino et al. 2010), farm products are shared among the inhabitants in Village A. Among the 57 households that responded, there were 31 households that did farming, but almost all households (53 households) answered that they enjoy local vegetables through self-production or sharing.

Among the 31 households that do farming, 11 had retired from fishing. Farming provides the sense of delight of doing productive work locally and the joy of producing local delicacies to those who have retired from fishing due to old age.

## 4. Conclusions



Farming in fishing communities has not been studied statistically and has been little investigated until now. This is because the economic importance of farming for fishing communities has been decreasing. However, patches of fields still exist in fishing communities. This paper describes the changes and the present situation of farming in fishing communities in Sanriku and explores the meaning of farming in contemporary fishing communities. Fishing-cum-farming was commonly conducted in Sanriku and was dominant until the 1960s. It was fortunate if fishermen could live in communities where paddy fields could be cultivated, but paddy fields were owned by a limited number of households in the community. The paddy field area increased with the extension of the northern limit of paddy production, as well as when lower flat spaces were converted to paddy fields after the residents had moved out because of devastating tsunami disasters. The paddy field area continuously increased until the 1970s, and then it began to decrease at a constant rate. The tsunami disaster in 2011 caused damage to facilities, salt pollution, and depopulation (which included a loss of producers), reducing the production area.

Farming in village A has been performed in small sloping patches of fields. It has been for self-sustenance, and with the development of a distribution system, agricultural production declined. Depopulation has accelerated and the shift of the labor force from agriculture and fisheries to other industries has increased. Amid such structural changes, small 'farmers' that have been overlooked by the government have continued to cultivate land. Farming gives retired fishers the delight of doing productive work in their local area. The aging 'farmers' enjoy farming and provide local people with fresh products, and this demands further evaluation.

These days, farming in Village A does not contribute as an income source and cannot provide economic security, either. Thus, farming in fishing communities has become exempt from national policy. But as a source of production of food stuffs for their own use, it still contributes not only to farming households but also to other households in the locality through sharing. Furthermore, it contributes to the welfare of elderly inhabitants by giving them the opportunity to participate in productive activities deeply connected with the locality, and to the strengthening of the social network as an important resource of social capital. These days, the welfare aspect of farming is attracting attention (Hassink and Dijk, 2006). The aging of farmers is a critical issue in Japan, but on the other hand, farming can contribute to the welfare of elderly people. The present situation of farming in fishing communities is not well understood, and the various roles that farming may be serving for inhabitants of these communities have

been overlooked. Considering the remoteness of fishing communities, the production of fresh agricultural products may have a special value to the local people. Further study on the role of farming in fishing communities is needed.

### Acknowledgement

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### Remarks

1. The victims of the large-scale tsunamis were 21,959 in 1896, 1522 in 1933, and 25,949 in 2011.
2. The situations of the households that were engaged in farming but did not consider it to be their main source of income were not investigated
3. The 1983 census defined “farm households” as those which own more than 10 acres of fields or those which sold more than 100 thousand yen of agricultural products in the previous year. Therefore, households that own less than 10 acres are not regarded as farm households.

### References

- Akimoto H. (1996). Iwateken chiho no ine hinshu no henshen. *Keizai Ronshu*, Vol. 21:1-23.
- Begossi A., Leitao-Filho H.E. and Richerson P.I. (1993). Plant uses in a Brazilian coastal fishing community (Buzois Island). *J. Ethnobiol.*, 13(2):233-256.
- Geheb K. and Binns T. (1997). ‘Fishing farmers’ or ‘farming fishermen’? the quest for household income and nutritional security on the Kenyan shores of Lake Victoria. *African Affairs*, Vol. 96:73-93.
- Hasegawa S. (2006). Tokei shiryō kara mita zakkoku saibai to sono tokucho. *Bull. Iwate Agric. Res. Ctr.*, 6: 97-108. Retrieved from [http://www2.pref.iwate.jp/~hp2088/bulletin/pdf/youhou\\_06-03.pdf](http://www2.pref.iwate.jp/~hp2088/bulletin/pdf/youhou_06-03.pdf)
- Hassink, J., Dijk, V. M (Eds.) (2006), *Farming for Health*, Wageningen, Netherland: Springer.
- Kobayashi T. (2002). A summary of the study on the part-time dishery establishments with agriculture. *Umi to Daichi*, Vol. 15:11-23. (in Japanese) Retrieved from <http://portal.dl.saga-u.ac.jp/handle/123456789/14055>

- Kobayashi T., 2000, Historical transition and present condition of the fishery households who are engaged in farming together in Japan: a statistical analyses, *Umi to Daichi* Vol. 12:1-8. Retrieved from <http://portal.dl.saga-u.ac.jp/handle/123456789/13984>.
- Ministry of Agriculture, Forestry and fisheries. (2011). *Higashinihon Daisinsai Nogyo no Higai Jokyō* Retrieved from [http://www.maff.go.jp/j/pr/aff/1105/spe1\\_03.html](http://www.maff.go.jp/j/pr/aff/1105/spe1_03.html).
- Morand P., Ibrahima O. and Breuil C. (2005). Fishing livelihoods: successful diversification, or sinking into poverty? In Ben Wisner et al. (Eds) *Towards a New Map of Africa*, London, England: Routledge. 71-95.
- Nakajo S. (2010). Iwate ken ni okeru zakkoku kenkyū no ayumi to sono kosatsu. *Bull. Iwate Agric. Res. Ctr.*, 10: 91-112. Retrieved from <https://agriknowledge.affrc.go.jp/RN/2010790757.pdf>.
- Nishio T. (2002) Kindai Hinsyū no Sakigake Rikū-132-go. Retrieved from <https://www.jataff.jp/senjin2/40>.
- The Geospatial Information Authority of Japan HP. *Chizu Kuchū Shashin Etsuran* Service. Retrieved from <http://mapps.gsi.go.jp/maplibSearch.do#1>.
- Yoshino K, Katayama C., and Morofuji K. (2010). Situation of local supply and consumption of agricultural products from the aspect of acquisition and utilization in rural Japan. In Masae Tsutsumi (Ed) *A Turning Point of Women, Families and Agriculture in Rural Japan*. Tokyo: Japan Gakubun-sha. 253-264.
- Yoshino K. (2017). TURFs in the post-quake recovery: Case studies in Sanriku fishing communities, Japan. *Marine Policy*, 86: 47-55.