

*Technical Paper*

## **Changes in the Roles of Women and Elderly Persons within Oyster Aquaculture in Japan**

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### **Abstract**

Women and elderly persons play an important role in the oyster aquaculture industry of Japan. Oysters are largely sold in shucked form in Japan and both women and elderly persons are involved in this process of shucking. They represent one reason for the survival of this small-scale aquaculture industry. But as workers age, the speed at which they can shuck the shells decreases and they are more likely to damage the oyster meat. Of late, owners of these businesses have been observed to generally employ young Chinese workers. This paper presents the changes in the roles of women and elderly persons within the oyster aquaculture sector in Japan caused by the entry of Chinese workers.

### **Introduction**

Japanese fisheries and aquaculture are now at a crucial juncture and the role of women and elderly persons in fisheries and aquaculture has become a priority issue for Japan. The generation born between the late 1920's and the early 1930's played a pivotal role in the Japanese fisheries and aquaculture sector. This generation is now at an age of retiring from active work at sea (Soejima 2009). Hence, it is to be expected that the number of fishers will decline rapidly and the Japanese fishery and aquaculture sector will face issues of labour shortage in the coming decade. Given these circumstances, we need to consider how to achieve a stable fish supply and a sustainable fishing community. For effective fisheries policy development, it is necessary to understand the current situation of women and elderly persons engaged in the sector against the background of the labour crisis. The Japanese Society of Fisheries Economics, which plays a central role in Japanese fisheries economics, held a conference in 2013, the main theme of which, was 'The Real Image of Elderly Fishers and Fishing Communities in Ten Years' Time'. In 2014, their conference is on 'Women in Japanese Fishing and Communities' and one of the themes is 'Changes and Effects of Women's Roles on Work on Land in Fisheries and Aquaculture'. Fisheries related shore-based or land-based work, performed by women, has become a topic of

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great significance in Japanese academic circles and investigating the roles of women and elderly persons in the fisheries and aquaculture sector is an important topic of interest.

However, there has been very little academic investigation of women and elderly persons in this sector. Most studies are focused on young males working at sea rather than the major role played by women and elderly persons working in land based activities (Imagawa 2011; Ohtani 2011). An increase in the volume of catches is not anticipated in Japan in the near future; thus, land-based work such as careful sorting of catches or improving sales strategies etc. will become increasingly important in fishery management and for fishing communities. Securing labour for land-based work in fisheries is likely to become a crucial issue (National Federation of Fisheries Co-operative Associations 1997; Hasegawa and Chang 2002).

This paper seeks to contribute to the understanding of the present situation in Japanese fisheries by exploring the roles played by women and elderly persons in land-based activities within the aquaculture sector. For the purpose of this study, “elderly persons” refers to elderly fishermen aged over 65 who have retired from active work at sea. The paper tries in particular to draw out the roles of women and elderly persons engaged in land-based work in the oyster aquaculture industry. The oyster aquaculture industry was considered for this study because the industry employs a large number of women and elderly persons when compared to other kinds of fishery or aquaculture. This is because oysters are largely sold as shucked shellfish in Japan, and women have been found to be more efficient at shucking oysters. The study was carried out in the town of Oku, Okayama prefecture. This town is an important oyster-producing area of the Prefecture. The study attempted to draw conclusions about the changes occurring within the oyster aquaculture sector and within local communities with respect to the changing roles of women and elderly persons.

## **Method**

The study was carried out through personal interviews as well as discussions with members of the Fishery Co-operative Association (FCA) during November 2005, September 2008 and July 2012. The interviews were conducted through the Oku FCA, which at the time comprised 43 fishery households. Interviews were carried out in 11 households. The questions pertained to family structure, household management, number and trends of employees engaged in land-based activities, and number and trends of rafts used for oyster aquaculture. The interviews were carried out on a case-by-case basis with the help of Oku FCA as well as a local resource person. Except in the case of two households, all respondents were women. Respondents were interviewed either at their homes or their work places. Telephone interviews were also carried out.

## **Results**

### ***Context***

The potential of the town of Oku as an oyster aquaculture production area is examined here. In 2010, the total production of shelled oysters across Japan was about 32,000 tonnes from

approximately 6,420,000 m<sup>2</sup> of farming area, with about 4,200 households engaged in production. Japan's top oyster production areas in 2010 were Hiroshima Prefecture (which produced around 51%), Miyagi Prefecture (producing around 7%) and Okayama Prefecture (producing 6%).

The town of Oku is a major oyster-producing area in Okayama Prefecture. Oku's production of shucked oysters was about 1,500 tonnes in 2011. In 2008, about 95% of Oku's households were involved in oyster production (see Table 1).

**Table 1.** The number of fishery households and sampled households in Oku (by sales amount per year).

Sales amount (million Yen)	No. of households	Number of samples
None	0	
Under 1	7	
1 ~ under 3	7	1
3 ~ under 5	8	3
5 ~ under 8	29	10
8 ~ under 10	20	11
10 ~ under 15	17	11
15 ~ under 20	6	6
20 ~ under 50	1	
50 ~ under 100	0	
Unclear		1
<b>Total</b>	<b>95</b>	<b>43</b>

Source: Fishery census 2008. Number of samples represent personal and FCA interviews.

### *History of oyster aquaculture in Oku*

Oyster aquaculture was started in Oku in 1952. Fishermen at this time were mainly involved in fishing with trawl nets. But in order to earn income during winter, they opted instead for oyster aquaculture. Thus, the Mokagemura FCA (currently the Oku FCA) brought seed oysters from Hiroshima Prefecture and Miyagi Prefecture and initially 30 trawl-net fishermen commenced oyster aquaculture using the simple hanging method. Total production in the beginning was about eight tonnes.

The scale of production gradually expanded, and raft-type cultivation was introduced in 1963. This new method of aquaculture was seen as a distinct opportunity and the number of oyster farmers increased to 75. By the late 1960s, the farmers no longer used the simple hanging aquaculture method and had completely shifted to raft-type cultivation, which was more effective. By the 1970s, more households had switched from fishing to oyster aquaculture due to dwindling marine catches. Oyster production through aquaculture increased dramatically because of the wide acceptance of raft-type cultivation. The production of oysters was 2,270 tonnes in 1980, with the town of Oku accounting for about 55% of total production in Okayama Prefecture.

On the one hand, there was an increase in the quantity of oysters produced; but on the other, their quality was deteriorating. This led to a marked debasement of market value and sales were hit badly. An urgent need arose to switch emphasis from quantity to quality. Consequently, in 1988 the Oku FCA decided to restrict the number of rafts operated by each fisherman. Fishermen were allowed to own a maximum of 18 rafts each. With this, the focus of the fishermen being engaged in oyster aquaculture alone shifted to instead devising better methods to shuck oysters and improve their methods of sales. Of late, the number of oyster farmers making direct sales (in addition to their sales to the FCA) has been increasing. In such cases the oyster farmers receive orders directly from consumers through internet, telephone or fax, and based on the orders placed, they deliver oysters through home delivery services. Catering to individual customers means added office work for the oyster farmers; however, to develop their sales channels, many oyster farmers are opting for this.

Oyster farmers in Oku have started to employ Chinese workers to perform the land-based work. These Chinese workers come to Japan under the industrial training and technical internship programs of the Japan International Training Cooperation Organisation (JITCO). The purpose of this program is to offer youth in developing countries the opportunity to acquire the skills, techniques and knowledge of advanced nations, thus building the human resource capacities needed for economic growth in those countries. The interns work as employees under this program for a maximum of three years. The number of foreign interns using this program is increasing annually not only in Oku, but also widely across the Japanese fishing and fish processing sectors. All the “Chinese workers” referred to in this paper came to Japan under this program. Most of these Chinese workers in Oku were women aged around 20 years.

### ***Roles of locally hired women and elderly persons retired from work at sea***

Women and elderly persons largely take on the responsibility of land-based work in the oyster aquaculture sector. In particular, the wives of raft owners, female relatives and locally hired female workers are predominantly engaged in the removal of oyster shells. The oyster aquaculture sector in Oku ranges from businesses employing as few as two workers (often a married couple) to about ten workers. The number of employees engaged in land-based activities was 65 men and 161 women, according to the 2008 Fishery Census. Since the Fishery Census does not classify workers based on nationality, it was difficult to determine the exact numbers of foreign workers.

The locally hired female workers were employed in the local agriculture sector throughout the summer and in the aquaculture sector throughout winter. Previously they formed the major workforce and this was an opportunity for them to gain additional income. They were able to earn between 80 thousand yen (approx. USD 820) and 150 thousand yen (approx. USD 1542) per month.

Also, in the case of oyster aquaculture, elderly persons retired from work at sea are often engaged in the work of removing shells. Most of them are fathers of the current owners and they often work without salary, mainly to stay engaged with some activity. They offer crucial support

for the aquaculture family businesses through this temporary labour, because their time is flexible. In fact, this voluntary labour is a major factor keeping the oyster farmers viable.

However, of late a lot of foreigners, particularly Chinese, have entered the land-based work of oyster aquaculture.

### ***Increase of Chinese interns***

Although reports state that the number of Chinese workers is increasing, there are no genuine statistical data regarding the total numbers of Chinese workers. As Chinese workers tend to be employed by individual households, these work places had to be examined individually. Of the 43 fishery households, information was obtained from 16 households whose annual production was valued at 10 million yen (approx. USD 103,000 at August 2013 exchange rates) or greater. Out of these 16 households, six fishery households (38%) had hired Chinese interns in 2008, with five more fishery households starting to hire Chinese interns in 2013. From this, it is clear that large-scale household businesses are increasingly employing Chinese workers. On the other hand, out of the 38 fishery households with production of less than 10 million yen per year, only two households (8%) had employed Chinese interns in 2008, although this number had increased to six fishery households (23%) by 2013. Furthermore, two households among the six major households had replaced Japanese workers with Chinese workers. In 2008, the households with small annual landings tended not to employ non-Japanese workers, even when their Japanese employees were viewed as elderly. However now, even the smaller households have started employing Chinese workers.

### ***Fewer women and elderly persons engaged in land-based work***

Women and elderly persons play a crucial role in supporting family businesses in oyster aquaculture. But as these women and elderly persons get aged, they lose their speed at shucking the oyster shells, which eventually damages the oyster meat. This has been observed through personal observation and confirmed by responses received from business owners. Shucking work is a battle against time. For example, the FCA limits shucking work hours from 5 am to 3 pm. It is important that workers remove the maximum number of shells in this limited time. Elderly persons often damage the oyster meat when they remove shells. The commercial value of damaged oysters is low, so owners become unhappy with these elderly persons. Young Japanese workers are also unwilling to become involved in this process, as this industry offers only seasonal work, with a peak season from October to April. Hence, the owners are forced to look for foreign labour.

On the other hand, Chinese workers tend to be younger, so their working speed is faster and they don't damage the oyster meat. They are also paid less compared to the Japanese workers. Local Japanese workers are paid an hourly wage of about 850 yen (approx. USD 8.70) while Chinese workers are paid only about 700 yen.h<sup>-1</sup> (approx. USD 7.20), despite the fact that older local women are capable of removing only one-third the quantity of oyster shells that the Chinese workers can. Therefore, the households' sales tended to increase after the arrival of the Chinese workers, since payroll expenses for the Chinese interns were lower. Thus, business owners who

wished to expand the scale of their business increasingly replaced locally hired women and elderly workers with young Chinese interns. This has also resulted in the local Japanese women and elderly persons moving out of the industry.

### ***New development patterns***

In the case of one household, only four family members (the two owners, their son and his wife) were engaged in land-based work in 2008. Their annual production was around 5.5 million yen (approx. USD 57,000). However, they hired three Chinese workers in 2009, which had further increased to four Chinese workers by 2012. By 2012, their annual production had increased to 20 million yen (approx. USD 206,000). This was due to the fact that Chinese workers could shuck oysters faster, enabling the owners to expand their production.

Furthermore, sales channels are also changing. In addition to FCA sales, direct sales channels are becoming increasingly important. Furthermore, households have undergone another big change by commencing processing work. One owner's wife stopped shucking oysters, since Chinese workers could be employed for this work at a cheaper rate. Subsequently, she became engaged in processing for example, oysters in olive oil, smoked oyster products, and so on, thus diversifying the household's sales. This work was carried out with the help of locally hired women, basically due to limitations on hiring Chinese workers for this, as the number of Chinese workers is restricted to those attending the industrial training and technical internship programs. Chinese interns already hired by that particular household also sometimes worked in the processing department. The owner's wife has also begun developing new products and travelling to Tokyo for sales and business talks. She has received coverage in local media like TV and newspapers, in addition to getting verbal requests. Though this was a unique case, it has attracted the interest of many women in oyster aquaculture households who have visited her processing plant to learn about how to manage these activities. Others may follow her example.

### ***Changes in the community***

One significant change in the local community has been that the number of rafts for oyster aquaculture is increasing. In other words, this means that each household's culture activity is becoming larger in scale. Previously the FCA allocated 15 rafts (each 25 meters by 8 meters) to each oyster farmer, while also permitting oyster farmers who cultivate two-year-old oysters to operate three additional rafts (oyster farmers in Oku normally cultivate and sell one-year-old oysters). So at the most, each household could have 18 rafts. However, in 2011 the FCA permitted more rafts because the participation of Chinese workers enabled faster shucking of shells, making a strong case for increasing production. Now, each household has a maximum of up to 20 rafts. Additionally, the FCA has also extended the operating season by one more month.

Another change is the increasing polarisation of businesses. This polarisation has been observed between the households that increased their sales channels and started processing activities after hiring Chinese workers (as illustrated in the case studies above) and the households that cannot do this. In other words the discrepancy between households capable of growing

expanding culture activities and surviving and households that will collapse has become clearer. This can be attributed mainly to the entry of Chinese workers.

## **Discussion and Conclusion**

This study has contributed to the understanding of the present situation and the changing roles of Japanese women and elderly persons employed in oyster aquaculture. In conclusion, three points based on this study will be discussed.

Firstly, oyster shell shucking was a source of income for Japanese women and a post-retirement activity for elderly persons. But they are slowly being displaced from their jobs due to the entry of Chinese workers who can shuck shells faster and are also paid less than local Japanese workers. Deprived of their roles in the oyster aquaculture industry, elderly persons are losing working opportunities as well as a sense of purpose in their lives.

Secondly, and conversely, we have as an example a case study where the owner's wife acquired new business skills and exploited new opportunities. She was able to leverage her unique talents in developing new products and in expanding her business. This demonstrates how women can acquire new roles and continue to contribute in oyster aquaculture management.

Thirdly, we find that polarisation of the industry is underway. Larger-scale household businesses are employing Chinese workers, increasing their number of rafts and gradually increasing their scale of operations. On the other hand, many smaller-scale household businesses cannot afford to employ Chinese workers. In many cases, they believe that they will have to give up aquaculture sometime during their lifetime. Despite the limitations of the sample data, this study offers some insights into how the oyster aquaculture industry is evolving. If this situation of dependence on foreign labour keeps growing, there is a possibility that this will lead to serious economic and social issues for locally hired women and elderly persons. Significant issues of poverty may arise, triggered by loss of job opportunities. This is a major challenge not only to fisheries policy but also to community and welfare policy.

Future studies could explore and analyse some of the issues identified in this study using a larger and more representative sample of land-based workers in fisheries and aquaculture. The impact on women and elderly persons after they are displaced from their jobs needs to be investigated. It is also necessary to understand why the Chinese interns come to Japan and why they choose this type of employment.

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