

## Small-scale Fisheries in Japan

Environmental and Socio-cultural Perspectives

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## Seven Years after Disaster

### Fisheries Communities in Coastal Pacific Tōhoku

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**Abstract** This paper gives an overview on several problems in fishing villages of Sanriku in the course of reconstruction after the tsunami disaster in March 2011. The focus is put on two communities on the Eastern and Western side of Oshika peninsula to show differences in efforts and success. Furthermore, qualitative observations on the micro level are included, i.e. internal conflicts within communities and regional policy-making during the reconstruction process, to enable a more differentiated view on problems that local residents and communities have been facing since disaster.

**Summary** 1 Introduction. – 2 The Setting. – 3 Reconstruction. – 4 Conflict and Livelihood during Reconstruction. – 4.1 Case 1: Mr. M. – 4.2 Case 2: Mr. K. – 4.3 Internal Frictions and Support. – 5 Population Decline and Demography. – 6 The Next Five Years.

**Keywords** Sanriku. March 2011. Tsunami. Disaster. Fisheries. Aquaculture. Reconstruction. Demography.

## 1 Introduction

On March 11, 2011, the Coastal Pacific Communities of Sanriku were severely hit by multiple tsunamis following the Great Tōhoku Earthquake measuring a moment magnitude of 9.0 Mw. The events affected the fisheries sector from northeastern Pacific Tōhoku to virtually all over the Pacific coastline in Japan from the northern Hokkaidō to Okinawa in the southwestern tip of the Japanese archipelago (Hamada 2013, 67). However, the situation was particularly severe in two prominent Prefectures of fishery industry: Miyagi and Iwate, in Pacific Tōhoku, in immediate vicinity to the epicentre, where virtually all coastal facilities were washed away and hence coastal people lost their livelihood.



The Tōhoku region has been often attributed a backwardness (Kawaniishi 2015) due to the fact that the industry of this region has largely been characterised by the primary economic sector over the centuries, and even the naming of the region (東北 lit. 'Northeast') represents a periphery itself, which goes back to the ancient naming Ōshū (奥州) or Mutsu (陸奥), literally

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meaning the 'Hinterland'. During the postwar phase of the economic miracle Tōhoku was a main source of human labour, when the young population left their homes in the countryside to the booming industrial centres at the Pacific belt between Kantō (Tokyo) and Kansai (Osaka) as 'golden eggs' (*kin no tamago* 金の卵). Today, the general ageing of population represents a severe problem in Japan, yet this demographic trend particularly affected Japan's rural peripheries - like Tōhoku - where the downward spiral already became visible in the 1960s (Wilhelm 2016, 25). The fisheries sector was no exception and the fisheries population had been shrinking since the 1970s (graph. 1). When disaster struck, Tōhoku's local industry was already more or less in a deteriorating state and calls for structural change had been put on the political agenda. However, the situation worsened over the years. The small- to middle-sized urban centres of Tōhoku - except for the booming cities like Morioka and Sendai - were more or less in a desolate state characterised by *shattā-gai* (シャッター街; closed stores in traditional shopping malls) and abandoned houses in the countryside since the burst of the bubble economy and the following years of deflation.

In this paper I will discuss the situation in some coastal communities before and after March 2011 to show the wide variety of problems faced by local residents in a post-disaster situation. My main focus will be placed around two coastal communities of Oshika peninsula (Miyagi Prefecture), Yoriiso and Momonoura, respectively. While located on both sides of the peninsula, the situations and outcomes since disaster differ considerably so that these two cases are very much suited to reflect on strategies and problems in the course of livelihood reconstruction after disaster. Unlike other authors on this topic,<sup>1</sup> I will include qualitative observations on the micro level, i.e. internal conflicts within communities and regional policy-making during the reconstruction process, to enable a more differentiated view on problems that local residents and communities have been facing since March 2011 that not rarely tend to be ignored and get 'lost in numbers' through quantitative approaches.

The paper starts with a brief description of main features we find in Sanriku and its fisheries. The following section is focused on reconstruction and recovery: the former will cover the administration framework for reconstruction, while the latter is more centred on local aspects, including conflicts that occurred during recovery, as much as how individual actors activated assets to overcome calamity.

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1 For instance Hamada (2013) or Aldrich, Sawada (2015). The paper is based on past publications by the author (Wilhelm, Delaney 2013, Wilhelm 2013) with updated data which became available meanwhile. A different version of the paper with an identical text in most parts is in print at the University of Vienna's series *Beiträge zur Japanologie*.

## 2 The Setting

The Pacific coast of Tōhoku can be split into two different sectors with their specific topographic features. The southern coast, from the shores in Fukushima Prefecture in the South up to the Mangoku-ura bay in Ishinomaki, is characterised by sandy beaches, while the northern part is rocky and cliff-sided, and engraved by small rivers which formed the so called ria bays over the time. The latter part is also referred to as Sanriku coast (*Sanriku kaigan* 三陸海岸), a name literally meaning ‘three riku’ pointing to the three temporarily existing provinces of Rikuzen 陸前, Rikuchū 陸中 and Rikuō (陸奥 also read Mutsu) in the early Meiji era that each included the Chinese character for ‘Ashore’ which is the meaning of *riku* 陸. The Oshika peninsula represents the southern end of the Sanriku coast, and the island Kinkasan in front of the southern tip has been an important landmark and thus a place of worship by fishermen who have accessed the so called waters of Sanriku-oki, which are famed for their wealth in marine resources. On the other hand, the ria bays that characterise the Sanriku coast provide excellent conditions for maritime aquaculture that has developed since World War II, for why this region shows a high density of fishing ports with adjacent small hamlets. For instance, in Nagasaki and in Hokkaidō Prefectures we find more than 280 of them, the highest numbers of fishing ports. However, when putting these in relation to the overall length of the coastline we find a fishing port every 15 kilometres in the two above mentioned Prefectures, while in Miyagi and Iwate the density is approximately three times higher (table 1).

Japan’s fisheries industry expanded its operations to the open seas after World War II, even though the roots for this expansion reach back to Meiji era. After offshore and pelagic fisheries production reached a peak in the middle of the 1980s, these sectors experienced a harsh decline later, most possibly due to a beginning global resource depletion and the rise of new players in the global fisheries industry such as Indonesia and China. However, the coastal fisheries sector’s production including cultivation fisheries remained stable in comparison to the offshore sector (graph. 2). Today, the coastal fishery sector in Sanriku is characterised by many small-scale operators – most often family run and thus with a relatively high amount of female workforce (graph. 3) – which are organised within the local Fisheries Cooperative Association (FCA) branch. Another feature of Sanriku’s fishery sector is the extensively developed aquaculture that has been mentioned above (graph. 4). Therefore we also see a high diversity of cultivated species (graph. 5) that ranges from different seaweed over sea-squirts, urchin, sea cucumber or fry for scallop. On the other side, there exists an effectively organised pelagic fishery in many villages’ fishing ports, such as the highly mobile fleets for offshore squid fishing operations, as much as onshore facilities or lodging of the crew in ports and harbours.

As mentioned above, the impact of destruction after the quakes of March 2011 hit the Sanriku region severely. Virtually all fishing vessels and fishery facilities (ports, rafts for cultivation, etc.) have been destroyed by multiple tsunamis in Iwate and Miyagi, and most gear and facilities were lost (tables 2 and 3). Furthermore, the entire coastline sunk up to 1.2 metres (in Ayukawa at the tip of Oshika peninsula), for why the wharfs had to be lifted to enable fishing and landing operations. In addition, the debris inside the coastal water made fisheries operations in coastal waters virtually impossible, not to mention the lack of vehicles to do so.

Summing up the physical damage in the fisheries industry by the events following the Great East Japan Earthquake we can record that nearly all coastal facilities were destroyed or at least in a dysfunctional state. Moreover, the fishery in Fukushima Prefecture had to halt operations due to the contamination by radiation emitted by the wrecked nuclear power plant Fukushima Daiichi. It should also be noted here at this point that some radioactive plumes during the dramatic events at the plant obviously dropped over the Oshika peninsula at the coast and in the interior region around Kurihara (northern Miyagi Prefecture) and Ichinoseki (southern Iwate Prefecture) where higher radiation values were measured.<sup>2</sup>

The following section gives a brief overview of the reconstruction policy in the fisheries sector developed in Miyagi Prefecture while partly referencing to the plans in Iwate Prefecture.

### 3 Reconstruction

Quite soon after disaster struck, the Japanese government launched recovery efforts by rebuilding homes and infrastructure, and providing employment and income for those affected. Some of these policies and programs have been a great help for locals trying to rebuild their lives; others, however, have left people frustrated and confused. An administrative framework for reconstructing Miyagi's fisheries was first discussed when Miyagi Governor Murai Yoshihiro announced the idea of Special Zones for Reconstruction of Fisheries (*Suisan-gyō fukkō tokku* 水産業復興特区, hereafter to be referred to as the 'Fishery Tokku' or simply 'Tokku') at the Fourth Quake Reconstruction Design Council (QRDP) meeting on May 10. These Fishery Tokku are to be distinguished from Reconstruction Tokku (*Fukkō tokubetsu kuiki* 復興特別区域 or simply *Fukkō tokku* 復興特区), which denote a set of administrative rules and measures in designated areas affected by disaster.

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<sup>2</sup> In fact, the level contamination in these regions were much lower than in Fukushima Prefecture. However, in July 2011, beef and rice straw was found to be highly contaminated in Kurihara and Ichinoseki areas, inducing a harsh drop of beef prices produced in Tōhoku (see Ministry of Agriculture, Forestry and Fisheries 2011)

The initial idea of these special fishery zones was to simplify administrative priorities when allocating sectoral fishing rights used for aquaculture (table 4). Opening these fishing rights up to outsiders was an attempt to raise needed capital from external investors. Doing so would shift the assignment of sectoral fishing rights from local fisheries cooperative associations (FCAs) to people who had no historical connection with the local fisheries. The idea was to encourage outsiders to bring in much-needed capital for rebuilding. Murai's initiative, however, was poorly prepared: he missed vital consultations with the JF Miyagi (the head organisation of FCAs) in advance of the meeting, which led to a strong opposition by FCA members, who collected the signatures of 14,000 fishermen against the Tokku plan. Fishery Tokku have been included in the National Reconstruction Plan, however, only one of special zone became eventually introduced in the village of Momonoura (Ishinomaki) at the Western side of Oshika peninsula on September 1, 2013. Another - more immediate and much criticised - outcome of the discussion surrounding Fisheries Tokku during 2011 was that Miyagi Prefecture's fisheries reconstruction plan eventually took shape with a half year delay compared to Iwate Prefecture.

On the other side, Japan's fisheries authorities developed a scheme to finance reconstruction for local fishermen smoothly and quick. Within this plan were payments to rebuild fisheries following specific rules for several kinds of operators. These plans provided start-up money and operating costs for a set amount of time, decreasing over time such that after several years they are expected to operate on their own.

JF Miyagi and its branch FCAs served as agents for consultation and support during the application and negotiation of this administrative program. In coastal settlements, FCA members were employed by the FCA itself to help clear and burn debris in the port areas. This work program had two benefits: first, members were provided with much-needed, though precarious, income, while they are unable to resume fishing activities or cultivation. Second, through this work they were making the ports usable for the future also regarding facilities for processing the landed catch. Thus the program met both present and future needs. Some groups along the coast benefited to a modest degree from such programs.

Aside from these specific plans which are only available to certain groups meeting certain conditions, how could the affected fishermen generally make their living without a fishing income? Even in cases where fisheries labour is a part-time or short-term work, it still provided vital income for fishermen's families. Immediately after disaster a temporary support system by government started to remove and collect debris from fishing grounds, a kind of self-help program for fishing villages financed by local government. To apply for this program, at least five fishermen had to join together. Yet, soon after the immediate time after disaster job opportunities in fisheries and other sectors were extremely rare along the Pacific coast. In the course of recon-

struction many fishermen found jobs in the construction industry. However, this trend has made many former fishermen disconnected from their habitat and livelihood by choosing a job in construction in the urban city.

The reconstruction in Miyagi Prefecture is planned over a period of ten years (2011 to 2020) which are further divided into the three phases of restoration (three years), regeneration (four years), and development (three years) (table 5). In comparison, the reconstruction plan by Iwate Prefecture allocated an overall period of nine years, thus a year less than Miyagi. Another difference is visible in how local actors are integrated during reconstruction. In Miyagi Prefecture the main bias of reconstruction was laid on an improved efficiency by restructuring the infrastructure of fishing ports as much as introducing new types of business, whereas in Iwate Prefecture the focus was put on restoring livelihood through traditional local business structures, i.e. FCAs. An evaluation of the outcome of each reconstruction plan is not possible at the time of writing, yet, we might generalise that in Miyagi the authorities have integrated (neoliberal) elements in a piggyback system to solve problems in the fishing industry's structure that have already been visible before disaster struck. Regarding Fisheries Tokku, we have to wait until 2018 – when new fishing rights are allocated by government – to see if this will turn out a fertile and sustainable policy for the future fisheries of Miyagi Prefecture.

Apart from these policy measures explicitly pointing to the fisheries industry we have to mention two important parts of reconstruction efforts by government, i.e. the relocation of housings to higher ground, as much as the construction plans for tsunami walls along Sanriku's coastline. Besides these plans we have to be aware that Sanriku's fisheries industry is embedded in local, regional, national and international contexts where different needs, problems and conflicts emerged during the course of reconstruction. Some of these are illustrated in the following section.

## **4 Conflict and Livelihood during Reconstruction**

In the following I will try to shed light on conflicts in coastal communities of Southern Sanriku to show different types of problems faced by local residents and related actors during the first half of Miyagi Prefecture's reconstruction period (i.e. five years after disaster, while the reconstruction's plan is designed for ten years). We will see that many residents have been more or less successful in overcoming personal calamity, while the situation of the latter differs not only locally, but, also regarding the state of the reconstruction process at a specific time with its specific situation that sometimes even relate to global politics. I will therefore try to show internal frictions as much as risks local people are facing in the course of post-disaster reconstruction.

I will first illustrate how two individual actors managed to restore the livelihood of many residents by referring to the so called Sustainable Livelihoods Framework (Scoones 1998, DFID 1999), hereafter referred to as SLF (graph. 6), for the model provides a tool to analyse the outcome of activities by individuals or groups to overcome calamity.

#### 4.1 Case 1: Mr. M.

M. is a local fisherman and vendor of marine products (principally seaweed, scallops and sea squirts) in Yoriiso. Due to lucky circumstances, M.'s house on a hilltop at the harbour was not affected by the tsunamis. Concerned about radiation and tough work that had to be done after March 2011, he let his wife temporarily move to Tokyo where their daughter studied design. His activities focussed on restoring his processing facility and adjacent trading company for marine products. As his former facility had been refurbished two years before disaster (partly with governmental subsidies) he could take advantage of a special emergency support program provided by government soon after disaster and before a general subsidy system came into effect. He succeeded reopening his business in April 2012, providing 12 residents with jobs. M. took advantage of a institutional framework he could fit in to reconstruct not only his own business very soon after disaster, but, also to provide job opportunities for local residents earlier than general support programs came into effect. M. succeeded in activating assets such as social capital as much as financial capital that was institutionally available.

#### 4.2 Case 2: Mr. K.

K. is the only descendant of a three and a half centuries old *honke* (main branch) family of local merchants denoted *isaba* (五十集 a traditional wholesaler and net-owner). The huge and prestigious residence above the harbour was washed away. After disaster, K. initially only thought to reconstruct his diesel and oil business while giving up his trading company for marine products (export of sea squirts = ascidian = *hoya* 海鞘 to Korea). His processing facility at the port of Yoriiso used to be the largest before disaster, providing local residents a job opportunity. Eventually, he succeeded in rebuilding his marine processing sites in Yoriiso and near Ishinomaki's central fishing port until April 2014.

Being connected to partners, friends and customers across great distances is common among coastal fishermen. Among the volunteers and supporters of the disaster relief efforts fisheries industry, many such friends reactivated their bonds and formed self-help groups. The Friends

and Supporters of the Sea (FSS, or *Kaiyū shien-tai* 海友支援隊) is one such group. FSS was set up just a couple of weeks after the March disasters as a company by former high school friends in their fifties and sixties to support rebuilding Yoriiso's local fishery and livelihood of residents. Its members' relatively advanced age distinguishes this group from other – mostly younger – volunteers. The three core members have all had successful careers as businessmen before March 2011, and now that their adult children have left home they have enough time and financial stability to focus on their new activities as experienced and locally respected persons. Based in central Ishinomaki, their activities focused on Samenoura bay where Yoriiso is located at the Northeastern tip. Since disaster struck, K. lives in an apartment of a FSS-friend in central Ishinomaki. Even if K. is not living in Yoriiso anymore as descendant of an influential and wealthy family he felt responsible for the former fellow residents even if he has no formal post (such as village headman) and moved to urban Ishinomaki after disaster. K. was also responsible for setting up two reasonably priced vending machines near the temporary housings (*kasetsu jūtaku* 仮設住宅) for residents who lost their homes.

K. has tried to rebuild his own business as much as to help local residents by activating his financial and social assets. However, as we will see below, he has been facing other problems in the course of resuming his business as much as during his support activities with FSS.

### 4.3 Internal Frictions and Support

The installation of cheap vending machines by K. mentioned above caused friction among the residents, because already before March 2011 there had been other vending machines offering beverages for 120 ¥ per item. They are run by another resident of Yoriiso whose uphill shop was not affected by the disaster. The latter complained that he would lose customers. Eventually, this problem could be settled through discussions among the residents (and within the settlement's resident assembly) by agreeing that the cheaper vending machines were intended to support those living in temporary housing.

Due to the harsh topography at the cape of Yoriiso, sites suited for a temporary housing estate were limited. They were constructed in summer 2011 at the southern border between Yoriiso and the neighboring settlement of Maeami, a little downwards of the local elementary school. In Maeami, 17 of 23 houses were destroyed by the disaster, thus most residents of the *kasetsu* – actually located in Yoriiso – were from there. The temporary housings were part of rebuilding plans to move residents away from low-lying vulnerable areas to higher ground. However, as sites suited for such plans are scarce, the municipal officials in charge of relocation had to talk with local landowners, that is, wealthy residents. Mr. D.



was one of them, a descendant of another wealthy local family who lost his house near the harbour of Yoriiso. After the disaster he temporally moved to Western Japan to his daughter's family. During the negotiations with officials he offered some of his privately owned land suited for the construction of new housing. In return he asked the municipality to provide him a preferential treatment for living in a so-called *saigai jūtaku* (災害住宅 i.e. a public Disaster Apartment) in the urbanized area of Ishinomaki because of his refusal to move back to Yoriiso. This in turn led to another problem, because the allocation of new residents to the brand-new *saigai jūtaku* was based on an egalitarian lottery system that did not provide for such special treatments. Eventually, D. achieved the expected outcome and is now living in a *saigai jūtaku*.

Because of his long relationship with Yoriiso residents, the author of this paper was also active in reconstruction efforts.<sup>3</sup> By chance a group of German members of parliament met fishermen from Yoriiso. The leader of the group happened to be a board member of the German branch of a large international welfare and health organization. A few weeks after their visit an offer of about 1,000,000 € for a community house in Yoriiso was communicated via the German embassy. Again the egalitarian principles built in the municipal reconstruction plans seemed to nip any such endeavour in the bud. Why should Yoriiso be favoured to other places where community houses were needed, too? Due to lucky circumstances a leading member of FSS had supreme abilities in accounting and planning, so that things began rolling and the so called *Kaiyūkan* (海友館), or German House, was constructed just next to the local elementary school and opened with a ceremony on April 12, 2014. However, at this point many residents were still inhabiting the nearby *kasetsu jūtaku* and it was especially them who begun asking why the community house was built in advance of their resettlement to higher ground. Other critique included questions such as why the house was not built near the port which is accessible for anyone. The latter, however, came to understand the vulnerability of such an endeavour near the sea. Many residents refused to make use of the German House during the following month, yet their attitude of refusal changed in the course of two years. Today, the German House is widely accepted – also because resettlement to higher ground has now begun. It also features solar panels to produce electricity autonomously for the following reasons: first, surplus electricity is sold to the opened electricity market at fixed prices to partially cover maintenance costs of the house itself; second, the electricity can be used for cooking, film screening events or meetings as well as accommodating two to four persons; third, in case of emergency

3 Since 2004, the author conducted extensive fieldwork in Yoriiso for his PhD Thesis (Wilhelm 2009). Since the disaster he visited Yoriiso more than dozen times to maintain bonds with the residents as well as to collect data for his studies.

the system provides electricity for multiple purposes. This is especially important for those in need of a power supply for their medical appliances such as lung machines.<sup>4</sup>

The next section focuses on demography and its effects on livelihood in a fisheries neighbourhood.

## 5 Population Decline and Demography

Apart from the 'damage by rumours' (*fuhyō higai* 風評被害; due to the alleged contamination of Sanriku's waters and thus its marine products), local residents experienced multiple problems during reconstruction, such as contested plans for building tsunami walls along the sea as well as accelerating depopulation, or problems that evolved within the global arena of foreign politics. In this chapter the latter two will be paid attention to.<sup>5</sup>

As noted before, fisheries activities were virtually impossible after tsunami struck. When looking at several districts of Ishinomaki City (table 6) we can observe that in coastal areas such as Ogatsu or Oshika the population dropped dramatically. On the other side, Kanan – a district adjunct to the urban area of Ishinomaki City with access to the Sanriku Highway, the Res Cross Hospital, and the location of a new outskirts shopping mall – experienced a population growth. We cannot simply say that the standstill of the local fisheries industry was the main reason why population declined after disaster. Other reasons are to be found in mental, economic or comfort aspects of the victims' lives after March 2011.

For instance, in 2012 a friend of the author, a stonemason craftsman from Ogatsu, told that he together with his mother had decided to move to a *kasetsu* settlement that was as far away as possible from the coast where they experienced the dramatic events. During the assignment of *kasetsu jūtaku* the authorities asked applicants if they had any locational preferences.<sup>6</sup> The friend chose to stay in the Kitakami/Ogatsu district to restore his livelihood as a slate-craftsman. Other residents of Ogatsu have

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4 Many people were evacuated to the nearby Onagawa nuclear power plant to access electricity after March 2011.

5 It should be noted that Yoriiso was one of three sites where plans for tsunami seawalls were dismissed. Officially, there was no need for them, but, this holds true for other places, too. In fact, it was the united effort of Yoriiso's residents who harshly opposed the plans, even if a few residents – including the village headman – favoured a wall at the port because it would protect their *naya* (納屋; store houses for fishing tools; sometimes referred to as *banya* 番屋) near the harbour.

6 In fact, there are five *kasetsu* districts in urban Ishinomaki City: West (Seibu, Hebita area), Central (Chūō, Ōhashi area), North (Hokubu, Kaisei area) and South (Tōbu, Watanoha area). The Eastern areas are Kanan, Monou/Kahoku, Kitakami/Ogatsu and Oshika.

chosen a *kasetsu jūtaku* near the urban center in Kanan or in an interior area such as Monou/Kitakami where many people from Ogatsu had been evacuated to the so-called ‘Big Bang’ communal sports centre immediately after the disaster.<sup>7</sup>

The depopulation of coastal areas is also visible in fisheries statistics. Graphics 7 and 8 illustrate the demographic change of the fishing population as much as the de facto residents between 2008-2013 and 2010-2015 in two fishing villages of Oshika peninsula, i.e. Yoriiso on the eastern side and Momonoura on the western side near the urban centre of Ishinomaki City.<sup>8</sup> Both villages show a general decline in population between 2008 and 2013 and, even before March 2011 the ageing of fishermen was clearly visible. Yet, when looking at the graph of 2013, in Yoriiso the distribution of age cohorts seems much better balanced than in Momonoura where fishermen below the age of 50 are virtually nonexistent. In Yoriiso the distribution even suggests that the problem of an ageing fisheries population even worsened during the course of disaster. As far as I could hear by local fishermen, many elders refused to rebuild their business after disaster. They weren’t “willing to shoulder the financial risks of resuming their fishery activities, as they will be far too old to work by the time reconstruction is finally completed and some of them lack successors in their families”. (Wilhelm, Delaney 2013, 114) On the other hand, the residential data in graphic 8 illustrates that the real situation is much worse in Momonoura than in Yoriiso. Only ten percent of the pre-disaster population remained in Momonoura, while in Yoriiso only 30% left. This has severe consequences in local autonomy such as in the case of local resource management or local fishing rights allocation.

Even if there still exists a Fishery Cooperative Association in Momonoura, the statistical data shows that an effective local management is virtually impossible since March 2011. There, the local fishing rights were handed over to an external investor in the course of the introduction of

7 Focussing further on the micro-migration between the eight areas after disaster seems to be worth a detailed demographic study. However, one can surely say that the population increase in Kanan after March 2011 is somehow related to the harsh decline in Ogatsu and the convenient infrastructure. According to the Population Census of 2015 Ogatsu lost three quarters of its former population. It should be noted that the suburbs of Sendai, the largest city in Tōhoku, experienced quite a growth in population and household numbers. (See: Ishinomaki-shi sōmubu sōmuka 2016)

8 In Japan, the statistical data provided by authorities can vary. In our case, the author referred to the data of the Population Census (Kokusei chōsa 国勢調査), that is conducted every ten years with additional approximative data for each five years. While this data is based on the number of persons ‘in place’ the residential data by local municipalities refer to the official resident registration data (*jūmin tōroku* 住民登録) which do not always mirror the real situation. On the other hand, the demographic data of the Fishery Census is based on the number of workers in the fishery sector and hence can vary from the residential data.

Special Fishery Zones (Suisan Tokku) which goes in hand with the transfer of local resources to external stakeholders. In Yoriiso, however, local autonomy over resources could be maintained. We even see an improved environment for fishing activities due to fewer fishermen (stakeholders) accessing the same amount of resources that becomes visible in the sea squirt aquaculture which is the main type of fisheries in Yoriiso (table 7). While the total number of fishermen in Yoriiso declined after March 2011 the amount of accessible resources (rafts for cultivation) remained stable. Therefore the number of rafts per cultivator nearly doubled during the initial phase (until 2013). Simply spoken, this also means a doubling of production for each and thus a possible rise in income. However, things are not easy, especially in Yoriiso's sea squirt industry. As indicated above (section 4.2), most sea squirt (about 70% of total production; Demura 2013, 2) had been exported to South Korea before March 2011 and the initial phase for cultivating sea squirts needs more time (at least three years to become ripe for sales) compared to other species. Hundreds of customers stood in line when above mentioned group of elder volunteers (FSS) organised a PR event to sell the first sea squirts produced in Yoriiso after disaster on the streets of urban Ishinomaki on June 1st, 2014. Yet, this is just one side of the medal. In September 2013 South Korea extended their import ban of marine products from northeastern Japan due to radiation fears<sup>9</sup> and thus the local sea squirt industry experienced a severe setback. The PR event represented an attempt to increase local demand, but, as the cultivation of sea squirt takes much longer time than other products it is difficult for producers to adapt to new conditions on the market. However, the PR efforts have not yet fruited and the domestic demand for sea squirt has not increased and remained at about 4,000 tonnes per annum while the total production is expected about 14,000 tonnes for 2016 of which approximately 10,000 are produced in Miyagi Prefecture alone. Waiting for a lift of Korea's import ban, the producers initially responded by freezing the remaining sea squirt, yet, since there has been no improvement in the bilateral talks the producers decided to discard a stock of 10,000 tonnes in June 2016, an amount slightly higher than the exports to Korea before March 2011. The decrease in numbers of rafts for sea squirt cultivation in Yoriiso between 2013 and 2016 in table 7 is surely related to the breakdown of the traditional *hoya* export market

9 Even though parts of Oshika peninsula were obviously slightly contaminated by plumes from the wrecked reactors in Fukushima, actually, no significant radiation has been found so far in sea squirts. The import ban by South Korea is to be regarded as a tool within the arena of global politics and bilateral relations between Japan and South Korea. Therefore, it represents an interesting case to study the effects of global affairs on the reconstruction of local business in a post-disaster situation. The export of sea squirts amounted approximately 10,000 tonnes annually before disaster.

to the Korean peninsula. Hence, we see that even the local *hoya* business is at the mercy of the global political arenas.

On the other hand, in Momonoura the demographic changes that occurred after March 2011 have led to a state of social vulnerability, i.e. it is almost impossible to resume collective fishing activities without the missing younger generations within the settlement. For a large part the latter triggered the introduction of Tokku in Momonoura, i.e. a special zone where a company (the Momonoura Collective Oyster Company; MCOC) established by external investment was installed in 2012 to provide young people with jobs with a stable income. The initial conflict during the introduction of the Tokku<sup>10</sup> until September 2013 have calmed by 2016 and it seems that this new model of fisheries reconstruction efforts can be a possible path for future developments in coastal Sanriku. At least for the fiscal year 2016 the production of MCOC increased every year since 2013 and a first profit was expected for 2016. Although the number of employees has risen from initial 15 to 43 by 2016, most of them are commuters from outside Momonoura because some essential parts of the village are still inhabitable due to uncompleted reconstruction work (Ōyama 2016, 13). Bringing back inhabitants seems to be a difficult task at Momonoura - in comparison to Yoriiso - is located in vicinity of urban Ishinomaki and therefore is easily accessible by car. It will be interesting to see if any Tokku other than in Momonoura will be introduced in 2018 when fishing rights are to be allocated for the second time after disaster.

## 6 The Next Five Years

While it was difficult to predict future developments of the disaster-struck fisheries industry of Sanriku soon after the earthquake, major developments could be observed during the following five years.

First, the trend of depopulation in the coastal region has been boosted by disaster. However, the situation differs from place to place. In some cases, as in Yoriiso, population decline in combination with reconstruction efforts have even led to an increased resource access and thus more suitable conditions for local producers who have remained. However, due to fears of radioactive contamination, it is difficult to predict the future mar-

<sup>10</sup> I have to omit details about the conflicts between JF Miyagi (the head organisation of FCAs) and the prefectural government in the course of creating the Tokku. Details have been discussed in Wilhelm (2013, 642-6). It should be noted, however, that there were rumours at the time of the introduction of Tokku that the deal to introduce the unpopular institution had been traded between the governor of Miyagi Prefecture and a willing friend and big player in the regional fisheries business to save the governor's face, as virtually no local fisheries association was willing to accept the introduction of this new institutional framework within their local district.

ket in fisheries especially in those sectors that had been relying on exports.

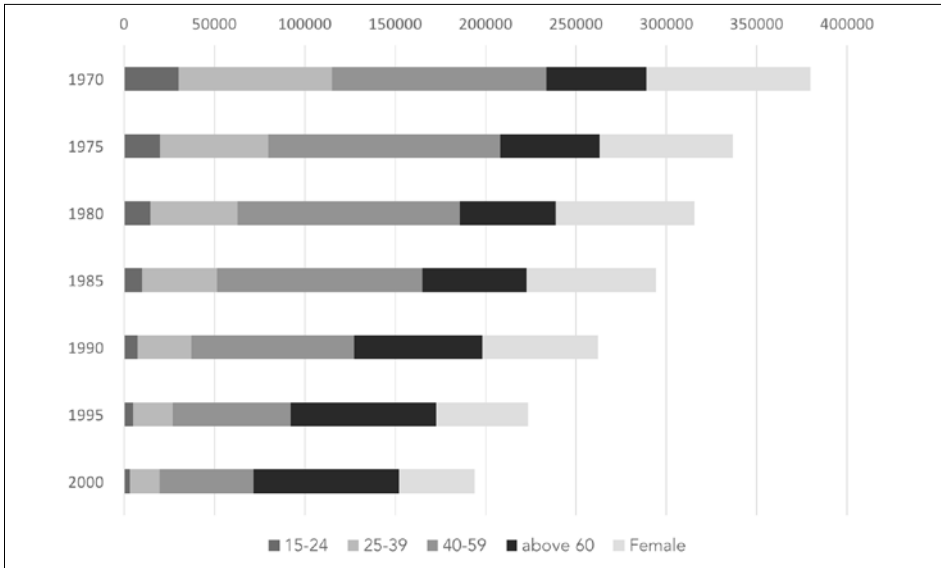
Second, similar to the variety of damage, the problems faced by local residents during reconstruction varied remarkably. During the initial phase it was particularly important to provide local residents with jobs to maintain their livelihoods. Therefore, resuming fisheries was a major precondition for this. However, increased mobility and – since reconstruction took effect – a booming construction sector pulled many former fishermen to other labour than fishing. Thus, the process of depopulation in coastal areas has to be seen in connection with changing conditions on the labour market. As we have seen in the case of Yoriiso, many frictions have emerged during the reconstruction even within a community. This is referred to as shifting states of social vulnerability.

Third and last, in Miyagi Prefecture a new type of fishing rights allocation was introduced in 2013 that enabled external investors to access fishing (and cultivation) grounds that used to be in the hands of local fishermen via their FCA. It will be interesting to see if this handing over of local autonomy in fisheries management will be successful. According to Miyagi Prefecture's officials, however, there will be no new Tokku installed in September 2018, when the fisheries rights will be allocated again for the second time after disaster.

To conclude, the situation in disaster-struck Pacific coastal communities is still severe. An often overlooked outcome of the March 2011 disaster for the local fishing industry is the loss of long-standing customers (*kokyaku* 顧客) that can sometimes be traced back over generations. Not just because of 'damage by rumours', but, rather due to difficulties in delivering supply products over months the partners of these traditional ties had to look for other suppliers with whom they continue business. In other cases, as we have seen in Yoriiso's ascidian aquaculture, supra-local or international frictions are complicating the reconstruction progress in coastal fisheries. Furthermore, as the amount of fisheries resources cannot be foreseen, declining catches – just like in 2017 – are a cause for headache for many local entrepreneurs who struggled hard to rebuild their business. We will have to see if Sanriku's coastal fisheries will be able to regain its pre-disaster power and strength.

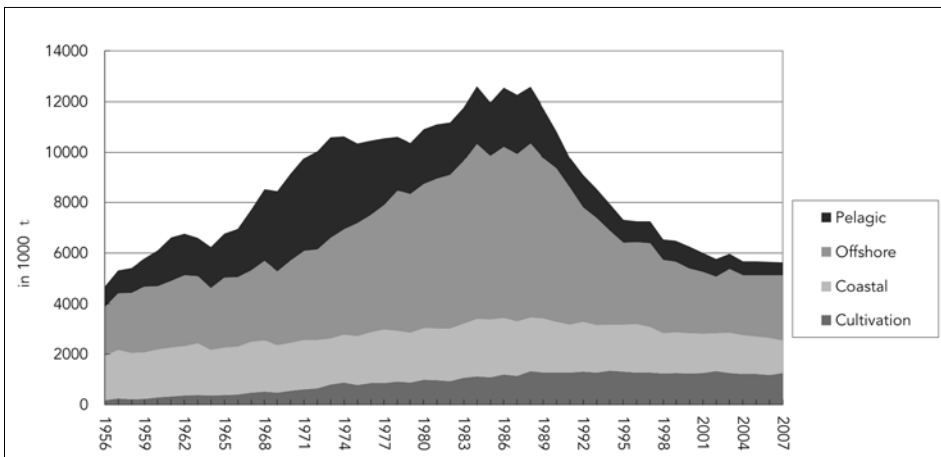
Appendix

Graphic 1. Fisheries Workforce in Japan



Source: Ministry of Agriculture, Forestry and Fisheries, Fisheries Census

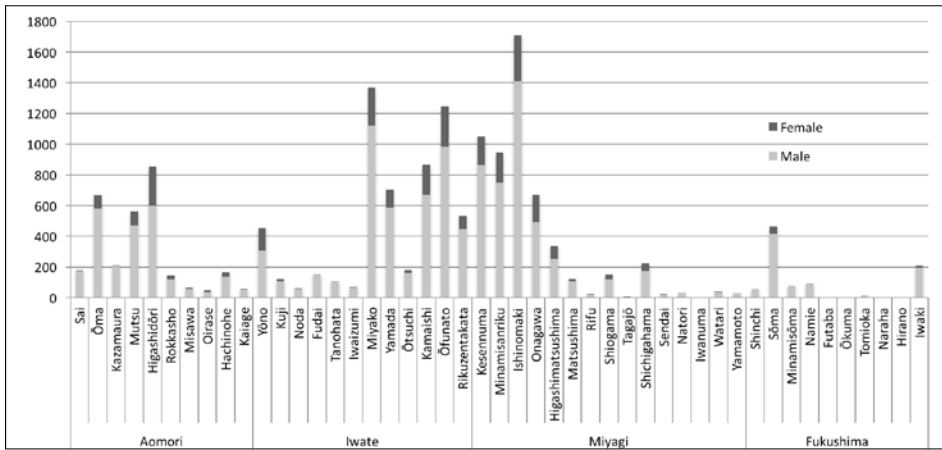
Graphic 2. Japan's Fisheries Production (1956-2007)



Source: Ministry of Agriculture, Forestry and Fisheries, Fisheries Census

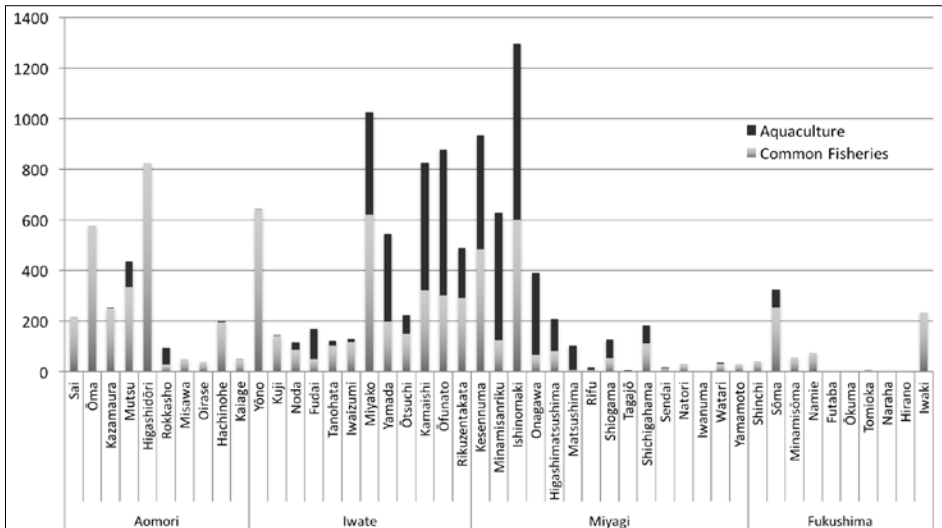
**Small-scale Fisheries in Japan, 129-152**

Graphic 3. Fisheries Workforce in Pacific Tōhoku by Gender (2013)



Source: Tōhoku nōseikyoku tōkei-bu (2011) and (2017)

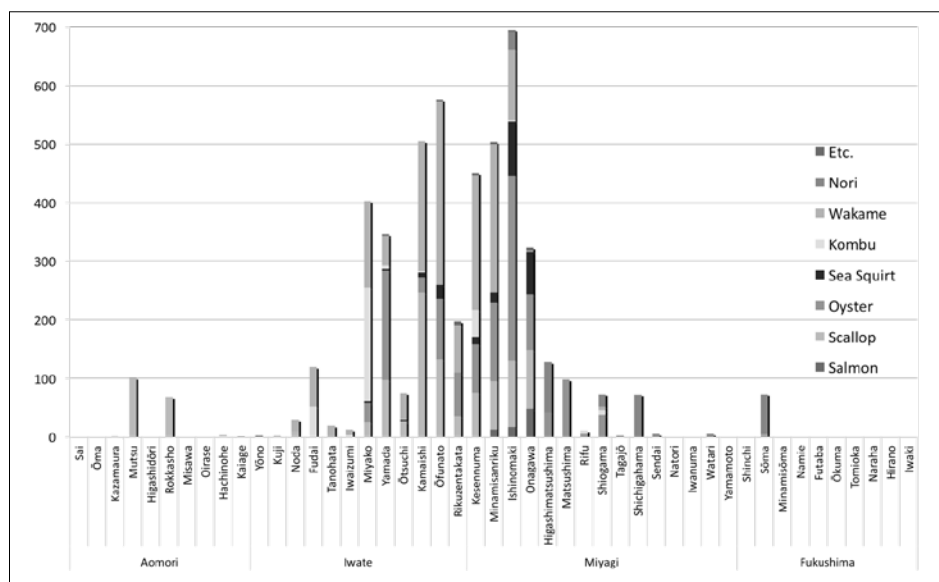
Graphic 4. Types of Fisheries in Pacific Tōhoku (2008)



Source: Tōhoku nōseikyoku tōkei-bu (2011)



Graphic 5. Cultivated Species in Pacific Tōhoku (2008)



Source: Tōhoku nōseikyoku tōkei-bu (2011)

Table 1. Density of Fishing Ports in Selected Prefectures

Prefecture	Coastline in km (A)	Number of fishing ports (B)	(A) / (B) = av. distance between ports (in km)
Hokkaidō	4,454.134	286	15.6
Nagasaki	4,189.132	282	14.9
Miyagi	827.884	143	5.8
Iwate	710.780	111	6.4

Source: Hamada (2013, 84) and Ministry for the Environment (2012)

Table 2. Fishing Vessels (May 2011)

Prefecture	Registered	Destroyed	in %
Aomori	9,672	616	6.4
Iwate	14,304	5,726	40.0
Miyagi	13,770	12,023	87.3
Fukushima	1,173	873	74.4
Sum	38,919	19,238	49.4

Source: Kahoku Shinpō (May 14, 2011)

## Small-scale Fisheries in Japan, 129-152

Table 3. Damaged Facilities

Prefecture	Ports	Markets	Processing	Amount in 100 ¥ million
Aomori	18	3	57	195,000
Iwate	108 of 111	13 (all)	144 of 178	3,973,000
Miyagi	142 (all)	10 (all)	378 of 439	6,680,000
Fukushima	10 (all)	12 (all)	105 of 135	824,000

Source: Ministry of Agriculture, Forestry and Fisheries 2012, 11

Table 4. Administrative Order/Grading of Fishing Rights Assignment

Former System	Fisheries Tokku (special zone)
1. Fishery Cooperative Association →	<b>1st Group</b>
2. Juridical person of local fishermen	- Fishery Cooperative Association
3. Juridical person of more than seven local fishermen	- Juridical person of local fishermen
4. Fishermen or employee (incl. juridical persons)	- Juridical person of more than seven local fishermen
5. Newcomers (incl. juridical persons)	<b>2nd Group</b>
	- Fishermen or employee (incl. juridical persons)
	- Newcomers (incl. juridical persons)

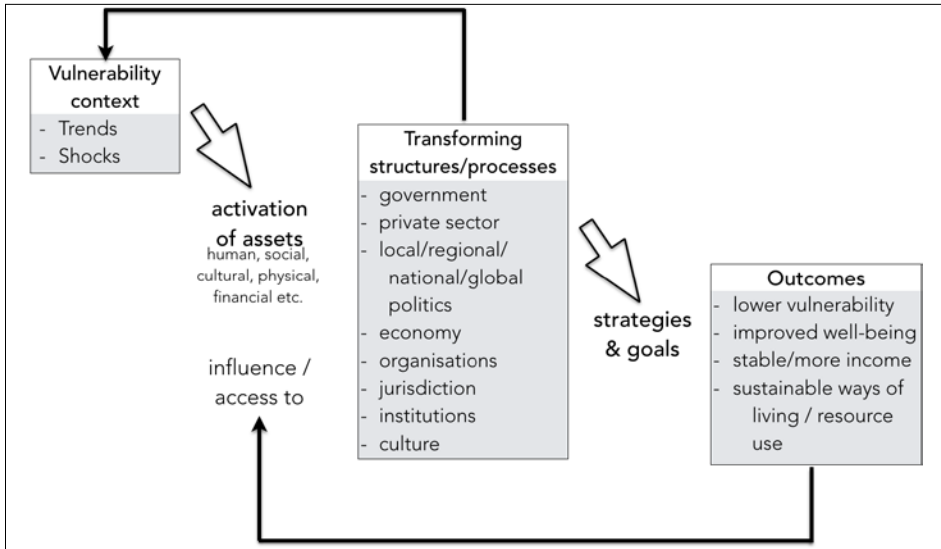
Source: Wilhelm 2013, 637 – Translated by the author

Table 5. Reconstruction Plan for Miyagi's Fishery

Restoration (3 years; 2011-2013)	Regeneration (4 years; 2014-2017)	Development (3 years; 2018-2020)
Reorganisation and temporary restoration of harbours and landing facilities	Concrete reinstallation of harbours and landing facilities	Support of integration of 'base harbours' and 'collection harbours' through improved infrastructure
Cleaning up debris	Reorganisation of releasing fry	Support of local, autonomous resource management
Emergency measures in aquaculture	Support to stabilise the fishing sector based on a reorganisation of fishing licenses and rights	Consolidation of companies through product development
Provision of vessels and gear; reinstallation of farming facilities; provision of fry	Consolidation of companies through mergers	Increased revival of municipal fishery areas
Emergency measures for cooling facilities and markets	Improvement and development of aquaculture facilities	Support of scientific fishery research
Introduction of new organisational structures	Concrete reinstallation of markets and cooling facilities	Adaption to situation in Fukushima Daiichi NPP
Resuming of scientific research institutions	Adaption to situation in Fukushima Daiichi NPP	
Adaption to situation in Fukushima Daiichi NPP		

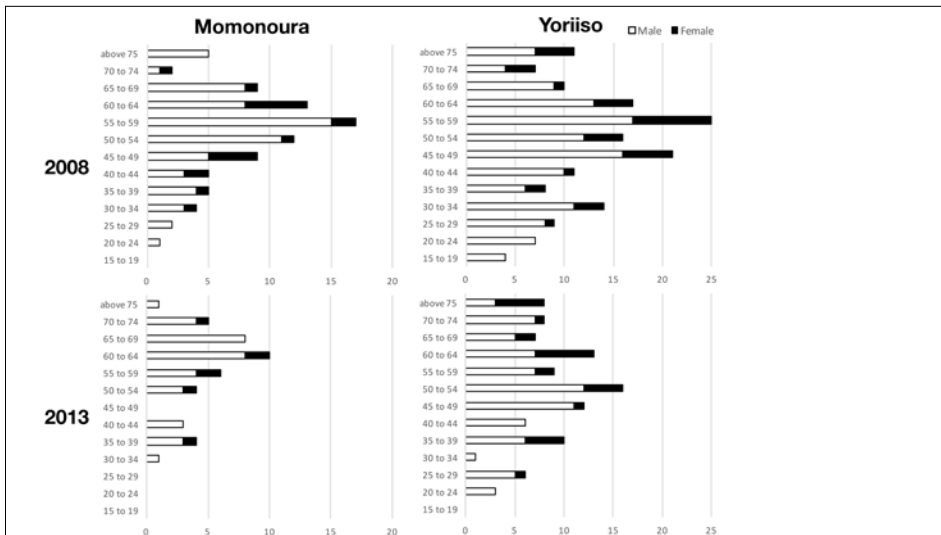
Source: Miyagi Prefecture 2011, 3

Graphic 6. Sustainable Livelihoods Framework



Source: Simplified and adapted scheme of Scoones 1998, 4 and DFID 1999

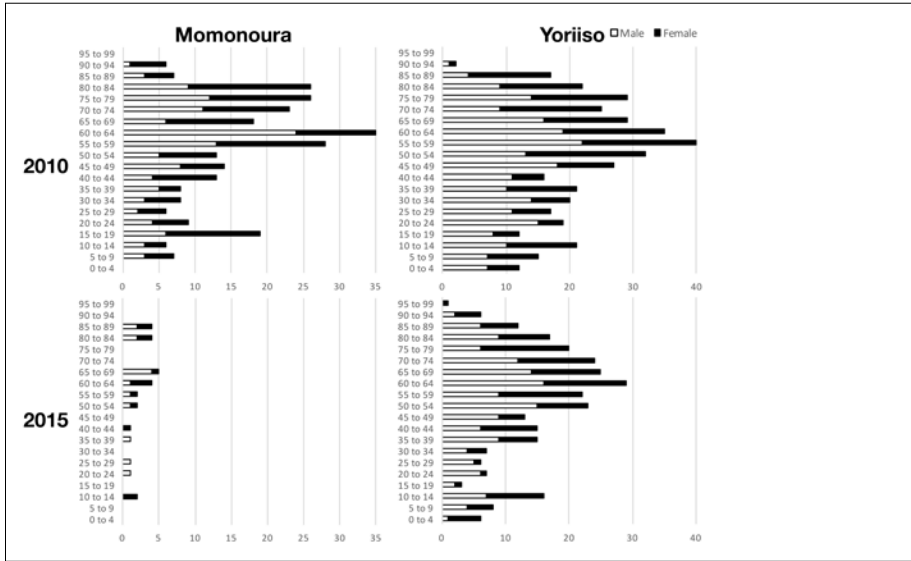
Graphic 7. Fisheries Population in Yoriiso and Momonoura (2008 and 2013)



Source: 12th and 13th Fisheries Census of 2008 and 2013. Tōhoku nōseikyoku tōkei-bu (2011) and Miyagi-ken shinsai fukkō kikaku-bu (2015)

**Small-scale Fisheries in Japan, 129-152**

Graphic 8. Residential Changes in Yoriiso and Momonoura (2010 and 2015)



Source: 12th and 13th Fisheries Census of 2008 and 2013. Tōhoku nōseikyoku tōkei-bu (2011) and Miyagi-ken shinsai fukkō kikaku-bu (2015)

Table 6. Population Change in Districts of Ishinomaki

	1995	2000	2005	2010	2015	2010>2015	2010>2015 (%)
<b>Ishinomaki</b>	121,208	119,818	115,588	11,2683	103,088	-9595	91%
<b>Kahoku</b>	14,186	13,407	12,508	11,578	11,097	-481	96%
<b>Ogatsu</b>	5,840	5,239	4,694	3,994	1,021	-2973	26%
<b>Kanan</b>	18,043	17,919	17,522	16,950	19,670	2,720	116%
<b>Monou</b>	8,990	8,644	8,102	7,582	7,460	-122	98%
<b>Kitakami</b>	4,765	4,472	4,028	3,718	2,430	-1288	65%
<b>Oshika</b>	5,891	5,279	4,882	4,321	2,448	-1873	57%

Source: Cabinet Office, Population Census of 2010 and 2015<sup>11</sup>

Table 7. Access to Sea Squirt Cultivation Resources in Yoriiso

	Cultivators	Rafts (hoya + scallop) = SUM	Rafts per Cultivator
<b>2011</b>	(36-3=) 33	(95 + 29) = 135	3.8
<b>2013</b>	19	(75 + 32) =107	5.6
<b>2017</b>	20	(75 + 29) = 104	5.2

Source: Data was kindly provided by Yoriiso's local FCA branch during fieldwork by Wilhelm

11 Cabinet Office, Population Census of 2010 and 2015 [online]. URL <http://www.e-stat.go.jp/SG1/estat/GL02100104.do?tocd=00200521> (2017-12-25).

## Bibliography

- Aldrich, Daniel P.; Yasuyuki Sawada (2015). "The physical and social determinants of mortality in the March 2011 tsunami". *Social Science & Medicine*, 124, 66-75.
- Demura, Masaharu (2013). "Miyagi-ken ni okeru hoya-yōshoku no fukkō jōkyō" 宮城県におけるホヤ養殖の復興状況 (State of Reconstruction of Ascidian Aquaculture in Miyagi Prefecture) [online]. *Nōchūsōken zuji hasshin repōto* 農中総研 随時発信レポート (Nochuri on demand report), 1-3. URL <https://www.nochuri.co.jp/genba/pdf/otr130109-2.pdf> (2016-11-23)
- DFID, Department for International Development (1999). *Sustainable Livelihood Guidance Sheets* [online]. Section 2. 1999. London. DFID. URL <http://www.eldis.org/vfile/upload/1/document/0901/section2.pdf> (2016-11-23).
- Endō, Masatoshi (1984). "Meiji-ki no gyojō kyōkai ni kansuru ichi shiryō" 明治期の漁場境界に関する一資料 (Materials Concerning the Boundary of Fishing Ground (sic) in Meiji Era). *Tōhoku chiri* 東北地理 (Geography of Tōhoku), 36(1), 69-70.
- Hamada, Takeshi (2013). *Gyogyō to shinsai* 漁業と震災 (Fisheries and Quake Disaster). Tōkyō: Misuzushobō.
- Ishinomaki-shi sōmubu sōmuka (ed.) (2016). *Heisei 27-nen kokuseichōsa ni yoru Ishinomaki-shi no jinkō/setaisū* 平成 27 年度国勢調査による石巻市の人口世帯数 (Population and households of Ishinomaki City according to the Population Census of 2015). Ishinomaki: Ishinomaki-shi sōmubu
- Katayama, Satoshi (2016). "Ōtsunami-go no gyogyō, gyoson to jinkōryūshitsu" 大津波後の漁業、漁村と人口流出 (Fisheries and Fishing Villages After the Great Tsunami and the Problem of Depopulation). Tsunashima, Fujio et al. (eds.), *Higashi-Nihon-daishinsai fukkō no kenshō. Donoyō ni shite, sanji-jōbin-gata fukkō'o norikoeru ka* 東日本大震災復興の検証。どのようにして「惨事便乗型復興」を乗り越えるか (An Evaluation of Reconstruction Efforts after the Great Tōhoku Earthquake. How to Overcome a 'Reactionary Type of Recovery'). Tōkyō: Gōdō shuppan, 189-208.
- Kawanishi Hidemichi [2010] (2015). *Tōhoku. Japan's Constructed Outland*. Transl. by Nanyan Guo, International Research Center for Japanese Studies, and Raquel Hill. Leiden: Brill.
- Ministry of Agriculture, Forestry and Fisheries (2010). *2008-nen gyogyō sensasu hōkokusho* 2008 年漁業センサス報告書 (Report of the 2008 Census of Fisheries) [online]. Tōkyō: Ministry of Agriculture, Forestry and Fisheries (Japan). URL <http://www.maff.go.jp/j/tokei/census/fc/2008/report/index.html> (2017-08-01).
- Ministry of Agriculture, Forestry and Fisheries (2011). *Gyūniku, inawara kara no sokutei kisei-chi o koeru seshiumu no kenshitsu ni kansuru jōkyō ni tsuite. Dai 12-kai genshiryōku songai baishō funsō sinsakai teishutsu*

- shiryō* 牛肉・稲わらからの暫定規制値等を超える セシウムの検出に関する状況について (About the Situation Concerning the Detection of Cesium Exceeding Provisional Regulation Value Etc. from Rice Straw and Beef. Materials for the 12th Meeting of the Commission for the Evaluation of Reparation Payments Due to the Conflict Arising from the Nuclear Accident at Fukushima Daiichi NPP) [online]. Tōkyō: Ministry of Agriculture, Forestry and Fisheries (Japan). URL [http://www.maff.go.jp/j/kanbo/joho/saigai/gyuniku\\_kaigi/pdf/p1-.pdf](http://www.maff.go.jp/j/kanbo/joho/saigai/gyuniku_kaigi/pdf/p1-.pdf) (2018-03-13).
- Ministry of Agriculture, Forestry and Fisheries (2012). Higashi-Nihon daishinsai to nōrinsuisangyō. Kiso-tōkei dēta (zusetsu) - Iwate, Miyagi, Fukushima o chūshin ni 東日本大震災と農林水産業基礎統計データ (図説) 岩手・宮城・福島を中心に (The Primary Industry Sector and the Tōhoku earthquake. Basic Statistical Data (Illustrated) with a Focus on Iwate, Miyagi and Fukushima Prefectures). Tōkyō: Ministry of Agriculture, Forestry and Fisheries. URL <http://www.maff.go.jp/j/press/tokei/kikaku/111021.html> (2013-08-25).
- Ministry of Agriculture, Forestry and Fisheries (2015). *2013-nen gyogyō sensasu hōkokusho* 2013 年漁業センサス報告書 (Report of the 2013 Census of Fisheries). Tōkyō. Ministry of Agriculture, Forestry and Fisheries (Japan). URL <http://www.maff.go.jp/j/tokei/census/fc/2013/report/index.html> (2017-08-01).
- Ministry of the Environment (2012). Heisei 24-nen. Kankyō tōkei-shū 平成 24 年環境統計集 (Collected Statistics 2012) [online]. Tōkyō: Ministry of the Environment (Japan). URL <https://www.env.go.jp/doc/toukei/data/11ex725.xls> (2016-11-21).
- Miyagi Prefecture (ed.) (2011). *Miyagi-ken suisan fukkō puran* 宮城県水産復興プラン (Reconstruction plan for the fisheries of Miyagi Prefecture). Sendai: Miyagi Prefecture. URL <http://dl.ndl.go.jp/info:ndljp/pid/6010687> (2012-08-12).
- Miyagi-ken shinsai fukkō kikaku-bu (ed.) (2015). *2013-nen (dai 13-ji) Gyogyō sensasu. Gyogyō keieitai-chōsakekka hōkokusho* 2013 年 (第 13 次) 漁業センサス 漁業経営体調査結果報告書 (2013 (13th) Fisheries Census. Report on Fisheries Units (in Miyagi Prefecture)) [online]. *Tōkei-ka shiryō* (Tōkei-ka shiryō Statistical materials), 1375. Sendai: Miyagi Prefecture. URL <https://www.pref.miyagi.jp/soshiki/toukei/gyosen-2009houkokusyo.html> (2016-11-23).
- Ōyama, Katsuyuki (2016). “Kigyō intabyū, Momonoura kaki seisansha gōdō gaisha daihyō shain Ōyama Katsuyuki-shi” 企業インタビュー 桃浦かき生産者合同会社 代表社員 大山勝幸氏 (Company interview with Ōyama Katsuyuki, representative of the Momonoura Collective Oyster Company). *Shichijūshichi bijinesu jōhō* 七十七ビジネス情報 [Bank Business Info], 74, July 22, 8-13.

- Scoones, Ian (1998). "Sustainable Rural Livelihoods. A Framework for Analysis". *IDS Working Paper*, 72. Brighton: Institute of Development Studies, 1-22.
- Tōhoku nōseikyoku tōkei-bu (ed.) (2011). 2008-nendo gyogyō sensasu. Tōhoku no gyogyō-kōzō 2008年漁業センサス 東北の漁業構造 (The structure of fisheries in Tōhoku as seen in the 12th Fisheries Census of 2008) [online]. Tōkyō: Ministry of Agriculture, Forestry and Fisheries. URL [http://www.maff.go.jp/tohoku/stinfo/toukei/tosyo/pdf/08gyosen\\_kouzou.pdf](http://www.maff.go.jp/tohoku/stinfo/toukei/tosyo/pdf/08gyosen_kouzou.pdf) (2012-11-02).
- Tōhoku nōseikyoku tōkei-bu (ed.) (2017). Heisei 27-28 nen. Dai 63-ji Tōhoku nōrinsuisan-tōkei-nenpō 平成 27, 28 年 第 63 次東北農林水産統計年報 (2015-2016. 63th Statistical Yearbook of Tōhoku's Agriculture, Forestry and Fisheries) [online]. Tōkyō: Ministry of Agriculture, Forestry and Fisheries. URL [http://www.maff.go.jp/tohoku/stinfo/toukei/nenpo/63\\_touhoku.html](http://www.maff.go.jp/tohoku/stinfo/toukei/nenpo/63_touhoku.html) (2017-06-16).
- Wilhelm, Johannes [Harumi] (2009). *Ressourcenmanagement in der japanischen Küstenfischerei* [Dissertation]. Bonn: Rheinische Friedrich-Wilhelms-Universität Bonn, Philosophische Fakultät. Norderstedt: BoD.
- Wilhelm, Johannes (2013). "Der Wiederaufbau der Fischerei Sanriku zwischen Sonderzonen und Fischereigenossenschaften". Blechinger-Talcott, Verena; Bruman, Christoph; Chiavacci, David (eds.), *Ein neues Japan? Politischer und sozialer Wandel seit den 1990er Jahren*. Monogr. no., *Asiatische Studien/Etudes Asiatiques*, 67(2), 625-50.
- Wilhelm, Johannes (2016). "Schools in Remote Areas of Japan. Challenges for Youth, Parents and Community". Assmann, Stephanie (ed.), *Sustainability in Contemporary Rural Japan. Challenges and opportunities*. Monogr. no., *Routledge Studies in Asia and the Environment*, 2, 19-34.
- Wilhelm, Johannes; Delaney, Alyne (2013). "No Homes, No Boats, No Rafts. Miyagi Coastal People in the Aftermath of Disaster". Gill, Tom; Steger, Brigitte; Slater, David H. (eds.), *Japan Copes with Calamity. Ethnographies of the Earthquake, Tsunami and Nuclear Disasters of March 2011*. Oxford; Bern; Berlin; Bruxelles; Frankfurt a. M.; New York; Wien: Peter Lang, 99-124.

