

Visiting Existing Seriola farms in Southern Japan

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AUSTRALIAN
SEAFOOD
COOPERATIVE
RESEARCH CENTRE

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NON-TECHNICAL SUMMARY

PROJECT NO: TITLE

Visiting existing *Seriola* seacage operations in Southern Japan

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NON TECHNICAL SUMMARY:

Indian Ocean Fresh Pty Ltd staff members visited a *Seriola sp* seacage operation in Southern Japan. Japanese amberjack (*Seriola quinqueradiata*), Hiramasa (*Seriola lalandi*) and Kampachi (*Seriola dumerili*) farming has developed successfully over the last 30 years on a commercial scale in Japan and there are likely to be similarities in production issues especially in light of similar water temperatures in southern Japan and WA.

(PROJECT) OUTPUTS DEVELOPED AS RESULT OF TRAVEL GRANT/ INDUSTRY BURSARY:

The tangible outputs for industry include:

- Better understanding of large scale production methods
- Insight into the relationship between harvest methods and product quality
- Understanding of comparative growth models
- Basic understanding of the comparative economics of farming in Japan as opposed to Australia
- Assist with CRC participants Masters by Research project by learning new research methods/liasing with industry research contacts.

ABOUT THE PROJECT/ACTIVITY

BACKGROUND AND NEED

As a newly emerging Yellowtail Kingfish producer in WA, it would benefit staff members of Indian Ocean Fresh Australia to view much larger scale Yellowtail farms and understand how they are managed and how operations are conducted.

Areas of interest include,

- Growth rates and nutritional issues
- Fish health issues and disease management

- Parasite management
- Harvesting practices

RESULTS – WHAT WAS DISCOVERED/LEARNT?

A summary table below outlines the *Seriola* species farmed in Japan.

Species	Region Farmed	Fingerlings/Hatchery
Buri (<i>Seriola quinqueradiata</i>)	Miyazaki Prefecture, Kyushu Island. Eastern and Western Japan. Ideal temperatures for this species – no fluke problems.	Fingerlings collected from wild at 2-5g (90%), Hatchery reared fingerlings (10%). Life cycle stages = Mojako (2-5g), Hamachi (up to 3kg) and Buri (up to 5kg)
Kampachi (<i>Seriola dumerilii</i>)	Kagoshima Bay, Kyushu Island. Okinawa Island. Higher temperatures – sometimes to 30°C in summer.	Fingerlings shipped from China (Hainan) at 300-400g. No hatchery focused on this species in Japan. Cheaper cultivation in China but cannot grow out due to low water temps.
Hiramasa (<i>Seriola lalandi</i>)	Miyazaki Prefecture, Oita - Kyushu Island.	Low volumes of wild caught fingerlings and less focus on hatchery work.

- The lifecycle of the Buri (*Seriola quinqueradiata*) – wild catch and aquaculture reared fish. Majority (90%) of the farmed fish are from wild fingerlings, the other 10% is cultivated from captive broodstock.
- 3 types of *Seriola* species are farmed and are area specific in terms of growth and market. The species are Japanese amberjack (*Seriola quinqueradiata*), Hiramasa (*Seriola lalandi*) and Kampachi (*Seriola dumerilii*). The Japanese Amberjack (Buri) has the highest production volume of the 3 species, but Kampachi commands the highest market price due to better flesh quality.
- The juvenile fish are vaccinated before growing out for different diseases each season.
- Fast growth rates – fish reach 4-5kg in 18 months.
- Visited Aquaculture Fundamental Research Group – Central Research Laboratory and met with the leading fish health experts. The research centre is focussed predominantly on yellowtail breeding, nutrition and fish health.
- The two most common fish health issues in Japanese yellowtail are nocardiosis and bacterial haemolytic jaundice, which are relatively unknown in Australia.
- Red tides are common and are monitored closely by local fisheries associations. Fish farms are warned of its presence and movements, and can act accordingly.
- Diets for yellowtail in Japan are superior to Australian yellowtail diets due to high fish meal inclusion.
- Withholding periods for fish treatments eg antibiotics and anti-fluke drugs, are less than those in Australia, with many prophylactic treatments administered during the growout period.
- Visited large scale yellowtail processing plant that is capable of 4000mt/annum of product. Very efficient and technologically advanced methods of processing, creating

minimal waste. The facility is EU certified, and is extremely stringent in terms of creating quality products.

- Toured Kurose-Suisan yellowtail farm which has over 500 net pens.
- Skin flukes are dealt with by freshwater bathing for small fish and hydrogen peroxide for larger fish (excluding Buri) and have also used Hadaclean for fluke control.

INDUSTRY IMPACT

PROJECT OUTCOMES (THAT INITIATED CHANGE IN INDUSTRY)

- Changes to harvest methods could directly affect the price of the product. If the flesh quality is seen to be of higher quality, it could generate higher market prices and increased profitability
- There is also the potential to learn what NOT to do, as we hope to gain an understanding of what does NOT work as well as what DOES work (shorten the learning curve)
- Overall we hope to fast track the operational development of YTK farming in WA

SUMMARY OF CHANGE IN INDUSTRY

(What immediate changes might be expected for business/industry?)

- More vigilant fish health monitoring.
- Review of existing yellowtail kingfish feeds and the need to match the dietary requirements to gain maximal growth and health.
- Better understanding of optimal harvest methods and product chilling.

WHAT FUTURE AND ONGOING CHANGES ARE EXPECTED?

(What will be the impact?)

- Implementation of fish health monitoring program for Western Australian finfish farming (currently happening in the form of a Fish Health Workshop Program organised by Aquaculture Council of WA – funded by the FRDC)
- We are hopeful that feed requirements of yellowtail kingfish will be better understood by industry and that the major feed companies will provide adequate feeds in the future.
- Useful ideas and knowledge that will directly enhance production and quality in WA
- Broader exposure to farming methods that may or may not be used currently in Australia
- Up skilling of existing staff
- Possible longer term connection between the two producers
- Better understanding of final product quality desired in a global marketplace

WHAT BARRIERS ARE THERE FOR CHANGES TO OCCUR?

- Support from the Western Australian Government for aquaculture ventures. WA is lagging behind other states with regards to funding, assistance and legislation to see aquaculture grow and thrive.
- Many changes to the existing business could be implemented if our farm was larger scale. Many of the ideas learned from Japan are not currently feasible due to high costs and current low production.

IF NOT ALREADY HAPPENING, WHEN WILL THE CHANGES OCCUR?

(e.g. 2 businesses will adopt project findings and two more are expected to adopt findings within 12 months)

Indian Ocean Fresh is likely to incorporate changes in 2012.

WHAT IS THE LIKELIHOOD THAT THESE CHANGES WILL OCCUR?

(e.g. 50% chance that four businesses will adopt project findings)?

The percentage likelihood that these changes will occur is 80%.

WHAT BARRIERS ARE THERE TO ADOPTION OF THESE CHANGES AND WHAT ACTION COULD BE TAKEN TO OVERCOME THESE?

(e.g. to adopt project findings will require group training/sharing equipment/invest additional capital etc.)

Time and resources to implement the changes, and a better understanding of the costs associated with these changes. Also the scale of operations, for example a harvesting machine will need more through put to make it feasible.

COMMUNICATION OF PROJECT/EXTENSION ACTIVITIES

WHAT IS THE OUTPUT THAT NEEDS TO BE COMMUNICATED?

That fish health is the number one priority – prevention and early detection of disease, foreseeing seasonal health problems and having a solid fish health plan are of high importance. Also, input and control over every facet of the operation is necessary for long term success. The company we toured was vertically integrated in terms of producing its own feed from wild caught bait fish- caught from its own fleet; catching wild fingerlings and growing the kingfish, processing, marketing and selling it product.

WHO IS/ARE THE TARGET AUDIENCE/S?

Marine Fishfarmer Association (MFA) members and other YTK producers in Australia.

WHAT ARE THE KEY MESSAGES?

Fish health and control over the inputs of the operation.

WHAT IS THE CALL TO ACTION?

(What is it you want people to do once you communicate the key message to them – i.e. what change of behaviour or action do you want them to take?)

To make people aware of the potential of yellowtail kingfish farming in Western Australia and its viability as a large scale industry. The first pilot scale project for farming yellowtail kingfish was a success, in terms of growing the fish and selling the final product. There is definitely room for growth into a larger scale profitable industry in Western Australia.

COMMUNICATION CHANNELS

(How can these messages be communicated and by who?):

<i>Channel</i>	<i>Who by</i>	<i>When</i>
Written Report	IOFA – Rowan Kleindienst	
Possible presentation at ACWA annual workshop	IOFA – Rowan Kleindienst	
Any other method of delivery deemed appropriate by the CRC and IOFA.		

LESSONS LEARNED AND RECOMMENDED IMPROVEMENTS

WHAT IS YOUR FEEDBACK?

(e.g. What difficulties were experienced in undertaking this research and how did this affect the project, what improvements and/or considerations can be recommended for future projects in this area and what barriers are there to undertaking further research in this area and how could these be overcome?)

The trip was very useful in terms of seeing first hand a large scale YTK farm and the extent of its operations. One of the main problems the language barrier – the levels of English ranged from excellent to non-existent, making it sometimes difficult to communicate effectively. Some of the issues faced by the Japanese farmers were much different to what we experience in Western Australia, and importance varied between similar issues faced. Useful networks were made, and hopefully it will assist in building a platform for a longer term relationship between the two industries.

FURTHER ACTION REQUIRED IN REGARDS TO COMMERCIALISATION?

(e.g. IP protection, licensing, sales, revenues etc)

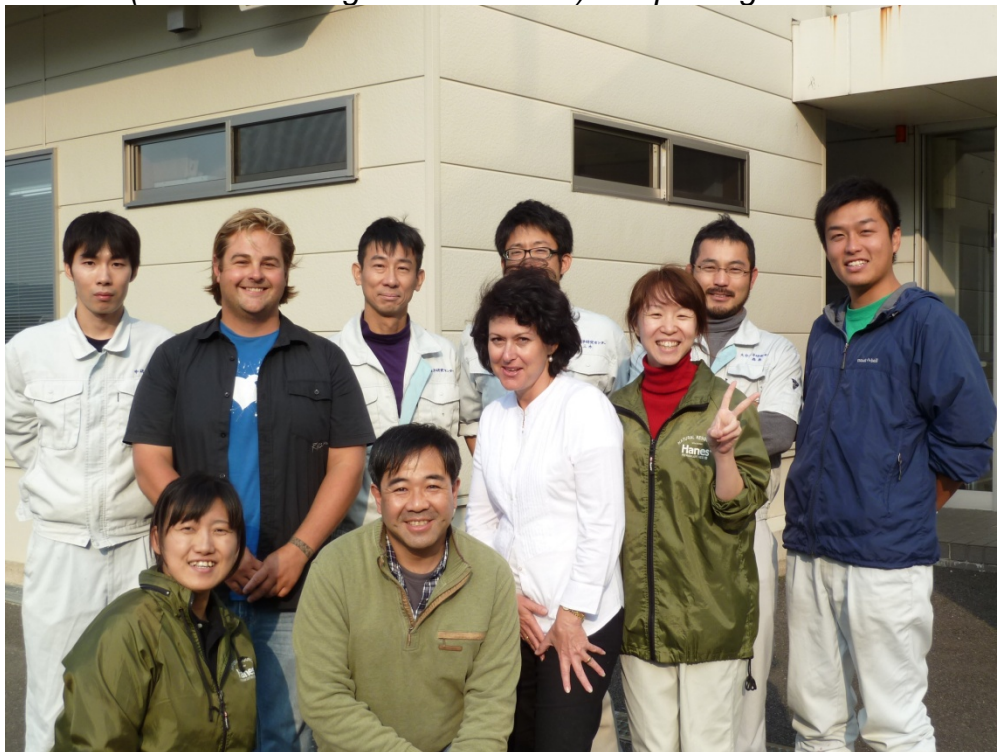
Not applicable.

Photos of the trip:

Picture 1: *Erica and Rowan with Sakurajima Volcano in the background. The waters behind us are littered with seacages farming Kampachi.*



Picture 2: *With the staff at Oita Marine Biological Technology Centre. Our guide, Mitsuboshi San (General Manager of the centre) is squatting in the front row.*



Picture 3: Fish farm tour at Kurose-Suisan. Mitsuboshi San, Erica and myself.



Picture 4 (left): Kurose-Suisan worker displaying a harvested Buri (approx 4kg)

Picture 5 (right): Packaged Buri at Tsukiji fish markets, Tokyo.

