The Basic Plan for Fisheries and Current Status of Aquaculture Research in Japan

Kazumasa Ikuta
Aquaculture Systems Division,
National Research Institute of Aquaculture
Fisheries Research Agency

Recent Status of Fisheries in Japan

- Acute changes in the structure of the fisheries industry
  - Low levels of wild stock population
  - Increasing world-wide demand for marine food products
  - Increasing importation of lower priced marine food products
  - Changes in the distribution system of marine products
  - Increasingly aged population and shortage of recruits
  - Increasing demand for safe foods
  - Concern for coastal environment and ecosystems

Alteration of the structure of the fisheries industry is strongly necessitated!

The Basic Plan for Fisheries

Ministry of Agriculture, Forestry and Fisheries

(March, 2007)

- Improvement of self-sufficiency

fishes and invertebrates: 50% (2005) → 56% (2017)

algae : 67% (2005) → 70% (2017)

1. Promotion of restoration and management of resources

   stock management/ecosystem management/stock enhancement/ aquaculture/etc.

2. Promotion of international competitiveness

   alteration of the fisheries and aquaculture industry

3. Improvement of distribution systems

   traceability systems for safety and security of food

   promotion of export of high quality and safe marine food products

4. Innovation of new technologies

   energy conservation and labor-saving technology/high technologies for aquaculture/freshness maintenance technology/bio-mass utilization

5. Promotion of multi-functions of fisheries communities

The Plan for Aquaculture

- Promotion of stock enhancement in harmony with ecosystems
  - Stock enhancement concerning bio-diversity and coastal ecosystems
  - Conservation and mitigation technologies of coastal fisheries grounds

- Promotion of sustainable aquaculture production
  - Establishment of aquaculture ground utilization plan
  - R&D for integrated multi-trophic aquaculture
  - R&D for low environmental loading aquaculture feed
  - R&D for alternative protein source for aquaculture feed
  - R&D for large scale aquaculture and offshore aquaculture

- Promotion of new distribution systems
  - Establishment of traceability systems for safety and security of aquaculture products
  - Establishment of risk communication systems between farmers and consumers

The Plan for Aquaculture

- Promotion of export of high quality and safe products
  - Marketing research on foreign countries and R&D for new products
  - Improvement of quality assessment technologies (i.e. HACCP)

- Promotion of innovation of new technologies
  - R&D for aquaculture technologies for high value products (i.e. blue-fin tuna)
  - R&D for energy- and labor-saving technologies
  - R&D for freshness maintenance technologies
  - R&D for biomass utilization technologies

- Promotion of prevention systems of fish disease
  - Improvement of pathogen control technologies

- Utilization of multi-functions of fisheries communities
  - Coastal environmental conservation by integrated coordination of governments, fishermen and citizens (i.e. Satoumi)
  - Providing citizens with recreational places

Challenge to Culture New Species

- Kanpachi (amber jack) Project 21 (2006-2010)

Imported seed from China led to *Anisakis* infection outbreak in 2006.

→ Domestic aquaculture seed production technology is necessitated.

- Seed production technology
- R&D for feed for larvae and brood fish
- Sustainable aquaculture technology

kanpachi (amber jack) ***Seriola dumerili***

Challenge to Culture New Species

- **Tuna Aquaculture Project (2007-2010)**

Decreasing stock levels of blue-fin tuna (ICCAT, CCSBT, OPRT, etc.)

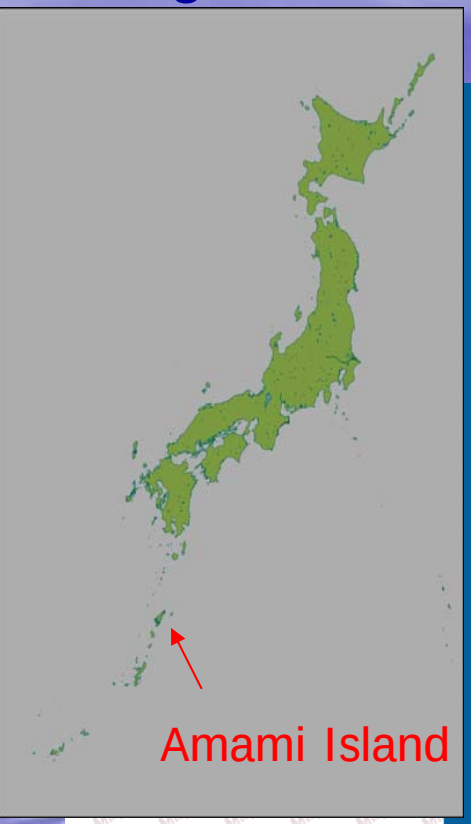
→ Complete aquaculture technology of blue-fin tuna is urgently necessitated.

- R&D for seed production technologies
- R&D for feed for larvae and brood fish
- Feasibility study of offshore aquaculture

Spawning of blue-fin tuna

Artificial blue-fin tuna larva

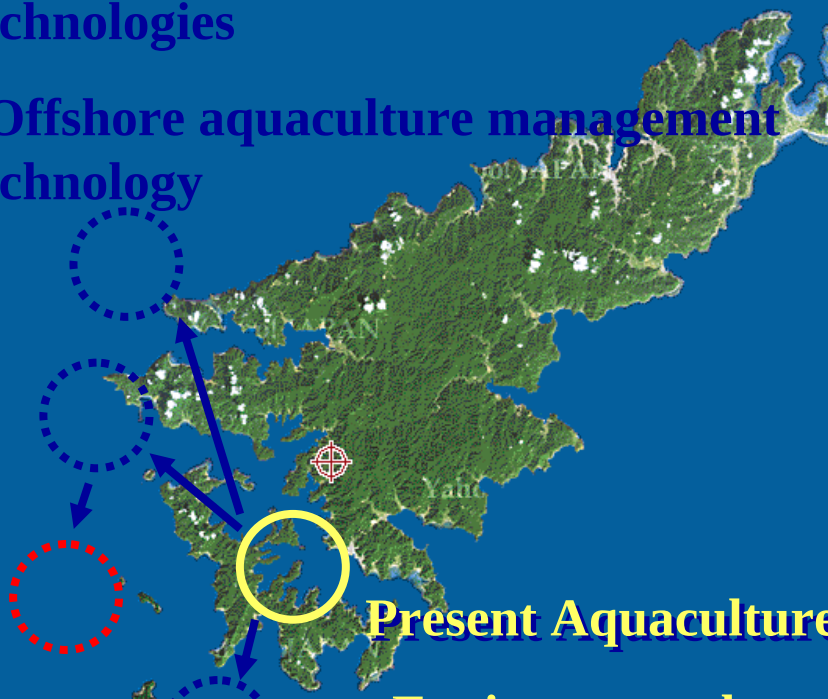
Image of Tuna Aquaculture Grounds Shifting towards Offshore Areas



Aquaculture Ground in Amami

Within 10 Years

- Improvement of existing technologies
- Offshore aquaculture management technology



Present Aquaculture Ground

- Environmental conservation technology
- Low environmental load technology

After the 10th Year……

- Innovation of offshore aquaculture facilities and technologies

Feeding aquaculture in enclosed bay areas causing impacts to coastal environment and ecosystems…

Aquaculture net cages in Gokasho Bay, Mie

Promotion of export of aquaculture products

Rapid development of economy in Asian countries, i.e. China

Competitive producers → Top consumers

Sea cucumber

Stichopus japonica

Export of dried sea cucumber to China is rapidly increasing.

- Stock enhancement technology
- Aquaculture technology

Grouper

Epinephelus septemfasciatus

Seed production technology was established. Asian countries demands more fry for aquaculture.

- Technology to reduce malformation rate of fry
- Technology to prevent VNN viral infection

Conclusions

- Alteration of the social structure and globalization of sea food markets are necessitating the alteration of the structure of aquaculture systems.
- The US and Japan share the same global trend of supply and demand for aquaculture food production.
- The UJNR will play a key role in opening the door to a new era of sustainable development of aquaculture.