Current Conditions and Countermeasures for the Conservation of Coral Reef Ecosystems

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Today’s Topics

1. Conservation of Japan’s Coral Reef Ecosystems

2. Urgent Measures to Counter Large-Scale Coral Bleaching

3. Activity of IYOR 2018 in Japan
The “Action Plan for Coral Reef Conservation” was completely revised to establish this action plan in March 2016 (Committee chair: Makoto Tsuchiya).

Action plans related to coral reefs: “Basic Plan on Ocean Policy” and “National Biodiversity Strategy of Japan 2012-2020”

→ Support attainment of the Aichi Target: “The multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.”

Target: Create a foundation for the conservation of coral reef ecosystems linked with the local communities by the end of FY 2020.

Three issues especially requiring focused measures to achieve 2020 goals:

1. Implement countermeasures for red clay and other sediments, nutrient salt and other elements originating from land areas.
2. Promote sustainable tourism for coral reef ecosystems.
3. Create connections between local residents and coral reef ecosystems.

Main Implementing Organizations

Created through collaboration of the Ministry of the Environment, related government ministries/agencies, local governments, the Japanese Coral Reef Society, etc.

Actual implementation requires the cooperation of even more organizations:

It is important for persons related to the corresponding regions (farming, fishing, forestry and tourism industries, and schools, community centers, researchers, NGOs, etc.) to recognize the importance of coral reefs and the connections they have with their livelihoods so that they act in ways that give full consideration to the coral reef ecosystems while working in cooperation to implement coral reef conservation measures.

Follow-up

• Related agencies and local governments will hold a workshop once a year to share information and promote cooperation, while symposiums and similar events will be held in accordance with local conditions. (Kikaijima Island, Feb. 2017)
• Model projects with the local community serving as the main actor will be implemented as reference cases to help various other areas implement their own countermeasures.
• A mid-term evaluation of achievement status will be performed in FY 2018 and a review of the measures will be conducted based on a final evaluation performed in FY 2020.
(1) Implement countermeasures for red clay and other sediments, nutrient salt and other elements originating from land areas

■ Current Conditions and Issues
  • Run-off of red clay from development projects and farmlands, and run-off of nutrient salt from chemical fertilizers, livestock excretion and domestic sewage
  • Issues such as a combination of infrastructural and soft countermeasures in farmlands, creating public awareness in farmlands and similar areas, and proper disposal of sewage water

■ Desired Ideal Conditions for FY 2020
  • Coordination and cooperation of related agencies results in trial implementation of measures in several regions to reduce the environmental load originating from land areas, and then the lessons gained from these areas are adjusted so that they are applicable to other regions as well and then provided accordingly.

■ Model Project on Yoron Island
  • Groundwater protection measures in linkage with conservation of coral reef ecosystem
  • “Symposium: Considerations Regarding the Aquatic Environment, Coral Reef and Future of Yoron Island” was held (March 9).
(2) Promote sustainable tourism for coral reef ecosystems

- Current Conditions and Issues
  - Increased value as tourist attractions and increased tourists
  - Negative effects of trampling and touching due to excessive and inappropriate use

- Desired Ideal Conditions for FY 2020
  - Model cases of sustainable tourism in coral reef ecosystems are created, and a system is created for sharing know-how related to items such as appropriate utilization methods and conservation of coral reef ecosystems.
  - Public awareness tools that effectively cultivate a better understanding of conservation efforts are developed and provided in various languages in order to respond to the increase in the number of foreign tourists.

- Model Project on Yonehara coast of Ishigakijima Island
  - Rules established primarily by the local community for the appropriate use of coastal areas
  - Review meeting held by related personnel (Feb. 24)
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(3) Create connections between local residents and coral reef ecosystems

- **Current Conditions and Issues**
  - Rapid expansion of gaps between coral reef ecosystems and the daily life of local communities
  - Loss of traditional culture of local communities that developed through connections with coral reefs and decrease in fishing resources

- **Desired Ideal Conditions for FY 2020**
  - The benefits provided by coral reef ecosystems are organized, understood and appropriately used in each area as means to promote the conservation of locally controlled coral reef ecosystems.
  - Sharing of information related to topics such as methods for utilizing the benefits of coral reefs is facilitated in high-latitude coral community areas.

- **Model Project on Kikaijima Island**
  - Members of the local community understand the connections between coral reef ecosystems and their daily lives and livelihoods.
  - Kikaijima Island Coral Festival was held (Feb. 11).
[Monitoring Sites 1000]

〇 Implemented since FY 2003 with the objective of continuously gathering and effectively utilizing basic long-term (100 years) information of ecosystems.
〇 Approximately 1,000 monitoring sites located all across Japan

[Coral Reef Surveys]

〇 Trial surveys were carried out in FY 2003 followed by the start of the project from FY 2004.
〇 24 sites located all across Japan (Approx. 500 spots)
  - High-latitude coral community areas
    (7 sites)
  - Main coral reef areas
    (17 sites)
[Miyakojima Island Area]
Survey point in East Kurima where more than 90% of the coral has died off
(Photo: Kenji Kajiwara)

[Yabiji Coral Reefs]
Dead staghorn coral and diseased coral colonies due to bleaching
(Photo: Kenji Kajiwara)
Status of Coral Reefs in Main Ocean Areas (2016)

[Ishigakijima Island]
Severe bleaching of table-top staghorn coral
(Photo: Minoru Yoshida)

[Sekisei Reef Lagoon]
Bleaching of table-top staghorn coral in reef flat
(Photo: Takumi Kimura)
Average Coral Cover and Bleaching, and Dead Coral Rate from FY 2016 Coral Reef Survey

- **Iki Area**
- **Kerama Islands**
- **Setouchi Area (Amami Oshima Island)**
- **South Coast of Kagoshima Pref.**
- **Yakushima and Tanegashima Islands Area**
- **East and West Coasts of Ishigakijima Island**
- **Amakusa Area**
- **Tateyama (Boso)**
- **Kushimoto Area**
- **Southwest Coast of Shikoku (Uwakai Sea to Cape Ashizuri)**
- **Remote Islands in Okinawajima Island Area**
- **Miyakojima Island Area**
- **Ogasawara Islands**
- **East and West Coasts of Okinawajima Island**
- **Miyakojima Island Patch Reef (Yabiji Coral Reefs)**
- **Sekisei Reef Lagoon**
- **Iriomotejima Island and Nearby Remote Islands**

**Legend**
- Healthy Coral Cover (%)
- Bleached Coral Cover (%)
- Dead Coral Cover (%)
Results of FY 2016 Bleaching Monitoring Survey

<Overview>
Survey method: Spot-check method
Survey locations: 35 points
Survey period:
(1) July 26 to Aug. 17
(2) Sept. 29 to Oct. 4
(3) Nov. 28 to Dec. 21

<Results of 3rd Survey>
Cover: 12%
Bleaching rate: 91.4%
Mortality rate: 70.1%
(The conditions for each point are shown in the figure on the right.)
Conference on Emergency Countermeasures for Large-Scale Coral Bleaching

Date/Time held: April 23 (Sun.), 2017, 10:00 to 17:15
Location: Okinawa Institute of Science and Technology Graduate University
(Onna Village, Okinawa Prefecture)
Main sponsor: Ministry of the Environment
Co-sponsors: Okinawa Prefecture, Okinawa Institute of Science and Technology Graduate University, and the Reef Conservation Committee of the Japanese Coral Reef Society
Participants
54 persons including experts from various fields and persons from related organizations (government ministries and agencies, local governments and academia) met together (in front of a general audience of approximately 60 persons).
Chairperson: Makoto Tsuchiya, Professor Emeritus, University of the Ryukyus

Conference Background
• Record large-scale bleaching occurred in the summer of 2016.
• This conference was held by Natsumi Higa (Parliamentary Vice-Minister of the Environment) under instruction from the Minister for the Environment, Koichi Yamamoto, in order to study emergency measures (first conference focused on bleaching ever held by the Ministry of the Environment).

Conference Results
• The most recent knowledge and expertise related to current bleaching conditions and countermeasures were shared, and opinions and ideas were exchanged.
• The results were summarized in the “Emergency Declaration on Large-Scale Coral Bleaching”, with this declaration, achieved through coordination of the participants, and with the understanding and cooperation of all Japan, being the first step towards implementing bleaching countermeasures.
• The conference closed with Natsumi Higa (Parliamentary Vice-Minister of the Environment) expressing commitment to provide an even greater effort in implementing measures for coral reef conservation on the part of the Ministry of the Environment having received this declaration.
Emergency Declaration on Large-Scale Coral Bleaching
Conference on Emergency Countermeasures for Large-Scale Coral Bleaching (April 23, 2017)

- Extremely severe large-scale bleaching occurred in 2016. The rise in average temperatures will cause the frequency of bleaching to increase, recovery to decrease, and coral to possibly become extinct.
  - It is necessary to alleviate climate change by reducing greenhouse gases and similar measures in order to prevent large-scale bleaching → Measures for attaining the targets of the Paris Agreement
  - Measures to adapt to the impacts of climate change, such as reducing anthropogenic pressures, are essential in order to achieve recovery from bleaching → Measures implemented locally

Essential Measures

- **Highly Urgent Measures**
  1. Monitoring
     1.1 Ascertain damage status due to bleaching in 2016
     1.2 Establish methods and create a system for estimating and predicting bleaching
     1.3 Effective continuous monitoring
     1.4 International sharing of information
  2. Study the Designation of Areas Preferentially Requiring Conservation and Corresponding Countermeasures
     2.1 Prediction, estimation and evaluation of impacts
     2.2 Identification and conservation of healthy or important ocean areas
     2.3 Identification of the causes of stress on weak ocean areas and corresponding countermeasures
  3. Regeneration of Coral Communities
     - Confirmation and verification of effective technologies (consider development of alternative technologies including coral resistant to high temperatures)

  4. Strengthen the “implementation of countermeasures for red clay and other sediments, nutrient salt and other elements originating from land areas”
     4.1 Implementation focused on reducing the environmental burden from land areas
     4.2 Comprehensive management of coastal areas
  5. Strengthen the “promotion of sustainable tourism for coral reef ecosystems”
     5.1 Use rules and public awareness activities for proper usage
     5.2 Creation of framework for burden on users
  6. Strengthen the “creation of connections between local residents and coral reef ecosystems”
     - Environmental education and public awareness activities through coordination and cooperation with a large variety of actors

- **Important Foundational Measures**
  7. Research and Studies
     7.1 Research and studies in natural and social sciences
     7.2 Pursuit of countermeasures with high cost effectiveness
     7.3 Understanding of changes on a long-term scale
  8. Support for Local Measures
     8.1 Creation of networks of related persons/entities
     8.2 Creation of framework to evaluate businesses from within and outside the area
     8.3 Development and deployment of human resources
  9. Local Horizontal Linkages
     - Creation of a network with the participation of a variety of actors from areas outside of the coral reef areas

- **Measures Linked with Climate Change Countermeasures**
  10. Climate Change Countermeasures
     - Reduction of greenhouse gases and implementation of adaptation measures based on plans, and publicizing of these measures within Japan and abroad
  11. Public Awareness Activities
     11.1 Publicizing of the importance of climate change countermeasures in order to conserve coral reef ecosystems
     11.2 National movement using the ICRI International Year of the Reef 2018
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International Year of Coral Reef 2018
—connecting, spreading, and mutually supporting—

• ICRI designated 2018 as the third IYOR.
• → A global campaign to raise awareness of worth of and threat on coral reef ecosystems as well as promote relevant actions.
• → In Japan, various parties, such as private companies, NGOs, citizens, researchers, media, and public sectors, collaborate with each other and take actions from each position for coral reef conservation.
Main pillars of IYOR 2018 in Japan

1. Activity registration system and Sharing of information on the relevant activities through Facebook

2. Official supporter system (targeting private companies)

3. Holding an opening symposium

4. Collaboration with another climate-change program, “COOL CHOICE”
Example: Team TYURA SANGO

Participants

19 private companies

Coral plantation activity

Coral are planted for four times every year in Onnna Village in Okinawa pref..

Raising-awareness events

Raising-awareness events are held for five or six times every year to let people know what is happening to the sea in Okinawa.
Example: Team TYURA SANGO

Planted corals have been successfully propagating and surviving, and their survival rate is high (70%).
The opening symposium of IYOR 2018 in Japan

Date: Jan 28th 2018
Location: Tokyo (Meiji Univ), Japan
Scale: approx. 300 audiences will attend.
Objective: Raising awareness among the public regarding IYOR 2018

Main contents:
1. Special lecture on coral reefs by prof. Tsuchiya
2. Investiture ceremony of IYOR 2018 ambassador (“Sakana-kun”)
3. Panel discussion
Thank you very much.