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Recommendations for Promoting Effective Marine Protected Areas

The Socio-Ecological Crisis Facing the Sea and a Vision for Coastal Revitalization through the Use of Natural Resources

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The Nature Conservation Society of Japan
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This report summarizes the discussions held by the above Discussion Group from 2024 to 2026 with a grant from Oceans 5, and presents them as recommendations on the challenges facing Japan’s coastal areas and on what marine protected areas (MPAs) and OECMs in Japan should look like.

Summary of This Report

Japan is an island nation surrounded by the sea on all sides. Marine biodiversity is indispensable for the supply of food, the promotion of industry, climate regulation, water purification and more; it is the foundation that supports our lives, our economy and our society. However, the degradation of biodiversity is advancing—through the loss of natural coastlines and tidal flats, the decline of seaweed beds, coral bleaching and the decrease of marine life—and in recent years changes in the marine environment, such as rising seawater temperatures and frequent marine heatwaves, have been making these impacts more severe.

The degradation of marine biodiversity leads, through the decline of ecosystem services, to the decline of coastal industries. As a result, there is concern over a progressing “negative spiral” in which biodiversity degrades even further because of a shortage of people to carry out marine conservation and restoration activities and the weakening of management systems. This report regards this situation as a “socio-ecological crisis” and examines the concept of “coastal revitalization” as a way to reverse it.

To revitalize coastal areas, it is important to start from efforts to conserve and restore biodiversity, thereby maintaining and restoring ecosystem services, and to link these efforts to the circulation of local economies through the promotion of fisheries, tourism and other industries and to the passing on of local culture. To this end, the report sets out a direction in which a broad range of coastal stakeholders draw up a vision for the future of their region based on its natural, social and economic conditions, and advance the conservation and restoration of natural resources together with their sustainable use in an integrated manner.

MPAs and OECMs (other effective area-based conservation measures) are effective tools for carrying out these efforts. For them, it is important not only to increase the area covered but also to enhance their quality (their effectiveness in conserving and restoring biodiversity). The report therefore presents five criteria, covering: (1) identification of important ecosystems and species; (2) establishment of conservation and restoration objectives and management plans; (3) participation of a broad range of stakeholders; (4) implementation of monitoring surveys and publication of the results; and (5) implementation of adaptive management.

Furthermore, in order to spread effective MPAs and OECMs throughout the country, the report sets the target of creating 30 localities that work on formulating and implementing comprehensive plans for the conservation and restoration of local biodiversity. It also examines the national and local government arrangements and actions needed to achieve this, mechanisms to support on-the-ground conservation and restoration efforts, and the funding sources needed to sustain these efforts over time, and recommends the necessary policy measures.

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Chapter 1 The Socio-Ecological Crisis Facing the Seas around Japan

1. Marine Biodiversity That Has Sustained Japan's Food, Culture, Industry and Life

Japan is an island nation surrounded by the sea on all sides, with the world's second-longest coastline relative to land area,[1] and since ancient times its people have lived in coexistence with nature while enjoying the blessings of the sea.[2]

In addition, the seas around Japan span diverse climate zones, from subarctic Hokkaido to subtropical Okinawa; several cold and warm currents flow through them; and the coastline is intricate and complex. For these and other reasons, these waters are among the most biodiverse marine areas in the world.[3]

Japan's diverse fishery resources have given rise to food cultures distinctive to each region and season, and have supported people's health. Today, many visitors come to Japan from around the world for its food, and marine resources are the foundation supporting the economy and society of coastal areas, including the promotion of the fisheries, food service and tourism industries. In many regions, the sea has also contributed to the development of local culture as an object of festivals, faith and art.

Marine biodiversity is, of course, indispensable in supporting the basic systems on which human survival depends, such as climate regulation and water purification. It is also important from the perspective of disaster risk reduction; for example, coral reefs and mangrove forests hold back the powerful waves rolling in from the open ocean.[4]

It is important to recognize that nature underpins the well-being and ambitions of all people, from health and happiness to prosperity and security.[5]

2. Rapid Degradation of Marine Biodiversity

However, marine biodiversity, which is so essential to our lives and survival, continues to deteriorate on a global scale.[6] In Japan as well, the state of biodiversity in coastal and marine ecosystems has followed a long-term declining trend from the late 1950s to the

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[1] Ministry of Land, Infrastructure, Transport and Tourism website (n.d.), "Coastline length per unit land area in major countries" (in Japanese).
[2] Hori, M. and Yamakita, T. (2021), Dynamics of People and Ecosystems 4: The History and Future of the Sea, Chapter 1 (in Japanese).
[3] Ministry of Agriculture, Forestry and Fisheries (revised March 2023), The Biodiversity Strategy of the Ministry of Agriculture, Forestry and Fisheries, p. 25 (in Japanese).
[4] Ministry of the Environment (2011), Marine Biodiversity Conservation Strategy, p. 15 (in Japanese).
[5] IPBES media release (2018), Nature's Contributions to People (NCP) – Article by IPBES Experts in Science.
[6] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) (2019), Global Assessment Report on Biodiversity and Ecosystem Services: Summary for Policymakers, p. 12 (in Japanese).

present.[7] In recent years, moreover, changes in the marine environment, such as the frequent occurrence of marine heatwaves in the waters around Japan, have been accelerating the degradation of biodiversity.

[Reference Information]

Examples of the degradation of marine biodiversity worldwide

- Sixty-six percent of the world's ocean area is experiencing cumulative impacts from human activities, and approximately one third of reef-forming corals, sharks and shark relatives, and more than one third of marine mammals are threatened with extinction.[8]

State of the degradation of marine biodiversity around Japan

- During the period of rapid economic growth, development and alteration advanced through land reclamation, the installation of artificial structures and so on, and the extent of shallow-water ecosystems shrank significantly. Owing to the artificial modification of shorelines for disaster risk reduction and other purposes, natural coastline has decreased to about 50% of the total length of Japan's coastline.[9]
- By 1995, the area of tidal flats had decreased to nearly half of what it was in 1945.[10]
- Seaweed beds, which serve as spawning grounds and as habitats for larval and juvenile fish, have declined sharply due to *isoyake* (the denudation of seaweed beds into barren grounds) and other factors, in addition to alteration such as land reclamation and to water pollution; their area in 2022 was roughly half that of 1990.[11] At the Ministry of the Environment's 12 monitoring sites for eelgrass bed and seaweed bed ecosystems, vegetation has disappeared or declined at seven sites: for example, the eelgrass bed at the Ibusuki site has disappeared, the area of eelgrass beds in Kagoshima Bay decreased by 88% between 2006 and 2021, and the canopy-forming species of the seaweed bed at

[7] Ministry of the Environment, Committee for the Comprehensive Assessment of Biodiversity and Ecosystem Services (2021), 2021 Report of Comprehensive Assessment of Biodiversity and Ecosystem Services in Japan (JBO3: Japan Biodiversity Outlook 3), detailed report, p. 37 (in Japanese).
[8] IPBES (2019), op. cit., pp. 13, 26.
[9] Ministry of the Environment, Committee for the Comprehensive Assessment of Biodiversity and Ecosystem Services (2021), op. cit., p. 38.
[10] Ibid., p. 37.
[11] Ministry of Land, Infrastructure, Transport and Tourism, Study Group on the Role of Blue Carbon in Contributing to Global Warming Prevention, second meeting of FY2023, Document 5: Port and Airport Research Institute, National Institute of Maritime, Port and Aviation Technology, "Progress in estimating the area of seaweed beds, etc.," p. 10 (in Japanese).

Izu-Shimoda have vanished.[12]

- In the Nansei Islands, coral reefs are shrinking and their quality is declining as a result of coral bleaching.[13]
- The IUCN Red List records 438 of the 4,613 assessed marine species in Japan as threatened with extinction (Critically Endangered, Endangered or Vulnerable).[14]
- As for the status of commercially important fish stocks, of the 40 stocks assessed on the basis of maximum sustainable yield (MSY), 22 have a biomass below the MSY level, and of the other 48 stocks, 29 are at a low stock level.[15]
- Fishery production in coastal areas has been on a long-term downward trend, falling by 66% over the past 40 years,[16] and the production of many fishery products has declined; for example, catches of asari (Manila) clams have fallen by 97% and catches of kombu kelp by 84% since the 1960s.[17] While the decline in production has multiple, interrelated causes, one of them is the adverse effect of marine biodiversity degradation on the reproduction of marine organisms.
- It is estimated that 11,000 to 27,000 tonnes of plastic flow into the sea from Japan every year.[18] Marine plastic litter causes problems such as the deterioration of the marine environment, including ecosystems—for example, by causing injury or death to marine life through accidental ingestion—as well as impaired coastal functions, adverse effects on scenery and impacts on fisheries.[19]

3. The Socio-Ecological Crisis in Coastal Areas

The degradation of marine biodiversity, which has sustained Japan's food, culture, industry and life, is a threat to our healthy and prosperous lives, and it is having a particularly serious impact on the economy and society of coastal areas.

For example, the loss of seaweed beds and tidal flats reduces spawning grounds and habitats for marine organisms, and the deterioration of water quality degrades their

[12] Biodiversity Center of Japan, Nature Conservation Bureau, Ministry of the Environment (2025), Monitoring Sites 1000 Coastal Area Survey (Rocky Shores, Tidal Flats, Eelgrass Beds and Seaweed Beds): Summary Report for FY2008–2022, pp. 248, 264 (in Japanese).
[13] Ministry of the Environment, Committee for the Comprehensive Assessment of Biodiversity and Ecosystem Services (2021), op. cit., p. 39.
[14] IUCN 2025. The IUCN Red List of Threatened Species. Version 2025-1.
[15] Fisheries Agency (2026), FY2025 White Paper on Fisheries, Figures 3-1 and 3-2 (in Japanese).
[16] Ministry of Agriculture, Forestry and Fisheries, Fisheries and Aquaculture Production Statistics (in Japanese).
[17] Ibid.
[18] Ministry of the Environment, FY2023 Study Results: Estimated Amount of Marine Plastic Litter Discharged in Japan, p. 35 (in Japanese).
[19] Ministry of the Environment (2024), Annual Report on the Environment, the Sound Material-Cycle Society and Biodiversity in Japan 2024, p. 222 (in Japanese).

living environment. Rising seawater temperatures worsen feeding conditions for marine organisms by reducing plankton, and lead to the further loss of seaweed beds. In this way, the degradation of biodiversity adversely affects the reproduction of marine organisms. As the marine environment of Japan's coastal areas undergoes major changes, catches are declining sharply even in regions that until now had enjoyed the rich blessings of the sea.

The degradation of marine biodiversity brings about a decline in ecosystem services, including a decrease in fishery resources, a loss of scenic and tourism value, a weakening of climate regulation and water purification functions, and a weakening of disaster risk reduction functions. The decline in ecosystem services causes coastal industries such as fisheries and tourism to decline, leading to population loss and the decline of local culture. The decline of the coastal economy and society in turn results in a shortage of people to conserve and restore biodiversity and a weakening of the systems for monitoring and management. There is thus concern that a negative spiral is progressing in which marine biodiversity degrades even further.

Furthermore, amid rapid global-scale changes in the marine environment, such as the frequent occurrence of marine heatwaves, the loss of biodiversity increases vulnerability to such changes. Unless people continue to live in coastal areas and actively engage in conservation and restoration, thereby strengthening the resilience of ecosystems (their resistance, recovery and adaptive capacity), there is concern that the negative spiral of coastal economic and social decline, driven by the degradation of marine biodiversity and the decline of ecosystem services, will advance.

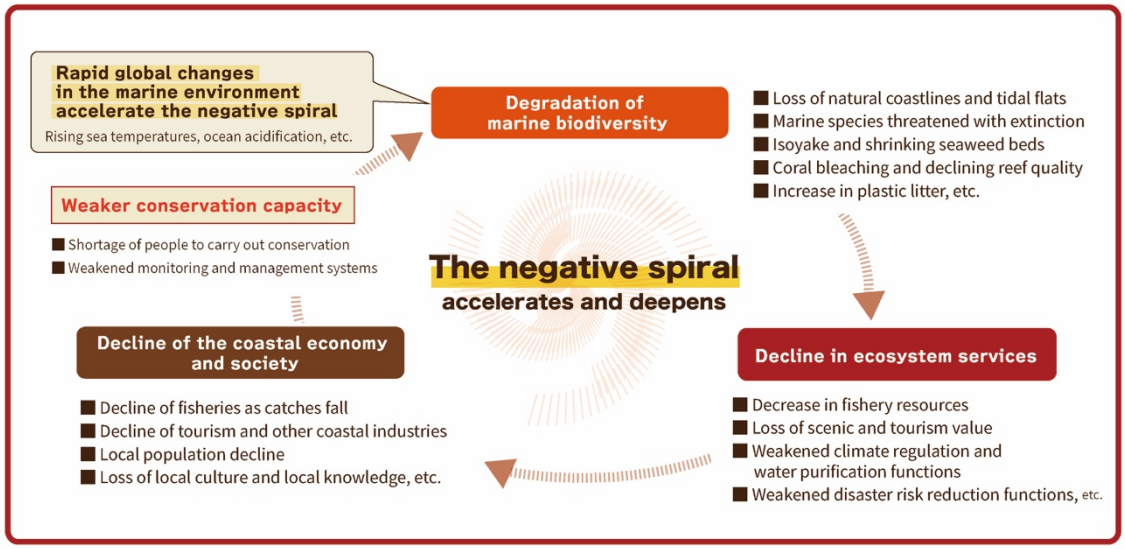


Figure 1: The negative spiral of biodiversity degradation in coastal areas and the decline of local communities

Chapter 2 Revitalizing Coastal Areas through the Conservation and Restoration of Biodiversity

1. Revitalizing Coastal Areas through the Conservation and Restoration of Biodiversity

To revitalize the economy and society of coastal areas, it is necessary to conserve marine areas where biodiversity remains high and, for areas where biodiversity has been degraded, to work toward its restoration where restoration is possible. In particular, it is necessary to strengthen the resilience of ecosystems (their resistance, recovery and adaptive capacity) to changes in the marine environment by conserving and restoring ecologically or biologically significant marine areas, such as seaweed beds, tidal flats and coral reefs, which serve as spawning grounds and as nursery grounds for larval and juvenile fish. To this end, it is necessary to strengthen monitoring surveys in order first to grasp the rapidly advancing changes in the marine environment and the state of biodiversity, and comprehensive plans for conservation and restoration need to be formulated and implemented on the basis of the survey results.

It is important to maintain and restore ecosystem services by conserving and restoring marine biodiversity, and to link this to the promotion of coastal industries such as fisheries and tourism, job creation, the circulation of the local economy, growth in the "related population" (people who maintain ongoing ties with the area), the passing on of local culture and so on. It is desirable to create a virtuous cycle in which the revitalization of the coastal economy and society makes it possible to secure people to conserve and restore biodiversity and to build systems for monitoring and management, and in which coastal stakeholders gain the energy to engage further in conservation and restoration.

In doing so, amid ongoing global environmental change, what matters is not to preserve ecosystems exactly as they are today, but to safeguard the economic and social value that ecosystems provide. It is necessary to devise proactive measures for adapting to change and to build economic and social systems that make sustainable use of new ecosystem services.

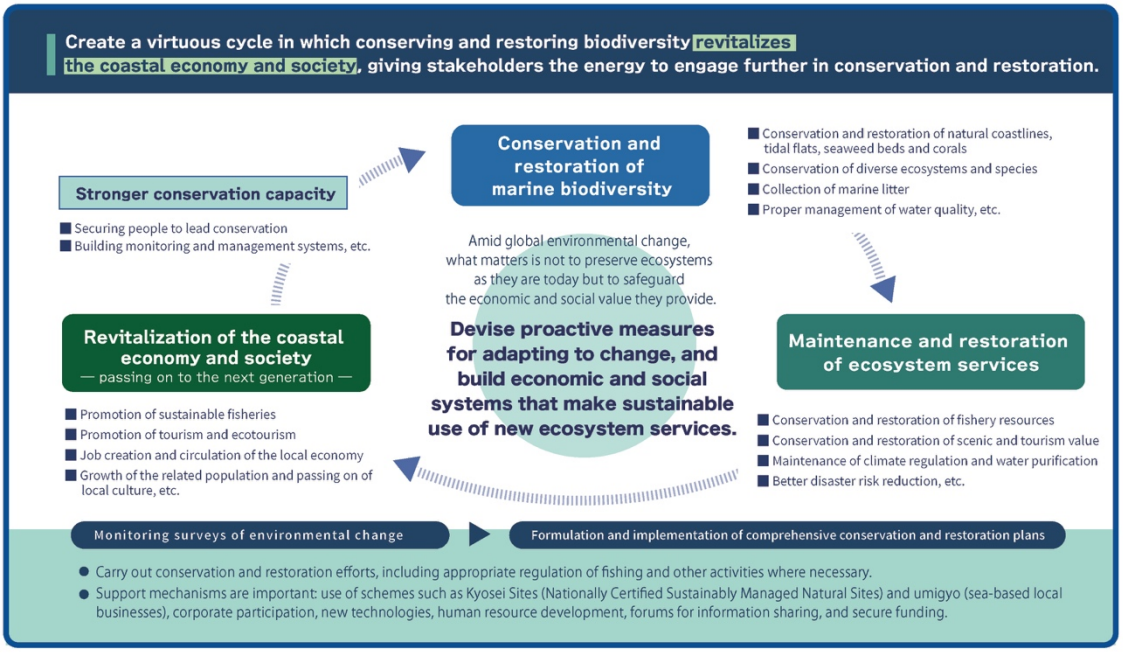


Figure 2: The process of revitalizing the coastal economy and society through the conservation and restoration of biodiversity

A characteristic of many marine ecosystems is that they are easily degraded but, where recovery is possible, recover relatively quickly. For example, water pollution in the Seto Inland Sea progressed during the period of rapid economic growth to the point that it was called a "dying sea," but various statutory measures were subsequently taken to improve water quality, and these produced a certain degree of success.[20] The fact that the effects of restoration are easy to perceive provides a strong incentive for stakeholders to work on restoring marine biodiversity.

2. Considering a "Vision for Coastal Revitalization"

The benefits expected from the conservation and restoration of biodiversity are wide-ranging. It is therefore important for those responsible for conserving and restoring the biodiversity of a coastal area as a whole to work with a broad range of stakeholders to consider and draw up the vision for coastal revitalization that they aim to achieve through the conservation and restoration of biodiversity.

The effects of efforts to conserve and restore biodiversity extend not just to certain industries but to the local community as a whole. When diverse stakeholders work together on a variety of initiatives under a common purpose, these efforts can be expected to produce synergies (combined effects greater than those of acting alone) and benefits for the entire community.

[20] Cabinet Decision (2022), Basic Plan for Conservation of the Environment of the Seto Inland Sea, p. 2, "2. Objectives of the Plan" (in Japanese).

Specifically, the following are conceivable as the visions for the future of coastal areas to be pursued—and the benefits to be expected—by mapping out how coastal space should be used and by appropriately conserving and restoring highly biodiverse marine areas.

(1) Local Communities Pursuing Sustainable Development through the Conservation and Use of Natural Resources

With population decline, aging and low economic growth expected to continue across Japan, a report by the Japan Agency for Marine-Earth Science and Technology (JAMSTEC)[21] presents four future socio-economic scenarios for marine areas: (1) a produced-capital-based, compact society; (2) a natural-capital-based, compact society; (3) a produced-capital-based, dispersed society; and (4) a natural-capital-based, dispersed society.

Which of these future scenarios a region chooses is a matter to be discussed by the stakeholders of each region. Nevertheless, given that people in Japan have lived in coexistence with nature since ancient times, it is important to aim for the sustainable development of coastal areas that reconciles environmental conservation with local industrial development by promoting industries that make use of natural resources.[22]

For this reason, development activities that affect biodiversity, such as the construction of artificial structures in highly biodiverse marine areas, must be kept to a minimum, for example by examining whether alternatives exist and how impacts can be avoided. In addition, the removal of existing artificial structures in coastal areas that are not being fully utilized, and the restoration of natural coastlines such as tidal flats and sandy beaches, should be actively considered.

For fishing—an important industry in coastal areas—to continue to be passed on in a sustainable form, fishers can be considered to have a responsibility to contribute to the conservation of marine biodiversity, which is the foundation of sustainable fisheries. Fishers are increasingly expected to play the role of guardians of the sea (those who protect the marine environment) through activities such as conserving and restoring seaweed beds and collecting marine plastic litter, and the framework through which society as a whole supports such activities should also be strengthened.

(2) Encouraging Young People to Join as the Next Generation Sustaining Local Communities

With aging and population decline posing serious challenges in many regions, in addition to encouraging new entrants into local industries such as fishing, leisure and tourism as people who will sustain their communities, it is possible to attract young

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[21] Japan Agency for Marine-Earth Science and Technology (2021), Environment Research and Technology Development Fund, Final Research Report, "S-15-3: Predicting and assessing the natural values of marine ecosystems from natural capital and ecosystem services," pp. 5–6 (in Japanese).

[22] Ministry of the Environment website (n.d.), Regional Circular and Ecological Sphere (in Japanese).

people who, while maintaining ties with cities through remote work, multiple jobs and the like, work on conserving and restoring coastal biodiversity and revitalizing local communities. To that end, it is important to promote a model of local living blessed with a good natural environment and abundant food.

(3) Promoting Fisheries That Respond to Changes in the Marine Environment

Changes in the marine environment that greatly affect fisheries, such as rising seawater temperatures and ocean acidification, are expected to continue, even though efforts to lessen the degree of change are under way worldwide. Under these circumstances, the most important thing for mitigating the negative impacts of marine environmental change on fisheries is to conserve and restore marine biodiversity through science-based efforts, so that the high resilience (resistance, recovery and adaptive capacity) inherent in the ocean is not lost.

In particular, it is necessary to conserve and restore fishery resources and to promote fisheries that respond to changes in the marine environment by conserving and restoring ecosystems that function as nursery grounds[23] for larval and juvenile fish, such as seaweed beds and coral reefs—often called the cradles of the sea; by managing fishery resources through catch limits and other measures; and by reviewing how fishing is carried out in line with the changing distribution of fish. Because it is difficult to restore biodiversity once it has been lost, conservation and restoration efforts are extremely important to ensure that marine areas that currently have high biodiversity, or that have prospects for recovery, are not degraded any further.

The conservation and restoration of fishery resources and the promotion of fisheries that respond to changes in the marine environment not only contribute to local economies but are also directly linked to the supply of diverse seafood to the public, enriching the Japanese diet and supporting people's health.

(4) Promoting Tourism, Leisure and Other Industries That Make Use of Natural Resources

To build sustainable local communities in which people and nature coexist, it is necessary to secure the livelihoods of local residents. In addition to the fisheries mentioned above, industries that make use of natural resources could include tourism and leisure industries such as diving and ecotourism. Because building new facilities and other artificial structures may negatively affect biodiversity conservation, it is important to place emphasis on refining the value of natural resources, on adding value through experiences rather than through luxurious facilities, and on making use of assets that already exist in the community (for example, renovating traditional houses rather than building new accommodation).

Promoting industries that add value through the use of natural resources requires

[23] Places that are particularly suitable for larval and juvenile fish and other organisms to grow and live.

uncovering the distinctive features and attractions of each locality. For this, it is important to set up forums, discussed later, where a broad range of local stakeholders can gather for discussion, and to develop and build the capacity of people and organizations that can facilitate those discussions. It is also beneficial for people from outside the region to take part in the discussions and offer new perspectives and knowledge.

In addition, appropriate rules on the use of natural resources are essential. For example, promoting recreational fishing can provide a source of income for fishers and other local stakeholders, but rules on the sustainable use of fishery resources need to be set for recreational fishers.

(5) Promoting Ecosystem-based Disaster Risk Reduction (Eco-DRR)

Conserving and restoring the biodiversity of salt marshes, coral reefs, mangrove forests, oyster reefs, seaweed beds and other habitats helps mitigate disasters in marine and coastal areas (storms, tsunamis, storm surges, floods, etc.) and protect human living environments.

Conventional disaster risk reduction efforts have often relied on building artificial structures such as breakwaters and seawalls, but it is desirable for people and nature to coexist by placing emphasis on nature-based solutions (NbS) such as these. Where existing concrete revetments are a cause of biodiversity degradation, it is important to find ways to make maximum use of natural resources, for example by exploring their removal or the use of nature-oriented construction methods and organic civil engineering.

Even where artificial disaster risk reduction facilities are built, it is important to reconcile biodiversity and disaster risk reduction by taking into account the characteristics of the local natural environment and ecosystems, past land use, and traditional knowledge and techniques related to disaster risk reduction.

As population decline, aging and low growth are expected to continue across Japan, it is becoming clear that it will be difficult to maintain all existing coastal communities and facilities as they are. Building communities that coexist with nature by retaining as much of the natural environment as possible can be one solution to this problem.

(6) Combating Global Warming and Maintaining the Earth's Environmental Systems That Support Human Survival

The ocean, with its vast volume of water, is also a carbon reservoir holding large amounts of carbon.[24] In particular, the conservation of seaweed beds, salt marshes, tidal flats and mangrove forests in coastal areas contributes to combating global warming, as these are blue carbon ecosystems that sequester and store carbon. Many functions of

[24] Ministry of the Environment (March 2011), Marine Biodiversity Conservation Strategy, p. 8, Chapter 3, Section 1 (in Japanese).

marine ecosystems are still being studied; for example, it has been pointed out that carbon fixation by coral reefs and high-latitude coral community ecosystems may exceed that of seaweed beds.

Coastal ecosystems such as tidal flats and seaweed beds purify water by removing organic matter contained in domestic wastewater from land through decomposition by bacteria and meiobenthos and filtration by shellfish, and by removing nitrogen and phosphorus as well through storage by algae and export by birds and fish.[25] In addition, phytoplankton and seaweeds in the sea release oxygen through photosynthesis and produce carbohydrates and proteins, which become the source of energy for marine life through the food chain.[26]

In this way, conserving and restoring coastal and marine ecosystems helps maintain the systems that support the survival of humankind and of life on Earth, such as climate regulation, water purification and food chains. It is hoped that further research will shed more light on the functions and roles of marine ecosystems.

(7) Reconciling the Promotion of Renewable Energy with the Conservation and Restoration of Biodiversity

To achieve the Japanese government's goal of carbon neutrality by 2050, offshore wind power, which has large development potential among renewable energy sources, is being promoted, but there are also concerns about its impacts on fisheries and ecosystems. Under these circumstances, for offshore wind power projects developed with appropriate site selection—such as avoiding important migratory bird routes and seabird habitats—and in accordance with environmental impact assessment procedures, one possible approach is to designate the waters around the facilities as a protected zone and to create seaweed beds and the like so that the area serves as a nursery ground for larval and juvenile fish, thereby conserving and restoring fishery resources and reconciling the promotion of renewable energy with the conservation and restoration of biodiversity.

As there are not yet enough examples of such initiatives, it is important for researchers to conduct monitoring to verify their effectiveness and to make continuous improvements.

(8) Preserving Local Culture and Contributing to the Preservation of National Land and Remote Islands by Enabling People to Continue Living in Coastal Communities

Enabling people to continue living in coastal areas while making use of natural resources, through the conservation and restoration of biodiversity, also helps preserve the festivals, food culture and traditional culture that have long been part of these

[25] Ibid., p. 10, Chapter 3, Section 2 (3).
[26] Japan Maritime Public Relations Center (n.d.), "Oxygen Is Also Produced by the Sea" (in Japanese).

communities. Coastal festivals and traditions have cultural and religious value, and passing these local cultures on to future generations also promotes tourism by adding to the appeal of the region.

In addition, Japan's food culture, which uses seafood distinctive to each region and season, not only enriches the Japanese diet but is also a major reason why foreign tourists visit Japan.[27]

The fact that people continue to live and carry on industrial activities in these areas also contributes to the preservation of national land and remote islands from a national security perspective.

(9) Contributing to Environmental Education and Providing the Public with Spaces for Leisure and Relaxation

Environments where biodiversity has been conserved and restored are also highly valuable as places for research and education. It is also important, by conserving and restoring coastal biodiversity, to keep places close at hand where people can learn about ecosystems, the evolution of living things and so on.

As more people deepen their knowledge of biodiversity and the environment, it is expected that more local residents and young people will take part in coastal conservation activities.

The conservation and restoration of coastal biodiversity and natural landscapes also plays an important role in providing places for leisure and relaxation, not only for local residents but also for people living in cities.

(10) Becoming a Global Model for Reconciling the Conservation and Restoration of Biodiversity with the Promotion of Local Industry and Culture

The existence of many small-scale fishing communities along the coast, where local residents and fishers manage coastal areas from the bottom up, is a feature found not only in Japan but also in many other countries, particularly in Asia. Creating successful examples in Japan that reconcile the conservation and restoration of local biodiversity with the promotion of local industries, such as coastal fisheries, and local culture can therefore be expected to serve as a model for coastal areas in Asia and around the world.

[27] Japan Tourism Agency, Consumption Trends of International Visitors to Japan: Results and Analysis of the International Visitor Survey, 2023 Annual Report, p. 24, "Activities during stay in Japan" (in Japanese).

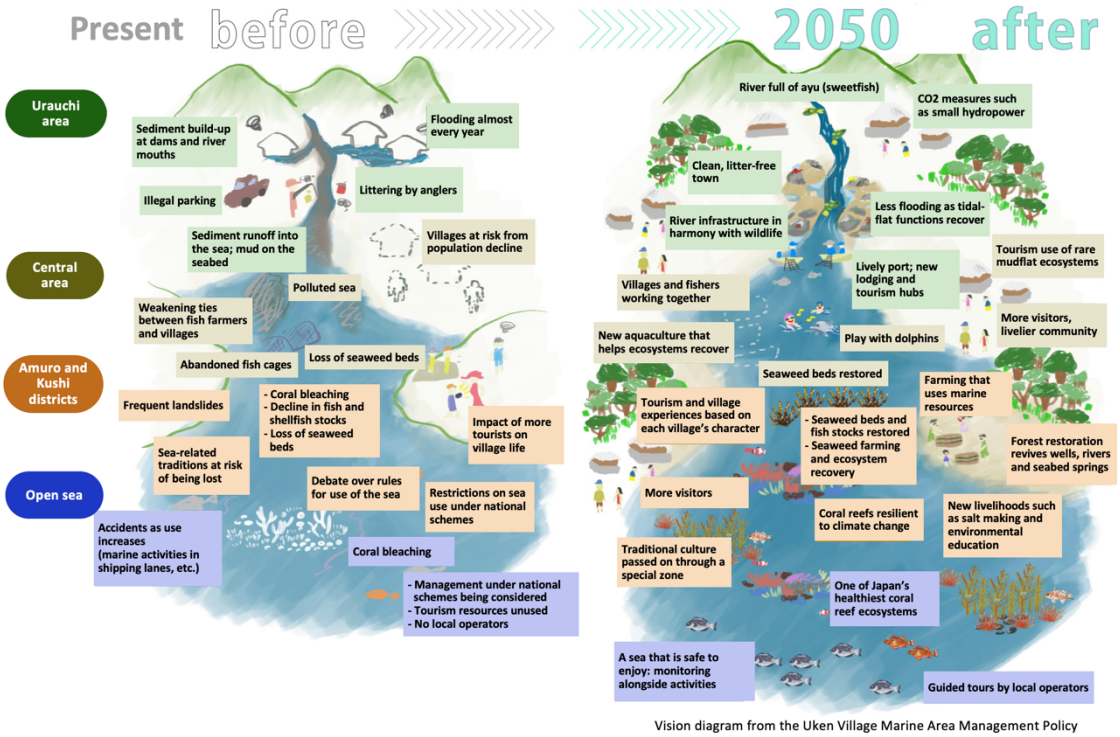


Figure 3: An example of a “vision for coastal revitalization” through the use of natural resources (Uken Village, Kagoshima Prefecture)

Chapter 3 Effective MPAs and OECMs for the Conservation and Restoration of Biodiversity

1. Significance of MPAs and OECMs

Establishing protected areas is an effective means of conserving and restoring coastal biodiversity and realizing the vision for coastal revitalization described in Chapter 2. By distinguishing marine areas where the need for biodiversity conservation and restoration is high from other areas, and by regulating activities and carrying out conservation and restoration efforts there, effective management that balances the conservation and use of marine areas can be expected.

The Kunming-Montreal Global Biodiversity Framework, which was agreed internationally with Japan's participation, set the goal of effectively conserving at least 30% of land and sea areas as healthy ecosystems by 2030 (the 30by30 goal) in order to halt and reverse biodiversity loss (nature positive). In achieving the 30by30 goal, importance is attached not only to MPAs but also to the role of OECMs, which are areas outside protected areas that contribute to biodiversity conservation.[28]

However, merely drawing boundary lines on paper and labeling an area as protected cannot be expected to produce conservation or restoration outcomes.[29] In realizing the 30by30 goal, it is necessary to promote effective MPAs and OECMs by not only increasing their area but also working to enhance their quality (their effectiveness in conserving and restoring biodiversity).

2. Current Status and Challenges of MPAs in Japan

In Japan, areas designated under individual laws—such as the Natural Park Law (Natural Parks), the Nature Conservation Law (Nature Conservation Areas and Offshore Seabed Conservation Areas), the Marine Resources Development Promotion Act (development areas for coastal marine resources and designated sea areas) and the Fisheries Act (zones for common fishery rights)—are regarded as MPAs, and 13.3% of Japan's sea areas are currently classified as MPAs.

Looking at individual cases, for example, in Shiretoko, which is inscribed as a World Natural Heritage site, effective measures such as the formulation of a high-quality management plan and monitoring surveys are being carried out to conserve local biodiversity. Minamisanriku Town in Miyagi Prefecture has established the town-run Minamisanriku Nature Center, which conducts survey, research, education and outreach activities; the town has formulated a conservation and utilization plan for the Minamisanriku coastal area centered on Shizugawa Bay, a wetland registered under the Ramsar Convention, and carries out monitoring, evaluation and conservation efforts. In the Seto Inland Sea, under the Law on the Special Measures for Conservation of the Environment of the Seto Inland Sea, efforts such as water quality improvement,

[28] Cabinet Decision (2023), The National Biodiversity Strategy and Action Plan of Japan 2023-2030, pp. 9–10 (in Japanese).
[29] Makino, M. (2020), Marine Conservation Policies in Japan, p. 49 (in Japanese).

conservation of the coastal environment and environmental monitoring are being carried out in order to make it a bountiful sea whose multifaceted values and functions, including the securing of biological diversity and productivity, are realized to the fullest.

While such efforts are under way, many of Japan's MPAs were not established with the direct aim of conserving and restoring biodiversity. As a result, in addition to the fact that their boundaries are not necessarily drawn on a scientific basis in a way that is meaningful for ecosystems, there are problems such as monitoring surveys, the formulation of effective management plans and the verification of conservation and restoration outcomes not being carried out sufficiently.

To realize the vision for coastal revitalization described in Chapter 2, it is important for effective MPAs and OECMs to spread across the country. Alongside strengthening efforts within individual schemes, plans need to be formulated to conserve and restore the biodiversity of each locality as a whole. It is also important to restore ecosystem services by aiming to conserve and restore ecosystems and species as a whole, rather than only particular natural environments, organisms or commercially valuable fishery species, and by taking measures that include conducting monitoring surveys and, in areas where the need for conservation is high, setting appropriate regulations on fishing and other activities.

3. Vision for Effective MPAs and OECMs (Five Criteria)

In our view, a marine area in which biodiversity is conserved is one in which the species diversity, genetic diversity and ecosystem diversity inherent to that area are maintained, and which has the resilience (resistance, recovery and adaptive capacity) to respond to changes in the state of the marine environment and ecosystems caused by natural and human factors.

We consider effective MPAs and OECMs to be areas in which the arrangements and methods for conserving and restoring biodiversity in this sense are clear and their effectiveness has been demonstrated—specifically, areas that meet the following criteria.

(1) The characteristics, status and challenges of ecosystems and species are clearly understood, ecologically or biologically significant areas are identified, and appropriate conservation and restoration measures are being taken.

- In effective MPAs and OECMs, the characteristics and status of ecosystems and species need to be clearly understood on the basis of scientific knowledge and traditional and local knowledge; ecologically or biologically significant areas need to be identified; and appropriate conservation and restoration measures need to be taken. Understanding the characteristics and status of ecosystems and species includes identifying the challenges (causes of degradation) and risk factors relevant to their conservation and restoration. Moreover, because information on marine areas is limited compared with land areas and the hurdles to conducting surveys are high, it is important to combine the knowledge and information accumulated

among local stakeholders with scientific methods.

- The extent of an effective MPA or OECM should be set, on a scientific basis, as the area necessary and sufficient for the appropriate conservation and restoration of "ecologically or biologically significant areas" (an area large enough to maintain the state of local biological communities, habitats and ecosystems). Because many marine organisms move between areas by drifting or migrating, designating only a particular area as an MPA or OECM is not sufficiently effective for conserving them. In addition, relying on a single MPA or OECM to conserve marine life increases the risks arising from climate change and other environmental changes. For this reason, networks of multiple MPAs and OECMs that take into account the life histories of the marine species to be conserved are needed. Furthermore, it is desirable to adaptively revise the designated boundaries of MPAs and OECMs in response to changes in the marine environment and in species distribution.
- To conserve and restore biodiversity, the approach to conservation within an MPA or OECM is not uniform; a zoning approach should be used that appropriately distinguishes between, for example, zones where, as necessary, strict protection is provided by excluding the impacts of human activities as far as possible, and zones where nature is used within sustainable limits.

(2) Management objectives (objectives for the conservation and restoration of biodiversity) are clear, and a management plan to achieve them has been formulated and is being implemented.

- In effective MPAs and OECMs, the management objectives within the MPA or OECM (objectives for the conservation and restoration of biodiversity) need to be clear, based on scientific knowledge and traditional and local knowledge and taking into account the characteristics of ecosystems and species identified under (1).
- Management objectives in effective MPAs and OECMs do not merely aim to increase particular fishery resources or species; they set out conservation and restoration objectives covering the important species in the area together with the food webs and ecosystem networks that surround them as a whole. For example, in some localities, marine mammals, sea turtles and seabirds could also be included in the conservation and restoration objectives. It is also important for local stakeholders to discuss a vision for the promotion of coastal areas that makes the most of natural resources, with the aim of enhancing the quality and quantity of ecosystem services through efforts to conserve and restore biodiversity.
- To conserve and restore coastal biodiversity, it is important to manage land and sea in an integrated manner, taking into account the influence of rivers flowing into the sea and of land-based activities that affect river water, for example by improving the quality and nutrient status of water flowing in from land.
- In recent years, as the impacts of climate change and other changes in the marine environment have been felt in waters throughout Japan, whether the state of the characteristic ecosystems and species of a given area can continue to be conserved

or restored is an unavoidable question. The conservation and restoration of biodiversity in effective MPAs and OECMs should be understood as maintaining, or striving to restore, the value of biodiversity (the quality and quantity of biodiversity and ecosystem services) in a manner adapted to environmental change.

- Once these management objectives have been clarified, a management plan to achieve them needs to be drawn up, and its implementation needs to be sustained over the long term.

(3) Researchers, local residents, citizens' groups and other stakeholders participate in the consideration of management and in the formulation and implementation of the management plan.

- The expert knowledge of scientists is indispensable for conserving and restoring coastal biodiversity. At the same time, given that local communities throughout Japan have long worked to protect the marine environment in ways that allow people and nature to coexist, it is important to manage these areas in ways that make use of the traditional knowledge and techniques handed down in those communities. Moreover, because marine areas do not belong to any particular owner, their effective management requires the cooperation of many stakeholders.
- For this reason, in the management of effective MPAs and OECMs, the participation of, and consensus-building among, a broad range of people who are involved or interested in the conservation and restoration of biodiversity in the area—not only the managers of the statutory schemes but also researchers, local residents, citizens' groups and others—is important.
- Exactly who this broad range of stakeholders comprises will vary from one locality to another, but they may include government bodies, local residents, researchers (from public research institutes, universities, etc.), fishers, fishers' organizations, seafood processors and distributors, people in the leisure and tourism industries, environmental organizations and citizens' groups from inside and outside the region, students and companies. Bringing together a wide range of people across genders and generations can be expected to enhance creativity and the problem-solving capacity to respond to change, from perspectives that are not bound by conventional thinking.
- Depending on local circumstances, it is also important to encourage the participation of land-side stakeholders who affect coastal biodiversity, such as river and forest managers and farmers. In addition, as there is concern that climate change will make disasters more severe and more frequent, coordination with the local departments responsible for disaster risk reduction and infrastructure management is essential in setting management objectives and formulating management plans for MPAs and OECMs.
- Encouraging the participation of companies is also important for conserving and restoring coastal biodiversity. When companies carry out economic activities in a locality, working in parallel to conserve the local natural environment is important

for supporting the sustainable development of the local community as a whole, which is the foundation of their own continued existence. Examples of corporate participation include taking part in conservation and monitoring activities, participating as sponsors, contributing in ways that draw on the strengths of their core business (for example, a company with strengths in communications could support information dissemination), and investment by financial institutions in conservation and restoration efforts, in the development of monitoring technologies and so on.

(4) Monitoring surveys are conducted regularly and the results are made public.

- Conducting regular monitoring surveys is essential for understanding the state of biodiversity within MPAs and OECMs and for verifying the effectiveness of management measures.
- In conducting monitoring surveys in coastal MPAs and OECMs, promoting citizen science, in which data are collected with the cooperation of fishers, recreational fishers, divers, members of the public, environmental organizations and others, can be expected to compensate for shortfalls in data collection capacity and yield more data.
- It is desirable to create mechanisms whereby encouraging citizens to take part in monitoring surveys leads to the development of the next generation of people who will carry on this work.
- It is important that the data collected through monitoring surveys be managed for each MPA and OECM, and that the national government take the lead in creating a mechanism for sharing and publishing them, so that the data can be used to build a picture of the state of biodiversity not only in the area concerned but across the country as a whole, and to enhance the effectiveness of biodiversity conservation and restoration.

(5) Adaptive management is carried out on the basis of the results of monitoring surveys.

- It is important that, on the basis of the results of monitoring surveys, the effectiveness of management measures in MPAs and OECMs be evaluated regularly with the participation of researchers, and that the results be made public.
- In the sea, water is constantly in motion through ocean currents, tidal currents and tides, and the sediment that makes up coastal beaches and tidal flats shifts. In recent years, marked changes in the distribution of marine life have also been occurring as a result of changes in the marine environment. Given that marine biodiversity is thus complex, involves uncertainty and is constantly changing, adaptive management is needed, consisting of a process of (1) setting indicators based on the hypotheses underlying the management objectives, (2) regularly monitoring the indicators, and (3) reviewing the management objectives and the content of the management plan in light of the monitoring results.

- Furthermore, it is desirable to adaptively revise the designated boundaries of MPAs and OECMs in response to changes in the marine environment and in species distribution.

4. Target for Expanding Effective MPAs and OECMs toward "Coastal Revitalization"

With the ultimate aim that 30% of Japan's sea areas be protected as effective MPAs and OECMs, and that efforts to revitalize coastal areas through the use of natural resources thereby spread throughout the country, we set the target of creating 30 localities nationwide that work on formulating and implementing comprehensive plans for the conservation and restoration of local biodiversity.

Specifically, the aim is for municipalities to take the lead, in collaboration with stakeholders involved in coastal conservation, in carrying out the following actions toward coastal revitalization, and NACS-J will work with government bodies and other organizations to support localities undertaking these actions.

(1) Understand the characteristics, status and challenges of local ecosystems and species, and identify ecologically or biologically significant areas.

(2) Consider a vision for coastal revitalization based on natural resources, and formulate and implement a comprehensive plan for the conservation and restoration of biodiversity to realize it.

- Objectives and plans should not be limited to promoting individual measures such as the conservation of seaweed beds, but should aim to conserve and restore biodiversity as a whole, while specifying the particular species and ecosystems to be conserved.
- Depending on local circumstances, the plan could be positioned as a regional biodiversity strategy, a nature restoration project implementation plan, a locality's own voluntary basic plan for ocean policy, or the like.

(3) Ensure the participation of stakeholders involved in coastal conservation, such as researchers, local residents and citizens' groups.

(4) Conduct regular monitoring surveys and publish the results.

(5) Carry out adaptive management based on the results of monitoring surveys.

Note that although most of Japan's coastal areas are already classified as MPAs, this target covers both localities starting new initiatives and localities further improving the quality of existing initiatives.

5. Expected Roles of MPAs and OECMs

The five criteria set out in "3. Vision for Effective MPAs and OECMs" are common to both MPAs and OECMs. However, since MPAs by definition have conservation as their primary purpose, we believe that MPAs should be required to meet all five criteria at a

high level. For OECMs, on the other hand, we believe that all five should be pursued, but we do not consider fulfilment of all of them to be a requirement for recognition as an OECM. This is our own articulation of the vision for MPAs and OECMs; it is not identical to the certification criteria for Nationally Certified Sustainably Managed Natural Sites ("Kyosei Sites"), which are expected to be registered as OECMs in coastal areas, but it is desirable that this thinking be incorporated into the certification criteria for Kyosei Sites in the future.

Both MPAs and OECMs are expected to play the roles of (1) conserving marine areas that are currently rich in biodiversity and (2) restoring degraded biodiversity. In addition, because OECMs include areas where conservation is not the primary purpose, OECMs are also expected to (3) create environments that support the recovery of biodiversity, for example around development sites.

Furthermore, whereas MPAs are managed by government bodies or fishery cooperatives, coastal OECMs are expected to be managed by private entities; OECMs are therefore also expected to (4) encourage companies and private organizations to take part in biodiversity conservation and restoration activities.

In realizing the vision for coastal revitalization set out in Chapter 2, it is important to combine multiple MPAs and OECMs appropriately in light of these respective characteristics.

Chapter 4 Arrangements and Actions Needed to Expand Effective MPAs and OECMs

1. National-Level Arrangements and Actions

At a time when sustaining communities on remote islands and peninsulas and in coastal areas has been identified as a social challenge, the conservation and restoration of biodiversity is a key element in revitalizing the economy and society of coastal areas. Moreover, the continued presence of people living in coastal areas and carrying on economic and conservation activities also contributes to the country's comprehensive national security, including food security, the preservation of national land and remote islands, and the monitoring and management of marine areas.

Japan has a long historical relationship with the sea, and a variety of sea-related schemes have developed over time; a distinctive feature is that the country seeks to conserve and restore biodiversity by layering the regulations and schemes of various ministries and agencies. To make the most of this feature and conserve and restore local biodiversity by skillfully combining existing schemes, it is necessary, alongside strengthening efforts within individual schemes, to have a lead coordinating body that establishes a plan for how biodiversity is to be conserved and restored as a whole and drives its implementation.

In particular, in recent years, in many regions the decline of local communities due to shrinking populations and industries has made it increasingly difficult to maintain all communities and facilities as before and to address environmental problems such as *isoyake* and coastal erosion in every locality. It is therefore necessary to set out how coastal space as a whole should be used—how marine areas where biodiversity remains high are to be conserved, what measures are to be taken in areas where biodiversity can be restored, and in which areas development and economic activities are to be encouraged while minimizing environmental impacts.

At the national level, the appropriate body to play this role is the National Ocean Policy Secretariat of the Cabinet Office, which is responsible for bringing together the measures of the various ministries and agencies and setting policy on the conservation and use of marine areas.

[Policy Recommendations]

National-level arrangements and actions

1. Establish, as an important national policy, that the conservation and restoration of biodiversity is a key element of the economic and social revitalization of coastal areas.
2. Set out the promotion of marine biodiversity conservation (expanding effective MPAs and OECMs, promoting the formulation of integrated coastal area management plans, etc.) as a precondition for advancing the Key Missions under the Ocean Development Strategy, which the National Ocean

Policy Secretariat of the Cabinet Office is responsible for implementing in cooperation with the ministries and agencies.

- When ocean development is carried out, biodiversity conservation and development should be reconciled by overlaying maps of marine ecosystems with the uses of marine areas.

3. Strengthen the National Ocean Policy Secretariat of the Cabinet Office as the lead coordinating body for promoting marine biodiversity conservation, and second a full-time Counsellor to it from the Ministry of the Environment.

4. In 2011, the Ministry of the Environment identified "marine areas of high importance from the perspective of biodiversity" in the waters around Japan. Given that the state of biodiversity has since changed with changes in the marine environment, and that technologies for surveying ecosystems have also advanced, these Ecologically or Biologically Significant Marine Areas (EBSAs) should be updated.

- One possible approach is to update the EBSAs on a rolling basis by compiling information aggregated in the Ocean Biodiversity Information System (OBIS), the Global Biodiversity Information Facility (GBIF) and similar sources.
- Another possibility is for the private sector to update the Key Biodiversity Areas (KBAs), the sites that are key to the conservation of biodiversity.

2. Local Government Arrangements and Actions

The benefits expected from the conservation and restoration of biodiversity are wide-ranging. It is desirable for a lead coordinating body responsible for conserving and restoring the biodiversity of a coastal area as a whole to formulate a marine spatial plan or an integrated coastal area management plan in collaboration with a wide range of stakeholders,[30] and to plan for synergies among measures by combining existing schemes. In doing so, the influence of rivers flowing into the sea and of land-based activities that affect river water also needs to be considered, and it is important to establish an integrated plan that reflects the connections between land and sea, including efforts to manage catchment and coastal areas with the participation not only of fishers but also of people involved with forests, rivers and the sea, citizens, companies

[30] Joint Appeal Committee of the Japan Society of Ocean Policy and the Japanese Association for Coastal Zone Studies (2022), Appeal for the Realization of Integrated Ocean and Coastal Management: Policy Recommendations for the Fourth Basic Plan for Ocean Policy, p. 6 (in Japanese), which states that "formulating marine spatial plans with the participation of a wide range of stakeholders is effective for considering in advance the interrelationships among multiple sectors and for effectively planning synergies."

and others.[31]

To advance these efforts, it is important for each prefecture and municipality to designate a department responsible for drawing up a grand design for sustainable development through the conservation and restoration of coastal biodiversity.

[Policy Recommendations]

Local government arrangements and actions

5. In coastal municipalities, in cooperation with the national and prefectural governments, establish a department or officer responsible for formulating and implementing, together with local stakeholders and from a comprehensive perspective, a plan for the conservation and restoration of coastal biodiversity (an integrated coastal area management plan).

- It is desirable for comprehensive plans to be formulated under departments responsible for planning, general policy or the like. To strengthen municipalities' capacity to carry out these efforts, options include drawing on retired prefectural government officials, using the national government's scheme for dispatching personnel to support regional revitalization, using the Local Vitalization Cooperator program, and partnering with environmental organizations.
- To support municipal efforts, the Ministry of the Environment and environmental organizations should take the lead in providing support such as training and the development of guidelines on the conservation and restoration of coastal biodiversity.

3. Support for On-the-Ground Conservation and Restoration Efforts

In many coastal areas, there is a serious shortage of people to carry out marine biodiversity conservation and restoration activities, as well as a lack of scientific knowledge and know-how.

In drawing up a vision for the locality's future based on natural resources and in formulating and implementing a comprehensive plan for the conservation and restoration of local biodiversity, an important role is played by facilitators who can create forums for discussion open to a broad range of local stakeholders and build relationships of trust.

In addition, to conserve and restore biodiversity, it is first necessary to grasp the rapidly advancing changes in the marine environment and the state of biodiversity, and strengthening monitoring surveys for this purpose is important.

[31] Field Science Education and Research Center, Kyoto University (ed.) (2011), Connectivity of Hills, Humans and Oceans: Toward Integrated Management from Forest to Sea, pp. 171–172 (in Japanese).

At present, under the Ministry of the Environment's Monitoring Sites 1000 project, monitoring surveys are conducted nationwide at six rocky shore sites, ten tidal flat sites, six eelgrass bed sites and six seaweed bed sites. In addition, national research and development agencies and prefectural fisheries research stations conduct surveys of the status of fishery resources and the aquatic environment as part of fishery resource management.

Going forward, to expand surveys of the coastal marine environment and biodiversity beyond these, it is important to build the arrangements, and to develop and apply the technologies, needed to conduct monitoring surveys simply and on a continuing basis. Promoting citizen science, in which data are collected with the cooperation of fishers, recreational fishers, members of the public and others, can also be expected to compensate for shortfalls in data collection capacity and yield more data.

On that basis, to carry out conservation and restoration activities on a continuing basis in light of the results of monitoring surveys, support for those who carry out these activities is also needed.

[Policy Recommendations]

Training facilitators

6. Facilitators need not be government officials; local residents, fishers and fishers' organizations, environmental organizations and others could also take on this role. However, it is essential that the Ministry of the Environment, the Fisheries Agency and environmental organizations provide facilitators with training and opportunities to build their capacity.

- In localities carrying out pioneering activities for the conservation and restoration of biodiversity, it is often the case that a charismatic individual is exercising leadership.
- It is important to develop the people who will shape the future of their communities by providing ongoing training opportunities and creating forums for information exchange for those seeking to work on the conservation and restoration of biodiversity.
- Important roles of facilitators include conveying information and processes to fishers in an easily understandable form and showing, through actual examples, how the conservation and restoration of biodiversity benefits the community.

Training the researchers needed for scientific surveys

7. To clarify the characteristics and status of ecosystems and species through scientific surveys, it is necessary to train the researchers engaged in such work.

- Collaboration with local universities, museums and aquariums could be

explored for carrying out scientific surveys.

Building the arrangements and developing the technologies needed for scientific monitoring surveys

8. It would be useful to compile a list of monitoring survey methods and anticipated conservation and restoration activities suited to the characteristics of different marine areas, so that each locality can select those that match its circumstances.

9. Develop guidelines on the specific procedures for conducting monitoring surveys, tailored to the ecosystems and indicator species to be conserved.

- In monitoring surveys, it is important to verify the effectiveness of conservation activities not only by comparing conditions before and after the activities but also by establishing control sites.
- The provision of data obtained through monitoring surveys requires rules, such as a publication mechanism that lets providers see how the information they supplied is being put to use. It is also important for the national government to take the lead in collecting and analyzing scattered monitoring data and in building a mechanism for sharing and publishing the information.

10. Conducting monitoring surveys involves challenges such as developing human resources, bearing the costs, and the difficulty of having the value of monitoring recognized.[32] It is therefore important to put effort into developing technologies that make it possible to conduct monitoring surveys more simply and on a continuing basis.

- Examples include environmental DNA surveys, video monitoring surveys using autonomous underwater vehicles (AUVs) and remotely operated vehicles (ROVs), and the collection of data from sensors installed on set nets.
- In addition to collecting new data, mechanisms for sharing data that fishers already hold, such as fish finder and sonar data from fishing vessels, are also important.

11. Establish a framework (a liaison council) through which the relevant ministries, agencies and institutions cooperate to conduct wide-area monitoring surveys of the marine environment and share data.

- For example, when the Japan Fisheries Research and Education Agency (FRA) surveys and assesses fishery resources, it could also monitor the marine environment and share data reciprocally with the Japan Agency

[32] Field Science Education and Research Center, Kyoto University (ed.) (2011), Connectivity of Hills, Humans and Oceans: Toward Integrated Management from Forest to Sea, p. 168 (in Japanese).

for Marine-Earth Science and Technology (JAMSTEC).

Support for those carrying out conservation and restoration activities

12. It would be useful to compile a list of anticipated conservation and restoration activities suited to the characteristics of different marine areas, so that each locality can select those that match its circumstances.
13. Develop guidelines on the specific procedures for carrying out conservation and restoration activities, tailored to the ecosystems and indicator species to be conserved.
    - One possibility is to have marine restoration positioned within the Fisheries Agency's program to promote the multifunctional roles of fisheries, and to have it featured in the program's guidelines and case studies.
14. Consider paying a daily allowance to fishers and local residents who carry out monitoring surveys and conservation and restoration activities, on condition that they have completed training, while also drawing on related budgets such as fisheries promotion budgets.
    - Training for fishers could be provided as part of the guidance services of fishery cooperatives.
    - Local residents, including the Nature Conservation Educators registered with NACS-J, could carry out monitoring surveys and conservation and restoration activities. Having a training scheme in place can encourage their participation.

Building mechanisms to encourage adaptive management

For adaptive management to function effectively, it is desirable to discuss and agree in advance on which measures the monitoring data are linked to and how the measures will be adjusted depending on the evaluation results.

15. It is important to provide criteria and evaluation guidelines along the lines of "an ecosystem in such-and-such a state is of high quality." Together with this, organizing a menu of actions for implementing adaptive management would encourage stakeholders' efforts, and it would be helpful to have a support system in which the national government is available for consultation.
    - In verifying the effectiveness of biodiversity conservation and restoration, the criteria used to assess the sustainability of seafood, such as those of the Marine Stewardship Council (MSC), could also serve as a reference.
    - It is also important to build mechanisms for learning from the success

and failure factors of efforts in other MPAs and OECMs.

16. Another possibility is for environmental organizations to take the lead in assessing the state of biodiversity conservation in each prefecture and publishing the results, thereby encouraging stakeholders' efforts.

[Recommendations to Fishers, Citizens and Other Coastal Stakeholders]

Roles expected of coastal stakeholders

17. Fishers, who are key stakeholders in coastal areas, are expected to play the role of guardians of the sea (those who protect the marine environment) through efforts to conserve and restore seaweed beds and tidal flats, the sustainable use of fishery resources and so on. These efforts contribute to the promotion of fishing and the fisheries industry, and it is also important for society as a whole to support them.

18. In addition to fishers, other coastal stakeholders, including citizens and citizens' groups, are expected to take part in considering the vision for coastal revitalization and to cooperate in conservation and monitoring activities.

[Recommendations to Companies]

Roles expected of companies

19. As members of local economies that enjoy the benefits of coastal biodiversity, companies and financial institutions are expected to take part in, or support, efforts to conserve and restore biodiversity. Examples of actions by companies and financial institutions include the following. It would also be useful to develop guidelines for companies and financial institutions on how they can take part in or contribute to the conservation and restoration of coastal biodiversity.

- Participating in local councils that draw up a vision for coastal revitalization and discuss the formulation and implementation of comprehensive plans for the conservation and restoration of local biodiversity
- Cooperating in conservation and monitoring activities
- Making use of the corporate version of the hometown tax donation program (corporate *furusato nozei*) and developing products tied in with conservation and restoration activities
- Investing in biodiversity conservation and restoration efforts, the development of monitoring technologies and so on

4. Consideration of Funding Sources

Sustaining marine biodiversity conservation and restoration activities requires financial backing for personnel costs, human resource development, scientific surveys, operating expenses and so on.

Because the conservation and restoration of biodiversity is a key element in revitalizing the economy and society of coastal areas, and because its benefits extend to the country as a whole, it is important to strengthen public support for those working to conserve and restore marine biodiversity.

[Policy Recommendations]

Consideration of funding sources

20. Funding sources for strengthening public support for marine biodiversity conservation and restoration activities, and financing mechanisms for running these activities, need to be examined.

- Marine biodiversity is not only the foundation supporting the economy and society of coastal areas but is also indispensable in supporting the basic systems on which human survival depends, such as climate regulation and water purification. To maintain these public-interest functions of the sea, one possibility is to create a new marine environment tax to be collected by the national or local governments.
- In addition, to help strengthen local governments' capacity, local fiscal measures for the conservation and restoration of biodiversity could be enhanced, for example by adding the area of MPAs under management to the indicators used to calculate the local allocation tax. The use of private funding should also be examined. Possibilities include the appropriate use of blue carbon credit schemes;[33] the promotion of corporate investment in biodiversity conservation activities as the work of the Taskforce on Nature-related Financial Disclosures (TNFD) progresses; and the development, through partnerships between local governments and companies, of products that contribute to biodiversity conservation. It would be useful to build mechanisms through which biodiversity conservation activities lead to higher corporate earnings and value.

[33] For details on the appropriate use of blue carbon credit schemes, see WWF 2023. Responsible Finance for Blue Carbon Ecosystems.

Chapter 5 Background to the Preparation of This Report

Differences from the recommendations published in 2012

In 2012, NACS-J published "The way how Marine Protected Area in Japan should be – to promote biodiversity conservation –," which set out NACS-J's view of what MPAs should be: (1) MPAs need to be established on a scientific basis; (2) monitoring surveys are needed; (3) MPAs need to be open to citizen participation; (4) attention needs to be paid to habitats; (5) boundaries and zoning that are meaningful for ecosystems are needed; and (6) networks of multiple MPAs need to be formed.

The five requirements of the "Vision for Effective MPAs and OECMs" that we newly present here do not differ in essence from the content of the recommendations published in 2012. However, in order to respond to the degradation of biodiversity and the changes in the marine environment that have become more pronounced over the past decade or more, the present recommendations go beyond stating the general principles needed for conserving the marine environment. They were prepared with a view to reorganizing, in more concrete terms, what is needed to work effectively on the conservation and restoration of marine biodiversity in MPAs and OECMs while encouraging the understanding and active involvement of fishers, researchers, citizens' groups and other stakeholders in marine areas.

(Reference)

Table 1: List of MPAs in Japan

Name	Relevant legislation	Area[34]	Share[35]	Main purpose of the scheme[36]
Natural Park	Natural Park Law	19,115 km²	0.42%	Protection of natural landscapes, etc.
Natural seashore conservation area	Law on the Special Measures for Conservation of the Environment of the Seto Inland Sea	91 sites	–	
Nature Conservation Area, Offshore Seabed Conservation Area	Nature Conservation Law	227,834 km²	5.10%	Protection of natural environments, habitats, etc.
Wildlife Sanctuaries	Wildlife Protection and Hunting Act	661 km²	0.02%	
Habitat protection areas	Law for the Conservation of Endangered Species	–	–	
Natural Monuments	Law for the Protection of Cultural Properties	–	–	
Protected water surface	Act on the Protection of Fishery Resources	28 km²	0.001%	Protection and propagation of aquatic organisms, etc.
Development areas for coastal marine resources, Designated sea areas	Marine Resources Development Promotion Act	333,616 km²	7.46%	
Zones for common fishery rights	Fisheries Act	87,200 km²	1.95%	
Various areas designated by prefectures, fishers' organizations, etc.[37]	Fisheries Act, Act on the Protection of Fishery Resources, Fisheries Cooperatives Act, etc.	–	–	
Total (without overlapping areas)		594,510 km²	13.3%	

[34] Cabinet Decision (2023), The National Biodiversity Strategy and Action Plan of Japan 2023-2030, p. 68, "Protected areas in coastal and marine areas" (in Japanese).
[35] Calculated using the figures in the table on p. 2 of Related Material 1, "Status of Marine Protected Area Designation in Japan," of Ministry of the Environment (2018), "Approach to the Designation of Marine Protected Areas in Offshore Areas (Summary)" (in Japanese).
[36] Makino, M. (2020), op. cit., p. 50, Table 5.1.
[37] Refers to areas where harvesting is regulated and waters under voluntary restrictions. Makino, M. (2020), op. cit., p. 50, Table 5.1.

Table 2: List of Nationally Certified Sustainably Managed Natural Sites in Coastal Areas

Certification period	Name
FY2023 First half	• Yoshizaki Coast Kyosei Site • Seaweed beds on the artificial seawalls of the Kansai International Airport Islands • Hannan Seven Sea Forest • Odagahama beach in Imabari, Ehime
FY2023 Second half	• Kingdom of coastal creatures “Aioi bay” • Yamagawa Cradle of the Sea
FY2024 First half	• Satoyama, Satochi, Satoumi learn and live SAKIYAMA, Goto city • Setouchi Town The Sea of NERIYAKANAYA • Ishigaki Island Nosoko Umishobu Seagrass Colony Kyosei Site
FY2024 Second half	• Satoumi creation at Aomori Ekimae Beach • Hyogo Canal – waterways nurturing marine life – • Suma Coast “Suma Abundant Sea Project” • Nanki-Tanabe Shinjo Satoumi • Nakatsu tidal flat (Maite River Estuary Wetland) • Hyuga-Hiraiwa Kurome Kelp Sea Forest
FY2025 Round 1	• Omaezaki Port Kubisho Coast • Artificial Seaweed Beds off Shinto, Iwakuni City • Chichibugahama Beach[38] • Karatsu Kushiura Hometown Sea[38] • The village of tideland and Japanese killifish in NANAURA[38] • Ishigaki Island Coral Spawning Farm
FY2025 Round 2	• Gonoura Sea Forest Creation: “Nature Coexistence Project Starting from Seaweed Beds” • Satoumi Coral Forest (Naha Airport South Area)
FY2025 Round 3	• Muneage Beach • Oku-cho, Setouchi City: From the Blessings of Oysters to the Sea of the Future • Huis Ten Bosch • Goto Miiraku Satoumi
FY2026 Round 1	• Enoshima Satoumi Conservation Site

[38] A site covered by a certified “collaborative enhancement activity implementation plan” formulated and implemented by a local government.

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