

Area- capability

Promoting the Use of Local Resources



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Humanity and Nature

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Introduction

Since the United Nations Conference on the Human Environment was held in Stockholm in 1972, much research has been done to alarm the international community of global environmental risks. Following the conference, numerous actions were taken to solve the global environmental issues on local, national regional and world levels. Nearly all of these actions began as scientific evaluations and forecasts that simulated related aspects of the natural environment. Then, some restrictions of ecosystem services utilization are set in management and/or conservation of natural resources. Many people know about the risks of widespread environmental problems, and we have a lot of data and information on natural environments around the world, however, their circumstances are growing worse.

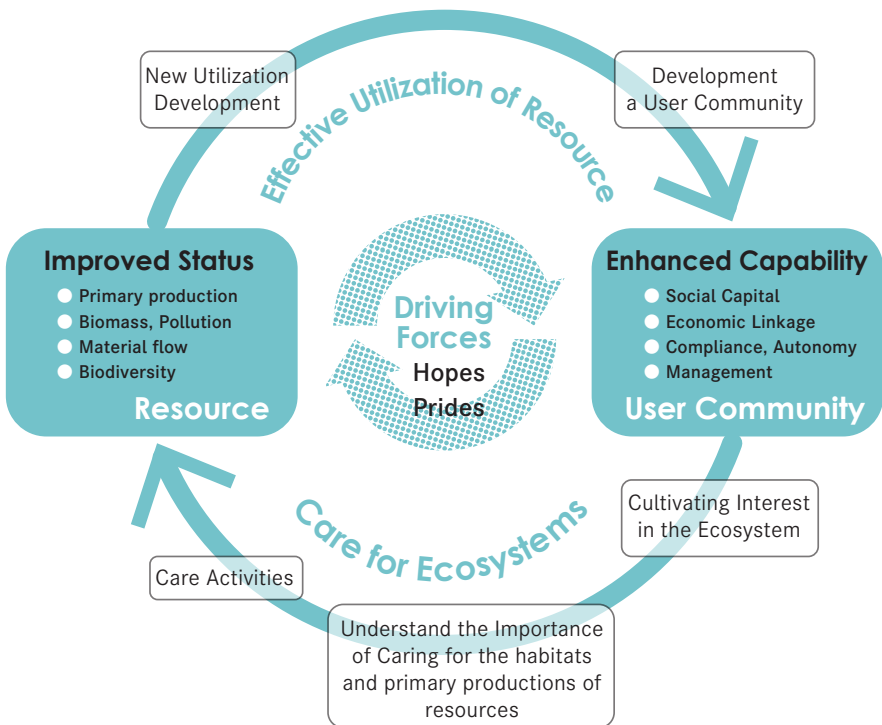
We searched for alternative ways to discussing global environmental degradation based on ordinary people's viewpoints. We investigated how daily activities can help solve environmental issues in rural areas where there is a lot of nature. Yet the people who live in rural zone of developing countries want to lead very convenient lives without deep thinking about the environment. Our challenge is to establish a way to implement regional sustainable development that takes regional cultures and environmental features into account, in order to meet local residents' hopes and interests.

Given the emphasis of recent regional development activities on

utilizing local characteristics, the scale and types of resources used and the nature of the activities are extremely diverse. That said, we found that efforts which have been able to continue sustainably and expanded in scope share the following elements: (1) A local community uses resource unique to the region; (2) Resource users understand the importance and take care of the environment that supports the resources used, and (3) A balance is struck between using and caring for resources and the supporting environment, which is evaluated by outside entities.

We believe these shared components are essential to sustainable development, and use the term “**Area-capability**” (**AC**) to refer to the set of factors that comprise these elements. We developed a conceptual map showing the relationship between these three aspects, which we refer to as the Area-capability Cycle (AC Cycle). We believe that the set of factors included in AC and the AC Cycle will be useful as a checklist when developing proposals for regional development and revitalization activities, assessing the balance between use and care, and clarifying the standpoint and role of each stakeholder when evaluating projects. The principles behind AC are discussed in detail below.

Area-capability Cycle



*Area-capability (AC):
Preconditions for
sustainable regional
development*

1 **Existence of a local community that utilizes a local resource unique to the region**

In AC, regions are revitalized by pinpointing the strengths and identifying products and lifestyle that are unique to a given region, and utilizing these in the local community. In other words, rather than “dealing with each of the problems facing a given region individual,” the approach is taken to revitalize regions by increasing opportunities to conduct regional activities using local resources, which, as a result, leads to resolution of individual problems.

Resource utilization involves three things: (1) the (re-)discovery of a local resource, (2) the development (introduction) of a new technology/system, and (3) the formation of a community. These three are interrelated, and it is just as likely for resource utilization to begin with the introduction of new technology as it is to begin with the formation of a community. That said, it is important that a single user community is organized for a single local resource and that the community remains open to the local community (in other words, any local resident is able to freely join or leave the community at any point in time). When local residents discover a local resource on their own, a sense of ownership is fostered, and utilization of the resource as a community ensures transparency.

2 Resource users understand the importance of and take care of the environment that supports the resource utilized

In addition to community-centered resource utilization, what is important in terms of AC is that the members of the resource user community “care” for the resource and the environment that supports it. Biological resources are often said to be renewable resources. In reality, however, any resource will deteriorate and eventually be exhausted if it is unilaterally exploited. In AC, “care” entails three factors: 1) having an interest in and being concerned about the well-being of the resource and the environment or ecosystem that supports it, 2) understanding the importance of and taking steps to preserve the resource and environment, and 3) actually carrying out conservation activities. The reason why we use the term “care” here rather than “resource management,” which implies restricting the use of a given resource, is because we feel that “being concerned about” and directly “treating” the environment that supports the resource are important aspects of the resource users’ relationship with the resource. Furthermore, we intentionally use the term “care” because we feel that it is important that the resource users perceive the resource and supporting environment not as something to be managed but, rather, as something integral to their own lives.

3 Striking a balance between utilizing and caring for resources and the supporting environment that can be evaluated by outside entities

Before AC activities that include both the utilization and care for resources can begin, it is necessary to generate anticipation and interest in such new activities among the local residents. In terms of the AC Cycle, we refer to this as “incentive.” No community revitalization can occur if this incentive does not exist. Furthermore, even if there is incentive and activities are started, in order for the activity to be sustainable, there must be a “driving force.” We believe that this driving force consists of “pride and sense of camaraderie regarding the activity and love of the region.” Energizing this driving force accelerates the AC Cycle and increases the vitality of the activity.

In order to energize the driving force for regional development, it is important for individual participants in the resource user community to feel that their lives have been enriched by using the resource in question. Here, “enrichment” does not simply mean financial gain but, rather, includes the formation of a foundation for the discovery of other resources, the formation of new user communities, and the development of diverse AC Cycles. At the same time, it is important that the state of the resource and the supporting environment (≡ ecosystem) be improved through “care,” and for this to be widely known. This is

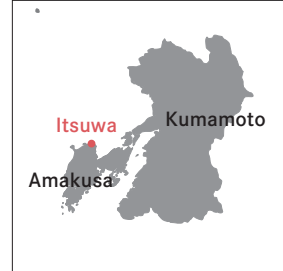
because local activities that are harmonized with the environment not only increase the pride and confidence of the participating residents but, also, contribute to regional branding. To this end, it is necessary to have outside researchers and experts evaluate the improvements in the resource and environment. This is the aspect of AC in which industry-government-academia cooperation is most important.

The importance of industry-government-academia cooperation has, of course, been pointed out before now. In the AC Cycle, the role and position of each contributor—industry (resource user community), government (public sector), and academia (experts)—can be clearly demarcated, and cooperation can proceed while understanding the different positions of each contributor. Accordingly, when designing regional activities, it is also important to plan for coordinating with and having objective evaluation performed by outside experts. Along with the fundamental principle of local resource utilization by local communities, we believe that one of the important elements of AC is the establishment of system for coordinating government, outside experts, and local communities.

Case 1

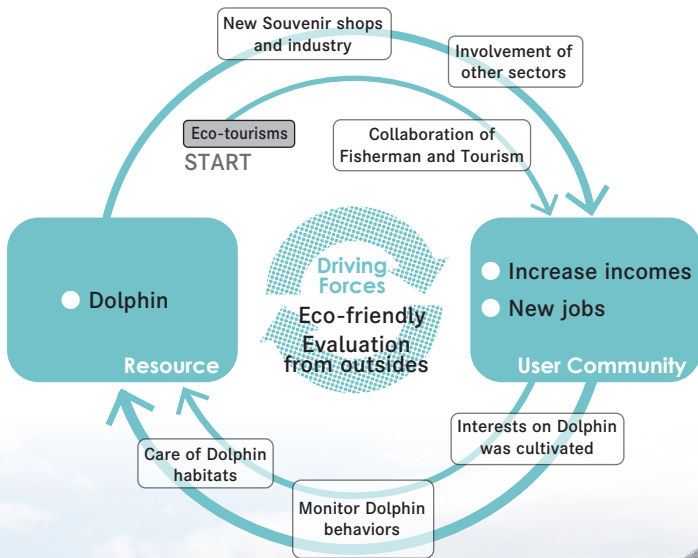
Dolphin watching

in Itsuwa-Machi in Amakusa City, Kumamoto Prefecture



Dolphin watching in Itsuwa-Machi was the brainchild of Hidenori Nagaoka, who moved to Itsuwa in 1993. Nagaoka, who was moved by seeing dolphins first hand, proposed dolphin watching to local fishermen as a means of community revitalization. The Itsuwa area had always been home to several hundred bottlenose dolphin, and their presence was taken for granted by the local residents, so no one had even considered the idea that they could be a tourism resource. In fact, to the fisherman, the dolphins, which ate the same fish they were after, were even considered enemies. For this reason, only five fishermen agreed in the beginning to offer dolphin watching tours. However, as the number of tourists steadily grew from year to year, the residents began to recognize that the dolphins were a resource for tourism, and the number of individuals engaging in dolphin watching businesses and gift shops increased. If we consider these changes in terms of the AC Cycle, the new means of

resource utilization in the form of dolphin watching led to the creation of a new community of fishermen and tourist business operators, and the dolphins went from being ubiquitous enemies of fishing to an important local resource for Itsuwa. In addition, the transformation of dolphins into a resource caused fishermen to dramatically change their feelings toward dolphins and to deepen their understanding of the dolphins' ecology. Furthermore, the fishermen have made an effort to ensure a high rate of encounters with dolphins by taking steps to care for the dolphins and their habitat. This, in turn, has contributed to the branding of sustainable dolphin watching.



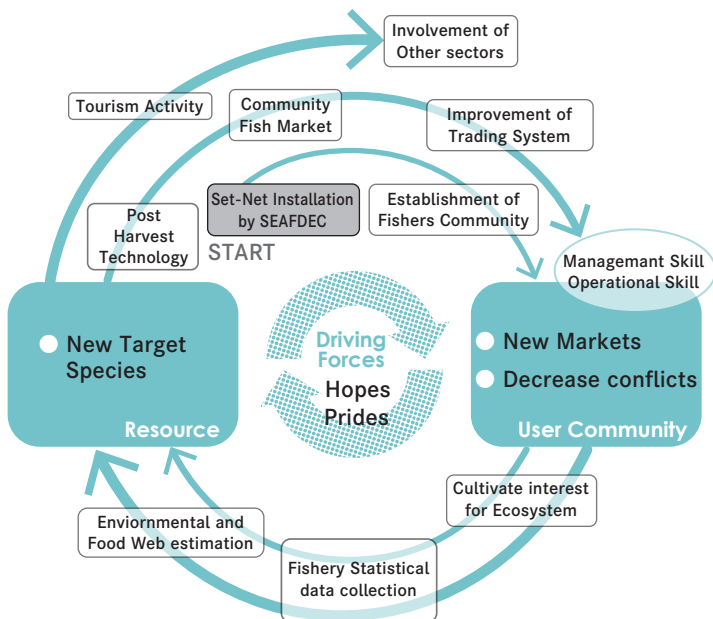
Case 2

Village-based set-net fishing in Rayong Province, Thailand



The adoption of set-net fishing technology in Rayong Province, Thailand is a prime example of the creation of a new community as a result of new resource utilization enabled by the introduction of outside technology. Small scale fishing in the form of basket fishing and spear fishing and commercial fishing using round haul netter boats had long been practiced in the area, which resulted in conflicts regarding coastal fishing rights. In order to reduce conflicts among fishermen and to gather information needed for resource management, an international organization named the Southeast Asian Fisheries Development Center (SEAFDEC) headquartered in Bangkok, Thailand decided to introduce set-net fishing technology modeled after the village-based set-net system used in Himi City, Japan. To introduce set-net fishing, the SEAFDEC staff first contacted local small-scale fishermen and created a fishermen's organization to manage the set-net, after which they provided technical support and materials to the fishermen's organization. The catch in the first year was not very good. However, the catch was improved

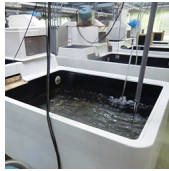
the following year thanks to the provision of technical instruction and better fishing gear. A cooperative sellers' market synced to the fishing operations was established, and the economic foundation and management skills were strengthened. As a result of this support, by the third year, there was no longer a need to rely on subsidies or research funds. Similarly, in terms of personnel, the set nets could be managed entirely by the fishermen's organization. In this case, the introduction of set-net fishing transformed large fish and various fish species that were previously inaccessible to the shore-based small-scale fishermen into a local resource for the user community of set-net fishermen. This new resource utilization, in turn, has become the driving force for a sustainable community. The cooperative marketing and fishing operations have strengthened local human resources and have stimulated interaction among local residents, opening up the possibility for other activities. These community activities have since spawned tourism and environmental education programs based around the set nets.



Case 3

Tiger prawn aquaculture in Lake Hamana

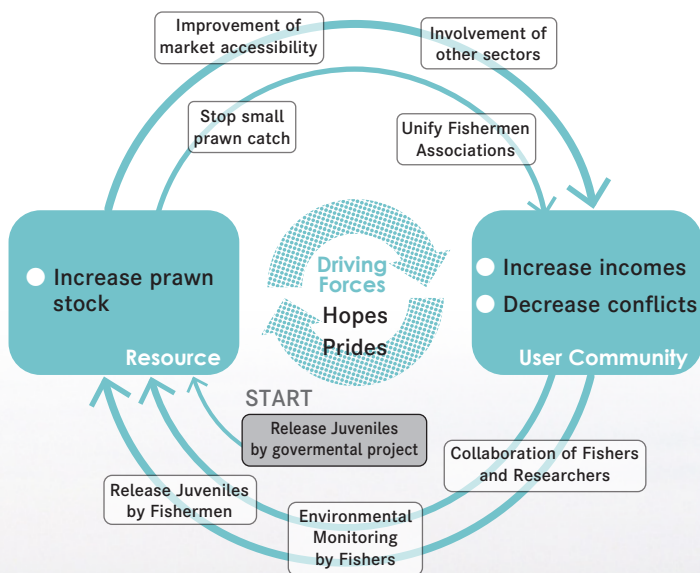
Nursery tanks for fingerlings at fisheries research institute of Shizuoka Prefecture



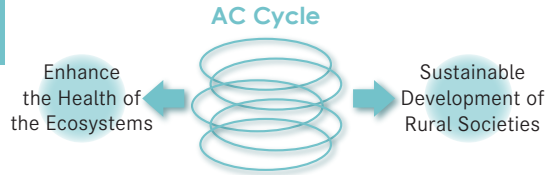
During Japan's period of rapid of economic growth in which the nation was fixated on the growth of heavy industry, much of the seashore was landfilled and reclaimed. With the loss of spawning and breeding grounds, natural fisheries resources (supply services and fundamental services provided by coastal ecosystems) deteriorated rapidly. To compensate for the lost reproductive capacity of the coastal ecosystem, the government decided to stock (raise and release) fish species important to the fisheries industry. This was the start of the aquaculture. Aquaculture research centers were established in each prefecture and began breeding and releasing hatchery-raised fish. In Shizuoka Prefecture, an aquaculture research center was established on Lake Hamana, which began stocking tiger prawns in 1980. The tiger prawn stocking program, which began as a top-down public works project, was not accepted by the local fishermen and received absolutely no cooperation from the local residents who did not believe stocking would be effective. Undaunted, the staff of the Shizuoka Prefecture Aquaculture Research Center persisted in collecting data for resource evaluation, researching aquaculture technology, conducting environmental surveys to identify suitable stocking sites, and continued to

breed and stock tiger prawns, if only in small quantities. The young people of Shirasu village, who had watched the center’s efforts in their own community, began to cooperate. With local support, the stocking of hatchery-raised tiger prawns increased dramatically. In turn, the increased harvest of small prawns resulting from this mass stocking opened the eyes of local fishermen to the potential of stocking prawns and led more and more fishermen to participate in each successive release. This series of changes aptly illustrates the AC Cycle: the obvious effectiveness of stocking heightened the fishermen’s interest in the resource and supporting environment and promoted understanding of the importance of caring for the resource.

Thereafter, fishermen in the Lake Hamana area solidified as a community through the stocking of tiger prawns, and even went on to revise fishing regulations and improve distribution methods to more effectively use the tiger prawns, which they themselves had stocked. It is because so many local residents have come to participate and take action of their own accord that the community has succeeded in augmenting its resource.



Using the AC Cycle as a Development Index



Up to this point, we have discussed the principle underlying AC and the AC Cycle. As can be seen from the cases above, one AC Cycle can be drawn for each local resource. In other words, for a region with multiple resources, as many AC Cycles can be drawn as there are resources. Meanwhile, in the case of AC, one user community is responsible for the use of one local resource. For this reason, the existence of many AC Cycles means the existence of the same number of local user communities. Since each community is open to the people in the region, it is possible for new members to join an existing community and for members of a given community to leave whenever they choose. Furthermore, an individual may participate in multiple communities. Such changes notwithstanding, the existence of multiple communities means that individuals have that many more opportunities to interact and exchange information with others, which should facilitate cooperation among local residents in various contexts.

In other words, we believe the number of AC Cycles is an indicator of the abundance of local resources in a given region and, at the same time, an indicator of the potential for various types of cooperation. As such, we suggest that the number of AC Cycles could be used as an index for regional development.

GLOSSARY

Local resources

In AC, emphasis is placed on resources in a given region and that are related to the natural environment or culture of the region. The dolphins of Itsuwa (wild animals) and the tiger pawns in Lake Hamana (fisheries resources and stocking) are prime examples of local resources that are directly connected to a region's natural environment and culture (livelihood). The set-net fishing (technique/system) being used in Rayong Province, Thailand is an example of a new means of resource utilization introduced from the outside. In this case, a fisheries resource that had not previously been used (or could not be used) was rendered usable as a local resource through the introduction of new technology.

Local resources in the context of AC link people together to create local communities, and comprise all of the objects and elements that are used by members of the community. In the case of the fixed nets, for example, the technique itself can be thought of as a local

resource. In Himi City, Toyama Prefecture, set-net fishing is considered a part of the local culture and is being used as a means for invigorating the local economy. A community centered around the fixed nets has been formed through cooperation between set-net manufacturers, distributors, processors, and fishermen. In this case, the set-net fishing operation itself can be considered the local resource. Ease of living in a town, neighbor relationships, or roadside stations, which have recently received much attention as potential catalysts for regional revitalization, could become the focal point for the formation of communities. If that is the case, they could also be local resources. That said, in the case of rural villages (agricultural, mountain, and fishing villages), the bounty of nature is most likely to become the source of a local resource. As such, we believe that an effective strategy for identifying a local resource is to first look among the various ecosystem services provided by nature.

Local communities

Typically, neighborhood councils and administrative districts serve as the basis for local communities. In terms of AC, however, communities do not necessarily

coincide with these administrative divisions. Local communities comprise the group of individuals that utilize and care for a given local resource. It is also

GLOSSARY

important that members of the community communicate with each other on a daily basis. As such, in a society with advanced IT and communication technology, it may not be necessary for community members

to reside in a given area. Finally, multiple local resources can exist in a given region, and the identification and utilization of as many of these local resources as possible enhances the region's overall potential.

Region ≐ Area

The goal of AC is sustainable regional development. As explained above, “region” in the context of AC does not necessarily coincide with administrative divisions or traditional villages. We believe that “region ≐ area” should be defined as the area in which residents are able to gather, work together, and improve their lives through the utilization and care of a local resource.

The extent of a region can vary depending on the nature of the local resource or the local community. In addition, an individual can belong to multiple local communities. We believe that the modalities of different resources and the different ways in which individuals interact with these resources will lead to the creation of new “regions.”

References

- Satoshi ISHIKAWA, Dec. 2009, Challenging Project for sustainable use of coastal fisheries resources in Southeast Asia- New concept “Area Capability”. JSPS – NRCT Seminar 2009, Proceeding :52-53.
- Satoshi ISHIKAWA, Mar. 2010, Utilization and management of fisheries resources in coastal area of Thailand, International Cooperation in Agriculture, Vol.11, 125-135 (in Japanese).
- Satoshi ISHIKAWA, Dec. 2012, Co-design, Co-produce of local people, researchers, and governments for sustainable rural development in Southeast Asian Coastal zone. Proceeding of the 4th Tohoku University G-COE 4th forum “Interface between Science and Policy”, Sendai, Miyagi.
- Satoshi ISHIKAWA, Mar. 2014, Decision-making process at local coastal communities based on scientific information on biodiversity and ecosystem services. Abstract of Symposium by The Ecological Society of Japan “Global and regional integration of social-ecological study toward sustainable use of biodiversity and ecosystem services”, Kagoshima University, Kagoshima.

- Kazuo WATANABE, Jun. 2014, The Area Capability Index: Measuring the Potentiality of Coastal Area in Southeast Asia. Abstract of spring meeting of the Japan society for international development, 62p, June 2014, Doshisha University, Kyoto.
- Satoshi ISHIKAWA, Sept. 2014, How can researchers contribute to promote local institutional ecosystem governance in the coastal zone of Asia?. Proceeding of JSPS Symposium Program “Long-term Sustainability through Place-based, Small-scale economies”, The Center for Japanese Studies, UC Berkeley.
- Satoshi ISHIKAWA, Oct. 2014, Capability for resource managements in tropical coastal areas. Abstract of the symposium of the Japanese Agricultural Systems Society, “System Approaches to Solve the Environmental Problems in the Global Scales”, Kyoto University, Sakyo-ku, Kyoto (in Japanese) .
- Satoshi ISHIKAWA, Dec. 2014, International dissemination of “Tsukuru-Gyogyo”- A case study of shrimp stock enhancement in Philippines. *BIOSTORY* 22: 62-63 (in Japanese).
- Satoshi ISHIKAWA, Kazuo WATANABE, Hiroshi FUSHIMI, Hisashi KUROKURA, Takafumi ARIMOTO, Mar. 2015, Area-capability enhancement for fisheries village development, Program and Abstract of the Japanese Society of Fisheries Science spring meeting 2015, 154p, Minato-ku, Tokyo.
- Satoshi ISHIKAWA, Kazuo WATANABE, Yasuyuki KONO, Mar. 2015, Coastal development based on Area-capability cycle, Program and Abstract of the Japanese Society of Fisheries Science spring meeting 2015, 181p, Minato-ku, Tokyo.
- Satoshi ISHIKAWA, Kazuo WATANABE, April 2015, Concept design of Area-capability and Area-capability cycle. Project interim Report of Coastal Area Capability Enhancement in Southeast Asia of RIHN, pp: 3-11 (in Japanese).
- Satoshi ISHIKAWA, Kazuo WATANABE, Yuttana THEPAROONRAT, Taweekiet AMORNPIYAKRIT, Nopporn MANAJIT, Nakaret YASOOK, and Sukchai ARNUPAPBOON, Jun. 2015, Balancing Fishery Resource Utilization and Conservation for Environmental Sustainability and Socio-economic Stability. *Fish for the People* 13(1) :13-20. ISSN:1685-6546.
- Satoshi ISHIKAWA, Mina HORI, Hisashi KUROKURA, 2015, A strategy for fisheries resources management in Southeast Asia: A case study of an inland fishery around Tonle Sap Lake in Cambodia. *Aqua-BioScience Monographs*, (in press).

Participating Organization *in random order

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(in Japan) Hokkaido University/ Miyagigakuin Women’s University/ Yamagata University/ University of Tsukuba/ Tokyo University of Marine Science and Technology/ The University of Tokyo/ Seijo University/ National Research Institute for Fisheries Science/ Tokai University/ Tokoha University/ Kyoto University/ Research Institute for Humanity and Nature/ Kochi University/ Hiroshima University/ Fukuyama University/ National Fisheries University/ Kagoshima University/ National Museum of Nature and Science/ Okinawa Prefectural Museum & Art Museum/ Nishio City Office/ Higashihazu Fisheries Cooperative/ Ishigaki City Office

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