Comparative Study of National Parks in East Asia as Environmental Education Institutions

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Abstract

The purpose of this study is to propose the characteristics of environmental education in national parks in East Asia by clarifying commonalities and differences in environmental education in the national parks of Japan, Korea, and Taiwan. We compared these characteristics from the perspective of nature administration within the national parks and collaborative management with residents, which is a requirement of the parks in East Asia.

First, we confirmed that national park administrations in the three countries are engaged in activities geared toward collaborative management that harmonizes environmental conservation and the local economies. Second, we examined the promotion of environmental education and confirmed that the roles of the national park administrations in the three countries differ in matters concerning environmental education. Third, we examined the structure of environmental education and confirmed that in all three countries, the residents of the national parks are essential stakeholders in the management of park areas for which environmental education had been developed.

In summary, we found that although the roles of the national park administrations differ in the three countries, they share the common goal of promoting collaborative national park management and are developing a collaborative environmental education approach.

Keywords: Collaborative Management, Community-based Environmental Education, Participation of Residents

I. Purpose and Background

Since Yellowstone was designated as the first national park in the US in 1872, the national park system spread throughout the world. In the modern era, park management was carried out in order to preserve the natural ecosystem, environment, cultural and historical heritage (Korea National Park Service 2019). As of 2018, there are 22 national parks in Korea, 31 in Japan, and 9 in Taiwan (Korea National Park Service 2019, Ministry of the Environment 2019, Ministry of the Interior 2019a).

East Asian countries have been engaged in a growing discussion on nature conservation in national parks. For example, the first Asia Parks Congress (APC) was held in Japan in 2013. Furthermore, the International Union for Conservation of Nature (IUCN) has published "A Regional Action Plan for Protected Areas in East Asia," (MacKinnon and Yan 2008) and each Asian country is a signatory to the Asia Protected Area Partnership.

Compared with the West, Asia has a different approach toward biodiversity conservation (IUCN 2013) and follows a conservation idea based on symbiosis with nature. This concept of conservation calls for the development of a nature conservation area system where nature and humans can coexist symbiotically (Toyoda 2015). Furthermore, the need for collaborative approaches for the management of natural resources has increased in recent years. In Japan, Korea, and Taiwan, national parks conserve not only pristine natural areas but also areas that are impacted by humans, which means land ownership and land use can vary within the national parks. Therefore, national parks include areas where both primeval nature and the culture of local residents are preserved within a mutually beneficial relationship.

Thus, to realize appropriate management of national parks for preservation of nature in East Asia, it is important that people inside and outside the parks gain a deep understanding of nature conservation through environmental education. In the working group of the first APC, discussions were held on the need for a type of environmental

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education that respects both local natural and cultural values (Kaizu 2014). According to Myers and Park (2013), the educational activities in national parks can be understood as one of the appropriate means to balance its diverse purposes.

Regarding international comparative studies on national parks, the literature contains papers on the state of establishment of national parks by Yui and Furuya (1997) and national park systems by Tanaka (2012), and Tsuchiya (2014).

However, few studies have focused on environmental education in national parks (Kim et al. 1998, Myers and Park 2013). There are also few international studies that have focused on national parks in East Asian countries in response to the growing discussions on the topic of national parks in East Asia. Therefore, it is necessary to develop research on national park management peculiar to East Asia and the environmental education that supports it. As a first step toward achieving that goal, this study proposes important characteristics for environmental education in national parks in East Asia by clarifying commonalities and differences in current environmental education in the national parks of Japan, Korea, and Taiwan. To achieve the objectives of this research, we selected examples and events that characterize the methods and content of environmental education in national parks in each country. From the perspective of nature administration within the national parks and collaborative management with residents, which is required in the national parks of East Asia, we compared the situation currently existing in the national parks in each country and the characteristics of the environmental education being conducted in these national parks.

II. Multilayered Structure of Environmental Education in a Japanese National Park

1. General Introduction to Japanese National Parks and Environmental Education Offered by Japan National Parks

The national park system in Japan was introduced after the enactment of the National Park Law in 1931. Currently, Japan has 31 national parks with a cumulative area of about 2.1 million hectares; private property within national parks is 25.8% of the total area.

At the beginning of the national park system, only the visual environment, that is, natural scenery, was subject to conservation. However, the subjects of conservation have now expanded to include the ecological environment—animals, plants, habitats, and biodiversity. Furthermore, in recent years, not only wild nature but also nature that has been developed through prolonged human influence is subject to conservation because of the growing importance of ecotourism. Consequently, environmental education is provided in national parks under various themes.

Furthermore, joint management of national parks in Japan by local residents together with park managers is indispensable for environmental conservation. Environmental education in national parks is therefore limited not only to visitors but also covers local residents in order to cultivate their environmental awareness. Additionally, in collaboration with local schools, exchange activities involving local adults, children, and environment experts are also organized. These actions are carried out through surveys on the natural environment in national parks and by sharing the results of the survey with exchange participants.

It is worth noting that environmental education in Japan's national parks has been developed by various stakeholders: non-profit organizations (NPO); local governments; Ministry of the Environment, Government of Japan; local residents' groups.

2. Movement for the Collaborative Management of Nature through Environmental Education in a Japanese National Park

Among Japan's national parks, a bottom-up type of environmental education—developed by various organizations—is practiced at the San'in Coast National Park, where NPOs and local governments are the main promoters of environmental education.

The San'in Coast National Park encompasses a 75-km-long stretch of the Sea of Japan coastline. The eastern part of the park, which is managed by the Takeno Ranger Office (Japanese Ministry of the Environment), has a vast waterside landscape including a sea cave, the Maruyama River, and Kumihama Bay. Oriental white storks, which

were once extinct in Japan, inhabit the area surrounding the Maruyama River. Within the national park, the natural seaside areas are designated as conservation areas, and adjacent areas that have been artificially developed are designated as ordinary areas.

The Takeno Snorkel Center, which serves as a visitor center and is under direct management of the Ministry of the Environment, is one of several centers that offer environmental education in the park. The center conducts environmental education programs including leisure activities, sea creature observation tours, and snorkeling tours, which allow visitors to explore the rich natural land- and seascapes. These environmental education programs are delivered by expert park residents, who highlight the importance of the flora and fauna of the parks through commentaries about and observation of nature.

Environmental education is also offered through nature schools and NPOs in the beach areas of the park. For example, Tajima Sea School (NPO) offers environmental education for elementary school students that involves observation tours of the sea and local environment. In addition, the school also conducts an annual survey of the debris deposited on the beach and organizes beach cleanups in conjunction with local elementary schools, divers, anglers, kayaking enthusiasts, and residents who regularly visit the coast (Imai 2016).

In ordinary areas, NPOs and local governments are also the main promoters of environmental education. In Toyooka city, which is located on the banks of the Maruyama River, the local government has established the Toyooka Environmental Economic Strategy as part of their efforts to develop a region where environmental conservation and the local economy work in harmony. In addition, the local government is working on an environmental education project for children to support and develop future leaders for the project for the reintroduction of the Oriental white stork.

Toshima wetland is one of the ordinary areas in which the Oriental white stork is being reintroduced. The wetland is managed by the NPO Wetland Net. The purpose of the NPO is to expand and conserve the wetlands that serve as a feeding ground for the stork in conjunction with farmers, residents, and the park administration. The NPO conducts activities to ensure that local children are familiar with nature through environmental learning programs about the stork and wetlands, and that they experience activities related to wetland conservation.

Thus, the environmental education offered by the national park is characterized by a multi-layer approach, with various entities carrying out different activities and roles. One of the reasons for this approach toward environmental education is because the park is protected under both the Natural Parks Act and the Natural Park Plan. The objective is to develop sustainable nature utilization through environmental education and ecotourism. Although the Ministry of the Environment does not directly oversee the environmental education programs offered by national parks, it is on an equal footing with other environmental education practitioners.

To ensure the success of this collaborative approach, the Ministry of the Environment is supporting local residents to take leading roles. The Takeno Ranger Office conducts environmental volunteer training lectures for local residents and supports the cleanup activities organized by the environmental NPOs. Further, environmental education in the national park, including in the ordinary areas, is also supported by the local government and NPOs.

In summary, environmental education in the San'in Coast National Park is supported at multiple levels by various entities including the Ministry of the Environment, local government, NPOs, and local residents, with each playing different roles in the overall conservation effort. These activities are developing concurrently within and outside the park, and the hope is that the spread of environmental education will prompt the transmission of knowledge regarding sustainable natural resource management to all of the park's stakeholders.

III. Changing the Structure of Environmental Education in South Korean National Parks

1. General Introduction to Korean National Parks and Environmental Education Offered

South Korea began designating national parks pursuant to the Parks Act enacted in 1967. As of 2018, there were a total of 22 national parks covering an area of 6,726 km². The national parks are categorized as nature preservation areas, natural environment areas, cultural heritage areas, and village areas, with each type of area being managed differently. Three of the categories, except for nature preservation areas, include areas where both primeval nature

and the living culture of local residents are being preserved in a mutually beneficial relationship.

To minimize inconvenience for local residents, ninety percent of villages within South Korean national parks are not managed by the Korea National Park Service (KNPS). However, there are areas where the interests of local residents conflict with the needs of the national parks (Lee and Lee 2002). To address this issue, the Park Service is working not only to preserve local ecosystems but also to reinvigorate these villages through projects such as the Myeongpum Maeul (Village of Excellence) program. The Park Service also continues to provide learning opportunities, such as the National Park Citizens' Academy, to help people understand life in the villages in the national parks.

As of July 2018, there are 281 educational programs offered by South Korean national parks, which can be roughly classified into the following types: programs on field guidance, ecotourism, history and culture, and natural ecology; experiential education programs for future jobs related to national parks; environmental education programs certified by the South Korean Ministry of Environment; and the Health Nanuri Camp. There is also the National Park Citizens' Academy, which educates local residents, and the National Park Ranger Program for Conservation. In addition, four national parks offer ecological experience programs that focus on the natural and cultural assets of the parks as well as their problems and needs. These environmental education programs are described on the KNPS website to allow visitors to choose the one that best suits them. Environmental education programs incorporating characteristics unique to a specific national park are continuously being developed, some of which have developed into stable, trusted programs and have received certification by the Ministry of Environment.

One characteristic of environmental education in national parks in South Korea is that there are national parks which have established nature centers (Ggum-an-deul) for the promotion of environmental education in the national parks. The national parks which operate nature centers are Bukhansan, Jirisan, Sobaeksan, and Seoraksan National Parks. Bukhansan National Park, a mountain located in the metropolitan city of Seoul, offers programs on the theme of the national park being an area of relaxation for urban dwellers with titles such as "Ecological Steps in Pursuit of Rest," "Brunch Ecological Trip," and "Urban Ecological Trip," as well as programs linked to school curricula and the government's "free learning semester" and the Junior Ranger program.

Jirisan National Park offers environmental education programs that focus on the region's unique characteristics including its history, culture, and scenery, with program titles such as "History of Thousand Years: Following the Footsteps of our Ancestors" and "Themed Travel to Search for the Magnificent Scenery of Jirisan Mountain." Sobaeksan National Park offers programs on the themes of nature and humans living together in harmony and the wisdom of nature, as well as programs using the fox, its mascot species, as the subject matter. Seoraksan National Park offers programs tailored to the needs of different target audiences (*i.e.*, school children or adults) with titles such as "Baekdudaegan Exploration" (Seoraksan is one of the mountains in the Baekdudaegan mountain range) and "The Story of Rocks," and organizes the Bindungbindung (Idling) Camp for visitors to stay overnight in the park.

2. Movement for the Collaborative Management of Nature through Environmental Education in Korean National Parks

The environmental education programs currently offered by South Korean national parks encompass a wide range of scopes and goals, including the promotion of ecotourism, natural ecological education, the promotion of personal healing and eco-welfare, training for professionals, conservation activities, and training and education for local residents. However, this was not always the case. Until recently, the national parks focused only on ecology and conservation education, but they are now gradually expanding the diversity of their educational programs to include ecotourism based on eco-welfare, rest, and the invigoration of the local economy, as well as hiking classes and safe hiking programs designed to change the culture of national park visitors. They are also targeting a more diverse range of trainees by developing training programs for professionals and teachers.

The change in focus of the environmental education offered by South Korea national parks was evident at the Promise between Nature and Humans for Sustainable Development workshop held by the Korea National Park Service in 2015. At the workshop the Park Service, government, private sector, and experts discussed the future strategy for national parks. It was explained that the aim is to create an atmosphere of communication and cooperation among

the national parks' various stakeholders, and the commitment of the Park Service to a collaborative management approach for the development of the national parks was confirmed (Korea National Park Service 2015).

In this way, the Korea National Park Service is seeking to break away from environmental education that is focused only on the visitors to the parks and instead seeks to enhance sustainable development and emphasize the local characteristics of each national park by building a mutually beneficial relationship with the residents of the villages within the parks. Indeed, national park villagers who have attended the National Park Citizens' College understand the importance of the national parks and have begun adopting roles as conservation leaders to ensure that the national parks are handed down to future generations. In addition, the villagers participating in the Myeongpum Maeul (Village of Excellence) program hope to reinvigorate both the economic and cultural aspects of their villages, demonstrating that it is possible to achieve both regional development and conservation.

IV. Environmental Education as a Way to Connect Residents and Park Administration in a Taiwanese National Park

1. General Introduction to Taiwanese National Parks and Environmental Education Offered

Taiwan's Environmental Education Act is a compelling law. According to the Act, all government officials, school students, teachers, and others are required to take environmental education programs for at least four hours annually. Outdoor learning, which is one of the methods of environmental education prescribed by the law, must be arranged at a selected environmental education facility. Thus far, 139 places have been designated as "selected environmental education facilities." Among them, national parks have experts for promoting environmental education and allow direct contact between people and nature. Since the "National Park Law" was enacted in Taiwan in 1972, nine national parks have been established. The national parks have a total area of about 7,489 km². The results of a 2017 survey on national parks revealed that 21.85 million people visited the national parks, and 8.33 million people used the nature observation service at the visitor center in each national park.

The national parks in Taiwan have a vision for promoting environmental education through collaboration with schools and communities (Ministry of the Interior 2019b). Moreover, for further development of environmental education, the National Park Headquarters (NPH) has established the Interpretation and Education Section, which is responsible for visitor center exhibitions, interpretation services, booklet production, promotion of ecological conservation, and environmental education.

Taiwan's national parks provide environmental education programs through direct contact with nature as well as through an e-learning platform. The park staff are also trained to deliver environmental education classes in schools.

2. Movement for the Collaborative Management of Nature through Environmental Education in a Taiwanese National Park

Among the national parks in Taiwan, Taijiang National Park particularly focuses on environmental education. Taijiang National Park, designated in 2009, is a wetland-dominated national park and the only national park in Taiwan that possesses a rich cultural history, established ecological conservation efforts, and its own industry. The park was specifically designated for the promotion of environmental education, and to this end a center for environmental preservation and learning was established. Through interactions with local residents, the national park's management aims to build connections between the local ecosystems and economy with local ecosystems.

The Taijiang National Park Service Administration communicates with local communities to improve environmental awareness through environmental education initiatives. For this reason, the center established an Environmental Education Volunteer Department. The park administration has also developed a learning program to enhance the quality of environmental education volunteers. In this program, candidate volunteers attend a five-day lecture series on topics such as the park itself, environmental education, and environmental education teaching methodologies. After attending the seminar, the candidate volunteers are able to enter an internship program in which they learn more about environmental education, and candidates who pass the final exam are then permitted to become volunteers. To maintain the quality of environmental education, the volunteers are expected to work on

environmental education programs for 80 hours per year. This program ensures a high standard of environmental education in the park.

The hub of environmental education at Taijiang National Park is the Taijiang Wetland School Environmental Education Center, which delivered a total of 219 environmental education programs to 9,126 participants between 2016 and 2017. The purpose of this center is to establish harmony between humans and the environment by educating people on the concept of ecological conservation. This purpose is achieved through the utilization of natural ecosystems and human resources in the national park, connecting local knowledge and innovative thinking, and creating a place of high-quality environmental education. To create and deliver these programs, the environmental education center created an educational network comprising local schools, non-governmental organizations, and universities.

In its collaboration with local schools, the center worked with teachers to educate them about the importance of the wetlands, which had been neglected in the area, and asked for cooperation in the creation and delivery of wetland environmental education programs. As a result, an educational network comprising 11 local schools was established in 2011. The center then conducted a workshop to inform teachers about the types of programs, the purpose of wetland environmental education, and how to make children aware of the wetland conservation efforts. After the workshop, the teachers formulated their own programs. In total, there are four community-based environmental education programs that were created by the network of local communities.

For example, to create a community-based environmental education program that utilizes the area's various resources as teaching materials, the teachers surveyed local resources and sightseeing locations and made additions to existing education materials as well as prepared handbooks on local plants and animals, such as the Black-faced spoonbill, which overwinters in the wetlands.

Another example of the programs offered is the "Half Day Fisherman Experience" in which participants learn about the aquaculture industry in the national park and local fishermen serve as lecturers (Taijiang National Park Service Administration 2013). The aim of the program is to help participants understand the relationship between the environment and the aquaculture industry, and to consider the sustainable use of marine resources by connecting the food we eat with the world's marine resources.

Furthermore, to expand environmental education that utilizes the resources of the national park, the environmental education center presents lectures for teachers in local schools, and offers an individualized environmental education program tied to each school's curriculum.

Environmental education in Taijiang National Park has become a platform that connects the park with various community groups and organizations. The environmental education center does not develop curricula themselves, but instead they develop them in cooperation with local teachers, residents, and experts. In addition, the park administration provides an extensive training program for the volunteers who deliver the environmental education programs. Environmental education, therefore, acts as a platform that connects schools, local residents, and the Taijiang National Park Service Administration.

V. Discussion and Conclusions

Here, we compare the environmental education systems in national parks in three countries in East Asia. First, we confirmed that the administrations of the national parks of the three countries are aiming to balance nature conservation with local economic activity. In Japan, Toyooka City has formulated the Toyooka Environmental Economic Strategy to develop a region where both environmental conservation and the local economy are in harmony. In Korea, projects to rejuvenate the villages within the national parks are being undertaken and the park administrations promise that all Korean national parks will be based on their local areas. In Taiwan, residents of the Taijiang National Park are conducting aquaculture.

Secondly, we examined the promotion of environmental education in the three countries and confirmed that the different roles the national park administrations play in environmental education. In Japan, the San'in Coast National Park administration has created a multilayered environmental education system jointly with environmental

conservation NPOs and the local government. In Korea, the administrations are leading a shift in the orientation of environmental education in the national parks. In Taiwan, the Taijiang National Park administration promotes environmental education in the national park and develops environmental education programs in conjunction with residents based on the local environmental, cultural, and industrial resources.

Thirdly, we examined the underlying structure of environmental education in the three countries. In all three countries, park residents are important stakeholders in the parks' management, particularly with regard to the development and promotion of environmental education. Through volunteer training programs, environmental education is being developed to improve residents' understanding of the needs of national parks. Community-based environmental education is also being delivered in the national parks. In Japan, the San'in Coast National Park administration together with various NPOs and civil society organizations have developed a range of environmental education programs within the national park, which has produced a multilayered approach to environmental education. In Korea, the structure of environmental education is shifting from focusing only on the visitors to the parks to including the parks' residents. In addition, environmental education programs focused on the parks' ecosystems, problems faced by the parks, and each park's local resources are being developed with a view toward sustainable development. In Taiwan, a local environmental education network with residents has been created to develop programs that utilize regional resources.

Finally, we describe the basic structure underlying the management of environmental education in the national parks of three countries in East Asia. Environmental education in these national parks is promoting a collaborative approach to park management through the participation of residents and various other stakeholders in creating, delivering, and promoting environmental education programs. Research to further elucidate the characteristics of environmental education in national parks in East Asia and the learning needed by national park residents for the success of the collaborative management approaches described here is needed.

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