Monitoring visitor use and awareness in Sanriku Reconstruction National Park: Towards eco-based disaster risk reduction

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Introduction

On Friday at 2:46 pm Japan standard time, a magnitude 9.0 earthquake occurred at the level of the Japan Trench, approximately 130 km east of Sendai. The sea floor was lifted up, causing a major tsunami that inundated 516 km² of the eastern coastline of Japan. Together, the earthquake and tsunami resulted in around 16,000 deaths and approximately 2,600 missing people (Renaud and Murti (eds.) 2013, Japan National Police Agency 2016). In order to support the revitalization of the Sanriku area, the Sanriku Reconstruction National Park was created after the 2011 Great East Japan Earthquake. However, large construction projects provoked adverse reactions in the tsunami-hit areas. For example, a giant conveyor belt is bringing mud to raise the ground level in Rikuzentakata City and some researchers have pointed out resulting negative effects on the ecosystem. In the case of Sri Lanka, dumping of debris from the cleanup into waterways and wetlands created pollution and drainage problems that hampered long-term recovery after the Indian Ocean tsunami (Sudmeier-Rieux and Ash 2009). These kinds of negative impacts have occurred in the aftermath of disasters and it is very important to pay close attention to the post-disaster recovery period and also to address how to strengthen the function of protected areas in eco-based disaster risk reduction. In addition to this viewpoint, this research focuses on visitor use, including visitor consciousness that can offer information on the value of a national park. Not only visitor use but also the consciousness of visitors, such as interest in disaster risk reduction and expected countermeasures, are thought to change gradually after a disaster but very little research has focused on such types of changes in psychological states.

Twin research objectives were thus formulated, to investigate 1) visitor use of Sanriku Reconstruction National Park and 2) visitor awareness on the role of a national park four years after the disaster.

Methods

Sanriku Reconstruction National Park was selected as a tsunami disaster case study area. It is located in an eastern district of Japan and runs 220 km north–south along the Sanriku Coast, stretching from Hachinohe in Aomori Prefecture through Iwate Prefecture to Kesennuma in Miyagi Prefecture. The designated parkland area is 14,635 ha (Japan Natural Parks Foundation 2016). A section of the Michinoku sea breeze trail was also established in 2013 and offers opportunities for hiking in the area.

The monitoring survey employed a questionnaire for domestic visitors to the park that included hikers in 2015, focusing on the following aspects: (1) visitor at-

tributes (e.g. age, gender), (2) characteristics of visit (e.g. number of visits, group size, objective of the trip), (3) awareness of national parks and disaster risk reduction (e.g. degree of interest and importance, preparedness and countermeasures expected for disaster risk reduction), (4) satisfaction and intention to revisit. Self-administered questionnaire sheets were distributed at Tanesashi Kaigan (coast) Information Center, Jodogahama Visitor Center and Goishi Kaigan (coast) Information Center on August 22–23. The three centres are located in order of north in areas hit by the 2011 tsunami in the Sanriku coast district and many of the seriously affected areas can be found from Jodogahama southwards. The data were collected from a sample of 18- to 82-year-olds from the Japanese visitors to the park. In total, 431 respondents participated in the survey, representing a response rate of 68%.

Results

Results indicated that the largest proportion of respondents was aged 20–40 (62%) and that the total number was almost equally divided between the two genders (male: 52%, female: 48%).

The most frequent size for groups of park visitors was two people (41%) and groups consisted of friends (33%) and family (26%). Some 69% of visitors used private cars since the public transportation system is not developed in the Sanriku coast area. The most common trip type was day-trips (41%) and first-time visitors (26%) were not common. The most commonly mentioned trip objective was sightseeing (70%) and natural landscape (60%) was regarded as the most important factor when visitors decided on the place to visit.

Visitors' degree of interest in reconstruction after the disaster was high (very interested: 50%, interested: 45%) and the role of the national park in the tsunami-affected area was regarded as important (very important: 47%, important: 33%). The most common answer for preparedness and countermeasures to protect against a future disaster was maintaining an evacuation passage, while learning about disaster risk reduction and ensuring self-help efforts were selected as the top-ranking

Table 1. Visitors' awareness at three centers in Sanriku Reconstruction National Park (N=431)

	Tanesashi IC (N_1=200)	**Jodogahama** VC (N_2=192)	**Goishi** IC (N_3=39)
Interest in Reconstruction after the Disaster	2.394 [a]	2.550 [b]	2.605 [b]
Importance of the Roles Played by the NP	2.595 [a]	2.508 [a]	2.351 [a]
Importance of Learning about the Fury of Natural Hazard	2.745 [a]	2.787 [a]	2.789 [a]
Importance of eco-based Disaster Risk Reduction	2.736 [a]	2.773 [a]	2.757 [a]

N.B. 1) The degree of interest and importance was measured using four levels Likert scale method (3: much interest, much importace - 0: no interest, no importance). 2) Tukey's honestly significant diffrence test was used to find out the difference among the averages of group (The same letter attached to numbers in the same line means "not significant, p>.05").

actions. Comparing the degree of awareness on national parks and disaster risk reduction among three study sites, the average score of degree of interest was significantly lower at Tanesashi ($P<.05$) but otherwise no significant difference was found (Table-1).

The average degree of satisfaction was measured at 7.98 out of 10 and the intention to revisit was very positive.

Implications and Conclusions

The implementation of this monitoring could demonstrate the role of national parks expected by visitors. As a matter of course, safety should be given priority in the aftermath of a disaster because the zoning system is employed and many people live in parks in Japan. However, visitors' consciousness is thought to be changing for a long period of time and further research is urgently needed on this topic. These results are expected to provide the management planning of the park with basic and important information. Moreover, I hope that the unique history and culture of this national park will provide a valuable insight into post-disaster reconstruction.

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