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The influence of PSSA on marine ecotourism : the assessment of marine ecotourism and the applicability of the PSSA designation to Shiretoko, Hokkaido, Japan / by Shinji Usui

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THE INFLUENCE OF PSSAS ON MARINE ECOTOURISM

The assessment of marine ecotourism and the applicability of the PSSA designation to Shiretoko, Hokkaido, Japan

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University

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ABSTRACT

Title of Dissertation: **The Influence of PSSAs on Marine Ecotourism - The Assessment of Marine Ecotourism and the Applicability of the PSSA Designation to Shiretoko, Hokkaido, Japan**

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This research is an investigation into the influence of PSSAs on marine ecotourism with an establishment of an assessment theory for marine ecotourism. This extends to application of the theory to a PSSA candidate and an observation for a proper assessment method of marine ecotourism.

The establishment of the assessment theory is carried out by discussing the definition of marine ecotourism. Through the discussion, three principal factors are identified – economic, environmental and social factors (ecotourism resources). They themselves represent original conditions of marine ecotourism in the area. Further, this research notices major stakeholders regarding exploitation of the ecotourism resources. The combination of the ecotourism resources and the stakeholders identifies detriment of the resources. Then, by evaluating whether APMs or ecotourism management properly addresses the defect, the appropriateness is confirmed.

The validity of this assessment theory is confirmed by some case studies and further, the theory is applied to a candidate PSSA, Shiretoko, to identify appropriate APMs. This discussion unveils the constraints of the theory regarding delimitation of the area, consideration of other legal problem such as UNCLOS and international matters. Since those constraints lead to inability of decision-making, the theory is found viable in preliminary assessment.

Such natures of the theory are identified by comparison or contrast with other assessment methods. The constraints of theory is connected to those of qualitative approaches. To explore feasibility of the proper assessment method, the research discusses the introduction of a quantitative approach, which enables decision-making but needs plenty of time in detailed analysis. As a potential solution, this research advocates a semi-quantitative approach while using a rating scale.

KEYWORDS: PSSAs, APMs, Marine ecotourism, Ecotourism resources, Stakeholders, Shiretoko, Qualitative approach, Quantitative approach

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LIST OF ABBREVIATIONS

APMs	Associated Protective Measures
ATBA	Area to be Avoided
DWT	Dead Weight Tonnage
EEZ	Exclusive Economic Zone
FKNMS	Florida Keys National Marine Sanctuary
GT	Gross Tonnage
IUCN	The International Union for Conservation of Nature
IMO	International Maritime Organization
MARPOL	International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978
PSSAs	Particularly Sensitive Sea Areas
UNEP-WCMC	United Nations Environment Programme World Conservation Monitoring Centre
UNESCO	United Nations Educational, Scientific and Cultural Organization

Part A Incremental Measures and Decremental Measures

Chapter 1 Introduction

The author of this research believes that there are mainly two approaches to protect the marine environment – conservative ways and progressive ways. The former is limitation of marine activities, for example by rules or regulations; therefore, these can be referred to as 'decremental measures.' The latter is new technology such as vessels equipped with ballast water treatment facilities or awareness building for the marine environment, for example through education or dissemination; hence, these can be called 'incremental measures.' Furthermore, the author attempts to identify what happens with the two approaches. It can be a conflict as decremental measures thwart incremental measures or a synergy as both of these methods reinforce each other.

This research deals with two relatively new concepts for marine environment protection – PSSAs and ecotourism. An area designated as a PSSA can exercise APMs, which restrict some ships' activities such as navigation or anchorage restrictions to protect the marine environment in an area. Therefore, PSSAs belong to the decremental measures. On the other hand, ecotourism can promulgate importance and vulnerability of nature to people at large through exploration or experience there; hence, it belongs to the incremental measures.

If PSSAs provide positive or negative impacts on marine ecotourism, what are the impacts like? And how can they be assessed? If ecotourism is negatively impacted or the PSSAs do not work properly, how should measures be taken instead? Further, how can PSSAs be applied to an area, in which there is active operating marine ecotourism? This research will examine and address these questions. At

first, this chapter explains how the two concepts relate to each other and introduces other chapters to show how to achieve this research and to discuss the concepts in this dissertation.

1.1 Relationship between PSSAs and Marine Ecotourism

In Resolution A.982 (24) (IMO, 2006b), PSSAs include criteria in ecological, social, cultural, economic, scientific and educational factors for areas to be designated. On the other hand, as can be seen from the example mentioned by Whelan (1991), ecotourism includes ecological, social, cultural, economic and educational factors. Therefore, the two concepts have some of the factors that define them, in common.

A conflict or a synergy as mentioned before has to be described. Indeed, the similarity between PSSAs and marine ecotourism causes conflicts or synergies within the factors for both concepts. For example, if an APM in a PSSA is "All tankers and vessels over 500 GT should avoid the area", whales might come back to the PSSA and attract tourists to whale watching. If only this aspect is considered, PSSAs and marine ecotourism are synergistic with respect to economic and ecological factors.

However, what is the impact like when considering scale of economy under the APM? Large cruise ships of more than 500 GT can not pass the area; whereas, only small ships of 500 GT or less are available for whale watching. Thus, the area has to depend on a greater number of small ships, which are less efficient than a smaller number of large ships; hence, the lower efficient operation will lead to increased costs. Furthermore, such small ships will produce more exhaust gases than larger ships. In this respect, PSSAs and marine ecotourism conflict with each other in terms of economic and ecological factors. Thus, the two concepts can be related.

1.2 Introduction of Chapters

This dissertation consists of 4 parts and 9 chapters. Part A includes Chapter 1 and Chapter 2, which provide guidance for the readers to deepen the understanding of the main discussion. Part B, consisting of Chapter 3 and Chapter 4, is the first half of the main research and discussion of this research. It deals with the influence of the existing PSSAs on ecotourism in the areas and additional measures or improvements if needed. Part C is the second half of the main discussion and comprises Chapter 5 to Chapter 7. It addresses with the application to the PSSA candidate Shiretoko the related measures needed when the area is designated as a PSSA. In Part D, which includes Chapter 8 and Chapter 9, the author presents future developments and conclusions from this research.

1.2.1 Definition of Marine Ecotourism

Before the main discussion of the PSSAs' influence on marine ecotourism, the definition of marine ecotourism should be discussed. It is difficult to discuss this influence without recognition of whether a tourism activity belongs to ecotourism or not. However, the definition is so elusive that it differs even among specialists in the field. Therefore, this research tries to focus on common factors from a variety of definitions given by organizations or researchers rather than aiming for a precise definition. Such factors will appear as minimum requirements for an activity to be marine ecotourism; in other words, they can be used in main indices for marine ecotourism assessment. All of them are discussed in Chapter 2.

1.2.2 Influence of PSSAs on Marine Ecotourism

If PSSAs relate to marine ecotourism, which has actually been undertaken in some of the areas, the following question will arise: Has sufficient discussion taken place on the influence of PSSAs on marine ecotourism? If the discussion has

sufficiently not taken place in PSSAs, the areas have employed PSSAs without examining whether PSSAs positively or negatively have an impact on ecotourism. Such inconsiderable employment might impair the ecotourism in the same manners as in Section 1.1.

Hence, this research aims to explore how PSSAs, positively or negatively, impact ecotourism by providing examples in some PSSAs where ecotourism is operated. And if there are any drawbacks, this research demonstrates what improvements will be needed. Such improvements and drawbacks are discussed later in Chapter 4. However, at first, how to assess the impact needs to be established to address these improvements and drawbacks, which are discussed in Chapter 3. The assessment is carried out by a theory established from fundamental factors in ecotourism.

1.2.3 Application of the Assessment Theory to the PSSA Candidate Shiretoko

After the examination above, this research extends to the application of the theory to the area, which is being considered for a PSSA designation, by providing a case study of Shiretoko, Japan. This area is inscribed in the world heritage list and marine ecotourism has been taking place there for some time. Chapter 5 introduces an overview of Shiretoko and why a PSSA is considered needed. In this situation, Chapter 6 will investigate problems in Shiretoko by using the established theory and will identify what measures will be needed for this potential designation without impairing ecotourism. Chapter 7 discusses the appropriateness of those outputs examined in Chapter 6.

1.2.4 Further Exploration for the Proper Assessment Method

Moreover, this research examines the feasibility of the established theory in the earlier chapters to be evolved to a proper marine ecotourism assessment method

to help development of appropriate measures while analyzing the natures of the theory. Concretely, its validity is reinforced by comparison with other tourism assessment methods. Also, the contrast provides strengths and weaknesses of the theory and its appropriate use. These are later discussed in Chapter 8. Finally, in Chapter 9 this research further discusses whether or not the weaknesses can be overcome.

Chapter 2 The Definition of Marine Ecotourism

As mentioned earlier in Chapter 1, the definition of marine ecotourism is important when proceeding with discussion on the influence of PSSAs on ecotourism. Because such definition serves to identify not only the scope of the meaning but also the core factors contributing to the assessment. For example, when thinking about ship safety and defining a 'ship', buoyancy will affect ship safety. Thus, buoyancy is one of the core factors. It means that considering safety measures, the planner has to recognize how the measures serve as at least buoyancy. Such validity of minimum requirements could be applied to marine ecotourism.

2.1 Definition of Ecotourism

Before discussing the definition of 'marine ecotourism', that of 'ecotourism' should first be discussed and defined. Most people would perceive that ecotourism is such an activity as going to mountains or the ocean and having experiences such as appreciating the beauty of nature and sometimes being overwhelmed by the grandeur of these locations. However, the definition provided by some materials unveils different aspects besides the 'natural' one. Therefore, this chapter discusses the appropriate definition of ecotourism.

2.1.1 Different Definitions of Ecotourism

Some organizations and researchers have attempted to define ecotourism. However, the definitions are more or less different and can not be fixed. The cause

is, as the U.S. Congress, Office of Technology Assessment (1992, p. 4) states that governments see ecotourism as an activity compatible with conservationist philosophy and with normally paced, culturally sensitive, sustainable development where they pursue promoting ecotourism in the countries. That is, diverse interests of parties concerned cause the interpretation of the definition for the parties to maximize their own benefits; thus, the definition varies according to the position of the specialists. The different definitions are summarized as follows:

(1) Ceballos-Lascurian (as cited in the U.S. Congress, Office of Technology Assessment, 1992, p. 2) from Tourism Ecotourism and Protected Areas:
"Traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of admiring, studying, and enjoying the scenery and its wild plants and animals, as well as any existing cultural features (both past and present) found in these areas"

(2) Ashton (as cited in the U.S. Congress, Office of Technology Assessment, 1992, p. 4) from Fundamentals of Ecotourism A Workbook for Nonprofit and Travel programs:
"Travel planned and performed in art environmentally and socially aware manner"

(3) The International Ecotourism Society (1990) from their Web site:
"Responsible travel to natural areas that conserves the environment and improves the well-being of local people"

(4) Ecotourism Australia (2010) from their Web site:
"Ecologically sustainable tourism with a primary focus on experiencing natural areas that fosters environmental and cultural understanding, appreciation and conservation"

(5) Garrod, Wilson and Bruce (2003, p. 26) from Defining Marine Ecotourism – A Delphi Study:

> Ecotourism is focused on the enjoyment and appreciation of nature, involving: (a) local participation in planning and management; (b) management aimed at maximising sustainability, with environmental protection a key priority; (c) appropriate interpretation and education about the environment; (d) a judicious mix of formal and voluntary measures; (e) collaboration among stakeholders; (f) responsible marketing; and (g) appropriate monitoring and evaluation.

Two common features stand out in these definitions besides nature areas. One common feature is, other than economic resources that conventional tourism deals with, to include environmental and social resources, which are represented by the words "the scenery and its wild plants and animals, as well as any existing cultural features" in (1), "environmentally and socially" in (2), "the environment" and "the well-being of local people" in (3), "environmental and cultural" in (4) and "environmental protection" and "local participation" in (5). The other common feature is sustainability, which is represented by the words "conserves" in (3), "sustainable" in (4) and "maximising sustainability" in (5). As a result, ecotourism can be defined to include, at least these three features: (a) it is held in natural areas, (b) it includes economic, environmental and social resources and (c) it is sustainable.

2.1.2 Sustainable Tourism

As a similar type to ecotourism, there is 'sustainable tourism'. World Tourism Organization, World Travel and Tourism Council & the Earth Council (1996, p. 30) describes sustainable tourism in the context of the development and the products as follows:

(1) Sustainable tourism development

Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems.

(2) Sustainable tourism products

"Sustainable tourism products are products which are operated in harmony with the local environment, community, and cultures, so that these become the permanent beneficiaries not the victims of tourism development."

Sustainable tourism is very similar to the definition of ecotourism with respect to involving environmental and social factors. However, as can be seen from the word 'future' or 'permanent', it focuses more on maintenance of economic, environmental and social resources. Still, it will be agreeable that sustainable tourism is treated as ecotourism in this research.

2.1.3 Distinction between Ecotourism and Conventional Tourism

The U.S. Congress, Office of Technology Assessment (1992) refers to the difference between ecotourism and mass/resort tourism. However, as The U.S. Congress, Office of Technology Assessment (1992, p. 4) also say "Ecotourism is also a notion that lends itself readily to commercial exploitation.", some ecotours would not really be of ecotourism – it could be from lack of understanding of ecotourism or exploitation of the catch-word 'ecotourism' by tour operators. It is also

possible that some mass/resort tours are so conscientious to consider environmental and social factors set forth in ecotourism.

To make matters worse, it is very difficult to identify how much an ecotour should satisfy the criteria to be a genuine one. As Cater and Cater (2007) point out, tourists more or less can not avoid to trample or erode the place. Also, they mention recreational fishing in a sustainable manner. Such natural experiences can be profitable in respect to the educational factor. If these activities are condemned, ecotourism will not exist. Therefore, such distinction should not be made unless it is clearly evident.

2.2 Definition of Marine Ecotourism

So far, this chapter has dealt with definition of ecotourism. The definition of 'marine' ecotourism will be examined. It should be noted that segmentation between marine ecotourism and land-based ecotourism is almost equal to the one between the ocean and land. However, in some cases, the activity itself is related to the ocean in a common sense; whereas, it does not take place exclusively in the ocean geologically. For example, recreational activities on the beach are applicable to the definition of marine tourism. Hence, this section demonstrates the difficulty of using a strict geological definition and identifies factors appearing as minimum requirements needed for the further discussion as was determined with the definition of ecotourism. Also, reflecting technology advancement by times, it also discusses the natural areas criterion already aforementioned.

2.2.1 Difficulty of Geological Confinement to the Term 'Marine'

Halpenny (2002, p.7) states that marine ecotourism is “ecotourism that takes place in coastal and marine settings.” and that the coast generally starts “at the point where the high tide reaches, and runs to the edge of the continental shelf under the

water." However, the high tide could not reach part of the beach, in which there are some activities that could be related to the ocean. In fact, Cater and Cater (2007) point out that Halpenny's definition does not include shore-based activities such as storm watching or interpretive centers. Furthermore, they state that the definition includes large island lakes. It seems to include some unnaturalness because the shore is not included while such inland areas are included.

Therefore, Cater and Cater (2007, p. 8) define that "marine ecotourism is ecotourism that takes place in saline and tidal coastal and marine settings.", taking such problems into consideration as the solution. However, there seems to be still a loop hole in this definition. For example, Dead Sea is a lake with high salinity, which is around nine times more saline than the ocean (National Weather Service, 2010) and with tides mentioned in the work of Hect and Gertman (2003). Hence, their definition will include such salty lakes with tides. Thus, it is difficult to confine ecotourism to that of marine ecotourism in geological conditions. If such discussion is required, it has to start at the definitions of the ocean, island and lake in the first place.

Hence, this dissertation focuses on more simple things such as ecotourism activities rather than complicated geological conditions. Where an ecotourism activity needs presence of the ocean, the ecotourism can be marine ecotourism; in other words, the activity can not exist without the ocean. Using this theory, the ocean is necessary for the beach to be so; otherwise, the area where only the sands remain will be just a desert. Likewise, if the purpose of storm watching is to experience the natural force of the ferocious waves as mentioned in Shangaan Webservices (1998), the ocean is an essential element. Of course, this is just a minimum requirement; however, it is enough for the further discussion in this research.

2.2.2 Natural Area Criterion

As discussed earlier in 2.1.1, ecotourism includes the criteria that it takes place in the natural areas. However, the existence of artificial coral reefs mentioned by Treeck and Eisinger (2008) has to cast doubt on this criterion. Indeed, this does not entirely belong to nature; nevertheless, it contributes to sustainability of environmental resources as long as it is appropriately installed. Therefore, ecotourism sites are not necessarily all natural. Situational changes by times such as technology advancement make the fixed definition more and more difficult.

2.3 Conclusion

It is difficult to fix the definition of marine ecotourism because it varies according to the advocates' position. Also, as with the example of artificial coral reef, the definition can change reflecting the times. Furthermore, it is problematic to identify whether the operated tourism is really ecotourism or not. However, fundamental requirements as mentioned earlier in this chapter will not be subject to such diversity. The requirements are determined as follows:

(1) Sustainable in terms of economic, environmental and social factors (hereinafter, the factors are referred to as “the ecotourism resources”).

(2) Tourist attractions require the presence of the ocean.

Especially, the three resources in (1) will be core factors in this research. Therefore, discussions in Chapter 3 deal with the ecotourism resources as the basis of the discussion. Also, it should be noted here that 'sustainable' does not necessarily mean perfectly intact as mentioned earlier in Paragraph 2.1.3.

Part B Influence of PSSAs on Marine Ecotourism and the Assessment

Chapter 3 Ecotourism Resources and Stakeholders

This part discusses, as introduced earlier in Chapter 1, a methodology to assess the influence of PSSAs on ecotourism. The problem is how it can be assessed; what is the positive impact or the negative impact? The influences can not easily be assessed in quantifiable terms such as numbers. Even if numbers are allowed to be used, most cases will not be convincing. For example, an increase of tourists, which usually leads to financial profits, does not necessarily contribute to successful ecotourism because the tourists can harm the environment, whether intentionally or not, causing increased stress on animals by these encounters.

Therefore, this research does not to use numbers and alternatively, focuses on essential factors with two kinds of aspects. As in Chapter 2, the first is ecotourism resources consisting of economic resources, environmental resources and social resources. They will be inherently placed in an area; hence, they are functioning as static elements. The second is the major stakeholders consisting of tour operators, tourists and local communities. They will directly be involved in the interests of the ecotourism resources; in other words, they can directly impact on or be impacted by the resources; hence, they are functioning as dynamic elements.

3.1 Ecotourism Resources

The words 'ecotourism resources' have been used in some literature and the meaning includes environmental and social aspects. For example, as Chettamart (2003) expresses “natural parks and protected areas” or “historical and cultural

sites", the words are used in environmental and social contexts. Cater and Cater (2007) also refer to environmental and social aspects regarding ecotourism resources. However, to successfully operate ecotourism, consideration of economic factors will be necessary as well as conventional tourism. Therefore, this research regards the meaning as the general terms of economic resources, environmental resources and social resources. Also, the identification of such features as costs or vulnerability is needed for each of the resources to be assessed.

(1) Economic Resources

This type of resources refers to how much the areas can afford to manage ecotourism economically. As aforementioned, they are also important as well as the other ecotourism resources because absence of the resources simply leads to bankruptcy of the management and discontinuance of the conservation, which are not sustainable. The resources involve costs and benefits for the management or the conservation.

In conventional tourism, these factors have been measured quantitatively as understood in cost-benefit analysis. However, in ecotourism, they should also be measured qualitatively because the other ecotourism resources, with which the economical resources are assessed, can not be assessed solely with numbers. Therefore, the factors for which the difference can be recognized should be chosen for the assessment. In other words, which are easy to be recognized for the assessment of the economic resources, the costs or the benefits?

Actually, the costs will be easier to assess than the benefits because numbers are essential to identify the difference of the benefits while for the costs, the difference can be identified with a 'status'. If a company does not have money, they have to borrow it. Then, the status 'having debt' denotes that they may have deficit. Especially, major operation costs in ecotorism will be conservation costs as mentioned by Sherman and Dixon (1991).

Furthermore, the status will be differentiated by the degree of dependance on external funds. For example, if the local communities have plenty of money to operate the ecotourism by themselves, they are robust at the economic resources; otherwise, they have to depend on external funds from, for example, the national government or other organizations, so then they are weaker in the resources. Especially, when the communities have to depend on foreign funds because the country can not support enough, they are more unstable in the resources.

(2) Environmental Resources

The environmental resources consist of ecosystem elements such as flora and fauna, natural terrain such as cliffs and beaches and natural phenomena such as ice floes and storms; needless to say, they are indispensable resources and main tourism attractions in ecotourism. Although the environmental resources have many aspects such as their aesthetic or scenic values, these are related to sustainability, whereas vulnerability aspects, such as bleaching coral reefs, are more significant. Therefore, the assessment is according to their vulnerability from external but natural stimuli, for example, climate changes are included there but humans' activities are not.

This type of resources should be assessed by dependance on certain species and exposure to threats. For example, the ecosystems depending on coral reefs are vulnerable. The marine biodiversity in such an area usually depends upon the corals. Since they are routinely located in shallow waters and sedentary, they are susceptible to an increase in the sea temperatures and they can not avoid these changes. As with this case, when exquisite climatic balance establishes the ecosystem, the resources tend to be vulnerable.

(3) Social Resources

The social resources are local industries or cultures adhesive to local people's life in the marine context. The major resources are usually fishery and tourism; however, each of them is different in the nature because tourism needs to accept visitors to function well but the fishery does not. In fact, incoming visitors may adversely affect the fishery. Therefore, they will be assessed according to whether the resources are culture-oriented or tourism-oriented.

For example, when an area depends on the fishery and tourism also occurs there using cruise ships, then fishing operations can be negatively impacted. Thus, when the resources are culture-oriented, the protective measures should be considered to mitigate the adverse effect to sustain the resources. On the other hand, when an area depends on tourism, the local people would be immune to such activities. Then, the resources are tourism-oriented and local participation will be needed in terms of job opportunities to sustain the resources. However, even if the resources are culture-oriented, the industries and cultures can be utilized as tourist attractions as in the case described in Chapter 6.

As a result, it will be agreeable that the economic resources are assessed by the degree of external dependance about the operation costs such as the conservation costs, that the environmental resources are assessed by dependance on certain species and exposition to threats and that the social resources are assessed as to whether the industrial structure is culture-oriented or tourism-oriented. Regarding tourist attractions, the environmental resources are major elements and the social resources have potential to be tourist attractions.

3.2 Stakeholders

Although Whelan (1991) mentions many kinds of stakeholders such as tour operators, ecotourists, local communities, governments, conservationists and development agencies. However, government and conservationists do not directly gain or lose benefits from ecotourism and development agencies are not involved in daily ecotourism operation. Also, Cater and Cater (2007) refer to coastal communities, marine ecotourists and the marine ecotourism industry as primary stakeholders; therefore, this research deals primary with the other three stakeholders. Furthermore, it is important to identify which of the ecotourism resources they are inherently seeking.

(1) Tour Operators

They basically consider their profitability first as they have been doing in conventional tourism; therefore, they are seeking mostly the economic resources. If they are foreigners, they would not contribute to the local communities economically. Furthermore, they possibly impair the environmental and social resources. To avoid that, local participation or regulation will be needed.

When tour operators are local people, they are close to or belong to local communities. Thus, they potentially develop and operate ecotourism taking into account the true state of affairs; such reconciliation of interests possibly leads to not only reinforcement of the economic resources but also minimization of negative impacts on the environmental and social resources. Of course, in this case, their profits contribute to the local communities. However, as Drake (1991) mentions, local participation is not a panacea and excessive participation can adversely impact on ecotourism. Therefore, regulation of them will, to some extent, be needed.

(2) Tourists

They participate in ecotourism seeking experiences or the appreciation of the nature; hence, tourists will have more active relationships with the environmental resources. This also means that they have the potential to impair the environment the most. If the environmental resources are vulnerable, the tourists' behaviors can highly accelerate the degradation of the ecosystem. Also, they can impair the social resources by affecting the activities of the local people.

The problem is that such disturbance is innocently caused by tourists. Compared with tour operators and local people, they will usually not have knowledge about what activities damage ecosystems or disturb local people. Therefore, regulation is usually needed to avoid such degradation impacts.

(3) Local Communities

Local communities will be connected best to the social resources because they are engaged in the cultures or the industries to maintain social infrastructure. For example, when they work in the tourism-oriented areas, they will demand local participation for maximization of their interests or for job security of local people.

On the other hand, most of the local people in culture-oriented areas live off the fisheries. In this situation, when tourism activities or marine protection measures interfere with the fishing operations, the fishers will protest against such activities to protect their industry. If other stakeholders attempt to take the interests of the communities into account, they could cooperate with tourism activities as with the case of the Galapagos archipelago in 4.1.3 (2).

Surely, these three stakeholders will be involved in the ecotourism resources and each of them is basically seeking mostly one of the resources connected with

their profits. Hence, for ecotourism to function properly, reconciliation of their activities will be needed, for example, through coordination or regulation.

3.3 Possible Impacts of PSSAs on Ecotourism

Although PSSAs function as marine environmental protection tools, APMs of the PSSAs can directly impact ecotourism. For example, when an APM is "the area to be avoided", it affects all vessels globally and those vessels have to avoid the area; therefore, it surely serves to mitigate conservation costs and protection of the ecosystem. In this sense, the economic and environmental resources are benefited by such measures.

However, it is clear that PSSAs will adversely affect the ecotourism resources from another aspect. The tour operators can not use cruise ships for whale watching. And it annihilates the fishing industry because fishing vessels can not be used. Thus, the APM under PSSAs may impair the economic and social resources. Therefore, the measures to mitigate such adverse impacts should be considered when a nation proposes the introduction of a PSSA.

3.4 Conclusion

To be ecotourism, the three types of resources have to be sustainable. This chapter discussed the natures of the resources to identify how to be ecotourism. However, while ecotourism is difficult to assess with numbers, objective measures are still required. To satisfy such a demand, this research identified the method that measures change of the status – the conservation cost dependance on others for the economic resources, dependance on certain species and exposure to threats for the environmental resources and the industrial structure for the social resources. The ecotourism resources, inherently owned by an area, should be recognized as static elements.

The assessment could not be done solely by using static elements. Behavior to the ecotourism resources such as protection or exploitation of the resources, should also be assessed. Three major stakeholders were assumed to be involved in the ecotourism resources and surely the connection was identified. Further, of course, each of these stakeholders attempts to maximize their profits connected with the resources. Therefore, reconciliation among them will be a critical point in the assessment.

After how the ecotourism resources and stakeholders function was confirmed, it was discussed how PSSAs impact on ecotourism should be assessed, for example, whether to compensate the weak points or whether to impair the benefits.

Chapter 4 Impacts of PSSAs on Marine Ecotourism

In Chapter 3, this research established the theory for the assessment of the impacts of PSSAs on ecotourism with connection between the ecotourism resources, which are static elements, and the stakeholders, which are dynamic elements. Of course, this theory has to be tested to confirm whether it is substantially correct or not. Furthermore, if there is any awkwardness of the management or the APMs, the improvements will be discussed.

Therefore, this chapter examines several PSSA case studies using the assessment theory for the following PSSAs – Canary Islands (Spain), Florida Keys (United States), Galapagos Archipelago (Ecuador), Great Barrier Reef (Australia), where ecotourism is relatively popular. They are also chosen by different characteristics according to geographical conditions, national situations, tourist attractions and so on. Because such differences will produce different results of the assessment, those results are unbiased.

4.1 Assessment and Measures of Influence of PSSAs on Marine Ecotourism

As with conventional tourism, if tourism is assessed only in economic terms, the assessment is relatively easy. This is because PSSAs basically restrict some vessel activities and surely provide negative impacts on the tourism. For example, cruise ships may have to sail under some limitations such as having to take disadvantageous routes, which could be in more dangerous waters or requiring more fuel, in their operations. Thus, tour operators would increase costs and lessen opportunities for profitability.

On the other hand, assessment of such performances on marine ecotourism would not be accomplished only in economic aspects. For example, even if stakeholders obtain a large amount of profits from the tourism, if vessels operated by them are negatively impacting animals and marring the marine ecosystem, it can be concluded that the ecotourism is not beneficial. In this case, PSSAs should provide benefits that are environmental rather than economical. Hence, multiple aspects should be considered to successfully assess them. This section deals with the assessment of the PSSAs' influence on marine ecotourism and if needed, the improvements that will be provided.

4.1.1 Canary Islands

The Canary Islands are approximately 100 km from the African continent and mainly comprise seven islands, which are Lanzarote, Fuerteventura, Gran Canaria, Tenerife, Gomera, La Palma and El Hierro. The annual average temperature is very moderate at around 22 degrees. About 1.63 million people lived in the archipelago in 1998; thus, this area has a relatively large population for such remote isles. In particular, 715,994 people live in Gran Canaria and 677,485 people live in Tenerife (Benítez, n.d.). The Western Canaries have not been affected by conventional tourism unlike the other islands (iknow Canary Islands, n.d.).

(1) Ecotourism Resources

As the Canarian Weekly (2004) describes “Santa Cruz de Tenerife provincial business people’s confederation described the Canarian Government’s 2005 tourism budget of 86 million euros as insufficient and offered to support the Autonomous Executive.”, the tourism operations depend on financial support from the local government. Thus, the area is of the intermediate level relative to the economic resources.

Benítez, (n.d.) describes the marine biodiversity of fish such as dusky sharks, blue sharks and dogfish and cetaceans such as dolphins, toninas and whales in Gran Canaria. The inhabitants in El Hierro are such marine creatures as barracuda, grouper, parrot fish and angelshark. Also, open water species such as mantas, tuna, turtles and sharks occasionally come to the vicinity of the island (NetReservas, 2003). There is no particular dependance on a certain species and migrations; therefore, this area does not have vulnerability at the environmental resource level.

Regarding the social resources, although fishery and ecotourism are the main industries in El Hierro (UNESCO, 2007), a large amount of benefits seem to be from conventional tourism as in Tenerife, which prospers in tourism compared with other islands (Rodríguez, Parra-López & Yanes-Estévez, 2007). As a whole, this area will lean toward tourism-oriented.

(2) Stakeholders

Benítez (n.d.) infers insufficient contribution of the foreign tour operators to the local communities from unbalance between tourists' expenses in Gran Canaria and that in the tour operators' countries.

This author further mentions that some tourism activities provide negative impacts on the local fauna including nesting and breeding areas and cetaceans. Therefore, the environmental resources are impaired by tourists.

In El Hierro, the local fishers and inhabitants cooperate regarding marine environmental protection to use natural resources sustainably (UNESCO, 2007). Employment is generated by tourism in Gran Canaria (Benítez, n.d.). Therefore, the local communities not only maintain the social resources but also reinforce the environmental resources. Also, Tenerife attempts to change conventional tourism to ecotourism (Rodríguez, Parra-López & Yanes-Estévez, 2007).

(3) APMs

IMO (2005a) states that the APMs in this PSSA are: (a) a traffic separate scheme, (b) all tankers and ships over 500 GT carrying oil or dangerous bulk cargo, must avoid biosphere reserve and cetacean breeding grounds, and (c) a mandatory ship reporting system for tankers of 600 DWT or greater (i) either transiting the Canary Islands, sailing between Canarian ports, or transit involved in inter-island navigation, and (ii) carrying different kinds of cargoes including high density oils.

Assessment and Recommendation:

As a whole, the local communities display high environmental awareness such as having moved from conventional tourism in Gran Canaria and Tenerie and cooperation on protective measures in El Hierro; therefore, the social resources and the environmental resources are relatively well maintained. Furthermore, the moderate restriction of the APMs reinforces the well environmental protection without impairing the ecotourism resources.

On the other hand, the economic resources are being decreased. Actually, in the operation of accommodating facilities, local enterprises are losing benefits by luxury facilities operated by foreign enterprises (Bianchi, 2004). Therefore, to improve the resource level, it is indispensable to regulate the foreign tour operators through local participation and other methods.

4.1.2 Florida Keys

The Florida Keys are located on the southern tip of the Florida peninsula, ranging from south of Key Biscayne to 145 km north of Cuba. Although some 82,000 people live there all year around, the population expands to around 143,500 from November until April due to tourists and semi-permanent residents. To protect the abundant environmental and cultural properties, around the 9,500 km2 area

surrounding the entire archipelago of the Florida Keys was designated as FKNMS in 1990, based on the National Marine Sanctuary Program established by the congress in 1972. This includes the productive waters of Florida Bay, the Gulf of Mexico and the Atlantic Ocean (FKNMS, 2004).

(1) Ecotourism Resources

Island Homes of the Keys (2009) states "The plan suggests that external sources – presumably state and federal funding – are expected to cover the gap."; that is, this area would rely on national funds for the ecotourism operations; therefore, they rate an intermediate level of the economic resources.

World Wildlife Fund (2000) states that rise of sea temperatures from global warming can cause high coral mortality and bleaching of coral reefs in the Florida Keys. Hence, this area is vulnerable at the environmental resource level.

In this area, there are some historical immigrants named Conchs that influence the area. They are engaged in wrecking, sponging, or fishing for the Havana market (Sunshine, as cited in Florida Keys Best, n.d.). Such existence of indigenous residents highly represents the culture-oriented resources.

(2) Stakeholders

The area profits from the ecotourism activities such as fishing, diving and boating (Lipton, Wellman, Sheifer & Weiher, 1995). It means that tour operators bring the profits to the community; therefore, the economic resources in the area seem to remain sustainable.

According to Lipton et al. (1995), diving damages coral, and anchoring and prop dredging by boating destroys seagrass beds. Thus,

tourists will degrade the environmental resources. On the other hand, the resources can be protected by the FKNMS.

The fishers strongly protested against the designation of the FKNMS and its zoning strategy due to then alienation from the planning discussions for the FKNMS (Suman, Shivlani & Milon, 1999). This implies that the protective measures did not consider the social resources, which are highly culture-oriented as mentioned above. Therefore, the resource can be impaired.

(3) APMs

The APMs of this PSSA prohibit (a) anchoring in Northernmost Area and southernmost area of the Tortugas Ecological Reserve and Tortugas Bank outside of the Tortugas Ecological Reserve, and (b) transit in the vicinity of the Florida Keys for all ships whose length is greater than 50 meters and for all ships carrying oil or hazardous cargoes (IMO, 2002).

Assessment and Recommendation:

Those APMs are so sophisticated that they address environmental protection while considering the social resources by limiting the application to the ships whose length is greater than 50 meters; in other words, this application rules out small fishing boats. Indeed, Schei and Brubaker (2006) state that in the footnote "The large ATBA in the Florida Keys applies to all vessels but only over 50 meters, and U.S. trawlers in the area are generally shorter."

4.1.3 Galapagos Archipelago

The archipelago extends from 800 to 1100 km west of the Ecuador mainland. The Marine Reserve is set up in all the waters between 1°40'N to 1°36'S and 89°14' to 92°01'W. This area is owned by the Galapagos National Park Service of the

Ministry of the Environment, the National Fisheries Department and the Navy. The total area is about 141,000 km2, of which the Marine Reserve accounts for 133,000 km2. It consists of 15 islands larger than 10 km2 and 115 smaller ones. There is a highly varied altitude and geographic area between the islands and their physical remoteness has allowed the evolution of many unique and diverse species. The temperature in the dry season is from 17°C to 22°C due to the Humboldt current while in the hot season it is from 23°C to 27°C due to the warm currents (UNEP-WCMC, 2008a).

(1) Ecotourism Resources

As UNEP-WCMC (2008a) states "US$10 million was provided by the Inter-American Development Bank", thereby the author concludes that this area is weak at economic resource level.

This area has unique animals produced by their varied climates, ongoing vulcanism and extreme isolation (UNEP-WCMC, 2008a). That is, a subtle change of the environment may possibly harm the ecosystem; hence, this area is vulnerable at the environmental resource level.

As UNEP-WCMC (2008a) states, although fishing was the basis of the islands' economy, tourism on Santa Cruz and San Cristobal Islands and fishing on Floreana and Isabela Islands are major industries respectively. Therefore, this area has both the culture-oriented resources and the tourism-oriented ones of the social resources.

(2) Stakeholders

According to Honey (1999), the tour operators do not offer much direct benefit to the local community. Honey (1999, p.111) further states that the guides make sure tourists "stay on the narrow gravel path, don't touch or take anything, don't take food onto the islands, don't litter and don't disturb

animals." This means that tourists are so regulated that they scarcely degrade the environment resources.

The tour operators support the local community for the detection of illegal fishing activities by working with the park service and research station (Honey, 1999). That is, the local community is somewhat cooperating in the tourism activities while they are maintaining their industry. Thus, they are maintaining the social resources.

(3) APMs

On the other hand, the APMs of this PSSA prohibit (a) transit (only transit purpose) for all ships of 500 GT or greater and for all ships carrying oil or hazardous cargoes (IMO, 2006a) and charge (b) mandatory ship reporting system (IMO, 2006c).

Assessment and Recommendation:

Tour operators help local communities to detect illegal fishing. The ship reporting system would support such activities. In this sense, the APM functions well. On the other hand, they do not pay their profits to local communities despite financial weakness; therefore, some amount of the profits should be levied for local communities by utilizing taxes. Also, because there is no limitation of tonnage for cruise ships (not sole transit), the operators should offer cruising services with as large vessels as possible, considering the overall tourism carrying capacity. In fact, relatively large cruise ships for ecotourists are available as in the Galasam Tours (2004).

4.1.4 Great Barrier Reef

The area is located in northeastern Australia and consists of about a 2,300 km long coast from Torres Strait to the Tropic of Capricorn. The State of Queensland

owns the seabed inside the three-mile territorial limit. Beyond the territorial limit, the Federal Government has exclusive rights to explore and exploit the area although third parties are entitled to some limited rights. Furthermore, private sectors own some land. The whole area designated for a World Heritage site is 348,700 km2, of which the Marine Park area is 344,400 km2. The area has the most extensive coral reef ecosystem in the world, where there are some 3,400 individual reefs varying in form and size over the entire area and 2,900 reefs alone inside in the Marine Park. The temperatures vary from about 30°C to 24°C in January and from about 23°C to 18°C in July (UNEP-WCMC, 2008b).

(1) Ecotourism Resources

According to UNEP-WCMC (2008b, p. 8), "The total gross expenditure by government on the Marine Park for the 2000 FY was estimated US$46.8 million, including funds from the government, universities and the private sector." Since this area also depends on the external funds but not on foreign ones, the economic resources are of the intermediate level.

UNEP-WCMC (2008b) mentions that the most extensive coral reef ecosystem is being threatened by coral bleaching from global warming. Therefore, this area is obviously vulnerable at the environmental resource level.

Although some people living in this area claim ownership of the property, the most important economic activity in this area is tourism (UNEP-WCMC, 2008b). Hence, this area is considered tourism-oriented at the social resource level.

(2) Stakeholders

According to Scottish Natural Heritage (2006), “the marine tourism industry is a major contributor to the local and Australian economies.” Surely, the tour operators contribute significantly to local communities.

As UNEP-WCMC (2008b) states some activities of reef-based tourism such as snorkeling, diving and reef walking damage the coral reefs. Therefore, tourists impair the environmental resources.

Commercial fishing is already heavily managed such that the government does not need any further regulation (Diggles, 2010). Furthermore, fishers do not necessarily refuse tourism activities and their resulting impacts.

(3) APMs

In the inner route of the Great Barrier Reef, the APMs of this PSSA include (a) IMO-recommended compliance with the Australian system of pilotage for all ships whose length is 70 meters or greater, or for oil and chemical tankers, and gas carriers (IMO, 1990); and (b) a mandatory ship reporting system for all ships whose length is 50 meters or greater, and for all ships carrying potentially polluting or dangerous bulk cargoes (IMO, 1996).

Assessment and Recommendation:

The dominant problems in this PSSA will be in the environmental resources. Although this area is environmentally vulnerable, the APMs are not sufficiently protective; as they still allow vessels sailing throughout all of the area. As Lindén, Chircop, Pourzanjani, Schröder and Raaymakers (2006) state, transit vessels (except cruise ships) should be banned in the areas. Furthermore, since APMs can not deter the tourist activities as in 4.1.4(2), other protective measures will be needed.

4.2 Conclusion

In this chapter, the influence of PSSAs on ecotourism was assessed by focusing on the ecotourism resources and the stakeholders, both of which were identified by utilizing the information from the author's literature review. And the problems and improvements deduced by the assessment theory were compared with other literature. In most cases, little deviation from the statements in the literature was confirmed. This means that the theory established in the previous chapter functions almost correctly. Also, because of short assessment, to some extent, some information would be lacking. That is, more information is needed to obtain more accurate results.

However, the result 'almost' is more important than 'accurate' because the assessment theory is qualitative rather then quantitative. '100% correct' never exists in this qualitative assessment. This means, the assessor can 'adjust' for accuracy according to their needs. However, some qualitative information of the ecotourism resources and the stakeholders should at least be provided. Of course, to obtain accurate outputs, more information will be needed, which will requite more time than provided for the dissertation.

Part C Applicability of PSSA designation to Shiretoko, a PSSA Candidate

Chapter 5 Background of Shiretoko

Earlier, the influence of PSSAs on ecotourism was assessed focusing on the three ecotourism resources and the three stakeholders best related to the resources. Further, the assessment theory performed, to some extent, its validity by using some examples of PSSAs, where ecotourism is primarily operated, and comparing statements mentioned in some research literature.

This part of the dissertation, in turn, applies the theory to the PSSA candidate Shiretoko and investigates the applicability of PSSAs. This chapter presents the overview of the Shiretoko area including why Shiretoko is considered a PSSA candidate. Chapter 6, as with Chapter 4, assesses the ecotourism of the Shiretoko area with the three ecotourism resources and the three stakeholders. The chapter also demonstrates what is needed in the PSSA through the assessment. In the Chapter 7, the proposed PSSA is investigated in detail as to whether the PSSA designation is appropriate or not. If not or partly not, the problems to be overcome to ensure a PSSA designation are thoroughly discussed.

5.1 Overview of Shiretoko

At first, general information will be needed to assess the Shiretoko area; therefore, this paragraph refers to the overview such as geographic traits (location and relation with the vicinity), scale of the local communities (population and area) and climate (temperature and winds).

(1) Location, Population and Area

Shiretoko is a peninsula, which is in the far northeast of Hokkaido, between 43° 56'38" to 44° 21'10" N and 144° 57'57" to 145° 23' 022" E (UNEP-WCMC, 2005). It is some 350 km away from Sapporo city, the capital of Hokkaido. Also, this area is across the Sea of Okhotsk from Russia and near Kunashir Island. The area supports two communities, which are Shari Town on the west side and Rausu Town on the east side (See Appendix A and Appendix B). In Shari Town, the population is 13,431 people and the area is about 737 km2 in 2005 (Shari Town, Hokkaido, n.d.). In Rausu Town, the population is 6,540 people and the area is about 398 km2 in 2005 (Rausu Town, Hokkaido, 2008). Compared with Sapporo city, which has about 1,890,000 people in the area of about 1,121 km2 (City of Sapporo, n.d.), the two towns are even smaller; however, Shari Town is a relatively bigger community than the community of Rausu Town.

(2) Climate

As of 2009, in Shari Town (Utoro Area), the daily temperature can reach up to 22.5°C in August; whereas, it declines to -9.3°C as the lowest point in February. On the other hand, in Rausu Town, the daily temperature can reach up to 19.6°C in August; whereas, it declines to -7.6°C as the lowest point in February. Therefore, the west side and the east side have some differences in temperature. As to prevailing winds, both of the towns represent the same tendency, which are stronger winds in the winter and more moderate winds in the summer (Japan Meteorological Agency, n.d.b, n.d.c).

Shiretoko is a relatively small peninsula; nevertheless, different traits appear between the west coast and the east coast in size of community and temperature. According to the Board of the Shiretoko Sustainable Forestry (2004), the ice floes

stagnating along the west coast substitute for land and a seasonal wind makes Shari town colder than Rausu town.

5.2 Environment

In the Shiretoko area, the ice floes are a unique and indispensable feature influencing the local flora and fauna, which have major environmental features. This section describes the formation of the ice floes, the flora and the fauna.

(1) Formation of Ice floes

Shiretoko is the southernmost area, where ice floes can be found, in the northern hemisphere. The ice floes are formed by three factors. First, the Sea of Okhotsk geographically enclosed limits water exchange. Second, such exchange limited water forms a layer of cold salty water to prevent deeper circulation of the water and the layer traps in the top 50 meters a large amount of fresh water flowing from the Amur river. Finally, the surface of the fresh water is frozen by icy winter winds from Siberia. The ice floes are carrying nutrients and when they are melted in Shiretoko, they release the nutrients to phytoplankton significantly contributing to formation of marine biodiversity (UNEP-WCMC, 2005). These factors contribute to the wealth of flora and fauna as follows:

(2) Flora

On the west coast of the Shiretoko peninsula, the ice floes significantly serve as growth of phytoplankton, a major source of marine biodiversity. The waters under the ice floes include abundant minerals that aid the growth of ice algae. Furthermore, the melting ice floes also feed other algae with minerals in them. Those algae are around ten times greater than that off the east coast of the peninsula (UNEP-WCMC, 2005).

(3) Fauna

Thanks to the abundant phytoplankton, a rich zooplankton is evident and feeds 28 species of marine mammals and 223 species of marine fish, 150 of which live in the shallow waters less than 200 m deep. The sea lions prey on green sturgeon and walleye pollack. In the areas along Pacific rim, wild salmon are significantly declining; nevertheless, in the Pacific, very few large areas preserve both native runs of salmon and steelhead and the intact ecosystems besides Shretoko. These waters are indispensable for the Steller sealion categorized as endangered on the IUCN Red List and for other cetaceans, seabirds and salmonid fishes. Also, some kinds of whales, seals and dolphins have been discovered (UNEP-WCMC, 2005).

In the fauna, UNEP-WCMC does not mention the differences between the east coast and the west coast of Shiretoko peninsula; however, in the flora, abundance of phytoplankton, which sustains marine biodiversity, is different between those areas. Taking only this into account, Shari is more advantageous than Rausu relative to the fauna; however, the ocean on the east coast has deep sea water, which includes abundant nutrition (Rausu Town, Hokkaido, 2008). Therefore, Shari depends on the ice floes more than Rausu does, although the ice floes are a major contributor in Shiretoko.

5.3 Marine Industries

Earlier in Sections 5.1 and 5.2 the author demonstrated the differences between the east area and the west area in certain features; it is also evident that the industries between these two areas (Shari and Rausu) can also be different. Therefore, they are analyzed respectively as follows.

(1) Shari Town

Fishing and tourism are the main industries. For the fishing industry, the salmon yield is the largest in Japan and it is from the Sea of Okhotsk, which has wealth marine resources (Shari Town, Hokkaido, n.d.).

(2) Rausu Town

On the other hand, in Rausu Town, fishing has traditionally been the main industry and tourism is the secondary industry; however, in recent year fishing resources have been depleted. Therefore, the town is trying to shift the conventional fishing to the more controlled one to protect marine resources and at the same time to promote other industries such as the marine products industry or tourism with something unique, for example, high quality kelp or nutritious deep sea water (Rausu Town, Hokkaido, 2008).

Overall, the two towns have different industries. One difference is that tourism is already a main industry in Shari; on the other hand, it is still developing in Rausu. Another difference is reliance of fishing resources, in which Shari is still stable but Rausu is less reliant on a depleted resource. This difference relates directly to the richness and diversity of marine creatures on the two coasts as mentioned earlier in Section 5.2.

5.4 Marine Ecotourism Activities

So far, the two areas have displayed differences in some aspects, and the differences stem to a large extent from the ice floes; hence, their marine ecotourism activities can also be affected. As with Section 5.3, the author attempts to describe the marine ecotourism activities by separating Shiretoko into Shari Town and Rausu Town.

(1) Rausu Town

According to the Shiretoko Rausu-cho Tourist Association (2010a), there are 12 categories of nature and hands-on activities there; however, the followings will be major marine ecotourism activities.

(a) Scuba Diving

In this area, people can participate in diving activities in all seasons – such as young fish in spring, righteye flounder, Japanese fluvial sculpin and northern wolffish in summer, the returning salmon and trout in autumn and the ice floes and cliones in winter. Furthermore, the divers can explore the rampant seaweed on the ocean floor.

(b) Cruise Ships

Cruise ships are an active business in summer and in winter. The summer cruise ships view marine creatures such as sperm whales, minke whales, Dall's porpoises and giant beaked whales. The sea bed in this area is very steep thus enabling such encounters with an abundant diversity of whales. Another attraction is the large number of petrels migrating from Australia. Furthermore, the operators provide tourists heading to Shiretoko Cape with an informative lecture about the fishing industry of earlier times and highlight the nature of Shiretoko from the open seas.

In winter, the cruise ships view white-tailed and Steller's sea eagles, which are designated a protected species, and view the ice floes. Tourists have opportunities to see the sunrise in early morning cruises. Also, when winter is almost finished and the sear eagles leave Rausu, tourists would encounter the spotted seals and even the ribbon seals, which are rare species.

(c) Hands-On Activities

The tour operators in Rausu are conscientiously offering such precious experiences as gathering of sea urchins that even local people can not do because only a limited number of fishers are usually permitted to do so. Under the supervision of the Fisherman's Cooperative Association, tourists can have the experience when the tide is on the ebb.

Besides gathering sea urchins, tourists can learn how the fishing industry is working from catching to processing. The traditional fishing method of earlier times is net fishing for Alaskan pollack. The special tasty hotpot, which is usually for the fishers, will also be offered.

As a whole, Rausu town would have three aspects. One is to show the nature to inform the importance of the marine biodiversity as with the activities (a) and (b) above. The other is experience and education for tourists to learn the local culture as with the activity (c) above.

(2) Shari Town

As expected the main tourist attractions in Shari town represent different features from those in Rausu. These activities are as follows:

(a) Ice Floe Walking

The ice floe walking allows tourists to recall the ancient times when Japanese ancestors came to this island from the north by walking on the ice floes. This activity is offered with special buoyant drysuits so that the tourists are safe from drowning in case they drop from hidden chasms and trap holes in the ice fields into the waters. (Nonprofit Shiretoko Naturalist's Association, 2006).

(b) Kayaking

The Shiretoko Outdoor Guide Center (n.d.) provides tourists with activities of kayaking both in summer and in winter. While the summer kayaking is to recognize the precipitous cliffs with the waterfalls, the winter one is to appreciate the culture of the northern people's hunting seals in earlier times. A large amount of ice floes and the pristine area provide the most realistic experience as if the tourist were the hunters or the adventurers of that time.

(c) Cruise Ships

The cruise ships attract tourists with the splendid spectacles of the coastal terrain and the abundant ecosystem of the local waters. The former is the precipitous cliffs with the waterfalls and the sea caves; while the latter is the precious flora and fauna, which have diverse birds and animals including brown bears, deers and white-tailed sea eagles and various marine creatures such as seals and dolphins. Furthermore, harmonization of the cliff and the ecosystem generates opportunities to see colonies of Japanese cormorants and black-tailed gulls on some of the irregularly shaped rock outcrops (Doutou Kaihatsu Kanko, n.d.).

On the west coast, ice floe walking and watching the cliffs are main activities. The reason is from the ice floes, which largely cover the ocean along the coast and which have caused erosion of the coast. It also implies that there are too many ice floes to safely offer cruising in winter. Furthermore, it should be recognized that the kayaking activity (b) includes cultural aspects.

As a whole, Shari town and Rausu town are providing different marine ecotourism activities mainly caused by the ice floes. However, to some extent, it might be the intention of Rausu town to try to differentiate the activities from those of Shari town, because Rausu town is a smaller community than Shari town and would need such a tourism differentiation to sustain the community.

5.5 Protection Values by PSSAs

This chapter has described characteristics of Shiretoko, yet it has not mentioned how Shiretoko is related to the PSSAs designation by IMO. The recommendation of a PSSA designation is originally from IUCN, which investigated the area for inscription of a World Heritage site. Paragraph 5.5.1 investigates the process leading to that recommendation. Also, noting that ecotourism and PSSAs have similarity in some features, as mentioned earlier in Chapter 1, 5.5.2 of the author's research demonstrates the applicability of PSSAs to Shiretoko by comparing the ecotourism activities to the criteria of IMO's Resolution A.982 (24).

5.5.1 World Heritage

As mentioned above, IUCN recommended application of PSSAs to Shiretoko in relation to its inscription as a World Heritage site. This sub paragraph traces the process from the Japanese proposal of the inscription to the recommendation of Shiretoko as a PSSA candidate.

5.5.1.1 Application for the Inscription and the Response of IUCN

Japan submitted the proposal to UNESCO for inscription of a World Heritage site in January, 2004 (Shiretoko Data Center, 2006). IUCN pointed out that insufficient marine environmental protection regimes were compared with terrestrial

ones as a result of the IUCN's investigation (personal communication, August 20, 2004).

As for improvements, they proposed both short and long term measures. The short term one is to reinforce the level of marine environmental protection of the nominated site including protection of breeding, spawning, and nursery sites for key fish species such as the walleye pollack and the consideration of no fishing areas. On the other hand, the long term measure recommended is to establish representative marine protected areas within and surrounding the nominated site.

5.5.1.2 Improved Marine Environment Protection and Inscription of a World Heritage

During a few interactions between Japan and IUCN about problems on the inscription proposal, the Nature Conservation Bureau Ministry of the Environment replied to the letter from IUCN that Japan had made improvements such as development of the Marine Management Plan within three years and the marine component extension from 1 km to 3 km from the coastline including a 200 meter deep underwater shelf (personal communication, March 30, 2005). Finally, the 29th World Heritage Committee decided on inscription of Shiretoko to the World Heritage List after such improvements (Shiretoko Data Center, 2006). The justifications for the inscription are as follows:

> (1) Criteria for inscription in World Heritage List include (UNESCO, 2005b, p. 20):
> "(ix) be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;"

"(x) contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation."

(2) Justification for inscription (UNESCO, 2005a, p. 115)

"(ix): Shiretoko provides an outstanding example of the interaction of marine and terrestrial ecosystems as well as extraordinary ecosystem productivity, largely influenced by the formation of seasonal sea ice at the lowest latitude in the northern hemisphere."

(x): Shiretoko has particular importance for a number of marine and terrestrial species. These include a number of endangered and endemic species, such as the Blackiston's Fish owl and the plant species Viola kitamiana. The site is globally important for a number of salmonid species and for a number of marine mammals, including the Steller's sea Lion and a number of cetacean species. The site has significance as a habitat for globally threatened sea birds and is a globally important area for migratory birds.

However, UNESCO (2005a, p. 115) simultaneously provided two further requests concerned with the matter. One request was to finish the development of a marine management plan by 2008, which includes the reinforced marine environment protection measures and the boundary extension possibilities of the marine component. The other request was to invite a mission to Shiretoko in two years from the inscription to confirm whether the marine management plan is carried out with its effectiveness in protecting the marine resources. It would mean inscription with prescribed conditions.

5.5.1.3 Arrival of the Mission from IUCN and their Recommendation

As aforementioned, the mission came to Shiretoko two years after the inscription and issued the report, which states the need of the PSSA designation for the marine component for further protection, taking into account that the IUCN (2005) mentions in the evaluation report more strictly controlled fishing within the breeding, spawning and nursery areas for the key fish species in Shiretoko and in its vicinity (IUCN, 2008).

Thus, the exploration of a PSSA possibility was proposed. Of course, PSSAs are effective in controlling navigation of fishing vessels in terms of marine environmental protection. However, this recommendation refers to protection from the fishing operations, which can not be directly regulated by PSSAs (N. Bellefontaine, Personal Communication, February 25, 2010). Furthermore, Japan has already enforced the strict protection to the marine ecosystem by Nature Conservation Law (1972), the Natural Parks Law (1957), the Law on Administration and Management of National Forests (1951) and the Law for Conservation of Endangered Species of Wild Fauna and Flora (1992) (IUCN, 2005). Therefore, to establish further measures to more strictly control fishing activities would be considered excessive and possibly impair the social resources. Nevertheless, this report recommends the promotion of ecotourism (IUCN, 2008).

5.5.2 PSSA criteria

While IUCN points out the need of PSSAs in Shiretoko, the applicability in terms of Resolution A.982 (24) has not been established. Therefore, the area demonstrates the applicability by giving some examples applicable to the criteria in Section 4.4 of the resolution (hereinafter, this paragraph abbreviates “of the resolution.” When indicating section or paragraph of this dissertation, it will explicitly be transcribed.) and their vulnerability in Section 5.1.

(1) Ecological Criteria

Shiretoko is the southernmost area where ice floes are reaching in the north hemisphere; therefore, it satisfies uniqueness or rarity criteria in 4.4.1. Since there are some endangered species as in 5.2 (3) of this dissertation, critical habitat criteria highlighted in Paragraph 4.4.2 is satisfied. The ecosystem in Shiretoko highly depends on the ice floes; therefore, it is applied to dependency criteria of Paragraph 4.4.3. Representativeness criteria of Paragraph 4.4.4 is similar to the criteria (ix) for the World Heritage List inscription, which is already satisfied. Many kinds of cetaceans, seals, seabirds, fishes and other marine creatures live there; therefore, the area satisfies diversity criteria of Paragraph 4.4.5. As long as the ice floes continue carrying nutrition for marine life, productivity criteria of Paragraph 4.4.6 will be assured. As already explained in Section 5.2 of this dissertation, Shiretoko is important spawning or breeding grounds, which satisfies Paragraph 4.4.7. Shari town and Rausu town are basically sparse and access to Shiretoko, especially to the peninsula point area, is limited; hence, criteria of naturalness in Paragraph 4.4.8 is assured. The ice floes are susceptible to climate change as mentioned in Paragraph 4.4.10; whereas, with absence of such a change or human harmful activities, the area is qualified as to integrity criteria of Paragraph 4.4.9. Unusual terrain formed by the ice floes produces sea birds' habitat; thus, bio-geographic, importance criteria of Paragraph 4.4.11 is applicable. All in all, Shiretoko satisfies the ecological criteria.

(2) Social, Cultural and Economic Criteria

In Shari town and Rausu town, fishing and tourism are indispensable industries for their citizens to gain livelihoods. Therefore, Shiretoko satisfies social or economic dependency criteria of Paragraph 4.4.12 and human dependency criteria of Paragraph 4.4.13. Also, as tourists can learn about ancient times there through experience of kayaking or hands-on activities,

there are historical cultures in the area; it suggests that cultural heritage criteria of Paragraph 4.4.14 is applicable. Therefore, Shiretoko is applicable to these criteria.

(3) Vulnerability to Impacts from International Shipping

IMO (2006b) states that besides the above criteria, vulnerability from international shipping should be considered. The investigation of those factors, which are vessel traffic characteristics and natural factors are needed.

In the former, operational factors in Paragraph 5.1.1 will be applicable because both Japan and Russia are engaged in fishing in the Sea of Okhotsk. About the latter, oceanographic criteria of Paragraph 5.1.7 will be applicable as the ice floes can which hamper ships navigating although they produce abundant fishing resources. Thus, Shiretoko is suited to PSSAs in term of their vulnerability from international shipping.

Although the applicability of the criteria set out in the resolution should be discussed in detail, Shiretoko will be qualified as a PSSA candidate in principle. As explained in Chapter 1, the features of ecotourism are similar to those of PSSAs and in this sense, it is rational that PSSA criteria apply to the area where ecotourism is operated.

5.6 Conclusion

Shiretoko is a relatively small peninsula; nevertheless, different traits appear between the west coast and the east coast in size of community and temperature. Further, the differences are formed by the ice floes, which affect environmental and industrial aspects. The ice floes including phytoplankton reach the west coast and provide marine biodiversity; therefore, fishing resources are fairly abundant. On the contrary, much less of the ice floes reach the east coast; therefore, the people there,

to some extent, forgo fishing to avoid depletion of the fishing resources and have to undertake other industries including tourism.

In the inscription of the World Heritage list, insufficient marine environmental protection measures urged the exploration of a PSSA possibility. PSSAs themselves are effective measures for marine environmental protection and Shiretoko would satisfy the criteria for this designation. However, the IUCN report recommends that fishing activities be further protected, yet the author contends that they are already sufficiently protected by the national laws of Japan.

Chapter 6 Identification of Ecotourism Resources and Stakeholders in Shiretoko

Surely, Shiretoko is found suitable to PSSAs in the criteria and the vulnerability sections set out in Resolution 982(24). In this chapter, the same assessment as carried out in Chapter 4 is made based on the information in Chapter 5, especially considering the unique characteristics. However, Chapter 4 assessed how the PSSAs positively or negatively impacted on ecotourism in those areas after the identification of the ecotourism resources and the stakeholders; whereas, this part of the author's research has to consider how the PSSA should be protected by APMs after the initial assessment. Because, needless to say, this area has not yet been designated as a PSSA. It also means, this Chapter will discuss the APMs that need to be created to support a PSSA in Shiretoko.

Furthermore, since a larger amount of information is available in the previous Chapters than that of Chapter 4, this chapter practices more detailed assessment according to the availability of information. It will lead to more accurate assessment and outputs.

6.1 Ecotourism Resources

Based on information of the previous chapters, the ecotourism resources are described as follows. As mentioned earlier in Chapter 5, the ice floes will be the most important ecotourism resources.

(1) Economic Resources

As can be found from the case studies in Chapter 4, it is usually difficult to operate ecotourism by their own capital, especially for such small communities as Shari and Rausu towns. Therefore, they would need financial support from others. In fact, UNEP-WCMC (2005) states that the present annual budget of the conservation is US$0.7 million from the Ministry of the Environment, US$8.7 millon from the Forestry Agency, US$0.2 millon from Hokkaido Prefecture, US$1.4 millon from Shari town US$0.2 millon from Rausu town and US$0.4 millon from the Natural Parks Foundation, Shari. Still, the marine ecotourism is operated with domestic funds. Therefore, their economic resources are at the intermediate level.

(2) Environmental Resources

The previous chapter mentioned that the ice floes with the abundant nutrition sustain the marine biodiversity in this area; nevertheless, they are reduced year by year due to global warming (Shiretoko Rausu-cho Tourist Association, 2010b). It means that subtle disturbances to the ice floes leads to collapse of the ecosystem. Although Rausu depends on the ice floes less than Shari as mentioned in Section 5.2., this town originally has less fishing resources than Shari as mentioned in Section 5.3. Therefore, absence of the ice floes will accelerate the depletion of the fishing resources.

However, the vulnerability is not only in the ice floes but also in the ocean currents carrying the ice floes. If an accident happens there, it will affect at least all the areas downward of the prevailing current. Actually, around 5,500 dead sea birds smeared with oil floated into the Shiretoko peninsula in 2006 (Oshima, Ono, Mitsudera, Uchimoto & Yamaguchi, n.d.). In this sense, this area is very vulnerable at the resource level due to losses of marine life.

(3) Social Resources

As mentioned in Chapter 5, both fishing and tourism are the main industries in Shari town, while fishing is the primary industry and tourism is in a developing phase in Rausu town. Especially, Rausu town is concerned about the depletion of fishing resources; thus, they will depend on tourism more and more. As a whole, Shiretoko is committed to tourism activity.

In the ecotourism resources in this area, there is no notable uniqueness in the economic resources and social resources; whereas, the environmental resources are different from those of the PSSAs as introduced in Chapter 4 in some aspects. One aspect is that they highly depend on the ice floes, which are a non-living phenomenon. Another aspect is that the ice floes involve large areas of mobile ice unlike coral reefs which live in limited areas. Therefore, how the stakeholders deal with them is one of key parts.

6.2 Stakeholders

The stakeholders are in principle pursuing their primary benefits, which means that tour operators seek economic resources as their first priority, tourists seek environmental resources and local communities seek social resources, and the coordination or regulation among them will be needed for ecotourism. However, ideally ecotourism should be developed voluntarily or spontaneously making such coordination or regulation amongst stakeholders because the ecotourism resources are all valuable properties to be protected by people. In this sense, the Shiretoko's case is really approaching to the ideal.

(1) Tour Operators

As indicated in 6.1(1), the operation is managed only by Japanese domestic funds; therefore, there is little space for foreign operators to

participate. Most tour operators are local people (Shiretoko Rausu-cho Tourist Association, 2010a; Shiretoko Shari-cho Tourist Association, 2008); hence, they would consider their properties holistically, which are not only economic resources but also environmental and social resources. Actually, tourism activities as discussed earlier in Chapter 5 reflect this holistic attitude. Of course, it implies that the tour operators contribute to local communities economically, environmentally and socially.

(2) Tourists

According to UNEP-WCMC (2005), there are few conservation management constraints; that is, as yet tourists do not notably or intentionally damage the marine ecosystem. Also, the Ministry of the Environment, Kushiro Nature's and Environmental Office (2008) regulates the uses of the area; for example, the entrance of ships with power is banned and use of the sea area by ships with power is restricted. In other words, the tourists are restricted to access in some areas in Shiretoko peninsula; on the contrary, the tourists have access to some other areas and possibly harm the environment there when restriction is insufficient. Therefore, consideration should be taken that after Shiretoko is established as a World Heritage site, the number of tourists will logically increase. Such an increase may well accelerate degradation of the environment without consideration of its carrying capacity.

(3) Local Communities

Because the social resources are inclined toward the tourism-oriented side, the local communities will usually accept moderate number of tourists and protective measures. In fact, UNEP-WCMC (2005) mentions “just outside the Park and, after tourism, a traditional self-regulating sustainable fishery for salmonid fish, calamari and kelp is the chief activity.” They also say “recent measures to protect the fish have led to a halving of the number of

fishing boats. No-one lives in the protected area today and only seven in the buffer zone." They think not only about their own benefits but also about all the benefits in terms of economy and environment.

In this area, the tour operators practically belong to the local communities and provide their activities voluntarily taking into account environmental and social aspects. On the other hand, the local communities have some concession for the tourism and the environmental protection – even if it leads to some loss of profits. Further such conscientious services from tour operators or local people as can be seen in 5.4(1)(c) enable tourists to have satisfying experiences both of the environment and the culture even if they are under some restrictions (e.g. ban of entrance with power boats, gathering sea urchins under supervision). As a whole, the ecotourism in this area is close to an ideal industry model.

6.3 Conclusion

The stakeholders take advantage of the ecotourism resources and the management seems to be almost perfect; on the other hand, the problem is, as mentioned many times, the vulnerability of the ice floes as an environmental resource. Ironically, the ice floes are sustaining most of the ecosystem and critical environmental resources in Shiretoko. Also, as mentioned earlier in Section 5.4, the ice floes are relevant not only to environmental aspects but also to industrial aspects. In this respect, the ice floes economically, environmentally and socially sustain people in Shiretoko; Therefore, these ice floes must be strictly protected. Furthermore, the ice floes range so extensively that the stakeholders' efforts could not confront this vulnerability. Therefore, all the areas of the ice floes floating should be protected by the PSSA; that is, protection of the vicinity areas of Shiretoko as recommended by UNESCO may not be enough.

Now that the need of PSSAs in the area is recognized, some problems would be posed: What kind of APMs should be applied to the area? Can they really be established legally? Will Russia, a neighbor country involved in the PSSAs, accept these APMs? These problems are discussed in the next chapter, which also identifies the limitation of the assessment theory proposed in this research.

Chapter 7 Appropriate Measures in Shiretoko

In the previous chapter, the assessment theory identified the two principles to maintain ecotourism in Shiretoko. One is that protection by PSSAs is needed for an extended area from Shiretoko and should include the vicinity where the ice floes are coming from. The other is how the Shiretoko area should be protected by APMs under the PSSA including how to attain Russia's acceptance. In the discussion chiefly three things will need to be considered.

First, PSSAs have some APMs, which are optional. Therefore, APMs should be selected so that they positively impact on ecotourism. However, not only APM functions themselves but also the application (e.g. type or tonnage of vessels) should be contemplated to successfully apply APMs.

Second, the area to be protected is already but roughly decided. Still, to acquire a PSSA designation, a more detailed area should be identified. In this case, consideration should be taken on the parameters for the proposed area, for example, the legal aspects, the extent or the currents of the ice floes.

Finally, since the proposed PSSA (hereinafter referred to as “Okhotsk PSSA”) involves Russia , their acceptance is required; hence, some observations about their attitude towards PSSAs will be needed by analyzing the Baltic Sea PSSA in which they refused to participate. The analysis has to identify what factors affected Russia to oppose to the Baltic PSSA and would they apply to the Okhotsk PSSA. To avoid such opposition is one of the minimum requirements to reach the designation of the Okhotsk PSSA.

7.1 Required APMs

APMs inherently function for marine environmental protection. However, some APMs could positively or negatively impact on economic or social aspects. For example, mandatory pilotage, which levies fees, will affect the economy. Therefore, in the light of ecotourism, APMs should appropriately be chosen taking into account the three ecotourism resources. The following paragraphs explain several types of APMs and their effects, and targets.

7.1.1 Types of APMs

Lindén et al. (2006) provide some examples of APMs. Here, discussion is made on the function and effects of these examples.

(1) Pilotage System; Traffic Surveillance, Reporting System

These APMs all function to supervise vessels going through the designated area. Since they would not work to protect the marine environment by themselves, they will need to be combined with other effective APMs. Also, such systems are costly to develop and conduct operations; that is, they would likely impair the economic resources; therefore, they should not be used except for as considered in Paragraph 4.1.3.

(2) Traffic Separation Schemes, Deep Water Routes

These APMs work as routing restrictions for vessels. They can be helpful to decrease accidents in traffic dense waters, which leads to marine pollution; on the other hand, the amount of traffic will likely not change significantly. Therefore, the APMs will not work to reduce air pollution by emission gases or to protect marine creatures from vessel disturbances.

(3) Discharge Prohibitions, No Anchoring Areas, MARPOL Special Area, MARPOL SOx Emission Control Areas

Since these are proscribing some vessel activities, they are more effective than (1) and (2) in terms of marine environmental protection. In fact, the Florida Keys PSSA applies no anchoring areas to protect coral reefs. Still, as explained in (2), they would not affect the level of traffic.

(4) ATBA

While other APMs can not prohibit navigation, this APM is able to do so; hence, it will be most effective in protecting the marine ecosystem. At the same time, the negative impacts on economic or social resources can be the greatest. As with the example in Section 3.3, if the APM is merely "the area to be avoided", cruise ships or fishing vessels can not transit there. If those ships really depend on the waters economically or socially, the industries of the local communities will be collapsed; therefore, ATBA should be used in PSSAs, for which the ecosystem is highly vulnerable and can be severely damaged by ships' navigation and some limitations of their application are usually needed.

In the case of Shiretoko, because the ice floes sustain all of the environmental resources and they are very fragile, a high standard of protective measures will be needed considering the damage if the ice floes are lost. Therefore, applying ATBA will be most reasonable with some limitations. It should also be considered whether a combination of ATBA and other APMs is needed or not as some PSSAs introduce it. However, this dissertation discusses ATBA, which is most effective as mentioned above.

7.1.2 Application for the Restriction

Surely, ATBA is needed in Shiretoko to protect the marine ecosystem. However, there is no point if the economic resources or the social resources are impaired by the APM. Thus, as mentioned above, some exemption from ATBA will be needed so that some kinds of ships such as cruise ships or fishing vessels are allowed to sail. In this case, as with some other PSSAs, it would be better "ships with transit and, all tankers and all vessels carrying harmful substance cargoes shall avoid the area." because not only cruise ships or fishing vessels but also many kinds of ships could be used by economical or social activities. Still, all vessels carrying oil or harmful substances should be fully prohibited to pass through the area.

Another point of discussion is the application by the size of vessels. In several PSSAs, the application is "tonnage is greater than 500 GT" or "length is greater than 50 m." These are exclusions for large vessels; however, they do not necessarily more negatively impact on the environment than smaller ships. As mentioned in Chapter 1, a small number of large vessels may be more economically and environmentally efficient than a large number of small ships. In this sense, the limitation should be discussed in detail, for example, taking into account carrying capacity of the area.

7.2 Geographical Extent to the Application of the APMs

The previous chapter proposed that the Okhotsk PSSA cover all the waters where the ice floes are floating. However, two problems are posed: How will the exact geographic range of the Okhotsk PSSA be set and will such an extended area as with the waters from Japan to Russia be legally accepted?

(1) Delimitation of Okhotsk PSSA

First, regarding the geographic range of the PSSA, the ice floes are, of course, constantly changing their size depending on the temperature, which is

seasonal. According to the Japan Meteorological Agency (n.d.a), the ice floes start growing in December, and become so large that they can cover most of the Sea of Okhotsk in March and after that they begin to gradually shrink. In addition, what was even more difficult, it is expected that all the ice floes do not necessarily come to Shiretoko. Therefore, to delimit the PSSA, scrupulous scientific research that considers the rate of the ice floes reaching Shiretoko or the ocean current, will be needed.

(2) Legal Problems

Although some PSSAs are already designated including large areas with multiple countries, as pointed out by Lindén et al. (2006), PSSAs should be limited to a local area within an EEZ and should not encompass such areas extending beyond EEZs. Surely, UNCLOS (1982) mentions the right of innocent passage, which can not be hindered unless ships are seriously harmful as identified in Article 19. In light of the provision of innocent passage, it will be difficult to realize the Okhotsk PSSA. Because, if an ATBA is applied to an Okhotsk PSSA, all vessels except ships exempted from an ATBA can not pass La Pérouse Strait (See Appendix C). This is presumably an infringement of the right of innocent passage.

Thus, the two principal reasons above confront the Okhotsk PSSA. However, the PSSA is, unlike the Baltic PSSA, not aiming at political interests such as exclusive financial profits or at deliberate obstruction against sea transit, but more focused on sustainable development through ecotourism. Although some concessions will be needed, the PSSA should basically introduce effective APMs to prevent, reduce, or eliminate the identified vulnerability as far as possible as indicated in Paragraph 5.2 of Resolution 982 (24). As one of compromised ideas, enabling an ATBA only while the ice floes are emerging could be worth discussion. The idea could overcome the legal problems because passing the waters covered with

the ice floes is dangerous; that is, the transit would not be innocent passage at certain times of the year.

7.3 Perspectives about Cooperation with Russia in Designation of PSSAs

As aforementioned, Russia's cooperation would be needed in the potential realization of an Okhotsk PSSA. However, as Russia refused to participate in the Baltic Sea PSSA, it is necessary to analyze the reasons for this refusal. It, simultaneously, is a means to find a solution to acquire their cooperation. Therefore, the following paragraphs discuss why Russia did not participate in the Baltic Sea PSSA and how Japan could take advantage of the lessons learned to obtain their cooperation.

7.3.1 Reasons Russia Refused to Participate in the Baltic PSSA.

Lindén et al. (2006) presents a problem, which might have led to Russia's withdrawal from the Baltic PSSA. Russia has ports on the Baltic Sea and the northern coast for oil export, which is one of the main local industries. However, due to heavy ice cover in the colder seasons, the export by ships on the northern coast is limited; therefore, Russia has to depend on oil transit through the Baltic Sea to expected markets. Furthermore, since oil demand and production are increasing, over time, this increases the pressure for Russia to accelerate the transit use of the Baltic Sea.

After the designation of the Baltic Sea PSSA, Russia surely reflected their grievance against the PSSA in A 24/11/1 (IMO, 2005b), which concerns the revised Draft PSSA Guidelines (currently Resolution 982 (24)). In Paragraph 8 of A 24/11/1, Russia had the following comment on the draft.

> The draft of the revised PSSA Guidelines does not take into consideration the principle of consensus in designation of PSSAs in which there are direct common interests of several coastal States. It should be acknowledged that all the issues of pollution of the marine environment and, in particular, of semi-secluded sea areas, shall be solved not only with proper consideration of lawful ways of their use, but also taking into consideration the sovereign rights of all coastal States. All these fundamental approaches were contained in the UN Convention on the Law of the Sea, 1982.

This statement implies that Russia's interests, which are oil exports, were disregarded when the discussion of the Baltic Sea for a PSSA the designation was underway. That explains why Russia commented that "the draft did not have consideration of interests." Especially, the phrase "in particular, of semi-secluded sea areas" crudely denotes the Baltic Sea. However, as in the preamble of UNCLOS, balance between environment and economy should fundamentally be considered.

Futhermore, Schröder (2010) points out that the Baltic Sea PSSA is used politically. For example, when the APM was discussed, mandatory pilotage was going to be employed to levy the fees as a toll in practice. On the other hand, compulsory pilotage does not serve to decrease accidents leading to marine pollution. In fact, Lindén et al. (2006) give examples of vessel groundings where pilots were on board all of the vessels. Also, Landtag Mecklenburg-Vorpommern (2001) in a 2001 expert report indicates that pilotage as an APM conflicts with the principles of UNCLOS.

After all, the reasons that Russia denied their support of the Baltic Sea PSSA are negligence of coordinating interests among parties concerned and political use of PSSAs. That is, it could be thought that the Baltic Sea PSSA seems to prioritize the

economic benefits of the countries involved in the area rather than marine environmental protection.

7.3.2 Possible Solutions to Secure their Cooperation

Hence, the cooperation with Russia would be indispensable to obtain the designation of Okhotsk PSSA; in other words, the lessons from the Baltic Sea PSSA have to be utilized to acquire their cooperation. Basically, Japan would have to justify the following two factors based on the lessons from the Baltic Sea PSSA.

(1) Consideration of Interests and Concessions

First, it is necessary to analyze the interests of Russia and to consider how far Japan should compromise with them. For example, if Russia depends on oil export and fishing, Japan would have to consider whether the tankers or the fishing vessels are acceptable for the transit or not. If the tankers going through Okhotsk PSSA are not acceptable, Japan would have to think of recommending alternative routes. On the contrary, if Japan excessively compromised, the PSSA would not work effectively. However, this is just an example and many other factors have to be considered further with prudent research to support the decision-making.

(2) Need for Marine Environmental Protection

It will be necessary to convince Russia of the need for the Okhotsk PSSA. Japan needs justification that Okhotask PSSA is purely for marine environmental protection unlike the Baltic Sea PSSA. This will be more difficult than the former because of two reasons.

The first is that there is a dilemma between the limitation of ecotourism and the need for a PSSA. Ecotourism is usually done in a limited local area such as Shiretoko; that is, this is actually a local matter. How can

Japan impose such a local matter on other countries? On the other hand, the PSSA designation is really needed to maintain the ecotourism activities in Shiretoko.

A second question is whether ecotourism is more important than other industries or not. Oil tankers possibly harm the environment if they cause oil spills by any accident; on the other hand, the transport of oil tankers supports the human economy on a global scale. Which is more important when weighing ecotourism and oil in the balance? Of course, awareness of the environment will be increased by ecotourism in the long term view. However, it is not a daily necessity as oil is for transport, heat and power for homes and industry.

Substantially, the PSSA and ecotourism concept is for local areas as aforementioned, and it is not typically to be applied to larger areas. However, effective APMs such as ATBA are needed to protect the environmental resources of the ecotourism. Without discussion of ecotourism, the ice floes will bring the marine biodiversity only to Japan. At this point, persuasion or justification to Russia will be difficult.

7.4 Conclusion

The author believes that Okhotsk PSSA should be introduced with a high standard of APMs such as ATBA to protect the fragile ice floes, which sustain all of the ecotourism resources. However, it is needed to limit the application to also protect cruise ships or fishing vessels.

When Japan tries to identify the extent of the PSSA, they will encounter two problems. One problem is that a scrutiny will be needed to exactly delimit the PSSA. Of course, such delimitation is inevitable although it is difficult to identify how extensively the ice floes are reaching Shiretoko. The other problem is legal in nature

in that La Pérouse Strait is practically "locked." This can be infringement of innocent passage as mentioned in UNCLOS. For this problem, a seasonal ATBA may be one of the potential compromise solutions.

The biggest problem for Japan will be coordination with Russia based on the lessons of the Baltic Sea PSSA. Detailed discussions will be needed to make decision for the best concession point that minimizes the negative impacts on the interests of Russia and that maximizes the effect of the APM. Furthermore, justification of the non-political needs will be required. This will be very difficult to find the effective justification. Because, to use PSSAs only for the ecotourism in Japan sounds egoistical while it is desperately needed. Even besides ecotourism, that is, marine environmental protection in general is difficult to be the reason to convince Russia because the Okhotsk PSSA still profits only Japan. Surely, the question is posed about why such a local matter needs to be applied internationally.

Here, it should also be noted that the assessment theory will have constraints with difficulties in detailed discussions or research for tonnage limitation in ATBA or for delimitation of the Okhotsk PSSA. It means that this assessment theory can not reach decision-making. Further, what was even worse, the vulnerability in the ecotourism resources extends to another country while the assessment theory does not assume such international matters.

Part D Prospects for the Future

Chapter 8 Marine Ecotourism Assessment in the Context of Marine/Coastal Management

The concept of ecotourism is much too abstract and elusive to judge what is good or bad ecotourism. Hence, this research established a theory to assess the influence of PSSAs on ecotourism in Part B deducing the theory based on the fundamental elements that most of the literature or documents about ecotourism have in common. This is why the assessment theory focuses on ecotourism resources as static elements and major stakeholders as dynamic elements. The benefits and the shortcomings are demonstrated with specific case studies.

However, it should be understood why the author did not use the existing assessment methods. The reasons relate to the problems of the existing methods. This chapter illustrates what concepts the assessment theory is based on through comparisons and contrast with some examples of other tourism assessment methods. It should be noted that some of the methods are not exactly for ecotourism assessment. Still, they are employed as supportive examples because the assessment policies are the same as those for ecotourism assessment in their basic factors, which are economic, environmental and social as described in Chapter 2.

8.1 Comparisons

First, the author identifies what factors the assessment theory has in common with other methods. On the contrary, identification of common elements denotes that the method would not deviate from the other methods in the principles.

(1) Basic Factors

Most of the tourism assessments include economic, environmental and social factors as mentioned above. For example, Lash and Austin (2003, p. 8) states “The Rural Ecotourism Assessment Program (REAP) was developed as an in-depth analysis of how to work with communities to assess procedures for developing ecotourism that will be market based and socially and environmentally constructive for local people”. The words 'market based' obviously represent economic factors. Gutierrez, Lamoureux, Matus and Sebunya (2005) also consider economic, environmental and social factors as well as policy. Although the assessment of Sharpe et al. (1996, p. 9-3) is just for tourism, not for ecotourism, they state ”you will find the economic, social and environmental benefit/cost ratios individually.”

(2) Involvement of Stakeholders

Further, other assessment methods recognize stakeholders as basic factors. Gutierrez, Lamoureux, Matus and Sebunya (2005) include local stakeholders in the second step of their assessment. Also, Sharpe et al. (1996, p. 9-1) states ”who or what may be positively/adversely impacted?” The word 'who' represents stakeholders in this context.

(3) Combination of Other Policies

To solely assess ecotourism would not be a realistic assessment method. Therefore, consideration of other factors such as a marine environmental policy is needed in addition to the factors identified earlier. The consideration will serve as assessment of how the new policy affects the ecotourism as this research discusses PSSAs. In fact, Gutierrez, Lamoureux, Matus and Sebunya (2005) includes policy as in (1) as useful information, and Sharpe et al. (1996, p. 9-3) mentions ”impact assessments can be done in

very technical, comprehensive ways especially what required under certain laws."

These fundamental factors will be essential for ecotourism assessment as most of the other examples have. Thus, the assessment theory has been carried out by using these factors. Also, another common point between the the assessment theory and other methods is that not only ecotourism assessment itself but also other environmental policy is considered.

8.2 Contrasts

On the other hand, the assessment theory has some different parts from others. Such differences are to aim for an ideal assessment method, which is easy and simple so that everyone can use the method.

(1) Local Communities

Some literature strongly insists on local community participation. For example, Lash and Austin (2003, p. 8) state "work with communities; constructive for local people" as in 8.1(1) and Gutierrez, Lamoureux, Matus and Sebunya (2005) also overestimates the importance of local community. Indeed, the assessment theory deals with local community but does not lean towards that factor. Consideration of local community makes common sense in ecotourism. The factor should not be weighted compared with other stakeholders such as tour operators or tourists. They all should be assessed fairly and objectively.

(2) Cost-benefit Analysis

Constraints of the assessment theory as mentioned in Section 7.4 are basically from inability of detailed discussions, which are needed in decision-making. In detailed discussions, cost-benefit analysis plays a key role.

Gutierrez, Lamoureux, Matus and Sebunya (2005) surely includes cost-benefit analysis in their assessment method. Actually, Sharpe et al. (1996, p. 9-3) states "benefit/cost ratios individually, but you will look at all of the results together to make final decisions on how to proceed." Cost-benefit analysis is also used for trade-off as Sharpe et al. (1996, p. 9-3) mentions "you might decide that a negative economic ratio could be offset by positive social and environmental ratios." In any case, cost-benefit analysis usually requires numbers such as statistics.

This is the major problem for assessment of ecotourism. Unlike conventional tourism, financial profits are not necessarily a success indication. The assessment has to holistically take into consideration environmental and social factors as well as economic factors. In this case, how are environmental and social factors assessed in terms of cost-benefit analysis? Sharpe et al. (1996, p. 9-3) admits the problem by stating "how to fit these qualitative, unmeasurable into the ratios?"

(3) Separation from Land-based Ecotourism

This assessment theory focuses on marine ecotourism although other literature discusses tourism in general, including land-based ecotourism. However, some items of the assessment only appear in the ocean, for example, cruise ships or fishing vessels. Even some severe events are different from the land-based ecotourism. For example, oil-spills in a marine area immediately influences other areas, because it is carried through the ocean currents. Of course, it does not happen in a mountain; in other words, such consideration in assessment of land-based ecotourism is redundant. Therefore, specifications to marine ecotourism allows abbreviation of the factors only in land; it leads to simplification of the assessment method.

On the other hand, when some factors range from lands to the ocean, the assessment theory will lack some assessment factors needed. In the case

of Shiretoko, although salmonids usually live in the ocean, they go up to freshwater rivers for reproduction. Then, the ecotourism resources in the river should also be assessed. In fact, the Ministry of the Environment et al. (2008) mention the impacts of river construction on salmonids and the countermeasures against these impacts. At this point, other assessment methods will be advantageous.

In the assessment theory, equivalent treatment among stakeholders facilitates fairer assessment, and abbreviation of cost-benefit analysis and concentration on marine ecotourism enable easier assessment. On the other hand, the method is devoid of detailed assessments for decision-making and trade-off consideration. Also, what is lacking is the consideration of amphibious factors.

8.3 Qualitative Assessment and Appropriate Use

The assessment theory relies on qualitative assessment, which does not rely on numbers. This type of assessment is suited to deal with abstract and elusive phenomena. For example, qualitative assessment is used in risk assessment with some assessment tools such as a risk matrix (Trbojevic & Carr, 2000). This type of phenomenon is usually difficult or impossible to assess with numerical data. For example, the number of accidents does not necessarily represent risk. The number of casualties should also be considered. In addition to these, other numerous parameters will be needed.

On the other hand, qualitative assessment is difficult to carry out in detailed assessment, which will be needed for cost-benefit analysis or decision-making while quantitative assessment can deal with it. This type of assessment should be used after a qualitative assessment is undertaken and elements requiring numbers are identified. Indeed, Trbojevic and Carr (2000) mention that qualitative assessment is suitable because the qualitative approach facilitates a broad-brush assessment.

This research is just aiming at proper use of two assessment philosophies. The assessment theory focuses on earlier phase assessment rather than full assessment including cost-benefit analysis. This is the primary reason that the author did not use other assessment methods, which try to practice full assessment at once. Actually, as carried out in Chapter 6, the proposal of the Okhotsk PSSA is possible without using statistical analysis. Quantitative assessment should be used in cost-benefit analysis or the cases as mentioned in 7.2(1).

8.4 Conclusion

This chapter demonstrated the validity, the benefits and the constraints of the assessment theory by comparison and contrast with other tourism assessment methods. Concretely, it is confirmed that the method has the basic factors in common with the other methods. In this way, the validity as an assessment tool is to some extent proven. Also, the advantages and the disadvantages are presented through the discussion on fair consideration of stakeholders, omission of cost-benefit analysis and limitation to the maritime sector.

However, what this research is trying to claim genuinely is to have justified separation of qualitative assessment from quantitative assessment and to effectively utilize the former with ecotourism assessment. Thus, the research tries to establish a new assessment method for ecotourism, which is so simple that everyone can use it and it does not need complex mathematical analysis. If local participation is important as other assessment methods state, local people would need an assessment theory that they can understand easily.

Chapter 9 Conclusions

This research has undertaken to define marine ecotourism, assessment of PSSAs' impact on ecotourism, application to the candidate PSSA of Shiretoko, and explored the establishment of the ecotourism assessment methodology. The interfaces between them include: the ecotourism resources were deduced from the definition, the assessment was made by combination of the resources as static elements and the stakeholders as dynamic elements, the theory was applied to the practical assessment of Shiretoko and the role as an ecotourism assessment tool was identified with the benefits and the drawbacks in contrast with other assessment methods.

This chapter highlights the two key elements. One factor is what the research achieved through the discussion in this dissertation. This dissertation has discussed various examples and concepts as mentioned earlier. Here, the key factors such as the ecotourism resources or the stakeholders in this research were reviewed. The other factor is what can be improved about the assessment theory for the future. The theory is potentially applied to the proper assessment method. However, as mentioned in Chapter 8, it has some shortcomings that were discussed, for example, the dilemma about the need of qualitative and quantitative assessment, continuum from the land and involvement of other countries.

9.1 Achievements of this Research

The achievements of this research can be divided into three stages, that is, an identification of the ecotourism assessment theory, a discovery of benefits and

constraints in the theory and the identification of the best use based on the advantages and the disadvantages of the theory.

(1) Identification of the Ecotourism Assessment Theory

Chapter 2 focused on fundamental factors rather than an exact definition, which are economic, environmental and social resources. That is, if ecotourism is operated in a place, it should have those factors. This research utilized such a perception to an assessment with major stakeholders, who directly incur benefits or drawbacks. The assessment method is established with the ecotourism resources as static elements and the stakeholders as dynamic elements in Chapter 3. The validity of the theory was investigated with some case studies in Chapter 4.

(2) Discovery of Benefits and Constraints in the Theory

In Chapter 6, the method is applied to Shiretoko, which is a PSSA candidate described in Chapter 5. The results were examined in Chapter 7 and unveiled some constraints of the theory. The first is inability of detailed analysis for decision-making. Second, although legal matters can be considered as with PSSAs, such consideration must be made prior to assessment. Actually, this research has not considered UNCLOS, which was a hindrance to realize an Okhotsk PSSA. Third, the method can not deal with the continuum from the ocean to land as in the case of salmonids. Furthermore, international matters are unmanageable because PSSAs and ecotourism are usually established for local areas.

(3) Identification of the Best Use of the Theory

Chapter 8 clarified simplification and qualitative assessment as the characteristics of the theory in contrast with other assessment methods and

identified that the theory should be used for preliminary assessment that serves as proposal of PSSAs.

Overall, establishment of the theory was done in (1). However, (2) and (3) will be essential in discussion on assessment methods. Because, perfect methods do not exist that can be applied to everything, especially in cases dealing with abstract or elusive phenomena such as this research. In addition, since there are benefits and constraints, appropriate use of the theory should be identified accordingly.

9.2 Improvements for the Future

For the assessment theory to be qualified as an proper assessment method, there are still some improvements needed. Here, the shortcomings set out in Chapter 7 and Chapter 8, for example inability of delimitation for the Okhotsk PSSA, continuum from the lands, legal problems and involvement of another country should be investigated. However, the improvements are not so easy because merely adding elements to deal with them will result in a more complicated assessment methodology or have the same functions as other assessment methods as mentioned earlier in Chapter 8. Hence, not only to incorporate all of those elements but also to commit to other assessment systems is important.

(1) Need of Detailed Analysis

For trade-off considerations or cost-benefit analysis the use of quantitative assessment will be needed. Indeed, this dissertation has stated that the introduction of quantitative assessment may well compromise the assessment theory and has refused cost-benefit analysis. However, as quantitative assessment is used for decision-making, numerical data is more convincing. The problem is that when it is introduced, the assessment will be more complicated.

Still, a partial introduction could be possible, for example, the economical resources abundance is represented with the scale from 1 to 5; likewise in the environmental and social resources. In doing so, if an APM is profitable environmentally for 2 but detrimental economically for 1 and if, for example, the environmental resources is 4 and the economical resources 2, the APM will be acceptable. However, to introduce such a scale, discussion with specialists must be necessary to maintain a fair and objective approach.

(2) Continuum from the Land

To realize a simplified assessment method, the method omits the consideration of land-based factors while the consideration is also needed as far as it involves the ocean. This is really a dilemma. At least, it can not be a solution to merely infuse such factors with the assessment theory.

A possible solution is to treat a phenomenon for the land as an input of the positive or negative impacts on the marine ecotourism and to treat the measures against that as an output of the positive or negative impacts on the land-based ecotourism. By combining it with a semi-quantified assessment as identified in (1), it will be easier to understand. For example, if the marine ecosystem is 3 points for environmental resources on the scale, and the sewage of the river creates a 2-point reduction, the ecosystem represents 1 point. Then, the measures against the sewage will need to accomplish a 2-point increase to the marine ecosystem. Furthermore, it should be considered whether the measures positively or negatively impact on the land ecosystem.

Figure 1 below represents these interactions between the land ecosystem and marine ecosystem. It should be noted that this theory can be applied not only to environmental resources but also to economic and social resources.

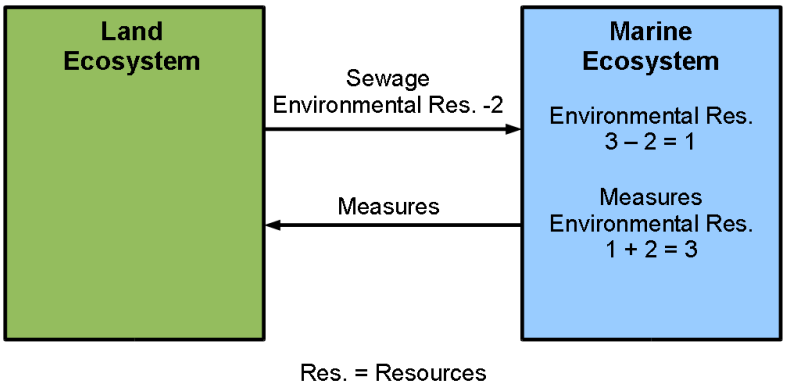

Figure 1 - Semi-quantified Assessment in Interaction with the Land
Source: Usui, S. (2010).

(3) Other Subsequent Matters

Legal matters, difficult delimitation and involvements of other countries as in Chapter 7 should not be considered for incorporation. Consideration of legal matters is surely important in marine ecotourism assessment as described in 8.1(3); however, they are not directly related to the ecotourism resources and the other matters happen uniquely or exceptionally only in the area. In other words, none of them will happen in other cases. To incorporate them will cause that the method incurs the redundancy when assessing ecotourism with other matters.

Although the previous chapter has treated quantitative assessment as a taboo in the assessment theory, using such simple numbers would be acceptable in the assessment theory because it is still easy to use. The problem is how to prepare the rating scale, for example, what phenomenon should represent how many points. For the preparation, a large amount of time could be needed to determine an objective rating scale. It will involve numerous specialists from various field in this discussion.

9.3 Final Comments

In this research, the author tried to avoid mainly two things. The first is not to stick to subtle parts and not to try to pursue all things. It is often needed to simplify a complicated matter while the notion could be regarded as non-academic. However, the notion is actually used even in physics, which requires precision as the swing period of a simple gravity pendulum omits the amplitude in a small swing. In this sense, the research still stands up as an academic work.

Second, redundancy should be avoided as far as possible. Even if environmental matters can usually not be judged by numerical data, they should be formulated to some extent. Otherwise, as in the example of the Great Barrier Reef PSSA, it ends up that the APMs do not effectively work for environmental protection. Some redundant measures remain rather than really required measures. It would not have occurred if the PSSA had been assessed by the assessment theory.

Thus, this research achieved the theory so that the users can recognize the phenomenon instinctively. In this way, they can easily identify the weak points of the ecotourism to be covered with the APMs needed. This notion would be most important to allow all stakeholders to participate in developing the marine environmental measures of a specific PSSA.

Environmental policies require proper assessment; otherwise not only do they not work, but also they may impair other policies, especially, their approaches are opposite as with ecotourism as an incremental measures and PSSAs as an decremental measures. This research challenged reconciliation of the two environmental issues, both of which are too abstract and elusive to easily assess. They can not merely be assessed using numerical data while numbers are needed to some extent. Furthermore, the research challenged establishment of the theory for comprehensive and a handy ecotourism assessment method unlike existing ones. The two aforementioned notions will be vital to cope with those matters.

As a very final comment, when planning marine environmental policies, the specialists must not forget the point of view from a lay person perspective, who are the majority involved in the marine environment, as compared with the specialists.

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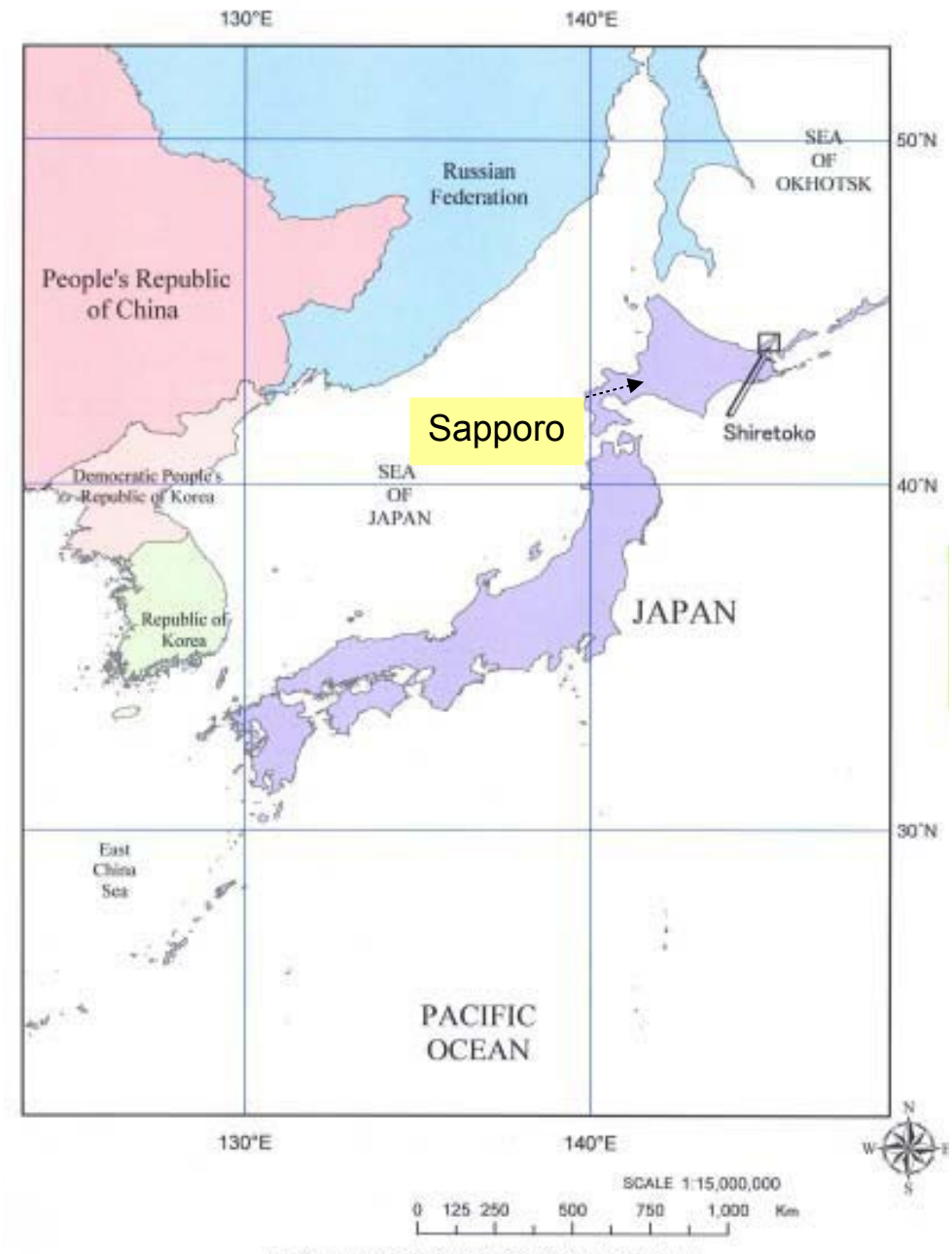
Appendix A Geography of Shiretoko

Source: IUCN (2005). *World Heritage Nomination – IUCN Technical Evaluation – Shiretoko (Japan) ID No: 1193.*



Appendix B Geography of Shiretoko (continued)

Appendix C Arrangement of La Pérouse Strait and Ice Floes

Source: Google (2010). *Google Maps.*