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Abstracts

U.S.-Japan-South Korea Cooperation and Its Challenges Regarding Maritime Security in East Asia

—From the Perspective of the Alliance Transition Theory—

Sehee HWANG

As China's rise and the decline of the United States becomes significant in East Asia, many studies focus on maritime security as the side of the conflict which is bringing about the power shift between the two states. In this paper, I analyze the security of East Asian seas using the Alliance Transition Theory. This provides insight into an ongoing internal crisis of the U.S. hegemony system concerning maritime security in East Asia, an aspect that has been overlooked due to an excessive focus on the power shift between the U.S. and China. In this paper, furthermore, I examine the need for U.S.-Japan-South Korea cooperation in terms of the Alliance Transition Theory, which would clarify the challenges and prospects of their security relationship.

The Adjusted National Capability model in Alliance Transition Theory takes as its premise that the national power of all cooperating countries in a security system can be used to estimate a member country's individual power. Using this model, we can understand the present as a critical point of Alliance Transition. In this study, I also discuss the challenges facing the U.S. in maintaining the status quo. Since maritime issues are particularly difficult to resolve, they need to be skillfully addressed to both the satisfaction of China and the U.S. allies. Priority should thus be given to intelligent management and cooperation with allies, rather than scenarios for full-scale military confrontation against an assertive China.

Key words: Power Transition; Alliance Transition; Maritime Security; U.S.-Japan- ROK cooperation

Stakeholders' utility and optimum uses of marine space

—A preliminary study on utility of *Pyropia yezoensis* farming in Tokyo Bay—

Kazumi WAKITA

Aiming at gaining insights that would help developing marine spatial planning, this paper explored what status of use of marine space would enhance stakeholders' utility. The utility that *Pyropia yezoensis* farming fishermen in Tokyo Bay derive from its farming was explored, on the

hypothesis that “pursuing optimum use of a marine and coastal area would enhance stakeholders’ utility”. Interview results to *Pyropia yezoensis* farming fishermen indicated that major motivation to continue its farming is their pride in succeeding traditional farming style and “Edo-mae” brand, which is interpreted as “Cultural Benefits” of utility, rather than “Essential Benefits” for their livelihood. Furthermore, an interview to one of the fishermen revealed his hesitation in relocating his farming area even if the water environment is becoming unfavorable for *Pyropia yezoensis* farming. These findings did not lead to support the hypothesis. Results of this study indicate importance of considering stakeholders’ utility carefully, especially “Cultural benefits” toward successful marine spatial planning and marine and coastal management.

Key words: cultural benefit, marine ecosystem services, marine spatial planning, *Pyropia yezoensis* farming, Tokyo Bay, utility

Marine Protected Areas in Japan

— Social Studies of Technology and Science on Policy Making Processes —

Izumi TSURITA

The Marine Protected Area (MPA) is receiving international attention as a management tool for tackling biodiversity conservation and sustainable resource use. However, its definition remains broad, and its individual objectives, persons involved, and management methods are diverse. In addition, the background to MPA policy making processes, such as an awareness of the persons involved, social trends, selection of the MPA as a solution, and management and planning of MPAs, includes issues from both the natural sciences and social sciences, as well as the humanities. It is important, therefore, to comprehensively analyse through different domestic and international levels how MPAs are situated within a policy agenda, and under what kind of conditions and persons it is developed. Accordingly, this study first observes changing MPA policy processes from three levels - international environmental policy, Japan’s national policy, and policy on the ground. Then, the study analyses the outcome of different policy levels from the perspectives of public policy and social studies of science and technology (STS). Finally, the study presents the challenges of the MPA policy as well as the provisions of the MPA policy research in Japan.

Key words: Marine Protected Area (MPA); Policy making process; Public policy; Social studies of science and technology (STS)

U.S.-Japan-South Korea Cooperation and Its Challenges Regarding Maritime Security in East Asia

—From the Perspective of the Alliance Transition Theory—

Sehee HWANG*

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— A preliminary study on utility of *Pyropia yezoensis* farming in Tokyo Bay—

Kazumi WAKITA *

Abstract

Aiming at gaining insights that would help developing marine spatial planning, this paper explored what status of use of marine space would enhance stakeholders' utility. The utility that *Pyropia yezoensis* farming fishermen in Tokyo Bay derive from its farming was explored, on the hypothesis that "pursuing optimum use of a marine and coastal area would enhance stakeholders' utility". Interview results to *Pyropia yezoensis* farming fishermen indicated that major motivation to continue its farming is their pride in succeeding traditional farming style and "Edo-mae" brand, which is interpreted as "Cultural Benefits" of utility, rather than "Essential Benefits" for their livelihood. Furthermore, an interview to one of the fishermen revealed his hesitation in relocating his farming area even if the water environment is becoming unfavorable for *Pyropia yezoensis* farming. These findings did not lead to support the hypothesis. Results of this study indicate importance of considering stakeholders' utility carefully, especially "Cultural benefits" toward successful marine spatial planning and marine and coastal management.

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1 Introduction

Marine and coastal areas are used for multiple objectives by various stakeholders, and different stakeholders have different views or values on marine ecosystem services. If we are to pursue "the greatest happiness principle" of utilitarian approach founded by Bentham (1970) in marine and coastal management, exploring how to enhance stakeholders' utility is one of the imperatives. Utility is the term used in economics, which means satisfaction gained through consumption of a good or

service (Ito, 2009). Each individual is assumed to have preferences for one thing over another, and these ordered preferences can be converted mathematically into a "utility function" that assigns a higher number to the options that rank higher (Elster, 1989). That is, utility forms the basis of preferences and choices of individuals. Therefore, utility is considered as the key in valuation of marine ecosystem services and management of marine and coastal areas, both of which require understanding on preferences and choices of people

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that affect decision-making. At the same time, utility is complex as clarified by Wakita *et al.* (2014a) in some cases of citizens of Japan: behavioral intentions of individuals for marine conservation are not enhanced only by perceived values of the “Essential Benefits” such as provision of seafood by the sea, but more positively influenced by the “Cultural Benefits” such as beautiful scenery and recreational joy provided by the sea.

With the understanding of the complex nature of the utility above, the author set forth the objective of this paper to explore what status of uses of marine and coastal areas would enhance stakeholders' utility and to gain insights into future planning and stakeholder coordination of marine and coastal management. In exploring this, the author set up a hypothesis that “pursuing optimum use of a marine and coastal area would be able to enhance stakeholders' utility”, where the “optimum use” means optimum zoning of marine and coastal areas for uses based on water environmental characteristics. In this study, relationships between utility of *Pyropia yezoensis* farming to farming fishermen and optimum use of Tokyo Bay were examined.

An optimum use or zoning of Tokyo Bay for *Pyropia yezoensis* farming was studied by Wakita *et al.* (2014b). According to their result of cluster analysis based on water environmental variables that affect growth of *Pyropia yezoensis*, Tokyo Bay was classified into six groups (Fig. 1) (Wakita *et al.*, 2014b). Among the six groups, Group 4 (Fig. 1) was identified as a grouped area having most suitable water environment for *Pyropia yezoensis* farming in Tokyo Bay (Wakita *et al.*, 2014b). Being pointed out by Wakita *et al.* (2014b), not all

existing *Pyropia yezoensis* farming areas are located in Group 4.

The fishery rights in Japan account for this. In Japan, framework of fishing rights enables specification of organizations or individuals that can fish specific marine resources at specific places in specific ways (Makino, 2013). *Pyropia yezoensis* farming is, of course, no exception. In line with the scheme of fishing rights, *Pyropia yezoensis* farming must be operated in the designated area. Basically, transfer from a designated farming area to other areas are not allowed. With understanding of the above-mentioned act, this study examined relationships between utility that *Pyropia yezoensis* farming fishermen derive from its farming and optimum use of Tokyo Bay.

Among diverse objectives of sea use in Tokyo Bay, *Pyropia yezoensis* farming is one of the icons, which has been succeeded since Edo era. Some Nori produced in Tokyo Bay are labeled and sold with the title of “Edo-mae Nori”. The word “Edo-mae” has had many definitions, changing with times. During the Edo era, it even meant tasty eels only caught in northern Tokyo Bay (Fujii, 2014). Today, however, fish, marine living products and fishing areas in Tokyo Bay are considered applicable to its definition in most cases, laying stress on special market value of those products. Simultaneously, “Edo-mae” often deliver atmosphere of traditional yet dashing way of life prevailed during the Edo era.

2 Materials and methods

To examine the hypothesis above, the author conducted semi-structured face-to-face interviews to *Pyropia yezoensis* farming fish-

ermen in Tokyo Bay, one by one. Two interviewees were selected in line with advice of an academic who has been working for environmental research and rehabilitation project of Tokyo Bay. Interviewees were selected to include *Pyropia yezoensis* farming fisherman from both areas favorable and unfavorable for farming. One interviewee operates *Pyropia yezoensis* farming in Kisarazu Area which belongs to Group 4 in Fig. 1, so he is farming favorable area in Tokyo Bay. The other interviewee operates *Pyropia yezoensis* farming in Chiba North Area which belongs to Group 5 in Fig. 1. Contrarily, he is working unfavorable area for *Pyropia yezoensis* in the Bay. The interviews were conducted on 5 September, 2013. The author spent 3 hours of interviewing time in total. Interview items contained views on their farming environment, farming style, and commitment to the *Pyropia yezoensis* farming. Through the outcome of those interviews, the author could investigate their utility of *Pyropira yezoensis* farming and clarify his conscious intentions and reasons why the fisherman has still worked in the area unfavorable for *Pyropia yezoensis* farming. Both of the two interviewees are male in the age group from forties to fifties.

3 Results and discussions

3-1 Utility of *Pyropia yezoensis* farming to its farming fishermen

Results of the interviews of two *Pyropia yezoensis* farming fishermen on their utility are presented in Table 1. One interviewee, referred to as Fisherman A in Table 1, operates *Pyropia yezoensis* farming in Chiba North *Pyropia yezoensis* farming area, where considered one of the most difficult areas for *Pyropia*

yezoensis growth. Another interviewee referred to as Fisherman B in Table 1 operates *Pyropia yezoensis* farming in Kisarazu *Pyropia yezoensis* farming area, where considered an area having good conditions for *Pyropia yezoensis* farming.

Fisherman A points out difficulties in continuing *Pyropia yezoensis* farming in the area under difficult water environment that locates in Group 5 (Table 1). At the same time, he is proud of continuing the pole-style (Shicyu-shiki), which is a traditional way of *Pyropia yezoensis* farming, by which he is confident about the quality of the product better than by the way of floating-style (Beta-nagashi). Further, his pride is clearly revealed by the fact that he quit an office work and has changed his field to *Pyropia yezoensis* farming. He has sincerely committed himself to receiving his father's brand-heritage, "Edo-mae", by succeeding traditional *Pyropia yezoensis* farming in Tokyo Bay. From these results, major cause of his continuing *Pyropia yezoensis* farming under the difficult condition is considered as his pride and perceived values in succeeding traditional way of farming and producing good quality of *Pyropia yezoensis* as one of the brand holders of "Edo-mae" in Tokyo Bay. Eventually, it will be said that the rather spiritual motivation has realized the coexistence of the unfavorable area, Group 5, with the favorable area, Group 4, for *Pyropia yezoensis* farming. In other words, Fisherman A assigns high priority to "Cultural Benefits" in his *Pyropia yezoensis* farming. He is fortunate that the consumers' market admits the product by the Fisherman A as a value-laden *Pyropia yezoensis* with the brand of pure "Edo-mae".

Fisherman B also makes up his mind to work on the traditional pole-style, as he is particular about the quality. The background of *Pyropia yezoensis* farming in Tokyo Bay will demand his decision; that is, *Porphyra tenera* farmed especially in the coast area in Tokyo Bay has had the brand name, "Asakusa-nori", which has been known for its delicate taste and aroma (Fujii, 2014), while its farming has suffered from various stresses. In particular, *Pyropia yezoensis* has been gradually replaced by farming of other species, tolerable to diseases and water temperature change. Nevertheless, fisherman B firmly told that his decision stands and there will be no retreat, even if the water environment at his farm becomes unsuitable for *Pyropia yezoensis* farming and he is granted to relocate his farm by an exemption of fishing rights. He has a deep concern for the public. He has opened his fisheries to visitors and children to let them experience and enjoy fisheries as a marine recreation. These will bear evidence of his motivation for inheriting *Pyropia yezoensis* farming at his place, being proud of its "Cultural Benefits".

The profit issues should be looked over the *Pyropia yezoensis* farming. Each price of Nori Sheet of each major *Pyropia yezoensis* farming area is 9.9 Japanese yen per sheet for Kisarazu area, 10.3 Japanese yen per sheet for Futtsu area, and 8.5 Japanese yen per sheet for Chiba North area (Chiba prefectural fisheries cooperatives Nori cooperative sales office, 2010). Futtsu area has the highest price due to its mass production of consistent quality by way of floating-style (Ukinagashi-shiki), which meets the market demand (Personal communication with officials of Japan Fisher-

ies Cooperatives and of Chiba prefectural fisheries cooperatives Nori cooperative sales office, on 3 September 2013 and 5 October 2013, respectively). If a fisherman anticipates a big profit in *Pyropia yezoensis* farming, the floating-style would be the one to choose. Fisherman A as well as Fisherman B sticks to the pole-style farming of *Pyropia yezoensis*, even yet. They are not easily prevailed upon to work on the mass production farming by use of floating style.

The interviews to the fishermen, as a case study, confirmed that in reality, pursuing optimum use of Tokyo Bay does not always result in enhancement of the stakeholders' utility, i.e., *Pyropia yezoensis* farmers in this case.

3-2 "Cultural Benefits" in marine and coastal management

In order to utilize limited marine and coastal space, marine spatial planning is naturally idealized for optimum uses and management of marine and coastal areas, including examining optimum spatial zoning in line with objectives of uses. Internationally, marine spatial planning through stakeholders' involvement has already been an essential step to promote ecosystem-based marine and coastal management (Douvere and Ehler, 2008). Utility of stakeholders should be received due consideration, since understanding stakeholders' utility would be one of the keys to successful marine spatial planning and marine and coastal management.

As mentioned in 3.1, in the case of *Pyropia yezoensis* farming, the coexistence of the unfavorable farm with the favorable farm is dependent upon the "Cultural Benefits" of

the farming. The hypothesis that “pursuing optimum use of a marine and coastal area would enhance the stakeholders’ utility” is not supported. Spiritual motivation to cherish the age-old heritage in fisheries should be taken the consideration into account in marine spatial management as the utility of importance. The interview revealed that the profitability is not always absolute in marine spatial management.

As a matter of consequence, the stakeholders’ utility, especially the “Cultural Benefits” should be considered carefully in developing marine spatial planning and managing marine and coastal areas.

3-3 Challenges and perspectives

Before concluding the paper, the author would like to point out the limitations of this study. Firstly, the limitations in relation to *Pyropia yezoensis* farming areas and the history of reclamation of Tokyo Bay should be pointed out. *Pyropia yezoensis* farming was operated along almost all of the coastlines of Tokyo Bay before the large-scale reclamation of the water front of Tokyo Bay from 1960s to 1970s (Shimizu and Ikeda, 2006; Koarai and Nakano, 2013; Information gained from interviews of Fisherman A and Fisherman B). The reclamation diminished a number of *Pyropia yezoensis* farms and deprived their fishing rights. The existing *Pyropia yezoensis* farming areas as of now are, after all, the ones which were out of the reclamation and/or moved to off-shore areas reflecting anthropogenic influences (Nishizaka, 1971; Tokyo Bay environmental information center, 2014). Also, fishing rights of *Pyropia yezoensis* farming were authorized to fishermen for specified places. That is,

fishing rights are restricted to specific places and fishermen. The fishing rights are then unable to be transferred to other places in principle. This principle might have affected the interview results of the *Pyropia yezoensis* farming fishermen regarding willingness to move to other places.

Secondly, although this study strengthened the importance of “Cultural Benefits” based on the findings, the interviews were conducted only to the *Pyropia yezoensis* fishermen in Tokyo Bay. As pointed out by Goulder and Kennedy (1997), there is variation in how the value or importance of ecosystems is viewed and expressed, depending on different disciplines, cultural norms, philosophical views, and schools of thought. There have been various studies carried out to explore how cultural differences influence valuation of ecosystem services (Hoyos *et al.*, 2009; Hynes *et al.*, 2013). To validate findings of this study, further research should be performed to measure the importance of “Cultural Benefits” and related utility derived from marine ecosystem services in other places and countries.

Thirdly, in this study, the importance of “Cultural Benefits” was treated only from a narrow point of view. Where there is a benefit, there is a cost. By contrast, the study looked at benefits only. In future study, the cost of “Cultural Benefits” and other benefits should be also explored. This study did not explore other factors which might enhance utility and guide to the success of marine and coastal management. Future work should investigate possible factors other than “Cultural Benefits” which might lead to the success of marine and coastal management, and examine the sensibility of each factor.

Lastly, possible bias in the results of the interviews should be noted. In this study, interviewees were selected from distinguished fishermen, who are leading fisheries communities or having been engaged in various activities other than fisheries. If other fishermen had been selected and interviewed, the results might have been different. An appropriate technique for interviewing to avoid unintended manipulation of interview results has not been established. In future study, when interpreting and analyzing the interview results, possible bias should be examined much more carefully. To avoid the risk of unintended manipulation of interview results, increase of interviewees and screening method of them would be required.

4 Conclusions

The hypothesis that “pursuing optimum use of a marine and coastal area would enhance the stakeholders’ utility” is not supported, but there still remain further studies by devising a series of systematic interviews in order to test this hypothesis. The key issue, which is brought about in this article, concerns undoubtedly reevaluating “Cultural Benefits”, much more definitely. The cultural benefits, despite its complex and individually independent nature, were found to be clearly recognized by two *Pyropia yezoensis* farmers in this study, although their views might not have a majority in the farmers and the effectiveness is a debatable issue in the marine spatial design and management. Further, it is also clarified that the utility that the *Pyropia yezoensis* farming fishermen derive from the farming is not always enhanced by economic gain. These findings reinforce complex nature of the utility,

especially the “Cultural Benefits”.

“Managing marine and coastal areas” is a synonym for “managing people”, which is similar to the realization that “managing fisheries” is synonym for “managing fishermen” by Hilborn (2007), yet rather complex. Although needs on marine and coastal areas would be more diversified and intense, they would never decrease. Hence, understanding the utility, which is the basis of preferences, choices, and behavior of people, becomes more and more important towards successful marine spatial planning. Thus, deeper understanding of the utility, especially “Cultural Benefits” is deemed essential towards finding common benefits among stakeholders for successful marine and coastal management.

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yezoensis farming fisherman), Mr. Takeshi Fukuda (*Pyropia yezoensis* farming fisherman), Mr. Yoshito Takahashi (Furusato Museum of Nori in Ohmori), and Dr. Etsuji Fujitsuka (Museum of Ohmori district). Special thanks are extended to John Dolan (OPRF) and Robert Blasiak (The University of Tokyo) for their constructive advice and editing. This study was funded by the Ocean Policy Research Foundation under its individual research fund, Nippon Foundation under its fund for Programme for Basis of Marine Affairs for The University of Tokyo, and S9 of the Environment Research and Technology Development Fund by Ministry of Environment.

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Table 1 Interview results of fishermen on *Pyropia yezoensis* farming and their utility

| Interviewees (Farming Area) | Category | Views and opinions |
|--------------------------------|---------------------|--|
| Fishermen A (Chiba North) | Farming environment | <p>✓ “To keep on operating <i>Pyropia yezoensis</i> farming in this place (Chiba North Area) is, of course, difficult. Thus, making continuous effort to successfully grow <i>Pyropia yezoensis</i> is crucial.”</p> <p>✓ “During winter, especially when little rain, <i>Pyropia yezoensis</i> tends to be discolored. Also, when red tide occurs, it damages <i>Pyropia yezoensis</i> growth.”</p> |
| | Farming style | <p>✓ “I stick to the traditional farming style called pole-style (Shicyu-shiki). Because it makes the taste of Nori much better than floating-style.”</p> |
| | Commitment | <p>✓ “I quitted an office job and became a <i>Pyropia yezoensis</i> farming fisherman here to succeed my father. I think that continuing traditional <i>Pyropia yezoensis</i> farming in Tokyo Bay and producing “Edo-mae Nori” are socially important. Besides, operating <i>Pyropia yezoensis</i> farming in Tokyo Bay is cool, I think.”</p> |
| Fisherman B (Kisarazu) | Farming environment | <p>✓ “I think this area (Kisarazu Area) is less vulnerable to discoloration compared with the Futtsu area or southern part of Chiba.”</p> |
| | Farming style | <p>✓ “I stick to the pole-style (Shicyu-shiki) farming. The natural drying process because of the tide, which only occurs in pole-style makes the quality of Nori very good. It makes the taste of Nori totally different from that of Nori produced in floating-style.”</p> |
| | Commitment | <p>✓ “Even if it is recommended to move to an optimum area for <i>Pyropia yezoensis</i> farming, I would stick to here and would not move to another place.”</p> <p>✓ “<i>Pyropia yezoensis</i> farming is not profitable, yet I have continued and will continue to do it.”</p> |

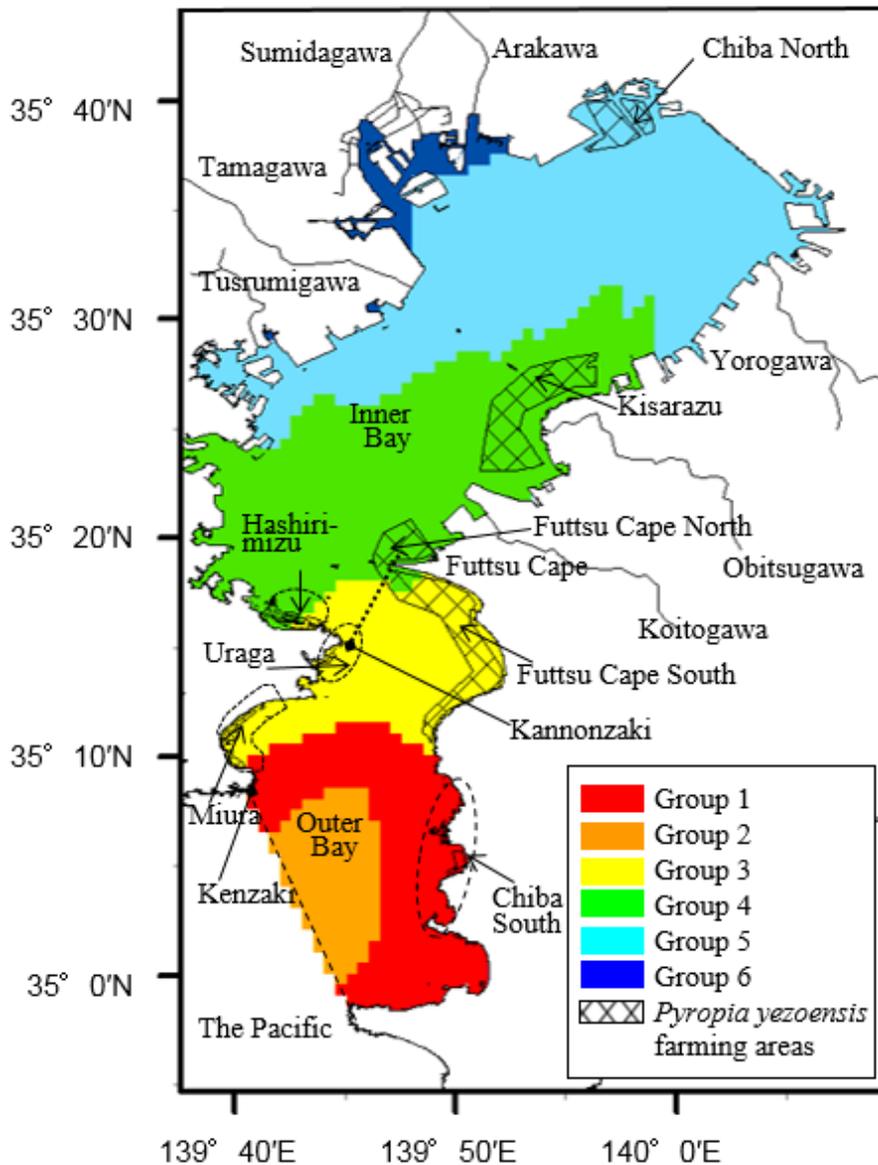


Fig. 1 Spatial distribution of 6 groups categorized by cluster analysis of Tokyo Bay based on average values of water temperature, salinity, dissolved inorganic phosphorus, transparency and water depth of December 2009, January 2010 and February 2010. Dotted line represents boundary between Inner Bay and Outer Bay of Tokyo Bay. Dashed line represents boundary between Outer Bay of Tokyo Bay and the Pacific (Partly modified Wakita *et al.* (2014b)). “Sumidagawa” represents “Sumida River”. Similar descriptions such as “Tamagawa” represent name of rivers.

Marine Protected Areas in Japan

—Social Studies of Technology and Science on Policy Making Processes—

Izumi TSURITA*

Abstract

The Marine Protected Area (MPA) is receiving international attention as a management tool for tackling biodiversity conservation and sustainable resource use. However, its definition remains broad, and its individual objectives, persons involved, and management methods are diverse. In addition, the background to MPA policy making processes, such as an awareness of the persons involved, social trends, selection of the MPA as a solution, and management and planning of MPAs, includes issues from both the natural sciences and social sciences, as well as the humanities. It is important, therefore, to comprehensively analyse through different domestic and international levels how MPAs are situated within a policy agenda, and under what kind of conditions and persons it is developed. Accordingly, this study first observes changing MPA policy processes from three levels - international environmental policy, Japan's national policy, and policy on the ground. Then, the study analyses the outcome of different policy levels from the perspectives of public policy and social studies of science and technology (STS). Finally, the study presents the challenges of the MPA policy as well as the provisions of the MPA policy research in Japan.

Key words: Marine Protected Area (MPA); Policy making process; Public policy; Social studies of science and technology (STS)

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