ISSN 1341－2418

# SOUTH PACIFIC NEWSLETTER

March 2017 No.28

## KAGOSHIMA UNIVERSITY
## RESEARCH CENTER FOR THE PACIFIC ISLANDS

KAGOSHIMA UNIVERSITY RESEARCH CENTER
FOR THE PACIFIC ISLANDS
1-21-24, Korimoto, Kagoshima, 890-8580 JAPAN ●
TEL: +81-99-285-7394
FAX: +81-99-285-6197

鹿児島大学国際島嶼教育研究センター
郵便番号　890-8580
鹿児島市郡元１丁目21番24号
電　　話　099-285-7394
ﾌｧｸｼﾐﾘ　099-285-6197

E-mail: shimaken@cpi.kagoshima-u.ac.jp
Website: http://cpi.kagoshima-u.ac.jp/index.html

CONTENTS



Cover photo: Rainbow tree in a forest of Kosrae, Federated States of Micronesia in August 2016 (by Yasushi OTSUKA)

## *RESEARCH ON INFLUENCE THE LIFE IN KOSRAE STATE OF FEDERATED STATES OF MICRONESIA BY GLOBALIZATION AND GLOBAL WARMING*

Globalization and global warming are affecting people's life in the world. Especially these are affecting many small islands, because the small islands are featured by the size of smallest and delicateness. For example, global warming leads temperature increase which affects sea level rise and this will affect low land very much. There are many low lands in the pacific, ex atoll. To improve this situation, at first we should know the situation and people's idea. This research is aimed to study how globalization and global warming affect the life in each island in Kosrae state of Federated States of Micronesia, was done in 5th – 9th August, 2016.

## *PRELIMINARY REPORT ON THE GEOLOGICAL SURVEY IN THE STATE OF KOSRAE, FEDERATED STATES OF MICRONESIA*

Hafiz Ur REHMAN

Department of Earth and Environmental Sciences, Graduate School of Science and Engineering, Kagoshima University

In August, 2016, a preliminary geological field survey and sample collection was carried out in the State of Kosrae, Federated States of Micronesia (FSM). This field survey is an extension of our project of the "Geological Investigation of the Caroline Volcanic Islands in the FSM" started in 2013. The aim is to investigate the origin of the volcanism on Caroline Islands in FSM, conduct a detailed geochemistry on the various types of volcanic rocks exposed on these islands, and to determine their precise age, finally to find the relation of these volcanics with the tectonic setting of the area. Caroline Islands are comprised of 607 small islands in the western Pacific which make the four main states: (1) Yap, (2) Truk, (3) Pohnpei, and (4) Kosrae of FSM, extending from west to east in the Pacific low latitudes in the northern equatorial region (Fig. 1a). The Islands of Yap form an island arc system on the

eastern convergent margin of the Philippine Sea Plate whereas other three states of the FSM (Truk, Pohnpei, and Kosrae) lie on the Pacific Plate, east of the Mariana-Yap-Palau trench system along the Caroline ridge (for details See REHMAN *et al*. 2013). REHMAN *et al*. (2013) presented a review on the geological setup, field, petrographic and geochemical features of the volcanic rocks, and summarised the age data of the volcanic activity on these islands. Based on the reported age data, the volcanic activity in Truk started at 14.8 Ma and continued until 4.3 Ma, in Pohnpei volcanism started at around 8.7 Ma and ended up at

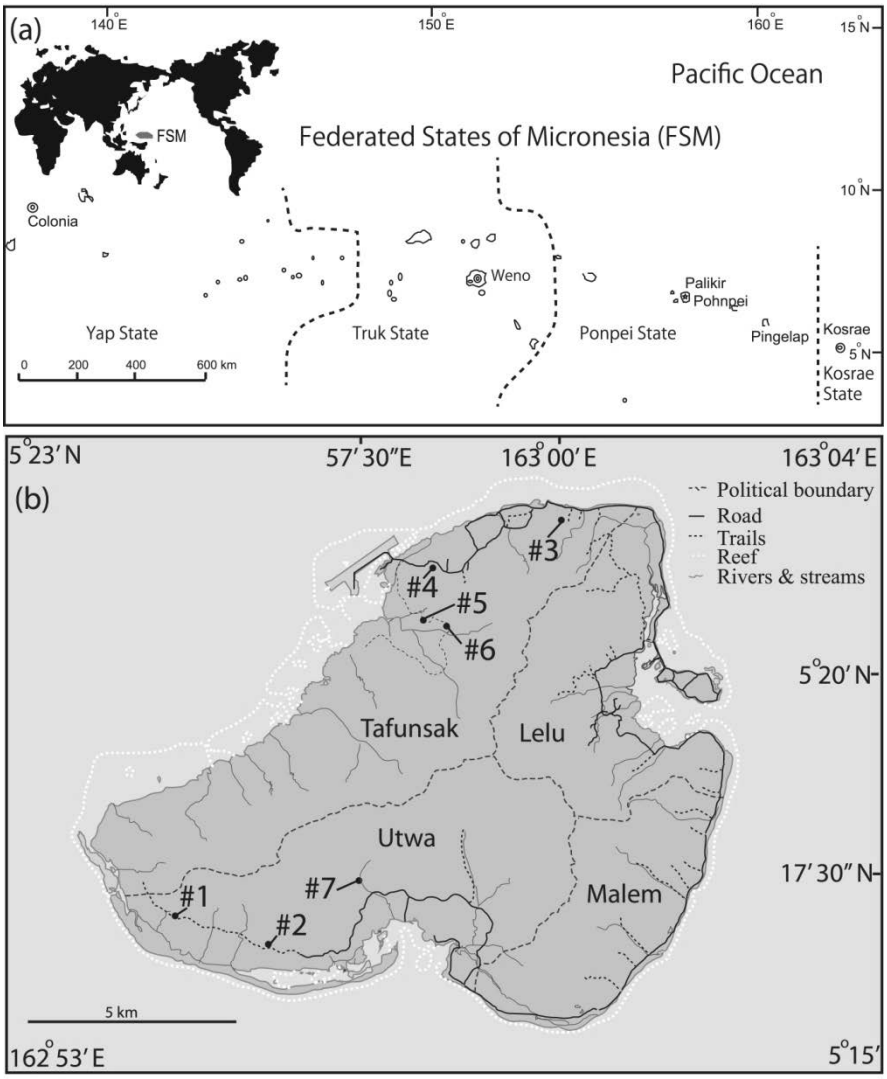



Fig. 1. Maps of FSM (a) and Kosrae (b).

0.9 Ma, and volcanism in Kosrae was initiated at 2 Ma and lasted until 0.9 Ma, showing a younging direction towards east (e.g. DIXON *et al*., 1984; KEATING *et al*. 1984a, b; LEE *et al*., 2001).

From a sub-linear trend within the Pacific plate alike the volcanic chain of Hawaii (volcanism from a hot spot) and the younging direction from west to east of the volcanic islands were interpreted by the above mentioned and a few other authors to be associated with a hot-spot origin. However age overlap of the volcanic activity in the three states of FSM and the absence of a hot-spot east of Kosrae after the volcanic activity of 0.9 Ma pose questions on the hot-spot model. To understand the origin and tectonic setting of these volcanic islands, it is better to revisit the geology of Caroline Volcanic Islands. In this

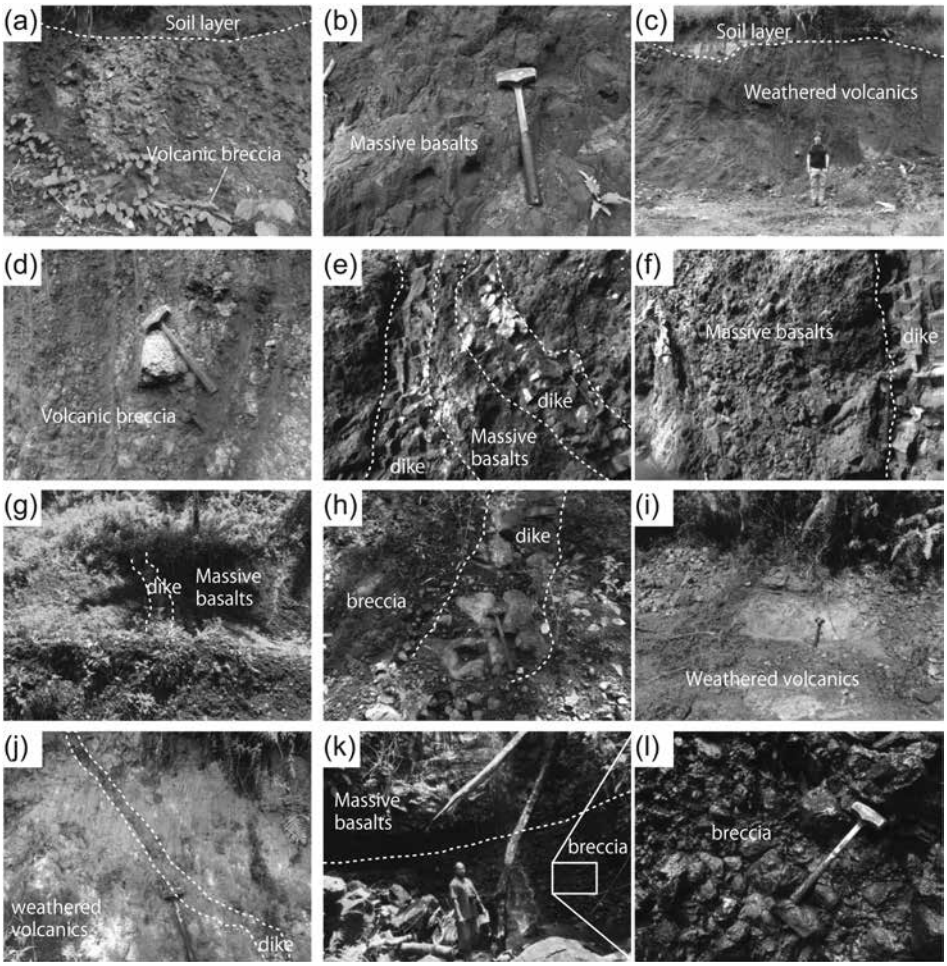



Fig. 2. Field Photos in Kosrae.

preliminary report a short and preliminary overview of the volcanic exposed in the State of Kosrae aided with field features are presented. Further scientific results will be presented in the future reports.

The State of Kosrae, the second largest island and the eastern most state of FSM, is located at approximately 5° N latitude and 163° E longitude covering an area of 110 $km^2$ (Fig. 1b). It is the youngest volcanic island surrounded by the mangrove swamp. MATTEY (1982) reported two magma types from Kosrae i.e. the Kosrae Main Lava Series (KMLS) and the Kosrae Nepehlinite Series (KNS). Rocks of the KMLS are mainly basalts, ankaramites, and hawaiites containing phenocrysts of olivine, Ti-clinopyroxene, kaersutite and phlogopite. These rocks are similar to the basaltic rocks exposed on the island of Pohnpei. Rocks of the KNS are a group of highly to moderately undersaturated lavas and dikes.

During the field survey conducted in August, 2016, about 65 rocks samples were collected from the outcrops, covering the most part of island (Fig. 2). Based on field features and sample investigation with the naked eye, at least four stages of volcanic activity can be recognized i.e. (1) breccia basalts (Fig. 2, a-d, g-h, l), forming the most of the outer margins of the main island (excluding the swamp and coral reefs) (2) Massive basalts (Main Lava Series, Fig. 2, e, f, k), (3) Nephelinite Series, highly weathered and mostly clayey (Fig. 2, i-j), and (4) Late-stage dikes (Fig. 2, e, f, j) intruding breccia and massive basalts.

Detailed petrological, geochemical, and geochronological work on the collected samples will enable us to understand the origin of these volcanic rocks and their timing of extrusion. In addition, the ongoing petrological and geochemical work on the rock samples collected from Truk and Pohnpei and that of Kosrae will help to elucidate the geological origin of the Caroline Volcanic Islands.

*Acknowledgements*

I am grateful for the cooperation by the State of Kosrae Government for giving us the permission to conduct field survey in the area, and special thanks to Presley ABRAHAM of KIRMA, without his cooperation, the field work could not have been possible. I also thank the cooperation of KAWAI K., OTSUKA Y., TAKAMIYA H. and YAMAMOTO S. This research was partly funded by the grants from the Kagoshima University Research Center for the Pacific Islands.

*References*

DIXON, T. H. BATIZA, R. FUTA, K. and MARTIN, D. 1984. Petrochemistry, age and isotopic composition of alkali basalts from Pohnpei Island, Western Pacific. Chem. Geol., 43: 1-28.

KEATING, B. H., MATTEY, D. P., NAUGHTON, J. and HELSLEY, C. E. 1984a. Age and origin of Truk Atoll, eastern Caroline Islands: Geochemical, radiometric-age, and paleomagnetic evidence. Geo. Soc. Am. Bul., 95: 350-356.

KEATING, B. H. MATTEY, D. P. HELSLEY, C. E. NAUGHTON, J. J. LAZAREWICZ, A. SCHWANK, D. and EPP, D. 1984b. Evidence for a hot spot origin of the Caroline Islands. J. Geophys. Res., 89: 9937-9948.

LEE, I. L., HUR, S. D., PARK, B. K. and HAN, S. J. 2001. Geochemistry and K-Ar age of alkali basalts from Weno Island, Caroline Islands, Western Pacific, Ocea. Pol. Res., 23: 23-34.

MATTEY, D. P. 1982. The minor and trace element geochemistry of volcanic rocks from Truk, Pohnpei and Kosrae, Eastern Caroline Islands; the evolution of a young hot spot trace across old Pacific Ocean Crust. Contrib. Min. Pet., 80: 1-13.

REHMAN, H. U., NAKAYA, H. and KAWAI, K. 2013. Geological Origin of the Volcanic Islands of the Caroline Group in the Federated States of Micronesia, Western Pacific. South Pacific Studies, 33: 101-118.

## *PREHISTORY AND PEOPLE OF KOSRAE*

Hiroto TAKAMIYA

The Research Center for Pacific Islands, Kagoshima University

*Introduction*

Almost all human groups are interested in their origins: when and where did their ancestors come from? For example, Japanese are so interested in this theme, not only scholars but also lay people have paid great attention on when and where their ancestors

come from (SHINODA 2016). However, there are often large gap on the knowledge between the most recent scientific findings on the theme and what lay people know about their origin. Are people of Kosrae interested in their origin? What do they know about their origin? In order to undertstand these questions, I have interviewed twelve Kosraean in the summer of 2016. While sample number is small, this report presents the preliminary results of the survey.

*Method*

The sex and age categories of the informants are shown in Table 1. The interview mainly consists of three questions.

1) Are you interested in the origin of the Kosrae people?
2) When and how the island was created or formed?
3) Do you know when and how people came to the island?

*Results*

Table 2 summarizes the results of the interview. On Question #1, contrary to my expectation, seven people out of twelve said they were not interested in their origin. Regarding to Question #2, all of them did not know correctly the geological history of the island. With regard to the third question, to which the author of this report had great interest, four people provided their ideas about when and where their ancestors came from. On the other hand, eight people had no idea about their origin.

Table 1. The ages and sexes of the informants.

| age | Male | Female |
|---|---|---|
| 10-19 | 1 | |
| 20-29 | 1 | 1 |
| 30-39 | 3 | 2 |
| 40-49 | | |
| 50-59 | 1 | 2 |
| 60-69 | 1 | |
| total | 7 | 5 |

Table 2. The summary of the survey.

| | Yes | No |
|---|---|---|
| question #1 | 5 | 7 |
| question #2 | 3 | 9 |
| question #3 | 4 | 8 |

*Discussion and Concluding Remarks*

According to RAINBIRD (2004), the island of Kosrae was formed approximately 1.4 million years ago. While people (*Homo sapiens*) first appeared into Australia and New Guinea ca. 50,000 years ago, they did not spread into the Micronesian islands for several thousand years later. Archaeological evidence indicates that the island of Kosrae was first occupied by humans approximately between 2000 and 1500 years ago (INTOH 1997, RAINBIRD 2004). Both linguistic and archaeological data suggest that the colonization took place from Solomons and/or Vanuatsu region to Central Micronesia, including Kosrae (INTOH 1997, RAINBIRD 2004).

Nine people did not know when the island was formed at all. Three people who answered the question stated the island was formed somewhere between 200 years ago and 1000 years ago. Ten people did not have any idea as to when people first colonized the island. Two people suggested that the island was colonized between 100 years ago and 300 years ago. Interestingly, while two people were not able to answer when colonization took place, they said their ancestors came from the south based on physical and linguistics similarities.

Two people mentioned that they briefly learned prehistory of the island when they were high school students but others said they never learned about the topic. Since more than a half of the informants were not interested on this topic, the results obtained this time might be natural outcome. However, while I was interviewing the islanders, I strongly felt the islanders should have more opportunity to learn about their origin and prehistory of the island in school education.

*References*

INTOH, M. 1997. Human Dispersals into Micronesia. Anthropological Science, 105:15-28.

RAINBIRD, P. 2004. The Archaeology of Micronesia. 301pp., Cambridge University Press, New York.

SHINODA, K. 2016 DNA de kataru Nihonjin Kigen-ron (The Origins of the Japanese based on DNA analysis). 245pp., Iwanami shoten, Tokyo.

***BLACK FLY OF FEDERATED STATES OF MICRONESIA***

Yasushi OTSUKA

The Research Center for Pacific Islands, Kagoshima University

Black fly is one of medically important insects. The blood-sucking habits of female black fly are responsible for considerable deleterious effects on humans and their economic welfare. The medical and socioeconomic impacts associated with black flies include reduced levels of tourism, the death of domesticated birds and mammals, and the transmission of viral, protozoan and filarial diseases. In particular, black flies are well known as vectors of *Onchocerca volvulus*, the causative filarial species of human onchocerciasis or

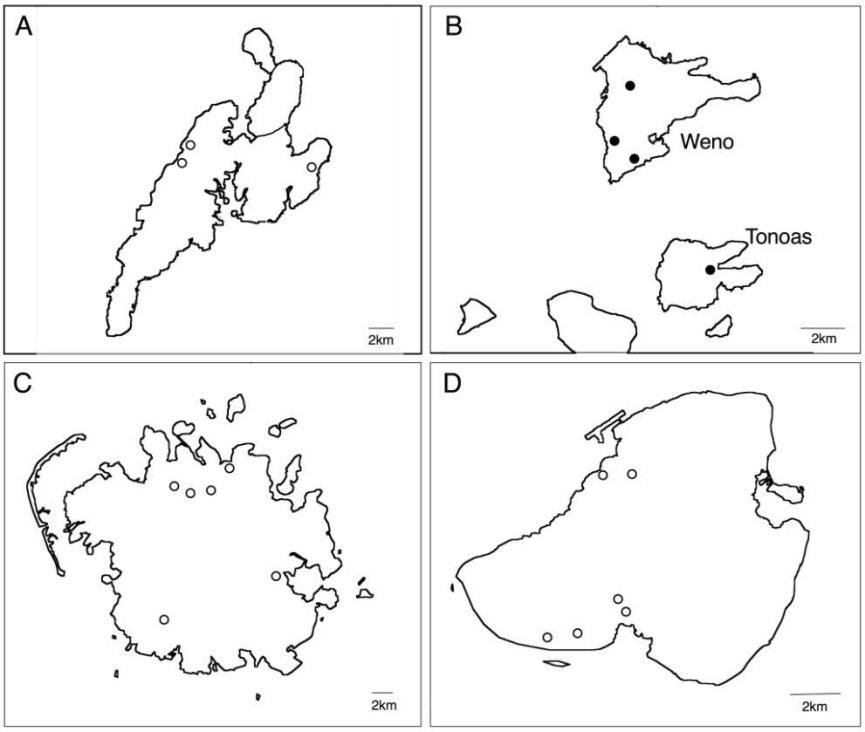



Fig. 1. Maps of surveyed sites in Yap island (A), Weno island and Tonoas island in Chuuk state (B), Pohnpei island (C) and Kosrae island (D). Filled and open circles indicates sites where larvae of black fly were found and not, respectively.

‘river blindness’ endemic in Africa and Central and South America.

STONE (1964) described three species of Simuliidae from Micronesia, *Simulium guamense*, *S. palauense* and *S. trukense*. In Federated States of Micronesia (FSM), only *S. trukense* is known in Weno island and Tol island of Chuuk state. To survey the distribution of black fly in FSM, I checked larvae of Simuliidae in streams of the main island of all states of FSM, Pohenpei island in August 4–9, 2014, Weno island in Nevember 29 2014, Tonoas in January 10, 2015, Yap island in August 21–24, 2015, Kosra island in August 6–8 2016 (Fig. 1). As a result, larvae of *S. trukense* were found in Nantaku river, Nawap river and Nemo river Weno island and a steam of Lala town of Tonoas island of Chuuk state. Whereas, no larva of black fly was found in islands of other states of FSM.

*Simulium trukense* belongs to subgenus *Inseliellum*, and is distributed in Guam, except for Chuuk state of FSM. In addition, *Inseliellum* subgenus has spread its distribution to the Society Islands, Cook Islands, Marquises Islands in Polynesia far. CRAIG *et al*. (2001) discusses the distribution of *Inseliellum* subgenera in relation to the geological history of islands. Among *Inseliellum*, species that are systematically ancestral are distributed in old islands, and derivative species are distributed in newly formed islands. *Simulium trukense* is systematically an ancestral species, and Chuuk is an old island among 10.9 Mya (14.8 to 4.0 Mya). Also, Guam is much older island with 33.2 Mya (43.8 to 13.5 Mya). On the other hand, Pohnpei and Koasre is a new island with 5.2 Mya (8.6 to 3.0 Mya) and 1.4 Mya (2.6 to 1.2 Mya), respectively. CRAIG *et al*. (2001) speculate that it was 20 Mya that the ancestors of *Inseliellum* subgenus spread to Micronesia. Afterwards it expanded the distribution with Guam and Chuuk, but the fact that the distribution did not spread to Pohnpei and Koasrae may be due to the historical factors of the geology. However, Pohnpei and Kosare islands have a higher altitude than Chuuk islands. This survey was done only in streams of low altitude, so another black fly species may inhabit in different environments.

<u>*References*</u>

CRAIG, D. A., CURRIE, D. C. and JOY, D. A. 2001. Geographical History of the Central - Western Pacific Black Fly Subgenus *Inseliellum* (Diptera: Simuliidae: *Simulium*) Based on a Reconstructed Phylogeny of the Species, Hot-Spot Archipelagoes and Hydrological Considerations. Journal of Biogeography, 28: 1101-1127.

STONE, A. 1964. Diptera: Simuliidae. Insects of Micronesia, 12: 629-635.

# *RESEARCH EXPERIENCES AT THE KAGOSHIMA UNIVERSITY RESEARCH CENTRE FOR THE PACIFIC ISLANDS*

Gary SALI

Visiting Professor, Research Center for Pacific Islands, Kagoshima University
(October 201 to March 2016):
Papua New Guinea University of Technology, Lae, Papua New Guinea.

While growing up in the highlands of Papua New Guinea, I have vivid memories of the older people in my remote village saying in their own local language (Sau Enga) "*Japan Amiyapa yanda piyambi*", which is interpreted in English as, "*Japan and Army were fighting*". This does not make any logic at all, when you put it together as sentence, but in their own world of local language, they were simply, telling what they heard from the Australian colonialists. They were making reference to the Second World War (1942-1945) where the British-Australian allied troops fought against the Japanese invasion forces in different parts of the coastal areas of Papua New Guinea (WAIKO 1993). Although, the war was fought in the low coastal lands, the people in the highlands of Papua New Guinea only saw planes flying over their territories, which they thought was "big birds" flown over by their ancestors.[1]

As the war ended and the Australians further penetrated and established their administrative camps in many isolated pockets of the highlands villages, (which were not discovered before the world war since their first contact of the region in the 1930s), the colonialists informed the locals that they (Australians) have claimed them (locals) and their land through a tough and enduring battle against a determined Japanese invasion (Griffin, et al, 1979). I was told by the locals that though they initially defended their territories using their own primitive weapons, they were no match for the high powered factory guns the Australian colonialists were using, and so they had to give in, and became loyal and obedient

[1] John WAIKO, a first Papua New Guinean Professor in History, in his book titled, "A Short History of Papua New Guinea", while giving a detailed account of the short political history of Papua New Guinea, presented a story of the Japanese invasion and the tough battle against the Australian and British allied troops. The major battle that took place in the Kokoda Trail was a bloody fight that lost lots of lives from both sides (WAIKO 1993).

servant and respected them in fear.

As I went to a formal school in my district in 1976, which is about one and half hour distance by walking, the war between the invading Japanese forces and the allied troops was told by many interested teachers, though it was not part of the teaching curriculum. As I moved through the Papua New Guinea education system to high school, senior high school, and university, I have come to learn the Second World War, and the battle with the powerful Japanese force against the might of the Australia and British troops particularly along the Kokoda Trail[2] that costed so many lives on both sides. Hence, to many Papua New Guineans, Japan is popularly a household name in the country, not only because of the notorious war, but most importantly because of its (Japanese) investment on social infrastructure and human development through the Japan International Cooperation Agency (JICA)[3].

In fact, I am so deeply touched and humbled by this opportunity as a Visiting Associate Professor to the Kagoshima University Research Centre for the Pacific Islands (KURCPI), as it is another shining example of what Japan as a nation has offered its generous assistance to many countries particularly in the small developing countries like Papua New Guinea. While growing up in Papua New Guinea, I was wondering whether I could have an opportunity to go to Japan in any capacity, and when this opportunity came, I grabbed it firmly with both hands.

My settling in at the KURCPI has been wonderful and I cannot ask for anything more and better. The Director of the KURCPI, Professor Kei, and the centre's research and

---

[2] "The Kokoda Trail or Track is a single-file foot thoroughfare that runs 96 kilometres (60 mi) overland—60 kilometres (37 mi) in a straight line—through the Owen Stanley Range in Papua New Guinea. The track was the location of the 1942 World War II battle between Japanese and Allied—primarily Australian—forces in what was then the Australian territory of Papua. The track runs from Owers Corner in Central Province, 50 kilometres (31 mi) east of Port Moresby, across rugged and isolated terrain which is only passable on foot, to the village of Kokoda in Oro Province. It reaches a height of 2,190 metres (7,185 ft) as it passes around the peak of Mount Bellamy. [1] The track travels primarily through the land of the Mountain Koiari people. Hot, humid days with intensely cold nights, torrential rainfall and the risk of endemic tropical diseases such as malaria make it a challenging trek. Hiking the trail normally takes between four and twelve days; the fastest recorded time is 16 hours 34 minutes". (See Wikipedia at https://en.wikipedia.org/wiki/Kokoda_Track).

[3] With the first Japanese Government initiated Official Development Assistance (ODA) to Papua New Guinea in 1974 with a construction of a National Fishery Training College in in Kavieng and along with the official opening and launching of the Japan International Cooperation Agency (JICA) Papua New Guinea Office in 1983, the Japanese Government and the people of Japan has invested so much through the banner of either old ODA and now JICA. The assistance has been wide across the socio-economic developments or institutional and capacity buildings.
(See details at https://www.jica.go.jp/png/english/office/about/history.html)

administration staff have been so kind to me providing conducive environment for my research. In the first few days of my arrival, I had the pleasure and honor of paying courtesy call to the Office of Kagoshima University President, Professor Yoshizane MAEDA, and it was indeed a privileged opportunity to have met him with his Executive Vice President Research, Professor Fuimo SUMIYOSHI, as shown in the picture below.

In this vein of my good orientation to the Kagoshima University, I have observed the sociology of Japanese people in Kagoshima (while working in the KURCPI office, visiting Kagoshima city council, staying in my flat, going to the shopping malls, taking a train ride, walking to the city, having meals in the restaurants, or in rare occasions just chatting with a few Japanese people) with interest not only on how they conduct their work and social life but looking at the general social environment. I could immediately observe that people move with purpose from one point to another, greeting other people very well, conscious of other person with respect, committed to their work, time is of essence, and generally nice people though they usually keep to themselves. There is a general perceived view in Papua New Guinea that Japanese people are usually generous and kind and my own observation does not change that perception. On the general social environment front, the place is peaceful and you could feel the peace, law, order and civility in its very cool form. I have heard about the general politeness of the Japanese people and serenity and tranquility of the place, and to have come from Papua New Guinea and observe the people's general behavior and the order of the place is just so amazing and real.

Drs. Kawai K, Sumiyoshi F., Sali G. and the President Maeda Y. (left to right)

I will return to Papua New Guinea with an honest conviction that Japanese people are in fact by and large diligent, hospitable, and optimistic as Japan Government's own book revealed these noble virtues in 1964[4]. I have come to realize Japanese society is generally based on respect and tolerance and to accord the level of respect to somebody, one has to bow down has a sign of deep respect, which is not a mere token, but one that transcend out from his or her inner being in the true spirit of love, care, and compassion. In Papua New Guinea and in the western world, a mere handshake is good enough to show respect but this may only be a token without having any sense of entrenched honor displayed from the inner level of the person.

For Japan, it can be observed that, this level of respect is translated to the general level of order and peace in the different communities across the country. The perception that Japan is so peaceful and has low crime rate is captured nicely by BERGO (2014) as: "its economic success, distinct culture and disciplined population has made Japan rather unique, and produced one of the lowest crime rates in the world. The country has 127 million people yet street crime is almost unheard of; the murder rate is only lower in tiny Monaco and Palau, and the use of drugs is minimal compared to other industrialized countries. The Japanese intolerance to illicit drugs—seen as evidence of bad personal character—were demonstrated with the national outrage followed when two well-known sumo wrestlers tested positive for marijuana in 2008". This is why my research at KURCPI is important as I have come to learn that the deep respect for other people and their properties imbedded in the Japanese culture compounded with a strong, stringent, and effective criminal justice system plus number of other structural factors have led to the low crime rate in Japan.

My research topic on "concerns and challenges of crime in Papua New Guinea", as stated in my abstract, "is an analytical understanding of not only crime concerns but also a broader context of the difficult conditions and challenges in which crime occurs in Papua New Guinea The research examines the crime concerns from Papua New Guinea through the lenses of white-collar crime; transnational crime; ethnic conflict; property crime; and crime against person" (SALI 2017). These crimes have grabbed headlines and featured prominently in the local and international media, and continue as a critical concern in this unique and

[4] Read this book on "Japan land and people" produced and published by the Government of Japan in 1964 that captured the Japanese life style with its cultures and socio-economic and political developments (Government of Japan, 1964). It is so amazing how Japan could still hold these virtues after just over 50 years. The noble virtues of diligent, hospitality, and optimism are still active and alive.

diverse country. In some instances, there have been reported cases of illegal hire powered guns used to engage in crime (ibid 2017). From Papua New Guinea context, crime is unique in its time and place, grounded in an historic legacy and shaped by the changing socio-economic and political dynamics of the country with strong western influences as different literatures show (ibid 2017).

Hence, my research is interesting and challenging at the same time. It is interesting because it gives me an opportunity to explore the crime problem in my country in detail especially from a country like Japan which has low crime rate in the world. It is, however, very challenging because it is next to impossible to find a way to totally eradicate crime from a society. Given these scenarios, I am confident that my research can identify the real causes of crime in Papua New Guinea, and develop strategies to deal with the problem.

It is important to know that crime concerns in Papua New Guinea is multifaceted and it is more than just a law and justice sector issue but the concern cross-cuts through the structural veins of our society. Papua New Guinea need to see the crime problem being shaped by structural factors that require not only committed political will and resources but a strong, vibrant, stable, and resilient bureaucratic and law and justice system to deliver (SALI, 2017). Japan's low crime rate is not because of miracle medical interventions but because of its positive mindset shifts and repeatedly doing the correct things by politicians, government and civil society workers, and the general public in the different responsibilities they perform. After the Second World War, Japan has committed itself to develop its economy and Papua New Guinea need to learn from Japan. There is no easy way out; Japan has earned the low crime rate in the world. In this vein, Papua New Guinea must work hard to find the real causes and minimize its appalling crime concern, and that is why research on crime like my research here at KURCPI is so important to contribute to this national issue.

## References


BERGO, H. 2014. The secret of Japan's mysteriously low crime rate. Nation Master Bog. Retrieved on 18th January, 2017, at http://www.nationmaster.com/blog/?p=74

GRIFFIN, J. *et al*, 1979. Papua New Guinea: A Political History. Victoria. Heinemann Education Australia.

SALI, G. 2017. Research abstract on the concerns and challenges of Crime in Papua New Guinea. Kagoshima University Centre for the Pacific Islands

WAIKO, J. D. 1993. A Short History of Papua New Guinea. Melbourne: oxford University Press.

Wikipedia, Kokoda Trail. Retrieved on 18th January, 2017, at https://en.wikipedia.org/wiki/Kokoda_Track

## Symposium

29 November 2016
Kagoshima University

### Ecology and Conservation of Sea Turtles in the Nansei Islands

*Aim*

Sea turtles are very familiar to people in Japan, which is surrounded by the sea, from the ancient times, and they appear even in Japanese fairy tales. Their meat and eggs are also very important as food especially on small islands. Sea turtles have been endangered due to its overhunt and decrease of their spawning grounds, i.e. pollution or removal of sandy beaches as a result of human activities. For these reasons, there is an increasing momentum among people in the world to conserve sea turtles in many ways. The loggerhead turtle, green turtle, and hawksbill turtle are often seen in the waters around Japan, and it is known that the sandy beaches of the Nansei Islands are very important for spawning grounds. In this symposium, we have invited three presenters who conduct research on sea turtles in different disciplines in various regions, and we focus on global and local activities of conservation and ecology to understand the present situation of sea turtles.

**1: Overview of Sea Turtle Conservation and Biology**

Yoshimasa MATSUZAWA (Sea Turtle Association of Japan, Suma Aqualife Park Kobe)

Sea turtles are marine reptiles and a part of the order Testudines. There are 8 species of living sea turtles, which consist of one species placed in the family Dermochelyidae and 7 species in the family Cheloniidae. Five of the 8 are widely distributed in tropical, subtropical and temperate waters through the world. Although they are well adopted to life in the ocean with their paddle-like flippers, flattened and streamlined shells, and salt glands, they are not ovoviviparous and females must return to land in order to lay their eggs. In Japan, nesting sites for loggerhead are distributed mainly along the Pacific coast in the south of Fukushima, those for green in the Ogasawara and Nansei islands, and those for hawksbill in the Ryukyu Islands. Irregular leatherback nesting has also been observed in Amami-Oshima Island. There had been variety of relationships between human sand sea turtles, which come ashore for nesting. Local people who observe turtles laying eggs would feel compassion for them whereas others especially in islands that traditionally utilize turtles and their eggs, see them

more as a food resource. Due to overexploitation and other threats –including fishery bycatch, beach erosion, coastal development, and oil leakage– that rose in the late 20th century, many of the sea turtle species and populations have declined and become in danger of being extinct. With growing support for conservation since the 1970s, a variety of conservation actions have been taken and some of them have led to recovery of some populations. However, subsequent studies found that some did more harm than good. Some of the turtle's inherent biological characteristics, such as long-distance migrations and generation time as long as 4 decades, make it difficult to conserve sea turtles comprehensively and effectively without long-lasting practical actions on regional scale, including sea turtle nest monitoring, and understanding and cooperation among communities and nations over migration routes for each population.

**2: Sea Turtles in the Nansei Islands**

TAKASHI ISHIHARA (Suma Aqualife Park Kobe)

Sea turtles are significant in the Nansei Islands in several ways. Firstly, the area is one where three sea turtle species, namely loggerhead turtle, green turtle, and hawksbill turtle, nest constitutively and sympatrically. While the southern nesting limit of the loggerhead is the Yaeyama Islands and the northern nesting limit of green and hawksbill is the Osumi and Amami islands, respectively, nesting sites of these three sea turtle species overlap only in the Nansei Islands. Secondly, it is has recently been revealed that the loggerhead genetic population structure of the Nansei Islands differ from that of mainland Japan. It is significant that about 20-40% of the haplotype from the Nansei Islands have the same unique haplotype of the South Pacific loggerhead population. In addition, the rate of the haplotype tends to increase as towards the southern nesting sites. This fact suggests that there is or was a genetic exchange between the North and the South Pacific populations through the Nansei Islands. For green and hawksbill turtles, juveniles with a carapace length of approximately 20cm are only rarely found in the Nansei Islands. This size is called a 'lost year size' because their habitats are still unknown. Clarification of their ecology is awaited in near future. It also seems that the frequency and number of sightings of green and hawksbill turtle by scuba divers is increasing in recent years and it is said that greens and hawksbills are increasing in numbers. In addition, it is also said that because it has also been lost to be captured for food or stuffed, the number or individuals of turtles who do not fear the people are increasing. It is now easy to take underwater photos during scuba diving. The underwater sea turtle photographs could reveal various ecology of sea turtles especially in the Nansei Islands, the dominant sea turtle habitat.

**3: Preservation Activity of Turtles in Amami-Oshima Island**

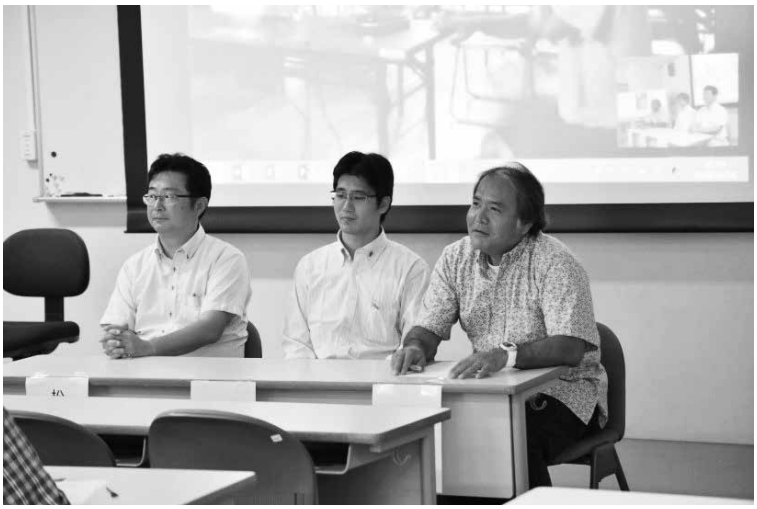
Katsuki OKI (Amami Marine Life Research Group)

There are over 130 nesting beaches of sea turtles at Amami-Oshima Island. Only about 30 beaches have been researched by the by administration, and we have shared in researching about 100 remaining beaches with a local resident and related groups since 2012. The sea turtles nesting situation of Amami-Oshima Island whole area became clear for the first time in 2012. The results showed there to be 1081 nests of sea turtles (605 nests of loggerhead, 327 nests of green turtle and 149 nests of unclear species).

Research on Tokunoshima Island was undertaken in 2013, and the research of sea turtles in the Amami Archipelago whole field was also performed, identifying 1932 nests (1141 nests of loggerhead, 662 nests of green turtle and 129 nests of unclear species), with the Amami Archipelago accounting for about 10 percent of the general laying number of times in the whole country.

However, the total number of nests of sea turtles decreased after 2012 at Amami-Oshima Island, with the number of nests of the loggerhead decreasing, and on other hand, the number of nests of the green turtle increasing. We started the satellite tracking of the females which nested at Amami-Oshima Island from 2015 and found that loggerheads are using the East China Sea, and that green turtles are using the coast of Kyushu, south-side of Honshu and Izu-islands as feeding areas. The predation of turtle eggs by Ryukyu Wild Boar, which is a native species, was confirmed at Amami-Oshima Island, and 89 nests were affected –about 25 % of the number of general nests are preyed on in 2015, and a preservation measure by the prefecture is proposed.

Talk and observation turtle meetings are being held periodically by our research group for the purpose of preserving the sea turtle and its nesting beaches.



Panel Discussion: Dr. MATSUZAWA, Dr. ISHIHARA, Mr. OKI (Left to Right)

## Symposium

22 January 2017
AiAi Hiroba, Amami City

### The Latest Findings on Prehistory of the Amami and Okinawa Archipelagos

*Aim*

Prehistory means the period of time where there was no written document. Since written document is not available, archaeology and anthropology play extremely important roles in order to understand prehistory. Because new and detailed analytical methods have been introduced into the Amami and Okinawa archipelagos for last twenty years or so, prehistory of this region has been much more clearly understood. This symposium is organized in order to share the portion of the latest data to the people of Amami islands.

The symposium consists of six themes. 1) DNA analysis, which has become very popular in recent years, provides some pieces of information about where people came from. Based on DNA data, Ken-ichi Shinoda will talk about the origin of the Amami and Okinawa people. 2) Masami Takenaka, an osteologist, will discuss physical characteristics of the prehistoric people in this region. 3) The carbon and nitrogen isotope analysis of human bones shed light on diet of prehistoric people. Minoru Yoneda will demonstrate what kind of food Amami and Okinawa islanders consumed prehistorically. 4) Takeji Toizumi, a faunal analyst, will introduce what kind of vertebrate animals were eaten during prehistoric time and attempt to reconstruct paleoenvironment. 5) Taiji Kurozumi, who is specialized in shell analysis, will explain shellfish utilization patterns in the prehistoric time. Also he will introduce paleoenvironment based on the analysis of endemic land snails. 6) Finally, Hiroto Takamiya will discuss plant food consumed by the prehistoric people in the islands. He also will show when transition from hunting and gathering to food production took place. We will try to avoid jargons in order for the participants to understand our talks easily.

**1: Formation of the Ryukyu Islanders Viewed from DNA Analysis**

Kenichi SHINODA (Department of Anthropology, National Museum of Nature and Science)

The origin of the Japanese population remains controversial, although multidisciplinary approach is being used to address this issue. The DNA analysis of ancient human remains is useful in this regard because it provides information on the genetic characteristics of a

society that existed at a specific time in the past.

Ryukyu Islands are the southwest island chain in Japan. Due to its geographical position, these islands are thought to play an important role of the migration route from Taiwan and Southeast Asia to the Japanese archipelagos. Archaeological excavations have been conducted on these islands and the skeletal remains excavated were from sites ranged from the Shellmidden period to the modern period.

By the 12th century, the hunter-gatherer lifestyle began to change with the advent of an agricultural society in all parts of Ryukyu Islands included the Amami islands. The relationship between the hunter-gatherers who inhabited this region in ancient times and the farmers who arrived later on has been particularly interesting; however, little is known about their biological relationships. Genetic analysis of ancient human remains is the most effective biological approach for determining the relationships between these people. In order to obtain more information on the genetic characteristics of this southwest island chain of Japan, we are currently analyzing DNA extracted from human remains that were excavated from cemeteries belonging to the Neolithic to early modern periods.

Our study of unraveled the genetic continuity between the ancient and contemporary populations of the Ryukyu Islanders. However these conclusions must be regarded as tentative since they are based on small sample sizes, even though the analysis has been highly efficient. Thus, we believe that further experiments to obtain more detailed data on the human skeletal remains from the Ryukyu Archipelago are important. We hope to pursue this matter in future studies.

**2: Human Skeletal Remains from the Amami Island**

Masami TAKENAKA (Life Science Course, Kagoshima Women's College)

Many prehistoric and historic human skeletal remains from the Amami Islands are collected and examined, recently. Prehistoric people in Amami were different from modern Japanese with many distinctive skeletal characters, such as the prominent nasal bones, broad and low face, edge-to-edge bite, long distal limb segments, low stature and so on. Most of these characteristics are shared by Jomon and modern Hokkaido Ainu in Japan. Medieval people in Amami, on the other hand, share their characteristic features, such as dolichocranic vault, taller and narrower face, flat front nasal profile, distinct alveolar protrusion, and so on, with people of mainland Japan. Drastic physical changes occurred to Amami inhabitants during protohistoric and medieval period under strong genetic and cultural influences of the immigrants from the mainland Japan and surrounding areas in east china sea who introduced agriculture and other technology to the Amami Islands.

**3: Dietary Reconstruction of the Past Human Populations on the Nansei Islands Using Bone Chemistry**

Minoru YONEDA (The University Museum, The University of Tokyo)

The Nansei Islands of southwestern Japan is unique field of human occupational history. The Pleistocene human remains from Okinawa, Ishigaki, and Miyako islands provide us very special opportunities to investigate the human who could survive on island far before farming. Even in ancient history, these island is important especially in light of trading between China, Taiwan, Korea and Japan. We have analyzed from a series of human remains from the southwestern islands including the Gusuku and Kuzuri sites on Kikai Island, which produced important archaeological evidences suggesting its key role in this region. The isotopic analysis of carbon and nitrogen in human bone collagen suggest dynamism of human occupation history through the change of diet including millet agriculture.

**4: Shells Excavated from the Archaeological Sites from Amami**

Taiji KUROZUMI (Natural History Museum and Institute, Chiba)

The period between ca.10,000 years ago and 1,000 years ago is called the Shellmidden period in the Amami and Okinawa prehistory. During this period, people were fishers and gatherers of the coral reef resources and utilized various thick shells from this environment as goods and exchange items. Among shellfish remains recovered from the Amami Islands, people ate conch (*Strombus lufuanus*), marine snail (*Turbo marmoratus, yakogai* in Japanese common name) and bivalve (*Tridacna* spp.) which are consumed even today. This implies the taste has not changed for several thousand years.

Large-sized *yakogai* are frequently recovered in large quantities in Amami archaeological sites. The sites dating between the 6th and 9th centuries AD in Amami have yielded a large amount of *yakogai*, and it has been hypothesized that the shells were exported from the Amami Islands to either mainland Japan or China as mother-of-pearl work. These hypotheses are known as the *yakogai* exchange. Some feel that this exchange lasted up to the 10th to 11th centuries AD. However, since there is no site exist which unearthed large amount of *yakogai* dating between the 10th and 11th, I think the exchange in the latter period should be seriously examined.

Fisher-gatherer societies, which continuously existed on the islands, drastically changed to crop agriculture societies during the later part of the Shellmidden period or just beginning of the Gusuku period. As of today, we do not clearly understand what was happening during the transitional period.

Numerous amounts of land snails, which were not utilized as foods, have been also recovered from archaeological sites. They inhabit in only limited area and sensitive to the

changes in the surrounding environment. Some of them are endemic species in particular islands. *Erabumaimai* (*Nesiohelix irrediviva*), which today only distributed in the central part of virgin forest in Okinoerabu Island, was recovered from the Sumiyoshi shellmidden located near the seashore. The fact indicates the island was covered by dense forest at that time. The extinct snail recovered from the Hosu cave site is also indicative of human imposed environmental change. The land snails recovered from sites often reveal human imposed environmental changes in the past.

**5: The Vertebrate Resource Utilization in Prehistoric Amami and Okinawa**

Takeji TOIZUMI (School of Education, Waseda University)

Archaeological sites in the Amami and Okinawa Islands often unearthed large amount of vertebrate (fishes, birds, and mammals) remains. The results of the analysis of these remains indicate that there are three distinctive periods in the vertebrate utilization in this region. First is between 7500BP and 5000 BP (Early 1 to 2 Shellmidden periods). During this period, at the beginning wild boar was heavily hunted and at about 6000 BP, fish species suddenly increased. While we still do not understand why this change took place, two possible explanations are as follows. Firstly, it might coincide with the emergence of coral reef environment around the islands and/or secondly, Kyushu Jomon people might have influenced the islanders.

Second is between 5000BP and the 10th century AD (Early 3 to Late Shellmidden periods). During this period, vertebrate remains are characterized by coral reef fishes and wild boar. This strategy lasted for 3000 to 4000 years. This suggests that people lived harmoniously in the resource poor islands for a long period of time. This stability in island environments is very rare phenomena in worldwide and is worth specific mention.

Third is from the Gusuku period to the Recent period. During the Gusuku period (the 11th century onward), accompanied with the beginning of food production, important draft animal, cattle, predominated vertebrate remains. It also includes other domesticated animals such as horses and pigs. At the same time, fish remains decreased from vertebrate remains indicating the coral reef resources became less important during the Gusuku period. In the Okinawa Archipelago, drastic decrease of Ryukyu mountain turtles (*Geomyda japonica*) from the Gusuku sites indicates deforestation during this period. The introduction and spread of agriculture during the Gusuku period brought about overall and multiple changes in relationship between human and nature.

**6: What Plants Did People Eat during the Prehistoric Times in the Amami and Okinawa Archipelagos?**

Hiroto TAKAMIYA (Research Center for the Pacific Islands, Kagoshima University)

When I was a student, I learned that like the Amami and Okinawa archipelagos, which are located in southern latitude, plant food must have played very important role in prehistoric times. However, at that time there was almost no information on what people ate during prehistoric times in this region. One reason was that researchers in the region believed that it was extremely difficult to obtain plant remains from the sites in these islands. Indeed at that time plant remains had been known from a handful sites from the Amami and Okinawa archipelagos.

About twenty years ago, I introduced flotation method in order to obtain carbonized plant remains from archaeological sites in the Amami and Okinawa archipelagos for the first time. Unlike expectation, many sites yielded only small amount of plant remains. However, they have demonstrated two important matters.

First, during the Shellmidden period (ca. 6500 to 1000 BP), people in the region were hunter-gatherers. Until the introduction of flotation, several Shellmidden period agriculture hypotheses had been proposed. However, they are all denied. Secondly, the result of flotation has revealed when food production began in this region. It was about the eighth to twelfth centuries AD in the Amami Archipelago and the ninth to twelfth centuries in the Okinawa Archipelago.

Panel Discussion

## International Workshop

18-19 October 2016
Kagoshima University

### Future Collaboration on Island Studies between Pattimura University and Kagoshima University

**1: How Did Prehistoric People Impact the Island Environments of Amami and Okinawa, Japan?** Hiroto TAKAMIYA (Research Center for the Pacific Islands, Kagoshima University)

**2: How Did Prehistoric People Impact the Island Environments of Amami and Okinawa, Japan?** Rafael M. OSOK and Ferad PUTURUHU (Study Center for Disaster Research and Climate Change Adaptation (PSPB-API), Pattimura University)

**3: Development of Marketing of Fisheries Products in Maluku?** Yolanda M. T. N. APITULEY and Dionisius BAWOLE (Faculty of Fisheries and Marine Science, Pattimura University)

**4: Improvement of the Marine Products Distribution for the Purpose of the Promotion of the Remote Island Fishery: A Case Study in Nakanoshima Island** Takashi TORII (Faculty of Fisheries, Kagoshima University)

**5: The Diversity of Grouper (Ephinepelinae) in Ambon Island, Maluku, Indonesia** Gino V. LIMMON[1] and Frederik RIJOLY[2] ([1]Maritime and Marine Science Center of Excellence, Pattimura University, [2]Fisheries and Marine Science Faculty, Pattimura University)

**6: Exploring the Diversity of Hexacoral on Shallow Water of the Amami Islands.** Takuma FUJII (Research Center for the Pacific Islands, Kagoshima University)

**7: Identification and Inventory of Coastal and Small Islands Conservation Area in Lease Islands, Maluku Province?** James ABRAHAMSZ[1], Frederik W. AYAL[2], Yoisye LOPULALAN[2] and Marvin M. MAKAILIPESSY[2] ([1]Research Center for Small Islands, Coastal

Area and Outer Islands, Pattimura University, [2]Faculty of Fisheries and Marine Sciences Pattimura University)

**8: Effects of Tourism on the Physiological Stress Levels and Behavior in Amami Rabbits**

**9: Cassava and Sweet Potato in Western Ceram, Maluku Province: Diversity, Cultivation and Utilization.** Simon H. T. RAHARJO[1], H. HETHARIE[1], G. H. AUGUSTYN[1] and M. PESIRERON[2] ([1]Faculty of Agriculture, Pattimura University, [2]Agricultural Technology Research Board (BPTP Maluku), Ambon, Indonesia)

**10: Potato Production and Distribution in the Kagoshima Island Area.** Norio SAKAI (Faculty of Agriculture, Kagoshima University)

**11: Productivity of Nutmeg (*Myristica* sp.) in Agroforestry System ("*Dusung*") in Ambon Island.** J. Audrey LEATEMIA, Herman REHATTA, M. R. ULUPUTTY and Asri MAHULETE (Faculty of Agriculture, Pattimura University)

**12: A Newly Invasive Long-Horned Beetle from Mainland Kyushu Attacks Citrus Trees in the Amami Islands.** Yoshitaka SAKAMAKI (Faculty of Agriculture, Kagoshima University)


Group Photo of Workshop Members

**13: Exploration of Local Microbes as Sources of Thermostable Biomass-Degrading Enzymes.** Dominggus MALLE (Faculty of Agriculture, Pattimura University)

**14: Design and Application of Unsinkable Tuna Longboat for Local Fishermen.** Wolter R. HETHARIA and Obed METEKOHY (Faculty of Engineering, Pattimura University)

**15: Renewable Energy and Lifestyle Change: An Example of Yakushima Island's "Zero Emissions" Initiative.** Hidetaka ICHIKAWA (Faculty of Law, Economics and Humanities, Kagoshima University)

---

## Research Seminars

---

**No.165, 25 January 2016**

**"Thirty-Seven Years of Contributions as a Marine Botanist in Kagoshima University"**

Tadahide NORO (Faculty of Fisheries, Kagoshima University)

[ABSTRACT]

Phycological research at Kagoshima University was pioneered in the 1950s by Dr. Kiichi Okada, who studied the fresh water alga *Thorea* in Sendai River, and Prof. Tsuyoshi Tanaka, who studied *Porphyra*. Thereafter, Prof. Koji Nozawa studied phytoplankton in the Kagoshima Bay and at sea-grasses (in the 1970s). Prof. Hiroshi Itono was a pioneer scuba diver at Kagoshima University, and he authored a book in 1980s, on the taxonomy of *Ceramiales*. Prof. Akio Inoue was the director of KURCPI, and he studied toxic phytoplankton in Tahiti and southern Japan in 1970s.

The author started his research career on blue-green algae in the Amami Islands when he was an undergraduate student at Kagoshima University. He studied Corallinaceae in the Barren Sea (*Isoyake*) during his graduate course at Hokkaido University. Then he returned to Kagoshima and studied a red tide organism *Chattonella marina* in the Kagoshima Bay and examined how the cyst could survive the winter.

Further, he became inclined to conspicuous seaweeds, such as *Sargassum* spp. in southern Japan and studied the taxonomy and ecology of this genus in the Indo-Pacific area. At KURCPI, he underwent an internationally certified training course for Indonesian instructors of fishery schools and drove the research project in Yap. During his experience

there, he determined that the extracts of *Monpano-ki* in (*Heliotropium foertherianum*), isolated in Okinawa, were effective against Ciguatera toxin.

In this seminar, the author will summarize his experience with research activities in Kagoshima.

**No.166, 15 February 2016**

**"The International Politics of Whaling: Aboriginal Subsistence Whaling in the Arctic Island of Greenland and the International Whaling Commission"**

Minori TAKAHASHI (Slavic-Eurasian Research Center, Hokkaido University)

[ABSTRACT]

The International Whaling Commission (IWC) was established in 1948 with the goal of adequately preserving whale populations and enabling an orderly development of the whaling industry. It oversees only 13 larger species of the existing 85 species of whales in the world, but nonetheless remains the main international organ that manages whales not only as a natural resource, but as an industry too. One of the forms of whaling managed and regulated by the IWC is aboriginal subsistence whaling. The definition of aboriginal subsistence whaling was set at the 33rd annual meeting of the IWC held in 1981.

> *Aboriginal subsistence whaling means whaling, for purposes of local aboriginal consumption carried out by or on behalf of aboriginal, indigenous or native peoples who share strong community, familial, social and cultural ties related to a continuing traditional dependence on whaling and on the use of whales.*

The Inuit and Yupik in Alaska, US, Makah in the state of Washington, US, Cukchi Yupik in the Chukotka region in Russia, Kalaallit in Greenland, Denmark, and the islanders of Bequia in St. Vincent and the Grenadines, have enjoyed the quotas for this type of whaling. Even after commercial whaling drew wide criticism and the IWC adopted a moratorium on it at its 34th annual meeting in 1982, aboriginal subsistence whaling continued and became the main form of whaling overseen by the IWC. However, aboriginal subsistence whaling was not always viewed by the IWC as a right that needs to be recognized. In this presentation, by taking Greenland as a case study, I shed light on the discrepancies between the IWC system and the reality on the ground.

**No.167, 7 March 2016**

**"Current Situation and Problems of Passion Fruit, Avocado and Other Tropical Fruits Cultivation in Japan"**

Tomohiro KONDO (Center for Regional Innovation, Miyazaki University)

[ABSTRACT]

Interest in tropical fruits cultivation has been increasing recently in south-west Japan, because global warming is going on. Detrimental effects of global warming on citrus, peel puffing, low acid content, shortage of storage period and so on, have been appearing, and so solution strategy, such as introduction of tropical fruits, is now demanded. Mango is major tropical fruit in Japan, but recently cultivation area does not increase partly due to increase of fuel cost for heating. And so, tropical fruits which can grow with low fuel cost is demanded.

Passion fruit can be cultivated as an annual crop so fuel cost for heating is very low and recently passion fruit cultivation in Japan mainly for fresh consumption has been increasing rapidly. Avocado has relatively high tolerance against chilling stress, the strongest cultivar can survive ? 6 °C condition, and avocado is thought to be able to be cultivated without heater in south-west Japan. Now avocado cultivation begin in Miyazaki, Ehime, Kumamoto and so on.

Passion fruit and avocado cultivation in Japan have just started and there is little experience, and so there are lot of problems. Current situation and problems of passion fruit and avocado cultivation and research results and future plan will be presented.

**No.168, 25 April 2016**

**"Effects of Ecotourism on Physiology and Behavior in the Amami Rabbit on Amami-Oshima Island"**

Mariko SUZUKI (Research Center for the Pacific Islands, Kagoshima University)

[ABSTRACT]

The Amami rabbit (*Pentalagus furnessi*) is an endemic species on Amami-Oshima and Tokunoshima Islands. This species often uses the road or open area for excreting and foraging during the night. The night-tours, searching the nocturnal animals by the automobile, has been increasing recently in Amami-Oshima Island.

The impact of human recreational activity on wildlife has been studied on a lot of species. These activities often cause animals to change their behavior and/or habitat use, and eventually population decline. In order to evaluate the impacts of tourism to the Amami rabbit in Amami-Oshima Island, two kinds of research have been conducted. First, the details of the Amami rabbit's road use were analyzed by counting the fecal pellets,

combining with genetic individual identification using fecal DNA, and examining camera traps. Secondly, the stress response of the Amami rabbit to tourism was investigated by measuring fecal cortisol levels. In addition, the stress levels were compared not between nights but between roads, in which traffic differs.

The Amami rabbits excreted in particular spots, and the spot mostly used by them was estimated to be used more than 4 individuals. They showed not only life activities such as excreting and foraging but also social activities such as resting, sniffing and chasing on the road. These results indicate that the road is an important place for the Amami rabbit. However, the frequency of their road use and fecal cortisol levels was not correlated with the traffic during the night. On the other hand, the fecal cortisol levels from the samples collected on the road used for night tourism were higher than those did on the farm road with little traffic. I will discuss the effect of tourism to their behavior and physiology with consideration for their ecology such as mating season, food availability and predator existence too.

**No.169, 30 May 2016**

**"Search for Therapeutic Drug Candidates against Diseases Characteristic of South Kyushu from Southern Medicinal Plants and Marine Organisms"**

Toshiyuki HAMADA (Graduate School of Science and Engineering, Kagoshima University)

[ABSTRACT]

Animals and plants create many organic compounds (primary and secondary metabolites) in their own bodies to use in order to survive in their ecosystems. Natural products chemistry is a scientific research field concerned with identifying these organic compounds and for elucidating answers concerning the phenomenon of life. It has also been deployed to assist in developing drugs by characterizing the active components from animals and plants which have been used for the treatment of human diseases and injuries.

As part of our research, we are examining the chemistry of several natural products specific to Kagoshima. In this presentation we introduce our trial to identify plant and marine organism compounds that can be effective against Ciguatera fish poisoning and Adult T-cell Leukemia, diseases characteristic of southern Kyushu.

**No.170, 27 June 2016**

**"Geology on Subduction Zone Mega-Earthquakes"**

Yujin KITAMURA (Graduate School of Science and Engineering, Kagoshima University)

[ABSTRACT]

The Japanese islands comprise an island arc formed by plate subduction. Along the island arc, plate subduction induces various geological processes such as seismogenesis, volcanism and formation of accretionary prism. The accretionary prism is a geologic body formed with accreted sediments derived from the oceanic plate subducting beneath the continent. Investigating the accretionary prism is a clue for understanding fundamental questions on the formation of the island arc and the earthquake generation.

What geology would tell us on earthquakes? In this talk, I introduce a geological approach to depict an image of subduction plate boundary process underground exampled from the Japanese island arc, a frontier on subduction zone earthquake. There are a couple of outcrops of fossils of earthquake which discovered firstly on the globe. We review the story how geology revealed the deformation process of such kind of rocks and discuss the seismogenic zone on the plate boundary.

**No.171, 11 July 2016**

**"**Presqu'îléité and Absolute Waterfrontage: Finger Islands and Canal Estate Development on Australia's Gold Coast**"**

Philip HAYWARD (RESEARCH CENTER FOR THE PACIFIC ISLANDS, KAGOSHIMA UNIVERSITY)

[ABSTRACT]

The Gold Coast, an urban conurbation stretching along the Pacific seaboard and adjacent hinterland of south east Queensland, is now Australia's sixth largest city. Its rapid growth over the last six decades has had major impacts on the rivers, estuaries, coastline and associated ecosystems of the area. This article addresses one particular aspect of this, the development of estates of 'finger islands' (narrow, peninsular residential areas with direct waterfrontage) and the canalised waterways that facilitate them. The article first discusses these landscape features in the context of earlier estates in Florida that provided a model for Australian developers and then turns to consider the specific nature of a number of developments in south eastern Queensland. These discussions also facilitate a conceptual inquiry into how finger islands, canal estates and associated waterways can be conceptualised, drawing on the French concept of Presqu'îléité ('almost islandness') and the Japanese/Ryukyuan concept of shima (insular neighbourhood).

**No.172, 26 September 2016**

**"Fisheries Development in Insular Areas: An Implication of the Case in Southwestern Madagascar"**

Taku IIDA (National Museum of Ethnology)

[ABSTRACT]

In such countries where fisheries are industrialized as Japan, most innovations concerning coastal fisheries are achieved through cooperation among fishermen's association, academic engineers, and device makers. In isolated islands or insular countries, however, such innovations cannot be expected or take exorbitant time to be introduced. To solve this problem, individual fishermen have to be innovative enough which has been the case in coastal areas of Madagascar. Although this island is fourth largest in the world and should be called dwarf continent, it shares insular conditions such as immaturity of public transport or close link between fishery and industry sectors.

This talk examines individually achieved innovations observed in this area and specifies conditions enabling them. The examples especially examined include: 1. wooden spearguns having been widespread around 1998; 2. wooden lures for squid having been widespread around 2003; beach seine nets made of secondhand tire, having been observed in 2008 but the date of whose introduction is not clear; 4. night-diving equipment with LED torch having been widespread around 2008. All these gears are invented by combining strange factory-made materials with ordinary materials and fishing techniques. As catalyzing factors of the invention processes, we can point out regular practice of bricolage and common sharing of individual idea.

**No.173, 14 November 2016**

**"The Community Medicine Training on Low Birthrate and Aging"**

Tetsuhiro OWAKI (Graduate School of Medical and Dental Sciences, Kagoshima University)

[ABSTRACT]

Japan of low birthrate and aging breaks into the population decline society which I have not experienced all over the world until now. In front of population to decrease, how should we build and maintain it surely? The local government must present the policy not to know whether it is a correct answer. Then how does the medical care turn out?

A post-baby boom generation becomes advanced elderly aged people in 2025, and the number of the death increases in Japan. An old age medical care becomes predominate of the Medicine, and the Japanese overall medical care peaks in about 2040. Afterwards, to correspond suddenly change and to support medical environment to reduce, we consider that what kind of training is demanded, and what kind of education is demanded as medical

school. Moreover, I introduce “Remote island, community medicine training” to all the medical course sixth graders, “The national medical student summer remote island training” that I offer to the hoping medical students of the whole country, “Community medicine training camp in Kitayama” and “community medicine training camp in Satsuma-cho” that I provide to the medical system student of Sakuragaoka, and “The remote island training” to a local frame medical student.

**No.174, 12 December 2016**

**“Geology and Fossils of the Upper Cretaceous Himenoura Group on the Koshikishima Islands”**

Yuka MIYAKE (Satsumasendai City Board of Education)

[ABSTRACT]

The Upper Cretaceous Himenoura Group is widely distributed in western Kyushu, Japan. The group yields abundant non-marine to marine molluscan fossils (e.g., inoceramids and ammonoids) in the Koshikishima Islands.

In the northern part of Shimokoshiki-shima Island, the Himenoura Group is composed mainly of fluvial, tidal flat, shoreface, shelf, and slope deposits in the Upper Cretaceous lower to middle Campanian. Tidal flat deposit contains large oyster (*Crassostrea*) aggregations and several vertebrate fossils. Shoreface and shelf deposits contain large fossils as bivalves and ammonoids and microfossils as radiolarians. Thick debris-flow deposits in the slope facies in middle to upper Campanian on western Nakakoshiki-shima Island. These deposits commonly yield shallow marine and brackish-water bivalves, in addition to poorly preserved non-marine vertebrate fragments.

This article addresses stratigraphy and fossils of the Upper Cretaceous Himenoura Group on the Koshikishima Islands. Particularly, we pay attention to the stratigraphy and fauna of the lower to middle Campanian that became clear with fossils such as inoceramids or ammonoids.

Discussion with audiences of Amami via internet

## Recent Publications

**+++ Book +++**

The Amami Islands (KAWAI K., TERADA R. and KUWAHARA S. eds., 151 pp., Hokutoshobo, March 2016)

Kagoshima no Shimajima (TAKAMIYA H. KAWAI K.. and KUWAHARA S. eds., 291pp., Nanpou Shinsha, March 2016)

**+++ Journal +++**

**South Pacific Studies Vol.37, No1, 2016**

Research Papers

KOEDA K., MAEKAWA T., WADA H. and MOTOMURA H.: Records of the Orange Goatfish, *Mulloidichthys pflugeri* (Teleostei: Mullidae), from Amami-oshima and Yonaguni-jima Islands in the Ryukyu Archipelago, Southern Japan

MANUS P. A.: Economic Efficiency of Smallholder Peanut Farming: An Application of Data Envelopment Analysis to Smallholder Producers in the Markham Valley of Papua New Guinea

ROYLE S. A.: Japan and A Geography of Islands

**South Pacific Studies Vol.37, No2, 2017**

Research Papers

CALINAWAN A., PAULE H. B. S., ADARNA L., VILLEGAS L. M. G. and MENDOZA C. S.: Pyrethroid Pesticides of Cabbage-Grown Area in Dalaguete, Cebu, Philippine

HAYWARD P. and KONISHI J.: A Fleeting Aquapelago: A Theoretical Consideration of The Japanese Presence in The Torres Strait 1880s–1940s

**+++ Occasional Papers +++**

**Occasional Papers No.57 (March 2016)**

2015 Project Progress Report: Biodiversity and Its Conservation in the Satsunan Islands (SUZUKI E., KAWAI K. and YAMAMOTO S. eds.)

**+++ Kagoshima University Toushoken Booklet +++**

**No. 3** KOBAYASHI T.: Volcanic Islands of Kagoshima (March 2016)

**No. 4** SUZUKI E., KUWAHARA S., HIRA M., YAMAMOTO T., SAKAMAKI Y. and KAWAI K (eds.): Biodiversity and Conservation: A Case Study in the Amami Islands Vol. 1 (March 2016)

**No. 5** SUZUKI E., KUWAHARA S., HIRA M., YAMAMOTO T., SAKAMAKI Y. and KAWAI K (eds.): Biodiversity and Conservation: A Case Study in the Amami Islands Vol. 2 (March 2016)