Summary Report

APBON 10th Web Seminar

1. Date: 23th December, 2021
   Time: 15:00-17:00 in Japanese Standard Time
   (13:00-15:00 in Cambodia, Thailand, Indonesia, Vietnam), (11:45-13:45 in Nepal)
   (14:00-16:00 in Malaysia, Philippines, China)

2. Location, Participants
   ・Webex Meeting Room
   ・19 participants (15 participants and 4 from secretariat) from 7 Nationalities
・MC: Dr. Muraoka (Gifu University) and Dr. Alice Huges (Chinese Academy of Sciences)

3. Program: **Presentation1:**
Dr. Ai Nagahama (Kyushu University)
"Leafing, flowering, and fruiting phenology in East and Southeast Asia"

Summary of presentation

At the beginning of the session, Dr. Nagahama introduced the idea of Phenology applied to the three patterns of forest (temperate, tropical seasonal and tropical rain forest) in East and Southeast Asia. Based on the diversity patterns of those three areas, she shared two concerns, the observation report of leafing, flowering and fruiting patterns in Bidoup-Nui Ba National Park, Vietnam and what meteorological factors correlated with those observation results.

As a result of the survey, all 91 species monitored showed new leaves but only 65 had flowers and 54 set fruits. We can also summarize this research result in three points. Firstly, the observation of leafing phenology peaked in April, it showed similar patterns to temperate forest. Secondly some species showed non-seasonal leafing patterns showed similarity to tropical rain forest. The third, Similar to general flowering in tropical rain forest and mass flowering in template forest, some species showed supra-annual flowering patterns. She concluded that this survey data would be also useful to clarify how forest phenology from tropical to temperate regions in Southeast Asia was diversified with using the species distribution data of plants and the herbarium collected in each observation sites.

Q&A Session:

Q: Is there any common tendency of early blooming in Southeast Asia and Japan affected by climate change such as the case of cherry blossom?

A: It is hard to mention the effect of climate change because we are collecting data every 3 month not yearly period. According to Dr. Nagai's recent research, the timing of blooming in warm region may delay because of insufficient chilling requirement in winter season. The important is the mechanism of chilling and heat requirements for leaf flush and flowering but no definite factors because no sufficient data in situ observation.

Q: It is interesting of different patterns of phenology between the regions. Did you also contrast the climate drivers might be behind for the same species such as shifting patterns of phenology? Did you see the species patterns of phenology or you can see the entire plot has a different pattern?

A: I just showed community-level and species-level Phenology in my presentation. Few species are common and almost all species are unique in each plot. So it is difficult to compare the species between plots.

Q: As Dr. Nagai suggested, chilling is very important. The first blooming date may delay because of insufficient chilling, it is interesting idea. I guess temperature is not so important to determine the phenological patterns in Bidoup Nui Ba but precipitation is more.

A: I totally agree that the annual change of temperature in Bidoup Nui Ba is quite small and the precipitation is bigger. I think chilling is not important for species in this area.

Comment: Some month ago, Dr. Miura present on flowering Phenology by using Himawari satellite. We will enhance and expand this idea of timing of flowering to broader regions if we can combine those ideas from Dr. Miura and Dr Nagahama. Even if chilling doesn't have remarkable impact in tropical region, we might seek how the geographical distribution of the climate precipitation can affect flowering and leafing in this region.

Presentation2:

Dr. Tetsukazu Yahara (Kyushu University)

"Plant Diversity Assessments: Advanced Understanding by Connecting Indochina and Japan"

Summary of presentation

This presentation aims to provide an idea how to connect the DNA sample analysis obtained in Southeast Asia with Indochina region. After introducing the current research method conducted in Southeast Asia such as MIG-seq and DNA barcoding, Dr. Yahara mentioned that there are undescribed new genus and species in *Lauraceae* found in his research around Indochina and suggested to describe a new genus "*Neoactinodaphe*" between existing "*Neolitsea*" and "*Actinodaphne*." Dr. Yahara also introduced new species of *Clinopodium* and *Hydrangea* (*Dichroa*) discovered at Bidoup Nui Ba National Park, Vietnam.

Dr. Yahara emphasized the efficiency of MIG-seq analysis to identify vascular plant species of a particular area such as Japan and Southeast Asia especially in the current situation of COVID19 where we cannot go out in the field. He concluded that many new species of vascular plants should be described through those methods as soon as possible because most of them are threatened.

Q&A Session:

Q: Is the DNA sequences more useful than morphological traits on discovering new species?

A: Yes. By using MIG-seq, we can know the answer about whether a specimen represents a new species. For example, our MIG-seq analysis showed that all the three previously accepted species of *Dichroa* (now treated as a section of *Hydrangea*) includes several species. After knowing this answer, we can look for morphological traits that enable us to distinguish undescribed species from described species. I think sequencing first and morphology observations next is the most efficient approach.

Q: Is there any other area where you haven't conduct sampling for understanding the regional biodiversity.

A: We have a lot of samples in Japan and Southeast Asia but we need materials of China for comparison, so we need to develop a network with more Chinese botanists.

Q: ABCD-net led by Dr. Ma has good access of digital collection also.

A: I do agree it. Also, we have plenty of collections located in South East Asia and we can analyze various geographical patterns using our data set but combining those data set and geographical analysis of specie's composition with phenological issue is quite promising. Thus, we need collaboration with researchers on Phenology, as Dr. Nagahama suggested because it is also important to predict effects of climate change on forest

ecosystems. APBON should be the one which organizes an observation network of Phenology in Southeast Asia though in-situ and satellite observations.

Q: Do you still conduct sampling in Japan as well?
A: Yes. I am still conducting many field research funded by Ministry of Environment Japan and discovered some new species in Japan. I estimate more than 100 new species to be described from Japan and more than 1000 from Southeast Asia.

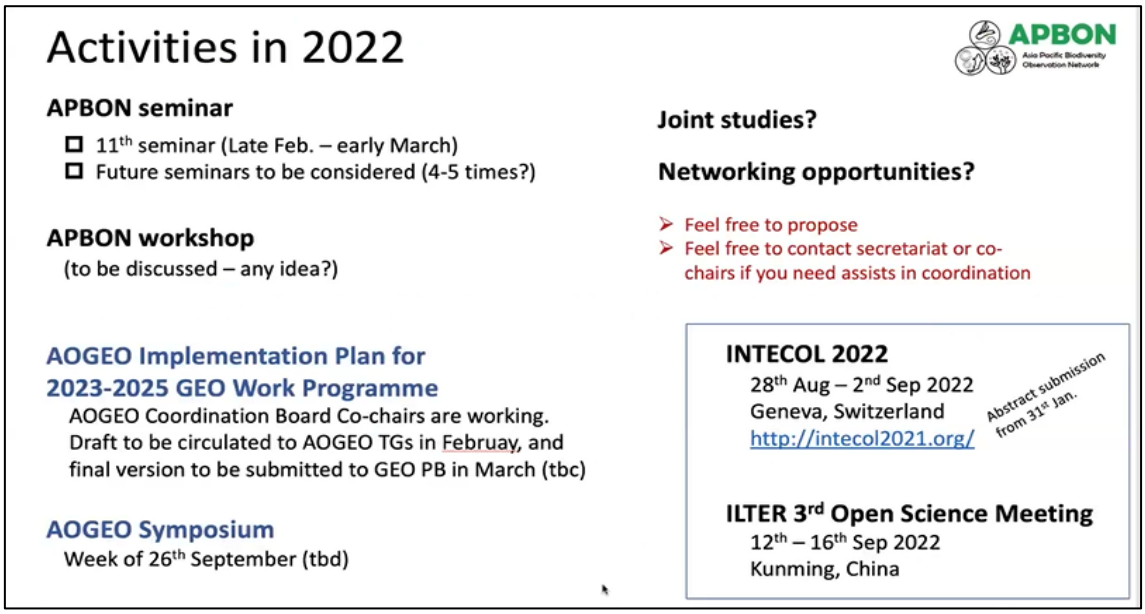
General discussion and Information exchange (Dr. Muraoka)

Co-chair Dr. Muraoka offered a depth of gratitude again for input and contribution from APBON members for those three events below.

- "APBON Achievement and Plan for 2022 and Beyond" discussed in 13th APBON Workshop (19 October) were shared.
-The information and details of Special Session 1, 14th AOGEO Symposium (10-12 November) were shared.
-Achievements and future plan presented in TG2 (AOGEO) which was held as a side event during the "GEO Week 2021" were shared.

Dr. Yamakita from APMBON briefly introduced the activities through "Marine Life 2030" organized by UN Decade of Ocean Science.

-The activities in 2022 was discussed as below.



-11th APBON seminar will be held on late Feb to early March. Dr. Xuehong Xu offered to provide speakers on remote sensing and border monitoring. Dr. Alice Hughes also suggested the future seminar can be relevant to the second flamework of post 2020 flamework CBD COP15 if it will be held on May.

-OECM Seminar to be held on 22th January 2022 organized was introduced.

-AOGEO Implementation plan for 2023-2025 GEO Work Programme was briefly explained. Dr. Muraoka emphasized the importance for collaboration with other institution aimed to AOGEO Symposium on September 2022.

Photo Session