

TG2 : Asia-Pacific Biodiversity Observation Network



For biodiversity conservation
& sound decision making

APBON

Asia-Pacific Biodiversity
Observation Network

APBON Highlights 2023 and 15th WS (Feb 2024)



APBON highlights at a glance

Networking and National BON

- APBON: 4 webinars and 1 workshop
- Restart the JBON's activities: Capacity-building WS

Biodiversity data

- ASEAN Biodiversity Outlook 3
- Disseminated digital biodiversity atlas to Thailand Biodiversity Information Facility

Conservation

- Held a workshop on biosphere reserves and OECMs in the Hindu Kush
- Launched the GEF/UNDP/ASEAN Effectively Managing Networks of Marine Protected Areas in Large Marine Ecosystems in the ASEAN Region
- Planted 35 million trees for the Malaysia Greening Campaign

APBON Highlights FY2023

Apr. Held the 16th APBON Web Seminar
 • "GEOBON Strategy" by Dr. Maria Cecilia Londono
 • "Bringing to life a global biodiversity observing system" by Prof. Andrew Gonzalez

May Held the inception workshop GEF/UNDP/ASEAN Effectively Managing Networks of Marine Protected Areas in Large Marine Ecosystems in the ASEAN Region (ACB)

Jun. Contributed to the GEO Symposium 2023 and GEO Open Data Open Knowledge Workshop

Jul. Held the 17th APBON webinar
 • "Master site concept in Japan" by Dr. Hiroyuki Muraoka (Gifu University)
 • Discussion: Identifying the availability and gaps of biodiversity data in the AP region
 Held a training course on basic of data collection and management (ICIMOD)

Aug. Conducted a questionnaire survey to identify the availability and gaps of data, knowledge, and capacity in the AP region
 Contributed to the GBIOS (Global Biodiversity Observing System) concept paper

Sep. Held the 18th APBON webinar
 • "Advances in species distribution modeling and applications for predicting ecosystem functions and services" by Dr. Jamie Kass (Tohoku University)
 • Discussion on the APBON activities beyond September
 AOGEO regional seminar and training on Earth Observation for advancing regional sustainable development in the Hindu Kush Himalaya (by ICIMOD)

Oct. Attended the GEO BON Global Conference 2023 and introduced the APBON activities
 Introduced APBON activities at the CBD Secretariat webinar Knowledge Management for Biodiversity

Nov. Attended GEO Week 2023 and introduced the APBON activities

Dec. Held the 19th APBON webinar
 • "The role of AHTEG on KMGBF" by Prof. Ryo Kohsaka (University of Tokyo)
 • "The role of APBON in IPBES and KMGBF implementation" by Mr. Ichiro Hama (Ministry of the Environment, Japan)
 • "Current progress of discussions of EBIV" by Takehisa Yamakita (JAMSTEC) and Yayoi Takeuchi (NIES)
 Contributed to the special symposium on biodiversity observations (organized by the National Science Museum of Japan and JBON)
 Contributed to the IPBES coordinating process from Thailand

Jan. Held the 20th APBON webinar
 • AP MBON

Feb. Held the 15th APBON workshop

Mar.



Executive summary

The 15th APBON Workshop was held on February 21-22, 2024, in Tokyo (Tokyo International Exchange Center) and online. Gathering 34 members from 10 countries/regions, the workshop facilitated discussions and exchanges on biodiversity observation practices within the Asia-Pacific region.

Over the course of two days, the workshop began with national reports detailing ongoing monitoring activities and regional challenges. Subsequent discussions focused on how APBON can address data gaps, compile existing data, and apply the concept of Essential Biodiversity Variables (EBVs), as well as coordinate biodiversity observations to support the National Biodiversity Strategies and Action Plans (NBSAPs), the CBD Kunming-Montreal Global Biodiversity Framework, and the Global Biodiversity Observation Network (GBIOS) of GEO BON. Key topics included promoting harmonized efforts towards a regional biodiversity monitoring scheme and exploring the use of biodiversity models for mapping ecosystem functions and services in Asia and the Pacific. We also discussed concrete plans for publishing the workshop results.



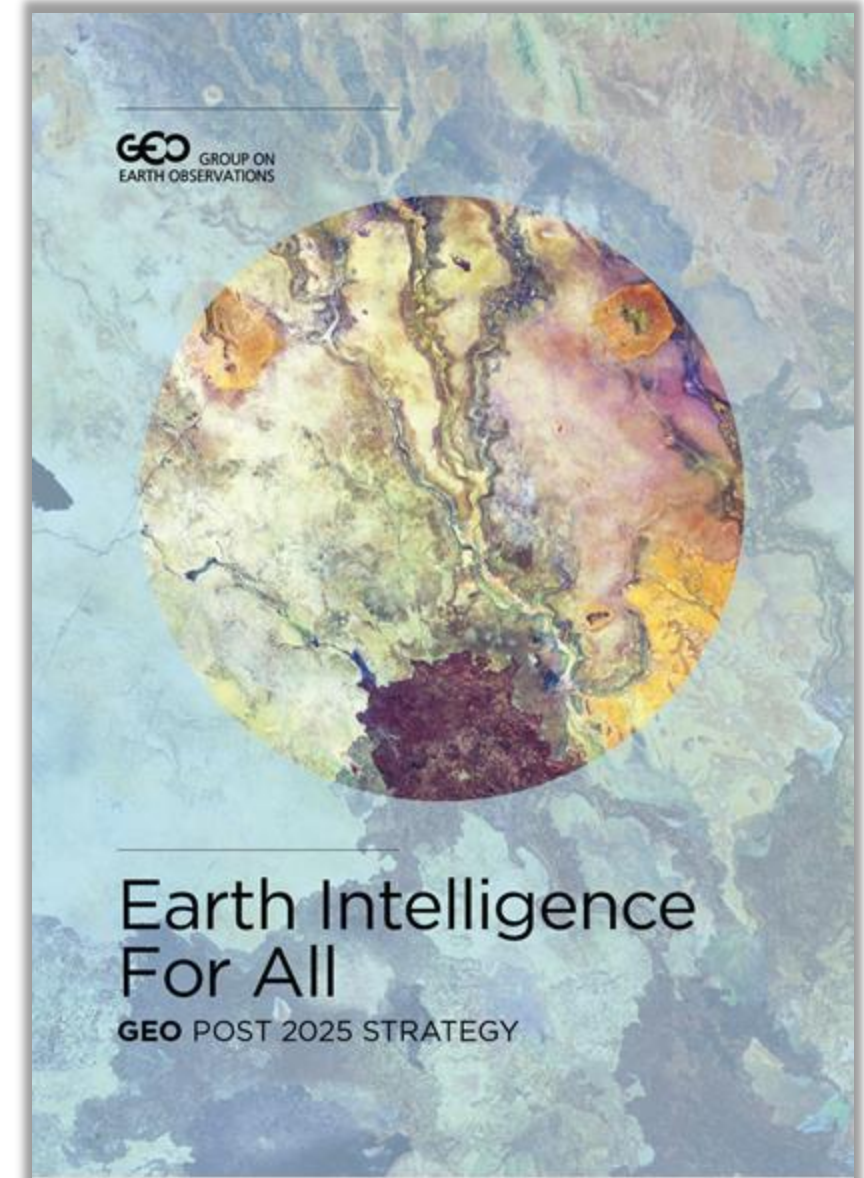
#APBON2024 #BiodiversityObservation #AsiaPacificConservation #EBVs #NBSAPs #CBDKunmingMontreal #GlobalBiodiversity

Program	
Day 1 : February 21, 2024	
8:30	Opening remarks and introduction to the program Co-Chairs: Hiroyuki Muraoka, Yingyut Tsaurat Secretariat: Kazuko Takahashi (Director of the Biodiversity Center of Japan) All participants: On-site self-introduction
10:00	[Session I] Science setting Introduction: Masaru Nishitake and Alice Hughes [Session II] Activity reports Moderator: Hiroyuki Muraoka • Status and challenges on NBSAPs in countries in the AP region • Status, gaps, and challenges on data availability and biodiversity observations in the countries: 1. Sunita Chaudhary (ICIMOD, Nepal) 2. Anchana Pathay (Prince of Songkla University, Thailand) 3. Nantida Subramaniam (Kasartat University, Thailand) 4. Yee Tze Leung (Forest Research Institute Malaysia, Malaysia) 5. Gray A Williams, Brian Leung Kai Hin (The University of Hong Kong) 6. South Burthang Island Fisheries Research and Development Institute, Cambodia 7. Saverio Sotiro (The University of the Philippines Diliman, Philippines) 8. Christian Elston (ASEAN Centre for Biodiversity, Philippines) 9. Venus Lerganias (Mindanao State University Nagaon Publication, Philippines) 10. Alice Hughes (The University of Hong Kong, China) 11. Takehisa Yamakita (JAMSTEC, Japan) 12. Pjo Mabuchi (Biodiversity Center of Japan, Japan)
10:20	[Session II] Analysis of data availability and accessibility for national and regional assessment of biodiversity status and trends Moderator: Masaru Nishitake Objectives: Achieve clear understanding of available data, knowledge, and capacity within the APBON network and how they are being used. Potential questions: What data exist? What data are accessible? Can we develop mechanisms to access private data? Where are the true data gaps? How can we fill them?
14:00	[Session III] Breakout group sessions: Mapping data availability and needs Group discussion
15:30	Closing Day 1

Program	
Day 2 : February 22, 2024	
[Session I] Transforming session: Asia-Pacific perspectives on EBIV indicators, etc. Moderator: Yayoi Takeuchi Introduction: Lee Ngh and Yayoi Takeuchi (NIES) (15 min)	
9:30	Objectives: Clarify gaps, challenges, and strategy to implement national and regional observations to meet requirements of assessments of biodiversity and nature's contribution to people (ecosystem services) in IPBES and KM-GBF Potential questions: • How do we apply the EBIV concept to our region? Do we have sufficient methodologies to fully cover the diversity? How do we assess and report the benefits of indigenous knowledge and culture on biodiversity? • How can we link the output of the monitoring programs to the global biodiversity observation system?
13:00	[Session II] Plans for publications (special issue on Ecological Research) Moderator: Hiroyuki Muraoka • Theme of special issue • Potential topics (titles of papers from the APBON and AP-MBON members) • Expected schedule
16:00	Closing remarks

Objectives of APBON session

- (1) To identify the data and observation needs to develop Essential Biodiversity Variables (EBV) in the AP region
- (2) To discuss cooperative plans for developing a Global Biodiversity Observing System (GBIOS) in the AP region and for connecting with data and analysis infrastructures (e.g., DIAS)
- (3) To develop APBON's input to the AOGEO and GEO Post-2025 Strategy – “Earth Intelligence for All”



Session outline



[Part 1] From data to EBVs: Preliminary assessment of data gaps and mismatches of EBVs from Asia-Pacific perspectives

Speakers:

1. Yayoi Takeuchi (NIES): From Terrestrial observation perspectives
2. Take Yamakita (JAMSTEC): From Marine and Coast observation perspectives
3. Jamie Kass (Tohoku University): From biodiversity modeling perspectives
4. Alice Hughes (University of Hong Kong): From global coordination perspectives

Discussions:

Concrete actions for developing EBV/EOV data in AP region

15:50 –
16:50

[Part 2] Observation needs and system to fill the gaps – Towards GBiOS in the AP region

Speakers:

1. Osamu Ochiai (JAXA; guest speaker): Biodiversity observation from space
2. Shin Nagai (JAMSTEC): Multi-platform phenology observations in AP region
3. Christian Elloran (ASEAN Center for Biodiversity): Filling the observation and knowledge gaps in ASEAN countries
4. Keisuke Takahashi (Biodiversity Center of Japan): Long-term biodiversity monitoring in Japan

Discussions:

What would be the biodiversity observation and data integration system in AP region - Towards our participation to the GBiOS.

16:50 –
17:50

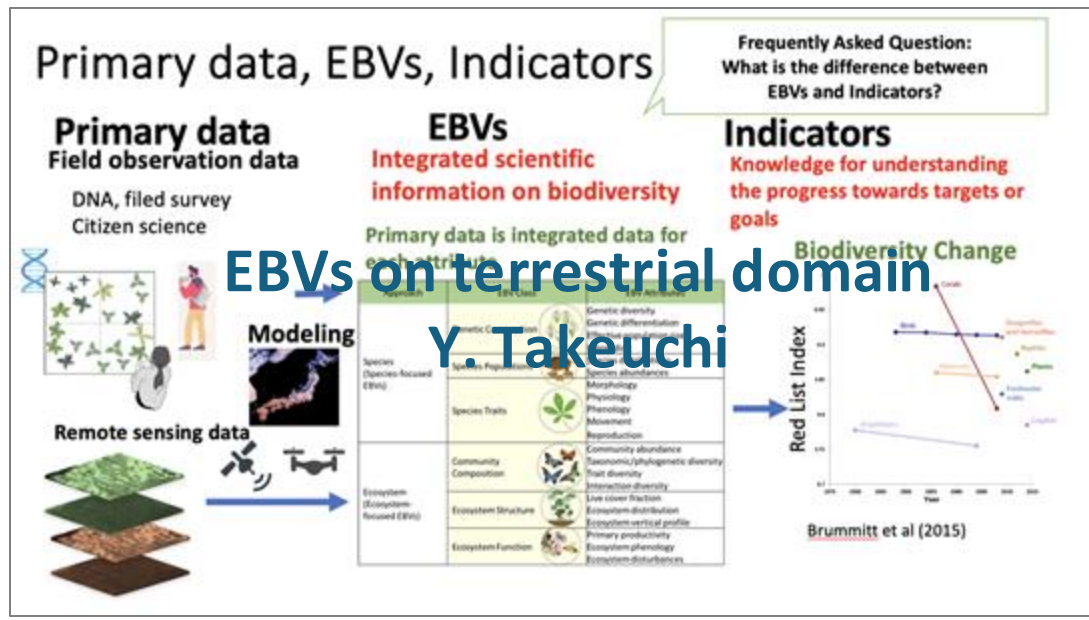
[Part 3] APBON's priorities for observations, synthesis, and cooperation

Drafting APBON's input to AOGEO Symposium statement

Moderators: Runi Anak Sylvester Pungga, Yongyut Trisurat, Hiroyuki Muraoka

17:50 –
18:40

[Part 1] From data to EBVs: Preliminary assessment of data gaps and mismatches of EBVs from Asia-Pacific perspectives



EOV and EBV Take Yamakita (JAMSTEC)

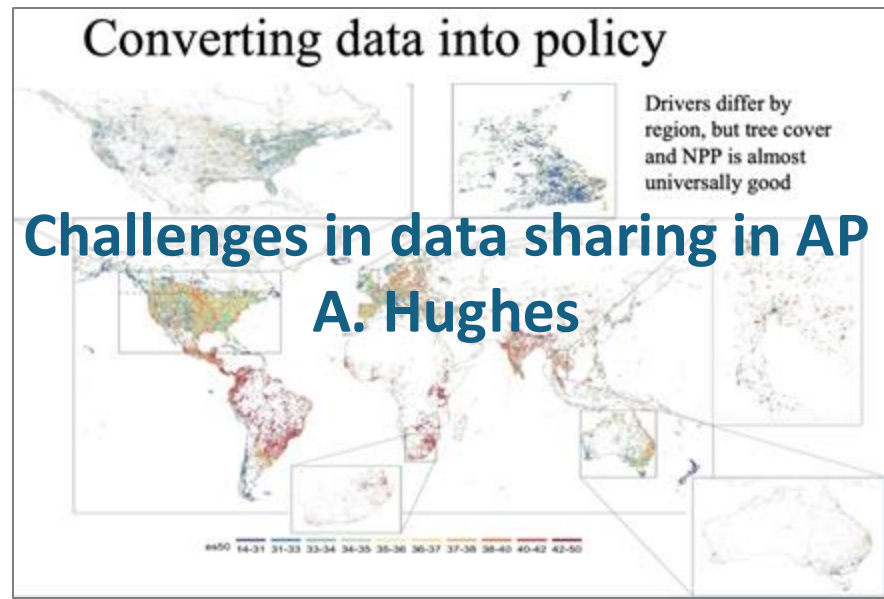
EOV class	EOV Bio names	In Japan	EBV class	EBV names	In Japan
Plankton	Phytoplankton diversity	Water quality assessment? Satellite	Genetic composition	Genetic diversity (richness and heterozygosity)	Good
	Phytoplankton abundance	—		Genetic differentiation (number of genetic units and genetic distance)	Good
	Zooplankton abundance	—		Genetic diversity (number of genetic units and genetic distance)	Good
	Zooplankton diversity	J-OBIS		Genetic differentiation (number of genetic units and genetic distance)	Good
Mobile animals	Fish abundance	Catch	Species populations	Inbreeding	?
	Fish distribution	Visual census on coral		Species distributions	Good
Habitat	Large animals abundance	Track / sound data?	Species traits	Species abundances	Good
	Large animals distribution	Track / sound data?		Morphology	Good
	Benthic Invert. Abundance	(Field Obs.)		Physiology	Poor
	Benthic Invert. Diversity	Field Obs.	Phenology	Poor	
	Coral cover	Field Obs.	Phenology	Poor	
	Coral composition	Field Obs.	Movement	Good	
			Reproduction	Good	

Role of biodiversity modeling for EBVs

- Some EBVs can be estimated directly with remote sensing (RS) data
- But many need *in-situ* observation data on species / communities, though much of AP region is lacking
- Biodiversity models use observation data with RS variables to predict and map these EBVs over space and time

Model and data for EBVs
J. Kass

Fernández et al. 2020 (Book: Remote Sensing of Plant Biodiversity)



[Part 2] Observation needs and system to fill the gaps – Towards GBiOS in the AP region

Role of Space Agencies

- ❑ Full coverage of in situ data is unlikely in the near future
- ❑ Remote sensing data are global, periodic, available, free
 - Use them to fill gaps
 - Combine with models
 - Interpolate
- ❑ Product uncertainty and probably accuracy will suffer
 - But this may be better than no product

Biodiversity observation from Space

O. Ochiai

Towards understanding of the spatiotemporal variability of NCP and biodiversity in the current: Satellite remote sensing

Monitoring general flowering in Borneo by PlanetScope constellation satellites with a 3 m spatial resolution

Tree discrimination of evergreen broad-leaved trees by focusing on the characteristics of plant phenology

Sentinel-2 satellites with a 10 m spatial resolution

16th AOGEO Symposium@Tokyo 3 Sept. 2024

Biodiversity information from society

S. Nagai

DATA GAPS

Understanding the gaps

Filling gaps in ASEAN region

C. Elloran

CURRENT STATE	KEY STEPS TO BRIDGE GAP	DESIRED STATE
<ul style="list-style-type: none"> Interoperable platform Standardized data structures and vocabularies Data visualization Interactive UX/UI 	<ul style="list-style-type: none"> Where are the data located? Do we possess the necessary data? What is the quantity and quality of the data, and how reliable is it? What additional tools and mechanisms are required? 	<ul style="list-style-type: none"> Provide technical support Provide system for sharing data Provide open access data Resource repository Visual components and libraries Knowledge sharing Space to collaborate or share materials with other government agencies

Overview of Monitoring Sites 1000

- Approximately 1,000 survey sites are set up throughout Japan for representative ecosystems, and monitoring is conducted annually.
- Aiming to continue the program for 100 years to capture the status and changes of ecosystems in Japan.

Region	Site Type	Count	Monitoring Personnel
Inland water regions	Lakes / marshes / wetlands	119	Experts / Citizen surveyors
	Sandy beaches	36	Citizen surveyors
Coastal areas	Rocky shores / Tidal flats / Seagrass beds / Algal beds	165	Experts / Citizen surveyors
	Coral reefs	25	Experts
	Small islets	30	Experts
total		1089	

Monitoring Sites 1000 Site Allocation Status (November 2021)

National biodiversity observations in Japan

K. Takahashi

Challenges in developing comprehensive biodiversity information (EBVs) over the AP region

- ✓ Data availability, accessibility, quality, standardization, and technical limitations.
- ✓ How can these EBVs enhance current biodiversity monitoring efforts?
- ✓ Collaboration and data sharing opportunities with other TGs of AOGEO and how such collaboration can enhance biodiversity monitoring.

Toward Global Biodiversity Observing (and Informing) System in AP region

- ✓ Comprehensive use of satellite data for spatial coverage and periodical measurements.
- ✓ Satellite data enables early detection of changes due to climate and human impacts.
- ✓ Models will scale *in-situ* data spatially and temporally from past to future.
- ✓ Comparisons of models with satellite data to identify indicators and hotspots.
- ✓ Platforms for data analysis and knowledge management (DIAS; ASEAN Biodiversity Dashboard).

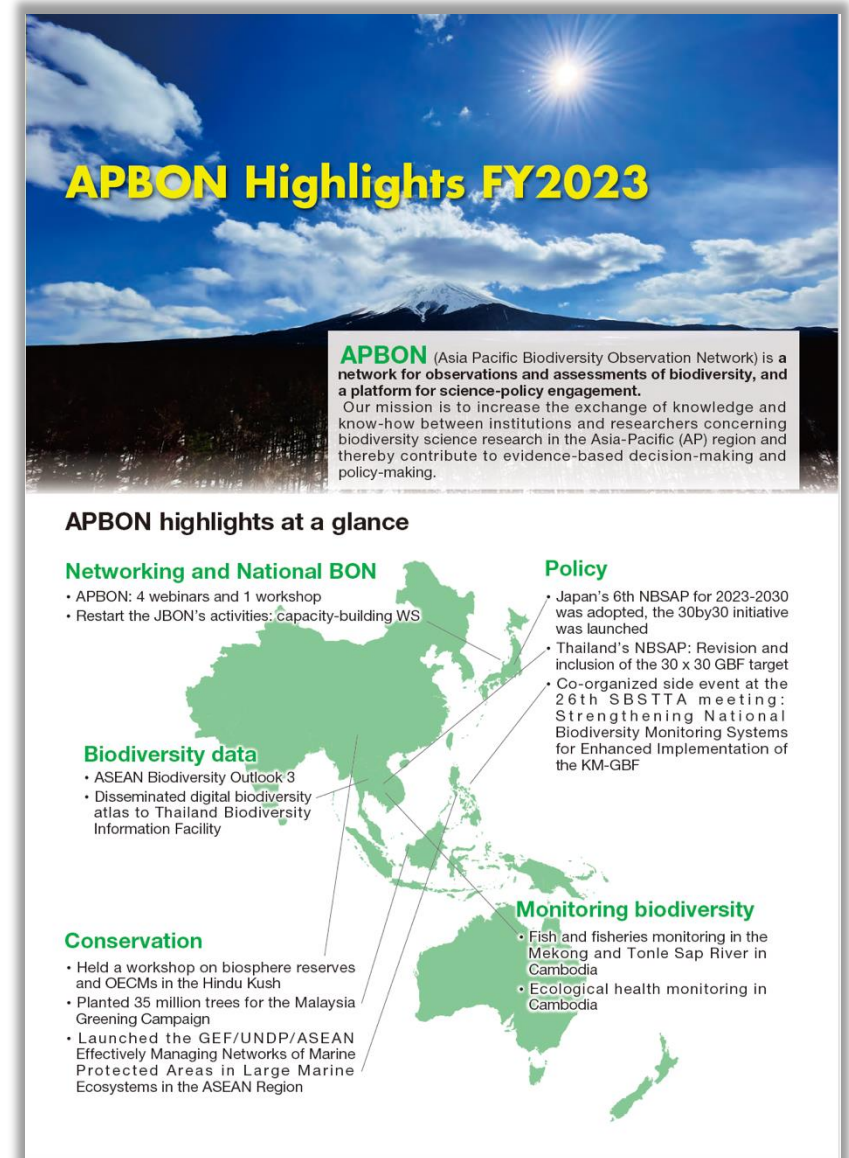
Role of APBON and its members in engagement of national and regional stakeholders

- ✓ Advocate the needs and importance of data-sharing among countries and organizations.
- ✓ Knowledge development and management by experts and society (capacity building).
- ✓ Co-creating Earth Intelligence for biodiversity conservation and sustainable use of natural resources.
- ✓ International funding and connections between scientific communities and governments are key for further progress.

Summary of APBON's achievements and way forward

Achievements

- APBON is continuing its cooperation in capacity building, and data and knowledge sharing through a webinar series and workshops.
- APBON has assessed gaps and needs for biodiversity data and knowledge throughout the region to meet the requirements of the Convention of Biological Diversity Kunming-Montreal Global Biodiversity Framework and other relevant assessments.
- Noteworthy national activities include restarting Japan-BON, publication of biodiversity data (ASEAN, Thailand), intensive monitoring of fish in the Mekong and Tonle Sap Rivers (Cambodia), and a census on biodiversity data across the AP region.



APBON Highlights FY2023

APBON (Asia Pacific Biodiversity Observation Network) is a network for observations and assessments of biodiversity, and a platform for science-policy engagement. Our mission is to increase the exchange of knowledge and know-how between institutions and researchers concerning biodiversity science research in the Asia-Pacific (AP) region and thereby contribute to evidence-based decision-making and policy-making.

APBON highlights at a glance

- Networking and National BON**
 - APBON: 4 webinars and 1 workshop
 - Restart the JBON's activities: capacity-building WS
- Policy**
 - Japan's 6th NBSAP for 2023-2030 was adopted, the 30by30 initiative was launched
 - Thailand's NBSAP: Revision and inclusion of the 30 x 30 GBF target
 - Co-organized side event at the 26th SBSTTA meeting: Strengthening National Biodiversity Monitoring Systems for Enhanced Implementation of the KM-GBF
- Biodiversity data**
 - ASEAN Biodiversity Outlook 3
 - Disseminated digital biodiversity atlas to Thailand Biodiversity Information Facility
- Conservation**
 - Held a workshop on biosphere reserves and OECMs in the Hindu Kush
 - Planted 35 million trees for the Malaysia Greening Campaign
 - Launched the GEF/UNDP/ASEAN Effectively Managing Networks of Marine Protected Areas in Large Marine Ecosystems in the ASEAN Region
- Monitoring biodiversity**
 - Fish and fisheries monitoring in the Mekong and Tonle Sap River in Cambodia
 - Ecological health monitoring in Cambodia

Summary of APBON's achievements and way forward



Ongoing issues

- ❑ APBON continues to assess needs and accessibility for data obtained by local and national biodiversity observation networks.
- ❑ APBON is planning to assess and develop Essential Biodiversity Variables (EBVs) for national and regional scales by combining existing *in-situ* data with satellite data and species distribution models, but EBVs are still challenging for APBON due to lack of accessibility of local data.
- ❑ Another key activity is working align APBON's activities with the National Biodiversity Strategies and Action Plans (NBSAPs) in each country to enhance cooperation between science and policy for biodiversity conservation.
- ❑ Further coordination should be pursued through engagement activities of APBON, national BONs, and AOGEO member states, as well as other relevant communities globally.
- ❑ In particular, APBON will engage with national and regional stakeholders on the importance of biodiversity data sharing and continuous cooperation for assessing and predicting biodiversity and ecosystem services under climatic and societal impacts.

Summary of APBON's achievements and way forward



Way forward for post-2025

- ❑ Improving data accessibility at regional and national levels will be fundamental for a comprehensive assessment of the state of biodiversity, planning of effective conservation measures, and development of effective NBSAPs.
- ❑ Development of science and policy cooperation is a high priority in our region, as our countries contain many biodiversity hotspots impacted by rapid changes in climate, biodiversity, and society.
- ❑ APBON further acts as a platform for such cooperation in the region and collaborates with GEO BON, the GEO community, and national and regional stakeholders for harmonized actions to be taken at all scales.
- ❑ To implement this further, we will plan a pilot project to create Earth Intelligence by integrating *in-situ* research, satellite obs., and modeling.



Thank you



For more information of APBON

<http://www.esabii.biodic.go.jp/ap-bon/index.html>



APBON website

<http://www.esabii.biodic.go.jp/ap-bon/index.html>

APBON online seminars

<http://www.esabii.biodic.go.jp/ap-bon/meetings/index.html>



AP-MBON website

<https://members.geobon.org/pages/ap-mbon.php>

Presentation files from seminars and workshops are available.

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- *Ministry of Education, Culture, Sports, Science and Technology (MEXT) Japan;*
- *National Institute for Environmental Studies (NIES);*
... and all other voluntary contributions.

