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IPBES AP regional assessment

Summary for policymakers of the regional assessment report on biodiversity and ecosystem services for Asia and the Pacific of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

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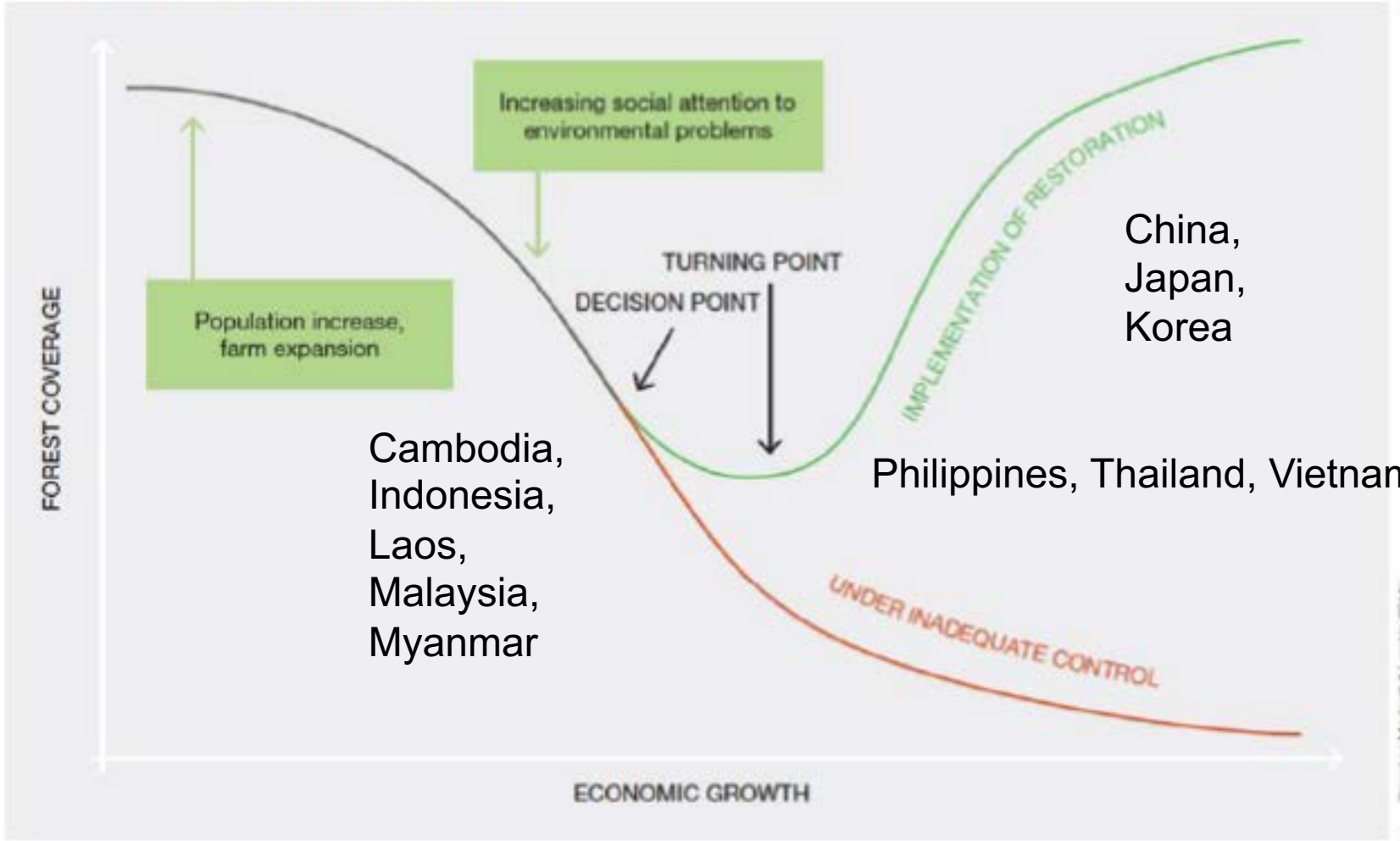
Environmental Kuznets Curve

Figure SPM.3
A scheme of forest transition under some key drivers
Based on Meyfroidt and Lambin (2011)[4]



China, Japan, Korea

Philippines, Thailand, Vietnam

Cambodia, Indonesia, Laos, Malaysia, Myanmar

Contribution of BES to SDGs

Table SPM.2
Contribution of ecosystem services to the Sustainable Development Goals

SDG	Synergies and trade-offs between Biodiversity-related Sustainable Development Goals (14, 15) and other Sustainable Development Goals, and possible policy options to integrate Biodiversity and Ecosystem Services aspects into other Sustainable Development Goals
1 End poverty in all its forms everywhere	• Globally and in the Asia-Pacific region, people's income levels tend to be low in biodiversity-rich areas, and where people depend more on BES for income and risk insurance. **NCP**[1] ❶ ❷ ❸ ❹ ❿ *(well established)* • Without simultaneously conserving BES and ensuring resource access by those dependent on BES, trade-offs occur between BES conservation and poverty eradication. **Drivers**[2]: **LU EC ST** *(well established)* • Poverty eradication and BES conservation can be compatible through various intervention options, such as community-based natural resource management (CBNRM), Indigenous Protected Areas (IPA) and community-based ecotourism.
2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture	• In the Asia-Pacific region approximately 481 – 579 million people directly depend on nature for food and livelihoods. Healthy BES underpin sustainable and productive agriculture. Various traditional agriculture landscapes found throughout the Asia-Pacific region provide cradles of many local crop and livestock varieties. **NCP** ❶ ❷ ❹ ❻ ❽ ❾ ❿ ⓬ *(well established)* • Agriculture intensification increases crop yield, but with indiscriminate agrochemical inputs, sacrifices BES beyond food production. **Drivers: LU OE PO IS** *(well established)* • Integrated Pest/Nutrient Management (IPM/INM), agroforestry and sustainable pastoralism, among others, can resolve the trade-offs. Traditional sustainable agricultural systems practiced by IPLCs in the Asia-Pacific region can be revisited to reinforce reciprocal benefits to nature and agriculture.
3 Ensure healthy lives and promote well-being for all at all ages	• Healthy BES are essential for human health in diverse aspects, e.g., clean air and water provision, diverse and nutritious dietary sources, pharmaceutical genetic resources, human immunity development, regulation of pests and pathogens, as well as interactions with nature that improve psychological and physical health. **NCP** ❷ ❸ ❻ ❼ ❽ ❿ ⓬ ⓮ ⓯ *(well established)* • "One-Health" approach, an integrative approach to human-animal-ecological health interactions, was introduced to the Asia-Pacific region. The ASEAN Agreement on Transboundary Haze Pollution is in force to tackle the connection between forest/land fires and their human health impacts.
4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	• A higher educational background improves people's support for BES conservation. BES provide opportunities for humans to acquire knowledge and to develop skills that help societies prosper. **NCP** ❺ *(well established)* • Several natural sites in the Asia-Pacific region are used for education and nature-based tourism. Community schools set up by some indigenous communities in South-East Asia help hand down the traditional knowledge that is central to sustainable agriculture and landscape management to younger generations, and also improve education access in remote areas.
5 Achieve gender equality and empower all women and girls	• Women and girls play a key role in maintaining agrobiodiversity that underpins food and livelihood security in South-East Asia and West Asia. Women in the Pacific islands have an important role in supporting sustainable fisheries through their engagement in early childhood development, when children's moral and cultural norms are formed. *(established but incomplete)*
6 Ensure availability and sustainable management of water and sanitation for all	• Water security, a concept that encompasses water quantity, quality, and functioning water systems, is supported by a rich mix of different ecosystem types in the Asia-Pacific region including forests, grasslands, wetlands, cultivated areas, and terrestrial waterbodies. **NCP** ❻ ❼ ❽ *(well established)* • Degradation of watershed ecosystems, as well as over-extraction and poor management of surface and ground water seriously undermine water security. **Driver: OE** *(well established)* • Payments for Ecosystem Services (PES) is increasingly used for incentivising watershed protection by upstream communities, and thus for ensuring downstream water security. Transboundary environmental legislative arrangements relating to water security are in place in two subregions.
7 Ensure access to affordable, reliable, sustainable and modern energy for all	• The heavy reliance of the poor on biomass fuel for household energy consumption, largely due to limited energy access, leads to forest biomass overexploitation. The Asia-Pacific region boasts large untapped potential for hydropower development. Watershed forests prevent soil erosion and downstream sedimentation, and thereby contribute to the longevity of reservoirs and hydropower facilities. Biofuel energy is another potential source for increasing power supply. **NCP** ❻ ❽ ⓫ *(well established)* • Large scale hydropower development impacts river ecosystems, and expanding biofuel crop production competes for land with forests and food production. **Drivers: LU OE** *(well established)*

IPBES/6/15/Add.3

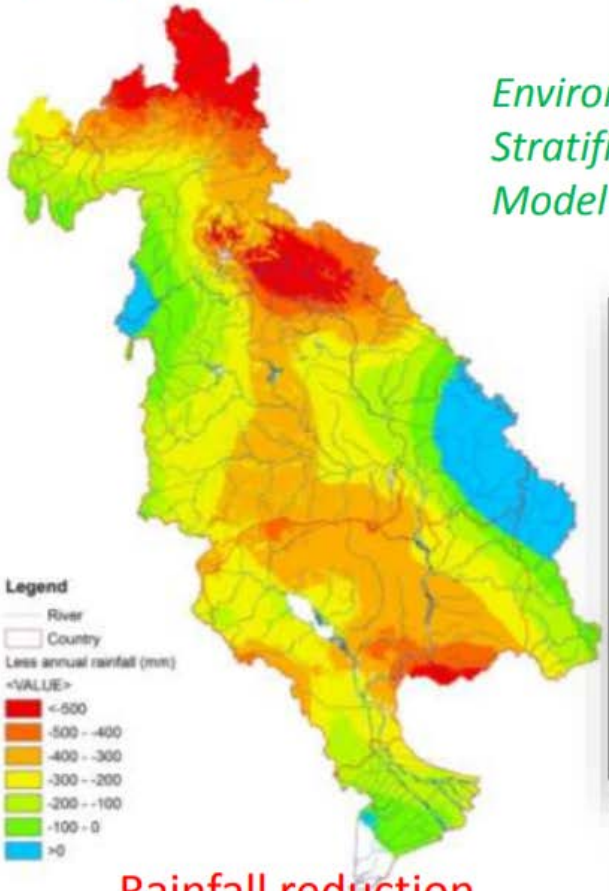
SDG	Synergies and trade-offs between Biodiversity-related Sustainable Development Goals (14, 15) and other Sustainable Development Goals, and possible policy options to integrate Biodiversity and Ecosystem Services aspects into other Sustainable Development Goals
8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	• Conservation awareness spreads alongside globalisation, and increased state revenue strengthens BES conservation. Beautiful natural scenery and wildlife attract tourists, generating economic opportunities. **NCP** ❺ *(well established)* • Large-scale land investments, e.g. for plantation, mining and tourism, while creating job opportunities, can negatively affect forests and water resources. Increased income changes consumption volumes and patterns, and thereby multiplies pressures on BES. **Drivers: LU OE IS PO EC** *(well established)* • Countries in the region are taking initiative to integrate NCP into development through green growth policies, especially in South-East Asia.
9 Build resilient infrastructure, promote sustainable industrialization and foster innovation	• Infrastructure development can negatively affect BES when poorly planned. **Drivers: PO LU** *(well established)* • "Blue and green" infrastructure, nature-based solutions and other ecosystem-based approaches that take into account the complementarity between the functions of built infrastructure and ecosystems for enhanced resilience, have recently been introduced to the Asia-Pacific region. **NCP** ❶ ❸ ❻ ❼ ❽ ❾ ⓱
10 Reduce inequality within and among countries	• Local stakeholder participation and fair and equitable benefit-sharing are imperative for the success of CBNRM and community-based ecotourism. The Nagoya Protocol is a multilateral legal instrument whose objective is the fair and equitable sharing of benefits arising from the utilization of genetic resources. **NCP** ❹ ❿
11 Make cities and human settlements inclusive, safe, resilient and sustainable	• Urbanisation can be a sustainability solution by concentrating industry, trade, transport, health care, education, and pollution treatment in relatively small areas. *(well established)* • Rapid urbanisation in the Asia-Pacific region impacts BES through land conversion, hydrological cycle changes, as well as the changes in lifestyles and consumption patterns. **Drivers: LU OE PO SC** *(well established)* • Urban ecosystems are increasingly integrated into urban planning in several Asia-Pacific countries with explicit recognition of NCP. Cultural and natural heritages in the Asia-Pacific region are increasingly recognised and conserved, with 332 designated UNESCO World Heritage sites. **NCP** ❶ ❹ ❻ ❼ ❽ ❾ ❿
12 Ensure sustainable consumption and production patterns	• Increased cash crop production and natural resource extraction, as well as rapid urbanisation coupled with changing diets, material uses and leisure preferences, increasingly affect BES in the region. **Drivers: LU OE EC SC** *(well established)* • Voluntary sustainability standards and green public procurement, among others, have become common instruments.
13 Climate Action	• Climate change affects BES, but ecosystem functions mitigate climate change and its impacts. **NCP** ❹ ❻ ❽ *(well established)* • The massive expansion of biofuel crop production for renewable energy can significantly undermine BES sustainability and food security. **Driver: LU** *(well established)* • Ecosystem-based mitigation and adaptation measures are readily available, including REDD+, EbA and Eco-DRR.
16 Promote just, peaceful and inclusive societies	• Unclear land tenure, weak governance, corruption, political unrest, and local conflicts exacerbate land degradation and resource overexploitation. Competition for scarce resources sometimes triggers conflicts. *(established but incomplete)* • Decentralisation and enhanced local participation in decision making improve conservation outcomes in some cases through CBNRM, co-management, collaborative governance, ICCAs and IPAs, in which local institutions and customary laws play pivotal roles in BES management. Multi-stakeholder collaboration in conservation movements can assist peace-building.
17 Revitalize the global partnership for sustainable development	• Global partnership, technology, and finance, among others, constitute a critical enabling environment for BES sustainability. Regional and transboundary collaboration between countries sharing important species, areas, or issues, has been strengthened. Biotechnology is a key contributor to food and environmental security, human health, and BES conservation. Information and knowledge sharing platforms have become increasingly available and play a key role in raising public awareness on environmental issues. Achievement of the Aichi Biodiversity Targets requires five times the current amount of investment.

Basin-wide Assessment of Ecosystem Services

Climate Change and Adaptation Initiative (CCAI)

Predicted climate in 2030, 2060

RCP4.5, RCP2.6, RCP 8.5



Rainfall reduction

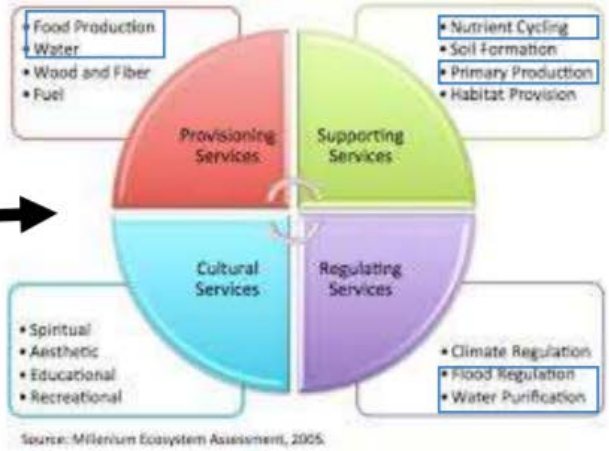
Environmental Stratification Model (EnS)

Vulnerable species

IUCN trait-based framework

Shift of ecoregions

InVEST



Change in ecosystem services

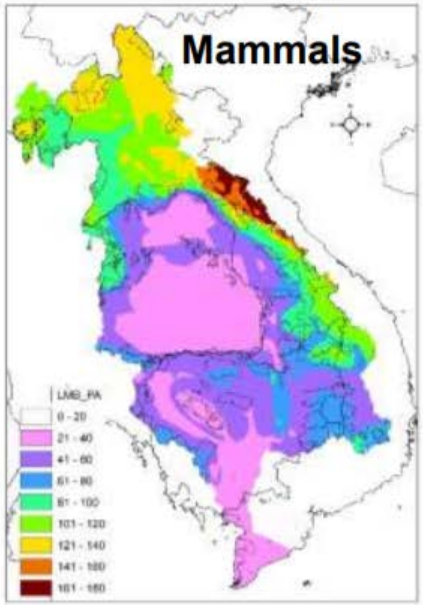
Yongyut Trisurat

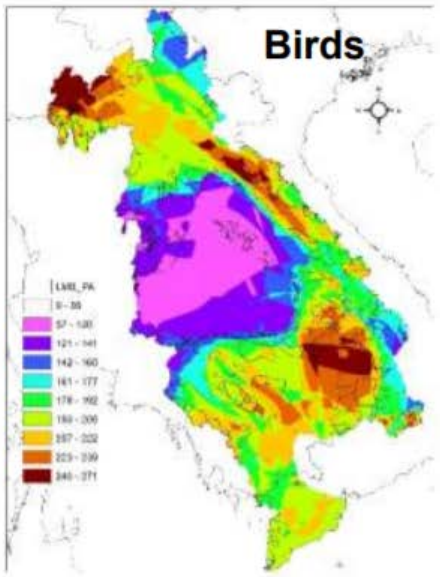
Species Vulnerability – limited occurrences

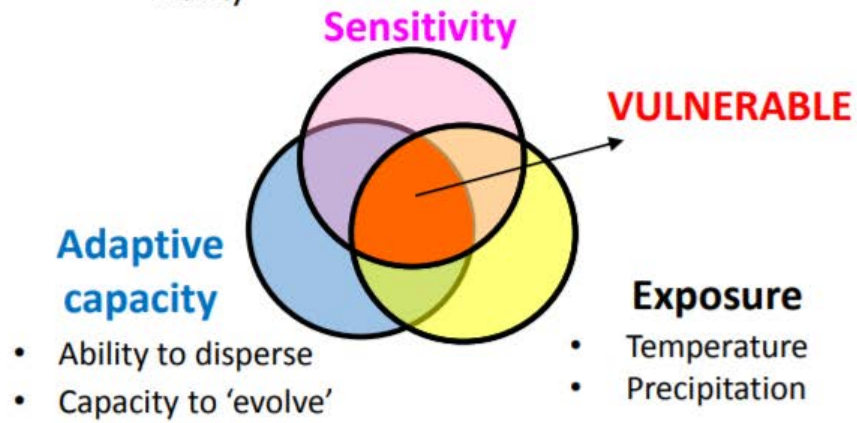
Method:
- Biological trait-based approach
- Regional & national experts

- Habitat and Microhabitat
- Narrow environmental tolerances
- Specific environmental trigger
- Interspecific interactions
- Rarity

GS-RCP4.5 2030/2060
- 108 mammal spp. > 13/56
- 91 amphibian spp. > 10/37
- 158 freshwater spp. > 4/47
- 100 bird spp. > 12/40







- Ability to disperse
- Capacity to 'evolve'

- Temperature
- Precipitation

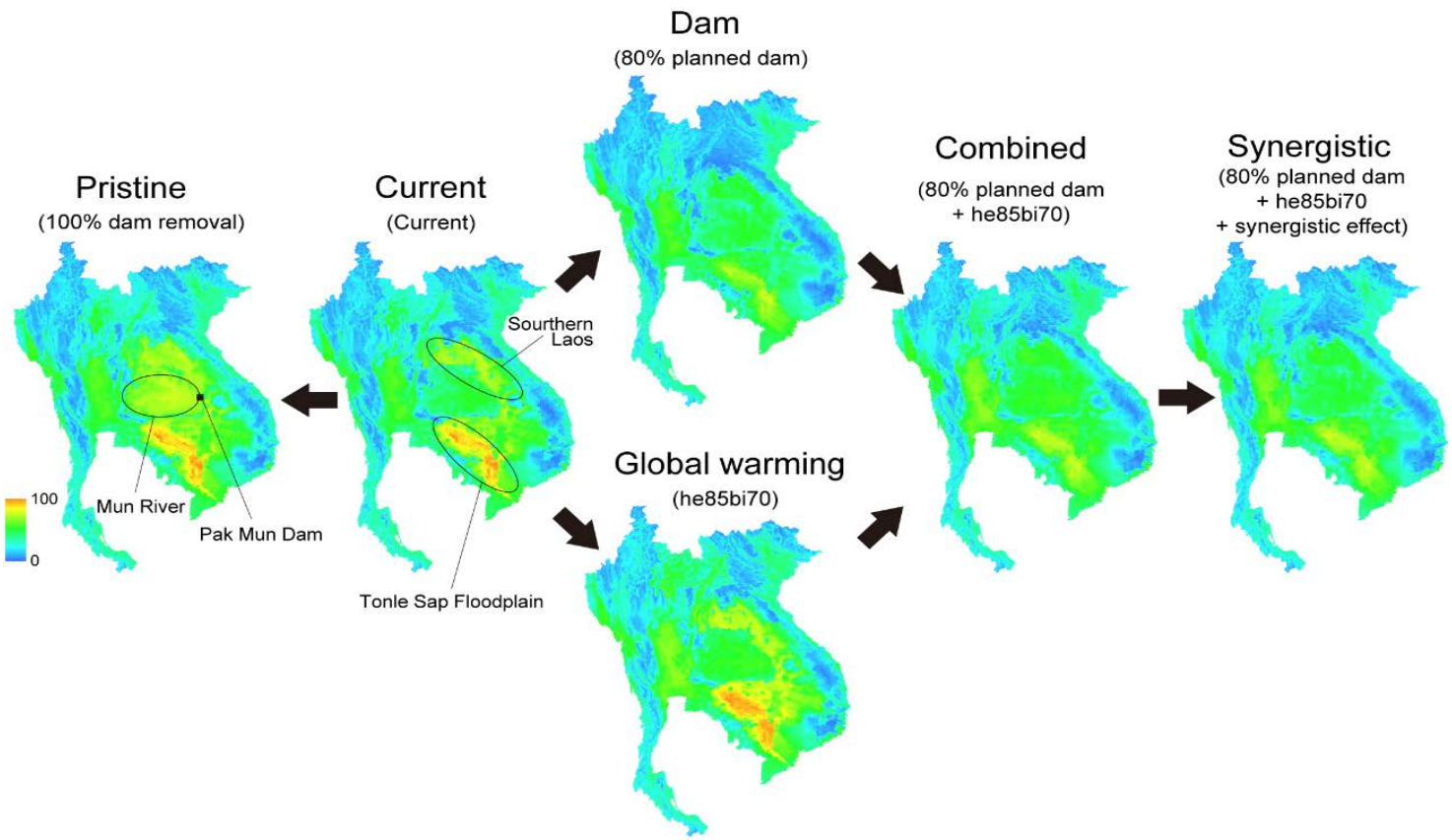
Geographic 'hotspots' of Vulnerability species

Yongyut Trisurat

Tonle Sap: threatened by climate change and…

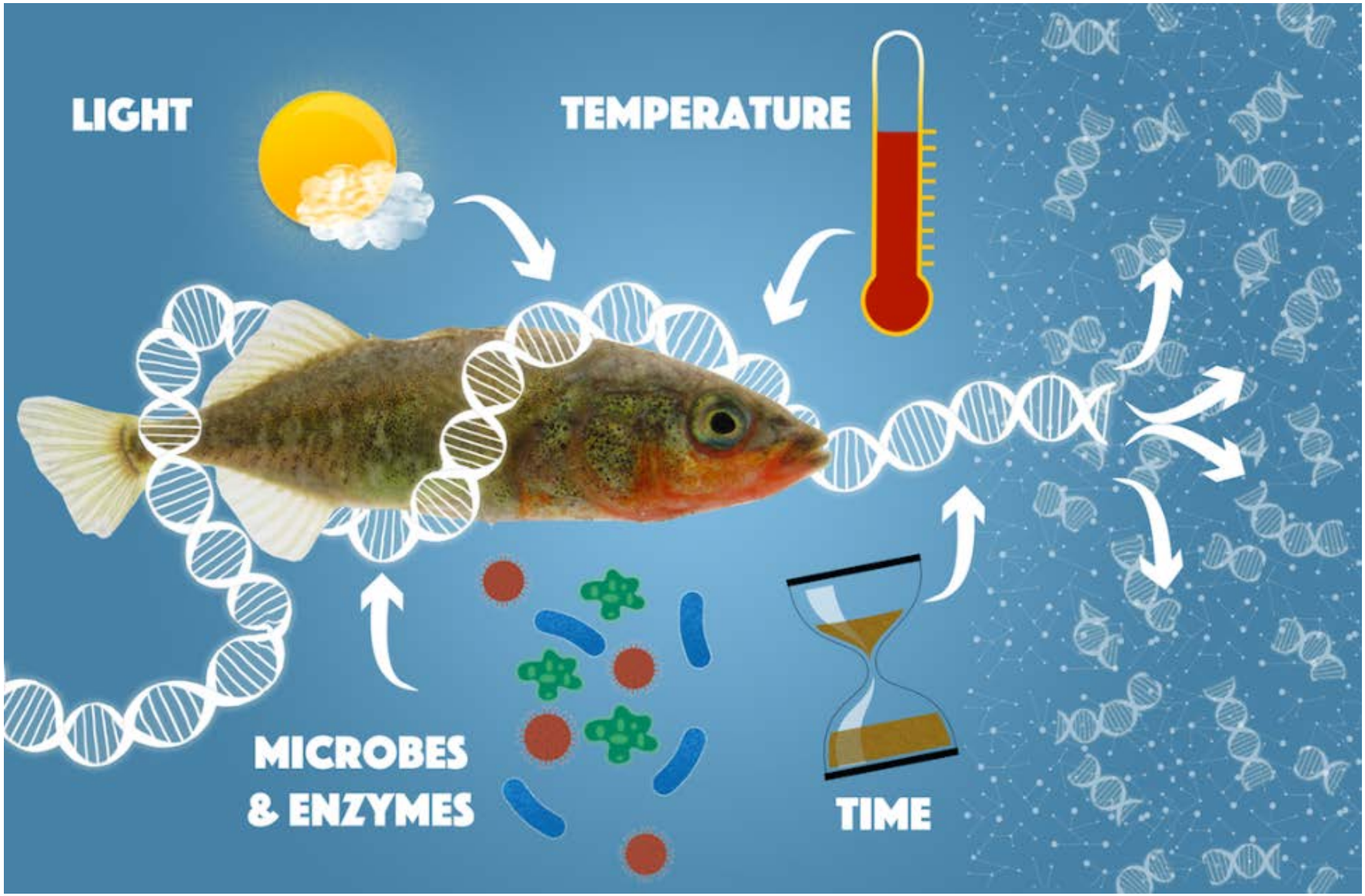
https://en.wikipedia.org/wiki/Tonl%C3%A9_Sap

Threats of dam construction and global warming upon freshwater fish diversity in Mekong Basin (Kano et al. 2016)



Fish bidodiversity index	Pristine	Current	Dam	Global warming	Combined	Synergistic
Mean species richness	39.6	37.3	32.8	41.1	36.1	34.2
Mean range size (km^2)	637,097	613,626	564,744	586,691	546,480	511,394
Threatened species	0.0%	4.7%	16.0%	35.0%	39.7%	40.5%

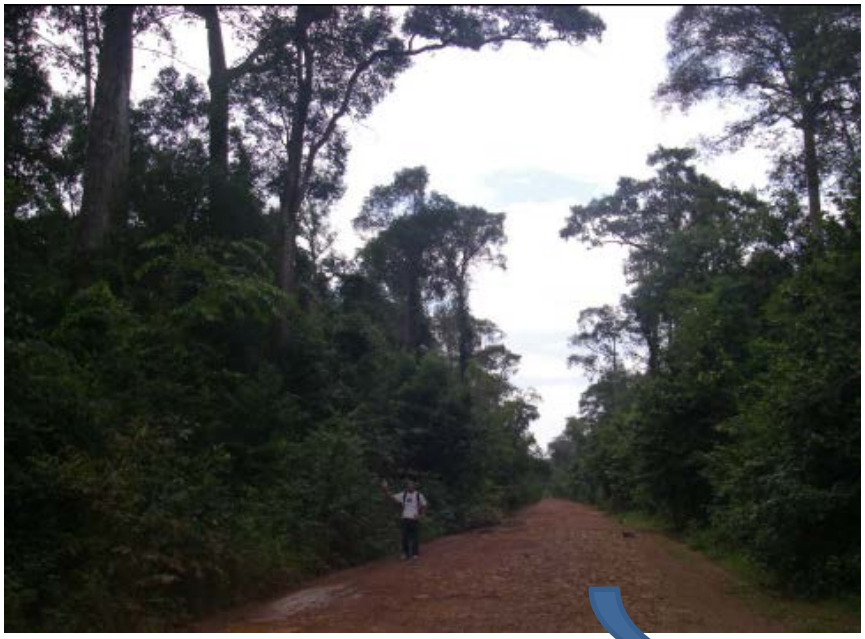
e DNA provides a new tool for EO platform



https://fishbio.com/field-notes/the-fish-report/true-or-false-challenges-of-edna-species-detection

Kampong Thom, Cambodia

Sep. 2010

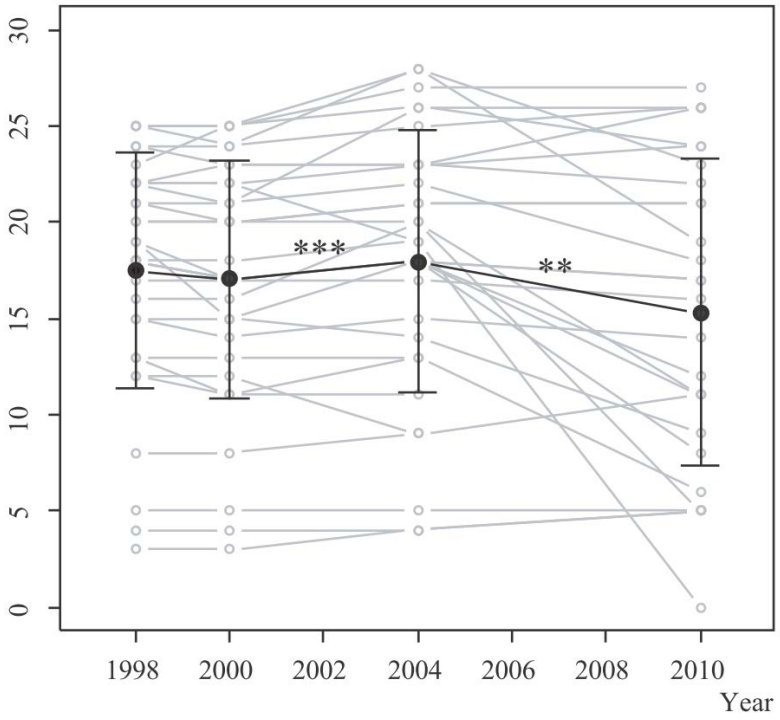


Jan. 2011

Since 2010, tropical lowland forest of Cambodia has been rapidly cleared under the high demand of firewood and incentives to land use change for money crops production.

Kampong Thom, Cambodia

Species richness (SR)



Effects of logging and recruitment on community phylogenetic structure in 32 permanent forest plots of Kampong Thom, Cambodia

Hironori Toyama[1], Tsuyoshi Kajisa[1], Shuichiro Tagane[1], Keiko Mase[1], Phourin Chhang[2], Vanna Samreth[3], Vuthy Ma[2], Heng Sokh[2], Ryuji Ichihashi[1], Yusuke Onoda[4], Nobuya Mizoue[1] and Tetsukazu Yahara[1]

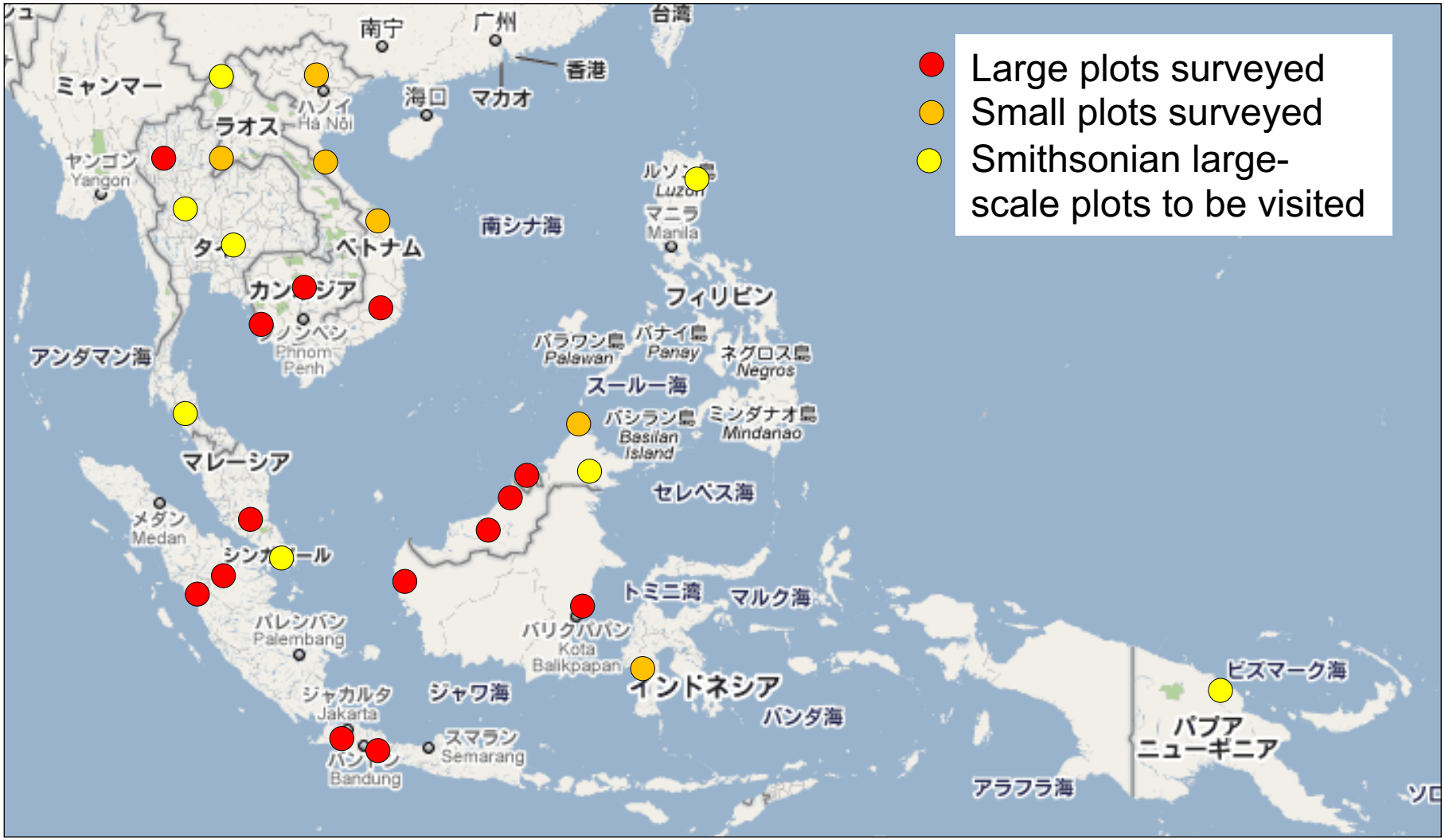
PHILOSOPHICAL TRANSACTIONS B

rstb.royalsocietypublishing.org

SR largely decreased from 2004 to 2010 in some plots due to illegal logging.

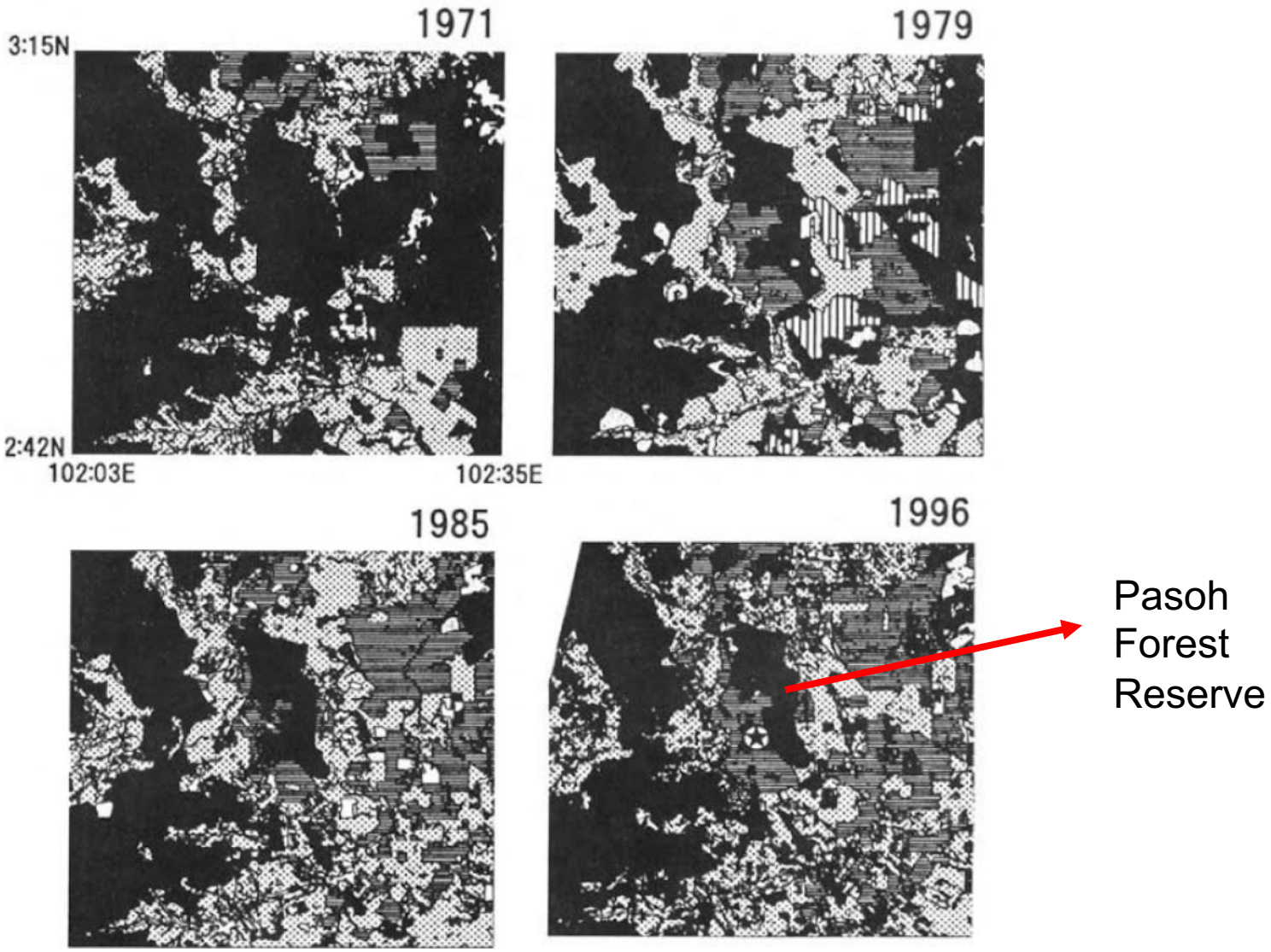
Multi-platform EO in Forest Plot Network

Candidate “master sites” in SE Asia



Pasoh Forest Reserve, Peninsular Malaya

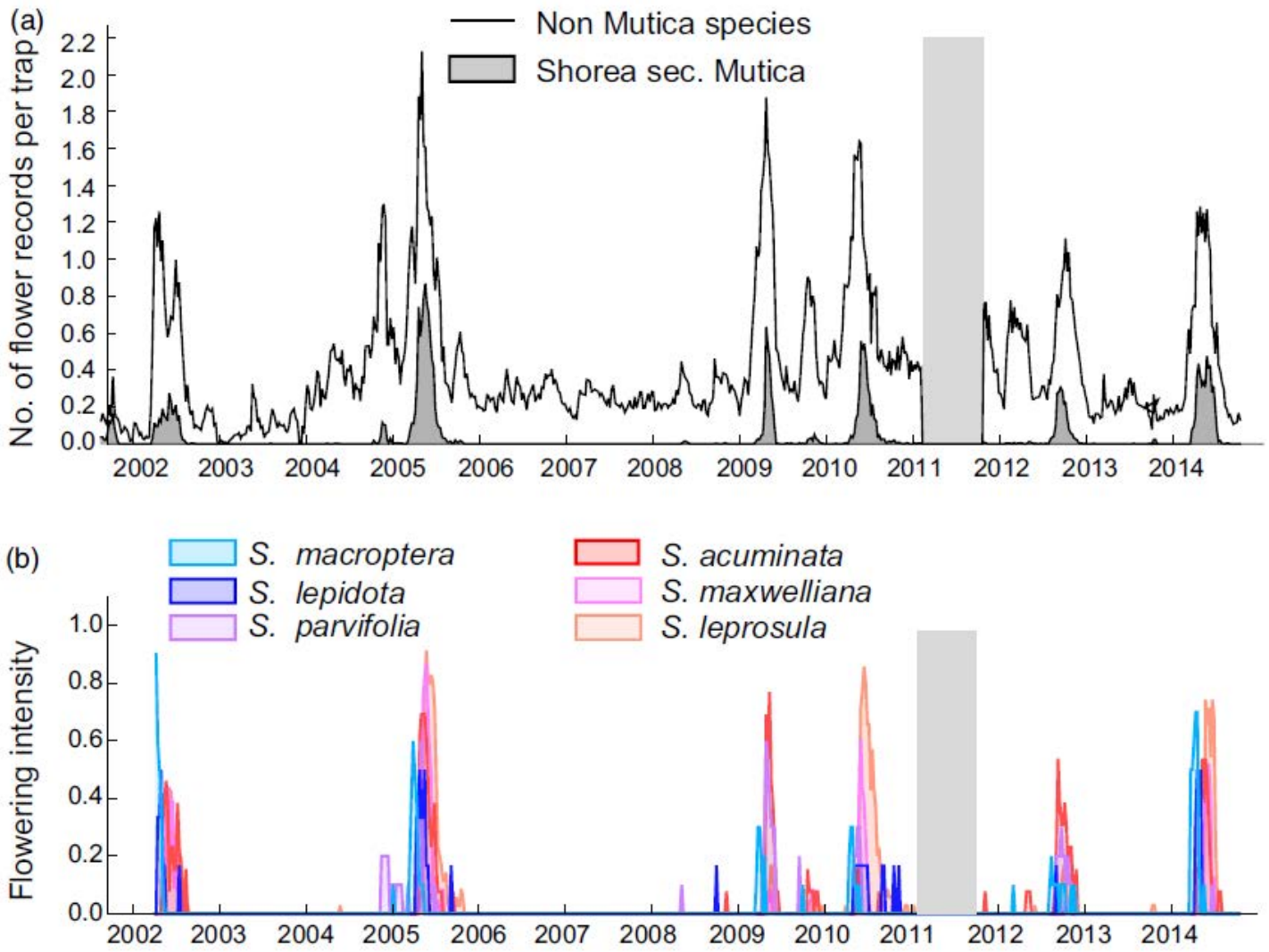
Okuda et al. (2003) Pasoh: Ecology of a Lowalnd Rain Forest in Southeast Asia



Pasoh Forest Reserve, Peninsular Malaya

Pasoh Forest Reserve, Peninsular Malaya

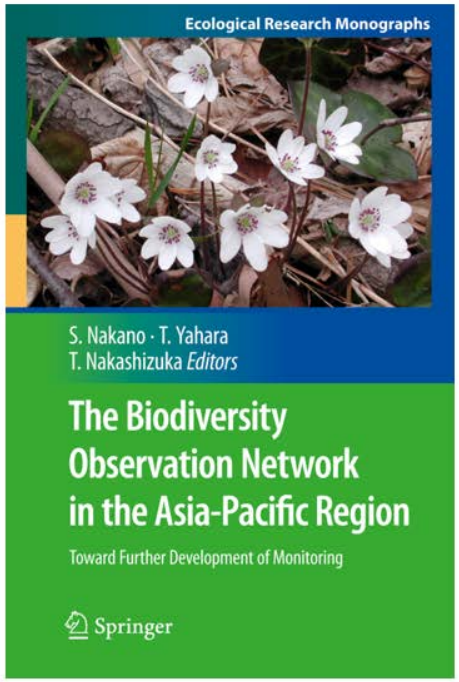
Flowering records in Pasoh, Malaysia (Chen, Satake, Sun et al. 2017)



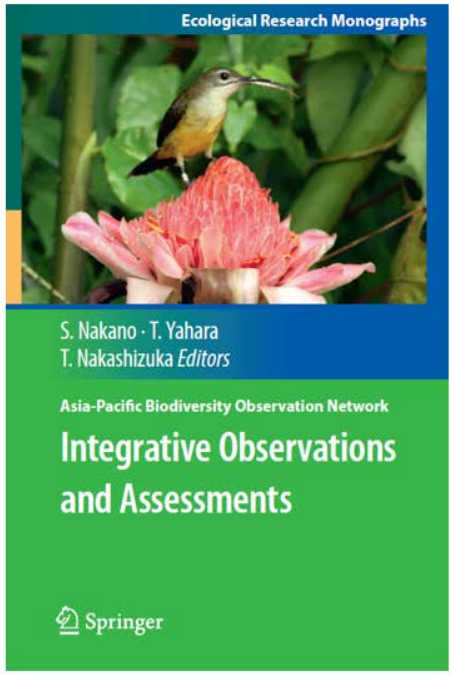
Next steps

-Designing a new strategic plan for 2019-2021
-Contribution to CBD COP15 where post-Aichi Targets will be set
-Following up IPBES assessment

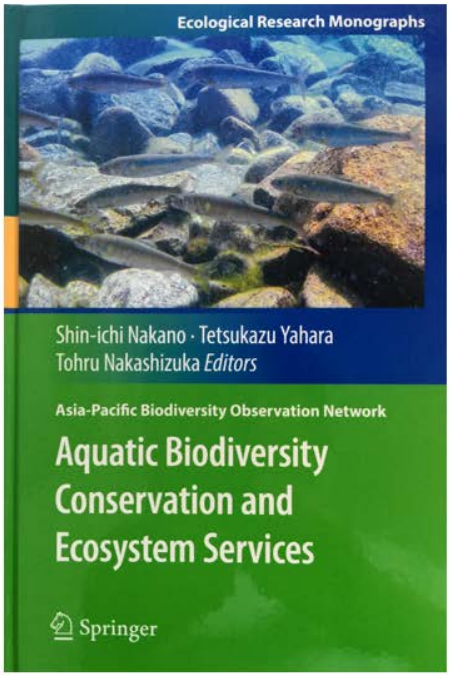
2012



2014

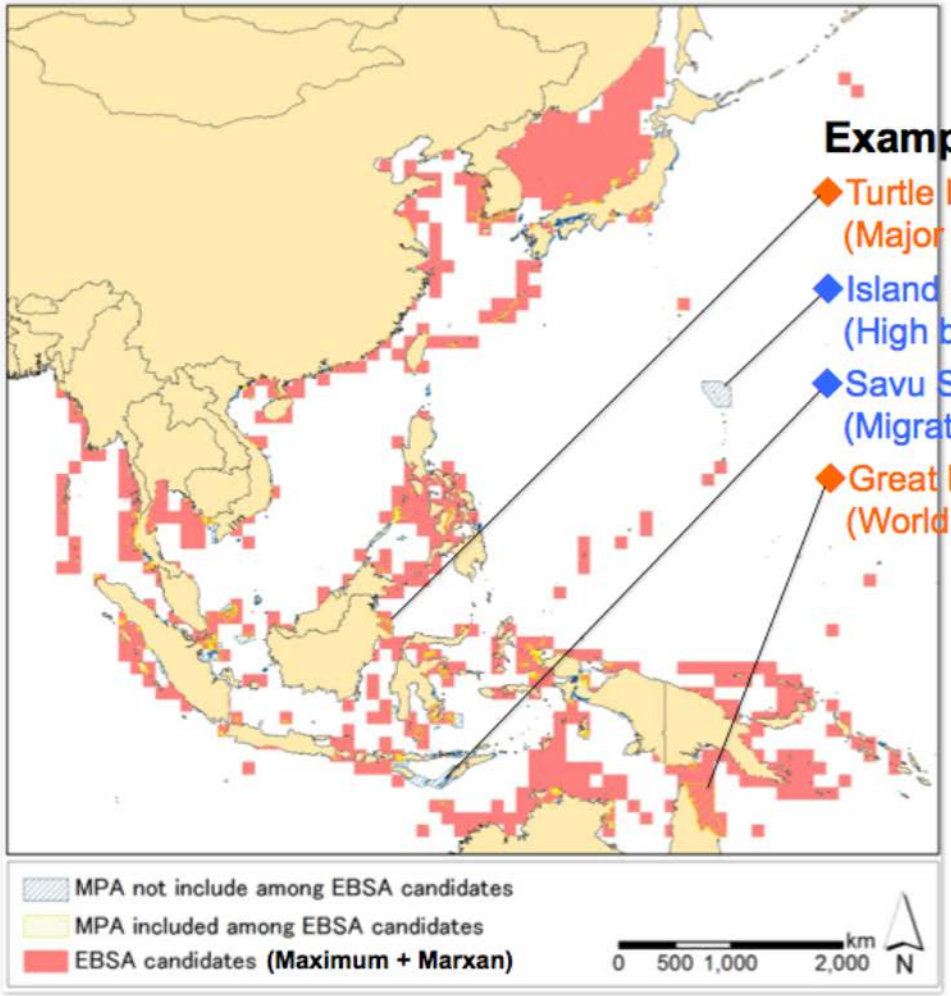


2016



Following up IPBES Regional Assessment

AP Marine BON will be organized in 2019



Yamakita et al. (2017) Marine Policy

Examples of Agreements and Disagreements

- Turtle Islands Heritage Protected Area
  (Major nesting area of marine turtles)
- Island Unit of Mariana Trench Marine National Monument
  (High biodiversity of seamounts and hydrothermal vents)
- Savu Sea Marine Protected Area
  (Migration corridor for threatened species, high nutrient)
- Great Barrier Reef Marine Park
  (World largest coral reefs)

Sea area within Asia-Pacific region	Rate (%)
Marine Protected Area (MPA)	1.1
MPA included among EBSA candidates	0.5
MPA not included among EBSA candidates	0.6
EBSA candidate not overlap with MPA	13.9

Total area of EBSAs became 14.4% of the study area.
Only 45% of MPAs overlapped with EBSA candidates.