

National Research Projects for Monitoring and Evaluation of Nationwide Biodiversity in Japan

December 2 2008

Noriaki SAKAGUCHI

**Biodiversity Center of Japan, Nature Conservation Bureau,
Ministry of the Environment**



Diverse Natural Environments

- Consisting of over 3700 islands
- Extending from north to south
- Mountainous
- Four seasons



Sub-tropical

to

Sub-arctic

Threats to Biodiversity in Japan described in National Biodiversity Strategy (rev. in 2007)

1. Global Warming



2. Habitat destruction and extinction of species



3. Desolation of rural areas



4. Invasive alien species



Asian small mongoose

National Research Project to Evaluate Biodiversity of Japan by Ministry of the Environment

Basic Act on Biodiversity (June 2008)



National Biodiversity Strategy (rev. in 2007)



1. National Survey on Natural Environment

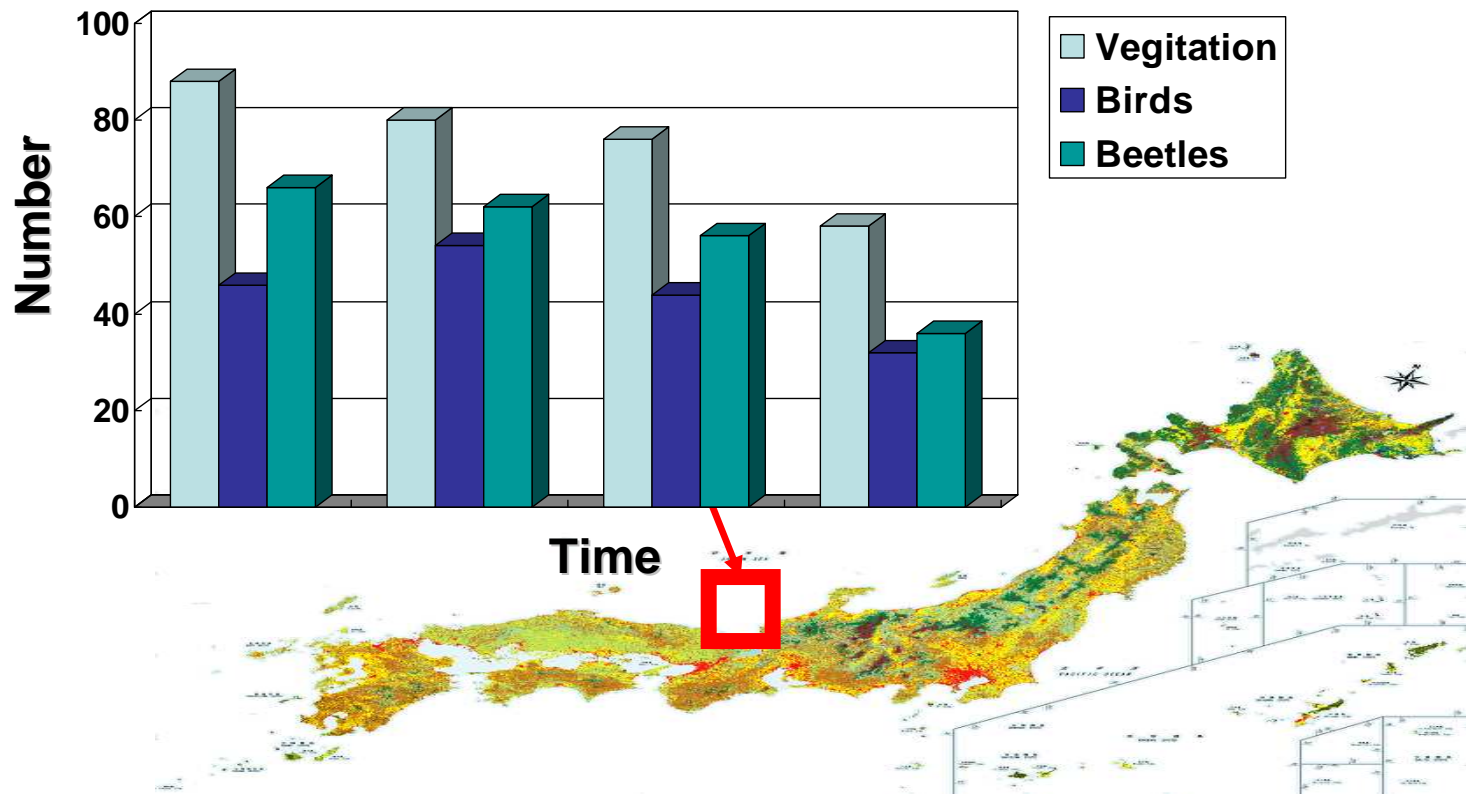
- Nationwide assessment on biodiversity including vegetation, fauna and flora**

2. Monitoring Sites 1000

- Long term monitoring of indicator species and physical factors in representative ecosystems of Japan**

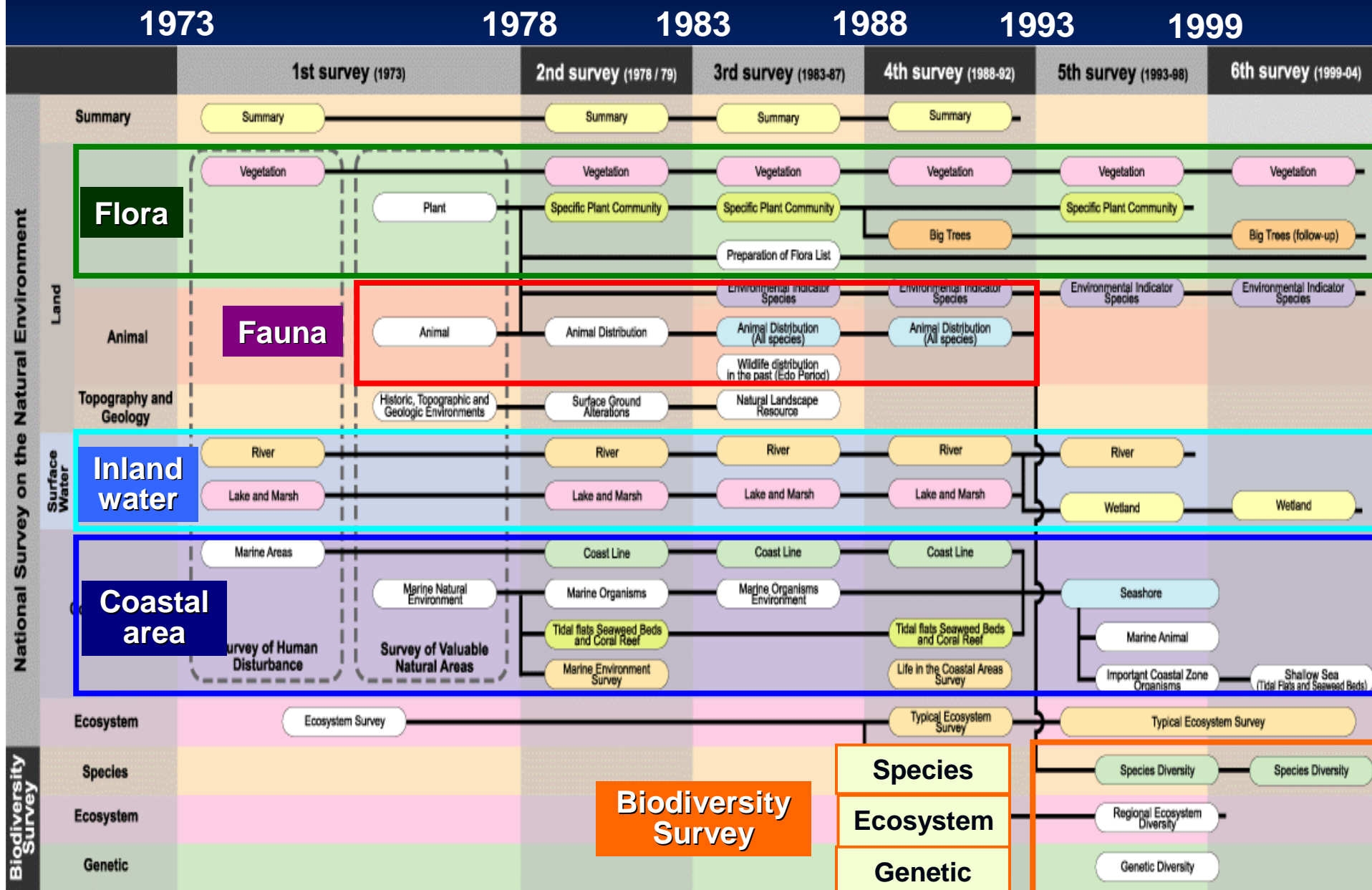
Comparison between the National Survey and Monitoring Sites 1000

Monitoring Sites 1000
Quantitative data on
indicators in ecosystems

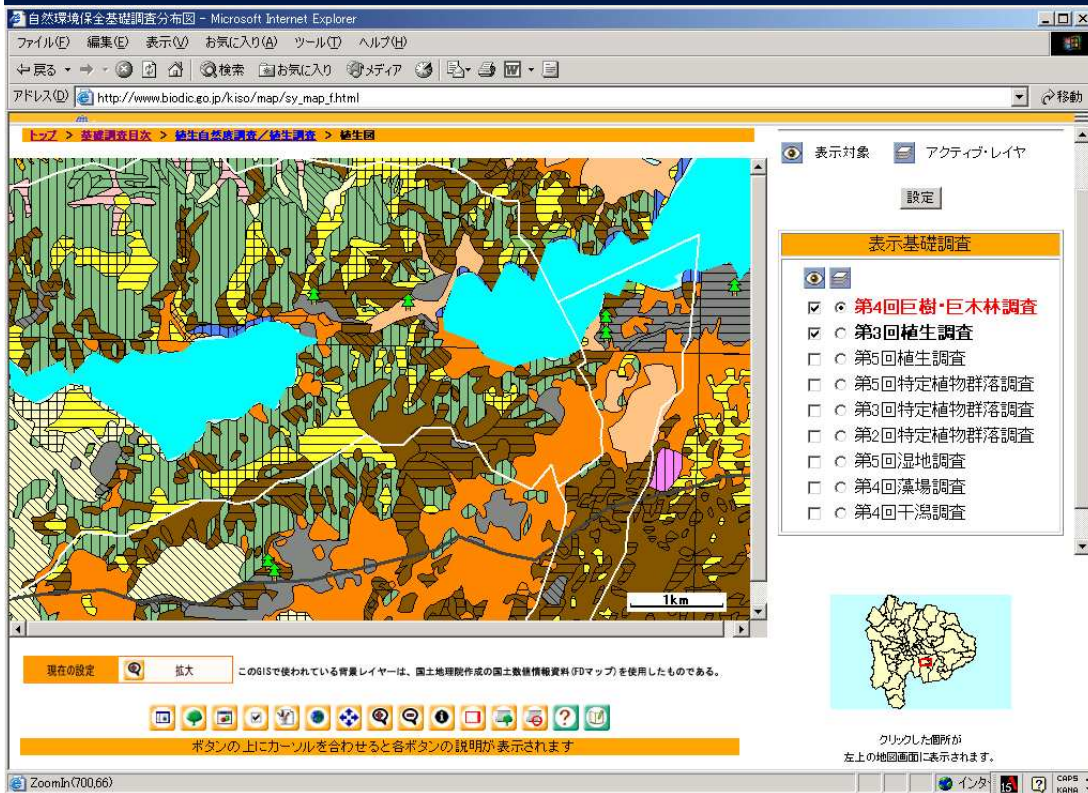


Biodiversity and distribution of fauna and flora
National Survey on the Natural Environment

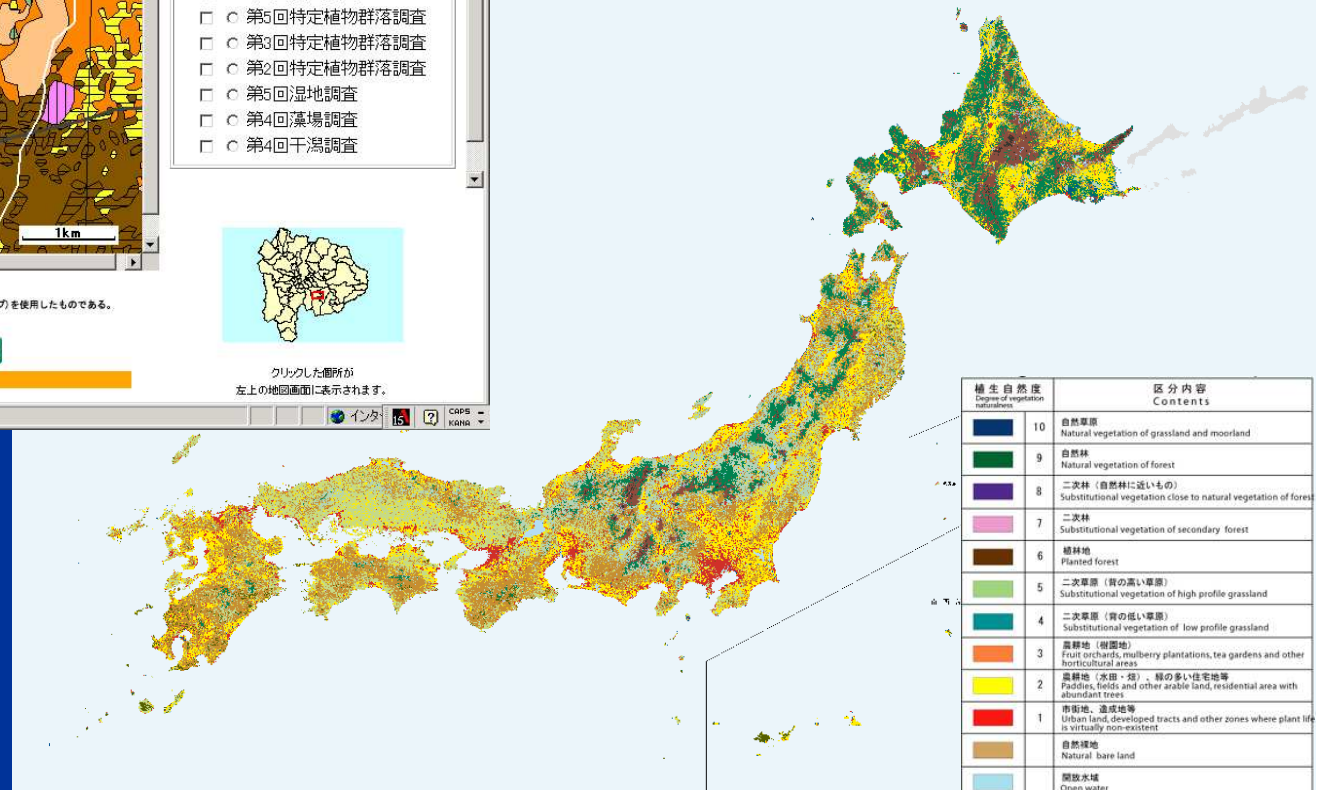
National Survey on Natural Environment



Vegetation Survey



GIS vegetation map
(1:25,000) developed
from field survey and
aerial photo



It takes longer time to develop 1:25,000 scale vegetation map

Vegetation Mapping by Remote Censing Using Satellite Images

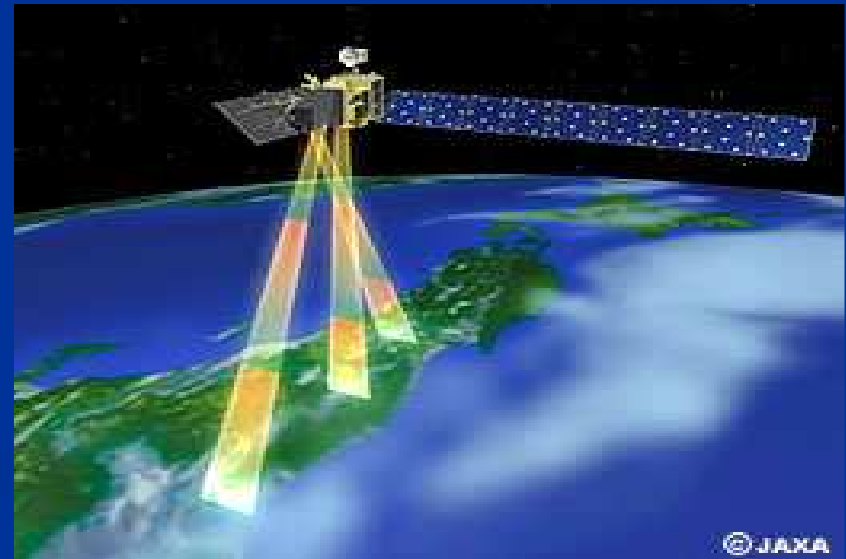
Advantage of vegetation mapping by satellite image:

Evaluating nationwide vegetation in short interval



Vegetation map
discriminated from
MODIS satellite image

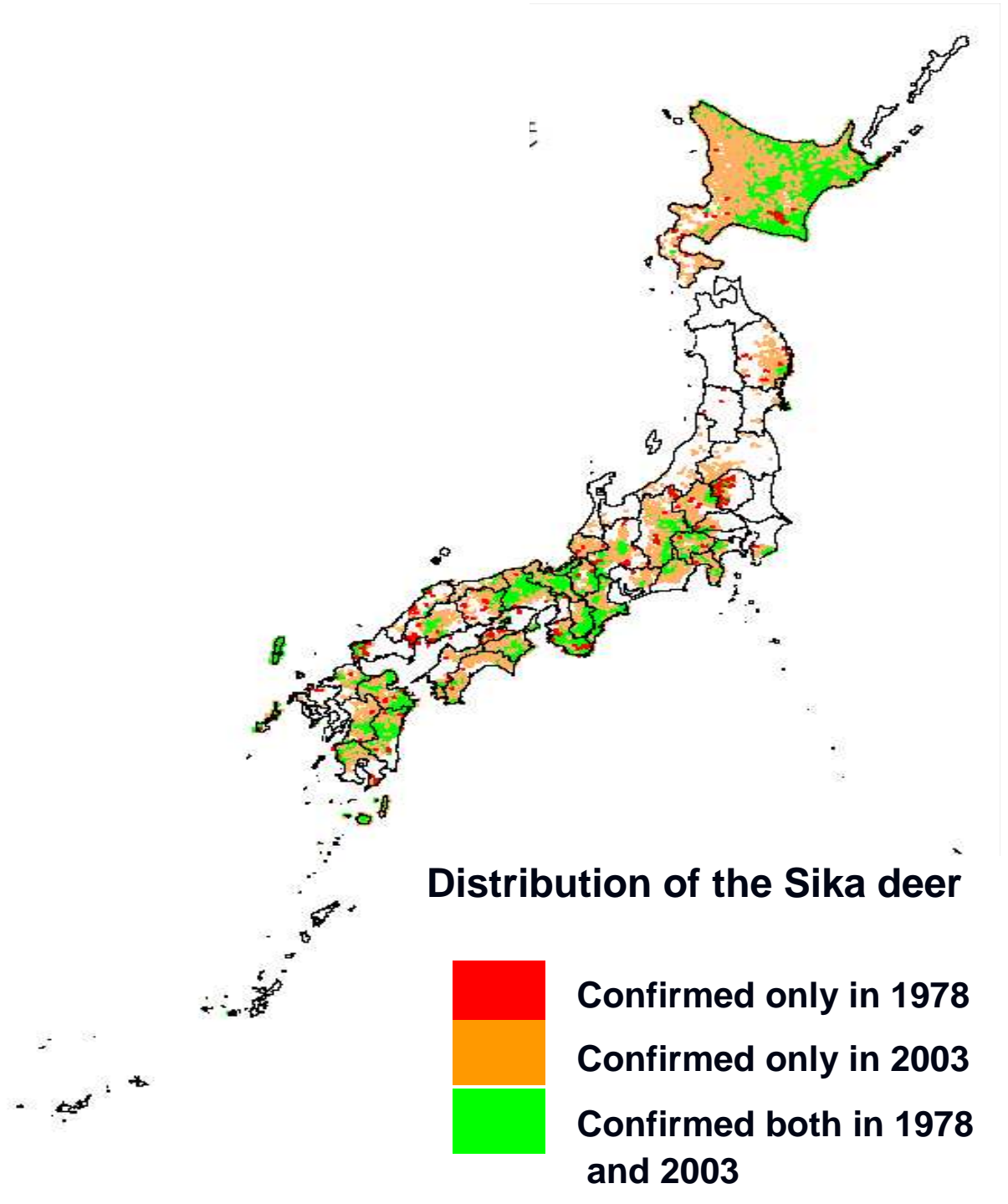
*For more precise analysis
and mapping*



Application of ALOS image data

Distribution of the Sika Deer *Cervus nippon*

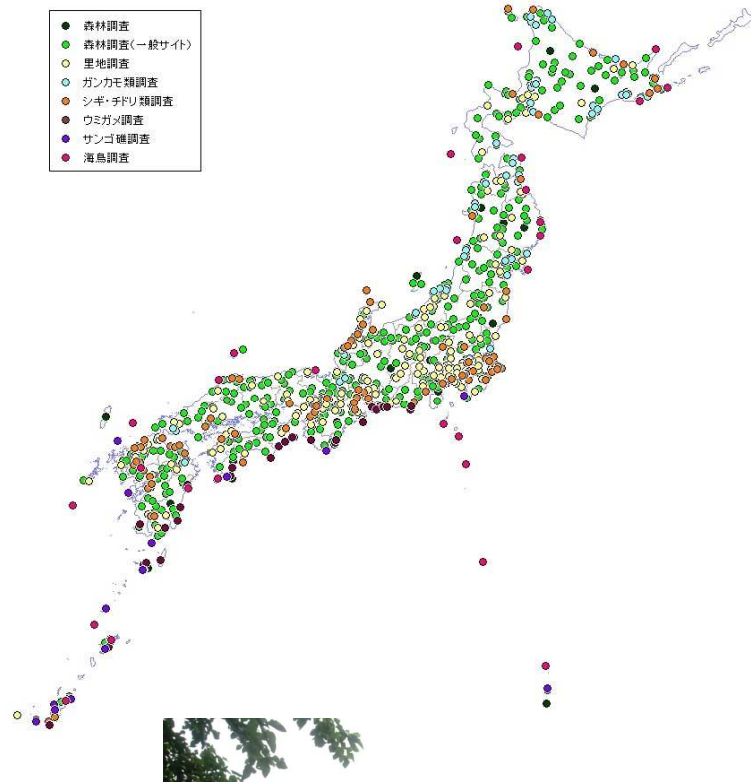
The distribution in 2003
expanded 1.7 times
more than that in 1978.



Monitoring Sites 1000

N 47.26302 E 114.43548

- 森林調査
- 森林調査(一般サイト)
- 里地調査
- ガンカモ類調査
- シギ・チドリ類調査
- ウミガメ調査
- サングロ調査
- 海鳥調査



撮影：梶原健次

Ecosystems and Indicators

Ecosystem		Sites	Main survey items	Surveyor
Terrestrial	Forest	465 (43)	Vegetation, growth, Litter, Terrestrial birds, Ground wondering beetles	Scientist / citizen
	Rural area	199 (18)	Flora, water environment, artificial impact, Indicator animals	Citizen
	Lake, Marsh	111 (30)	Vegetation, Plankton, Fishes, Anatidae	Scientist
Marine shore	Sandy shore	41	Vegetation, Sea turtle egg-laying	Citizen
	Rocky shore	6	Benthos	Scientist
	Tidal flat	128 (8)	Benthos, Sand grains, Shorebirds	Scientist / Citizen
	Eelgrass bed	6	Eelgrass vegetation, Benthos	Scientist
	Seaweed bed	6	Seaweed vegetation, Benthos	Scientist
	Coral reef	24	Coral coverage, Crown-of-thorns starfish, Bleaching, substratum turbidity	Scientist
	Small islet	30	Vegetation, Seabirds	Scientist
Total		1016		

Design to Collect Quantitative Data on Ecosystem Changes

Functional Change of Ecosystem
(Material Circulation, Energy flow)

The Change of Ecosystem
Service for human

Impossible because of cost, time and power

Target

Indicators in the Ecosystem (Functionally Important Species)

Example of Forest Survey

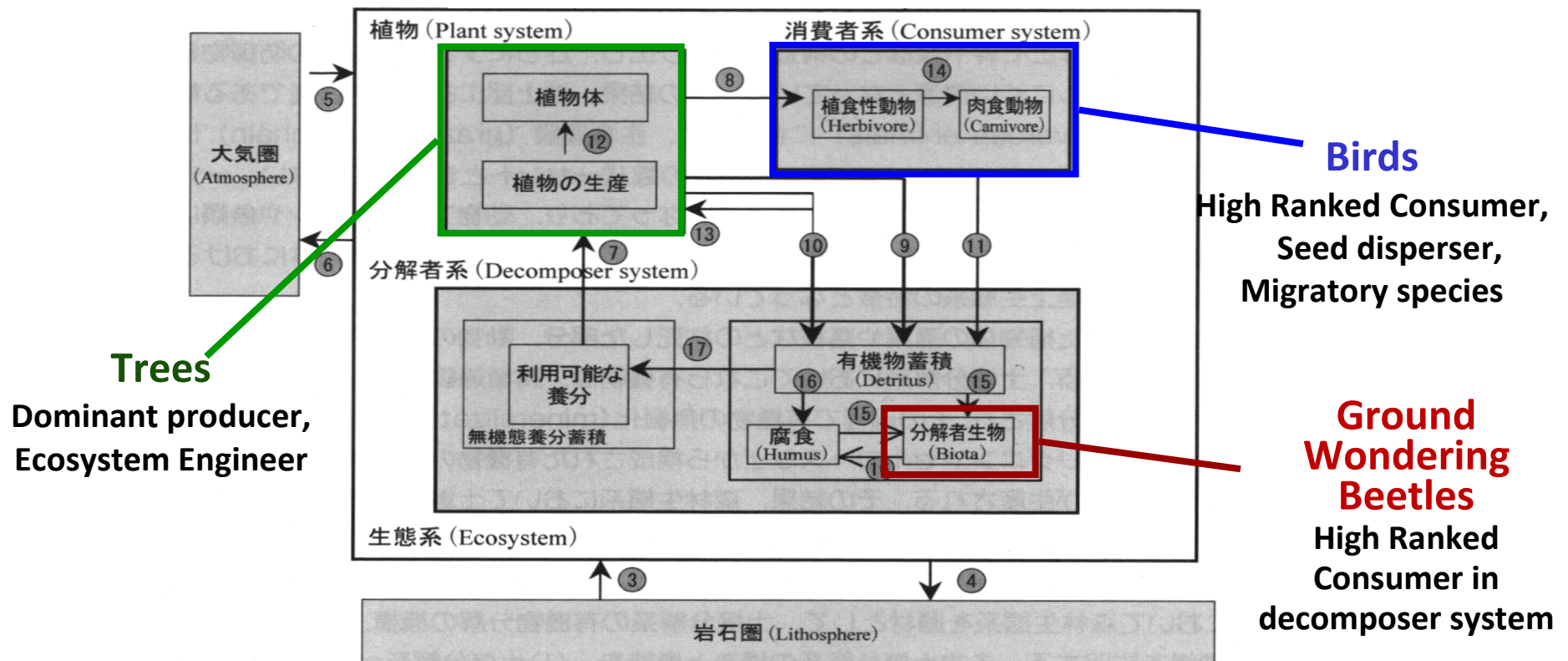


図 3.1.1 森林における物質循環

地球環境と生態系 (武田・占部編) より

Global Warming Effects on Coral Reef referred from IPCC report

1. Raising water temperature



Breaching

2. Oxidation of marine water



Depression
of growth

Methodology for Coral Monitoring

Spot check method

15 minutes observation by snorkeling at a fixed site (50m x 50m)

Observation items

Coral: Coverage, Growth type, Recruitment, Bleaching

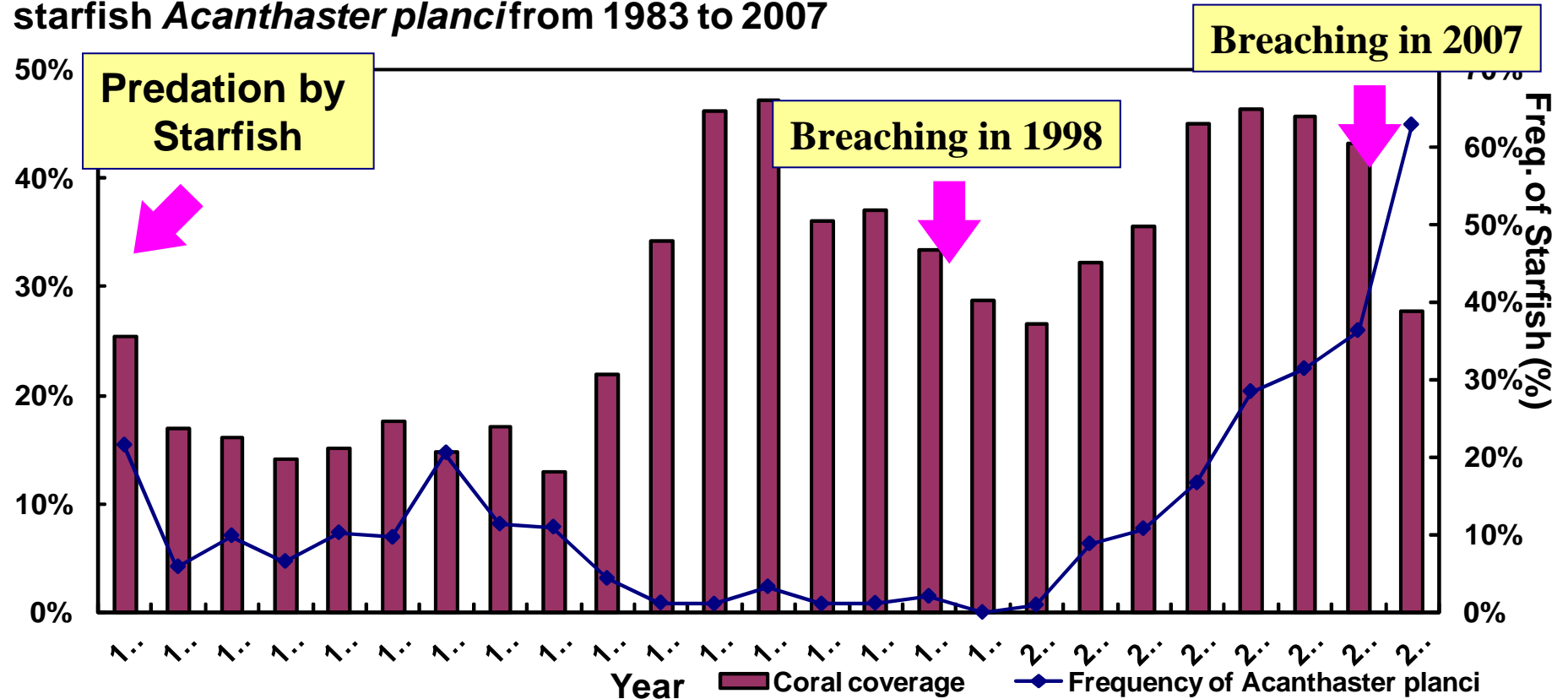
Crown-of-thorns starfish: Number, Dominating size, Predation

Other organisms: Coral eating snails and their predation, Large sized coral fishes

Physical factors: Position, Topography, Substratum, Depth,, DPSS

Results of Coral Reef Monitoring in Sekisei-syouko

The change of coral coverage and frequency occurrence of the crown-of-thorns starfish *Acanthaster planci* from 1983 to 2007



Site 14

Application to restoration of coral reefs and eradication of star fishes

撮影：木村 匡



Asia Pacific Biodiversity Inventory Initiative

1. Development of Biodiversity Information Inventories

Develop and provide biodiversity information inventories in East and Southeast Asian region for decision-making in biodiversity conservation policies.

2. Promotion of Taxonomy Capacity Building

Promote capacity building of taxonomy in the region basic for the development of biodiversity information and the conservation policies.



Development of Biodiversity Inventory

Objective: To develop the biodiversity information inventories directly available for decision-making in biodiversity conservation policies and provide the information for the decision-maker.

Function of Interface

Baseline data on Biodiversity

GBIF, OBIS
IUCN RL
Other DBs

Collecting



Screening, Compiling regular revision

- Red Data Book on Endangered Species
- Indicators of Ecosystem
- Population in each habitat on particular species

Biodiversity Conservation Policies

Evaluation of the achievement of "Biodiversity 2010 Targets"

Development of National Biodiversity Strategy and Action Plan

Species Conservation: Migratory birds

Existing Biodiversity Inventories:

WCMC-UNEP:
Species DB, WDPA
Birdlife: IBA

Sumatran tiger

Panthera tigris sumatrae
Distribution: Sumatra Is.



Population size: 350-500
IUCN Red List: CR
CITES: Appendix I
Protected by Act on Fauna
Factors threatening: habitat loss, poaching, illegal trade

Ecological data:
HRS: 100km2 male
50km female
Food: barking deer
wild boar
Behavior: nocturnal



Conservation activities :
Action plan: Wild Cat, 1992, IUCN SSP.
Conservation of Sumatran tigers, 1999, PHKA, Ministry of Forestry, Indonesia.
Research activities:
Zoological Society of London, Riau Pr.
Fauna Flora International., Selatan NP.

References:
WWF, 2006, Research on Sumatran tiger

Providing



Decision-makers

Global: CBD, CITES, IAS,
Flyway Partnership on
Migratory Birds
National: NBSAC, Species
Conservation, Law
Enforcement, others

A Japanese Bobcat is perched on a thick, mossy tree branch at night. The cat has a mottled brown and black coat and is looking towards the right with its mouth slightly open. Above the cat's head is a large, white, cloud-like thought bubble containing the text "Thank you for your attention!!". Three smaller, white, oval-shaped bubbles trail from the bottom of the main bubble towards the cat's head.

**Thank you for your
attention!!**

November 26, 2008

Noriaki SAKAGUCHI

Biodiversity Center of Japan, Ministry of the Environment