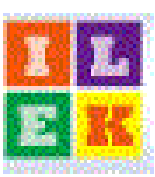


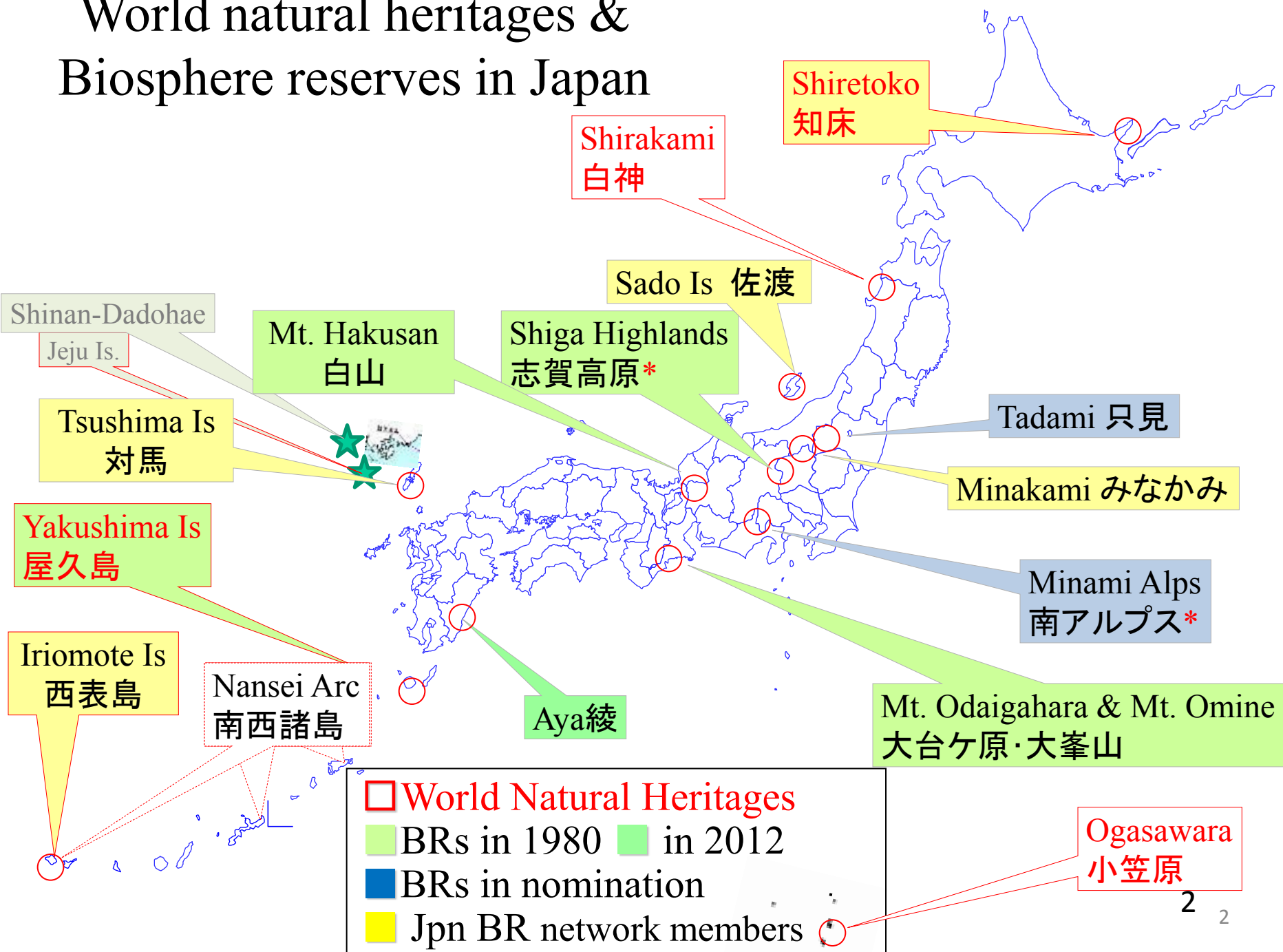
# Relationship between World Heritage and Biosphere Reserve: A Comparative Study between Yakushima and Shiretoko



Hiroyuki MATSUDA  
(Yokohama Nat'l Univ.)  
with Toshinori TANAKA  
(Univ. of Tokyo)



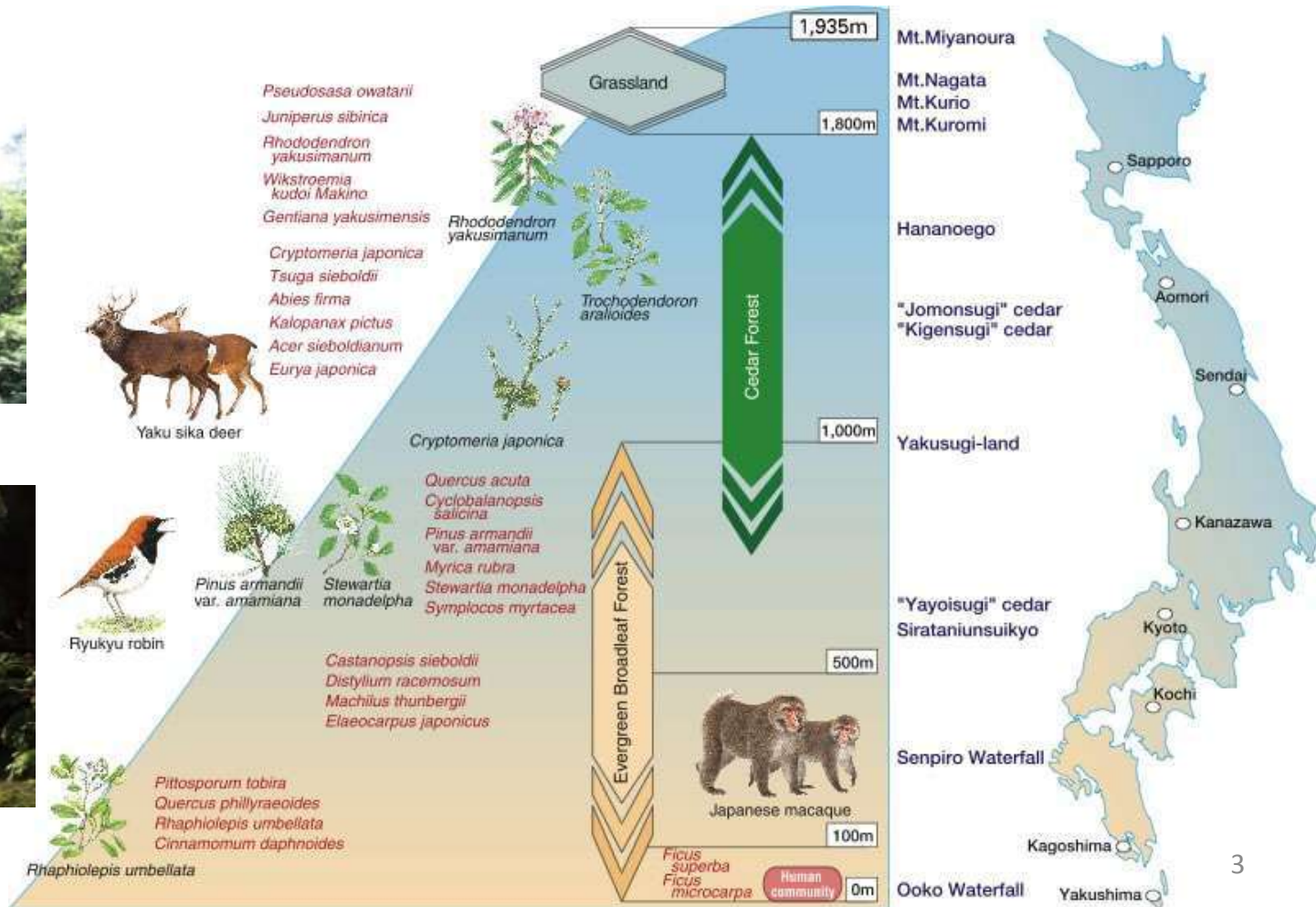
# World natural heritages & Biosphere reserves in Japan





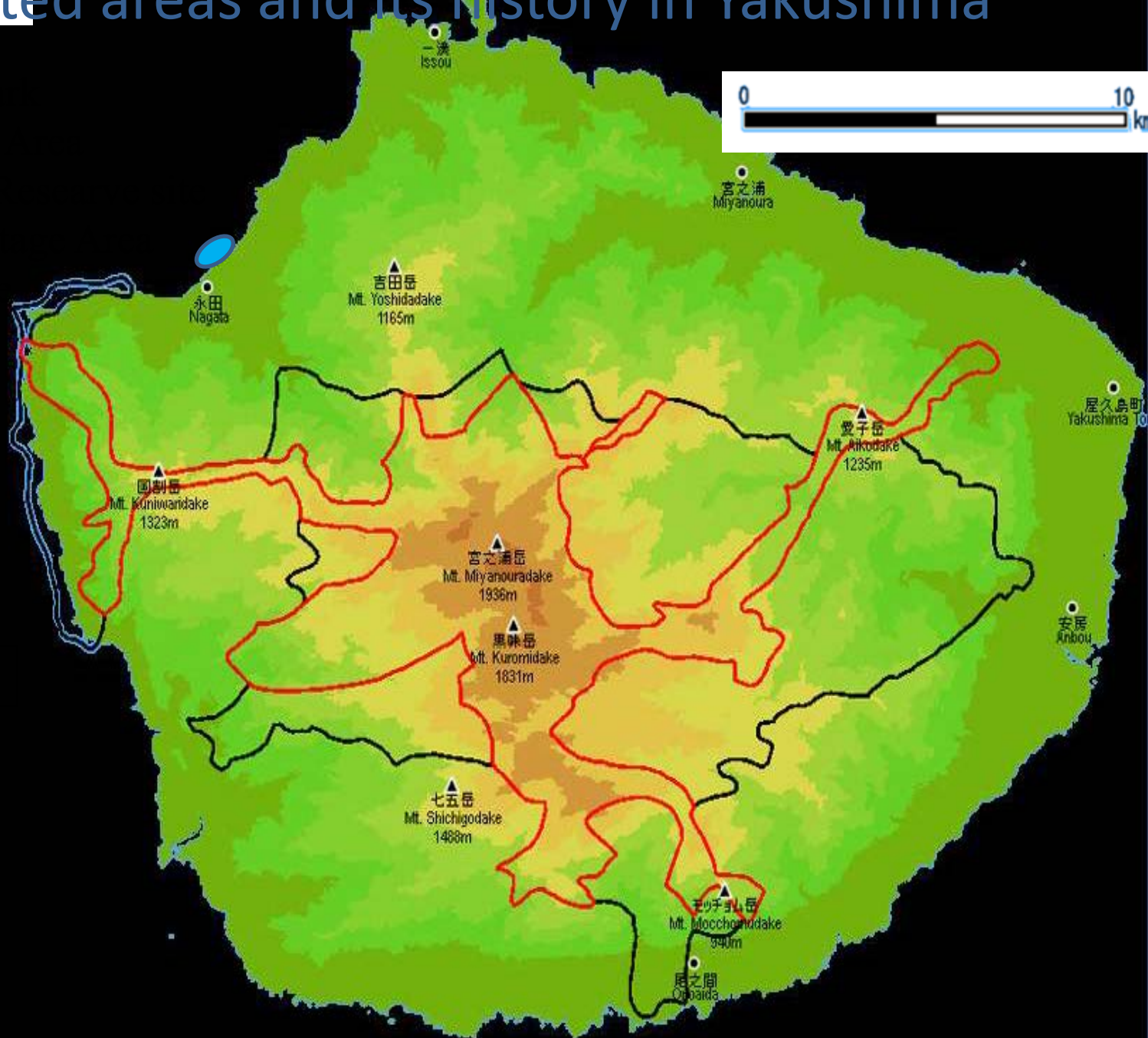
# Yakushima World Heritage inscribed in 1993

- Satisfies Criteria vii) landscape and ix) Ecosystem
  - vii: **Vertical distribution of flora** with steep Mt & heavy rain
  - ix: **Biogeographical boundary** between tropical/temperate



# Protected areas and its history in Yakushima

- 1964 ~ National Park
  - 1975 ~ Wilderness Area
  - 1981 ~ Biosphere Reserve
  - 1993 ~ World Heritage Site
  - 2005 ~ Ramsar Wetland
- (● Nagata Bay)



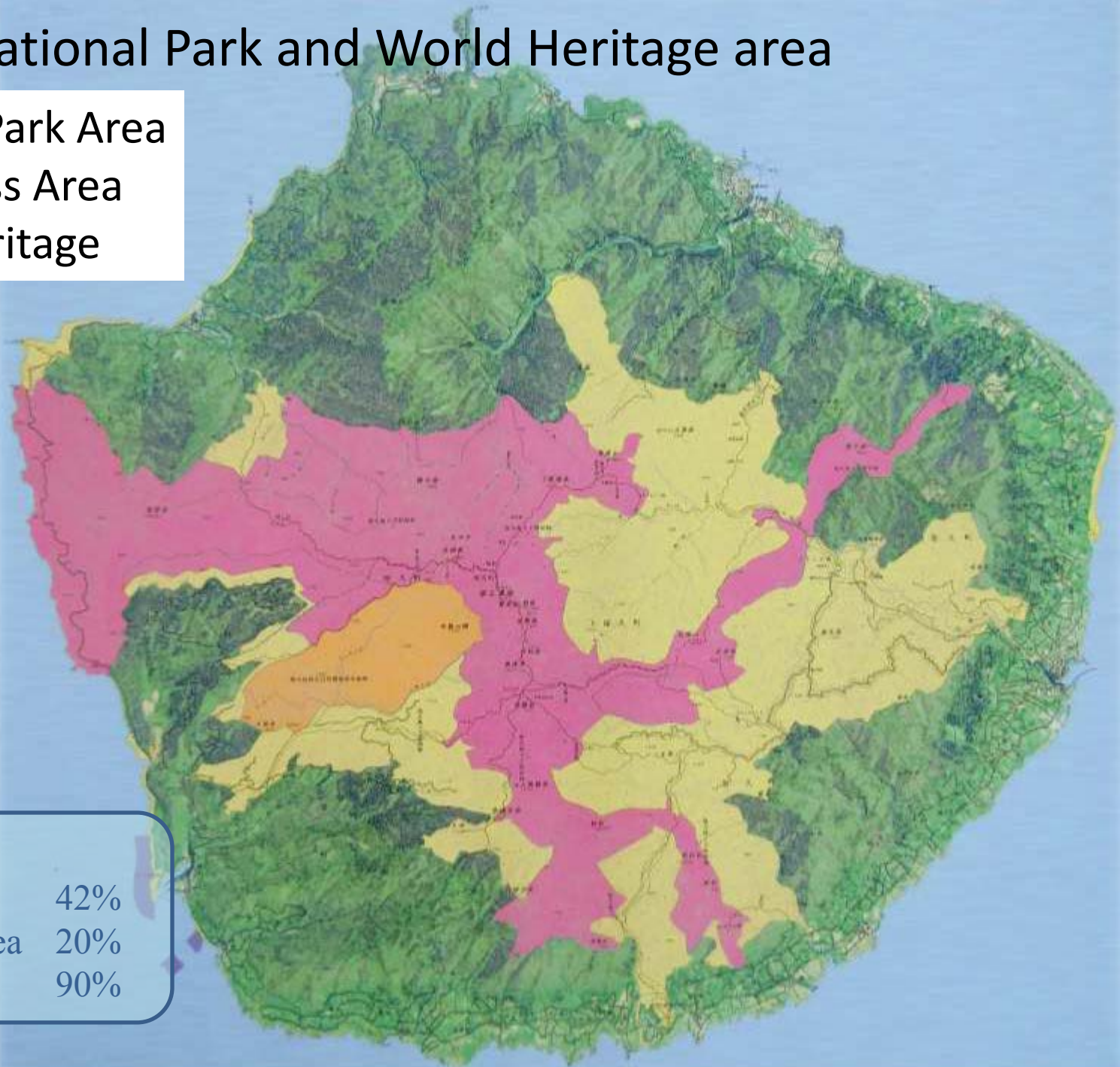
Core = 7599ha

Buffer = 11,3

Transition = 0!



# National Park and World Heritage area



## Yakushima Island

National Park Area	42%
World Heritage Area	20%
Forest	90%

# World natural heritage & Biosphere reserve

- UNESCO Convention
- Top-down control by nation & convention
- “WH in danger”
- Protection of core area
- Protection of the value
- 5 yr periodic review
- Started from 1972
- UNESCO Programme
- Engagement of all relevant stakeholders
- no “BR in danger”
- +Sustainable use of transition area
- Creation of the value
- 10 yr periodic review
- Started from 1971

# Protection, Conservation, Restoration: From wilderness to ecosystem services



Aldo Leopold (1887-1948)



Rachel Carson (1907-1964)



1980~

Sustainable Development

19c ~

Protection of wilderness

1992~

Biodiversity

2005~

Ecosystem services

Sustainability?

Edward O. Wilson (1929-)



保存 (P-type)

保全 (C-type)

復元回復 (R-type)

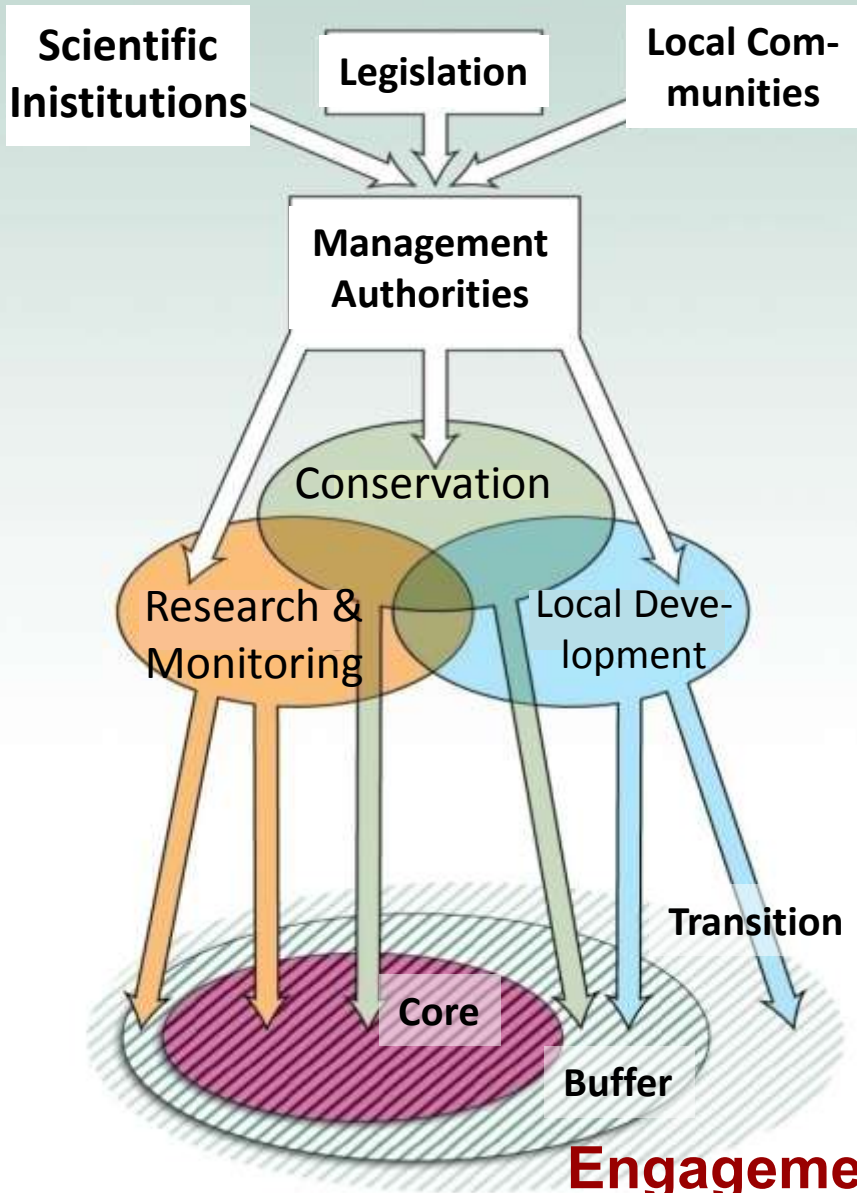
WNH

BR, Ramsar

# UNESCO's **Man** and the Biosphere Programme

## Biosphere Reserves – Key Features

By Prof. Choi



**Zoning** – means to meet the challenges of biodiversity management in multi-use areas with the objective of sustainable development.

**Organizational/governance arrangements** – enabling involvement of all actors in management and decision-making processes.

New forms of institutional cooperation and links between different levels of economic and political decision making.

**Engagement of all the relevant stakeholders.**



# Shiretoko WH satisfies criteria vii (ecosystem) and x (biodiveristy)



- vii: **Interaction of marine and terrestrial ecosystems**, largely influenced by **seasonal sea ice** at the lowest latitude, the primary producer provides **the source of food for marine and terrestrial species**.
- x: A number of endangered and endemic species (e.g., **Blackiston's fish owl**), globally important for salmonids, marine mammals (**Steller's sea lion** and cetaceans) and, threatened **sea birds** and migratory birds....

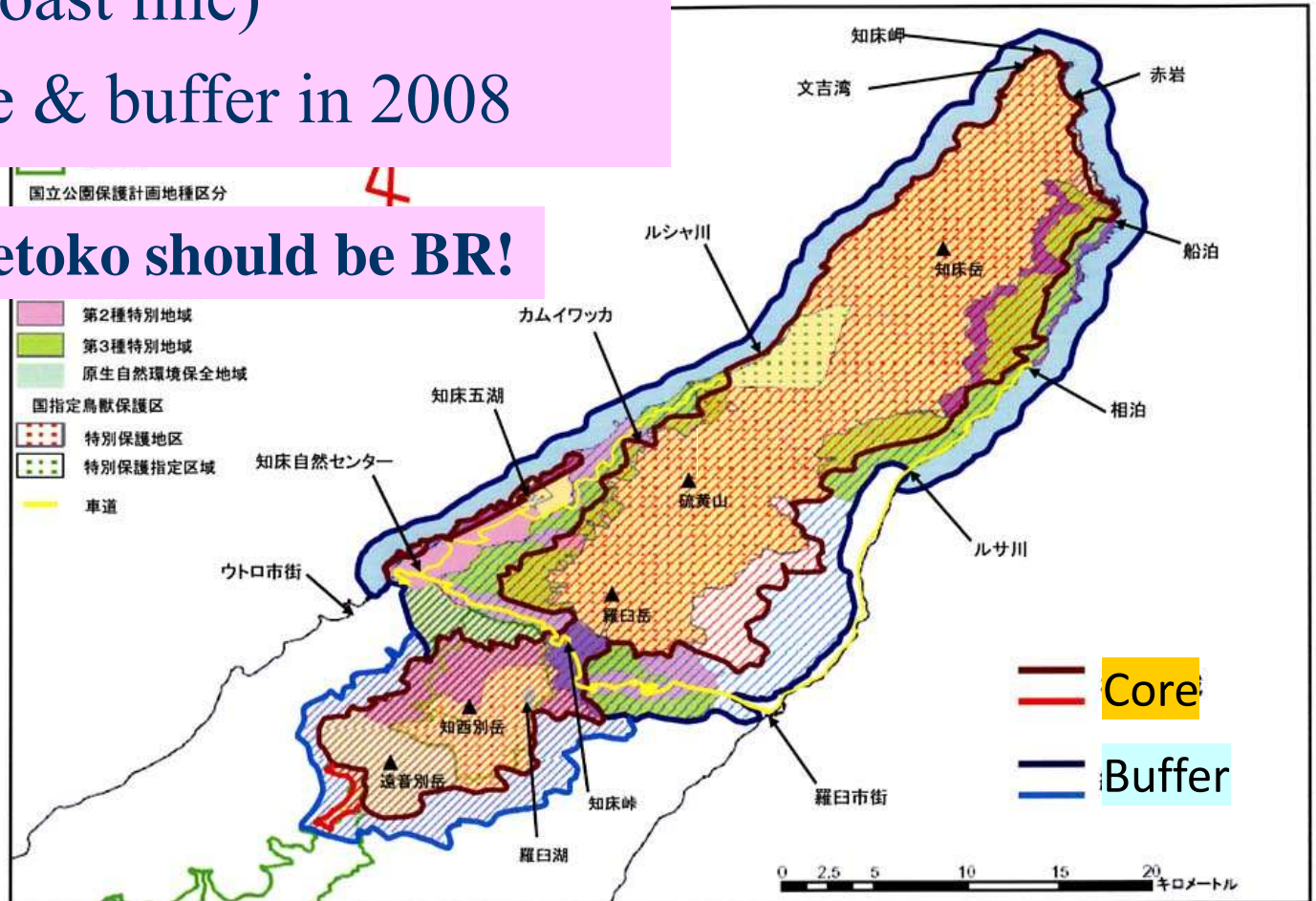
# Zoning of Shiretoko World Heritage as of 2004

- Similar to BR zoning
- Marine area was expanded in 2005 (3km from coast line)
- Rename core & buffer in 2008

SC agreed, Shiretoko should be BR!

Zone A

Zone B





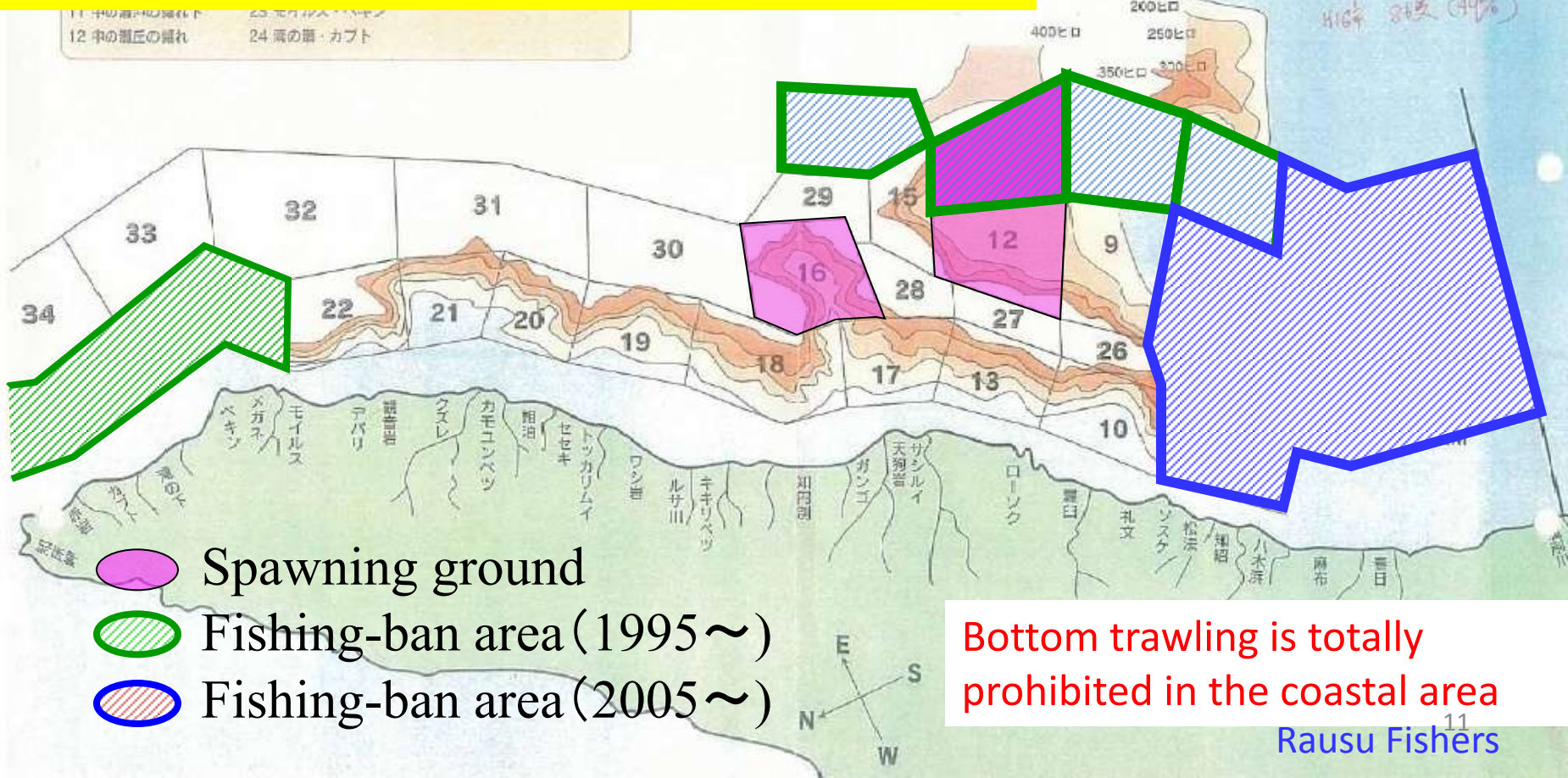
# Fishing ground exists in WH area! “MPAs” to protect Walleye pollock

Mitsutaku Makino's idea

177 boats fished walleye pollock in 1995  
Decreased to 86 boats in 2004 (49% reduction)  
Compensation to retired fishers by Fisheries Organization  
Fishing ban during Mar 20-end since 1995



Fishers expanded Fishing ban area in 2005





## IUCN/UNESCO "Report of the reactive monitoring mission 18-22 February 2008"



The mission team also applauds the **bottom up approach** to management through the involvement of local communities and local stake-holders, and also the way in which scientific knowledge has been effectively applied to the management of the property through the overall Scientific Committee and the specific Working Groups that have been set up. These provide **an excellent model for the management** of natural World Heritage sites **elsewhere**.

# Shiretoko's episode during World Heritage is one of the 6 impact stories in 2010



The International Association for the Study of the Commons

Founder=E. Ostrom

The leading professional association dedicated to the commons

<http://www.iasc-commons.org/impact-stories>

## Impact Stories

### Co-managemnt in Japanese coastal fisheries

Articles and Photographs: Mitsutaku MAKINO, M.A., M. Phil., Ph.D., Fisheries Research Agency Japan

Country: Japan

Type of resources involved: Coastal Ecosystem

What change happened to strengthen rights to the commons?

Marine Policy 33 (2009) 207–214

After the listing of the co-

plan was enacted in on-

rights system, traditiona-

officially incorporated as

to observe the changes

fishers' organizations o-

positive appreciation in

more incentives to ne-

conservation. This is

nominate to the UNES

environment", which oft-



Contents lists available at ScienceDirect

Marine Policy

journal homepage: [www.elsevier.com/locate/marpol](http://www.elsevier.com/locate/marpol)



Expanding fisheries co-management to ecosystem-based mana  
A case in the Shiretoko World Natural Heritage area, Japan

Mitsutaku Makino<sup>a,\*</sup>, Hiroyuki Matsuda<sup>b</sup>, Yasunori Sakurai<sup>c</sup>

<sup>a</sup> National Research Institute of Fisheries Science, Fisheries Research Agency, 2-12-4, Fukuura, Kanazawa, Yokohama 236-8648, Japan

<sup>b</sup> Faculty of Environment and Information Sciences, Yokohama National University, 79-7, Tokiwadai, Hodogaya, Yokohama 240-8501, Japan

<sup>c</sup> Graduate School of Fisheries Sciences, Hokkaido University, 3-1-1, Minatomachi, Hakodate 041-8611, Japan



# Wildlife control in Shiretoko



## Zoning of bear management

- zones for bears
- zones for people

WH area

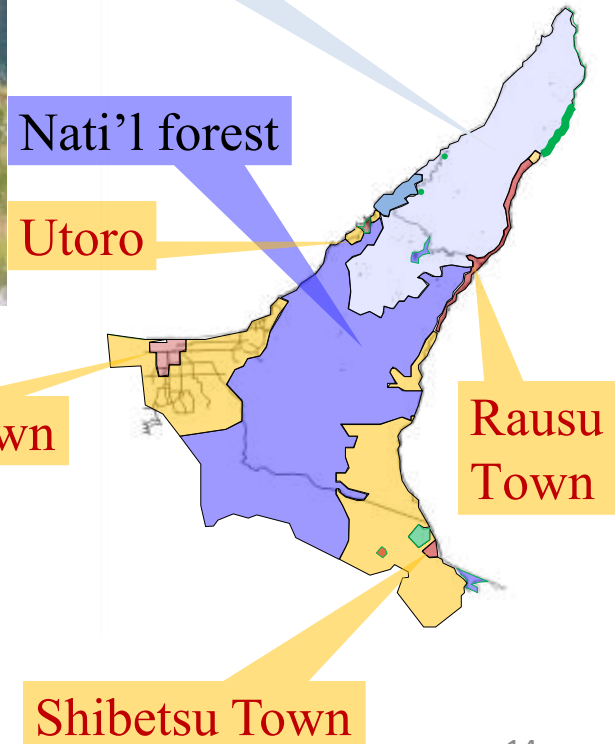
Nati'l forest

Utoro

Shari Town

Rausu Town

Shibetsu Town

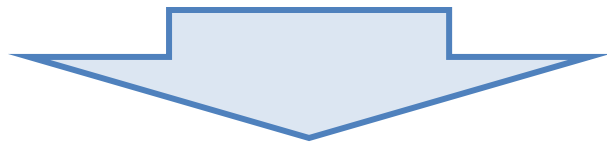


Fishers and bears coexist in Rausu (Hokkaido Shinbun)



# Problem of Bear Management at Shiretoko WH

Countermeasures to conflicts			Management Costs	bear population	Effects on humans	
Nuisance control	Protection	Awareness			Conflicts	Appeal



5 years later, we may need

- Option 1: More killing of nuisance bears
- Option 2: More control of tourists
- Choice of stakeholders...

**Brown bears aren't scared of humans, and humans aren't scared of brown bears**

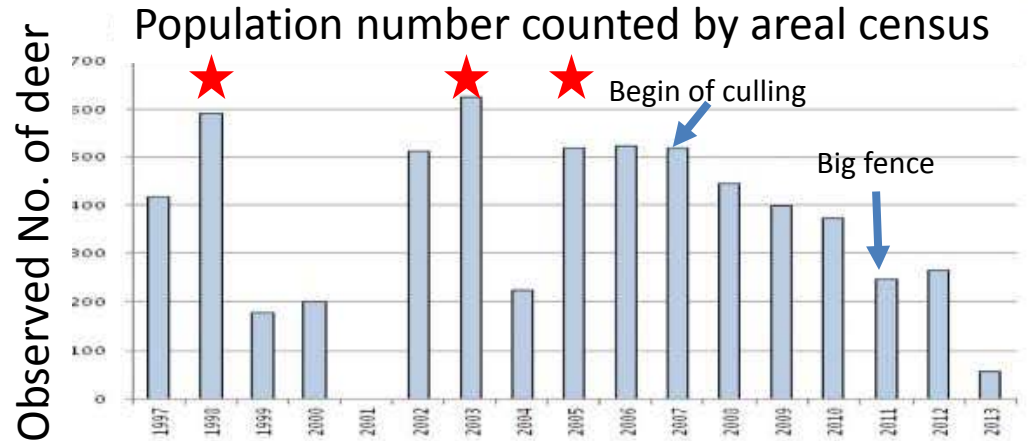


# Adaptive deer management in cape Shiretoko (2007-)

[http://www.env.go.jp/council/12nature/y124-03/mat05\\_1.pdf](http://www.env.go.jp/council/12nature/y124-03/mat05_1.pdf)



Wintering sites



Before irruption (July 1990)  
Beautiful flowers existed,  
Bamboo shoots were high



Effect of fencing: September 2011  
Outside: Bamboo shoots is low  
Inside: Mugwort stand >1.5m

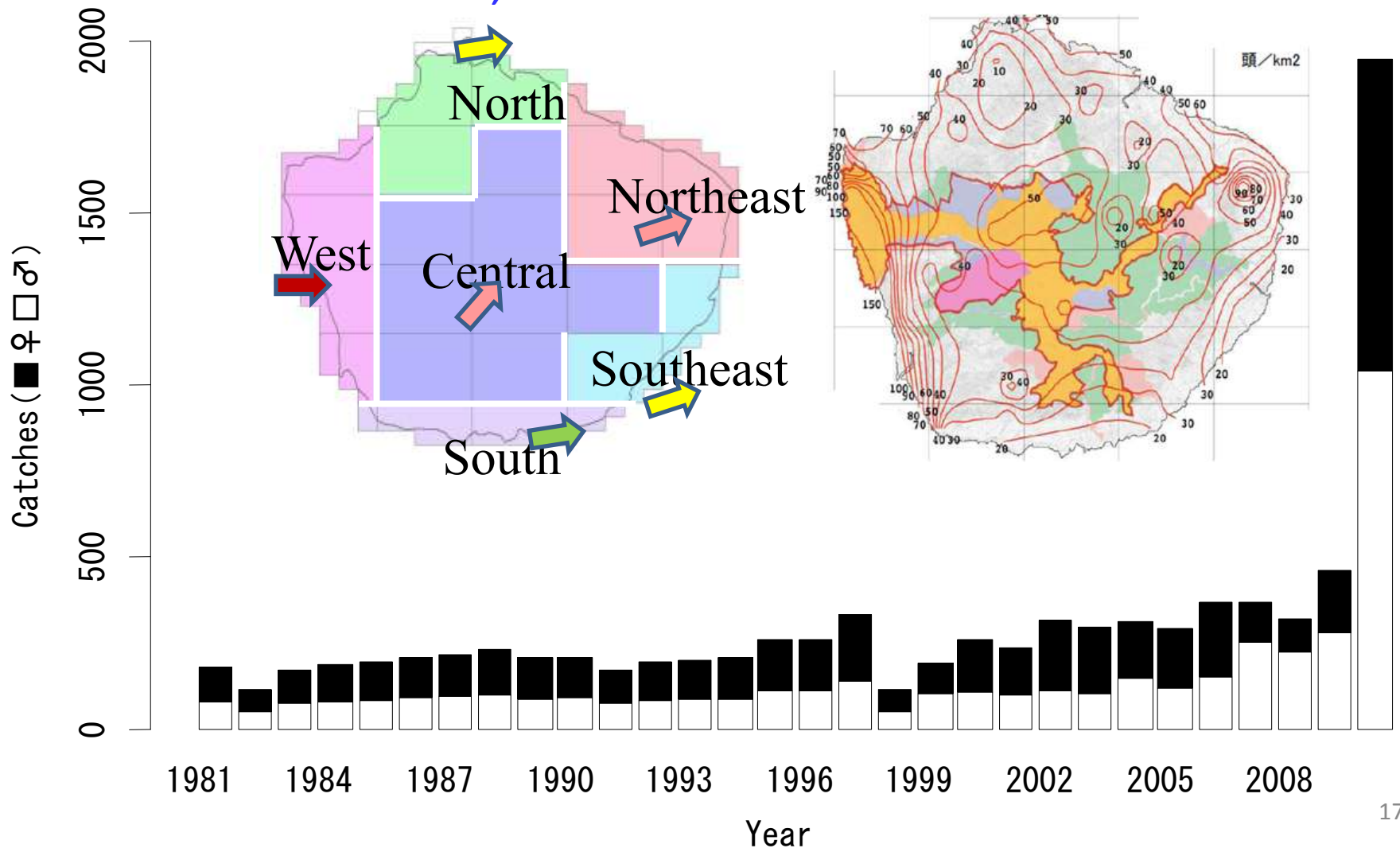
Population control in core area of world natural heritage (> releasing wolves)



1. Deer abundance successfully decreased.
2. Monitor recovery process of natural vegetation.

# Deer management in Yakushima BR since 2011

In Core area, deer control is most difficult!





*Thank you for attention!*

## Conclusion

- We need control even in Japanese WH area.
- Bottom-up approach is effective if agreed.
- Scientists give options, stakeholders choose.
- BR Core/WH area is strictly protected in order to use natural capitals in transition area
- BR/WH are education sites for sustainability

