Sustainable management of ASEAN Heritage Parks through valuing and improving eco-tourism

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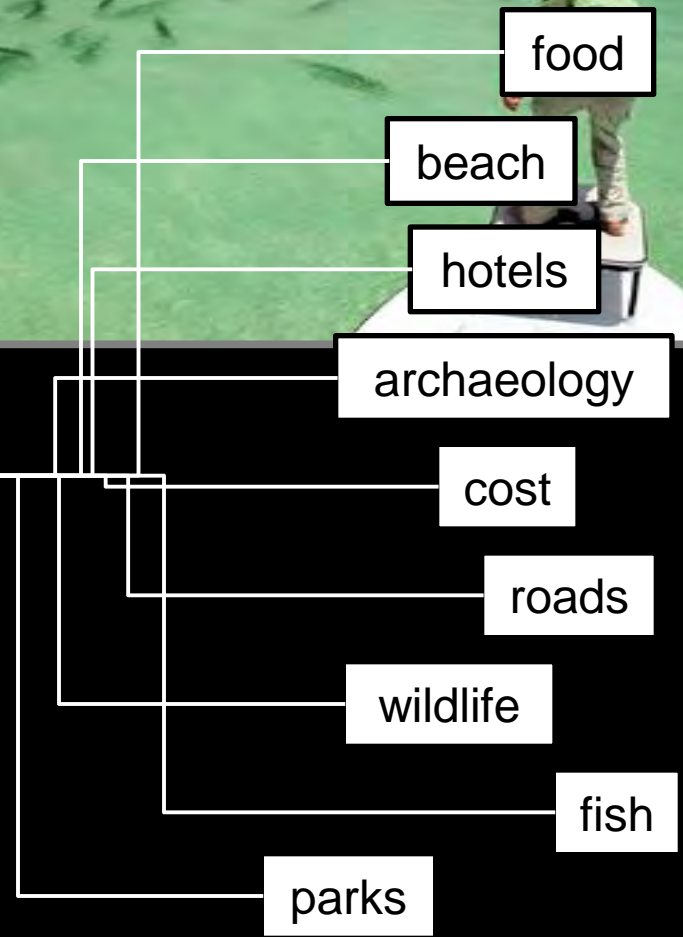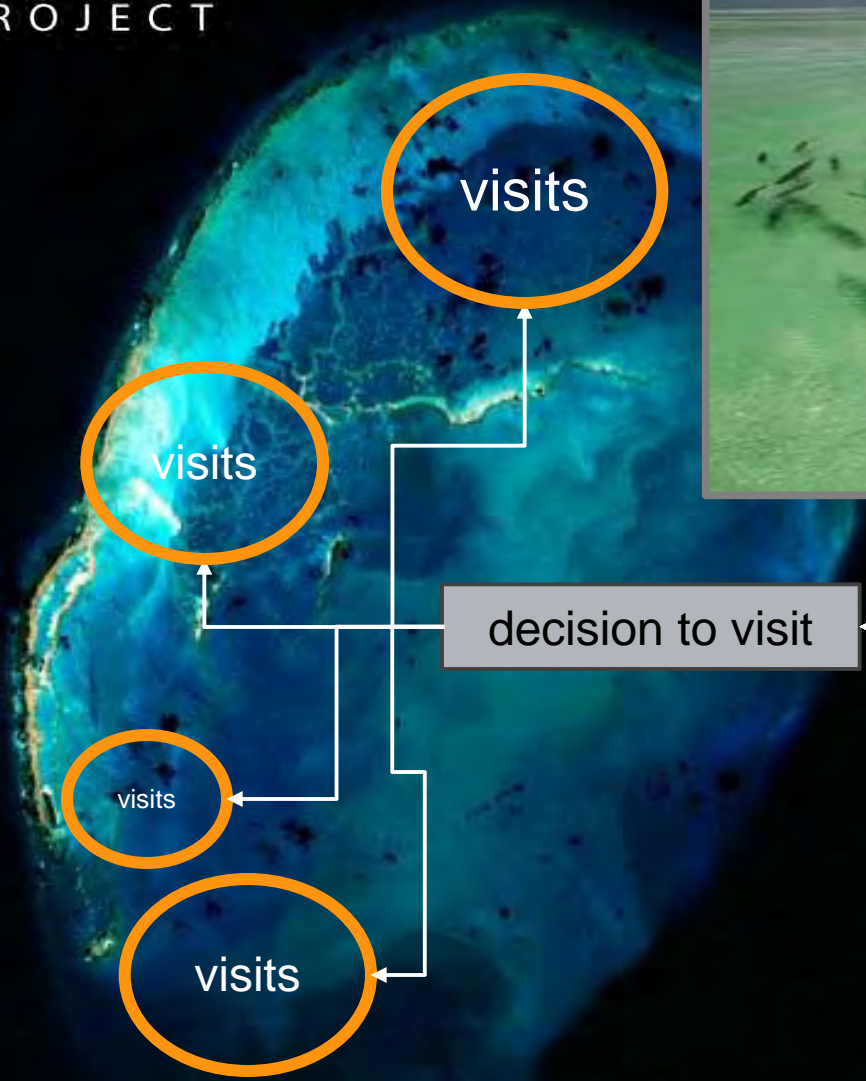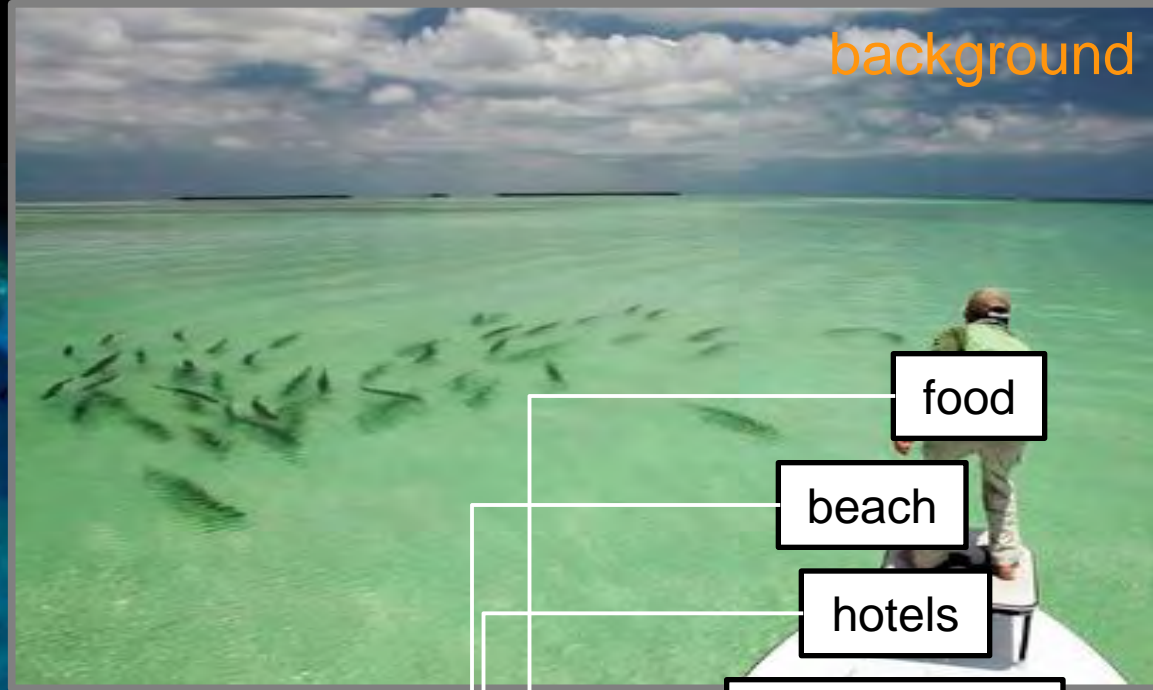
Korea Environment Institute (KEI)
ASEAN Centre for Biodiversity (ACB)
Makiling Forest, Tarutao National Park

Background

- **Eco-tourism is one of the most important ecosystem services, providing a powerful incentive for national and local economies which is also highlighted in COP13.**

- ASEAN Member States declared **'ASEAN Heritage) Parks(AHPs)')to increase effectiveness of management, including eco-tourism,** on certain protected areas with high conservation importance.

Location of 37 AHPs

natural capital PROJECT

background

visits

visits

visits

visits

food

beach

hotels

archaeology
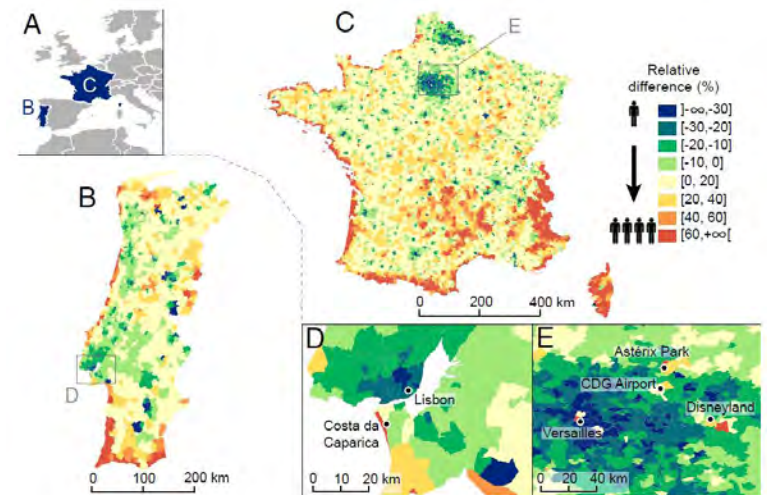
decision to visit

cost

roads

wildlife

fish

parks

Where? Why?

Background

- However, due to lack of data, it is a challenge to monitor eco-tourism and set specific management plan for eco-tourism in AHPs.

  ⇒ ASEAN Centre for Biodiversity(ACB) asked for a science/technology-based approach that can be easily utilized in AHPs to assess status of eco-tourism.

**Dynamic population mapping using mobile phone data**

Deville et al. 2014

Objectives

- Korea Environment Institute (KEI), in collaboration with ASEAN Centre for Biodiversity (ACB), will apply an **innovative modeling approach using social big-data to examine the current status of management, and support the development of related management strategies encouraging eco-tourism** that enhances cultural services in AHPs.

  ⇛ Measuring and mapping **the value of nature-based tourism & recreation** to a place

  ⇛ Understanding what characteristics of the ecosystem **attract tourists or deter them from visiting**

Key strategies to implicate BBI's objective

A. Facilitate the linking of needs through **effective partnerships** between KEI and ACB

B. Participation of **regional experts**

C. **Transferring techniques and knowledge**
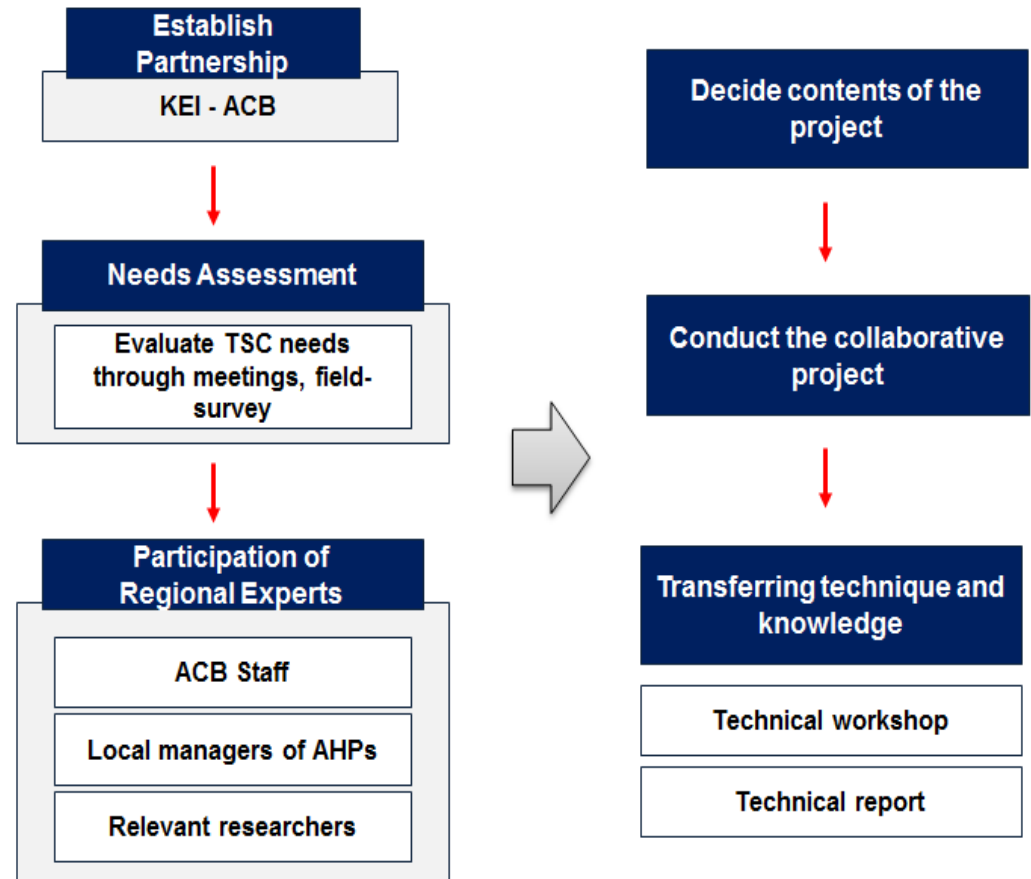
Contents of the project

**Transfer technologies and knowledges to assess
the current status on eco-tourism in AHPs**

Technical modeling *on the status of eco-tourism using social big-data*

Field study(based on questionnaires) *to evaluate status of eco-tourism*

A training workshop *on modeling technique
and best practices in eco-tourism management*

Support to develop strategies for sustainable management

Key strategies to implicate BBI's objective

Field-survey in AHPs (Mt. Makiling, Philippines)

Exploring needs on management of AHPs

with local institutions(ACB) and local experts

Confirmed project sites

The research project will be piloted in two sites, namely:

1) Mt. Makiling Natural Reserve, Laguna Province, Philippines
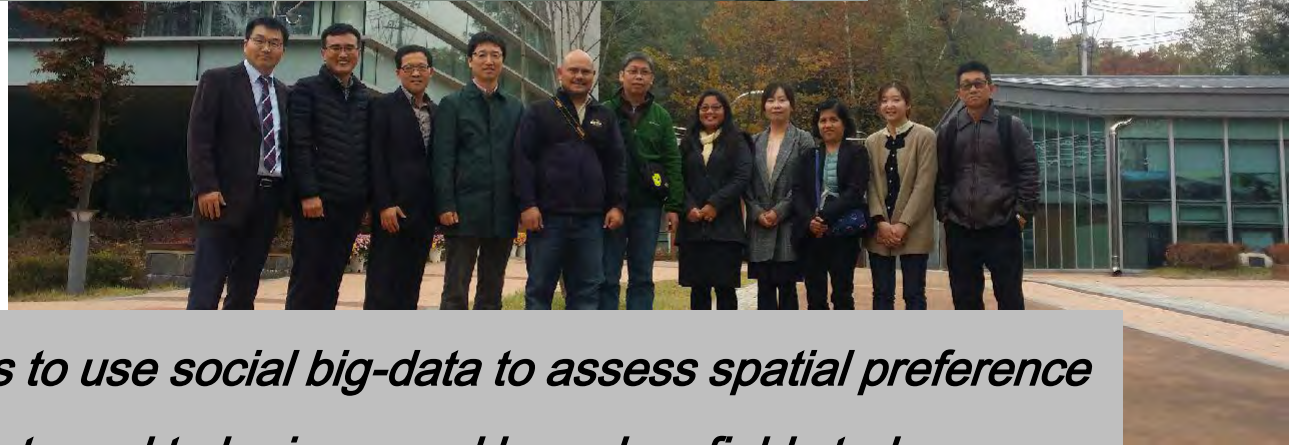**2) Tarutao National Marine Park, Satun Province, Thailand**
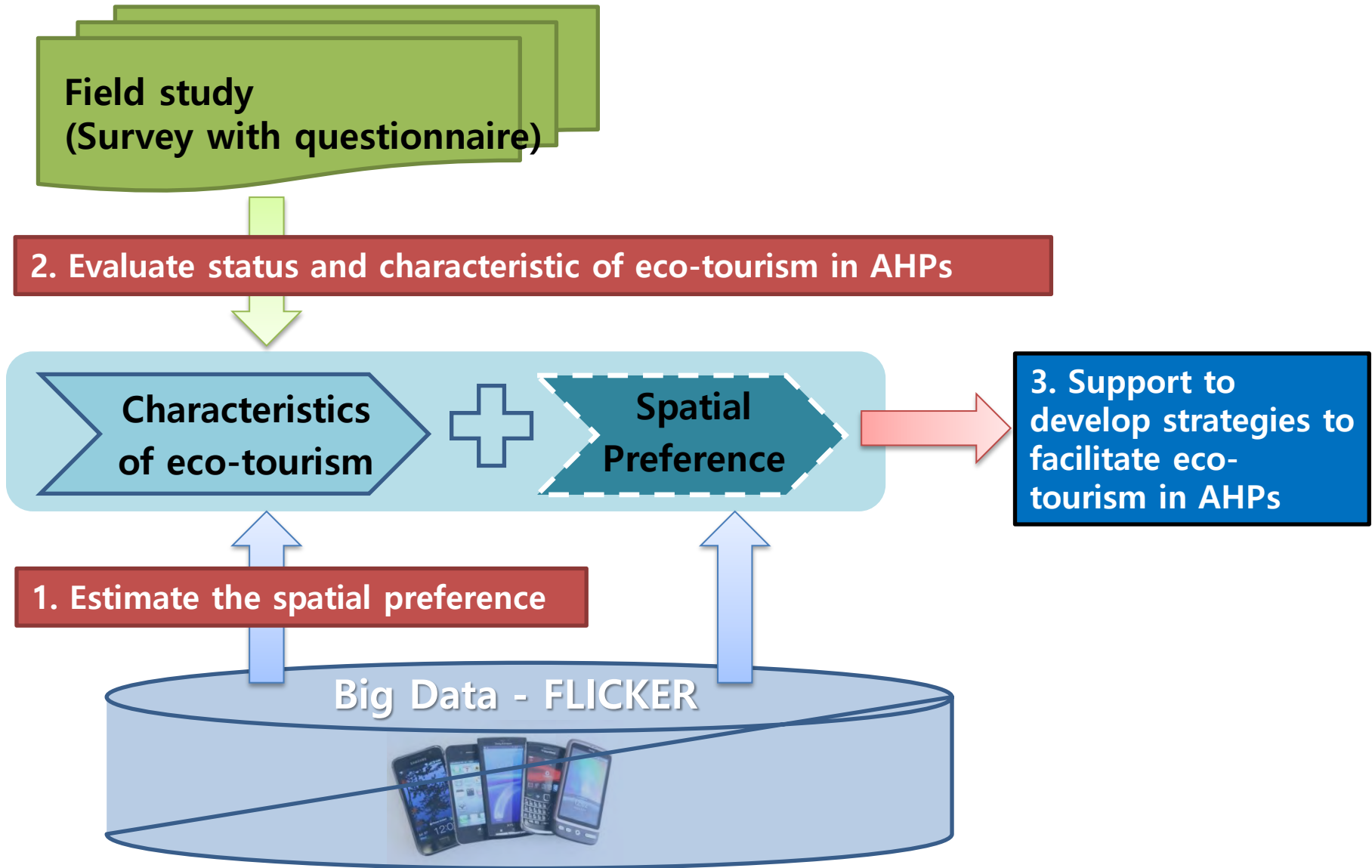

Mt. Makiling

Tarutao Park

Transferring technologies and knowledges

Technical Workshop in Bukhan National Park, Republic of Korea

Transferring techniques to use social big-data to assess spatial preference

Identifying elements that need to be improved based on field study

Introducing Korea's management strategies of national park

A Framework to evaluate **eco-tourism in AHPs**

Field study
(Survey with questionnaire)

2. Evaluate status and characteristic of eco-tourism in AHPs

Characteristics of eco-tourism

Spatial Preference

3. Support to develop strategies to facilitate eco-tourism in AHPs

1. Estimate the spatial preference

Big Data - FLICKER

This led us to searching for a global data source on visitation that we could use as a response variable to measure the effect of natural and other attributes in any location
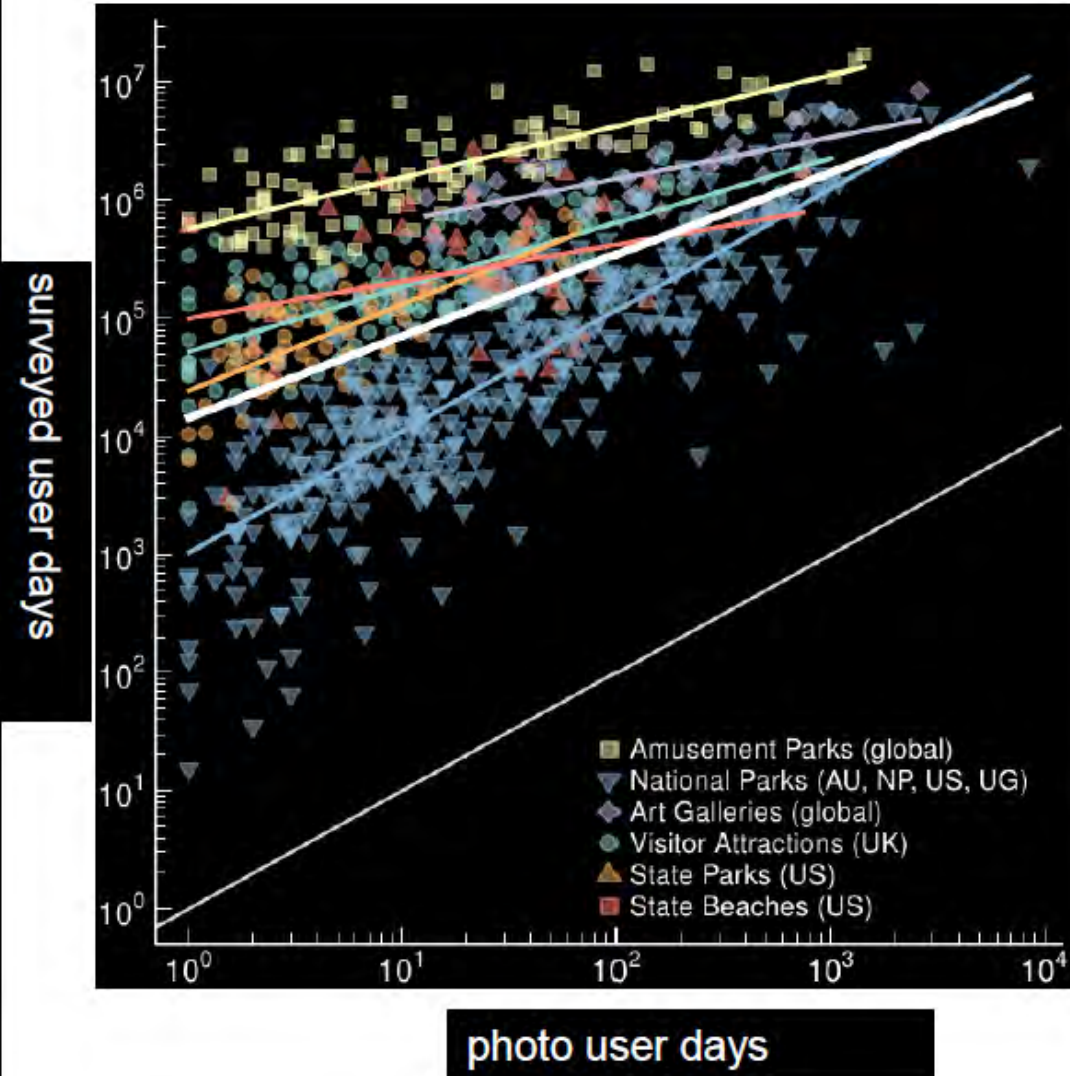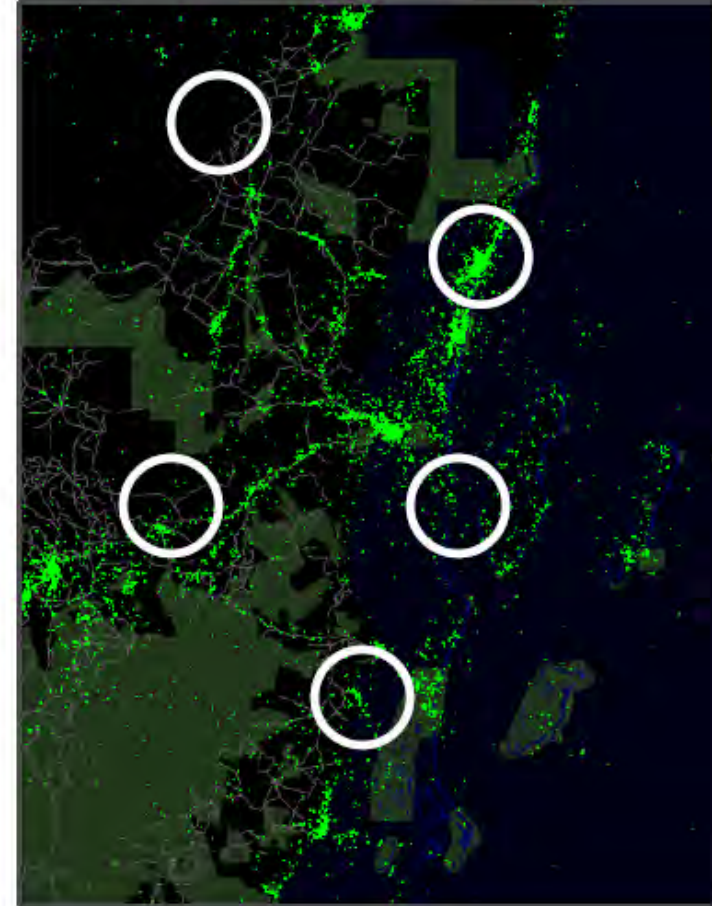
proxy data

flickr photos

n = 200 million

Compared photo-visitation rate against surveyed visitation rate at over 800 worldwide and found a correspondence. (Wood et al. 2013, Science Reports)
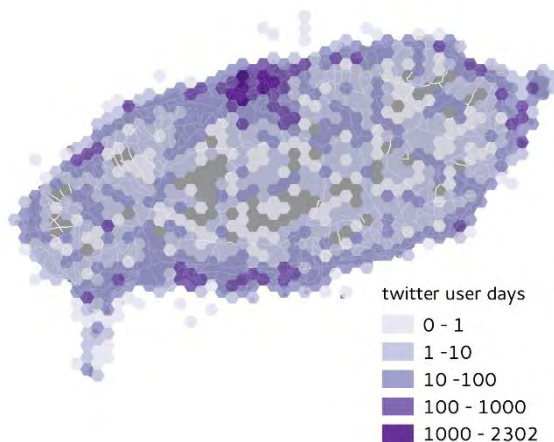
proxy data

flickr

Mapping and Valuing Nature-Based Recreation and Tourism in Jeju Island, Korea

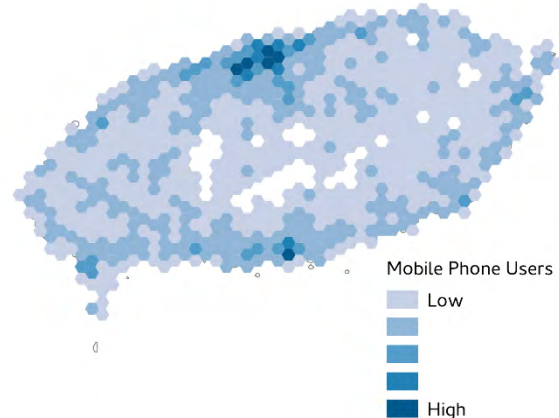## Patterns of visitation based on Big Data

Flickr Photo user-days

photo user-days
- 0.00 - 0.50
- 0.50 - 2.00
- 2.00 - 8.00
- 8.00 - 16.00
- 16.00 - 31.10

Twitter user-days

twitter user days
- 0 - 1
- 1 - 10
- 10 - 100
- 100 - 1000
- 1000 - 2302

Mobile Phone Users

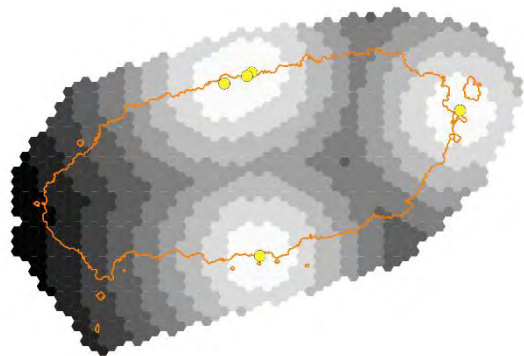Mobile Phone Users
- Low
- High

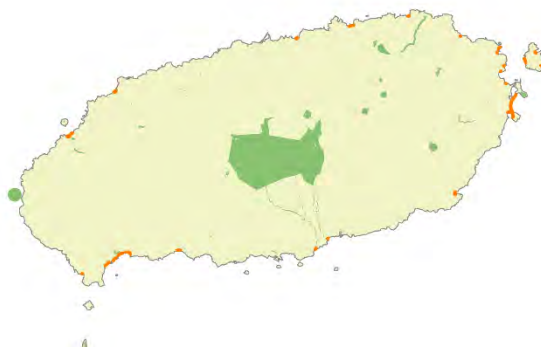## Drivers of Visitation
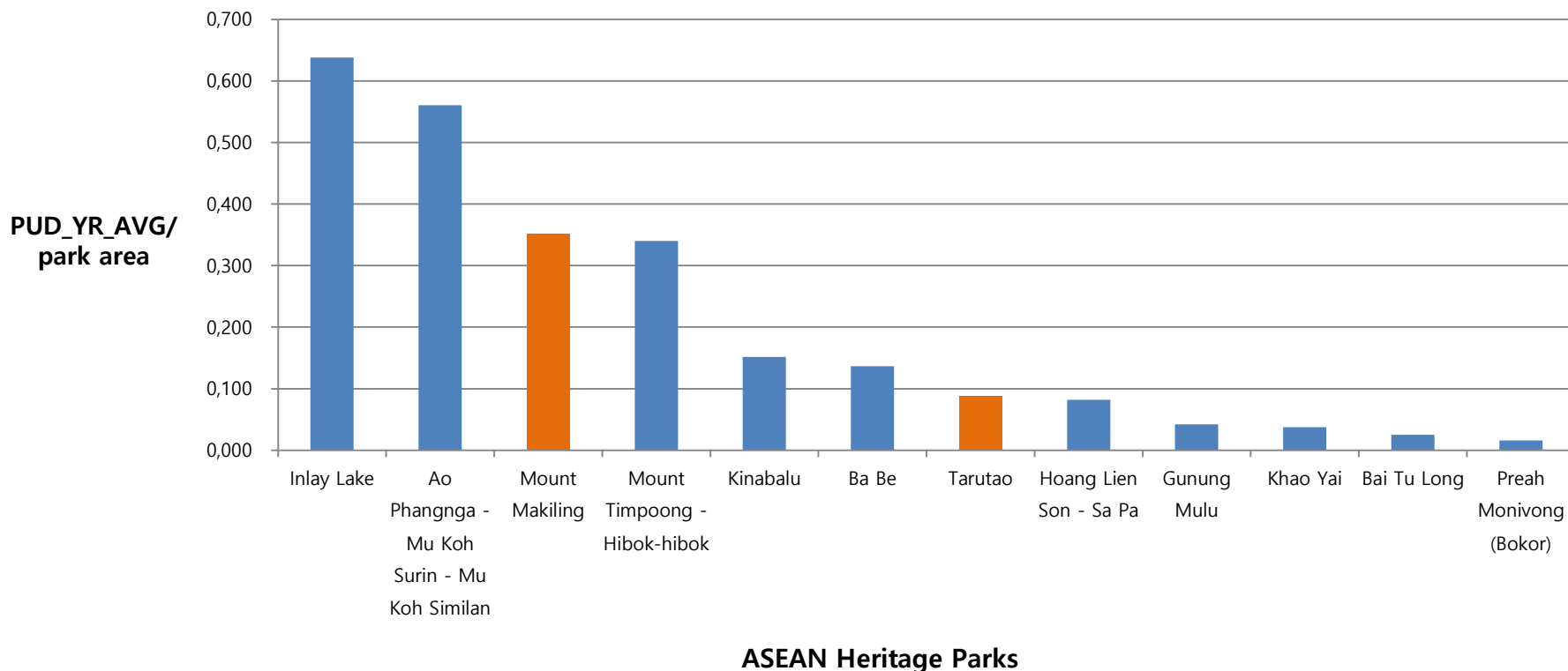
Accessibility:

Natural Attractions:

Built Infrastructure:

Evaluating spatial preference using social big-data

(1) Identifying ranking of AHPs with higher preference in FLICKER

Top 12 AHPs with highest 'PUD *per park area*'

Support to analyze trend of eco-tourism after designating AHPs

Evaluating spatial preference using social big-data

(2) Identifying specific visiting characteristics

Visitation Rate (Photo_User_Days/yr):

0.1 Low — 33.2 High

Visitation Rate (Photo_User_Days/yr):
- Top 5% hot-spot
- Top 10% hot-spot
- Top 25% hot-spot
- Top 50% hot-spot
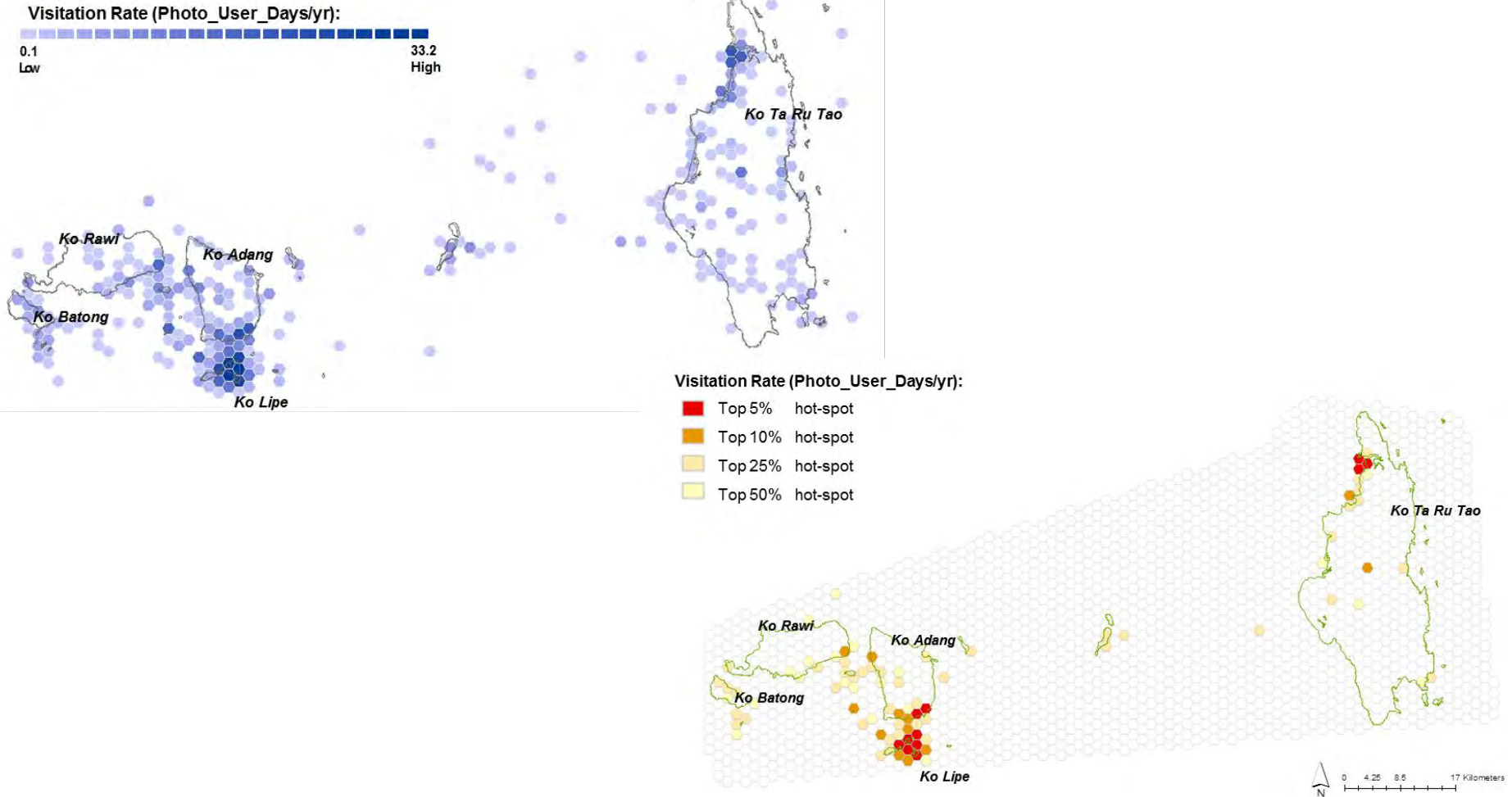
Providing spatial characteristics that show frequently visited area

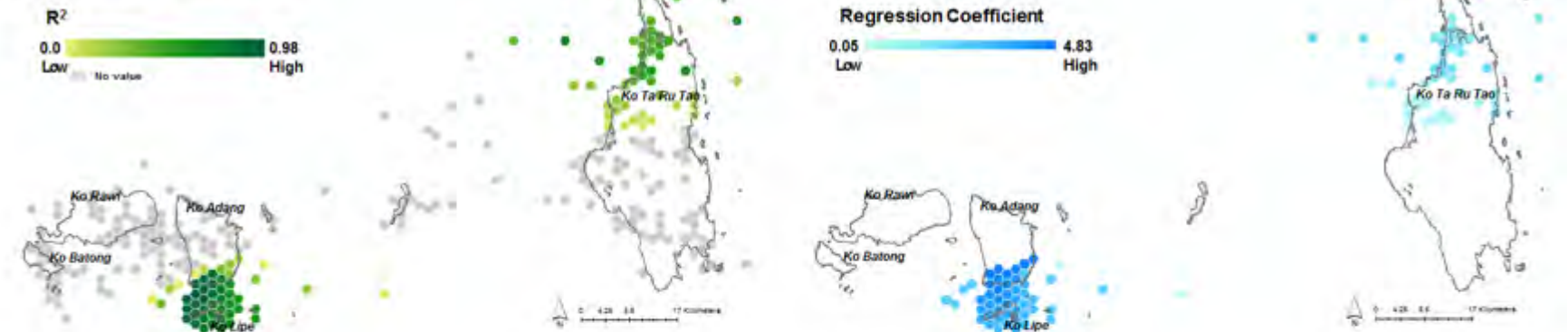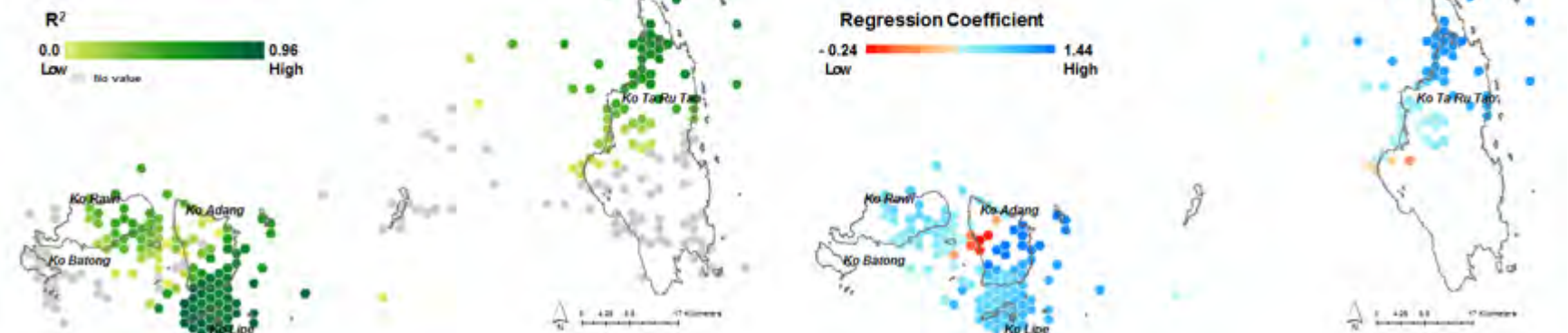# Evaluating spatial preference using social big-data

(2) Identifying specific visiting characteristics

(a) Artificial Attraction

(b) Artificial Restaurant

Providing impact of amenities to spatial visitation pattern

(c) Artificial Hotel
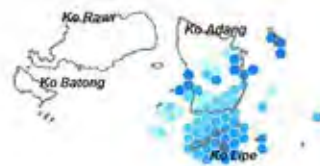
R^2
0.0 — 0.90
Low / No value / High

Regression Coefficient
0.01 — 1.22
Low / High

Ko Ta Ru Tao
Ko Rawi
Ko Adang
Ko Batong
Ko Lipe

(d) Natural Attraction

R^2
0.0 — 0.74
Low / No value / High

Regression Coefficient
- 7.49 — 0.53
Low / High

Ko Ta Ru Tao
Ko Rawi
Ko Adang
Ko Batong
Ko Lipe

(e) Natural Camping

R^2
0.0 — 0.76
Low / No value / High

Regression Coefficient
- 0.14 — 12.15
Low / High

Ko Ta Ru Tao
Ko Rawi
Ko Adang
Ko Batong
Ko Lipe
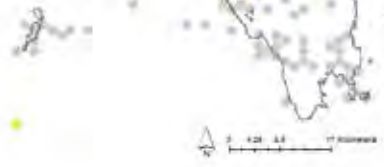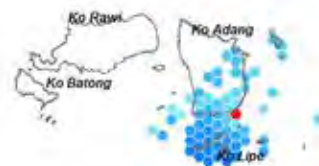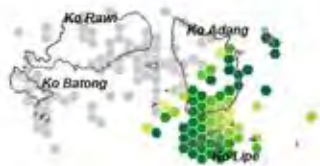
Identifying specific characteristics of eco-tourism

- **Through the discussion between KEI's experts and regional experts, three questionnaires were developed for visitor, regional community, and manager**
- **Regional AHPs managers supported field survey to collect questionnaires**
- **Total number of respondents: (1) Makiling - 100 (2) Tarutao - 142**

(3) Effectiveness of AHPs to eco-tourism among two national parks

Makiling AHPs
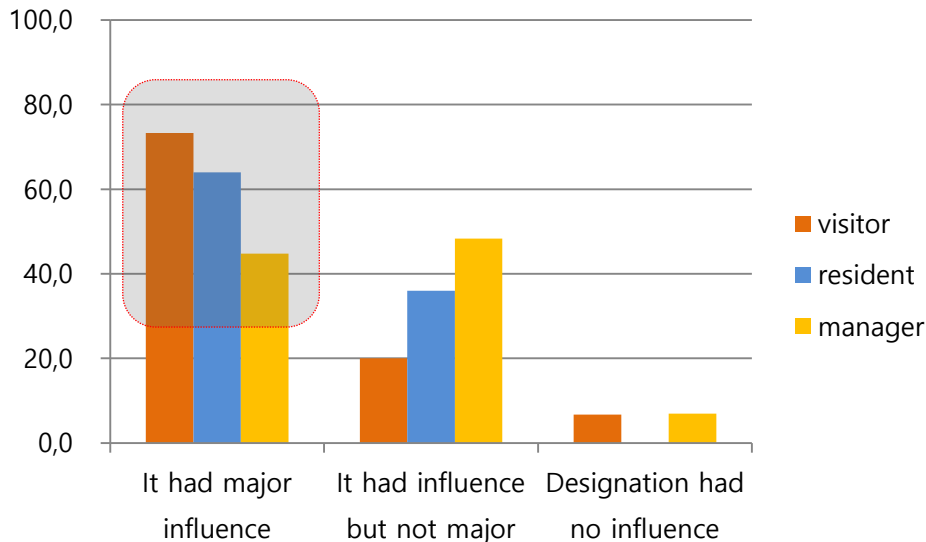
Tarutao AHPs
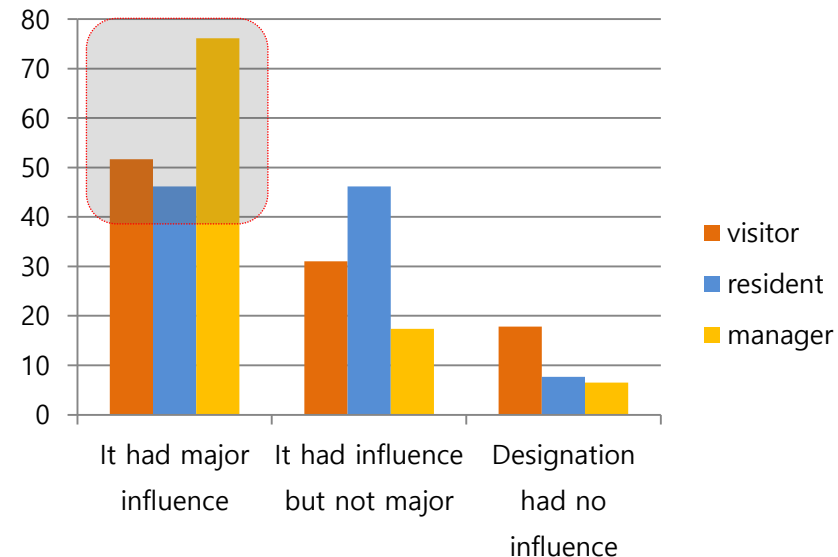
Among (1) biological, ecological value (2) social, cultural value and (3) facility, designation of AHPs had major influence to increase biological and ecological value

Identifying specific characteristics of eco-tourism

(3) Visiting satisfactions of each attributes of eco-tourism

Makiling AHPs

Satisfaction - High

- High Biodiversity; 4,2
- Natural Ecosystems Services; 4,1
- High Conservation Status; 4,0
- Number of Visitors; 4,0
- Educational Program; 3,9
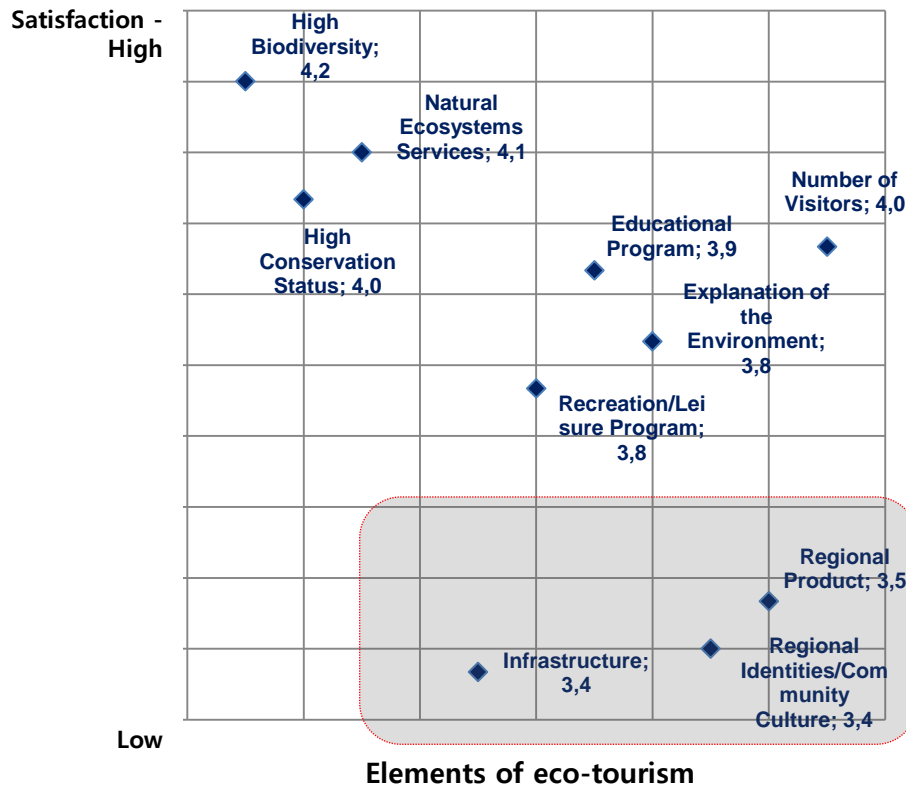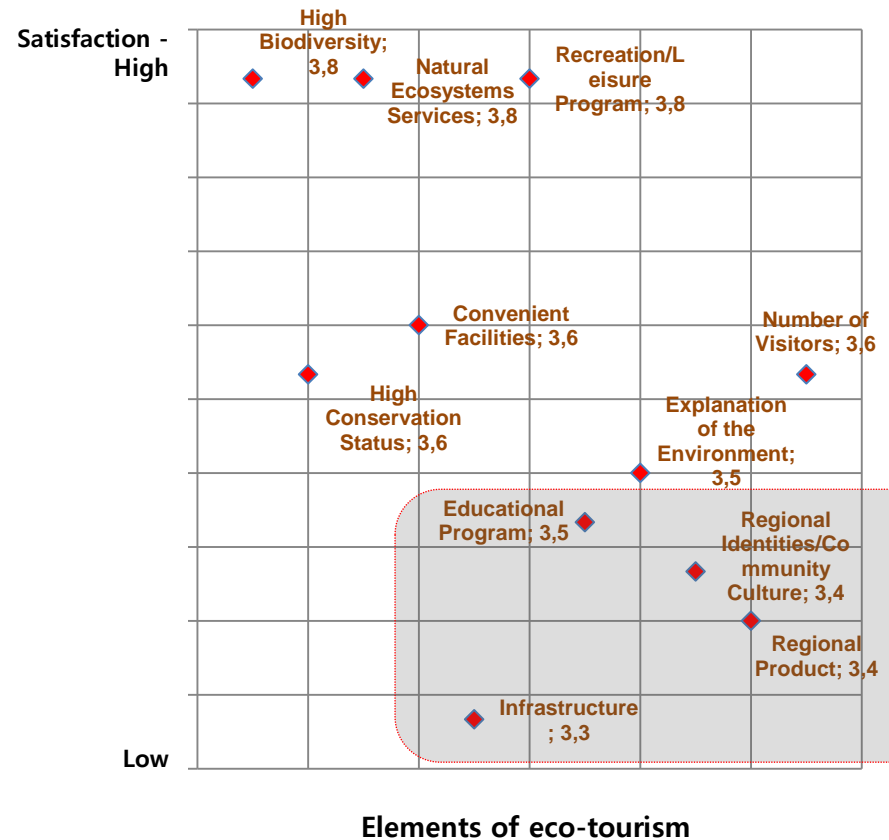- Explanation of the Environment; 3,8
- Recreation/Leisure Program; 3,8
- Regional Product; 3,5
- Infrastructure; 3,4
- Regional Identities/Community Culture; 3,4

Low

Elements of eco-tourism

Tarutao AHPs

Satisfaction - High

- High Biodiversity; 3,8
- Natural Ecosystems Services; 3,8
- Recreation/Leisure Program; 3,8
- Convenient Facilities; 3,6
- Number of Visitors; 3,6
- High Conservation Status; 3,6
- Explanation of the Environment; 3,5
- Educational Program; 3,5
- Regional Identities/Community Culture; 3,4
- Regional Product; 3,4
- Infrastructure; 3,3

Low

Elements of eco-tourism

- Regional AHPs managers supported field survey to investigate visitation satisfaction
- Total number of respondents: (1) Makiling - 100 (2) Tarutao - 142

Conclusion

- The places people visit reveal their preferences about natural environments.

- Use of social big-data made available to assess spatial preference, and AHPs managers were able to recognize where it needs to be well and newly managed.

- Within spatial data, results of field-study provide insights to identify status of eco-tourism to identify strong and weak elements.

- Transferred technique, knowledge, and result of the BBI pilot project can be further utilized in management of AHPs to effectively implement Aichi Target 1, 11, 14.

Lessons learned and recommendation

- **Process for the contract**
- The duration of project approval may vary from country to country.
- ASEAN Centre for Biodiversity required SSAA rrrrrr r''''' '' rrrr to initiate the project.

- **Project period/Expansion of the project**
- As the project was conducted as pilot, project period was short.
- Project implementation plan and capacity building process should be designed as a long-term process.
- May need measures that link the short project to long-term project based eppp '''''' '' dddddd dd

- **Information on demand/supply**
- fff rr ccc oo''''' '' dddddd do uucccc uu offered to develop the further TSC project.

Further Request

- The project needs to be sustained in longer term to facilitate sustainable eco-tourism in all AHPs. Transferred technique ddd wwwweeee uuuudeiiiiiiiii iii dddttt lleee nnHH''' management.

- More activities on capacity building should be introduced. AHPs managers are the key actors of knowledge transfer.

- Future study sites need to procure as much big data as possible to produce effective results for eco-tourism program. ttt ooooooodHHttttt tttttttt t ttttttttttt ttt ggggggg of PUD among AHPs should be considered.

Thank You
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