NATIONAL BIODIVERSITY AND GEOSPATIAL

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LOGO

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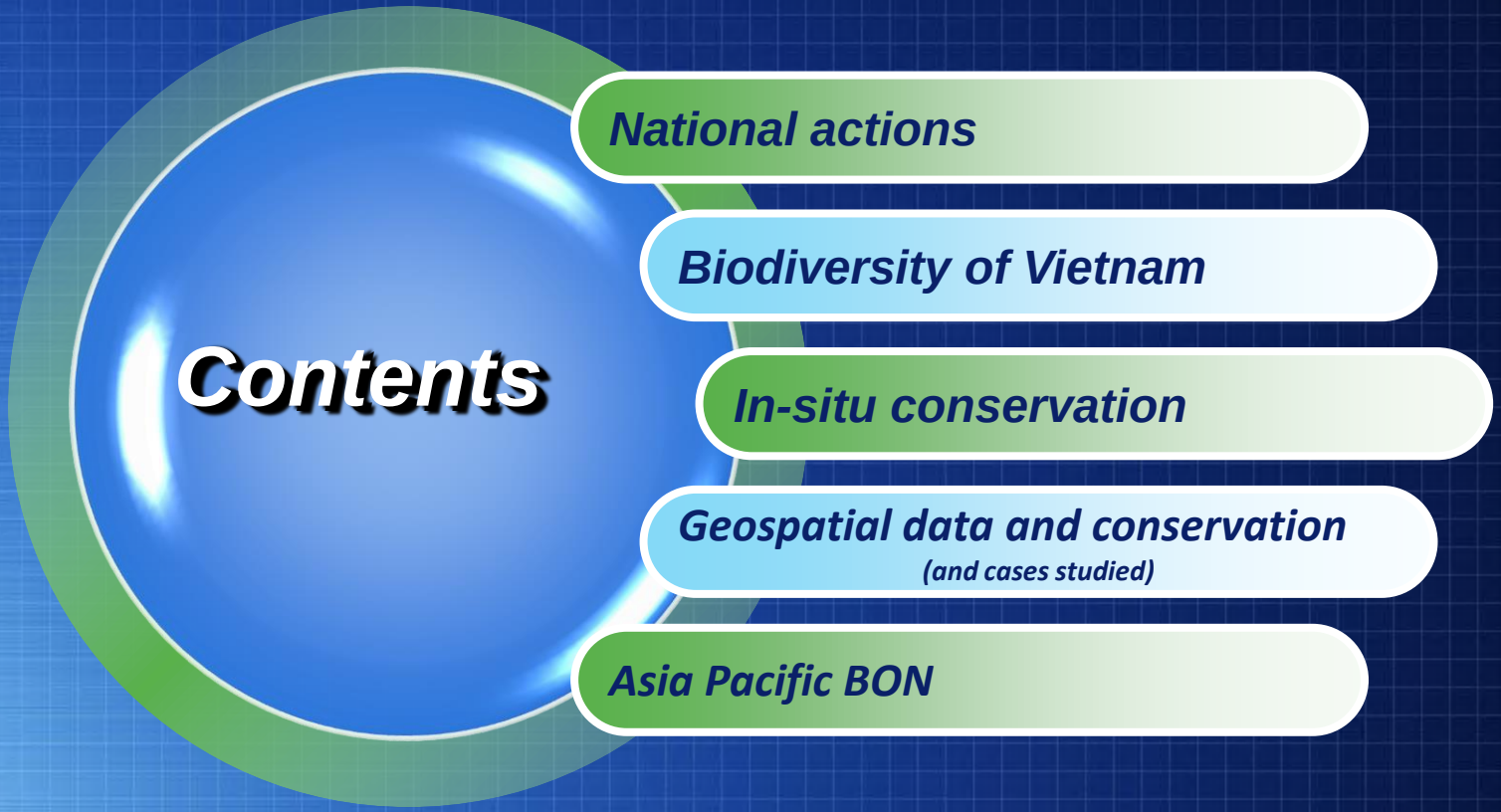
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National actions

Vietnam national strategy for space technology research and application first time appeared on June 14, 2006.

In 1995, the first Biodiversity Action Plan (BAP 1995) was issued after Vietnam became a member of the Convention on Biological Diversity in 1994.

2005, the Ministry of Natural Resources and Environment had submitted the "Biodiversity Action Plan to 2010 with vision to 2020" (BAP 2007) to the Prime Minister for approval. BAP 2007 issued by the Prime Minister at Decision 79/2007/QD-TTg dated May 31, 2007.

2014 Master plan for biodiversity conservation of Vietnam up to 2020 with Vision to 2030.

2014 Approving the strategy for management of special-use forest systems, marine conservation zones and inland water region for conservation zones in 2020, vision in 2030

Biodiversity of Vietnam

Viet Nam has rich and endemmic biodiversity, with many types of ecosystems, species and genetic resources.

Biodiversity brings direct benefits to humans, contributing substantially to the national economy, especially sectors such as agriculture, forestry and fisheries; ensuring the food security for the country; maintaining genetic resources for farming animals and crops; providing construction materials, pharmaceutical materials and food…

In addition, ecosystems play an important role in climate regulation and environmental protection.

Biodiversity of Vietnam

At present in Vietnam, about 49,200 species have been identified, consisting of nearly:

-7,500 microorganisms;

- 20,000 terrestrial and water plants;

-10,500 terrestrial animals;

- 2,000 invertebrates and freshwater fish; and in the sea,

- There are over 11,000 marine species.

Biodiversity of Vietnam

The research results show that hundreds of terrestrial and inland freshwater species new to science have been described

From 2006 to 2011 alone, over 100 species new to science were discovered and described for the world,

Many other wildlife species in Vietnam still unknown, and the number of such known species may be much lower than the actual number of species in nature.

Biodiversity of Vietnam

Vietnam's topography and climate have created wide range of forest ecosystem types:

- Evergreen closed tropical rain-forest;
- Semi-deciduous closed tropical rainforest;
- Evergreen broad-leaved forests on limestone;
- Coniferous forests;
- Dry dipterocarp forest;
- Mangrove forests,
- Melaleuca cajuputi forests; and Bamboo forest.

In-situ conservation

Approving the master plan on biodiversity conservation in the whole country through 2020, with orientations toward 2030
Total protected area in the whole country to about 2.94 million ha.

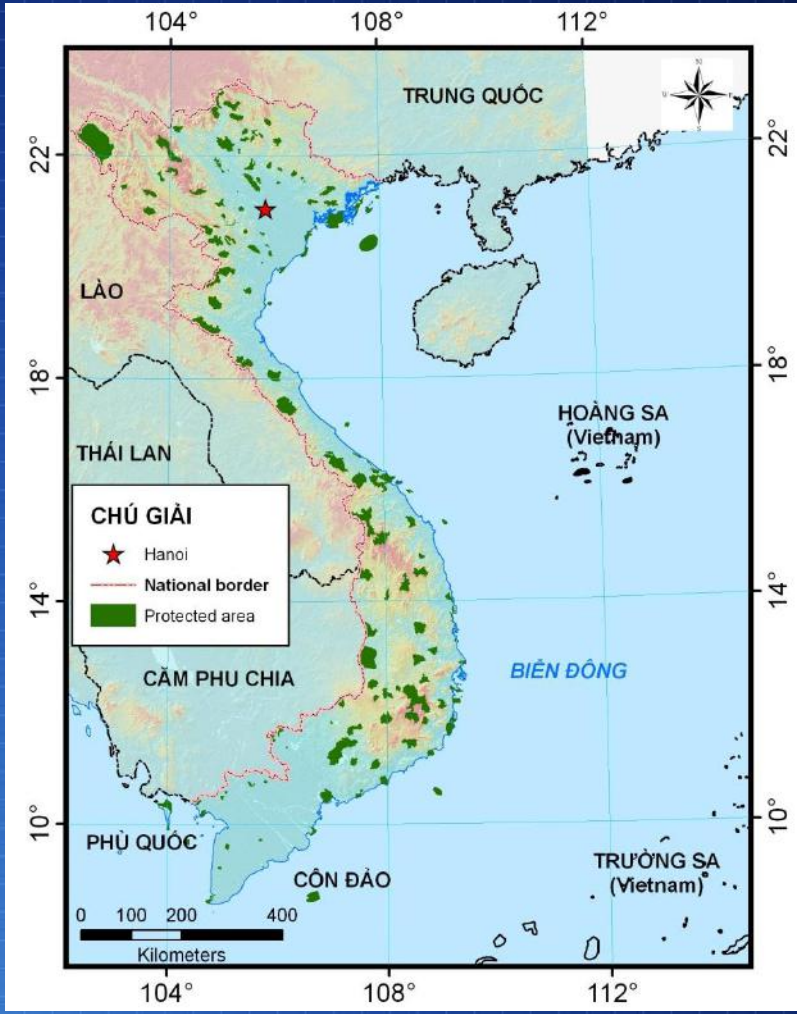
Target: by 2020, special-use forests, marine protected areas, approaches to new management approaches such as co-management, benefit sharing; Control the wild, endangered, precious and rare species in the special-use forest, protected area sea and inland water conservation zones; preserve and develop the number of precious and rare species is declining and threatened with extinction; …".
The decision also specifies the Program priority, including the program "***Building Database Management System whether special-use forests, marine conservation area, inland water conservation area***" until 2018.

Protected area of Vietnam

Total 219 protected areas

- Total = 167 areas; Area = 2 451 173 ha (9%)
- NP = 34; area 1 166 462 ha
- Nature reserve = 58; area = 1 108 635 ha;
- Species/habitat protected area = 14; area = 81 126 ha;
- Landsacape PA = 61; area = 95 530 ha

Protected area of Vietnam



Geospatial data and conservation

Geographic Information Systems (GIS) provide forest rangers and biologists with a tool for effective storage and analysis of remotely sensed and other spatial and non-spatial data and biodiversity information, for scientific, management, and policy oriented problem solving.

These technologies may be used to facilitate measurement, mapping, monitoring, modeling, and management for a wide range of users, especially for biodiversity conservation.

Geospatial data and conservation

Utility of GEO in several biodiversity conservation applications with a strong emphasis on:

1)Biodiversity monitoring, Landcover change;

2)GIS basics, technical aspects of GIS including geo-targer;

3)Open source software;

4)Symbology; Geoprocessing Tools;

5)Drone monitoring;

6)Webgis data sharing;

7)Development of images application;

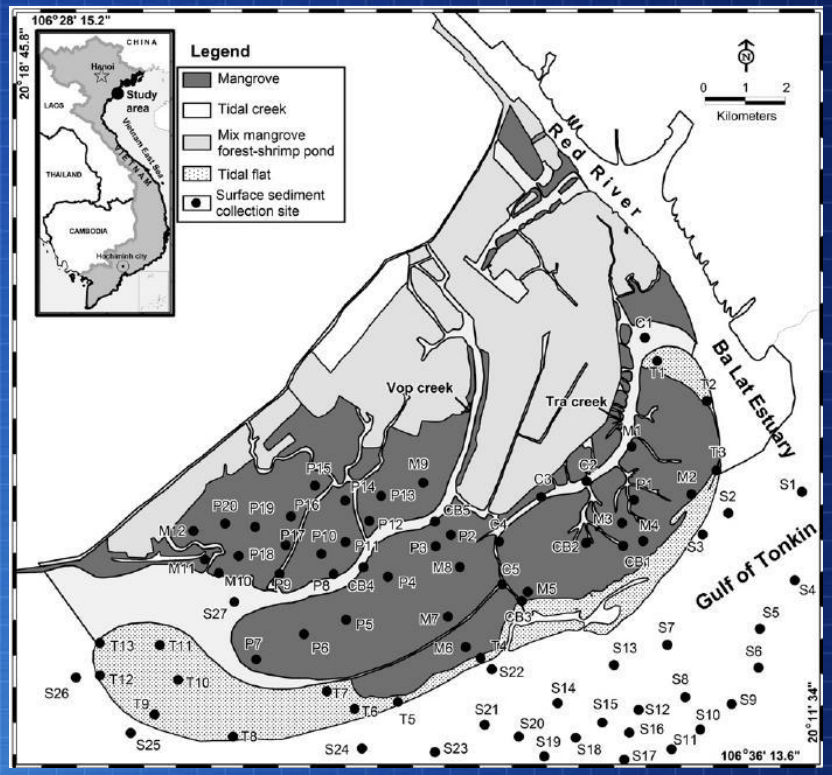
8)Bioclimate and Modeling…

Geospatial data and conservation

Cases study

1) Biodiversity monitoring, Landcover change

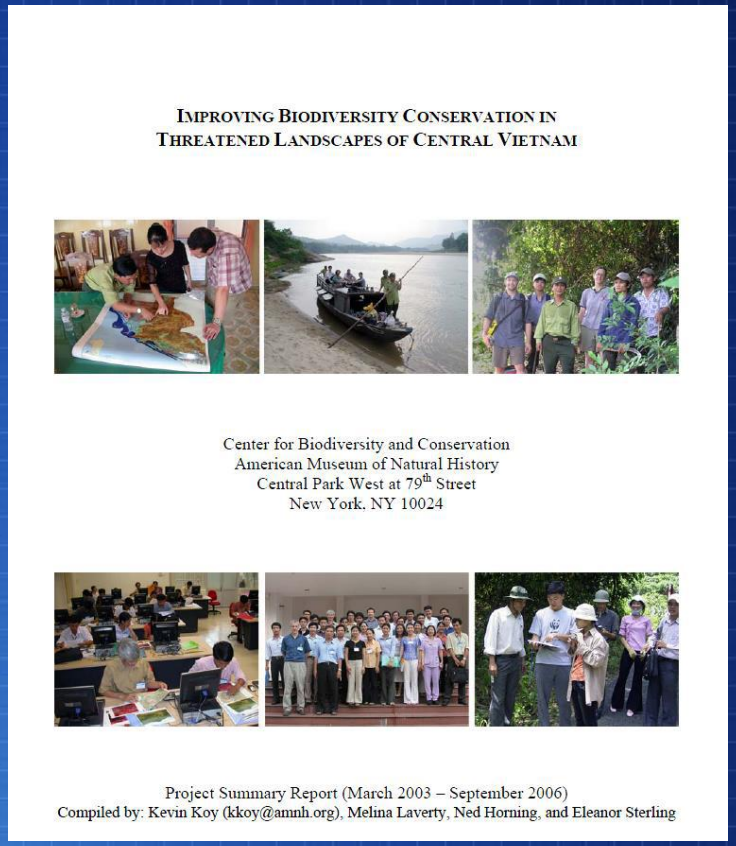
THE PROJECT FOR DEVELOPMENT OF THE NATIONAL BIODIVERSITY DATABASE SYSTEM IN THE SOCIALIST REPUBLIC OF VIETNAM



Geospatial data and conservation

Cases study

2) GIS basics, technical aspects of GIS including geo-targer;



IMPROVING BIODIVERSITY CONSERVATION IN
THREATENED LANDSCAPES OF CENTRAL VIETNAM

Center for Biodiversity and Conservation
American Museum of Natural History
Central Park West at 79th Street
New York, NY 10024

Project Summary Report (March 2003 – September 2006)
Compiled by: Kevin Koy (kkoy@amnh.org), Melina Laverty, Ned Horning, and Eleanor Sterling

Geospatial data and conservation

Cases study

3) Open source software;

Geospatial data and conservation

Cases study

4) Symbology; Geoprocessing Tools;

Geospatial data and conservation

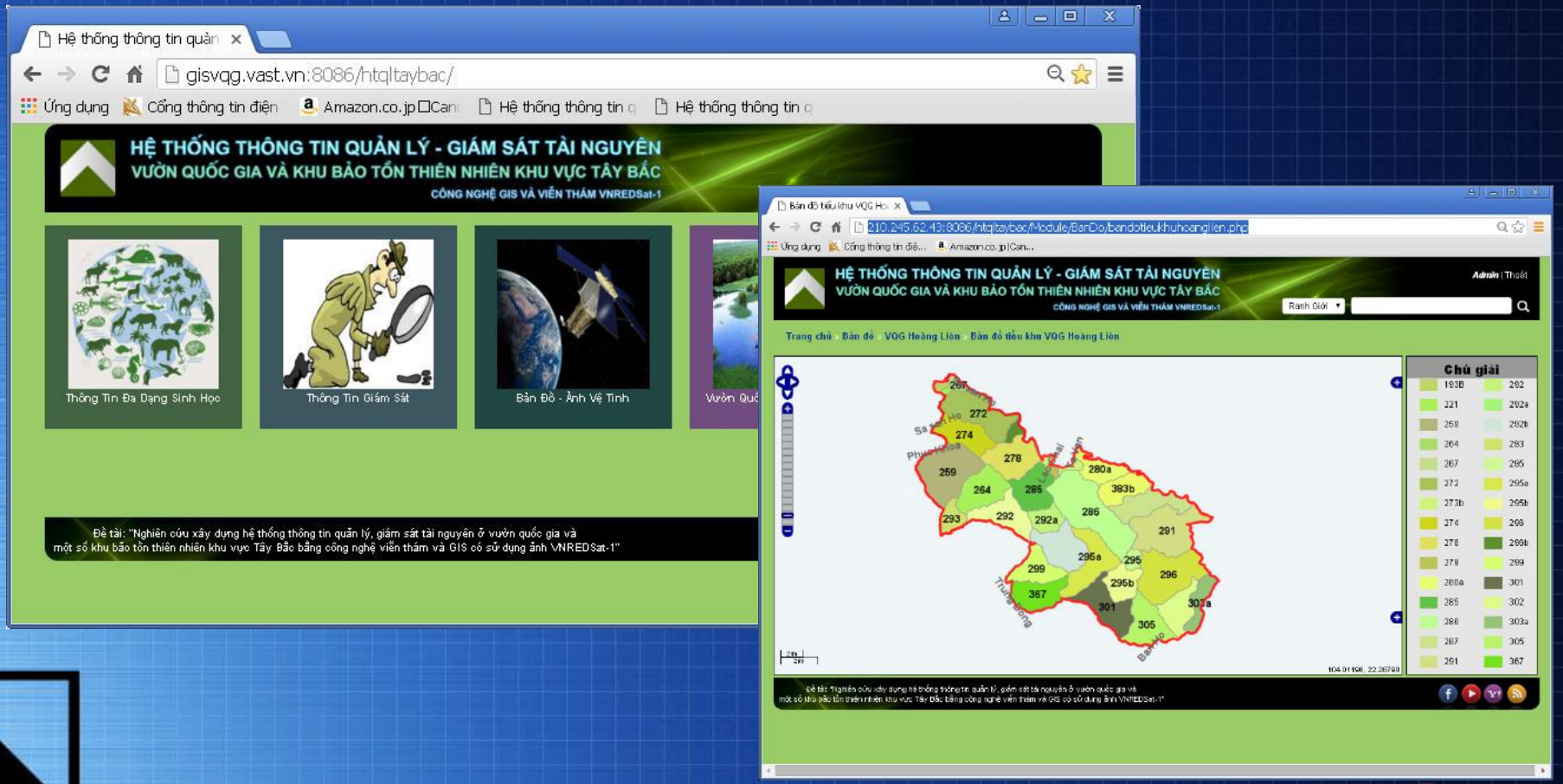
Cases study

5) Drone monitoring;

Geospatial data and conservation

Cases study

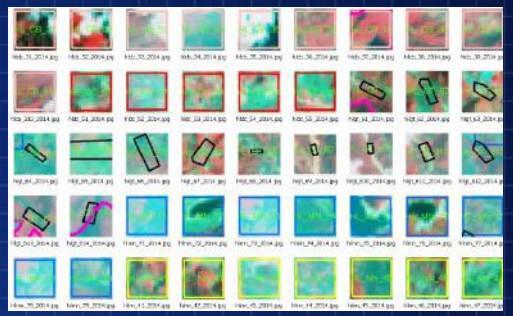
6) Webgis data sharing;

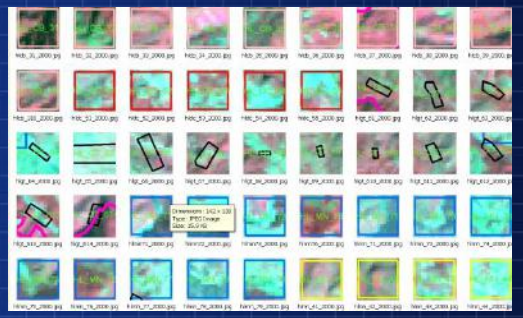


Geospatial data and conservation

Cases study

7) Development of images application;





Geospatial data and conservation

8) Bioclimate and Modeling…

Cases study

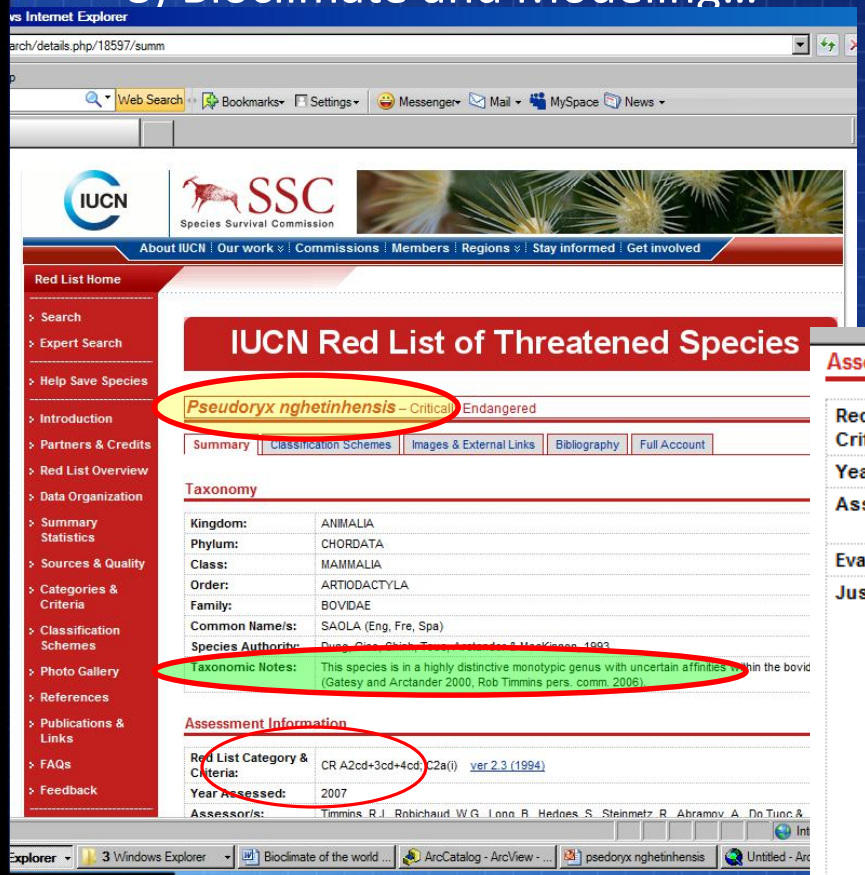
Until this decade, no new large mammal species have been described for many years. Our knowledge of the faunal diversity of Vietnam was impeded by years of war and limited international contacts.

This is the first of the new mammal species discovered. First found in Vu Quang forest reserve, which is in Ha Tinh province of north central Vietnam. Specimens are also known from Nghe An province just to the north, and it is suspected from Thua Thien-Hue province and Dak Lak in the southern central highlands. Based on this information, we believe that *Pseudoryx nghetinhensis* has a wider distribution

Geospatial data and conservation

Cases study

8) Bioclimate and Modeling…



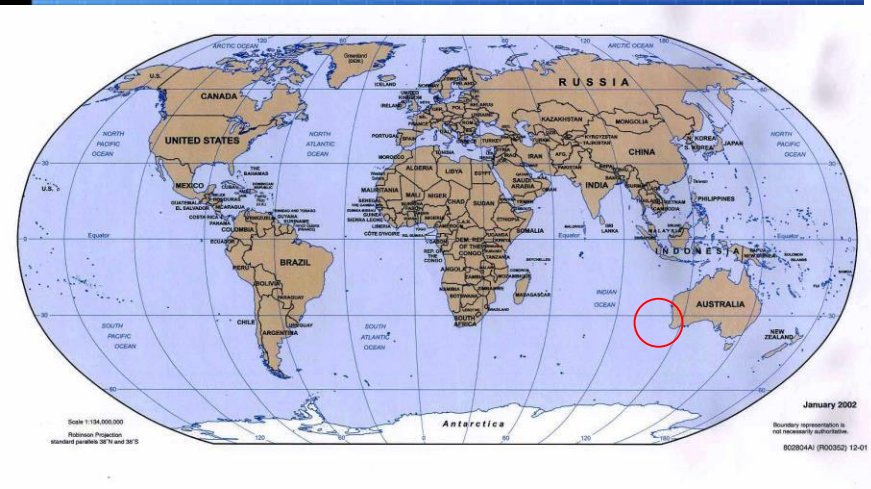
Assessment Information

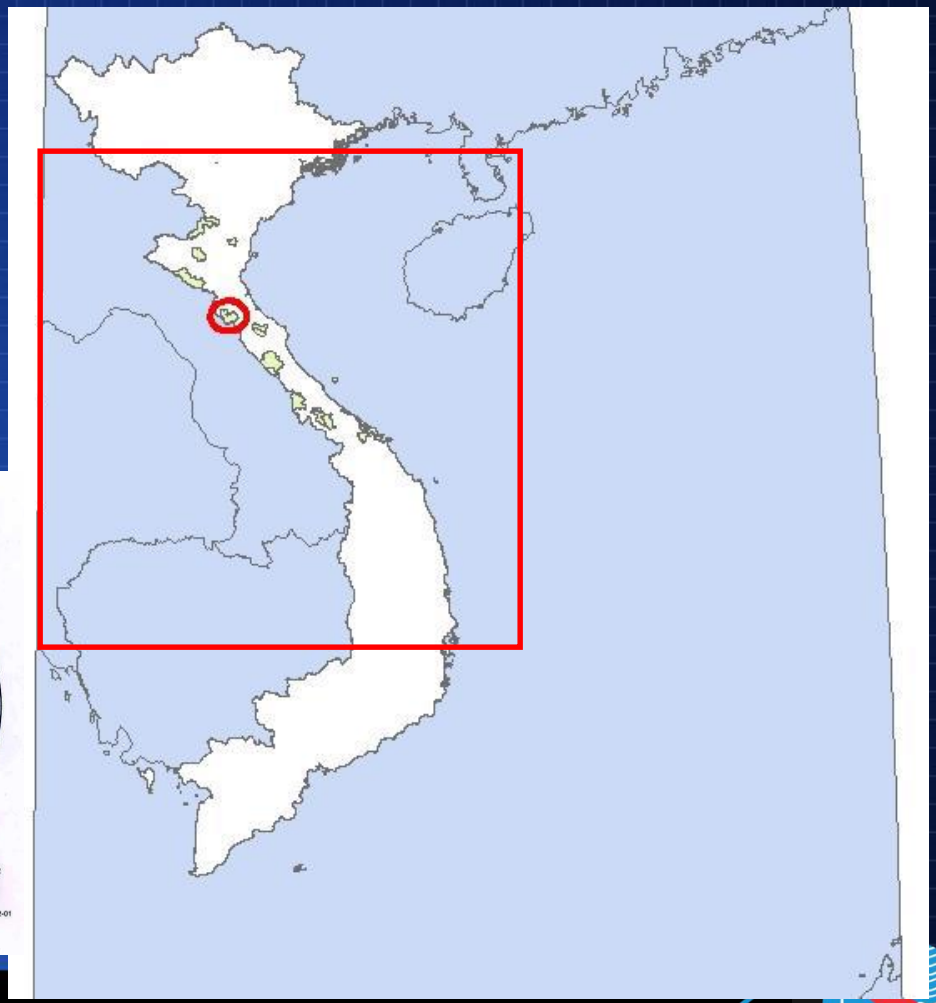
Red List Category & Criteria:	CR A2cd+3cd+4cd; C2a(i) ver 2.3 (1994)
Year Assessed:	2007
Assessor/s:	Timmins, R.J., Robichaud, W.G., Long, B., Hedges, S., Steinmetz, R., Abramov, A., Do Tuoc & Mallon, D.
Evaluator/s:	Hedges, S., Timmins, R.J., Robichaud, W.G. & Long, B. (Asian Wild Cattle Red List Authority)
Justification:	The species is listed as Critically Endangered. All available information indicates that the species is in a clear and protracted decline throughout its small range due to intense hunting pressure, accelerated by continued fragmentation of its habitat to increased human access (mainly through road construction). No part of the species' extent of occurrence is effectively protected from hunting. Local hunters in the species' range commonly go years without seeing an animal, indicating very low and suppressed population density. Threats from hunting are exacerbated by other factors including loss of habitat. The new Ho Chi Minh Road through the Annamite Mountains in Vietnam, (with additional roads branching to Lao PDR) is a major and probably unmitigatable threat. Rates of decline are likely to increase rather than decrease, and a population reduction of >80% over three generations is estimated for the past, present and future (=A2cd+3cd+4cd). The remaining population is estimated at <250 mature individuals, with a continuing population decline, and largest subpopulation estimated to contain <50 mature individuals (= C2a(i)). This assessment and the conclusions are based in part on information exchanged among researchers at an international *Pseudoryx* conference convened in Vietnam in 2004 (Hardcastle *et al*. 2004).
History:	1994 - Endangered (Groombridge 1994) 1996 - Endangered (Baillie and Groombridge 1996) 2003 - Endangered (IUCN 2003) 2006 - Critically Endangered (IUCN 2006)

Geospatial data and conservation

Cases study

8) Bioclimate and Modeling…



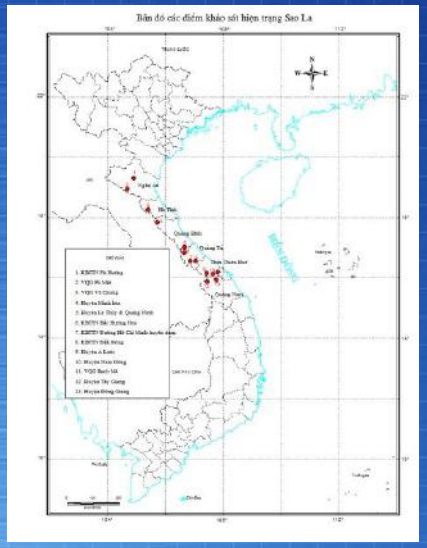


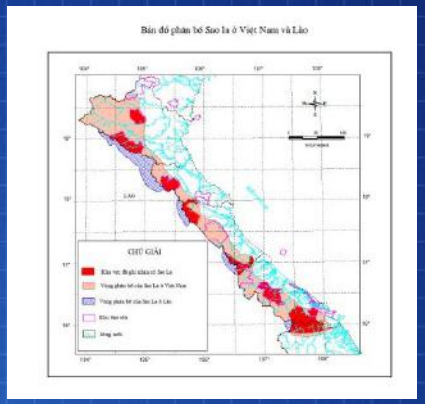
Geospatial data and conservation

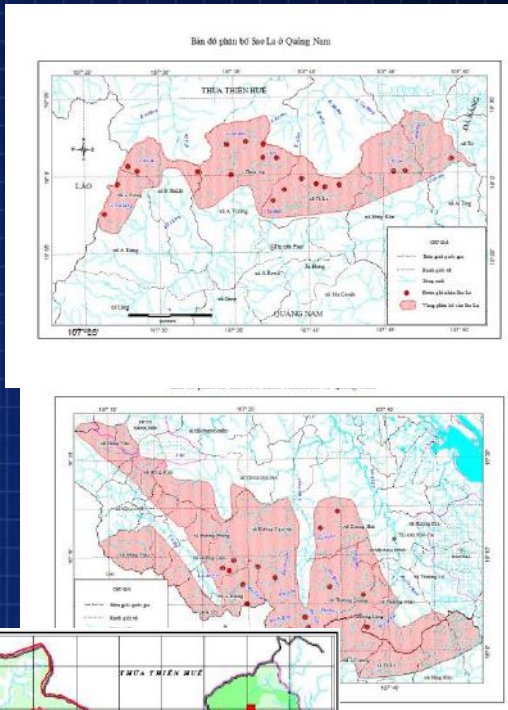
Cases study

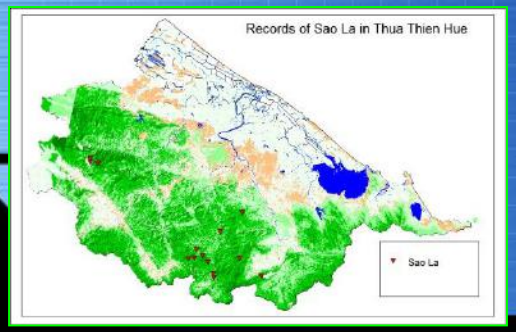
8) Bioclimate and Modeling…

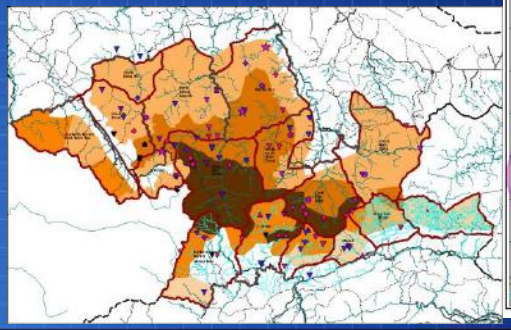
Some research and survey have been carried out in the previous decade.

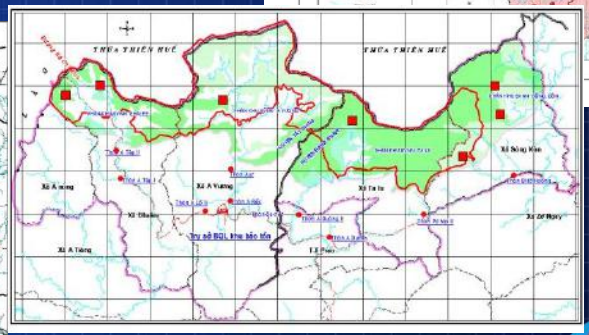












Geospatial data and conservation

Cases study

8) Bioclimate and Modeling…

- **BIO1 = Annual Mean Temperature**
  BIO2 = Mean Diurnal Range (Mean of monthly (max temp - min temp))
  BIO3 = Isothermality (P2/P7) (* 100)
  BIO4 = Temperature Seasonality (standard deviation *100)
  BIO5 = Max Temperature of Warmest Month
  BIO6 = Min Temperature of Coldest Month
  BIO7 = Temperature Annual Range (P5-P6)
  BIO8 = Mean Temperature of Wettest Quarter
  BIO9 = Mean Temperature of Driest Quarter
  BIO10 = Mean Temperature of Warmest Quarter
  BIO11 = Mean Temperature of Coldest Quarter
  BIO12 = Annual Precipitation
  BIO13 = Precipitation of Wettest Month
  BIO14 = Precipitation of Driest Month
  BIO15 = Precipitation Seasonality (Coefficient of Variation)
  BIO16 = Precipitation of Wettest Quarter
  BIO17 = Precipitation of Driest Quarter
  BIO18 = Precipitation of Warmest Quarter
  BIO19 = Precipitation of Coldest Quarter

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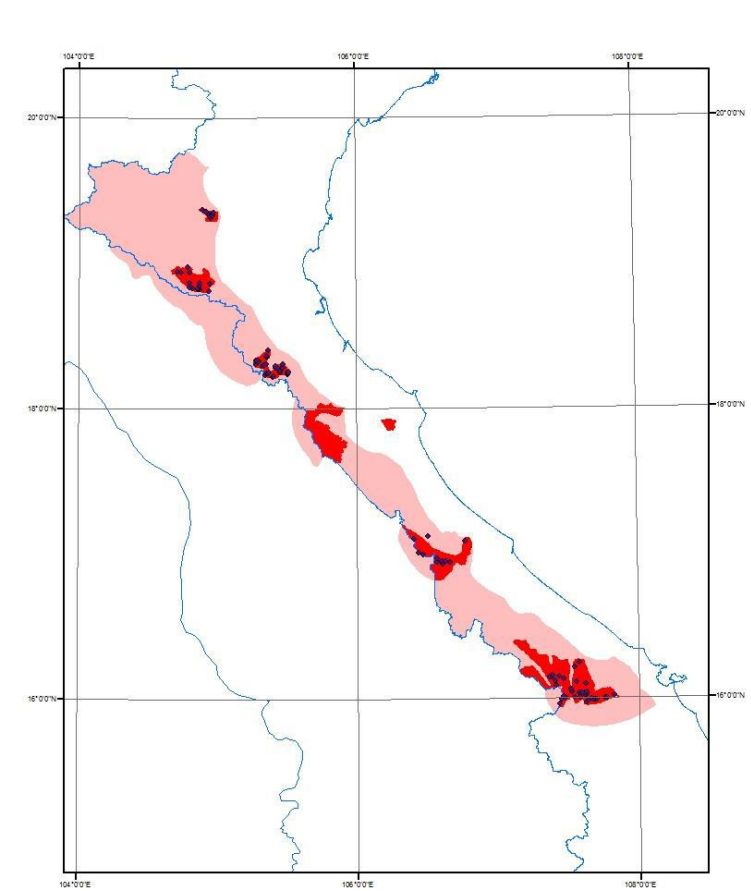
Geospatial data and conservation

Cases study

8) Bioclimate and Modeling…



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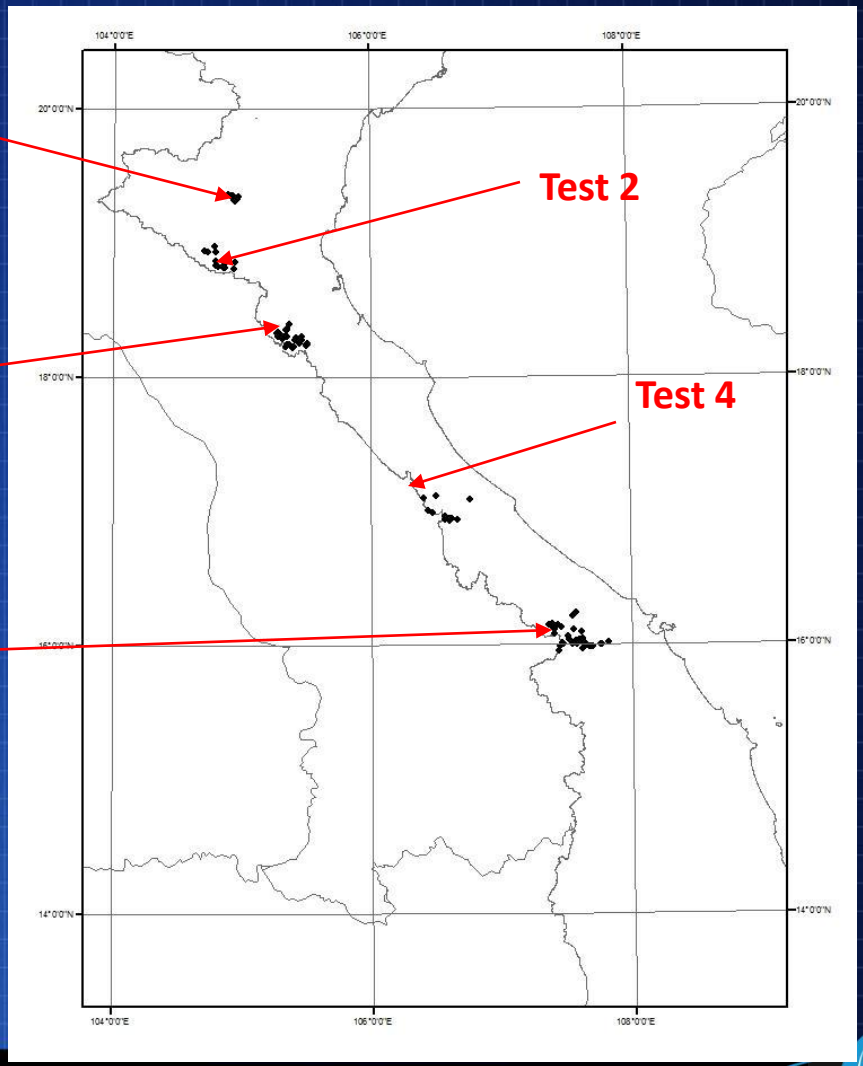

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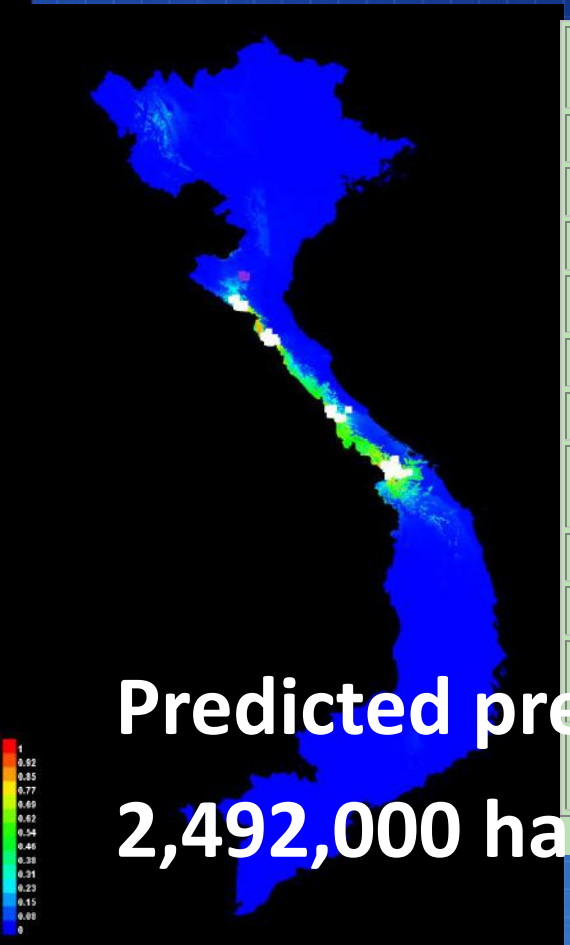
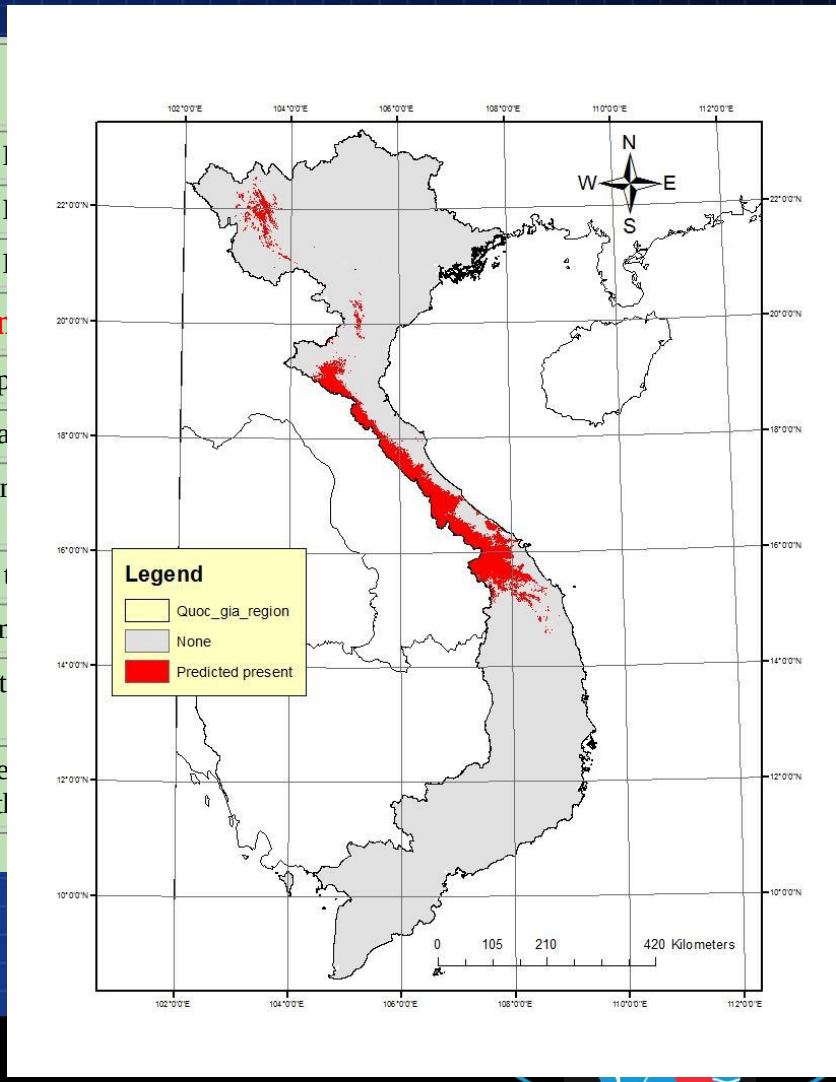


Cumulative threshold	Logistic threshold	
1.000	0.005	
5.000	0.035	
10.000	0.101	
9.675	**0.094**	**Minir**
28.636	0.435	10 p
16.752	0.250	Equal tra
9.675	0.094	Maxir
4.609	0.031	Equal t
4.608	0.030	Maximur
3.572	0.021	Balance t
9.741	0.096	Equate e t

Predicted present area

2,492,000 ha



Geospatial data and conservation

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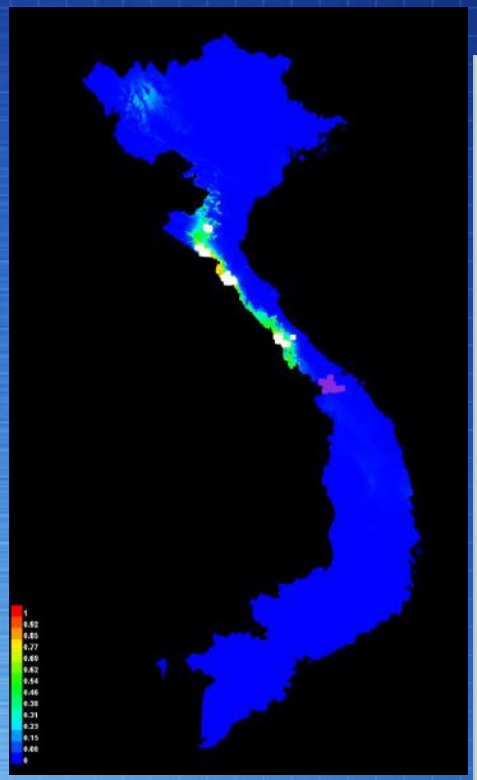
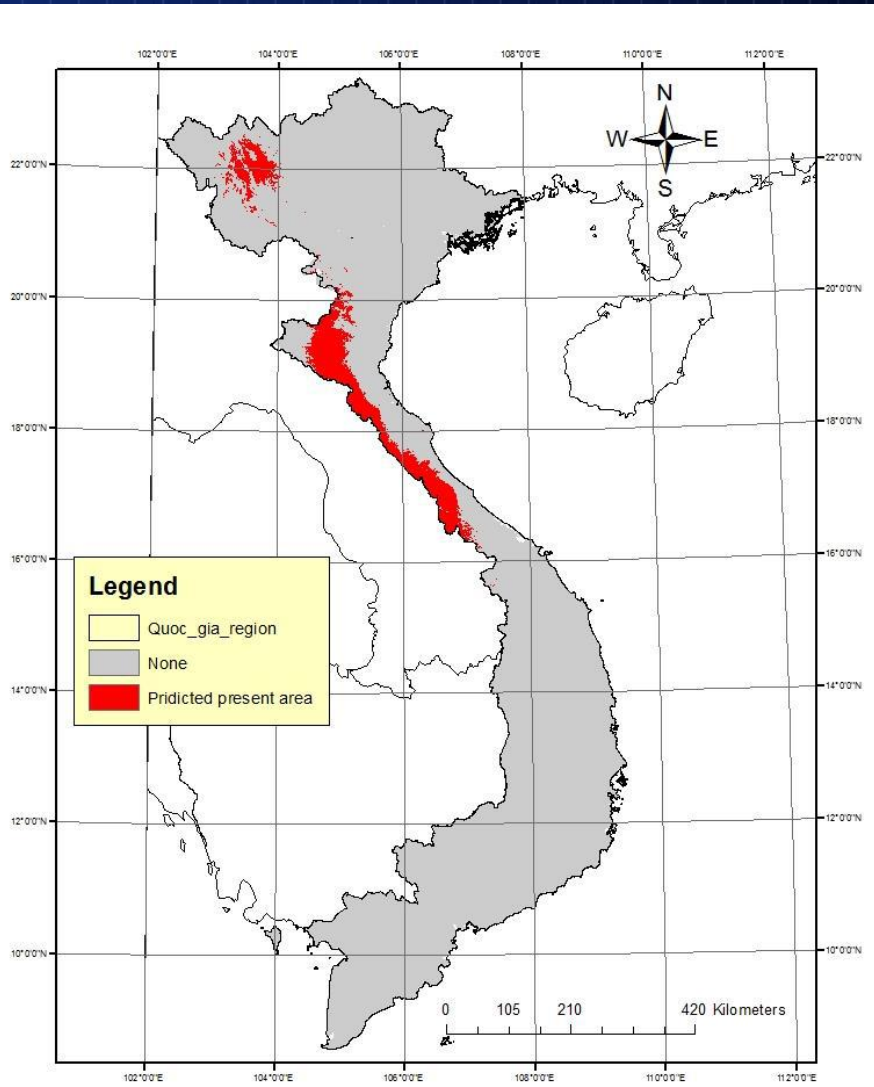


Cumulative threshold	Logistic threshold
1.000	0.004
5.000	0.028
10.000	0.113
8.521	**0.088**
37.444	0.481
16.690	0.242
16.621	0.230
0.702	0.003
0.517	0.002
3.499	0.017
10.055	0.113

Predicted prese

2,008,700 ha



Geospatial data and conservation

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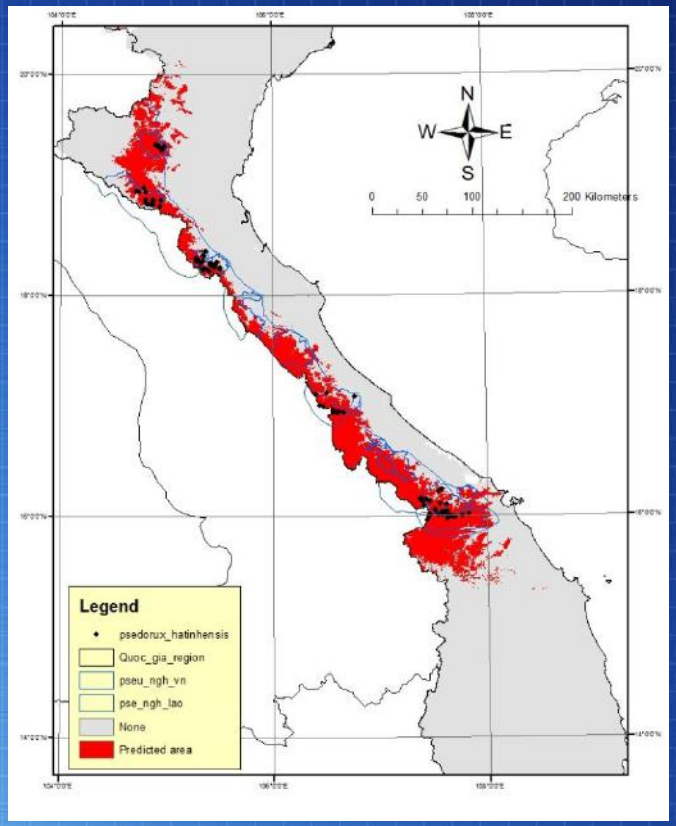

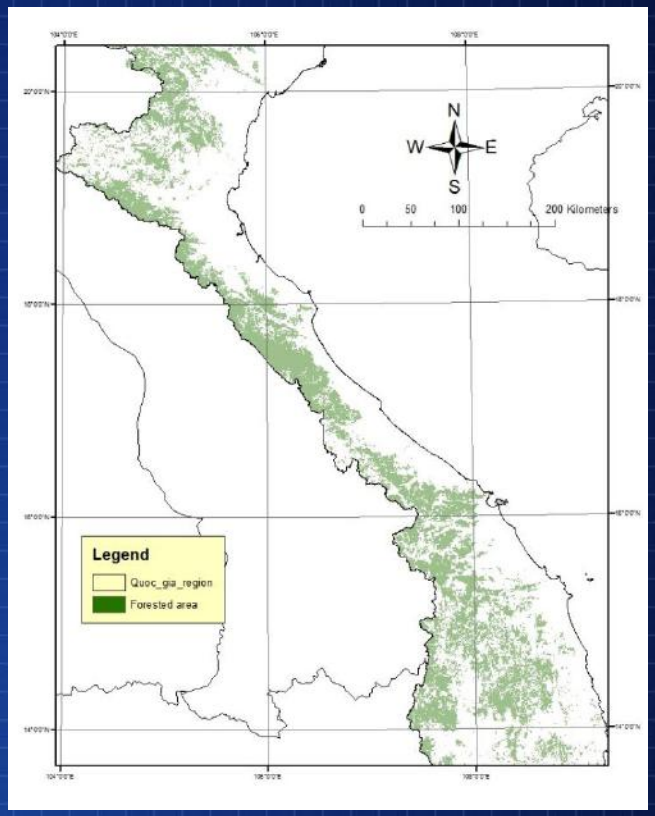

Geospatial data and conservation

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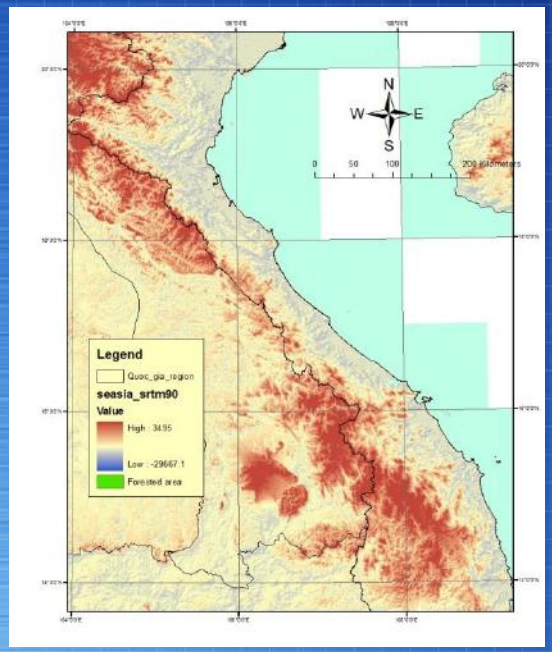

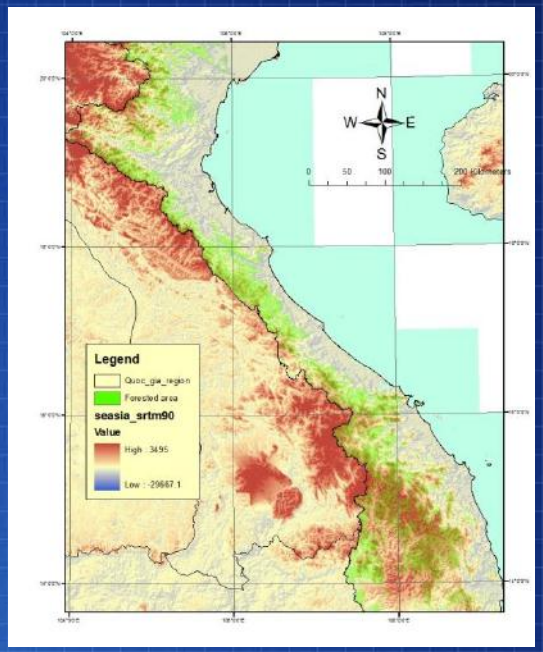

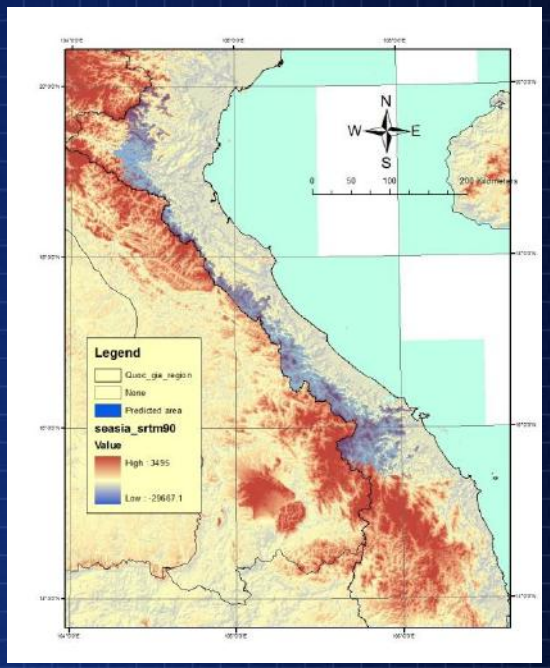

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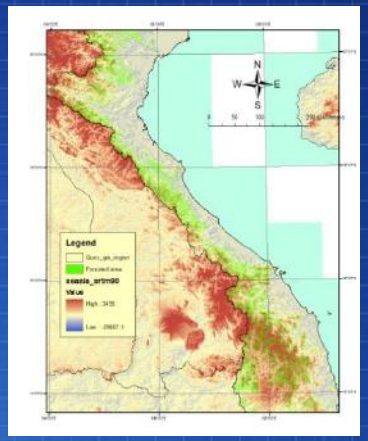
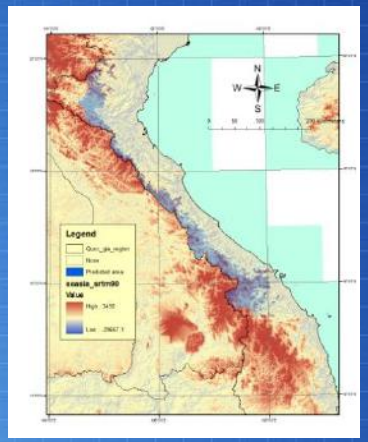
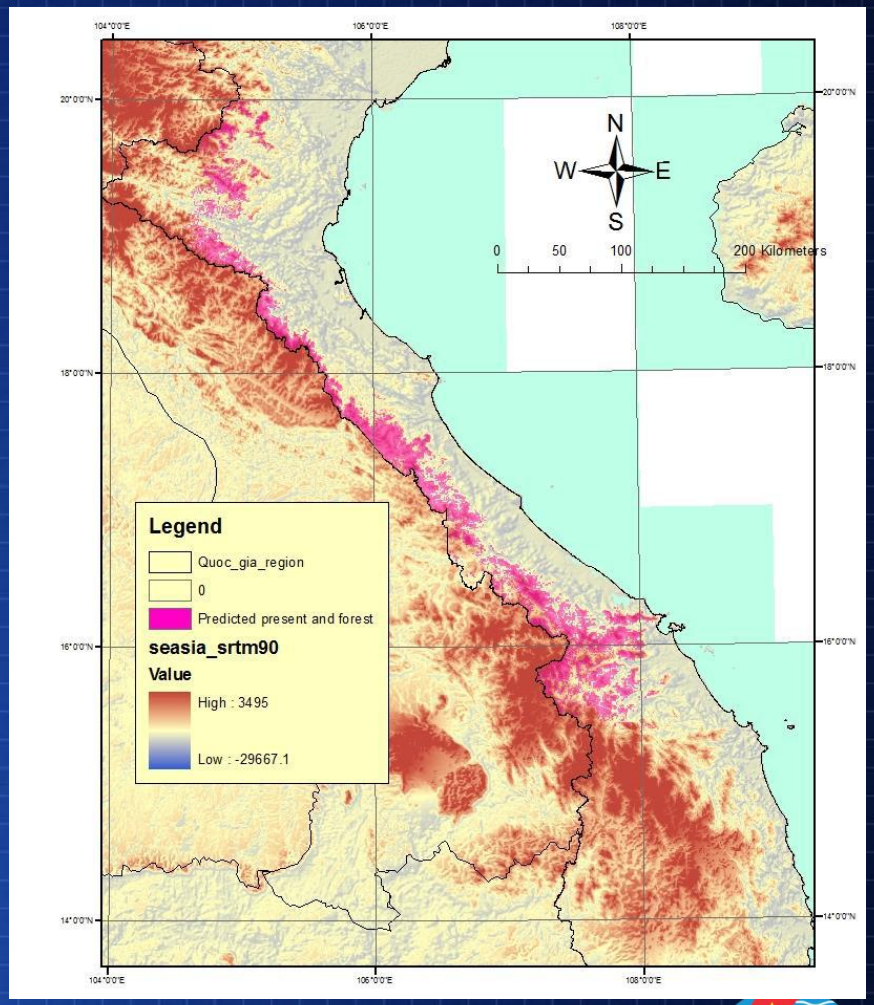


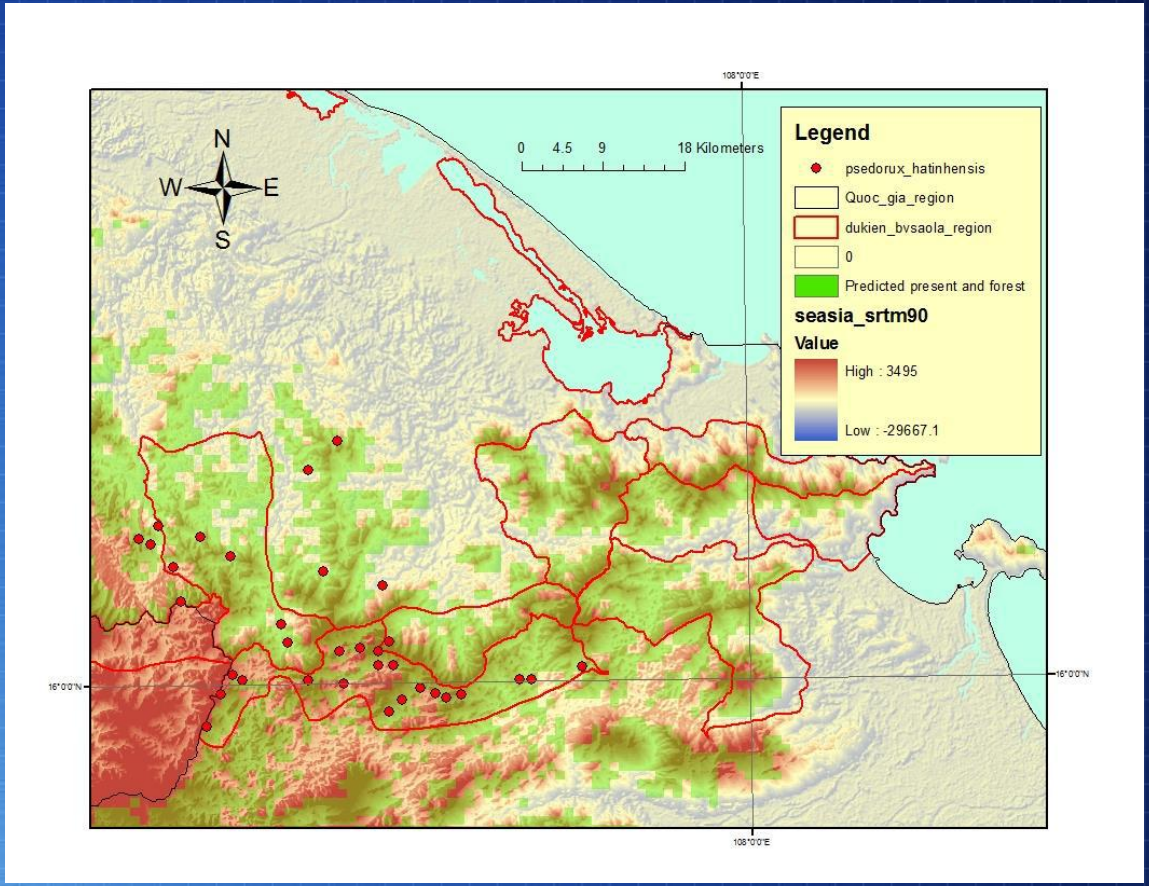




Geospatial data and conservation

Cases study

8) Bioclimate and Modeling…



Geospatial data and conservation

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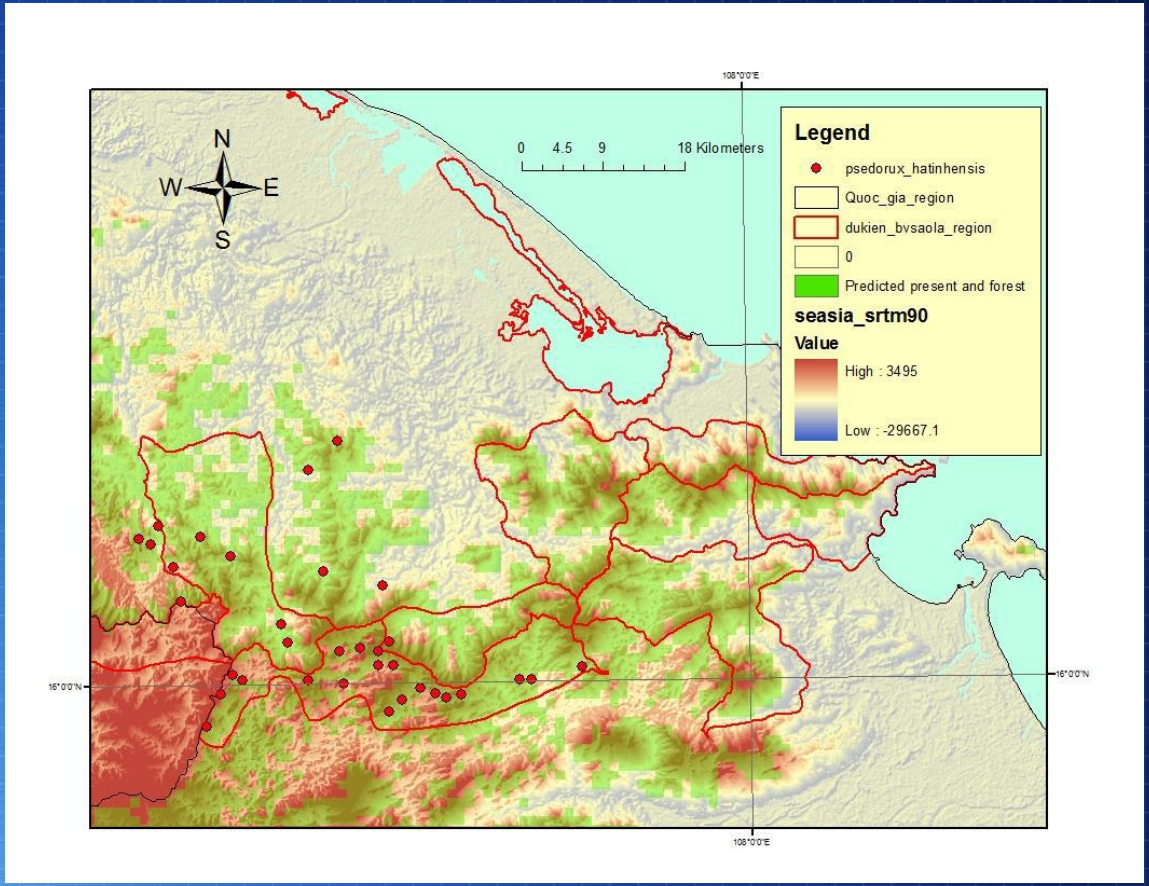

Geospatial data and conservation

Cases study

8) Bioclimate and Modeling…

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Discovery of a new crocodile lizard population in Vietnam: Population trends, future prognoses and identification of key habitats for conservation

Mona van Schingen[1,2], Quynh Quy Ha[3,4], Cuong The Pham[4], Tuan Quang Le[4], Truong Quang Nguyen[4], Michael Bonkowski[2], Thomas Ziegler[1,2,*]

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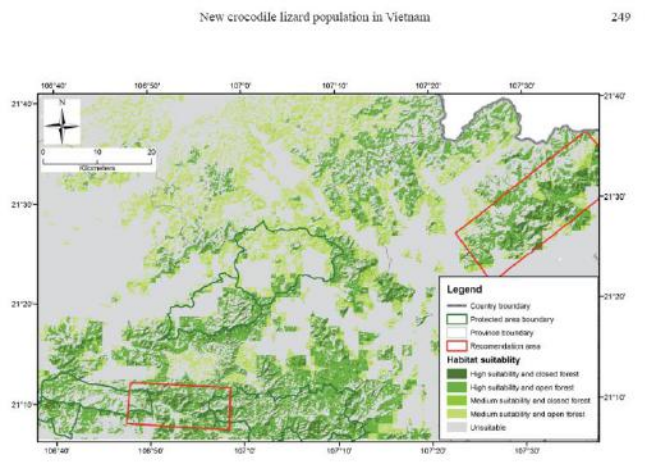

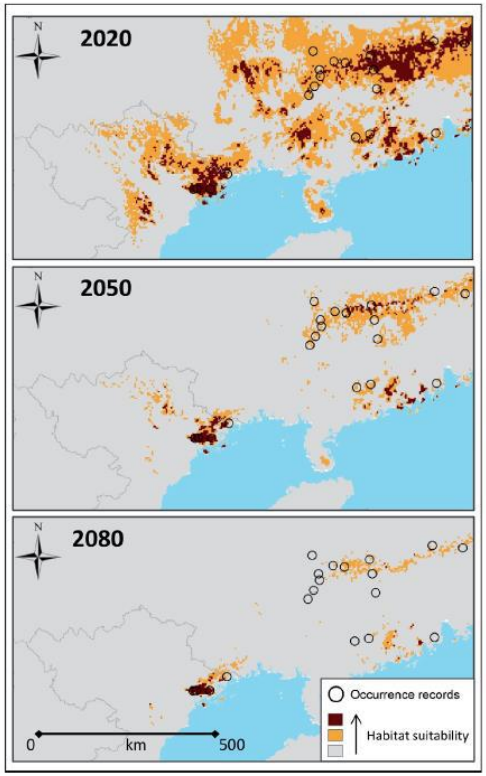

Fig. 4. Predicted suitable habitats for *S. crocodilurus* in the period between 2020 to 2080, based on bioclimatic data and elevation. Habitat suitability increases from yellow to dark brown.

Asia Pacific BON

1) Biodiversity monitoring, Landcover change;
2) GIS basics, technical aspects of GIS including geo-targer;
3) Open source software;
4) Symbology; Geoprocessing Tools;
5) Drone monitoring;
6) Webgis data sharing;
7) Development of images application;
8) Bioclimate and Modeling…

Asia Pacific BON *(Discussion)*

1) GEOSpatial become a tool of regions which all government have been approved;
2) GIS basics, and ground data collection as a duty of the local province and institution;
3) Open source software as a option for the communities
4) Geoprocessing Tools become more powered;
5) Drone monitoring as a main and important
6) Webgis data sharing for conservation as a guildbook
7) Development of images application more quality
8) Bioclimate and Modeling become strong tool for predict the distribution area of the species in the climate change

Thank you for your attention!

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