

How Can Thailand Protect 30% of Its Land Area for Biodiversity, and Will This Be Enough?

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Tropics of Presentation

1. Thailand Overview
2. Protected areas in Thailand
3. Conservation Targets
4. **Thailand's 30% of PAs?**

Thailand Overview

Location: SE Asia

Area: about 517,624 sq. km.

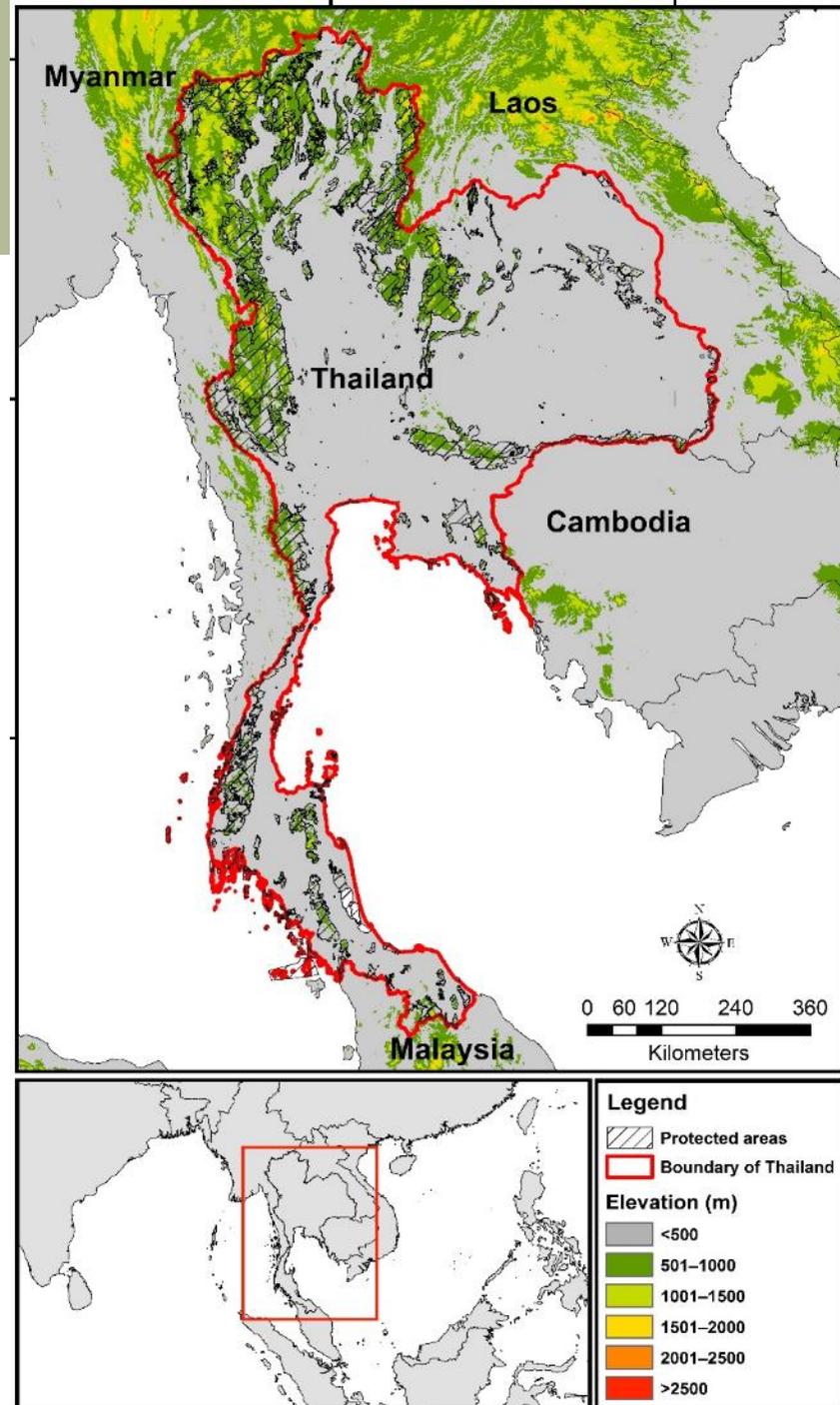
Population: 70 million

Middle-income country.

- Total GDP, USD 1.47 trillion,
- Per capita 7,500 USD

Topography

- Low-lying (64% is < 250 m a.s.l.)
- Relatively flat
- Mountains in the north and west



Thailand Overview

- **One of the most biodiversity-rich countries in Southeast Asia.**

 - 10% of vertebrate spp.

 - 5% of vascular plants

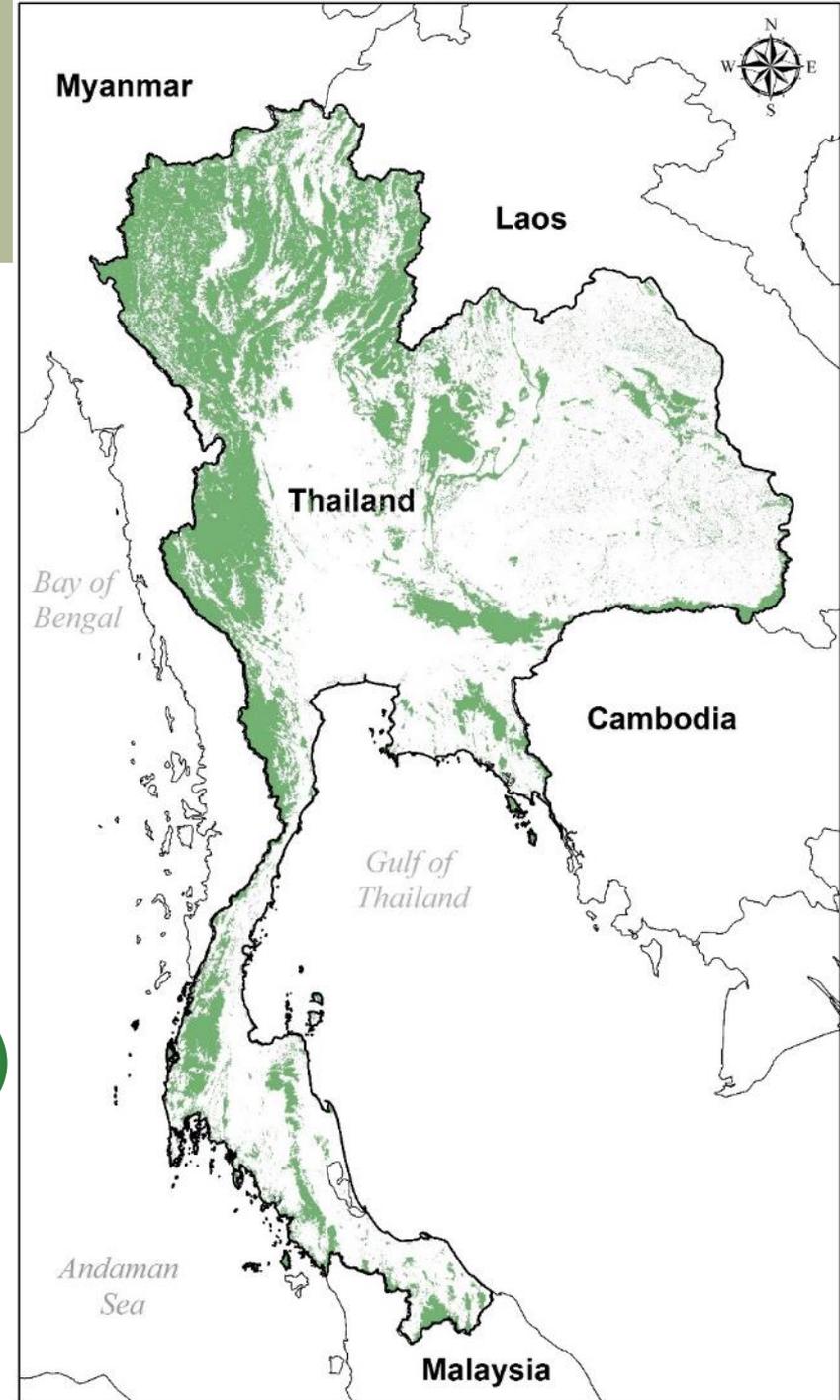
- **Forest area remaining 31.7%**

 - 1973, forest cover 43%

- **National Policy (40% forest target)**

 - 25% protected areas

 - 15% production forest



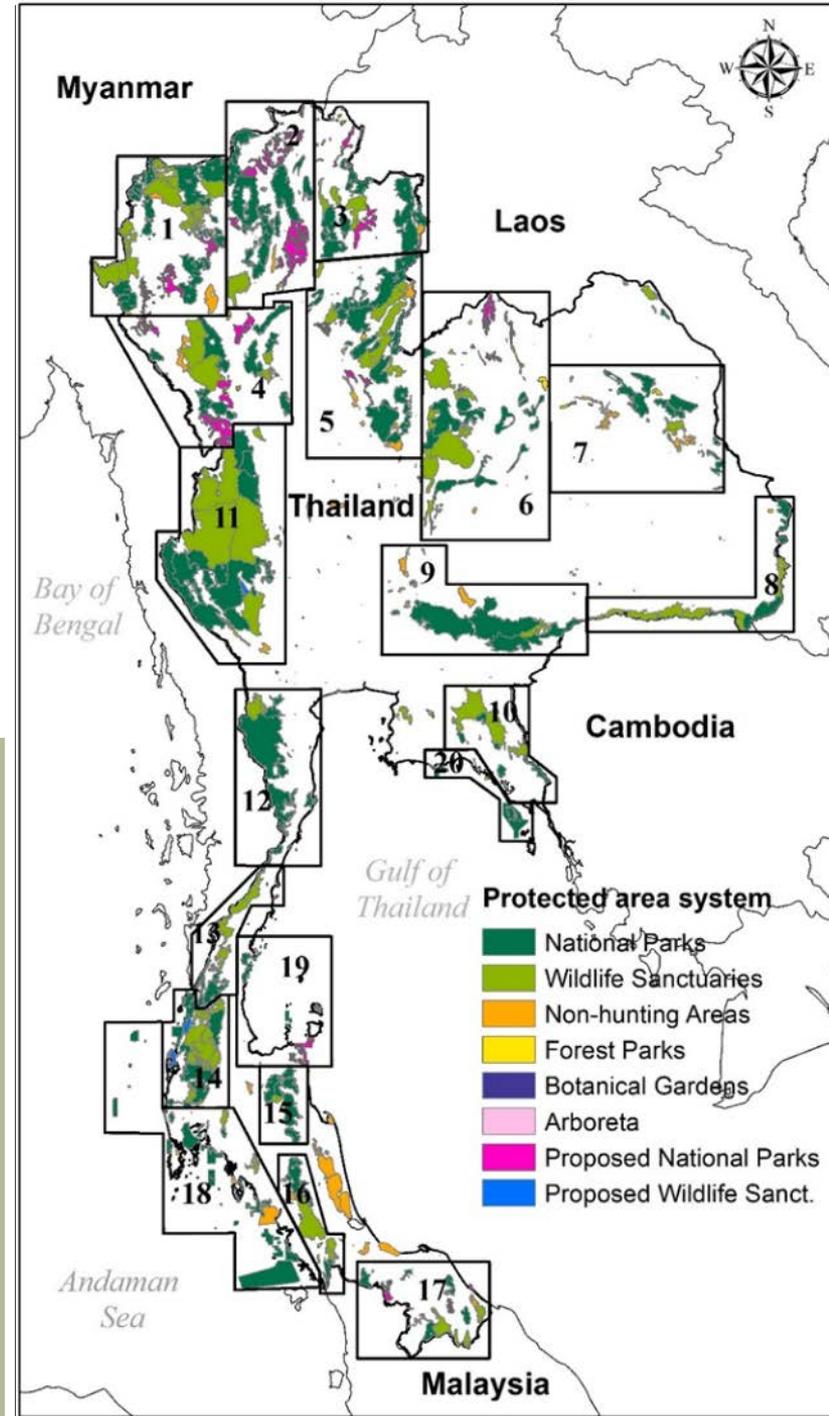
Protected areas In Thailand



1st national park established in 1962

PAs covers 118,320 km² or 22.8% of the country's land area (DNP 2019).

Small size and fragmented, only 8% are > 1000 km²



Conservation Targets



Convention on
Biological Diversity

CBD Aichi Target 2020

- **Protect at least 17% of terrestrial** and inland water, and 10% of coastal and marine areas.

Post-2020 Global Biodiversity Framework 2030 (draft)

- **Protect at least 30% of the terrestrial area of the planet**
- well connected and effective system of protected areas and other effective area-based conservation



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Can Thailand protect 30% of its land area for biodiversity and will this be enough?

Key Questions.....?



How can Thailand meet the proposed CBD area target of 30% by 2030?

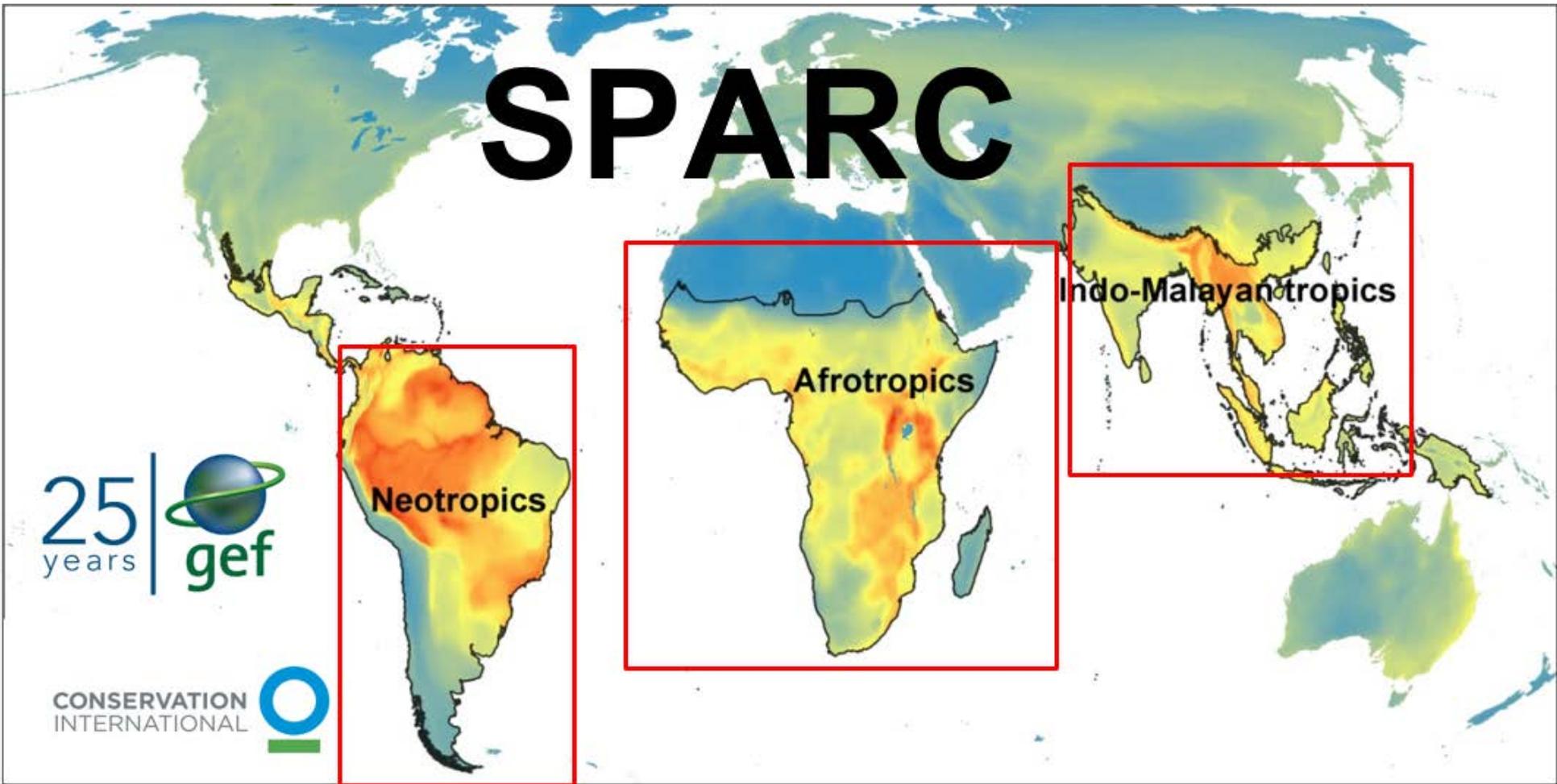


Will the 30% be “well connected and important for biodiversity?



How vulnerable will this 30% be to climate change?

GEF Funded Project through CI



Spatial Planning for Protected Areas in Response to Climate Change

Article

Can Thailand Protect 30% of Its Land Area for Biodiversity, and Will This Be Enough?

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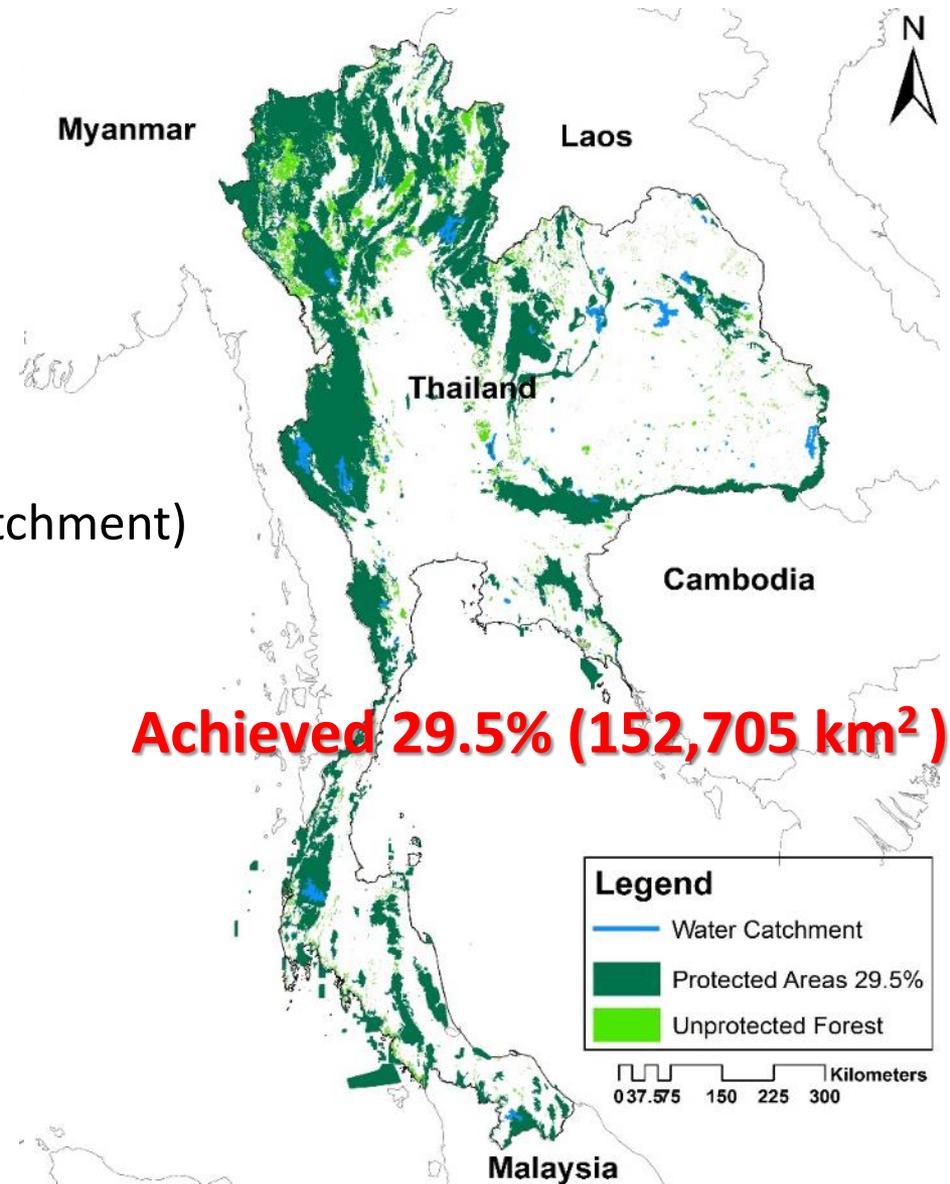
Abstract: The draft post-2020 Global Biodiversity Framework asks CBD parties to conserve at least 30% of the planet by 2030 ‘through a well-connected and effective system of protected areas . . . with the focus on areas particularly important for biodiversity’. We use Thailand as a case study for the ability of a densely populated, hyper diverse, tropical, middle-income country to meet this target at a national level. Existing protected areas (PAs) total 24.3% of Thailand’s land area. Adding forest on government land adjacent to existing PAs, plus unprotected areas of Ramsar sites, raises this to 29.5%. To assess the importance for biodiversity, we used modeled distributions of birds and mammals plus, as proxies for other biodiversity components, elevation, bioclimate, forest type, and WWF ecoregion. All modeled species occur in the current PA system but <30% meet representation targets. Expansion of the system increases the proportion of mammals and birds adequately protected and increases the protection for underrepresented bioclimatic zones and forest types. The expanded system remains fragmented and underrepresents key habitats, but opportunities for increasing protection of these are limited. It is also still vulnerable to climate change, although projected impacts are reduced. Additional protection is needed for wetland and coastal habitats, and limestone karsts.

How achieved 30% of protected areas?

- The existing and already planned PAs covering 24.3%
- Forest patches >10 km² adjacent to PAs cover 5.2%
- Other effective area-based conservation measures (i.e Ramsar site, and water catchment) cover 0.04%

An additional 0.5%

- Smaller and isolated forest patches, may support viable species
- Coastal wetlands in the Inner Gulf of Thailand and inland wetlands in the Chao Phraya floodplain.



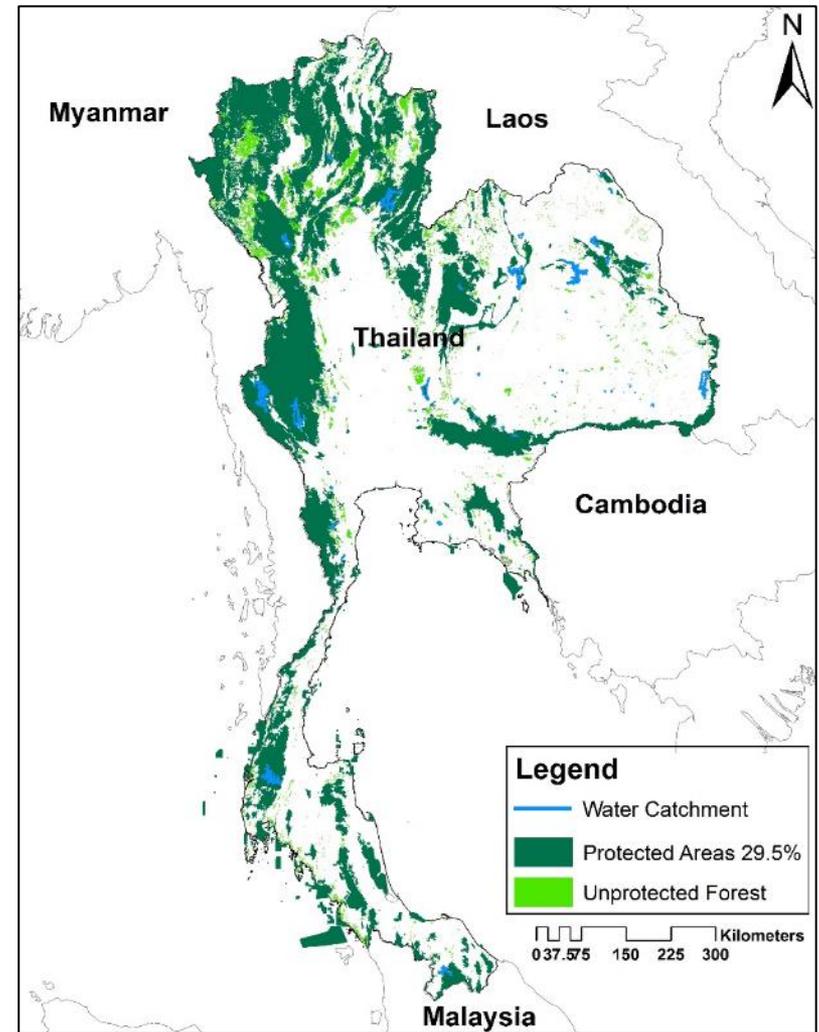
Are protected areas well connected?



The expanded protected area will increase both patch size and connectivity, particularly in the north and west.



Protected patches less isolated than in the current system.



Protected area	Number of patches				Mean area km ²	Mean distance to nearest large patch (km)
	<100 km ²	100-1000 km ²	>1000 km ²	total		
24.3%	570	80	20	670	188	14.3
29.5%	520	69	19	608	251	12.5

Will 30% PAs be enough for biodiversity?

1. Conserving importance for biodiversity

- Protect 702 bird and 80 mammal species in PAs

2. Representation of biodiversity

- Forest types (RFD 2018)
- Elevation range
- The WWF ecoregions and WWF Global 200 ecoregions.
- Bioclimates present and projected for 2070.



The importance for biodiversity conservation

Increase in adequately protected species

- from 28% to 60% of mammals
- from 26% to 38% of birds

Increase in the area of under-represented forest

- Deciduous Dipterocarp Forest from 42% to 62%
- Mixed Deciduous Forest from 61% to 81%

Myanmar

Laos

Thailand

Cambodia

Malaysia



Legend

bird richness

0–54

55–107

108–161

162–214

PAAs (30%)

(B) Bird

Representation of elevation ranges

Elevation Range (m)	total area (km ²)	area protected (km ²)		% of range protected		% of total area protected		% natural vegetation protected	
		24.3%	29.5%	24.3%	29.5%	24.3%	29.5%	24.3%	29.5%
0-250	395814	25181	30151	6	8	17	17	58	65
250-750	169217	80106	100356	47	59	55	57	90	92
750-1500	55788	38246	45773	69	82	26	26	92	94
>1500	1482	1175	1330	79	90	1	1	95	97

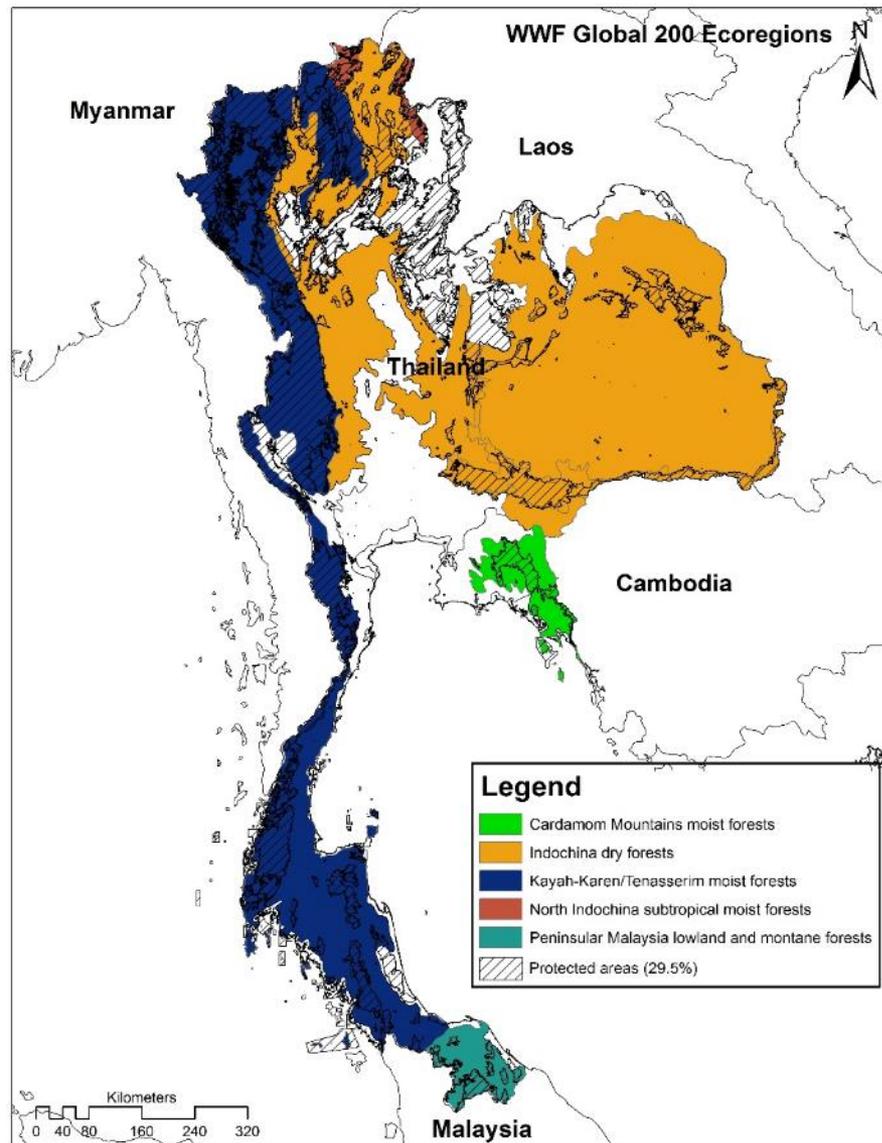


The lowlands is still greatly underrepresent (only 8% protected), but most forest (65%) within this range will be protected.



The remaining unprotected forest is in small, isolated fragments.

Representation of WWF ecoregions and Global 200 ecoregions



- 15 ecoregions present in the expanded PA system from **1% for the Chao Phraya freshwater swamp forest** to **90% for the Peninsular Malaysian montane rain forests**
- Limited Freshwater Swamp Forest and Mangrove Forest
- 80% or more of remaining natural vegetation protected of five Global 200 ecoregions, **except Indochina dry forest, at 67%**

Representation of bioclimatic zone

Bioclimatic zone	Total area of zone (km ²)	% of zone protected		% of total area protected		% of natural vegetation protected	
		24.3%	29.5%	24.3%	29.5%	24.3%	29.5%
Extremely Hot and Moist	262852	28.5	35	63.1	63.1	83.1	86.3
Extremely Hot and Xeric	200660	3.9	6	6.6	8.2	69.9	80.2
Hot and Mesic	43791	72.2	83.4	26.6	25	92.4	93.7
Hot and Dry	5818	76.5	88.8	3.7	3.5	93.2	93.6
Warm Temperate and Mesic	83	91.6	97.6	0.1	0.1	100	98.8



Increased the area of protected forest in the currently underrepresented Extremely Hot and Moist and Extremely Hot and Xeric,



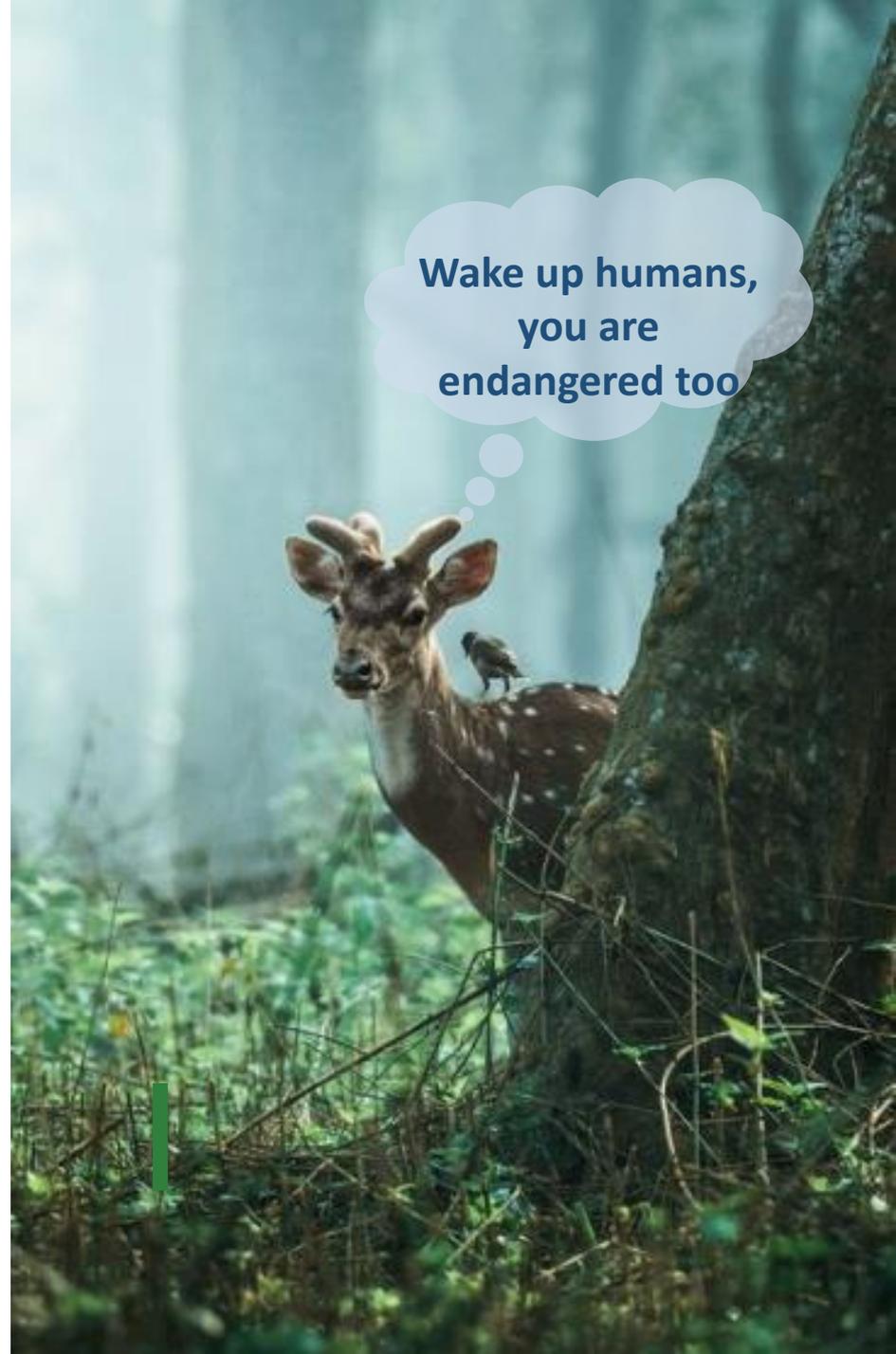
However, these bioclimates are still underrepresent in terms of the percentage of zone protected

How vulnerable will the expanded PA system be to climate change?

 The expansion does little to reduce the impacts of climate change

 The coolest bioclimatic zone will be lost from protected areas system, and the Hot and Mesic and Hot and Dry zones will be greatly reduced

 Adequacy of protection for mammals and birds declines by 2070



Conclusions

- Thailand needs to seriously consider climate change in protected area planning and management.
- Increasing the area of the existing PAs to 30% by 2030 is practical and will significantly increase protection of biodiversity in Thailand.

The expansion relatively reduces the impact from climate change and additional actions will be necessary.

- Biodiversity corridors and transboundary PAs
- *Ex-situ* conservation & genetic improvement

Khao Yai-Thap Lan corridor





Thank You :)