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Prioritizing Conservation Planning for Rare and Endangered Species in Arid Area of China, A case study of Mammal

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CONTENT

- Background
- Data and method
- Result
- Discussion

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BACKGROUND

● Wildlife are sensitive to human pressure and global climate change, so they are good indicators for environmental change, . Conservation become the **prior** issue in this region Vs.use.

● Worldwide, the main threats to mammals are habitat loss and degradation. Systematic Conservation Planning (**SCP**) can be an effective way for regional conservation management.

●Only a **few** research focus on the systematic conservation planning in Northwest of China, especially arid area

● Therefore, we aim to provide the scientific basis and references for priority setting and **conservation planning** in this region.

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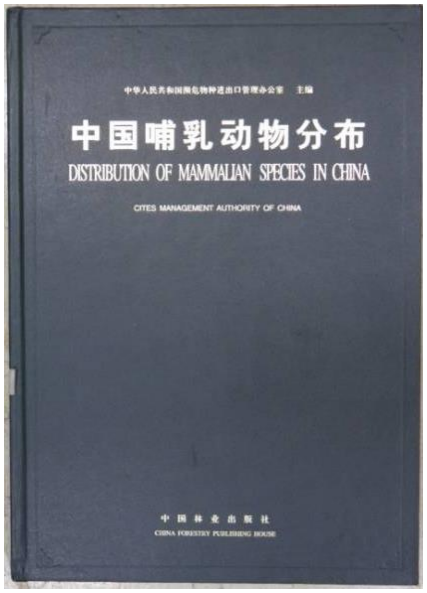
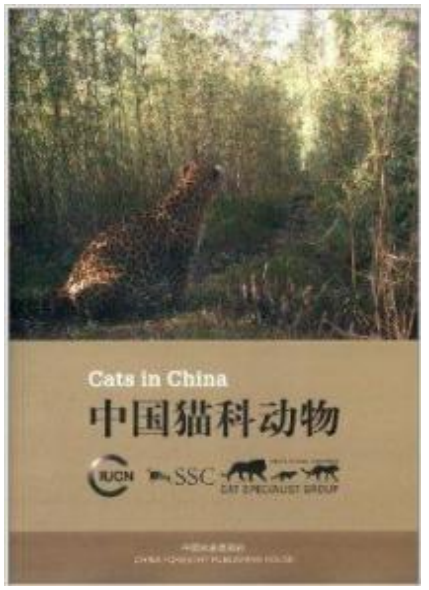
Data

We obtained the species data(distribution) from several ways, including fauna, papers, nature reserve investigations, news, and other publications





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Data

We obtained ecological baseline data

Vegetation in China (1:1,000,000)

SRTM 90m Digital Elevation Data v4.1--International Scientific & Technical Data Mirror Site, Computer Network Information Center, Chinese Academy of Sciences. (http://www.gscloud.cn)

Administrative map--Geographic Information Center of the National Foundation(http://ngcc.sbsm.gov.cn/)

National Nature Reserves--nature reserve investigation

Climate baseline--IPCC, International Scientific & Technical Data Mirror Site, Computer Network Information Center, Chinese Academy of Sciences. (http://www.gscloud.cn) and other publications

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Method

- Where is the arid region in China?
- Choose the endangered mammals
- Mapping distribution of species
- Calculate important value
- Determine the location and area of hotspots

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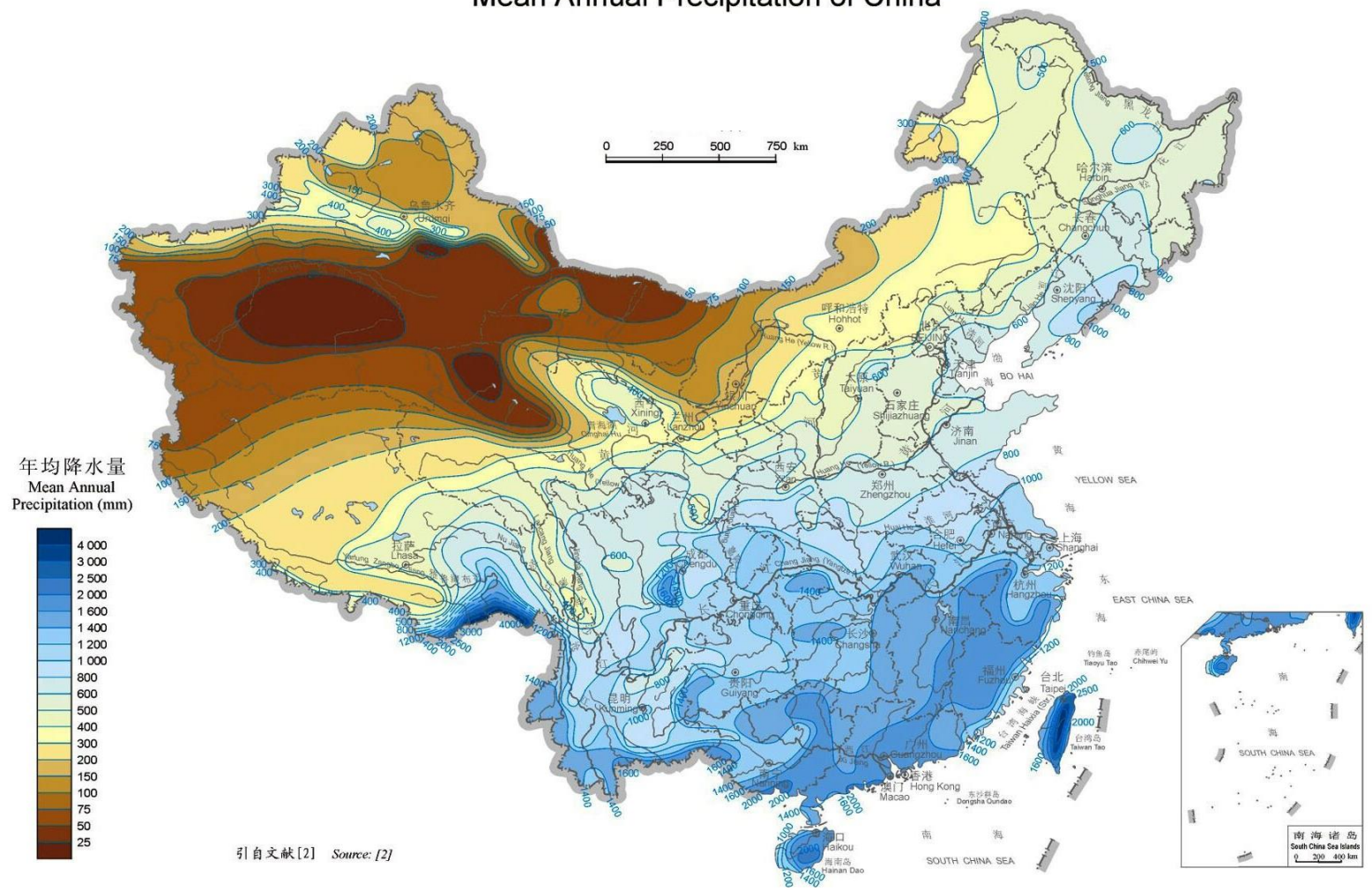
Method

Where is the arid region of Northwest China?

Precipitation below 200, topography and landform evaporation capacity



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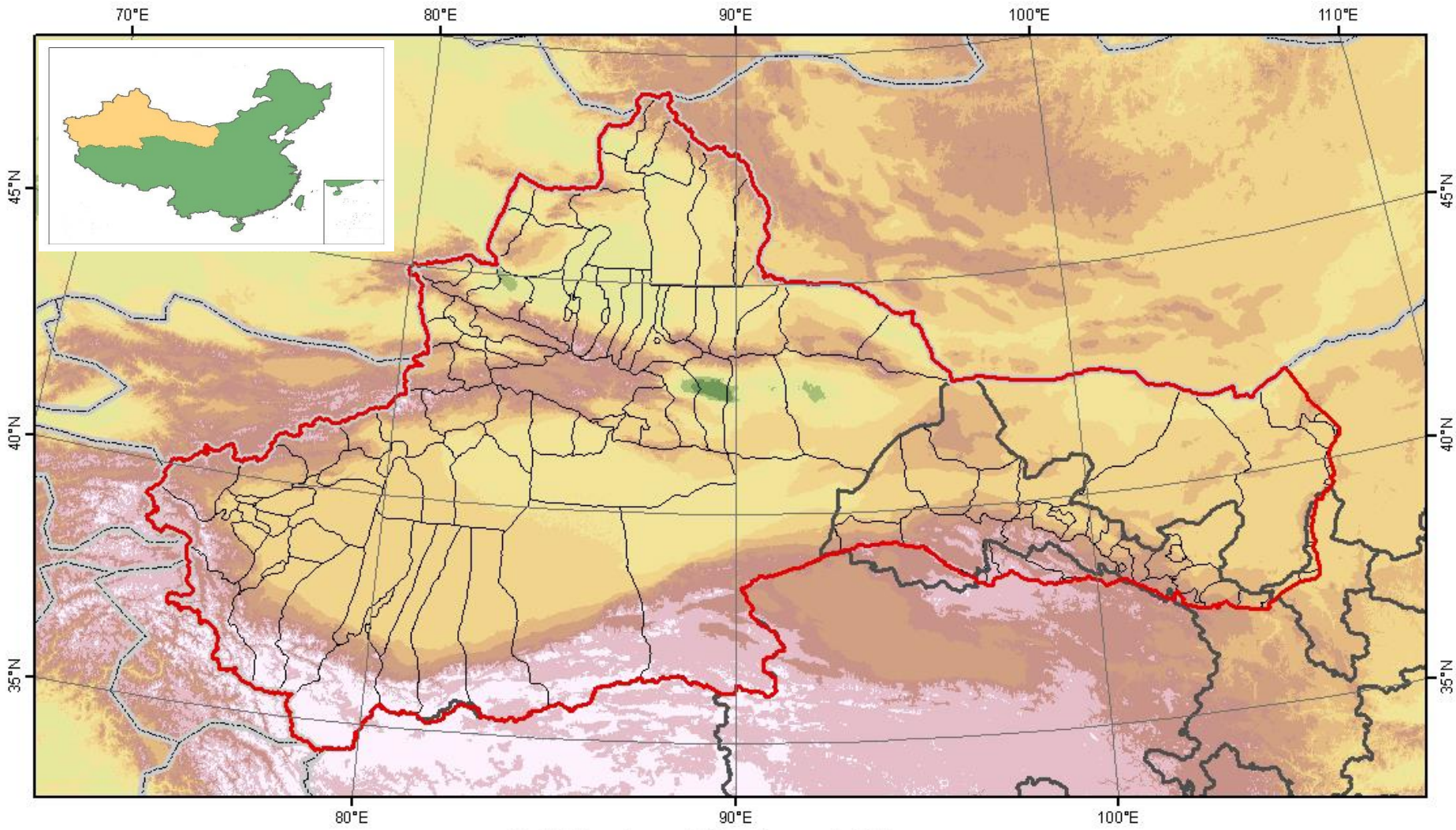

Total arid area is 2147677.7km^2

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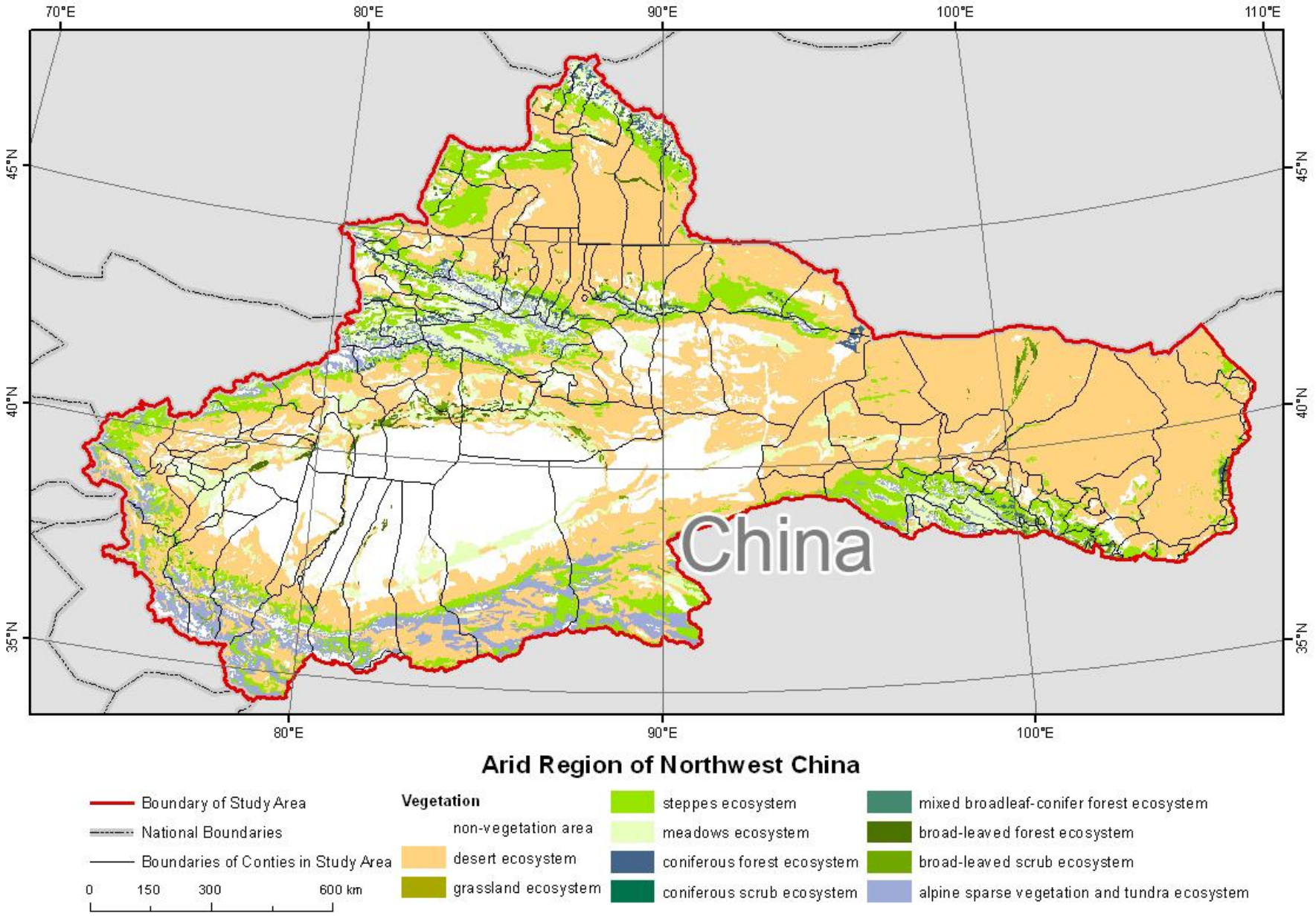

The vegetation of northwest arid areas

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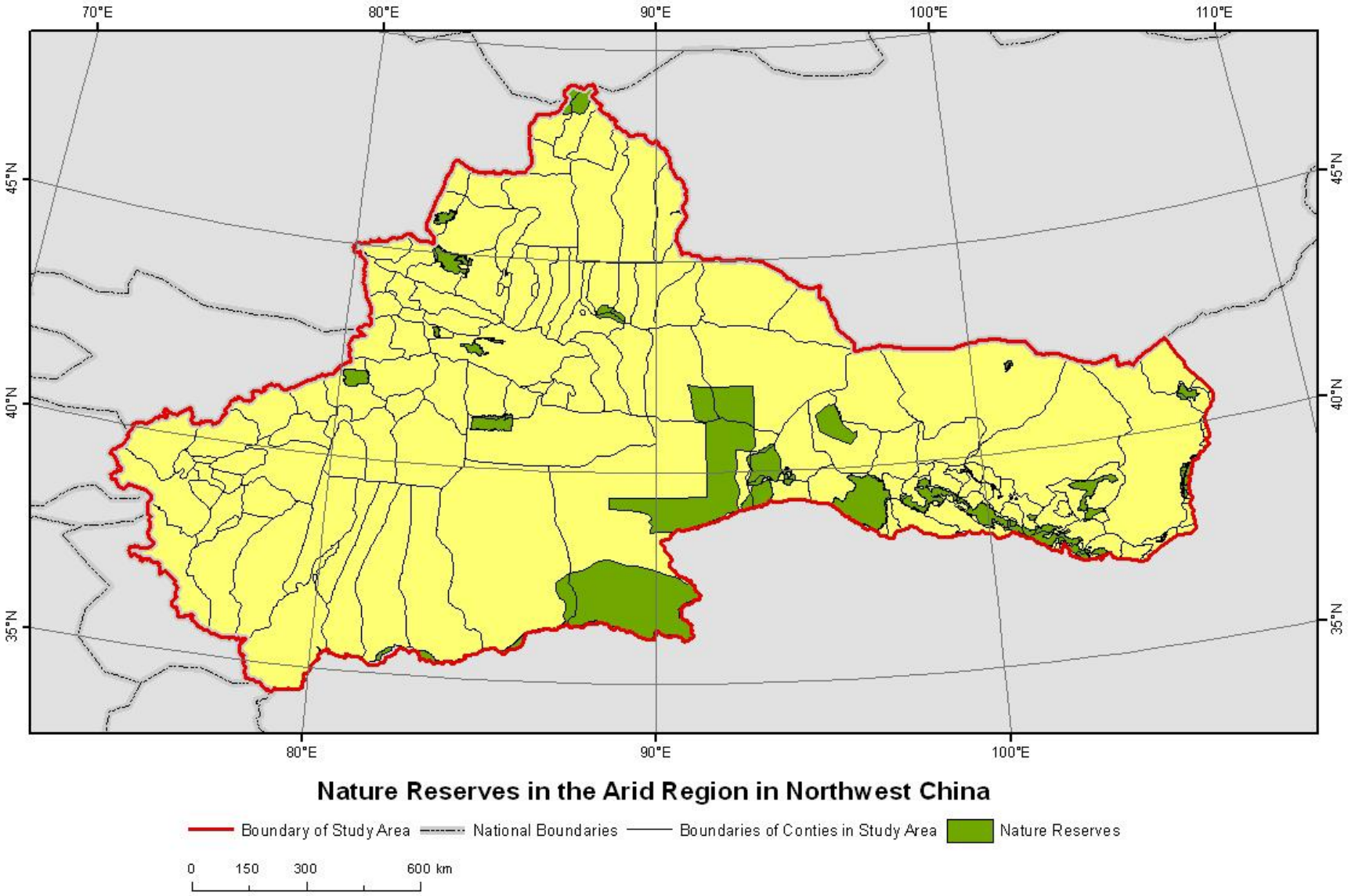

National nature reserves are 185091.23km², 8.62% of total area

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Method

Choose the endangered mammals(26 species)

Order	Famliy	Species(Latin name)
Lagomorphs	Ochotonidae	*Ochotona iliensis*
		Ochotona koslowi
	Leporidae	*Lepus yarkandensis*
Artiodactyla	Camelidae	*Camelus ferus*
	Moschidae	*Moschus chrysogaster*
		Moschus moschiferus
	Cervidae	*Przewalskium albirostris*
	Bovidae	*Bos mutus*
		Procapra gutturosa
		Procapra picticaudata
		Gazella subgutturosa
		Pantholops hodgsonii
		Ovis ammon
Perissodactyla	Equidae	*Equus hemionus*
Carnivora	Canidae	*Cuon alpinus*
		Vulpes corsac
		Vulpes ferrilata
	Ursidae	*Ursus arctos*
	Mustelidae	*Martes foina*
		Mustela erminea
		Mustela altaica
		Vormela peregusna
	Felidae	*Felis silvestris*
		Lynx lynx
		Otocolobus manul
		Panthera uncia

- IUCN (CR, EN, VU ,NT)--IUCN red list
- China species red list (CR, EN, VU,NT)
  --The national distribution of mammals
- Endemic species
  --China endemic terrestrial mammals

Herbivore-14

Carnivore-12

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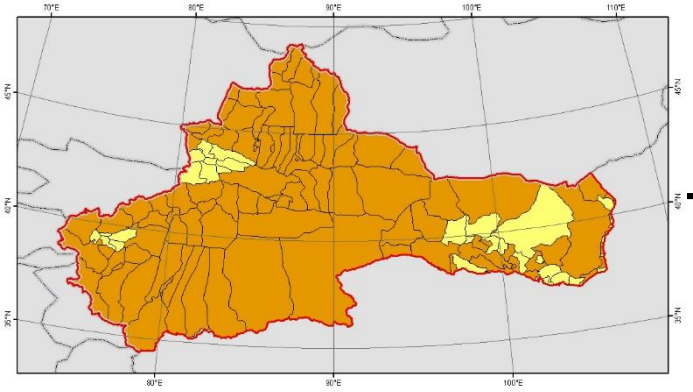
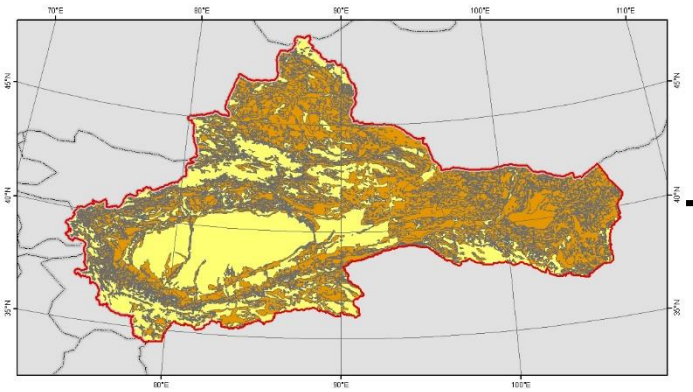
Method

Mapping distribution of key species

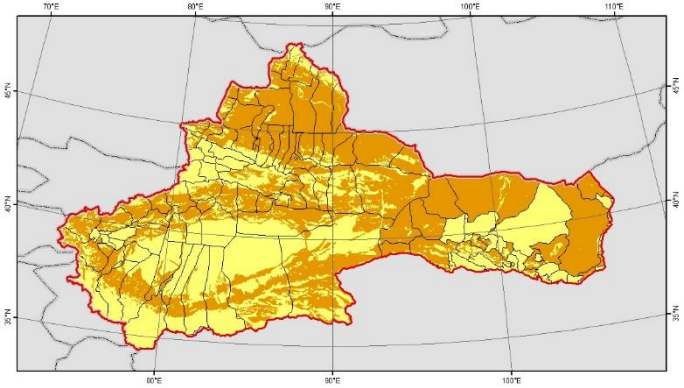
Counties





Habitat

Overlay



Gazella subgutturosa

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Important value

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Score	IUCN	China species red list
3	EN	EN
3	EN	VU
3	EN	CR
3	CR	CR
2	NT	EN
2	NT	NT
2	NT	
2	VU	CR
2	VU	EN
2	VU	VU
1	LC	CR
1	LC	NT
1	LC	VU
1	LC	EN

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Method

Important value

Chinese name	Scientific name	Score	IUCN	China species red list	Endemic species
伊犁鼠兔	*Ochotona iliensis*	3	EN	EN	Y
柯氏鼠兔	*Ochotona koslowi*	3	EN	EN	Y
塔里木兔	*Lepus yarkandensis*	2	NT	NT	Y
野骆驼(双峰驼)	*Camelus ferus*	3	CR	CR	
马麝(高山麝)	*Moschus chrysogaster*	3	EN	CR	
原麝	*Moschus moschiferus*	2	VU	CR	
白唇鹿	*Przewalskium albirostris*	2	VU	EN	Y
野牦牛	*Bos mutus*	2	VU	VU	Y
黄羊(蒙原羚)	*Procapra gutturosa*	1	LC	CR	
藏原羚	*Procapra picticaudata*	2	NT	NT	Y
鹅喉羚	*Gazella subgutturosa*	2	VU	VU	
藏羚	*Pantholops hodgsonii*	2	NT	NT	Y
盘羊	*Ovis ammon*	2	NT		
蒙古野驴	*Equus hemionus*	3	EN	VU	
豺	*Cuon alpinus*	3	EN	EN	
沙狐	*Vulpes corsac*	1	LC	NT	
藏狐	*Vulpes ferrilata*	1	LC	NT	
棕熊	*Ursus arctos*	1	LC	VU	
石貂	*Martes foina*	1	LC	EN	
白鼬	*Mustela erminea*	1	LC	EN	
香鼬	*Mustela altaica*	2	NT	NT	
虎鼬	*Vormela peregusna*	2	VU	EN	
野猫(草原斑猫)	*Felis silvestris*	1	LC	EN	
猞猁	*Lynx lynx*	1	LC	EN	
兔狲	*Otocolobus manul*	2	NT	EN	
雪豹	*Panthera uncia*	3	EN	EN	

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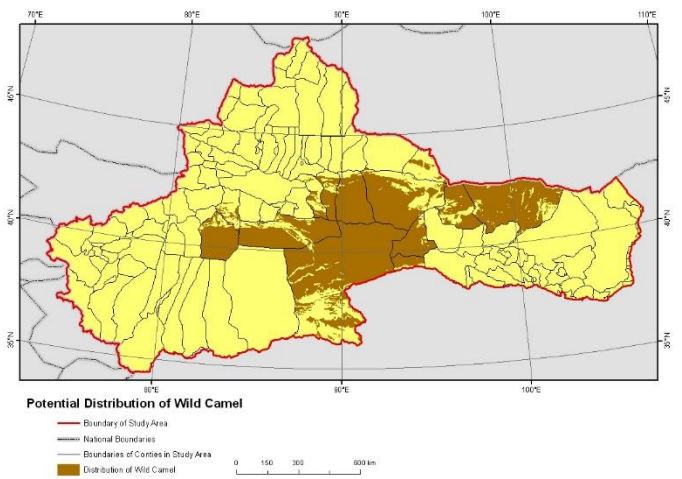
Determine the location and area of hotspots

- Overlay all the species distribution layer with the important value



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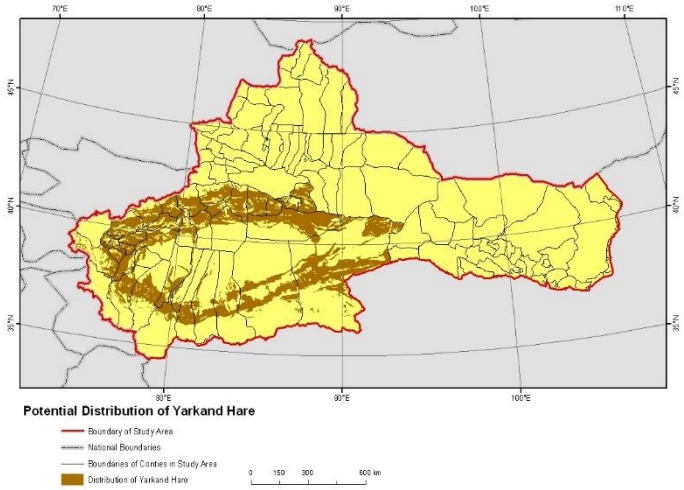

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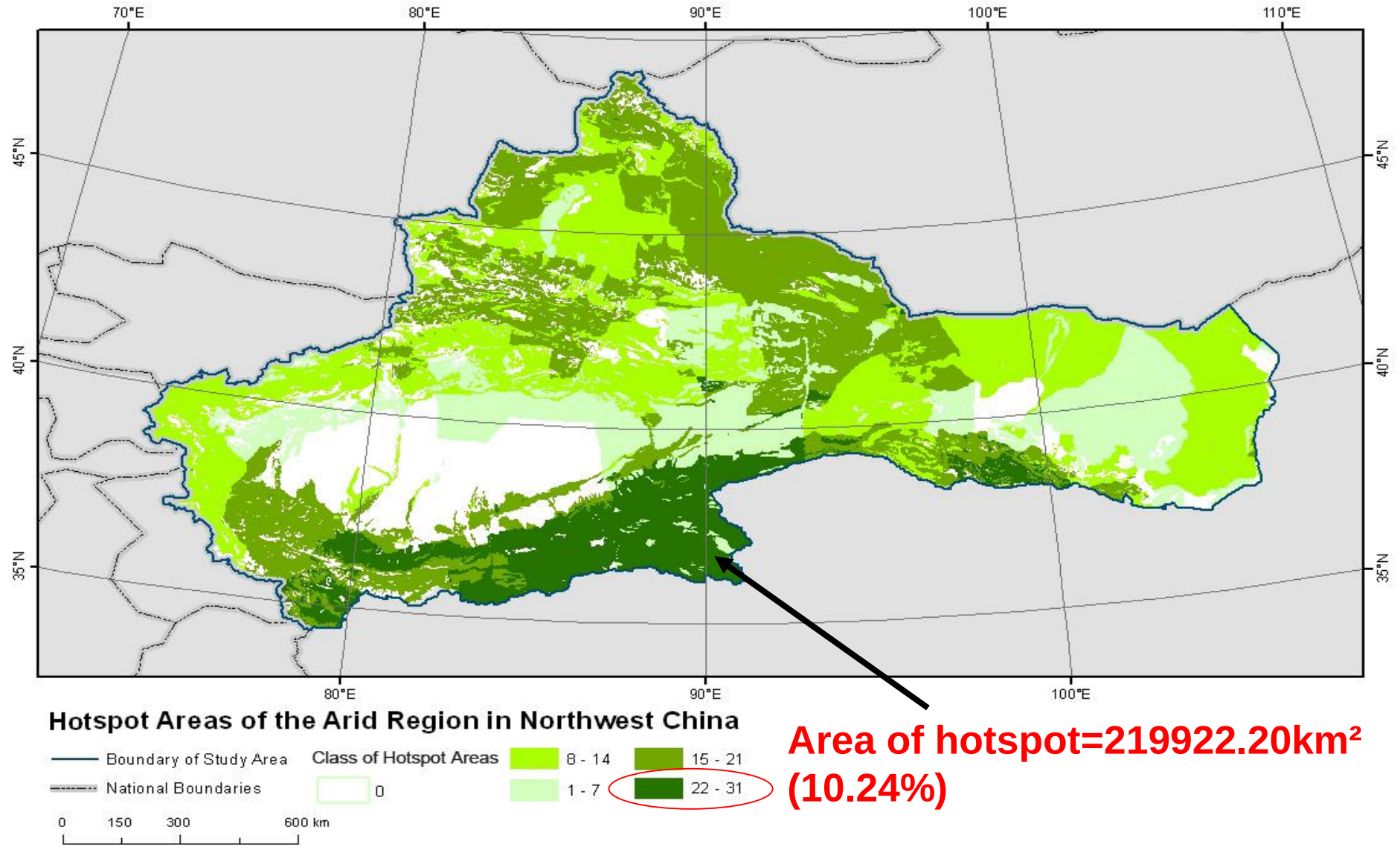
Result



Area of hotspot=219922.20km² (10.24%)

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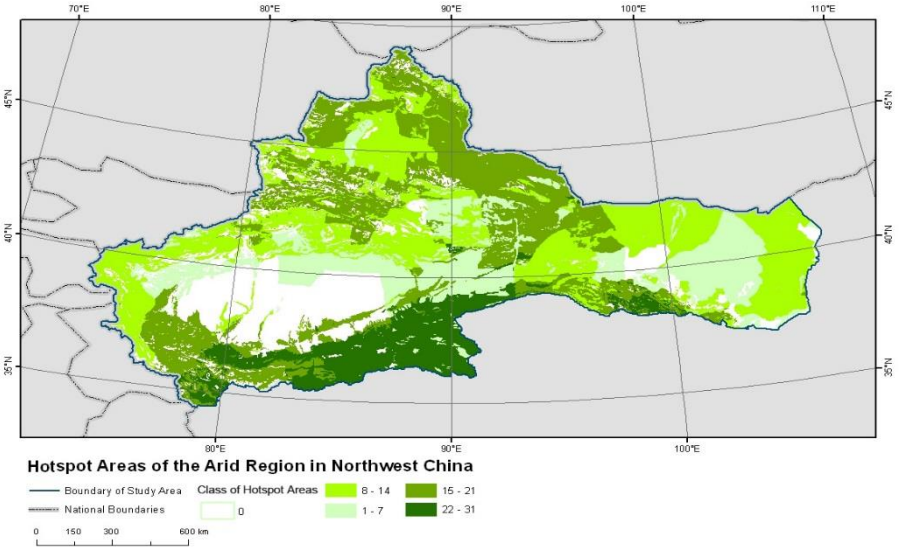
Result

- **Hotspot located in** Ruoqiang, Qiemo, Qilian

- **Ecosystem:** grassland ecosystem, vegetation- desert ecosystem, meadow ecosystem

- **Vegetation type:** temperate subshrub, short subshrubs desert; alpine meadow-steppe type; alpine sparse vegetation



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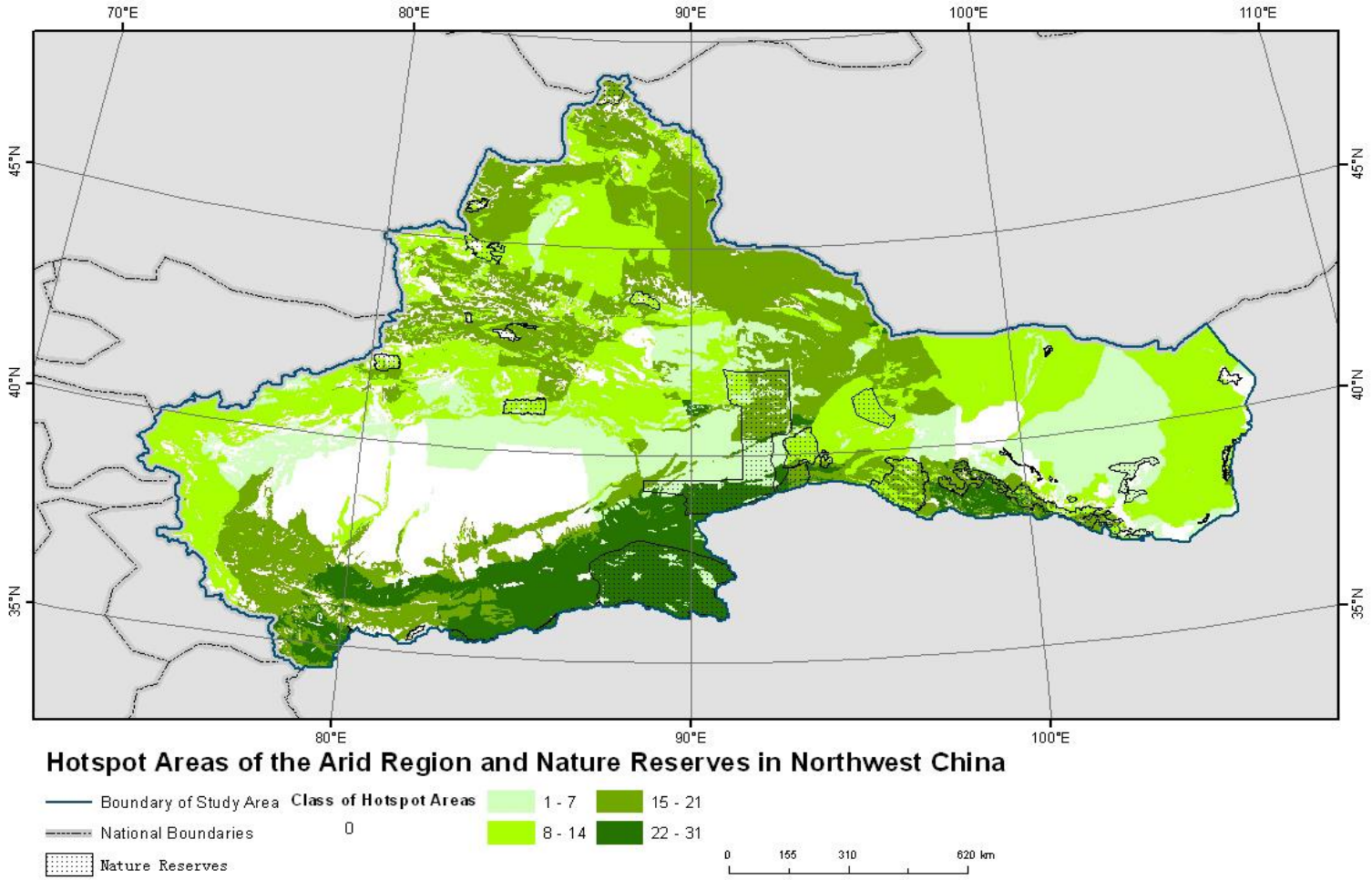
Result



There are 70806.158km² national nature reserves in hotspot area, about 32.2% of total hotspot area.

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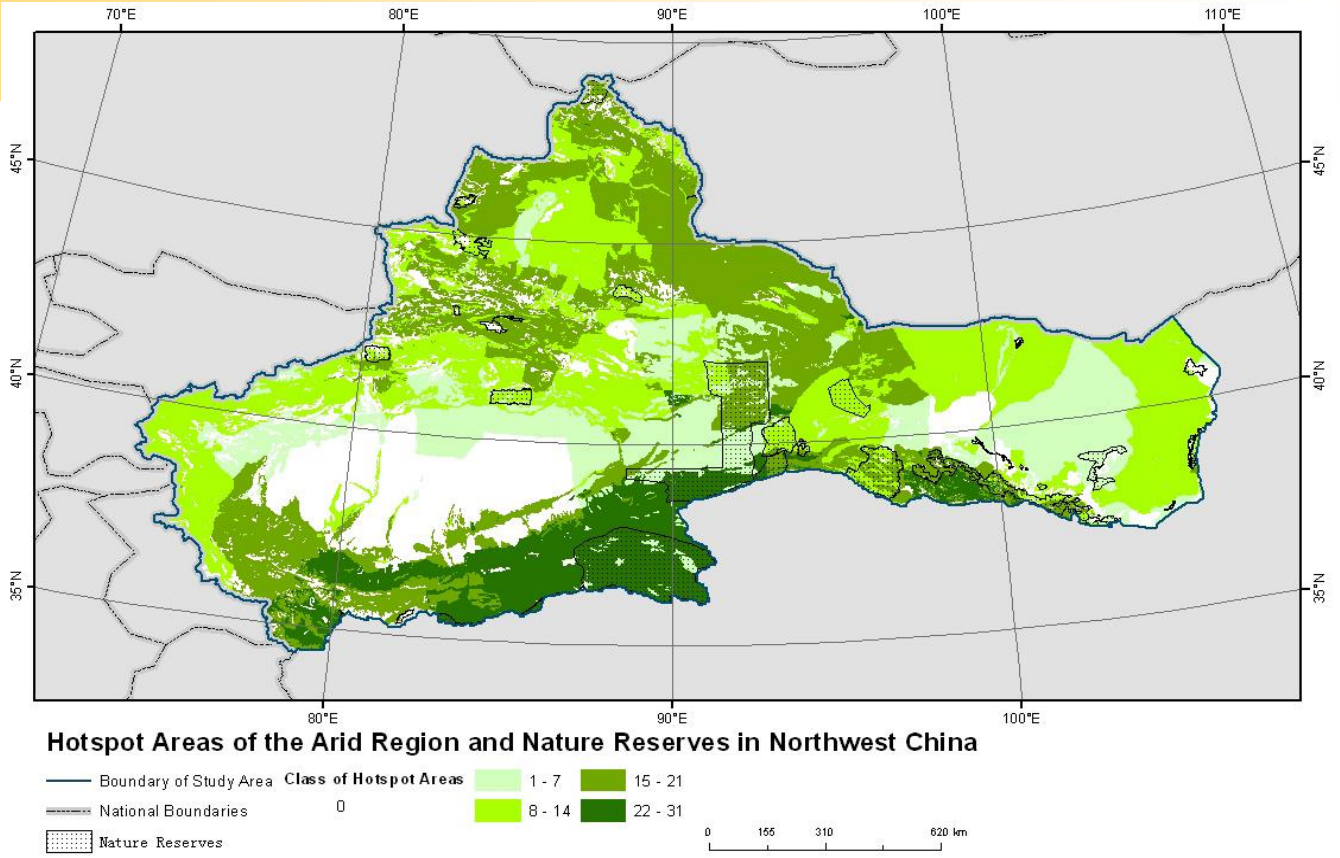
Result



The highest level hotspot / Total area=10.24%

The National Reserves area/Total hotspot area=32.2% (**3.27%** / total area**)**

GAP area is 149116.042km², about 67.8% of total hotspot

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Discussion

- Southern area would be the prior area for conservation in arid area.

- Since the 1950s, nature reserves in China presented an dramatic development. There are more than 60% hotspot area still waiting for conservation planning.

- Modifying national nature reserves in hotspot would be helpful for conservation

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Further research

1. Data
Species distribution only focus to the county level. More occurrence point still need further **investigation**s.

2.Climate
What is the **relationship** between climate change and distribution of endangered species in this area? and relationship with Water? How to respond to global climate change?

3.Conservation strategy
The potential distribution of species will change under the climate change, so does the hotspot. Therefore how to modify our conservation strategy under the climate change?

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Thanks for your attention !

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