

Distribution of the Ibex (*Capra ibex*) in Tomur National Nature Reserve of Xinjiang, China

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Abstract: Ibex (*Capra ibex*), a first grade protected animal, has not been well studied in China. Surveys were conducted to investigate the distribution of the ibex in the Tomur National Nature Reserve during October—November 2004, July 2005, and October—December 2005. The results were as follows: ① Out of five valleys, the ibex was distributed in the Qiong-Tailan, Keqik-Tailan, and Muzart Valleys; ② Ibexes were not observed in the Tomur Valley and Kuzbayi Valley in our surveys, but interview investigations indicated that they may be found here as well. Our results indicated that the nature reserve as a whole is in the distribution range of ibex and it plays an important role in protecting ibex and the alpine biodiversity. However, the uneven distribution pattern can be due to human activities. Therefore, the management of the reserve needs to be improved in the future.

Key words: Ibex; Distribution; Tomur National Nature Reserve; Alpine biodiversity

新疆托木尔峰国家级自然保护区北山羊分布调查

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摘要: 北山羊作为国家 I 级保护动物, 目前对其研究仍然较少。2004 年 10—11 月、2005 年 7 月以及 2005 年 10—12 月三次对新疆托木尔峰国家级自然保护区北山羊 (*Capra ibex*) 的分布进行调查。通过定点搜寻、样线调查以及访问调查, 其结果显示北山羊在保护区 5 个主要区域中的 3 个有分布, 这 3 个区域是: 琼台兰河谷地区、克其克台兰河谷地区、木扎特河谷地区; 在托木尔河谷和库孜巴依河谷两个区域中, 定点搜寻和样线调查均没有发现北山羊分布, 但访问调查该区域有北山羊。通过此次调查得出托木尔峰自然保护区的大部分地区是北山羊分布区, 说明该保护区在北山羊保护中的确起了重要作用, 但北山羊在保护区中的不均匀分布现状值得注意, 这种现象可能与人为活动干扰有关。

关键词: 北山羊; 分布; 托木尔峰国家级自然保护区; 山地生物多样性

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The Ibex (*Capra ibex*) is one of the least known ungulates which has been listed as endangered in the China Red Data Book of Endangered Animals and they are a first grade protected animal in China. Ibexes are known as alpine animals and are distributed in Xinjiang, northwestern Tibet, Qinhai, far northern Gansu and in western and central Inner Mongolia in China (Yang &

Feng, 1998). Due to the remote and rugged habitat, research into ibex is very limited in China. Gu (1990) and Wang (1983) have conducted surveys in the Albin Mountains, and low mountains of the Altay Range. Schaller et al (1987) have studied the distribution of ibex in Taxkorgan Nature Reserve. Xu et al (2006, 2007) have studied the population density, habitat use, and the winter

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activity of ibex in the Tomur National Nature Reserve. Despite these studies, basic information such as the distribution and population of the ibex in China is still very limited. In this paper, we try to address the detailed distribution of ibex in the Tomur National Nature Reserve through field surveys during three different periods from October 2004 to December 2005. Such information will be helpful in understanding the conditions needed for ibex survival in the reserve and management of the nature reserve.

1 Study Area and Methods

1.1 Study area

The protected area was on the southern flank of the Tianshan Mountains and encompasses about 3000km² of rugged ridges and narrow valleys with an elevation of 2 000-7000m. Its climate is cold and arid, and the mean annual rainfall is 600-700mm. Local fauna and flora is abundant and includes 28 species of moss, eight species of ferns and 634 species of spermatopytes. There are also many protected animals such as snow leopards (*Uncia uncia*), wolves (*Canis lupus*), red foxes (*Vulpes vulpes*), ibexes, snowcocks (*Tetragallus altaicus*), chukar partridge (*Alectoris chukar*), and argali sheep (*Ovis ammon*) (Mountain Investigation Team of Chinese Academy Sciences, 1985; Xu et al, 2005, 2006, 2007; Ma et al, 2006).

1.2 Method

The International Snow Leopard Trust has a standard methodology for ungulate surveying in the mountains and has been successfully used in Nepal, India, and Mongolia (Jackson & Hunter, 1996; McCarthy, 2000; McCarthy et al, 2005; Xu, 2006). We followed this methodology. Both fixed-point and route survey were conducted during the three periods of field work. Fixed-point was conducted every morning or evening for at least one hour each time with at least two observers using binoculars and high-powered spotting scopes. An entire block was scanned in fixed-point and all ibexes counted and assigned sex and age class where possible. Route survey was conducted by horse-riding or on foot. We counted every group of ibex we came across and also assigned sex and age class where possible. Interview investigations were conducted when we met shepherds in the field, and staffs of the reserve were also interviewed. After three field surveys, all of the main valleys of the reserve had been surveyed. A detailed timetable of the surveys is as follows in Tab. 1.

Tab. 1 Timetable of ibex surveys in the Tomur National Nature Reserve of Xinjiang, China in 2004 and 2005

Surveyed valley	Surveyed time
Muzart Valley	Oct 17-22, 2004; July 1-3, 2005; Oct 18-Dec 26, 2005
Kuzbayi Valley	Oct 23-26, 2004
Tomur Valley	Oct 27-Nov 3, 2004; July 8-10, 2005
Keqik-Tailan Valley	July 4-7, 2005
Qiong-Tailan Valley	Nov 4-7, 2004

2 Results

We found ibexes in three of the five valleys of the nature reserve. They are Qiong-Tailan Valley, Keqik-Tailan Valley, and Muzart Valley. Muzart Valley is the biggest valley and more groups of ibexes were observed there. We did not observe ibex during the field surveys in the Tomur Valley and Kuzbayi Valley, but interview investigations indicated that ibexes might be distributed in these two valleys. Details are as follows in Tab. 2.

Tab. 2 The distribution of ibex in the Tomur National Nature Reserve of Xinjiang, China

Surveyed valley	No. adult male	No. adult female	No. juvenile	Total number
Qiong-Tailan Valley	*			35
	*			10
	*			4
	*			7
	*			24
	*			18
Keqik-Tailan Valley	*			2
	2	4	4	10
	*			33
Muzart Valley	6	0	0	6
	0	3	3	6
	3	5	3	11
	*			14
	*			5
	*			11
	3	6	5	14
	6	9	3	18
	4	10	5	19
1	0	2	3	
3	4	3	10	
Tomur Valley	Interview confirmed distribution area but survey did find ibexes			
Kuzbayi Valley	Interview confirmed distribution area but survey did find ibexes			

*Age of ibex was not assigned.

3 Discussion

The Tomur National Nature Reserve is one of the biggest alpine nature reserves in China and is home to many rare and endangered alpine animals like the ibex, snow leopard, and argali sheep. Therefore, this nature reserve is important for the conservation of the alpine ecosystem. As ibexes are the common species of alpine ungulates in this nature reserve, its survival conditions become a good indicator when evaluating the conservation conditions of the reserve. From the results of this survey we can see that most areas of the reserve have the proper habitat for ibexes. This result is consistent with the results of Xu et al (2007) and indicated that the Tomur National Nature Reserve plays an important role in the conservation of endangered animals like ibexes.

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In the other two valleys such as the Tomur and Kuzbaya Valley we did not find ibexes through the field surveys, but interview results indicated that they may be distributed in these areas. Therefore, we concluded that the Tomur Valley and Kuzbaya Valley are distribution areas of ibexes. Further studies and surveys should be carried out to explore the reasons for this uneven distribution pattern.

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