

A PRELIMINARY INVESTIGATION INTO THE GEOGRAPHIC DISTRIBUTION
OF THE SNOW LEOPARD Panthera uncia Schreber

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Xining Peoples Park

Panthera uncia, or ounce, is also called the "grass panther" by local people. It is a precious species which is at the point of extinction, and has now been listed in the first group of animals under State protection. It is a typical high mountain animal, accustomed to the cold climate. Its habitat has snow throughout the year. There have been some preliminary reports on the geographic distribution of the ounce in Qinghai Province (Shou Zhenuang et al 1962, Zhang Jie et al 1963). In order to get a clearer picture of its numbers and geographic distribution in Qinghai province, as well as its way of life, the author visited Liugou, Shiqiao, Qingyanggou, Baishutai, Qingdapan in Babao commune, and Branma, Daquan, Kekeli in Yeniugou region of Qilian County; Zongjia, Balong, Xiangride, Gouli in Dulan Country, Yushu Country, Zhido County, Qiumalai County, Zadao County etc in the Yushu Tibet Autonomous Region, and penetrated deeply into the area where ounces appeared in the years 1973, 1974, 1975, 1978, and 1981. The investigation was conducted by following tracks, and examining faeces and food remains, as well as from discussions with local people and units which purchase husbandry products, and purchase records for the past 17 years by the Peoples Park Zoo in Xining, capital of Qinghai Province.

1. Habitat, environment and hunting activities

The ounce is found in four types of habitat:

1. high mountain rocky areas;
2. High mountain grasslands;
3. High mountain scrub;
4. Margins of mountain coniferous forests.

These are all areas where the bharal Pseudois nayar appears, and provides the ounce with its main prey. It also takes musk deer Moschus spp, roe deer Capreolagus spp and hares.

1. High mountain rocky area. This is generally 4,000-4,500 metres altitude and has snow throughout the year except in the lowest part where there is high altitude vegetation, such as Saussurea, Kobresia pygmaea, Drab etc. On summer evenings the bharal graze in this area. The ounce usually follows the herd, waylays its prey and kills it by biting the throat.

2. High mountain grasslands 3,700-4,000 metres with Kobresia tibetica vegetation dominant, along with (grass Sha Cao and Hé Cao). This is the main habitat of the bharal, which may be found grazing among domestic stock. The author has observed bharal carcasses left by ounce in Babao commune of Qilian County, and found plant fibres in the faeces of ounce.

3. High Mountain scrub 3,400-3,600 metres with Salix oritrepha, Carex etc. The ounce often follows bharal grazing in this area in winter.

4. Margins of coniferous forest on slopes 3,000-3,300 metres. Where the slope faces the sun the main vegetation is (fir Yuanbai), while on the shady side there is (fir Yunshan). The ounce appears in this area during the winter and early Spring following the bharal. It sometimes enters sheep folds to catch sheep.

II. Geographical Distribution of Ounce

The map is based on field investigations from 1968-84 and information obtained from units which purchase ounce pelts. In Fig. 1 it can be seen that Qinghai ounces are found mainly in (1) Guide, (2) Huzhu, (3) Menyuan, (4) Qilian, (5) Tianjun, (6) Dulan, (7) Geermu, (8) Guina, (9) Xinghai, (10) Zhiduo, (11) Zaduo, (12) Nangqian, (13) Yushu, (14) Chengdo, (15) Quimala, (16) Maduo, (17) Maqin, (18) Jiuzhi, (19) Banma, (20) Dari counties, in some parts of (1) the Grand Qaidam Basin, (2) Qilian Mountains, (3) Tulai Mountains, (4) South Tulai Mountains, (5) South Shulai Mountains, in the north of the province, (6) Bayan Har Mountains, (7) Burhan Badai, (8) Tangula Mountains in the south of the province. One may catch a glimpse of the ounce in (10) Xiqing Mountains Amne Machin in the east of the province. (11) Kekexili area, which is uninhabited, has to be investigated.

III. Age Definition in the Ounce

Ounce come into oestrus from April to June each year. The period sometimes lasts until July. The number of cubs found by hunters in a single lair is usually 2-3. Ounce raised in Xining Shi People's Park reach sexual maturity at three years and begin to mate. In 1984 the three cubs conceived and born in the zoo represented the first breeding success in China.

The age of a captured ounce is determined by the length of the tail. May is presumed to be the date of conception. Based on records of ounce raised in the zoo the following table has been prepared relating age and the length of the tail:

IV. Purchase of Ounce

To meet exhibition needs in zoos in China, the Xining Shi People's Park purchased 73 (43:33) ounce caught in 11 counties of five Regions in Qinghai Province from 1968-84. They include 44(23:21) aged six months or less, nine (6:3) one year old, two (2) two years old, 18 adults (9:9) three years or more. Most of the ounce were caught in Yeniu Gou Commune of Qilian country in Haibei Region, Shule commune in Tianjun County in Haixi Regio, Gouli Commune in Dulan County and Zaduo County in Yushu Region.

Table 2 is based on the 17 year purchase records of Xining Park, including area of origin, time of purchase and age. The table indicates that among the 19 groups of siblings below six months of age, 13 were two cub litters (1:1), which is 68.4% of the total; four were three cub litters (2:1), or 21.1%; and two were three cub litters (1:2), or 10.5% of the total.

V. Summary

1. Ounce live at an altitude between 3,000 and 4,100 metres, and their habitats include high mountain bare rocky areas, high altitude grasslands, high mountain scrub, and the margins of slope coniferous forests.
2. The geographic distribution of Qinghai ounce is mainly in the Qilian Mountains, Tulai Mountains, South Tulai Mountains, Shulai Mountains, Bayan Har Mountains, Bulhan Budai Mountains, Animaqin Mountains, Tangula Mountains, in the Kunlun Range. The range covers 20 countries in Qinghai Province and most of the area in the Grand Chaidam Basin. Ounce concentrate mostly in Qilian County, Tianjun County, Dulan County, and Zaduo County.
3. Ounce produce 2-3 cubs at a time. They reach sexual maturity at three years of age. The oestrus period is April-June each year.

REFERENCES

- CHINA ECONOMIC ANIMALS (MAMMALS), edited by Shou Zhenhuang, Science Press 1964
- ANIMAL RESEARCH 15(1) pp 125-137. Qinghai Geographical Distribution (Mammals) by Znagn Jie, Wang Zongyi. 1963.

表 1 年(月、日) 龄与尾长的关系

Table 1 The relation between age(Year,Month,Day)and tail length.

年龄(年、月、日) Age(Year,Month,Day)		尾长(厘米) Tail length(cm)
50日	50 Days	27—30
2月	2 Months	32—36
3月	3 Months	39—42
4月	4 Months	45—49
5月	5 Months	50—58
6月	6 Months	58—62
1年	1 Year	73—80
2年	2 Years	80—90
3年	3 Years	95—102

表 2 西宁人民公园1968—1984年雪豹收购数

Table 2 The number of purchased Ounces in Xining People's Park in 1968—1984.

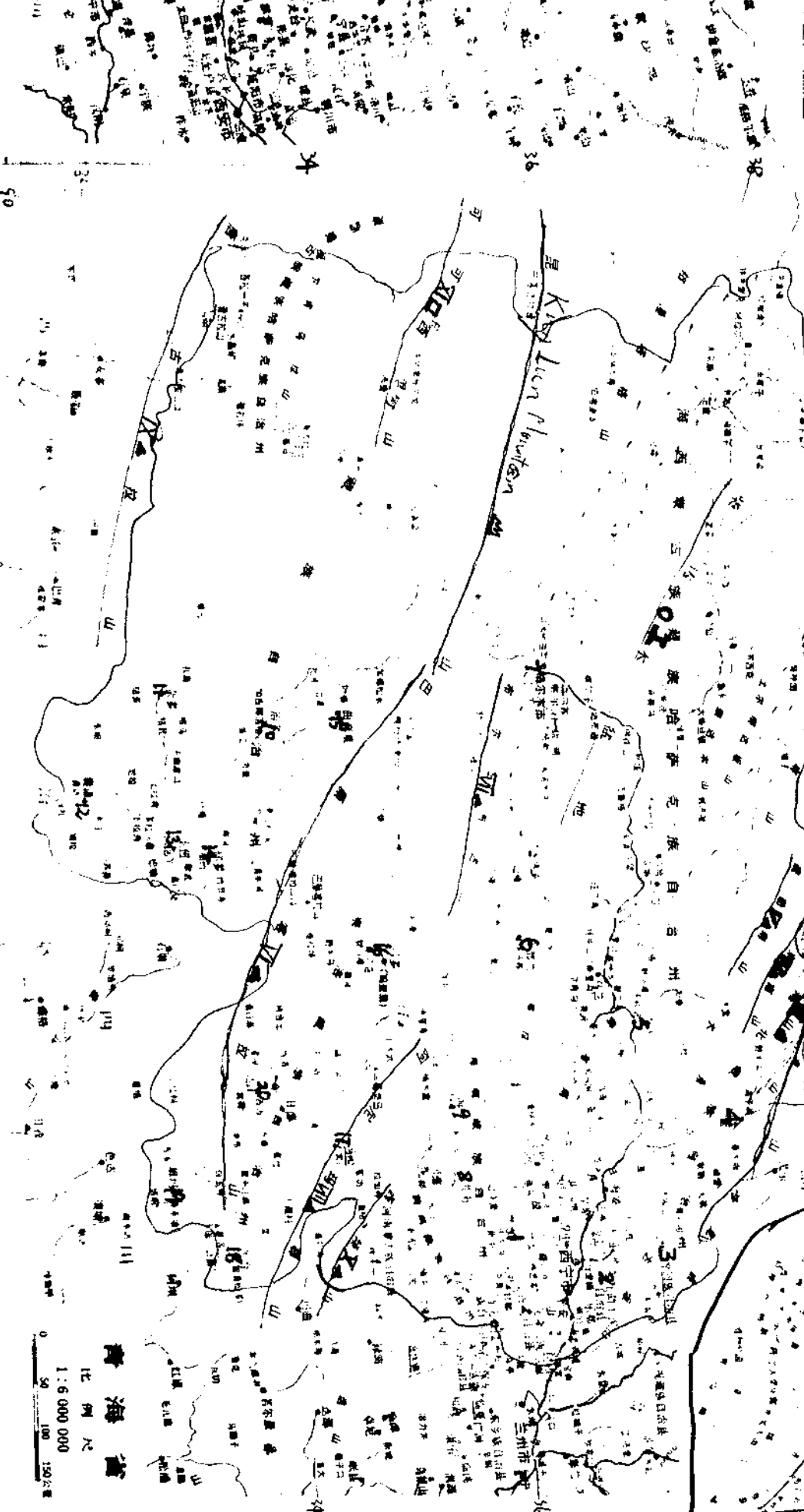
州 (地区) Prefecture	产地 Producing area			收购时间 Time of Purchased	收购数量 Number of pur- chased		年 龄 Age				
	县 County	乡 Village	山 Mountain		♂	♀					
海东地区 Haidong Prefecture	贵德 Guide	杂让 Garang	群加山 Qunjashan	1976.8.5	2	1	2月 2 months old				
	互助 Huzhu	加定 Jadin	祁连山 Qilianshan	1972.4	1	1	未睁眼 Eyes not open				
海北藏族自治州 Tibetan Autonomous Prefecture of Haibei	门源 Menyuan	仙米 Xianmi	仙密大山 Xiaomidashan	1976.5	1	1	20日龄 20days old				
	祁连 Qilian	扎麻什 Zhamashi	东沟脑 Donggounao	1968.10		1	成体 Adult				
				1976.5	1	2	35日龄 35 days old				
		野牛沟 Yieniougou	多隆 Doilong	马鞭子山 Maanzishan	1977.5	1	1	未睁眼 Eyes not open			
					八宝 Babao	柳沟脑 Liougounao	1975.1		2	成体 Adult	
						清大板 Qindaban	1978.1	1	1	成体 Adult	
					野牛沟 Yieniougou	沙隆河东山 Shashahedoushan	1973.12	1		1.5岁 One and a half years old	
							小水沟 Xiaoshuigou	1974.1	1		成体 Adult
								1975.3		1	1年龄 One year old
							铁木勒沟 Tiemulegou	1977.7	2	1	15日龄 15 days old
							哈熊峡 Haxiongxia	1978.11	1	1	半年龄 Half an year old
							边麻沟 Bianmagou	1979.3	1		1年龄 One year old
							二道沟 Erdaogou	1979.4		1	成体 Adult
							一道沟 Yidaogou	1979.7	1		1年龄 One year old
					柯柯里 Kekeli	1981.1	1		2年龄 2 years old		
					祁兰 Dulan	巴卧 Balong	依克西勒 Yikegole	1969.8	1	1	幼体 Young
香加 Xiangjia	茶卡日塔 Chakarita	1977.5	2	1				幼体 Young			
		1979.2	1					成体 Adult			
沟里 Gouli	塔妥前沟 Tatuoqiangou	1977.5	1			1年龄 One year old					
		1977.8		1		1年龄 One year old					
		1983.5	2	1		50日龄 50days old					
		吞日德中庄 Xiangridezhongzhuang	塔妥前后沟 Tatuoqianhougou	1984.5		1	1	成体 Adult			
1984.5	1					1年龄 One year old					
碌碌前沟 Liuluhuangqiangou			1982.12	1		1	成体 Adult				
碌碌后沟 Liuluhuanghougou			1983.3			1	1年龄 One year old				

Mountains Basins

- I Orank Chaidamu (Qaidam) Basin
- II Qilian Mountains (North)
- III Tulai Mountains (North)
- IV South Tulai Mountains (North)
- V South Shulai Mountains (North)
- VI Bayan Har Mountains (Middle)
- VII Burhan Budai Mountains (Middle)
- VIII Anmang Mountains (Middle)
- IX Tangula Mountains (South)
- X Xi qing Mountains (East)
- XI Kekexili Non-habitat Area (West)

甘肃省

比例尺 1:10,000,000



- 20. Da...
- 19. Ba...
- 18. Ji...
- 17. Ma...
- 16. Ma...
- 15. Qian...
- 14. Che...
- 13. Xu...
- 12. Nan...
- 11. Z...
- 10. Zhu...
- 9. Xin...
- 8. Gu...
- 7. Ge...
- 6. Dal...
- 5. Tian...
- 4. Qian...
- 3. Ma...
- 2. Hu...
- 1. Gu...

Qinghai Province

青海省

比例尺 1:6,000,000

0 50 100 150公里

青海雪豹地理分布的初步调查

廖炎发

(西宁人民公园)

关键词: (Key words): 雪豹(Ounce, *Panthera uncia*), 地理分布 (Geographical distribution), 栖息环境(Habitat environment)。

雪豹 (*Panthera uncia* Schreber) 俗称草豹, 为濒危珍兽, 现已列为国家一类保护动物, 属典型高山动物, 耐寒冷, 棲息地常年积雪。有关雪豹在青海境内的地理分布, 以往已有初步报道 (寿振黄等, 1962; 张洁等, 1963)。为了进一步摸清雪豹在青海省境内的数量分布及生活习性, 笔者于1973、1974、1975、1978、1981各年在祁连县八宝乡的柳沟、石桥、青羊沟、柏树台、清大板及野牛沟乡的边麻、大泉、柯柯里地区; 都兰县的宗加、巴隆、香日德、沟里及玉树藏族自治州的玉树、治多、曲麻来、杂多等县, 深入雪豹活动地区, 采用跟踪足迹、粪便及食物残骸的方法进行调查, 并访问当地群众及畜产品的收购部门, 结合西宁市人民公园17年来的收购记录, 综合整理如下。

一、栖息环境及猎食活动

雪豹的栖息环境有4种, 即高山裸岩、高山草甸、高山灌丛和山地针叶林缘。这4种生境均为岩羊出没之地, 雪豹则以岩羊为主食, 也食麝、兔、野兔等。

(1) 高山裸岩 一般海拔4000米以上, 其中4500米以上为永久冰雪覆盖层, 4100—4500米为堆积成片的砾石和岩屑, 4000米附近有高山植物, 如风毛菊(*Saussurea*)、小蒿草(*Kobresia pygmaea*)、葶苈(*Drab.*)等。夏季黄昏时, 岩羊常来这里觅食, 雪豹则随羊群活动, 常埋伏以突然袭击方式捕食岩羊, 咬其喉部使之死亡。

(2) 高山草甸 海拔3700—4000米, 植物以藏蒿草(*Kobresia tibetica*)占绝对优势, 伴生种中, 莎草和禾草数量较多。此地带为岩羊主要棲息场所, 常可观察到岩羊与家畜混群在同一地点觅食。笔者曾于祁连县八宝乡夏季草场发现岩羊被雪豹吃剩的残骸, 在雪豹粪便中还发现有植物纤维。

(3) 高山灌丛 海拔3400—3600米, 主要植物有山生柳(*Salix oritrepha*)、苔草(*Carex*)等。冬季雪豹随岩羊多在此活动。

(4) 山地针叶林缘 海拔3000—3300米, 阴坡以云杉为主, 阳坡多为圆柏。冬春大雪以后, 雪豹常随岩羊来此地活动, 有时由于饥饿, 竟闯入羊圈盗食绵羊。

本文于1984年7月17日收到。

fir
(*Cunninghamhamia*)
(*cryptomeria*)

yuán bāi

shā cǎo

hé cǎo

Yán Yáng

shingle, gravel.

prairie.

roe duck
squirrel

munt-deer

rabbit, wild

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3年	3 Years	95—102

四、雪豹收购

为供全国各动物园观赏需要,西宁市人民公园自1968—1984年收购来自青海5州11县捕获的雪豹73只(40♂,33♀),其中6月龄以下的雪豹41只(23♂,21♀);1年龄的9只(6♂,3♀);2年龄的2只(2♂);成年雪豹(3龄以上)18只(9♂,9♀)。内中捕获数量较多的有海北州的祁连县野牛沟乡,海西州的天峻县疏勒乡,都兰县沟里乡,玉树州的杂多县。

根据该园17年收购雪豹的产地、时间、年龄列表2。表2说明,在6月龄以内的19窝幼豹中,每窝2只,雌雄各1只的有13窝,占总窝数的68.40%;每窝3只,2雄1雌的有4窝,占总窝数的21.1%;1雄2雌的有2窝,占总窝数的10.5%。

五、小 结

(1) 雪豹生活在海拔3000—4100米的高山裸岩、高寒草甸、高山灌丛和山地针叶林缘4种环境中,它的主要食物是岩羊。

(2) 青海省雪豹主要分布在昆仑山系的祁连山、托勒山、托勒南山、疏勒山、巴颜喀拉山、布尔汗布达山、阿尼玛卿山、唐古拉山,遍及青海省内20个县及大柴旦部分地区。分布数量较多的县为祁连、天峻、都兰、杂多4县。

(3) 雪豹每胎仔数2—3只,3龄即达性成熟,繁殖期为每年4—6月。

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都兰 Dulan		巴隆 Balong	依克高勒 Yikegaole	1969.8	1	1	幼体 Young	
		香加 Xiangjia	茶卡日塔 Chakarita	1977.5	2	1	幼体 Young	
		宗加 Zongjia	克尔吾德尔金 Kerwuderjin	1979.2	1		成体 Adult	
		沟里 Gouli			1977.5	1		1年龄 One year old
			塔妥前沟 Tatuoqiangou	1977.8		1	1年龄 One year old	
				1983.5	2	1	50日龄 50days old	
		香日德中庄 Xiangride- zhongzhuang	塔妥前后沟 Tatuoqianhougou		1984.5	1	1	成体 Adult
					1984.5	1		1年龄 One year old
				硫磺前沟 Liuhuangqiangou	1982.12	1	1	成体 Adult
			硫磺后沟 Liuhuanghougou	1983.3		1	1年龄 One year old	

续表 2

Tibetan	天峻	苏勒		1983.5	1		成体 Adult
Autonomous	Tianjun	Suic		1983.6	1		成体 Adult
Prefecture				1983.10	1		成体 Adult
of Hainan			碗碗前后沟	1984.2	1	1	成体 Adult
			Liouhuang-	1984.4		1	成体 Adult
			hongou	1984.4	1		2年龄 2 years old
				1984.4	1		1年龄 One year old
玉树州	杂多	且容 Danrong	玛尺贡日玛	1974.11	1	1	30日龄 30 days old
Tibetan	Zadoi	且容 Argasai	石龙寨 Shilongzai	1978.9	1	1	未睁眼 Net open eyes
Autonomous		阿多 Adoi	巴群寨 Baqunzai	1978.9	1	1	40日龄 40 days old
Prefecture	玉树 Yushu	巴塘 Batang	真钦果	1975.9	1	1	幼体 Young
of Yushu	囊谦 Naqian	娘拉 Niangla	扎马果 Zhamaguo	1977.6	1	1	幼体 Young
果洛州	玛多 Madoi	花石峡 Huashixia	长石头石 Changshitoushi	1972.7	1	1	未睁眼 Not open eyes
Tibetan		雪山 Yueshan	阿尼玛卿山	1973.7	1	2	未睁眼 Not open eyes
Autonomous			Animaqingshan				
Prefecture	久治 Jigzhi	苏乎日麻	年宝一日寨	1974.6	1	1	幼体 Young
of Guoluo		Suhurima	Nianbao-Risan				

参 考 文 献

- 寿振黄主编 1964 中国经济动物志(兽类), 科学出版社。
 张道藩 王宗沛 1963 青海兽类区系, 动物学报 15(1):125-137。

二、雪豹分布

根据1968—1984年的野外调查和向收购部门了解，初步绘制了青海雪豹分布图（图1）。从图1可见，青海省雪豹主要分布在贵德、互助、门源、祁连、天峻、都兰、格

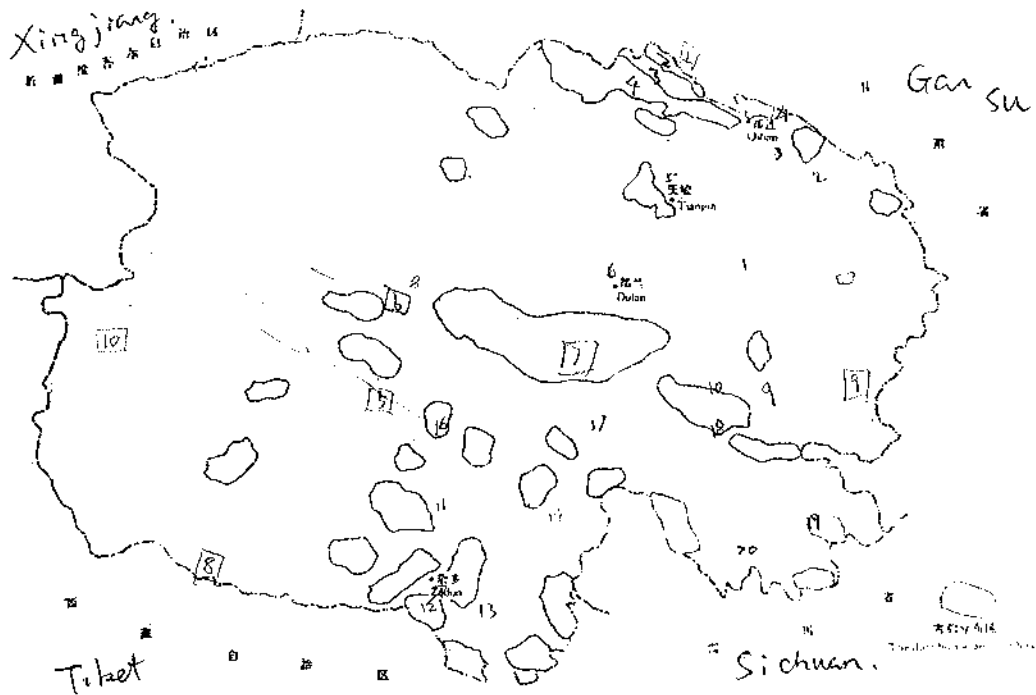


图1 青海雪豹的地理分布

Fig. 1 The geographical distribution of Ounces in Qinghai Province.

尔木、贵南、兴海、治多、杂多、~~囊谦~~、~~曲麻莱~~、~~玛多~~、~~玛沁~~、久治、班玛、达日等县；大柴旦的部分地区；北部的祁连山、托勒山、托勒南山、疏勒南山；中部的巴颜喀拉山、布尔汗布达山、阿尼玛卿山及南部的唐古拉山；东部的西倾山偶有发现，可可西里无人区尚待调查。

Bayan Har Shan.

三、雪豹年龄划分

雪豹每年4—6月进入繁殖期，偶有延至7月。猎人在野外于一窝内捕获的幼豹均为2—3只。西宁市人民公园饲养的雪豹3年即达性成熟，并开始发情交配，于1984年9月在我国首次繁殖成功，产仔3只。对捕获雪豹的年龄划分以尾长为主要依据，并结合其繁殖期进行推算（推算时将繁殖期定为5月）。根据该园饲养雪豹的记录，将雪豹的尾长与年龄关系列于表1。

- ⑮ NAN QIAN
- ⑮ NIDA
- ⑮ YUXU

外文摘要 (Abstract)

THE GEOGRAPHICAL DISTRIBUTION OF OUNCES
IN QINGHAI PROVINCE

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This paper deals with the geographical distribution of ounces (*Panthera uncia* Schreber) in Qinghai Province. Ounces are distributed in 20 counties—Guide, Huzhu, Menyuan, Qilian, Tianjun, Dulan, Golmud, Guinan, Xinghai, Zhidui, Zadoi, Nangqen, Yushu, Chindu, Qumarleb, Madoi, Maqen, Jigzhi, Baima, Darlag. Among them, there are 4 counties—Qilian, Tianjun, Dulan, Zadoi, in which the numbers of ounces are bigger.

The numbers of ounces are shown in table 2. There are altogether 73 ounces (40♂, 33♀) which is supported to every park of China for ornamental. They were captured by fellow-villagers, and 44 ounces (23♂, 21♀) of them are below 6 months old, 9 ounces (6♂, 3♀) of them are 1 year old, 2 ounces (2♂) are 2 years old, 18 ounces (9♂, 9♀) are adults.

Ounces live at an altitude of 3000—4100 metres above the sea, and prefer to eat Bharal (*Pseudois nayaur*). Its breeding period goes from April to June, the number of embryos being 2—3.

A female ounce was successfully reproduced for the first time at Xining People's Park of China, in September, 1984, and she gave birth to 3 young ounces.