

NOTES ON WHITE-LIPPED DEER (*CERVUS ALBIROSTRIS*) IN CHINA

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Abstract

In the last ten years, the author has carried out many surveys on the white-lipped deer of Qinghai-Xizang (Tibet) Plateau and its adjacent regions and has collected a wealth of data on this species. In 1984, another investigation had been carried out in one of the main native areas of this deer. These observations show that its distribution range lies between 92.5° to 120° east longitude, 29.5° to 38.7° north latitude. This is a social animal, it breeds once a year and each female only gives birth to one young. The adults feed mainly on grasses and sedges.

Key words (关键词): White-lipped deer, *Cervus albirostris* (白唇鹿), Feeding habit (食性), Reproduction (繁殖), Morphology (形态).

Introduction

The white-lipped deer or Thorold's deer (*Cervus albirostris*), also called yellow deer, is a valuable animal, which lives in some alpine regions of China. No detailed research has ever been carried out on this deer since it was discovered in 1883 by Blanford. Even in Monograph of Economic Animal of China-Mammals (1962) the information on this species is fragmentary and not up-dated. In the last ten years, I have made some surveys on the mammalian fauna of Qinghai-Xizang Plateau and in its adjacent regions. In 1984, I carried out an investigation on this deer in Zhidui County, one of the main native ranges of this species, situated in the upper course of the Yangtze River, along the bank of the Tongtian River, in the southwest of Qinghai Province. My main purpose was to get a better understanding of the ecology and distribution of this species and to provide some basis for further research of white-lipped deer.

1. **Biometrics** White-lipped deer is a large animal. Table 1 is based on the measurements from 28 four-year-old individuals.

Table 1 The measurements of *Cervus albirostris* (Length: mm)

表1 白唇鹿的外形量度 (长度: 毫米)

Numbers 数量	Sex 性别	Locality 产地	Weight 重量	Head and body 体长	Height at shoulder 肩高	At rump 臀高	Tail 尾长	Ear 耳长	Hind foot 后足长
27	♂	Zhidui, Qinghai 青海治多	—	1794.7 1550—1900	1334 1200—1450	1920 1150—1350	103 80—120	250 210—280	503 480—520
1	♀	Qilian, Qinghai 青海祁连	196.1kg	1880	1260	1250	62	260	330

The skull of the animal is long and narrow, the greatest length of which is 372.7

mm by an average. The length of its rostrum is about the half of that of the skull. Its posterior wings of the nasals is especially wide. The whole lachrymal bone sinks into deep holes presenting semi-circular. The frontal bone is broad, the front part of which is slightly sunken while the back part protruded into a ridge. The upper cheek teeth is comparatively short, about 28.5% of the skull. The dental formula, $0133/3133=34$. The table 2 shows the measurements of the skull.

Table 2 Carnial measurements of *Cervus albirostris* (Unit: mm)

表2 白唇鹿的头骨量度 (单位: 毫米)

No. 号数	Locality 产地	Greatest length 最大长	Palatal length 腭长	Zygomatic width 颧宽	Interorbital breadth 眶间宽	Length of rostrum 吻长	Nasal length 鼻骨长	Nasal width 鼻骨宽	Upper cheek teeth 上齿列长	Brain case 脑颅宽
001		398	219	183.6	124.7	218	144.8	74.5	105.0	100
A2		388	206	169.2	112.5	208	140.0	62.0	111.1	96.6
A3		404	215	173.1	—	214	150.0	70.7	109.2	103.3
A4	Qinghai	350	189	149.3	111.4	192	—	60.4	105.0	91.4
A1	Zhidoi	—	—	136.9	94.3	—	—	50.5	102.4	85.7
A5	青海治多	369	204	163.9	110.4	—	138.8	60.0	99.5	93.8
A6		340	188	151.1	104.3	189	—	56.0	114.7	85.0
A7		360	195	151.5	107.6	193	—	56.0	107.0	93.3
A8		—	—	153.0	106.9	—	—	59.0	103.7	90.4
A9	Qinghai Qilian 青海祁连	372	201.3	104.4	114.3	205	141.4	66.2	107.8	95.2

2. Biology The habitat of the animal is in the shrubby mountains, the altitude of which is on less than 3500 m above sea level. It can even live in the bare rocky mountain regions at an altitude of 5100 m or above (Fig.1).

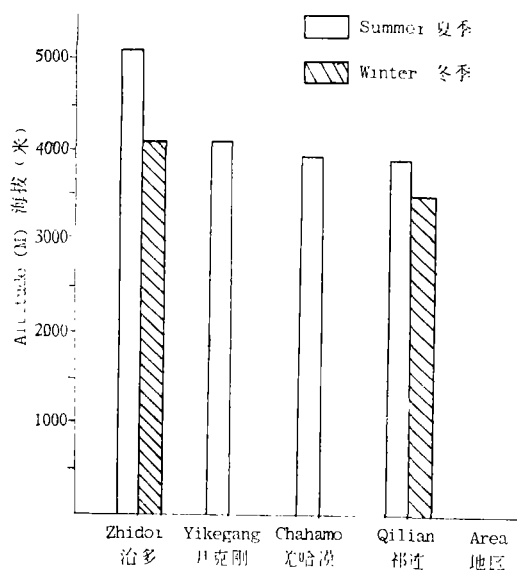


Fig.1 The altitudes of distribution for the *Cervus albirostris* in different areas during summer and winter.

图1 夏冬季白唇鹿在不同地区分布的海拔高度

flat and open places. It is seldom to be seen in places where the terrain is precipitous with sheer cliffs and over-hanging rocks. Yet blue sheep (*Pseudois nayaur*) and argali (*Ovis*

The shrub cover consists of various kinds of azaleas (*Rhododendron capitatum*, *R. thymifolium*, etc.), willows (*Salix oritrepha*) and bush cinquefoil (*Potentilla* sp.) etc. In the higher region, white-lipped deer is seen in meadow grasslands, swamp meadows surrounded by mountains or in the alpine meadows at the foot or on the ridge of mountains. White-lipped deer does not live under shrubby-line. Only in one or two places in the seasons of higher temperature, a few may be seen under the shrubby-line. For instance, at noon of May 31, 1972, on the mountain in the south rim [of Qaidam Basin, 5 stags were observed resting in the sparse juniper (*Sabina tibetica*) wood under the shrubby-line.

White-lipped deer tends to live in semiopen environmental condition. Although there are rolling mountains and hills within its distribution range. White-lipped deer always selects comparatively

ammon hodgsoni) occur there. Blue sheep, argali, snow cocks (*Tetraogallus tibetanus*) and Brandt's mountain finches (*Leucosticte brandti*) often feed with white-lipped deer on the meadows under naked rocks, too. At the foot of mountains, white-lipped deer coexists with alpine weasels (*Mustela altaica temon*), masked polecats (*Mustela eversmanni larvatus*), woolly hares (*Lepus oiostolus kozłovi*), plateau pikas (*Ochotona curzoniae*) and himalayan marmots (*Marmota himalayana*).

There is almost no summer in the distribution range of white-lipped deer all the year round. It is always under the low or lower temperature of autumn, winter and spring. Freezing and frost seasons are long. It may be snowing every month in these regions. Data collected at 4086 m above sea level, in Zhidui county, Qinghai province in 1970, 1980—1983 prove that only in 5 months the temperature is above 0°C there. The annual mean temperature is -1.76°C. There are 273 freezing days and only about 12 days without frost in a year.

White-lipped deer is a social animal. The adult males and females live separately except in the mating season. They roam mainly at dawn and dusk in certain open valleys at the foot and on the ridge of mountains. In daytime, they retreat to secluded places to rest. In the warmer months (i. e. May, June, July, August and September), they spend most of the time at the higher altitudes. In September, the snow on the mountains does not melt, but becomes deeper and deeper and the water begins to freeze. Therefore, deer are compelled to move to the lower areas.

White-lipped deer breeds once a year. The breeding season differs in regions of different altitude. For example, in the central area of Qilian mountain in the north of Qinghai (close to Qilian county), the mating season of this species ranges from early October to early November, while in the west region (Tuole county) where the altitude is over 3900 m, the mating season occurs half a month later than that. The mating season in southern Qinghai (where the altitude is over 4100m) is the same of that in the western region.

When the mating season starts, the stag is excited, active and eats almost nothing. He roars day and night and follows the doe closely. Fighting for does is very fierce between stags. Clashing, tussling and pursuing opponents, their activities increase. At last, only the winner can get access to one or two does and can mate with them. The others may only look at these from a distance. As soon as oestrus doe has been mated, the stag will leave her alone and will go to mate with other does, or he will fight for new mates. Oestrus lasts one day and one night. The whole mating season lasts about 30 days. When the mating season is over, stags and does continue to live separately, while the young stags (Less than 4-year-old) still stay with the doe group. The adult stag group moves about in small bands, thin and tired, at this time. Except for eating and drinking, their activity is strongly reduced. They live such a way of live through the whole winter and till next early spring. In the next late spring, the ground is gradually thawing and all the plants are green up. The stags get fat. Their range becomes larger and larger. With the strengthening of the health, the old antlers of the stags fall off successively and the young pilose antlers grow up. The overgrown hoof shells of some stags start to crack and drop with the increase of the amount of their movement. At the same time, the winter pelage is gradually shed and the summer pelage grows out. In summer, the stags have become very strong and their young antlers fork into 3—4. They can be found all over mountains and hills. At sunny noon, you can see stags bathe in the rivulets and marsh ponds at the foot of mountains. In autumn, they get plump and sturdy. Their pilose antlers have generally grown up. The aged upper epidermis falls off and the boned antlers are completed. Soon after, the mating season comes again.

The mated does will begin to give birth at the end of May till late June next year. The whole pregnancy period is seven months. Each mother produced only one calf per year. They leave the deer group to give birth in some lonely and quiet places, such as deep shrubby gorges with high rocks around. As soon as the fawn is delivered, the mother licks clean the mucus on fawn's body and eats the placenta afterwards. Then it leaves

the fawn alone and moves about. The mother nurses its baby at irregular intervals and keeps watching it from a nearby location. The newborn fawn is very weak. What it can do is only to rest on the ground. About 20 hours later, it can stagger along for short

Table 3 Measurement of the fawn 20 hours after its birth (Length: mm., Weight: g.)

表3 产下20小时后的鹿羔量度 (长度: 毫米; 重量: 克)

Sex 性别	Locality 产地	Weight 重量	Head and body 体长	High at shoulder 肩高	At rump 臀高	Tail 尾长	Ear 耳长	Hind foot 后足长
♂	Zhidai, Qinghai 青海治多	10000	680	610	600	45	135	300

distances. One month after, it can chew plants a little. The nursing period lasts to the next mating season. If the mother has not conceived again, the nursing period will last till the next April or May. If the fawn is a male, its young pilose antlers can be seen at this time.

The Tibetan hunters maintain that does can breed at the age of 3, whereas only the 5-year-old stags can take part in mating.

The white-lipped deer takes mainly grasses (Gramineae) and sedges (Cyperaceae) for food. But the composition of its diet changes in accordance with environmental conditions. For example, azaleas (*Rhododendron*), willows (*Salix oriterpha*), bush inquefoil (*Potentilla*) etc. make up of a large percentage of the food for those deer living in groves. I investigated the feeding habits of this species in regions with an elevation of 4086—4900 metres above sea level. I found that the distributed vegetation in the dwelling places of this species gave priority to alpine meadow and swamp meadow. From the analysis of stomach contents and the direct investigation of the feeding places of white-lipped deer, the plants on which this species feeds are as listed below:

Gramineae

1. *Poa* sp.

2. *Stipa orientalis* Trin

3. *Festuca* sp.

4. *Ptilagrostis concinna* (Hook. F.) Roshev

5. *Koeleria cristata* (L.) Pers

Cyperaceae

6. *Kobresia tibetica* Maxim

7. *Kobresia pygmaea* Clarke

8. *Kobresia humilis* (C. A. Mey) Serg

9. *Carex moorcroftii* Falc ex Boott

Liliaceae

10. *Lloydia serotina* (L.) Reichb

Rosaceae

11. *Potentilla anserina* L.

12. *Potentilla fruticosa* L.

Leguminosae

13. *Oxytropis ochrocephala* Bunge

Scrophulariaceae

14. *Pedicularis longiflora* var

tubiformis (Klotz.) Tsoong

15. *Pedicularis przewalskii* Maxim

Chenopodiaceae

16. *Microgynoecium tibeticum* Hook. F.

Compositae

17. *Saussurea stella* Maxim

Gramineae and Cyperaceae are the main food of white-lipped deer. In the morning or at noon and dusk, white-lipped deer may be seen drinking water in rivulets and rivers.

In some ponds, this species bathes only but does not drink water.

3. The geographical distribution of white-lipped deer The distribution areas are bordered by Nangji and Balong in the region of the Yangtze River springs on the west (i.e. at the junction of the two Yangtze River branches: Tuotuo River and Dangqu River); on the east by Kangdi county in Sichuan province; on the south by Mangkang county in Xizang (Tibet); on the north by Qilianshan regions at the junction of Qinghai and Gansu provinces. The whole distribution range is from about 92.5° to 102° in east longitude and from about 29.5° to 38.7° in north latitude (Fig.2).

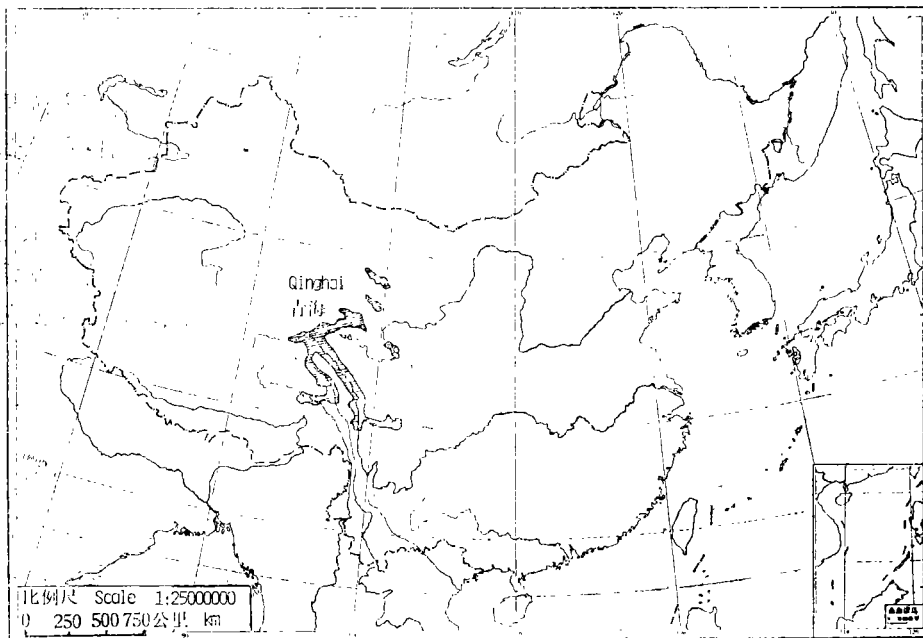


Fig. 2 Distribution of *Cervus albirostris*

图2 白唇鹿分布图

4. The present status of white-lipped deer The white-lipped deer rate by our government in the list of first-class protected animals which can not be wantonly caught and killed without permission. In the past many white-lipped deer were illicitly caught and killed in their native haunt every year. These killings were mainly done by the local hunters to get pilose antlers, skins and pelts. This has greatly changed since protective laws were issued. The local people, in most of the regions, have attached great importance to protective measures, but in some remote areas, for example, in Mangkang region on the bank of Jinshajiang River in east Xizang, catching and killing of white-lipped deer are not very rare. In the summer of 1973 and 1977, I saw fresh venison, deer skins and pilose antlers on sale in the local national trading corporation. Whereas, in some areas (i.e. in Zhidui county, Qumalai county and Qilian county etc. in Qinghai province) protective measures are effective. Therefore, white-lipped deer groups can be seen often around the local residential areas in winter. The largest group observed consisted of more than 200 individuals. Furthermore, some local units and people have been carrying on the domestication of white-lipped deer.

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中 文 摘 要

中国的白唇鹿 (*CERVUS ALBIROSTRIS*)

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白唇鹿 (*Cervus albirostris*) 是中国特有珍贵资源动物。由于其生活在人迹罕至的高寒地区, 故自1883年被分类记载以来, 至今还未见有关此种兽类的详细研究报道。今就作者调查作一些补充报道。

白唇鹿分布于海拔3,500米以上的高山灌丛带, 其活动上限可达5,100米甚至更高的高山裸岩带。在它们的分布区, 虽然有高山峻岭连绵不断, 但它们总是选择较平缓、稍开阔的地方活动、休息, 在那些地势险峻、切割剧烈的悬岩绝壁区域, 极少见到白唇鹿的踪迹。

白唇鹿分布区的气候条件, 一年中几乎无夏季, 终年处于气温低或较低的秋、冬、春季节。所以白唇鹿是世界上分布海拔最高的一种耐寒鹿类。

白唇鹿营群居, 除配种期外, 成年动物往往雌、雄分群活动于一定的范围内。活动主要在晨、昏。在食物充裕的夏、秋季, 白天大多休息。活动高度随季节而有变化。

一年繁殖一次。每年约10月初进入配种期, 受孕母鹿于翌年5月底陆续产羔至6月下旬结束。

禾本科 (Gramineae) 和莎草科 (Cyperaceae) 植物是白唇鹿的主要食物, 但随其栖息环境的差异, 食物成分也有所改变。

白唇鹿整个分布区西起长江源区的囊极巴陇一带, 东至四川省甘孜、康定境内; 南界至西藏的芒康县; 北缘抵青海省与甘肃省交界的祁连山地区。所以整个分布区位置约在东经92.5°—102°; 北纬29.5°—38.7°。