

DISTRIBUTION OF MACAQUES (*MACACA*) IN CHINA

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Abstract

This paper deals with the distribution of macaques (*Macaca*) in China from the viewpoint of dynamic zoogeography. Since Early Pleistocene, the range of the macaques have involved latitudinal shifting, but not perfectly correlated with climatic changes. Based on information available from historical literature, the macaques ranged in a more wider area, but have been experienced local extirpation since 14th century, especially in northern China. Current distribution and population of the macaque species have been described and three major patterns concerning the recent status of occurrence and conservation have been suggested.

Key words Macaques, *Macaca*; Geographical distribution; Historical distribution

INTRODUCTION

Since the first overview paper on the geographical distribution of primates in China (Zhang et al, 1981). Tan (1985) has given a general but more complete description of individual species. In more recent years, the field survey of primates and a series systematic study on taxonomy of macaques (Fooden et al, 1976, 1979, 1982, 1983, 1985, 1988), have provided valuable information for further examination of macaque distribution in China.

All, except *Macaca sylvanus* confined in NE Africa, 12 species of the genus *Macaca* are distributed in southeast Asia. Among them, there are six species existing in China, e. g. *M. mulatta*, *M. thibetana*, *M. assamensis*, *M. arctoides*, *M. cyclopis* and *M. nemestrina*.

for the end of understanding a general tendency of the distribution from a view point of dynamic zoogeography, the authors give a brief of the results offered by pa-

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laeogeography on historical change of the macaques in the period of pleistocene and cultural historical time (Fig. 1—3), and examine the current distribution (Fig. 5—8) with population situation based on information available, including specimen records kept by 17 institutions in China and observation notes provided by personal communication.

Except recent extirpation of local population of the macaques, following three major patterns in terms of conservation could be categorized and shown on figures 5—8, which may implicate a possible change of near future:

1. Recorded before and still remained a certain amount of population, usually in an unstable condition.
2. Living in favourable condition of protection or areas of unaccessibility.
3. Facing considerable endangered situation, probably going to extirpation.

DISTRIBUTIONAL HISTORY

The fossil *Macaca* of China are most widespread among the primate fossils in China. But, they are being not yet well studied, only two major groups have been treated roughly (Jablonski et Yuerong 1988). The first group is a generally earlier of Early Pleistocene-Middle Pleistocene and northern distribution, most species of them are identified as *M. andersoni* and *M. robusta*. The second group is a later in Middle Pleistocene with a generally more southern distribution and containing a large number of specimens lumped together as *Macaca* sp. and of some living species. The distinctly morphological differentiation between the fossil *Macaca* found from the north China and extant living species of the genus might be implying that there could be a divid-ingly evolutionary lineages resulting in extinct induced by dramatic change of paleo-environment in the north during the middle Pleistocene.

Available information of fossil macaques in China provides following facts which could indicate a distributional change of the macaques in geological time (Fig.1).

1. The earliest fossil macaques found in China are known from the localities of Pliocene age at Lufeng County, Yunnan (Qi 1979) and Zhongxiang County, Hubei (Gou, 1980). The later location is not far away from Yangtze River, coincided approximately with the north limit of tropical summer green forest zone in that time (Liu et al, 1984).
2. Only one record of Early Pleistocene fossil macaque has been found in Baojing, Hunan (Wang et al, 1982), Where the climate was of tropic (Liu et al, 1984).
3. Fossil macaques of Middle Pleistocene in China indicate that *Macaca* of this period experienced its most northward extension in Asia to near 42°N (Jinniushan Excavation Team, 1976), nevertheless the tropical environment regressed southwards to the coast belt of south China. The localities of north-most fossils found correspondent with north limit of subtropical humid zone of Middle Pleistocene.
4. The late Pleistocene fossils of *Macaca* indicate a southward move. The north-most limit of its range shifts near lower reaches of Yellow River, while the north limit of subtropical zone was moving to the south of Yangtze River in

the area of its middle-low reaches (Liu et al, 1984).

5. In Holocene cave deposits, the fossil *Macaca* including of living species could be found as representative associaters of Paleo - or Neo-lithic sites. The north-most fossil localities are distributed slightly far north than that of Late Pleistocene, related to the north limit of subtropical zone which was quite similar to the present subtropical north limit.

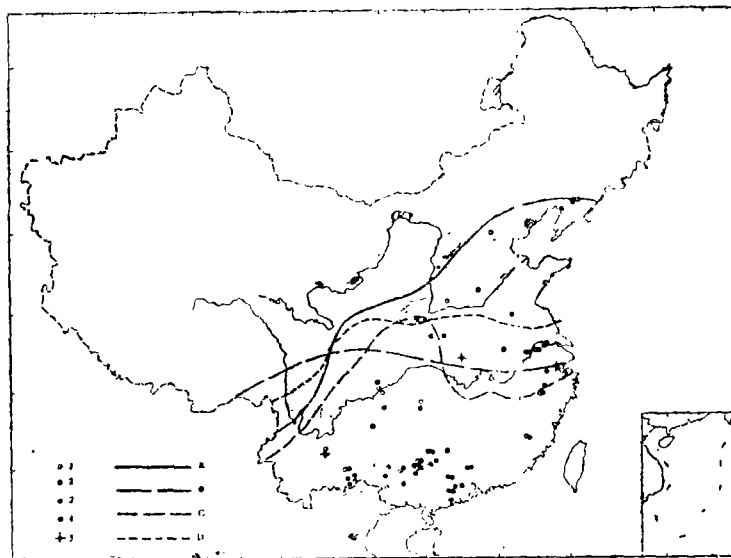


Fig.1 Quaternary distribution of macaques (*Macaca*) fossils in China
1. Early Pleistocene; 2. Middle Pleistocene; 3. Late Pleistocene;
4. Holocene; 5. Pliocene. Northmostern limit of climatic zone; A.
Subtropic of Middle Pleistocene; B. Tropic of Early Pleistocene; C.
Subtropic of Late Pleistocene; D. Present subtropic.

图 1 中国第四纪猕猴属化石的分布

1. 更新世初期; 2. 更新世中期; 3. 更新世晚期; 4. 全新世; 5. 鲜新世。气
候带最北界限; A. 中更新世亚热带; B. 早更新世热带; C. 晚更新世亚热带;
D. 现在的亚热带

The figure 1 shows that, the *Macaca* was restricted in tropic during Early Pleistocene. Apparently, it shifted much further to the north in Middle Pleistocene following northward replacement of the subtropical zone. While during Late Pleistocene the southward movement of the *Macaca* was not perfectly related to the shifting of subtropical zone.

Most Holocene fossils of *Macaca* in China are recognized to be of living species, *M. mulatta* or *M. thibetana (speciosa)*, which have been found usually in south China (Huang, 1979). A northmost site of fossil macaques is Yinxu (Xin'an), Anyang, County Henan, to the north of Yellow River (Zhang, 1984).

Painstakingly checked through numerous ancient Chinese books and some county gazettes of north China, Wen Huanren et al (1981) have pointed out that "Hou" (monkey) has been noted since the beginning of 14th century when local county gazettes became a traditional documents and lasted until the beginning of this century. The historical records provides a negative answer to the previous suggestion given by Mollendorff in 1878 and Allen in 1938 that the northmost colony of *Macaca mulatta* lived

in the Eastern Tombs (actually, Xinglong), northeastern Beijing and still remained a few individuals up to several years ago, is due to "a successful introduction" (Allen 1938). In the literature statements, most of the "Hou" has been absented since 18th century, probably because at least the "Hou" became too rare to be worthly mentioned or could not be confirmed, if not totally disappeared. In south China, the ancient culture developed much later, but we can still traced back to 18th century from county gazettes. An information provided by the South China Institute of Endangered Animals has been shown on the figure 3. Comparing to the extant distribution, the macaques have been extirpated from the most of the area since 18th century in north China and since 1950s in southwestern China (Fig.2,3).

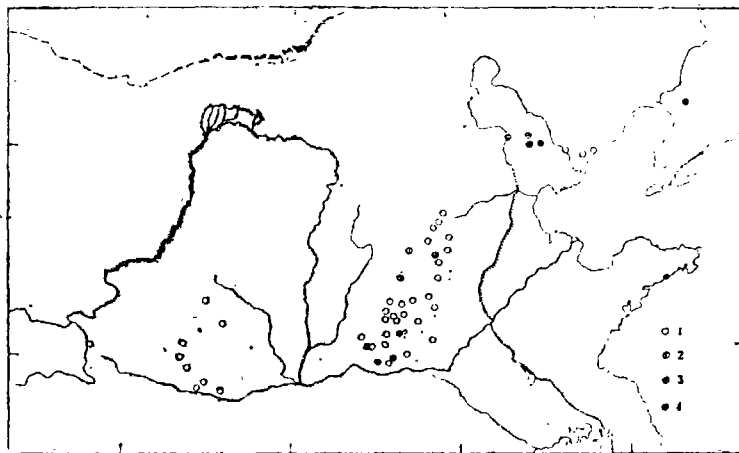


Fig.2 Historical distribution of macaques (*Macaca*) based on county gazettes in north China.

1. Before 18 century; 2. Before 19 century; 3. Before 1950s; 4. Probably being extirpation.

图 2 历史时期, 猴属在中国北部的分布(据方志材料)
1. 18世纪以前; 2. 19世纪以前; 3. 50年代以前; 4. 可能灭绝

CURRENT DISTRIBUTION AND POPULATION

1. Rhesus Monkey (*Macaca mulatta*)

The Rhesus monkey is a most widespread species of *Macaca*, extending from easternmost Afghanistan through southern flank of Himalaya and adjacent plain of northern Indian peninsula and the northern part of Indochina to eastern China. The altitudinal distribution of the animals ranges in varied amplitude with dissimilar habitats in different areas of China:

Qinghai	Yunnan	Shaanxi	Anhui	Sichuan
3100—4300m	2500—3500m	630—1500m	200—800m	2500—3500(4000)m
Subalpine coniferous	Evergreen forests	Mixed forests	Evergreen and mixed forests	Temperate broad leaves and mixed forests

The northmost distribution of this monkey had reached to 40°42'N, the northmost limit of warm temperate zone, There was an isolated colony ranged in the area of Xing-

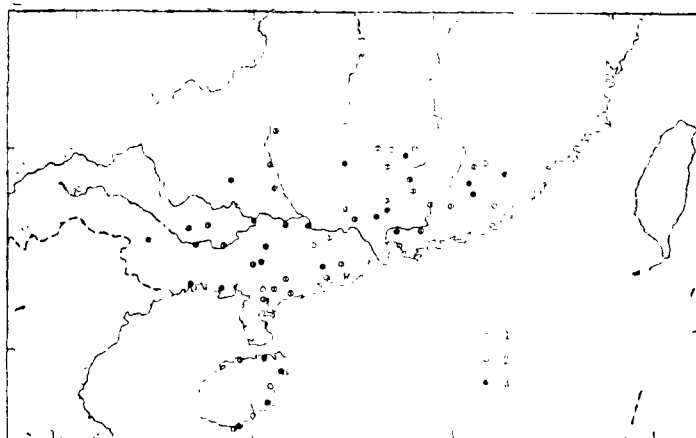


Fig.3 Historical distribution of macaques (*Macaca*) based on county gazettes in southern China. (Guangdong and Guangxi).

1. Before 18 century, 2. Before 19 century, 3. Before 1950s

图 3 历史时期, 猕猴属在中国南部的分布(广东、广西)

1. 18世纪以前, 2. 19世纪以前, 3. 50年代以前

long county, to the north about 150 km far from Beijing as mentioned above. A recent field survey carried out by the authors, has confirmed that this colony was likely extirpated totally (Zhang et al, 1989). With a vast gap of discontinuation about 650km, another isolated area of the macaques occurs along mountain ranges of Taihang Mountain and Zhongtiao Mountain on the boundary of Shanxi and Henan provinces, where is a transitional area of north subtropic and warm temperate climate.

From 34°30'N, along Yangtze River to the south, over the whole south China, the rhesus monkeys spread on more or less continuation in terms of geographical distribution. However, the colonies of rhesus monkey are living in a pattern of fragmentation in terms of ecological habitat. A distributional map of the rhesus monkey in medium scale of Fujian province could be an example (Fig.4). But, even on small scale map, there still is a rather wide gap over the low land and surrounded lower hills in great lake area (Dongting Lake and Boyang Lake etc.) of middle reaches of Yangtze River, where the cultural landscape has dominated since longtime ago (Fig.5).

Although under great impact of deforestation, cultivation, illegal hunting and other human activities, the less specialization of habitat preference, terrestrial and omnivorous habits enable the rhesus monkeys to live more or less in disturbed forests and around farm habitation. So, the rhesus keep a top position on account of their numerous population. About 35 reserves, nine of them are particular for the rhesus and a few really inaccessible remote areas such as western Sichuan and southeastern Tibet, in which the rhesus exist in a more or less favourable condition. Except these areas, the monkeys are facing critical endangered situation, even threatened to be extirpated (Fig.5).

Estimations of population size of the rhesus reported by different writers were not based on standard method, but the most records were coming from field survey, so, they could be reflected a rough picture, some of them indicate a considerable decreasing since last decades,

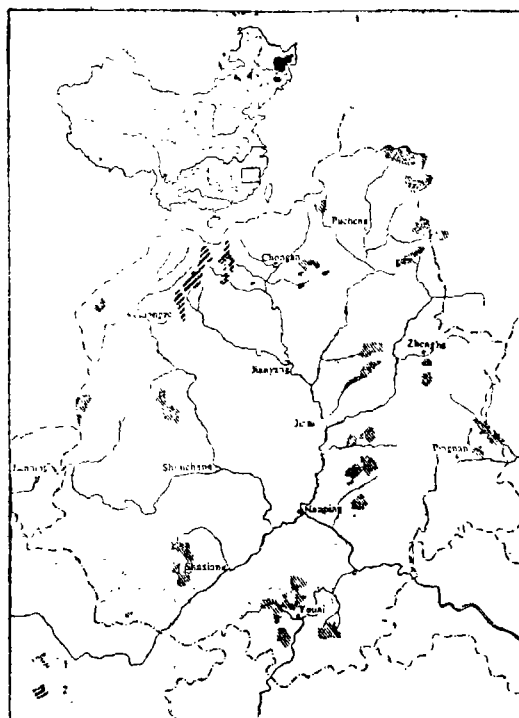


Fig.4 Distributional pattern of macaque colonies in Fujian Province

1. *Macaca mulatta* or *M. thibetana*, 2. *Macaca arctoides*

图 4 两种猕猴在福建省的分布

1. 猕猴或藏酋猴, 2. 短尾猴

Xinglong, Hebei	60—70	1960s
	40—50	1970s
	4—5	1985—1988
	0(?)	
Jiyuan, Henan	200	1988(Qu et al, 1989*)
Nanzheng, Shaanxi	60—70	1981(A report 1981**)
Xingshan Hubei	120—160	1984(Hu et al, 1984***)
	280—320	1984(Hu et al, 1984***)
Fujian	3067—3438	1960(Qin et al, 1960****)
	1300—1800	1984(Zheng, 1984)
Guangdong		
Continental part	2000—3000	1981(Liu et al, 1981)
Dangen Is.	200	

* Qu Wenyuan, Zhang Rongzu, C. H. Southwick, 1989. Rhesus Monkey (*Macaca mulatta*) in Taihang Mountain, Jiyuan county, Henan, China(in printing).

** A report of Resources of Birds and Mammals in Shaanxi, 1981. Unpublished.

*** Hu Hongxin et al 1984 The rhesus, *Macaca m. mulatta* of Xingshan, Hubei, Unpublished.

**** Qin Yaoliang et al 1960 Report on monkey resources of north Fujian. Bioresource Study Team, Academia Sinica. Unpublished.

Erzhou Is.	100	1981
Shangzhou Is.	400	1981
Lingtin Is.	60—70	1981
Hainan	20000	1960(Liu et al, 1981)
	4000	1981
Fusui, Guangxi	1000	1988(Wang et al, 1988)
Caogaisongduo, Qinghai	987—1098	1986(Wang et al, 1986)

Following Allen (1938) and Ellerman and Morrison-Scott (1950), current agreement regarding subspecies of *M. mulatta* presenting in China, except *M. m. vestitus* from Himalaya, all of the previous validity of *tcheliensis* from Beijing, *brevicaudus* (or *brachyurus*) from Hainan island, *lasistis* from Yunnan, *littoralis* from Fujian are treated as a single typical *M. m. mulatta*.

The rhesus monkey is broadly sympatric with five other species of *Macaca* in southern part of its range in China.

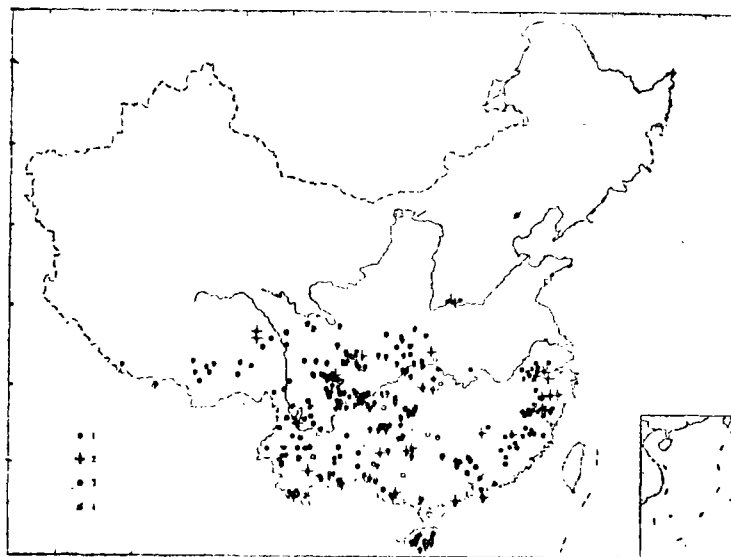


Fig.5 Current distribution of *Macaca mulatta* in China

1. Recorded before and still remained a certain amount of population, usually in an unstable condition.
2. Living in favourable condition of protection or areas of unaccessibility.
3. Facing considerable endang-
erous situation, probably, going to extirpation.
4. Most possibility of
extirpation.

图 5 现代猕猴属在中国的分布

1. 过去记录, 现在仍保持一定数量的种群, 一般处于不稳定状态;
2. 生活在良好的保护环境或非进入区域;
3. 面对相当濒危处境, 也许将要绝灭;
4. 多数有灭绝的可能性

2. Assamese Macaque (*Macaca assamensis*)

The main range of Assamese macaques occupies an area with a landscape dominated by limestone jungles, from northern India and Nepal to Vietnam, and being mostly sympatric with *M. arctoides*. Since the first definite record of the animal obtained

from extreme western Yunnan on Nanting River in 1917, more records have been got from southern Yunnan, western Guangxi and southern flank of Himalaya, Xizang (Tibet). The northern limit of its range in China, generally coincides with tropical forests and extending slightly to warm-subtropical evergreen forests.

There are no full available figures for identifying subspecies in China, although three subspecies, *M. a. caolidgei* (in Xishuangbanna, Yunnan), *M. a. assamensis* (in Gongshan, Yunnan) and *M. a. pelops* (in southern Himalaya) have been reported (Li et al, 1983; Feng et al, 1986).

According to Ma (1987), *Macaca assamensis* as well as *M. arctoides* were rather common and numerous over 11 counties in Honghe (Red River) area, southeastern Yunnan in 1950—60s, but now they become rare species found only in inaccessible mountains within 6 counties.

In Guangxi, Assamese macaques spread mainly in southwest part and a few places of northwest part. Total population of the monkeys in Guangxi has been estimated at 3000—4000, mostly concentrated near the Sino-Vietnam border, a jungle area of limestone hills between county of Longzhou and Ningming. The Assamese macaques sharing in habitats with *Macaca arctoides* and *M. mulatta* in a single hill has been observed (Wu, 1981)*.

Assamese macaques have been protected in a number of natural reserves including three assigned particularly for them in Guangxi (Fig.6, Table 1).

3. Pig-tailed Macaque (*Macaca nemestrina*)

The Pig-tailed macaque is a widely distributed species throughout mainly the Indo Chinese peninsula extending into Assam and Sundaland and reaching Sumatra and Borneo. Its range in China is a small portion of a projection along Lancang River (Mekong River), Yunnan, restricted largely to the south of Tropic of Cancer and marginal sympatry with *M. mulatta*, *M. assamensis* and *M. arctoides*. The specimens were designated as *M. n. lesnima* (Li et al, 1983).

Joint occurrence of the Pig-tailed macaques with *M. assamensis* and *M. mulatta* in same habitat has been observed, but contact or mix one another never been seen. The major habitat of the Pig-tailed macaques is situated lower than that of *M. arctoides*. The Pig-tailed macaques have been protected in four natural reserves in China, one of which is assigned particularly for this species (Fig.6, Tab.1).

4. Stump-tailed Macaques (*Macaca arctoides*)

Because of superficial similarities of the two Chinese stump-tailed macaques *M. arctoides* and *M. thibetana*, have been treated by only subspecifically distinct, thus the problem classification has induced confusion of their distribution. Before a revision studied by Fooden et al (1985), *M. arctoides* had been considered to have a wider range. But, the result of the study suggested that *M. arctoides* extends from its main range of Indochinese Peninsula to Yunnan, Guangxi, and not beyond outside of Guangdong (Fig.7).

Population size of this monkey in following places was estimated:

Ailao Mountain, Yunnan	5—6 groups
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* Wu Mingchuan, Wei Zhengyi 1981 Survey on Guangxi macaques. Unpublished.

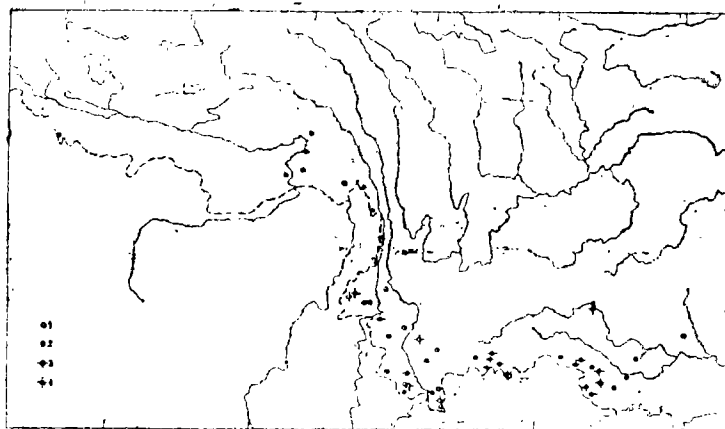


Fig.6 Current distribution of *Macaca assamensis* and *M. nemestrina* in China.

1, 3. *Macaca nemestrina*, 2, 4. *Macaca assamensis*; 1, 2. Recorded before and still remained a certain amount of population; 3, 4. Living in favourable condition of protection or areas of unaccessibility

图 6 熊猴与豚尾猴在中国分布的现状

1,3. 豚尾猴; 2,4. 熊猴; 1,2. 原有记录, 现在仍保留一定数量的种群; 3,4. 生活在良好的保护环境中, 或非进入区域

	less than 100	1988	
Cangyuan county Yunnan	19 groups	1986	Yang 1986*
	350		
Yunnan	6000	1986	Wang et al 1986
Guangxi	3000—4000	1983	Wu 1983
Guangdong	3000—4000	1960s	Liu 1981
	1000	1981	Liu 1981

In eastern part of its range in China, especially in Guangdong, the local population of the monkeys are facing very critical status. In more than 10 natural reserves in Guangxi and Yunnan, the Stump-tailed macaques have been protected (Fig.7).

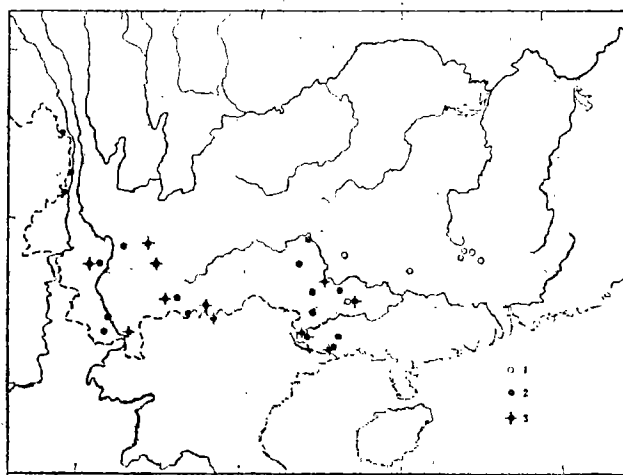


Fig.7 Current distribution of *Macaca arctoides* in China (1 2 3 See Fig.5)

图 7 短尾猴在中国分布的现状 (1,2,3 见图 5)

* Yang Dehua 1986 Report on population of six rare animals in Yunnan, Unpublished.

5. Tibetan Stumptailed Macaques (*Macaca thibetana*)

The *Macaca thibetana* is an endemic species of China, restricted generally in the temperate and warm subtropical zone of central China (24°—33°N). Its range corresponds to the zoogeographical "Central China Region". According to Hu et al (1982), Jinsha-River, the upper reach of Yangtze River in western Sichuan, is the extremely west limit of Tibetan stumptailed macaques' range. It is much further to the west of Moupin, the type-location (now Baoxin county), central Sichuan, which was previously known as the most western occurrence of the species. Whatever Moupin or Jinsha River, both are situated within traditional area of eastern Chinese Tibet. So, the specific name of *thibetana* which was thought to be incorrect implication (Fooden, 1983), must be reconsidered to be suitable. But, a recent field visit by the authors is likely confirmed that the most western limit of this monkey must be not beyond the area of the Yalong river.

The range of Tibetan stumptailed macaque replaces geographically the northern areas of *Macaca arctoides* and *M. assemensis* which are distributed in tropical south China. Being an ecogeographical vicariance of *M. arctoides*, Tibetan stumptailed macaques range to rather north latitude, and correlatively have higher altitudinal distribution. Following data obtained by different authors could be taken as examples:

Fujian	900—1400m	evergreen forests	Qin 1960*
Huang Mountain	400(500)—1700m	evergreen and	
Anhui		deciduous	Xiong 1984
		broad L. forests	
East part of "South China Region"	1000—2500m	ditto and mixed forests	Fooden et al 1983
Emei Mountain	1800—2200m	Mixed forests	Fooden et al 1985
Central Sichuan			
Fanjing Mountain	1200—2350m	evergreen and	
梵净山		deciduous	
		broad L. forests	

The population of *M. thibetana* at following places have been estimated:

Guizhou	2000—3000	1986	Wang et al	1986
Guangxi	1500	1983	Wu	1983
Guangdong	3000—4000	1960s	Liu	1981
	1000	1984	Liu	1984
Jiangxi	1000	1981	Sheng et al	1981
Fujian	370 (in 3 counties)	1960	Qin*	1960
	180—360 (in 7 counties)	1984	Zheng	1984
Hunan	2000	1988		
Gansu	2400	1986	Wang et al	1986

Three natural reserves have been established at Mang Mountain and Bamian Mountain, Hunan and Yinding Mountain, Guangxi for this species. In more than 20

* Qin Yaoliang et al 1960 Report on monkey resources of north Fujian, Bioresource Study Team, Academia Sinica. Unpublished.

natural reserves, the tibetan stumptailed macaques remain certain amount of population and are well protected (Fig.8, Tab.1).

6. Taiwan (Rock) Macaques (*Macaca cyclopis*)

The Taiwan Macaques occur in a wide range of habitats from forests to open rocky hills, but most prefer to live in well - preserved tropical/subtropical forests. The previous wider range which covers most of the mountain areas has been declined or disappeared and restricted to mountain forests of Kenting, Taiping, Wulai, Zhanghua and Jiayi of East Coast (Peng, 1979). A preserve for this macaque has been established at Bagua Mountain, Zhanghua since 1972 (Fig.8). More preserves have been proposed. A field study (Frank et al, 1979) contributed to general picture concerning the population and problems of protection of the Taiwan Macaques have been summarized as follows:

Xi Tou 西投, N.Taiwan	Rare remnants of a larger population in Ching Shiwan gully	logging and deforestation extensive, large bamboo introduced
Anma Mountain Central Taiwan	1000	With forest destruction extensive, large bamboo introduced
Tai Pin Mountain	Highest level	Some competition between squirrels and monkeys for food supplies
Bagua Mountain, Zhanghua County	60—70 (2 groups)	Protected, but illegal trap

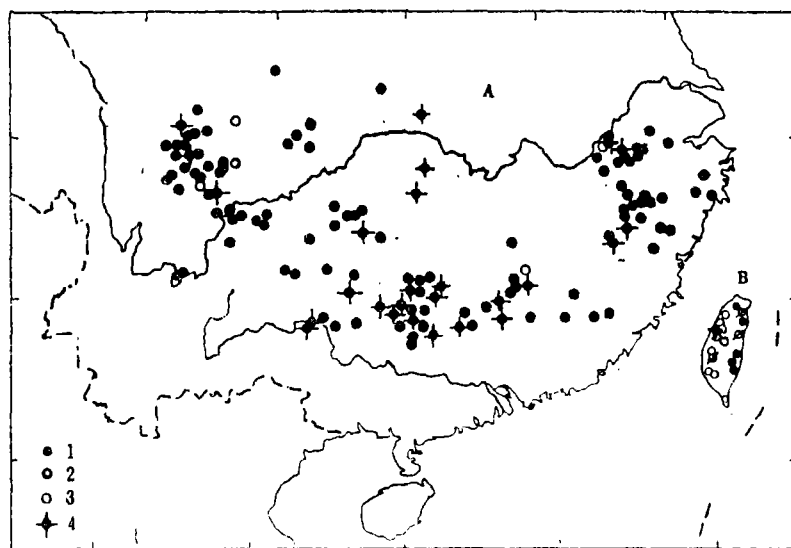


Fig.8 Current distribution of *Macaca thibetana* and *M.cyclopis* in China
A, *Macaca thibetana*; B, *Macaca cyclopis*. 1,2,3,4: See Fig.5

图 8 藏酋猴及台湾猴在中国分布的现状
A. 藏酋猴; B. 台湾猴; 1、2、3、4 见图 5

Shan-pin and		
Mali-River	100 annual	Illegal trap
Reserve	trapped	
(South Taiwan)		
East coast	Varied in	More tolerant of humans
	different localities	

Another sources (Mackinnon et al, 1987) stated that some 7,250 Taiwan macaques are estimated to exist within the present island's network of protected areas.

CONSERVATION

On the protected animal list of China (1989), *Macaca assamensis*, *M. cyclopis* and *M. nemestrina* are treated in top priority and *M. arctoides*, *M. mulatta* and *M. thibetana* are put in the second. In Action Plan for Asian Primate 1987—1991 (APEAPC), proposed by IUCN/SSC Primates Specialist Group, these six species have been categorized in terms of Degree of Threat for the whole area in general. But if taking an examination based on actual situation in China solely, the six macaques must be treated in more critical status as follows than the same species in rest area of Southern Asia:

Vulnerable: *Macaca mulatta*, *M. thibetana*, *M. cyclopis*

Highly vulnerable: *M. arctoides*, *M. nemestrina*

Endangered: *M. assamensis*

Furthermore, for effective protection, different measures have to be taken according to local current population of the animals and degree of human impact. The Macaques as well as other non-human primates in China are all variously affected by combination of following human impacts.

1. Habitat clearance: It is a most serious problem in China, for instance, the rate of rainforest disappearance in Hainan is 59 ha per day (Kuang, 1985). In Xishuangbanna, southern Yunnan, natural forest has decreased since 1960, from 1,133,333 ha down to 569,333 ha until 1982 due to *Hevea* plantation and farmland cultivation. Even in west Sichuan and southeastern Xizang (Tibet), the rugged mountain areas, logging industry has become more active as the rest areas of China being a status of timber-exhaustive. Additionally, the government's strategy of a forestation is to encourage replanting so called "fast-growing economic forest" usually of some coniferous, fir or pine with pure or a few species. It does not recover monkey's habitat.

2. Illegal trapping: Since last decades, illegal trapping of macaque monkeys by Monkey-trapping teams or individual hunters did not effectively be restricted in most of places, especially in where the monkeys occur as constant crop raiders. Purchasing of primates' meats and bones for medicine is an important item in local commercial system. Over-setting of snares and traps by local hunters induced brutal killing of game animals including the primates.

3. Unperfectively protected system: The network of wildlife protected system established rapidly since last decade without much experiences and enough professional stuffs. Furthermore, education of natural conservation for local people and officers who are in charge of the system is too weak to realize the function of Wildlife Prote-

cted Law. There are 17 reserves focusing particularly for the macaques (Tab.1). However, for the end of keeping progress, an action plan for primate conservation of China before year 2000 must be made.

Table 1 Reserves focusing on macaques in China

表 1 中国猕猴属的保护中心

<i>Macaca mulatta</i> 猕猴	
1. Jiyuan, Henan	35°11'—17°N, 112°3'—33'E
2. Suoxiyu, Hunan	29°21'N, 110°34'E
3. Badagongshan, Hunan	29°31'N, 109°41'—110°10'E
4. Shangchuandao, Guangdong	21°42'N, 112°42'E
5. Huaping, Guangxi	25°31'—39'N, 109°48'—49'E
6. Nanwan, Hainan	18°24'N, 109°59'E
7. Yulong-Haba Xueshan, Yunnan	27°20'N, 100°10'E
8. Wuyanlen, Zhejiang	27°45'N, 119°50'E
9. Manghe, Shanxi	35°12'—17'N, 112°22'—31'E
<i>Macaca assamensis</i> 熊猴	
10. Jinxin, Guangxi	24°13'N, 110°22'E
11. Huanglianshan, Guangxi	23°35'N, 106°15'E
12. Gulongshan, Guangxi	23°08'N, 106°15'E
<i>Macaca arctoides</i> 短尾猴	
13. Daweishan, Yunnan	22°55'N, 103°40'E
<i>Macaca thibetana</i> 藏酋猴	
14. Mangshan, Hunan	24°53'—25°03'N, 112°43'—113°E
15. Bamianshan, Hunan	25°27'—26°23'N, 113°41'—44'E
16. Entinshan, Guangxi	24°53'N, 111°E
<i>Macaca cyclopis</i> 台湾猴	
17. Zhanghua, Twiwan	24°05'N, 120°35'E

CONCLUSION

1. The six species of Macaques (*Macaca*) distributed in China exhibit distinctly geographical patterns respectively. Among them, *Macaca thibetana* is endemic species in continental area of southern China and *M. cyclopis* is endemic in Taiwan Island.

2. Being a most widely range species, *Macaca mulatta* extends into warm-temperate zone of north China. *Macaca thibetana* could be represented as a subtropical species.

3. Fossil records of *Macaca* in China indicate that the distribution of the animals experienced latitudinal shift following climatic change throughout the Quarternary in general, but a northward extension reflects a wider range of ecological adaptation from tropic to warm-temperate as a whole of the genus.

4. Current distribution of the *Macaca* in China is a consequence of longterm human impact, the fragmentation of geographical range as well as of ecological habitat result in local extirpation of the animals. Except in the natural reserves and unaccessible remote areas, the macaques are generally facing a critical endangered situation.

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中文摘要

猕猴属在中国的分布

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猕猴属(*Macaca*)在中国有6种: 猕猴(*M. mulatta*); 藏酋猴(*M. thibetana*); 熊猴(*M. assamensis*); 短尾猴(*M. arctoides*); 豚尾猴(*M. nemestrina*)和台湾猴(*M. cyclops*)。其中以猕猴分布最广泛, 从热带至暖温带除极少岛屿外, 几乎与所有其他种类呈重叠分布。藏酋猴是我国中亚热带—北亚热带的特有种。熊猴、短尾猴和豚尾猴3者的分布主要在南亚热带和热带, 彼此部分重叠, 与藏酋猴呈生态地理替代。

迄今所知, 最早的猕猴属化石发现在禄丰(云南)和钟祥(湖北)第三纪上新统, 当时为热带。早更新世化石见于长江中游, 当时亦为热带。中更新世猕猴属的分布北伸至北纬42°, 现辽西南部, 当时为亚热带的北缘。晚更新世化石发现地点表明猕猴属的分布有南移, 最北分布约与长江相当, 当时为亚热带的北界。全新世化石分布稍向北伸, 亦大致与当时亚热带北缘相当。从史籍资料分析, 近数百年来, 猕猴属分布比全新世化石分布偏北, 分布区北部的气候已转为暖温带。可见猕猴属的分布变迁与气候的变动, 并不十分吻合。

现代猕猴属在中国分布的总趋势是缩小了, 其生境则呈零散状态。据现有资料和国内同行提供的有关分布与数量情况, 将猕猴属在中国的分布趋势, 分3种类型并标于小比例尺地图上(图5—8)。

1. 原有记录地点, 至今仍可发现或不能肯定已经绝灭。
2. 栖息于有利的环境, 即受保护的或少受人类干扰的偏僻地点。
3. 面临严重的濒危处境或可能已经灭绝的地点。

关键词 猕猴属; 地理分布; 历史分布