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**WWF PROJECT 4512 / CHINA**  
**SURVEY OF REMAINING WILD POPULATION**  
**OF SOUTH CHINA TIGERS**

**Final Project Report**

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## Summary

During October 1990 through February 1991 I advised and assisted the Wildlife Protection Associations of the Forestry Departments of Guangdong, Hunan, Jiangxi, and Fujian Provinces in southeastern China to conduct a survey for the endangered South China Tiger (*Panthera tigris amoyensis*). The survey was sponsored by World Wide Fund for Nature (WWF-International) and the Ministry of Forestry of the Peoples Republic of China. The aim was to develop methods to assess the status of tiger populations in the wild and to determine the status of the South China Tiger. Tracks and scrapes made by tigers were observed in the mountainous regions of northern Guangdong, southern, eastern and northern Hunan, and western Fujian Provinces. Reports indicate that tigers may also occur in central Jiangxi. There is evidence that reproduction is occurring in southern and northern Hunan and western Fujian. Habitats where large ungulates are present as a source of prey for tigers and where there is little human disturbance occur as scattered islands among the mountains within the four provinces. These habitats are relatively small (< 50,000 ha) and are isolated by extensive agricultural lands and single species forest plantations, making it difficult for tigers in these habitat islands to interact and breed. Existing threats to tigers in the region include accidental capture and injury of tigers in traps used to capture ungulates, competition for prey of tigers by people hunting ungulates for subsistence and for sale in markets, and loss of habitat from deforestation.

## Introduction

The South China Tiger (*Panthera tigris amoyensis*) is in immediate danger of becoming extinct. Deforestation and hunting of tigers and their prey has caused the decline from an estimated 4,000 South China Tigers in 1949 to 150-200 in 1981-82 (Lu and Sheng 1986, Lu 1987). At present there is believed to be 30 to 50 animals in the wild and 33 males and 18 females in captivity in zoos within China (Jackson 1990).

Conservation of South China Tigers in the wild is not only a concern of the people of China but also of the international community. In the recent past, three subspecies of tigers have become extinct, the Caspian (*P. t. virgata*), the Bali (*P. t. balica*), and Javan tigers (*P. t. sondaica*). The long term survival in the wild of the remaining subspecies is of concern but the fate of the South China Tiger is in need of immediate attention. Urgent measures to ensure the survival of tigers is needed and can be effective as shown by the success of Project Tiger in India and Nepal (Jackson 1990).

Before conservation actions for South China Tigers can be initiated it is necessary to determine their numbers and distribution in the wild. Some information of the population status of South China Tigers was gathered by Lu and Sheng (1986). The Ministry of Forestry of the Peoples Republic of China and World Wide Fund for Nature - International initiated field investigations beginning in October 1990 to better determine the status of tigers and to identify steps necessary for their conservation.

The long term survival of tigers in the wild and feasibility of recovery programs will be influenced by the distribution and quality of habitat, abundance and distribution of prey, and ability of tiger populations to interact and breed.

The aims of the field investigation as outlined by WWF were:

- 1) To determine the present distribution of the South China Tiger.
- 2) To estimate the population size and composition in each area surveyed and determine whether natural reproduction is still occurring.
- 3) To collect data on the abundance of prey species and of other predators, in particular leopard and clouded leopard.
- 4) To collect other ecological data on forest type and bird species diversity which can be of use in subsequent selection of protected areas.

- 5) To produce a map showing existing tiger populations and the extent of suitable habitat, assessing threats to the tigers' survival and the measures that it would be necessary to take in order to save the South China Tiger from extinction in the wild.

The Ministry of Forestry of P.R.C. coordinated efforts between Guangdong, Hunan, Jiangxi, and Fujian Provinces beginning August 1990. Actual field investigations were carried out by the Wildlife Conservation Associations of the Forestry Departments of the respective provinces. I was assigned to take part in the investigations within Guangdong, Hunan, Jiangxi, and Fujian as advisor and representative for WWF-International.

I acknowledge the generous support by the Ministry of Forestry of P.R.C., the Wildlife Associations and Foreign Relations Departments of the four provinces, World Wide Fund for Nature - Hong Kong, and World Wide Fund for Nature - International. The World Wide Fund for Nature - International provided funding for the survey. Many individuals provided moral and logistic support. I am grateful for the cooperation and companionship of the survey team members and team leaders Chen Wan Cheng in Guangdong, Gui Xiao Jie and Lei Guang Chun in Hunan, Liu Wei Lin and Song Xiang Jin in Jiangxi, Ruan Yun Qiu in Fujian, and Wang Wei in Beijing. Cheng Wenzhou and Chen Tao were invaluable interpreters. I would also like to thank Mary Ketterer, John MacKinnon, David Melville, Dr. Kenneth Searle, Karen Phillipps, Pascale Moehrle, Andrew Laurie, Peter Jackson and Vienne Cheng for their advise and support. My wife Mona Miles Koehler was a supportive field assistant, editor, and companion.

### STUDY AREA AND METHODS

The historic range of South China Tigers extended from the coasts of Guangdong and Fujian, west to central Sichuan, and north to the Yellow River Range at approximately 35° N (Lu and Sheng 1986). The area in which field investigations were conducted during this survey included northern Guangdong to northern Hunan along the border with Hubei and from western Hunan to western Fujian.

The study area has a subtropical climate with 1100 to 2250 mm of precipitation annually. Elevations range from 300 to 2157 meters with snowfall often occurring for

brief periods during winter at elevations above 1500 meters. Bamboo and broadleaf evergreen forests occur at lower elevations and deciduous broadleaf and conifer forests at higher elevations while grassland habitats predominate at elevations above 1000 meters.

The method used to survey for tigers involved field reconnaissance and recording locations of tracks and marking scrapes made by tigers. Areas selected for survey were identified by presence of intact natural forest and grassland habitats from records of the provincial Forestry Departments and from reports by government officials and local people of recent tiger activity. Historical information on where tigers occurred was obtained from interviews of people who hunted tigers since 1950. We found that sites reported to be used by tigers for marking in previous years were still being used for marking. Knowledge of felid behavior patterns and previous marking sites proved valuable for identifying sites currently used by tigers. Also by careful interrogation we were able to determine if observations of tigers made by local people were indeed tigers or possibly leopard (*Panthera pardus*), clouded leopard (*Neofelis nebulosa*) or other animals.

## RESULTS

### Evaluation of Survey Method

Evidence of tiger was documented during the survey in the remote mountainous regions of Guangdong, Hunan, and Fujian. The steep mountainous terrain, dense subtropical vegetation, and soil conditions made it difficult to conduct a systematic search on foot and made it difficult to observe tiger tracks and marking scrapes. Because of these logistical problems it was not possible to estimate numbers of tigers from observations of tracks and scrapes. The few track observations made and the variability of soil, terrain, and weather conditions made it difficult to compare track characteristics and derive estimates of tiger numbers. In areas where a number of marking scrapes were present it could not be determined if scrapes were made by one or several tigers. It is possible, too, that tigers might have been present in areas where their tracks or scrapes were not observed.

Employing the help of people who had hunted tigers from 1950 through the 1970's proved valuable for locating evidence of tigers. Hunters not only possess the skills for identifying tracks and marking scrapes but they knew areas that tigers had

frequented and areas where tigers had scrape marked in past years, sites which were often still used by tigers. Tiger sign was frequently observed during the survey at sites where hunters had killed tigers 30 years ago. A technique employed by some hunters to determine the presence of tigers was to construct tilled dirt pads about 30 cm in diameter in the center of a wild animal trail. This method was used successfully by the survey team in Fujian to collect impressions of tiger tracks during the survey.

Interviews of local people also proved valuable for locating areas where tigers frequented and sites where marking scrapes might occur. The local people who live in the remote regions where tigers are present spend much time in the mountains searching for and collecting mushrooms, resin, and medicinal plants. Through careful interrogation we were able to determine if sightings of tigers reported by the local people were indeed tigers or leopards, clouded leopards, or other animals. We followed up recent reports of tigers or their sign with investigations in the field and frequently confirmed reports by documenting the presence of tiger tracks or scrapes.

### Evidence of Tigers

Tracks of tigers were observed in three areas in Hunan and two areas in Fujian (Figure 2, Table 1). Observation of marking scrapes on the ground were made in three areas in Guangdong, two areas in Hunan, and four in Fujian provinces (Figure 3, Table 2). In addition, recent sightings of tigers made by local people were reported for two areas in Guangdong, three areas in Hunan, two areas in Jiangxi, and two areas in Fujian (Figure 4, Table 3). These reports of tiger sightings do not constitute all recent reports but only those of which I was aware.

Tracks and scrapes of tigers were recorded at elevations ranging from 430 to 1700 m in natural forested habitats, a forest plantation, a corn field, and in grasslands along mountain ridges. Width of tracks measured 12 to 16 cm (Table 1). Scrapes were most frequently located < 30 cm from the edge of trails used by wildlife and people. Scrapes measured 13 - 20 cm wide and 20 - 50 cm long with a distinct pile of soil or grass and leaf litter at one end (Table 2). The marks of four claws could be seen in five scrapes with the distance between claw marks measuring five to seven cm indicating that scrapes were made by tigers with the pass of a single foot. One scrape on a tree possibly made by tigers was recorded in Hupingshan Nature Reserve in northern Hunan. Claw marks were observed on the trunk of the tree to 160 cm above

the ground and the distance between claw marks measured 2.0 - 2.3 cm. Asiatic black bears (*Selenartos thibetanus*) will mark trees using their claws, however, the marks recorded in Hupingshan were not made by bears. It is possible that the tree scrape marks may have been made by a leopard, although the local people believe that they were made by a tiger.

Since 1988 local people reported seeing tigers in Chebaling Nature Reserve and Renhua in Guangdong province (Table 3). During the same period, observations of tigers were made by local people in Mangshan, Bamianshan, Hupingshan, Badagongshan, and Zhang Jia Jie Forest Park in Hunan; near Jingangshan and Yihuang in Jiangxi; and Meihuashan in Fujian provinces. These are believed to be reliable reports. Many of the people questioned concerning sightings could accurately describe the animal as a tiger and some observations occurred within a distance of less than 30 m. Many people who reported seeing tigers had previous experience with leopards and could accurately distinguish the two felids.

Based on interviews with local people there is evidence for reproduction in Mangshan and Hupingshan in Hunan, near Yihuang in Jiangxi, and near Meihuashan in Fujian. Observations by local people of female tigers with young were made in Mangshan in Hunan where we observed large tracks (14 cm wide) and smaller tracks (12 cm wide) of tigers. It appeared as if these animals were traveling together, possibly being the female and its large sized kitten reported by the local people. There is also evidence of past reproduction near Reshui in southeastern Hunan where a 28 kg tiger kitten was reportedly captured during 1988 in a trap used to capture ungulates. The kitten apparently died in the trap and the hunter discarded the carcass for fear of being prosecuted for its illegal possession. Embedded in the trunk of a tree near Meihuashan in Fujian we found a broken tooth from a young felid that a forest worker described as belonging to a tiger which escaped from a leghold trap as the worker approached the trap site. Additional evidence for reproduction and presence of young tigers occurring near Meihuashan is that of a 10 kg kitten which was struck and killed by a vehicle on a road on 10 September 1987.

#### Evidence of Prey

Sambar (*Cervus unicolor*), serow (*Capricornis sumatraensis*), and wild pig (*Sus scrofa*) are potential prey for tigers and occur over much of the area surveyed. There

are also several species of deer, muntjac (Muntiacus muntjak, M. crinifrons) and tufted deer (Elaphodus cephalophus), rodents, and lagomorphs which could be utilized as prey. Although tracks of these species were seen during surveys it was not possible to estimate numbers of ungulates based on number of tracks or pellet groups. Ungulates in the subtropical forests typically occur in small groups and their scattered distribution within an area made it difficult to estimate their numbers. Sign of wild pig occurred in all areas surveyed (forest plantations, natural forests, and grasslands) indicating wild pigs are common and wide spread. Tracks of sambar and serow were common in areas where natural forests predominant as in the nature reserves of Guangdong, Hunan, Jiangxi, and Fujian provinces. Ungulates appeared to be common in Chebaling in Guangdong; Mangshan, Bamianshan, Hupingshan, and Badagongshan in Hunan; Jingangshan in Jiangxi; Wuyishan and Meihuashan in Fujian.

#### Evidence of Leopards, Clouded Leopards and other Carnivores

As with tigers it was difficult to document evidence of leopards, clouded leopards, and other felid species from field surveys. We did record tracks of a leopard near Dong Gu in Jiangxi. These tracks were located along the boundary between a forest and a rice field. Sightings of leopards by local people were reported in Hupingshan and Zhang Jia Jie Forest Park in Hunan.

Based on numbers of clouded leopards captured in leghold traps by hunters clouded leopards appear to be widespread and common in the areas surveyed. In Jiangxi reports indicate that 30-40 are captured each year. These felids are captured in traps intended for wild pig and deer. Most nature reserve administrative headquarters that we visited in the four provinces had one or two mounted specimens or captive live specimens of clouded leopards and often zoos in the larger cities had captive clouded leopards. Frequently foot injury was apparent on the specimens indicating that they had been captured in leghold traps. Two clouded leopards captured in leghold traps in Badagongshan Nature Reserve in Hunan were confiscated and the hunter was prosecuted. While we were conducting the surveys the governments of Fujian and Hong Kong had confiscated live clouded leopards from illegal traffickers. This information presents evidence for the widespread distribution of clouded leopards but also the threat posed from incidental trapping.



There were also mounted specimens of leopard cat (*Felis bengalensis*) and golden cat (*Felis temmincki*) at many nature reserve administrative headquarters. People in a village near Yihuang, Jiangxi, had a skin of a golden cat shot by a hunter in the autumn 1990. A skin from a leopard cat was observed at a store along the border between Hubei and Hunan's Hupingshan Nature Reserve. In a garment store in Changsha Hunan several fur garments made from leopard cats were for sale.

There were many reports from local people of Asiatic black bears occurring within the nature reserves in the four provinces. We observed black bear feeding and marking sites in Mangshan, Hupingshan, and Badagongshan in Hunan and Wuyishan and Meihuashan in Fujian. Live bears were confiscated from hunters by officials of the government of Hunan Forestry Department indicating there exists some illegal exploitation of these protected animals. We also found a skin of a black bear in a shop in Hubei along the border with Hunan.

#### Threats to Tigers and other Felids

Threats to tigers and other protected felids include 1) the incidental capture of these species in traps intended for wild pig and deer, 2) competition for prey by the local people when they kill ungulates for consumption and sale, 3) loss of habitat from deforestation and conversion of native forests to single species forest plantations, and 4) isolation of populations into small habitat islands making population interaction and breeding difficult.

We found many instances of clouded leopards being captured, injured, or killed in leghold traps intended for capturing wild pigs and deer. Tigers, often kittens, were also captured in these traps. In southeastern Hunan one hunter reported catching a 28 kg tiger kitten in a leghold trap. The tiger had died in the trap and the hunter discarded the carcass to prevent prosecution. In southwestern Fujian near Meihuashan Nature Reserve a local person reported several instances of tigers escaping from leghold traps.

A tiger that escapes capture with injuries inflicted from traps may have greater difficulty killing prey and may not survive or may resort to killing domestic animals. The traps seen for sale in markets in southeastern Hunan and western Jiangxi are similar in size to traps used in North America for capturing wolves (*Canis lupus*). The large size and toothed jaws of these traps would likely inflict serious injuries to any felid which might escape. These traps are reportedly used to capture muntjac and wild

pig for consumption or sale in markets. In southeastern Hunan sambar may sell for 8 RMB/kg and wild pig for 4 RMB/kg whereas domestic pig may sell for 5 RMB/kg. Leghold traps, too, are often used by farmers to capture wild pigs which threaten their crops. Incidental captures of tigers, clouded leopards, and other animals may pose a serious threat to populations of these endangered species.

We encountered local people with muzzle loading rifles within nature reserve in all four of the provinces. Although these firearms may pose little direct threat to tigers they may be effective for killing ungulates which are important prey for tigers. Competition for ungulate prey may seriously impact low density and low productivity tiger populations. We did find remains of sambar, serow, and muntjac killed by people in areas which are important habitats for tigers.

Habitat loss was a major factor contributing to the decline of tigers since the 1950's and it continues to be a threat. Cutting natural forests and subsequent conversion to single species conifer (*Pinus massoniana* or *Cunninghamia lanceolata*) forest plantations reduces forest diversity and habitats favorable to native ungulates. Once the forest is cut the sites are burned to prepare for commercial tree planting, destroying all native plants and forest litter. These early stages of reforestation provide poor conditions for wildlife. Also, the closed forest canopy and sparse understory vegetation in older plantations offer little forage and cover for ungulates.

These cutting and reforestation practices may adversely affect protected nature reserves too. Nature reserves are frequently located in the mountains along the borders between provinces and protection of wildlife and forests within reserves often ends at the provincial boundary. Forests may be cut and wildlife exploited along the border with the neighboring province, further isolating the reserves and threatening its wildlife. Deforestation along the border in Jiangxi will threaten the tigers and ungulates in the 7,545 ha Chebaling Nature Reserve in Guangdong. These destructive forestry practices sometimes occur within a reserve, as in Jingangshan in Jiangxi.

Planting conifers in natural grasslands may also have detrimental effects on ungulates which forage in grasslands. During the late 1960's many areas within these provinces were seeded from an airplane and dense stands of pines are replacing the natural grasses. Conifer trees are also planted by forest workers, converting the natural grasslands to forest plantations. This has occurred in Hubei province which borders

Hupingshan Nature Reserve in Hunan and in Jingangshan in Jiangxi. These activities may affect habitat utilization by ungulates in the reserve.

People living within nature reserves may affect the behavior of wildlife and threaten wildlife when they cut trees for building material and fuel. In addition human activity may disturb animal behavior and their foraging patterns. The local people within reserves often trap and hunt ungulates which pose a threat to their crops. Such activities reduce the numbers of prey available for tigers and directly threaten tigers, leopards, and clouded leopards which might be caught and injured in traps. Once reserves are established and wildlife numbers increase as a result of greater protection, human-wildlife interactions and financial costs of government compensation also increase.

### **Recommendations for Conservation**

The survey has not only shown that South China Tigers are present but that populations are distributed over a wide area and reproduction is occurring. Ensuring the future survival of their populations, however, will be a challenge. If adequate numbers of tigers are present then programs for their conservation may succeed as shown with the success of Project Tiger in India and Nepal. Conservation programs for tigers can help ensure the survival of many other threatened and endangered animals and plants and it can be compatible with human needs. Reserves serve as watersheds for clean water for drinking, irrigation, and hydroelectric power and forests for clean air and medicinal plants.

A philosophical and financial commitment will be needed if conservation programs for tigers are to succeed. Actions needed for tiger survival include: 1) increased protection for tigers, 2) protection of the prey of tigers, 3) protection for habitat, 4) establishing adequate-sized nature reserves, 5) public education and information programs, 6) research on tigers and their prey, 7) possible programs for reintroduction of captive bred animals into the wild, and 8) an international commitment for funding and expertise.

### Protection for Tigers and other Felids

Strict enforcement of existing wildlife protection laws is mandatory. Investigations are also needed on the potential threats that marketing of other species of

wildlife may have on survival of tigers and other threatened and endangered species. Trapping for ungulates may pose a serious threat to both tigers and clouded leopards and trapping should be banned in areas where these felids occur. Although there is a need to protect crops from depredation, alternative methods for controlling wild pigs which destroy farm crops should be investigated.

### Protection of Prey

Strict laws for the protection of all wild ungulates and enforcement of these laws is needed, particularly for areas deemed essential for the protection of tigers. This may require banning both firearms and traps and initiating measures to protect habitats for ungulates.

### Habitat Protection

Habitats important for tigers and prey should be protected. Tigers and their prey can tolerate limited man-caused habitat disturbances as shown by the presence of tiger tracks in a corn field within 100 m of a village and within a forest plantation. Serow, wild pig, and muntjac were also observed using small sized man-made forest clearings. Forest regeneration may occur relatively quickly in this subtropical region if forest clearings are small and the site is not severely disturbed. Other activities may have little impact on tigers and their prey. These may include collecting medicinal plants, mushrooms, and bamboo shoots.

To minimize the impacts that deforestation may have on tigers and their prey, forest openings must be small and the forest must not be converted to single species conifer forest plantations. Existing single species conifer plantations should be thinned and native trees and vegetation should be encouraged to provide cover and forage for ungulates. Grasslands at higher elevations should not be converted to conifer plantations. Where this has already occurred, trees should be harvested and grasses and forbs should be permitted to grow.

### Reserves

Although man and tigers can coexist, for the most part tigers are extinct or rare where man has dominated the landscape. Reserves with a minimum of human activity are essential for conservation of tigers and their prey.

To ensure the survival of this large and potentially dangerous carnivore, reserves must be large. In the region surveyed there were few areas greater than 40,000 hectares in size where natural forest and grassland habitats remain intact. Hupingshan (40,000 ha) in northern Hunan and Wuyishan (56,000 ha) in northwestern Fujian are the only reserves which may be of adequate size for conservation of tigers.

Existing reserves should be enlarged or combined with adjacent reserves. Meihuashan and Longxi in Fujian and Bamianshan in Hunan should be expanded in size to include surrounding habitats important for tigers and their prey. Mangshan in Hunan and neighboring Babaoshan and Cheng Jia in Guangdong should be combined into one large interprovincial reserve for tigers. Investigations into the occurrence of tigers near Yihuang, Jiangxi, requires further work. If this area proves to be valuable to tigers then forest and grassland habitats there should be protected. All these areas offer a variety of elevations and forest habitats which may be important cover and forage for ungulates throughout the year. The importance these areas offer for conservation is high-lighted by evidence of tigers reproducing here.

Reserves where tigers occur are often located in the mountains along provincial borders. This poses many problems for reserve managers. Deforestation, as occurs in Jiangxi adjacent to Chebaling Reserve in Guangdong, or conversion of grassland to forest plantations, as in Hubei adjacent to Hupingshan Reserve in Hunan, impacts the quality of habitats for ungulates and hence tigers occupying these reserves. In these areas, too, protection of ungulates from hunters is difficult because wildlife can be driven out of the reserve to outlying areas where they may be legally harvested.

Where possible, corridors between reserves should be established to permit tigers to travel between reserves. Corridors should be managed to protect ungulates and habitat, but some use of forest resources may be acceptable. Because of extensive and intensive agricultural practices few areas now exist which may be suitable for corridors.

### Education

There is a concerted effort in China to educate the public about conservation of wildlife and natural areas. China has made wise use of television as a vehicle for the conservation message. Public notices in towns and villages are used to relay the needs for conservation of natural resources. These efforts should be continued and expanded.

The help of local people is often enlisted for collecting information for wildlife management. This practice serves to educate and to promote participation and a sense of pride among the local people for resource management. Education and training programs for reserve managers and wildlife law enforcement personnel should also be of high priority.

### Surveys and Research

The survey for South China Tigers initiated in 1990 in Guangdong, Hunan, Jiangxi, and Fujian should continue and survey efforts should be expanded to include other provinces. This initial phase was successful in that the distribution of tigers was better defined, reproduction was documented, and important areas for tiger conservation were identified. Additional surveys will further refine and expand our knowledge about the distribution and population status of tigers in China. These surveys should enlist the help of the local people and those who have hunted tigers in the past.

Consideration should be given to more sophisticated research techniques. Cameras placed at bait stations or along wildlife trails and possibly triggered by infrared sensors may be useful for identifying individual tigers for censusing and documenting reproduction.

If concerns about conservation suggests that more information is needed about habitat and spatial requirements of tigers, as well as numbers, reproduction, and use of prey, than a population study using radio telemetry may be warranted. Radio telemetry studies in these remote and rugged mountains will be difficult and expensive. The rugged terrain would present problems for capturing animals and monitoring their movements using radio telemetry. Initial surveys with camera stations might be required to identify areas where capture and working tigers may be practical.

Additional research which might prove valuable for management of tigers includes assessing the habitat needs of the prey and the influences that human activities and management practices may have on habitat. Quantitative and qualitative studies of habitats are needed as well as studies on the influences that seasons may have on ungulate use of these habitats. The role that natural fires may play in maintaining natural grasslands and the importance these grasslands may have for ungulates should be investigated.

### Captive Breeding

Although there is evidence confirming the presence of tigers in all four provinces, tigers appear to be confined to the mountainous regions where there are few people. These habitats are dispersed and isolated by intensively farmed and deforested areas, obstacles for tiger populations to interact and breed. Where reproduction occurs it may be between closely related individuals.

Inbreeding may jeopardize chances for the long term survival of tiger populations. To minimize the potentials for inbreeding it may be necessary to release unrelated animals into the population. These animals could possibly come from other reserves where it is known there are adequate numbers or they might be obtained from captive breeding programs. Both options would be expensive and both would be presented with many logistical problems. However, these options should be investigated.

### Financial Considerations

Conservation of South China Tigers will require a commitment for long term funding. Monies should be provided for additional survey work. More thorough and extensive surveys should be undertaken in Guangdong, Hunan, Jiangxi, and Fujian. Surveys need to be conducted in other provinces as well.

For conservation efforts to be effective more information about tigers and their prey is needed. The difficulties of conducting studies on elusive carnivores in remote regions will require a long term effort and it will be costly.

Administering reserves for tigers and enforcing wildlife protection laws will also be expensive. Increased enforcement efforts are needed to reduce man-caused mortalities for both tigers and their prey. People living in areas important for tigers should be relocated. Information and education programs need to be continued. These will all require a long term commitment for funding. But more important, the survival of the South China Tiger depends on a moral and philosophical commitment.

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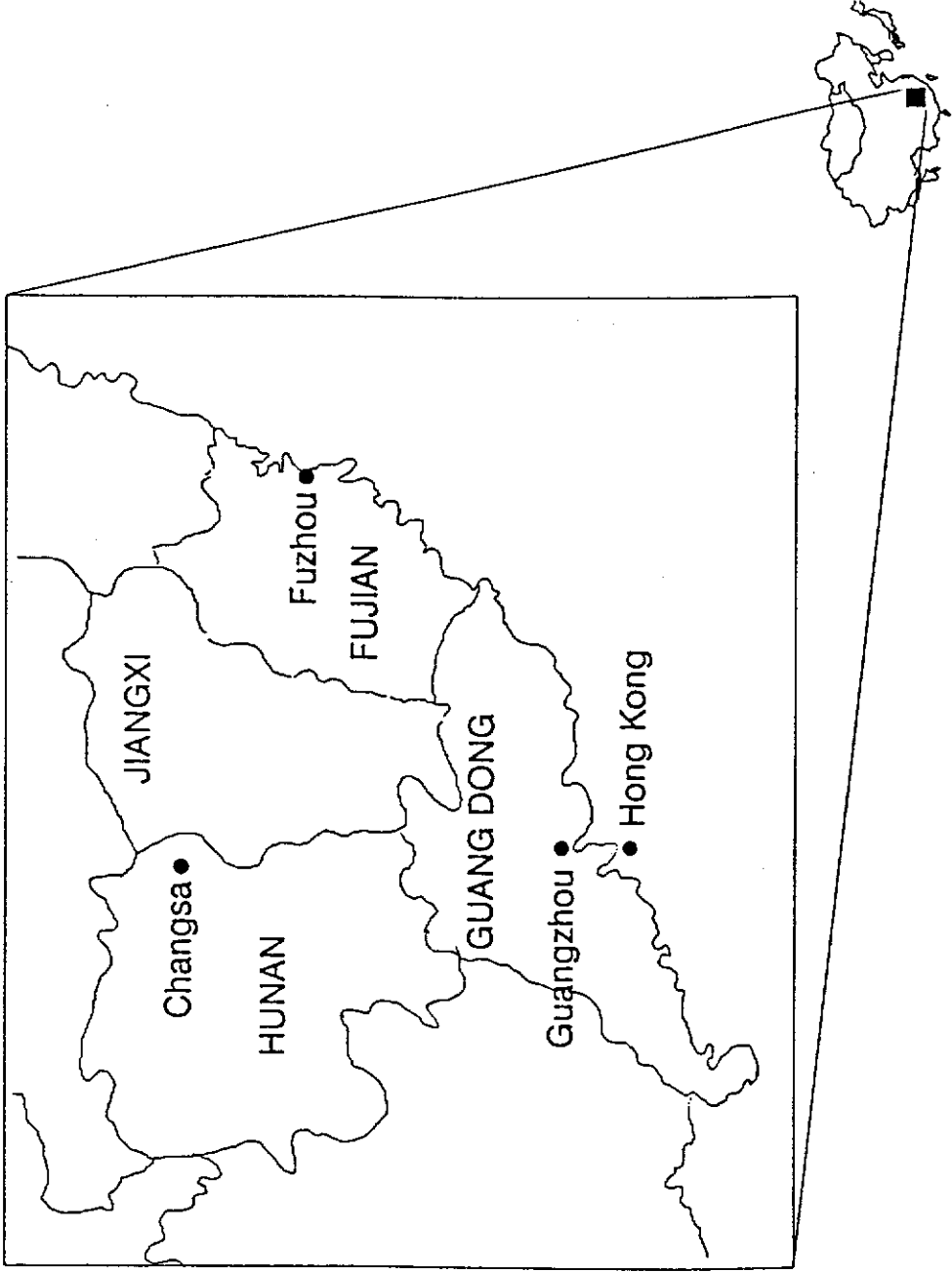


Figure 1. Location of provinces surveyed for South China Tiger during October 1990 - February 1991.

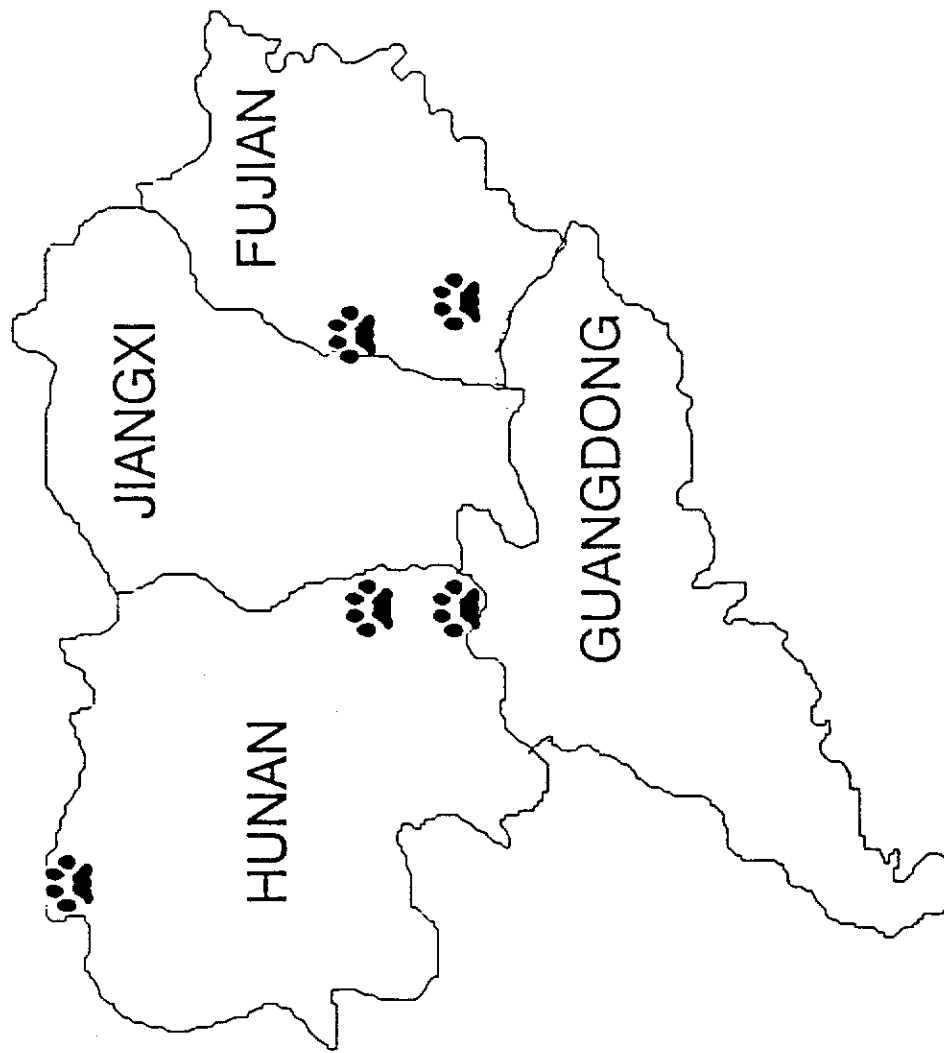


Figure 2. Locations of tiger tracks observed during the survey.

Table 1. Locations of tracks of South China Tigers recorded during surveys October 1990 - February 1991.

Date	Province	Location	Latitude	Longitude	Track Width	Track Length	Size (cm)	Comments
6 Nov 1990	Hunan	Mangshan	24° 53' N		14	15.5		< 2 m from small tracks
			112° 50' E		14	14		which may be of kitten
10 Nov 1990	Hunan	Bamianshan	26° N		12	-		Local person heard tiger
			113° 45' E		13	-		roar three days previous
16 Dec 1991	Fujian	Meihuashan	25° 20' N		16	12		Scrapes within 100 m
			116° 45' E		15	12		of same age as tracks
13 Jan 1991	Hunan	Hupingshan	30° 5' N		12	14		In corn field < 100 m
			110° 45' E		12	10		from house
25 Jan 1991	Fujian	Ninghua	26° 20' N		14	16.5		
			116° 40' E					

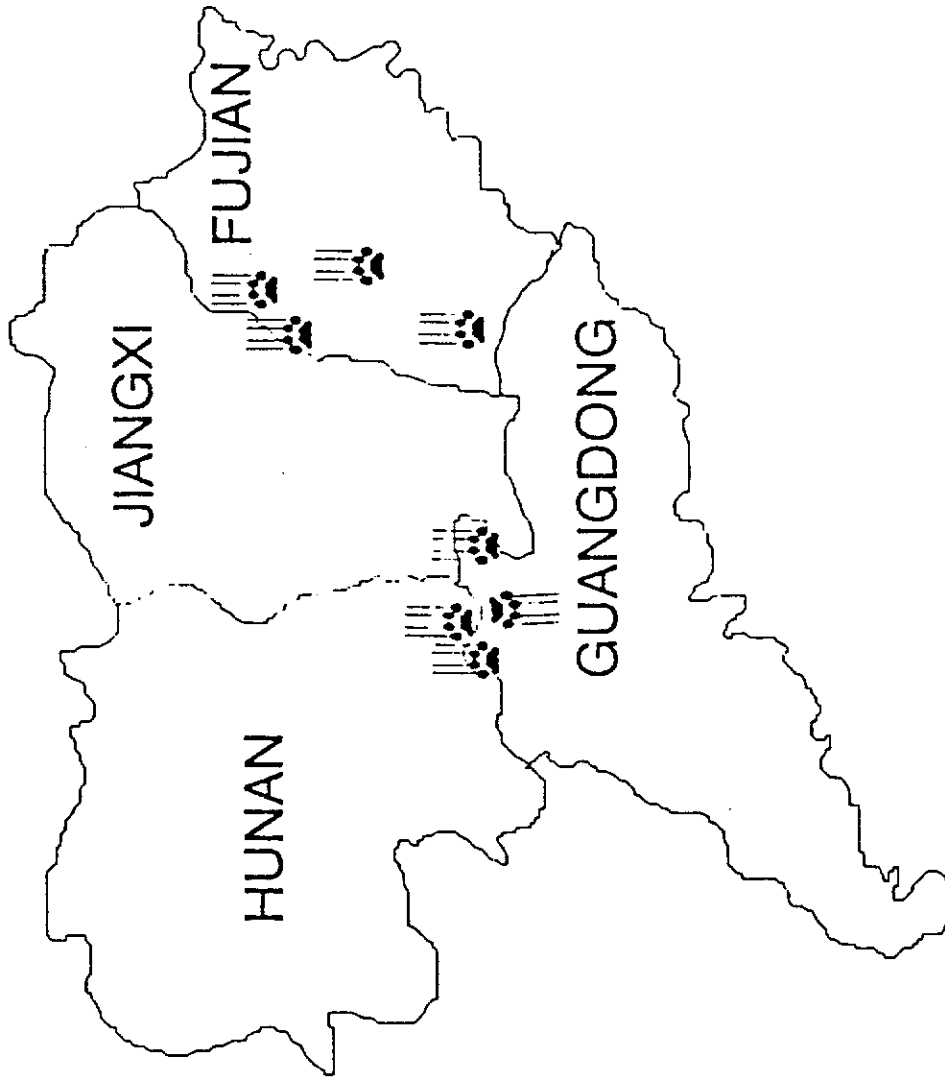


Figure 3. Locations of tiger scrapes observed during the survey.

Table 2. Location and description of tiger scrapes recorded during survey October 1990 - February 1991.

Date	Location		Latitude		Longitude		Measurements		Comments
	Province	Place	Latitude	Longitude	Width	Length			
21 Oct	Guangdong	Cheballing	24° 50' N	114° 20' E	15	20-25	20-30	Grassland along ridge elevation 1200 m	
25 Oct	Guangdong	Renhua	25° 13' N	113° 45' E	18	18	28	Two fresh scrapes < 30 m elevation 430 m	
30 Oct	Guangdong	Cheng Jie	24° 50' N	112° 45' E	20-14	34	23	4 scrapes < 100 m 2 fresh elev. 1150 m	
6 Nov	Hunan	Mangshan	24° 53' N	112° 43' E	19.5	30	33	2 fresh scrapes < 50 m	
14 Dec	Fujian	Shaxian	26° N	117° E	24	51	51	elevation 830 m	
16 Dec	Fujian	Meihuashan	25° 20' N	116° 45' E	12	50	50		
					15	50	52		
					19				

Table 2. (Continued) Location and description of tiger scrapes recorded during survey October 1990 - February.

Date	Province	Place	Location		Measurements		Comments
			Latitude	Longitude	Width	Length	
16 Dec	Fujian	Meihuashan	25° 17' N	116° 45' E	12	40	Grassland at elev. 1700 m
24 Jan	Fujian	Longxi	26° 30' N	117° 20' E	14	38	At least 3 scrapes along trail
					20	40	at elev. 1000m
					13	45	
24 Jan	Fujian	Longxi					11 scrapes within 100 m.
26 Jan	Fujian	Jianning	26° 45' N	116° 45' E	22	55	

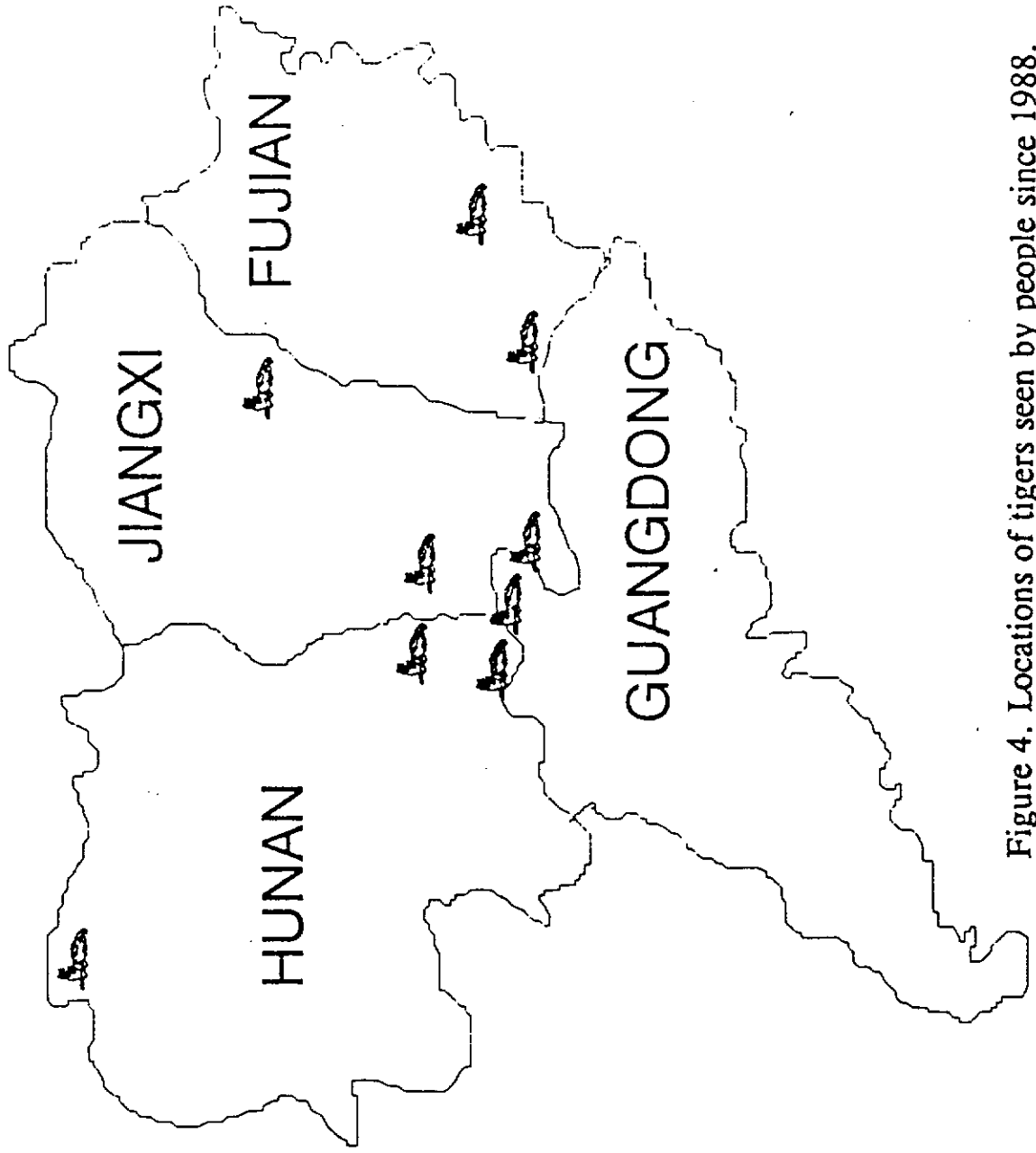


Figure 4. Locations of tigers seen by people since 1988.

Table 3. Locations of tigers seen since 1988 by local people.

Date of Observation	Province	Place	Latitude	Longitude	Comments
Autumn 1990	Guangdong	Chebaling	24° 50'N	114° 20'E	
1988, 1990	Guangdong	Renhua	25° 13'N	113° 45'E	
1990	Hunan	Mangshan	24° 53'N	112° 50'E	Female and one kitten
7 Nov. 1990	Hunan	Bamianshan	26° N	113° 45'E	Heard roar (we saw tracks)
1988	Hunan	Hupingshan	30° 5'N	110° 45'E	Heard roaring, saw tracks, saw female with kittens
17 Nov 1990	Hunan	Hupingshan			Female with kitten
Dec. 1990	Hunan	Hupingshan			Female with 2 kittens
1989	Jiangxi	Jingangshan	26° 15'N	114° E	Person shot at tiger
1989, 1990	Jiangxi	Yihuang	27° 20'N	116° 10'E	Several tigers seen by a number of local people



Table 3. (Continued) Locations of tigers seen since 1988 by local people.

Date of	Location			Comments
Observation	Province	Place	Latitude Longitude	
1990	Fujian	Meihuashan	25° 17'N 116° 45'E	
1991 Jan	Fujian	Datian	25° 40'N 117° 45'E	plaster impression of track

Schedule of Activities 10 October 1990 - 9 February 1991

- 10 Oct. - Guandzhou: Coordination meeting with Ministry of Forestry PRC.
- 12 - 16 Oct. - Hong Kong: Purchase supplies for survey.
- 17 Oct. - Guandzhou, Guangdong.
- 18 Oct. - Chebaling Nature Reserve, Guangdong.
- 24 Oct. - Leave Chebaling for Renhua County.
- 26 Oct. - Boboashan Reserve
- 26 Oct. - Interviewed on TV about tiger conservation
- 30 Oct. - Chen Jia Reserve.
- 3 Nov. - Guangzhou.
- 4 Nov. - Hunan Chenzhou.
- 6 Nov. - Mangshan Reserve Hunan.
- 8 Nov. - Re Shui in SE Hunan.
- 9 Nov. - Bamianshan.
- 11 Nov. - Toayundeng Reserve.
- 13 Nov. - Changsha Meeting with Hunan Ministry of Forestry.
- 14 Nov. - Hupingshan Reserve.
- 19 Nov. - Zhang Jia Jie National Forest Park and Provincial Reserves.
- 24 Nov. - Nanchang, Jiangxi, Coordination Meeting.
- 27 Nov. - Jian and Dong Gu Jiangxi.
- 29 Nov. - Jingangshan Reserve.
- 5 Dec. - YiHuang Jiangxi.
- 9 Dec. - Wuyishan Reserve Jiangxi.
- 11 Dec. - Wuyishan Reserve Fujian.
- 13 Dec. - Nanping-Sanming Prefectures Fujian.
- 16 Dec. - Meihuashan Reserve.
- 23 Dec. - Fuzhou Meeting with Fujian Department of Forestry.
- 24 Dec. - Guangzhou, Guangdong.
- 25 - 30 Dec. - Hong Kong for communication to WWF.
- 31 Dec. - Changsha, Hunan.
- 4 Jan. - Chengde Hunan.
- 6 Jan. - Hupingshan Reserve.

- 14 Jan. - Badagongshan Reserve
- 22 Jan. - Fuzhou, Fujian.
- 23 Jan. - Mandangshan Reserve.
- 24 Jan. - Longxi Reserve.
- 26 Jan. - Jianning.
- 27 Jan. - Ninghua.
- 28 Jan. - Meihuashan Reserve.
- 29 - 30 Jan. - Meihuashan: Summary meeting with representative from Guangdong,  
Hunan, Jiangxi, Fujian, and Ministry of Forestry PRC.
- 1 Feb. - Xiamen Fujian
- 3 Feb. - Hong Kong
- 9 Feb - USA

