

# THE STATUS OF WILD CATTLE IN CAMBODIA AUGUST 1999 UPDATE

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## Introduction

This report updates information from the July 1998 Interim Report, "Distribution of Tiger, Leopard, Elephant, and Wild Cattle in Cambodia", which in turn was presented in "Tracking Tigers".

## Additional information sources

1999 Tiger Conservation Workshops for district and province officials in Kratie, Stung Treng, Mondulakiri, Koh Kong, Preah Vihear, and Pursat

1999 interviews of 71 hunters in Kratie, Mondulakiri, Siem Reap, Preah Vihear, and Koh Kong

1998-99 special interviews in Ratanakiri and Mondulakiri in connection with the film expedition for the documentary "Quest for the Kouprey"

1998-99 special interviews in Chhep and Chey Sen districts of Preah Vihear

1999 field survey in the Cardamom Mountains of Koh Kong and Pursat

1998-99 WWF/WCS activities in Virachey National Park

## Regions defined

Information is presented for the 9 regions shown on map Figure 2 and described in Table 1 from the CAT News article "National Status Survey for Tigers in Cambodia". (These regions are a further refinement of the 5 Biodiversity Management Regions used in the July 1998 Interim Report, and can easily be cross referenced to the sub-regions listed in the gaur and banteng tables in the July 1998 Interim Report.) These regions contain all forested areas in Cambodia more than 10 km from villages, and therefore encompass virtually all possible large mammal habitat in Cambodia. It is important to note that returning refugees and other resettlement associated with the end of the Cambodia conflict render the designated regions somewhat imprecise. However, they are sufficiently accurate for indicating countrywide distribution patterns of large mammals.

## South of Sre Pok

This area of 14,971 km<sup>2</sup> is located in portions of Ratanakiri, Kratie, and Mondulakiri. It is without doubt the most important wild cattle area in Cambodia. Multiple intact herds of gaur and banteng are scattered throughout the area in suitable specific locations. The entire region is contiguous, and hunters report that the animals move around considerably, especially in connections with the dry season/wet season cycles. Mondulakiri and Kratie hunters interviewed in 1999 listed gaur and banteng along with sambar, barking deer and wild pig in

the category of animals that are medium in numbers and easy to find and shoot whenever desired, as opposed to animals like tiger and elephant that are listed as low in numbers and hard to find. Officials at the Mondulkiri workshop characterized gaur and banteng as common in Koh Nhek and Pich Roda, and buffalo living in a wild state present in isolated locations.

Kouprey, elks deer, and hog deer used to be common, but are now never seen. The consensus of Mondulkiri officials is that the kouprey may be gone, and if there are any left, the number is less than ten. Three kouprey were reported seen with a herd of banteng in Koh Nhek in August 1998. A Khmer Rouge was reported to have seen 2 or 3 kouprey near Phnom Yankee in 1997. A hunter reported meeting 2 or 3 Kouprey near Phnom Yang Po in 1996-97. In 1996, 4 or 5 were reported seen in Koh Nhek. All of these reports were second or third hand, and no further details are available. No other plausible information on kouprey has come to light in Mondulkiri during the past year. The author reluctantly concurs with the local officials and hunters—the kouprey are finished. Under the most optimistic possible scenario, less than six scattered individuals remain.

The January kouprey documentary expedition proceeded from Lomphat in motorized dugouts up the Sre Pok to the portion of Mondulkiri north of the Sre Pok, where base camp was located at the junction of Prek Rue. Two hunters were encountered on the river returning from a month of hunting. They had the remains of two male banteng in their dugout. Numerous banteng and buffalo tracks were seen along the Prek Rue. The guides reported a permanent population of buffalo living in a completely wild state along the Prek Rue, sometimes crossing the Sre Pok to the vicinity of Phnom Yang Ke. One hunter encountered 4 large male buffalo and two gaur near Phnom Yang Ke in August 1998. Gaur are almost never seen north of the Sre Pok, but banteng are always present.

Our guides were tribal hunters who ride elephants all over both sides of the Cambodia-Vietnam border. They say that the habitat in Cambodia is far superior to that in Vietnam in Yok Don and the adjoining area in Vietnam north of the Sre Pok, which would account for the low animal populations reported from recent surveys of Yok Don and vicinity.

Another area that Koh Nhek hunters report has particularly large concentrations of gaur and banteng is Phnom Gunshall, in Pich Roda district near the Koh Nhek frontier. The area is in Phnom Prich Wildlife Sanctuary. One official reports meeting 5 to 20 gaur every time he goes to the area. He also reports that in the past, one hunter regularly took 5 or 6 banteng per hunt. A third important concentration of wild cattle is in Keo Sema district, north of the Snoul Wildlife Sanctuary. Kratie officials report that gaur and banteng are sometimes seen along the main road through the sanctuary, now that logging has ceased. A Mondulkiri official reported that a large gaur was shot in March 1999 by a logging company guard in Keo Sema.

The author employs a full time refugees monitor in Mondulkiri, as part of his Refugees International responsibilities. This monitor visits all districts by motorbike on a regular basis, and in August 1999 reports that hundreds of rifles have been taken back from civilians by the authorities in the past few months. Wild animal meat has vanished from the main province market, and furthermore is no longer widely available in the districts.

This region contains four protected areas: Snoul, Phnom Prich, Lomphat, and Nam Lyr. After the movie expedition visited the Sre Pok Triangle, WPO has held further discussions on

designating a new wildlife sanctuary along the Vietnam border north and south of the Sre Pok, which would link Yok Don, the proposed northern extension of Yok Don, and Lomphat. Currently, only Snoul has any kind of management presence. It is important to note, as the map illustrates, that wild cattle could theoretically move from Snoul to Phnom Prich to Lomphat to Nam Lyr without encountering a major habitat break in this large, sparsely populated region. The opportunity exists for true landscape-scale conservation activities. Habitat threats are minimal—some resettlement do to returning refugees, and some logging in the isolated blocks of evergreen forest, primarily adjacent to the Vietnam border north of Snoul and in the famous Prey Khieu (Green Forest) in western Koh Nhek and northern Kratie.

### **Virachey**

In March 1999, five rangers made a 20 day trip to the tip of the Dragon's Tail, where Cambodia, Laos and Vietnam meet. They encountered 4 gaur, reinforcing previous information that gaur are widely distributed throughout Virachey. The rangers also received reports of kouprey midway between the Se San and the Dragon's Tail, from where other reports of klouprey have come in recent years, as reported in the July 1998 Interim Report. However, when the rangers asked for detailed descriptions, the descriptions resembled banteng. The author accepts this as much more plausible, since the habitat is not consistent with kouprey. The author no longer considers it plausible that a lost herd of kouprey inhabits Taveng District in Rataanakiri.

When the WWF/WCS team went in to removed their camera traps from the Veal Thom area along the Vensai/Taveng border in Virachey in July 1999, much sign and tracks of gaur were encountered, and animals could be heard moving around, but none were seen. No gaur or banteng were photographed by the camera traps. No further evidence of banteng has emerged from Virachey. The small populations in Taveng Distirct remain the only confirmed significant banteng presence in Virachey. Most of Virachey is too steep and densely forested for banteng, although gaur populations appear to be robust.

### **Northeast Buffer**

This is the portion of Stung Treng east of the Mekong and west of Virachey, and the portion of Ratanakiri between the Sre Pok and Se San. The only population of gaur and banteng documented for this area is Phnom Voene, as previously reported. No significant new information has been obtained in the last year for this region.

### **Kampong Thom**

This is a large area of lowland evergreen forest west of the Mekong in Kampong Thom and Kratie Provinces. It has been heavily logged and hunted. Generally very low populations of large mammals are reported, but some gaur and banteng are still present. A Kratie official at the workshop reported that a hunter encountered a herd of 20 to 30 gaur near Phnom Chi in early 1999, and shot one large male with his AK-47 when the animal scared him by coming too close. Phnom Chi is a very curious place. Khiting Vohr are reported to live there. Two Kouprey were reported shot there in the late 1980's. A Rhino was shot there by a group of Khmer in 1985. Officials at the workshop report that elephant tracks were seen there for the first time in years in 1999, and tiger tracks as well. However, WPO officials who participated in timber inventories in the area report the area is largely logged out and shot out. A large

Khmer Rouge base camp was located on Phnom Chi for many years, making it highly unlikely that anything like Khiting Vohr, Kouprey, or Rhino survived. Furthermore, in June 1999, 9 hunters were interviewed around Phnom Chi to get to the bottom of the conflicting reports. All reported that large mammals are now very rare throughout this region, due to heavy logging and hunting.

### **Northern Plains**

This region is located in Preah Vihear and Siem Reap Provinces, and the new Oddar Meanchey Province, created from the northern third of Siem Reap Province. It contains two wildlife sanctuaries: Beng Per and Kulen Promtep. In March 1999, the WPO team drove to Tbeng Meanchey, the capital of Preah Vihear. En route, the team stopped at the Beng Per ranger check point (the road bisects Beng Per sanctuary.) Rangers reported that all the large mammals had been shot out or driven out by widespread illegal logging. Nothing larger than a barking deer was left. However, in early 1999, after logging had stopped and gun control implemented, a single herd of banteng moved into the sanctuary. Soldiers immediately began placing mines in the meadows where the banteng fed to harvest the banteng for meat and horns to sell. Rangers pointed out that law enforcement was problematic, because the soldiers had guns and they did not.

Thirty-nine officials from every district in Preah Vihear attended the workshop. They reported that the once plentiful tiger, elephant, gaur, banteng, buffalo, and kouprey were almost all gone after 30 years of anarchic conflict and illegal logging. Only during the past year, with the conflict over, gun control implemented, and logging stopped, have a few large mammals begun to reappear. No official claimed that any kouprey survive anywhere.

Four sets of hunter interviews have been conducted: the 1998 interview survey, the 1998 Chhiep special interviews, Chey Sen special interview following the 1999 workshop, and the 1999 interview survey in Preah Vihear and Siem Reap. Two important areas have emerged from these interviews. The western half of Kulen Promtep sanctuary, located in Svay Leu district of Siem Reap and Kulen district of Preah Vihear, is anchored by the pristine Prey Shaak evergreen forest. A few herds of gaur and banteng survive here, because the evergreen forest provides refuge not found in the adjacent open forest and grassland. A Forestry official reported that a hunter shot one banteng in Kulen district in 1997.

The same situation exists in the Prey Preah Roca Forest, located in northern Choam Ksan and Chhiep districts south of the junction of Cambodia, Thailand, and Laos. Hunters interviewed in Chhiep in 1998 reported that banteng and gaur are still present in low numbers. One hunter shot a banteng in 1997 and sold the horns to the WPO interviewer for \$48. The hunter said he could sell it to Thai and Lao traders for \$100 to \$150. Several hunters and officials reported that traders from Laos come to Chhiep every six months to buy horns, tiger bones, and ivory.

Further south, in Chey Sen district, few animals remain. After the workshop, a WPO official proceeded to Chey Sen to investigate reports of a Khiting Vor trophy. It turned out to be a female gaur, killed on January 1, 1999. A few gaur remain near the border of Chey Sen district and Sandan district of Kampong Thom. This area can be considered a transition zone from the Kampong Thom Region to the Northern Plains Region. Banteng have not been seen in Chey Sen in years, but hunters found the footprints of a herd of ten in neighboring Chhiep district in October 1998.

Elds deer, sambar, and barking deer are reported in medium to high numbers throughout the open forest portions of the region. It appears that the largest population of elds deer in Indochina remains here. There is no possibility of mistaken identity, because the WPO interviewer returned with an enormous set of elds deer antlers, and inspected many other sets of antlers in the field.

A few wild buffalo are said to remain in the Prey Preah Roca Forest of Chhiep District. A hunter saw two there in early 1999.

As noted previously, none of the 39 officials from every district in Preah Vihear at the workshop claimed that any kouprey remained. Furthermore, none of the hunters interviewed in Preah Vihear and Siem Reap in 1999 reported any kouprey. The only kouprey report received in the last year for this region was that two kouprey were seen crossing the road by two Red Cross workers driving from Siem Reap to Anlong Veng. It would appear that the kouprey is finished west of the Mekong, with a maximum of a couple of scattered individuals left under the most wildly optimistic possible scenario, considering all of the available evidence. The author estimates the total world population east and west of the Mekong at less than ten, and more likely less than five. If the kouprey is not extinct already, extinction is imminent.

For years, most wildlife trophies exported from Cambodia to Thailand have moved through the Poipet border crossing. The main kouprey horn dealer at Poipet told Sun Hean that he purchased three male kouprey horns and one female horn in the last year. All came from eastern Cambodia. The horns were inspected by Sun Hean and Heng Kimchhay, and were determined to be old horns. The author inspected horns at village Sre Angkrong in Ratanakiri from a female kouprey shot in the 1940's. While serving as an election observer in Mondulakiri in July 1998, the author learned that a Pnong tribal brought in a set of female kouprey horns from an animal shot years ago. Traffic in horns is not an accurate indicator of continued presence of Kouprey. In fact, lack of new horns from either east or west of the Mekong is another indicator of the precarious status of the kouprey.

Along with gaur, banteng, elds deer, sambar, and barking deer in both areas, low numbers of elephants are present in and around the Prey Preah Roca Forest. Medium numbers of tiger appear there and in and around the Prey Shaak Forest. Hunters reported 15 tigers were killed in Siem Reap in the past year, including three young, and 16 tigers were killed in Preah Vihear, including one young. Therefore this area has sufficient diversity and numbers of wildlife over a large and varied intact habitat to warrant a conservation program that could stabilize and then increase wildlife populations. Efforts should center on the west half of Kulen Promtep Wildlife Sanctuary and the Prey Preah Roca Forest in extreme eastern Choam Ksan and northern Chhiep districts. This area adjoins an existing protected area in Thailand and a proposed NBCA in Laos. Elephants have been confirmed to cross the borders and wild cattle have been reported to. The area could be given special management status, such as a wildlife sanctuary, and managed in concert with the adjoining protected areas in Thailand and Laos.

## **Pailin**

This region is adjacent to the Thailand border north of the Cardamom Mountains Region. Pailin itself is now a special administrative area run by ex-Khmer Rouge. The region contains the Roneam Daunsam Wildlife Sanctuary and the Som Lot Multiple-use Area.

Nothing whatsoever has been learned about this area during the past year. However, the 1998 interview survey of this region documented that banteng were reported in low numbers by 2 hunters, medium numbers by 12 hunters, and high numbers by 2 hunters. Gaur were reported in low numbers by 9 hunters, medium numbers by 5 hunters, and high numbers by 1 hunter. Only 1 hunter reported gaur were not present in his hunting area. Obviously both gaur and banteng are still found in this region, despite years of especially nasty warfare, some of the most extensive minefields in Cambodia, widespread illegal logging, and mass relocations of human populations. Future field surveys will sort out the details.

### **Phnom Oral**

This region lies west of the Cardamom Mountains Region. It contains the highest point in Cambodia, Phnom Aural, 5810 feet. The Phnom Aural Wildlife Sanctuary encompasses 2,537 km<sup>2</sup> of the 6,079 km<sup>2</sup> region. Nothing new was learned this year about the area. In the 1998 interview survey, 5 hunters reported low banteng, 3 medium, and 1 high. Seven hunters reported low gaur, and 2 hunters reported gaur not present in their hunting area. The region appears to contain herds of both species, but field surveys will be necessary to confirm details.

### **Elephant Mountains**

This region lies south of the Cardamom Mountains Region. It contains Kiirom and Bokor National Parks. No new information has emerged during the past year on the status of wild cattle in this region. The 1998 interview survey resulted in 5 hunters reporting low banteng, 4 medium, 2 high, and one not present. Eight hunters reported low gaur, 2 medium, and 2 high. Like Pailin and Phnom Oral, the differing ratios of banteng and gaur reported are another of the many indicators that the hunters know the difference between the two species. Color pictures were shown at the interviews to ensure this.

### **Cardamom Mountains**

This region contains the Phnom Samkos Wildlife Sanctuary and Ream National Park, and borders Phnom Aural Wildlife Sanctuary to the east. It is important to note that the region as defined contains not only the Cardamom Mountains, but also several adjacent basins and coastal lowlands. Interview survey results in 1998 were very uneven. Of 31 hunters interviewed, 1 reported low banteng, 15 medium, 1 high, and 14 not present. The author interprets this to indicate that banteng are found only in widely scattered areas of suitable habitat, but where they are found, they are generally present in solid medium numbers. For gaur, 6 hunters reported low, 9 medium, 1 high, and 15 not present. The author concludes gaur are found in the Cardamom Mountains Region in widely scattered populations containing low to medium numbers of animals.

During the May 1999 FFI Field Survey, the author and Ramesh Boonratana and WPO staff Prum Sovanna observed several sets of fresh gaur tracks crossing the logging road on the ridge that forms the watershed divide between Koh Kong and Pursat Provinces. This location is at the approximate center of the Cardamom Mountains Region. Local people reported gaur are frequently seen along the road at this location, and other gaur populations are widely scattered a day or two's hike away. No direct evidence of banteng was found. Two pairs of banteng horns were retained at O'soam Commune for ceremonial purposes, but the origin of the horns could not be determined. O'soam is in a basin about 7 km north of the ridge where

the gaur tracks were seen. Villagers reported banteng scattered around various locations a day or two's hike away.

Also in May 1999, FFI representative Frank Momberg and 3 Ministry of Environment staff accompanied a refugees needs assessment that entered the northern part of the Cardamom Mountains Region by crossing the mountains from Battambang into the new Veal Veng District of Pursat. Veal Veng district is the former western half of Kravanh district. About 5000 people in 20 villages in 5 communes now live in Veal Veng district in a large basin in the northern portion of the Cardamom Mountains Region. Some of these villages are inside the Phnom Samkos Wildlife Sanctuary.

Due to impossible roads, only 6 households from 4 villages were interviewed in 3 days. Sightings of several groups of 2 to 5 individuals of gaur were reported in at least 8 different locations. Banteng were reported to be abundant in the mixed deciduous forest of the basin, occurring in larger groups than gaur. Several groups, about 20 in total, were sighted along the Sam Lang river in April 1999. The interview team saw a gaur trophy at a market in Battambang that originated in the Veal Veng district. Two banteng trophies were observed being transported by motorbike from Veal Veng to Battambang.

### **Conclusion**

Assemblages of banteng and gaur are still found in all nine large mammal regions in Cambodia. Field surveys will be necessary to determine detailed distribution and estimates of numbers. For the first time in 30 years, it is now possible to carry out fieldwork in every province in Cambodia. Peace has brought large numbers of armed men out of the forest, and thousands of rifles have been returned to the authorities. Anarchic logging has been brought to a halt. Wildlife is already responding, showing up in areas where large mammals have been missing for years. An excellent opportunity exists to develop conservation programs to maintain Cambodia's unique wildlife heritage.

## IUCN Antelope Survey and Action Plan

### Chapter 39: Cambodia (Khting Vohr)

**Authors: Hunter Weiler and David Ashwell**

#### Introduction

Cambodia is situated in western Indochina and occupies an area of 181,000 km<sup>2</sup>. It shares land borders with Vietnam, Lao PDR and Thailand and has a short coastline on the Gulf of Thailand (Fig. 39.1). The human population is approximately ten million.

More than 75% of the country consists of a low-lying central plain, which is dominated by the Mekong River and Tonle Sap lake. The Cardemom, Elephant and associated mountains in southwestern Cambodia are the most extensive mountains within the country and generally exceed 1,000 metres in elevation. An outlier to these ranges, Phnom Aural, is Cambodia's highest point, at 1813 meters. The smaller Dangrek Range and the Virachey mountain chain constitute much of Cambodia's northern border with Thailand and Laos. The northeast and east are occupied by the Bokeo (Ratanakiri) and Chhlong (Mondolkiri) plateaus. The latter is a part of the larger Mnong Plateau in southern Vietnam and is contiguous with the Di Linh highlands and Darlac Plateau of Vietnam.

Cambodia has a tropical monsoon climate with marked dry and wet seasons. The southwest monsoon brings heavy rain from May to October. Natural and semi-natural landscapes (mostly forests) occupy about 60% of Cambodia (Ashwell 1997). The economy and human population have been devastated by years of war and civil conflict, which have had unknown effects on the environment and wildlife. However, large areas of natural habitat remain as the large majority of Cambodian villages are situated within only twenty percent of the landscape. Indeed, Cambodia contains the largest extent of natural forest in mainland Southeast Asia (Ashwell 1997).

While there was a considerable amount of game hunting during the 1960's, research on Cambodia's wildlife prior to the 1970's was limited to largely *ad hoc* investigations upon birds and Wharton's (1957) major study on the kouprey (*Bos sauveli*). The current status of much of the country's fauna is not well known. Gradual improvements in the security situation since 1993 have led to increased survey through collaborative efforts; particularly between the Ministry of Environment, the Wildlife Protection Office (WPO), IUCN and its partner organizations WWF, WI, FFI and UNESCO; but also by a wider array of development projects and individual initiatives.

In recent years there have been a number of short-term field surveys focusing upon large mammals. (Olivier and Woodward 1994, Lic and Desai 1996,

Timmins and Men 1998, Weiler 1998a&b) There has also been a range of information collecting activities (Ashwell 1997, Duckworth and Hedges 1998, Martin and Phipps 1996, and Weiler *et. al.* 1998). This information generally supports the contention that Cambodia still supports a range of medium-sized and larger mammals and that many of these are widespread though not necessarily abundant. Many are currently threatened by recent habitat destruction resulting from widespread logging and largely uncontrolled trade (Martin and Phipps 1996). Larger animals tend to be restricted to areas more than ten to twenty kilometres from villages (Ashwell 1997 and Weiler *et. al.* 1998).

### **Current Status of Antelopes**

The only species of antelope reported from Cambodia is the *khting vohr* (*Pseudonovibos spiralis*), a new bovid named on the basis of horns obtained in Vietnam (Peter & Feiler 1994a; 1994b). Horns from this species were originally collected at Soui Kiet in southern Vietnam during 1929 but were not described until 1986 when they were considered to be those of a female Kouprey (Hoffman 1986).

The treatment of this first specimen as the horns of female kouprey has been rejected (Dioli 1995). However, the taxonomic status, systematic and phylogenetic relationships of *Pseudonovibos* within the Bovidae have yet to be established although Peter & Feiler (1994a) considered that its horns most resembled those of Mongolian gazelle (*Procapra gutturosa*).

All existing specimens consist of horns either with or without frontlets. As these are commonly fabricated the authenticity of some records is in doubt. However, their description by four separate authors (Desai and Lic 1996, Dioli 1995, 1997; Hoffman 1986, and by Peter and Feiler 1994a, 1994b) would appear to be adequate to establish at least the prior existence of this species. However, no specimen, corpse or body part other than horns has ever been observed by biologists and field signs are unknown.

### **Conservation Measures Taken**

#### Laws and Regulatory Framework

Various laws regarding hunting and wildlife trade exist, but there has been little attempt to enforce them. In early 1999 a complete ban on hunting and wildlife trade was announced along with a ban on logging. There are indications that the relevant agencies are beginning to develop a program to enforce these initiatives.

Wildlife protection is the responsibility of the Wildlife Protection Office (WPO) within the Forestry and Wildlife Department, which is itself in the Ministry of Agriculture, Forestry and Fisheries (Sarun 1997). However the Ministry of

Environment has overall responsibility for the development and management of protected areas. Institutional responsibilities for wildlife management therefore require further clarification and enhancement.

Additional bases for the development of legal protection stem from Articles 58 and 59 of the Constitution, the 1996 Environmental Framework Law, Cambodia's accession to the Convention on Biological Diversity, World Heritage Convention, RAMSAR and the CITES conventions. The CITES Secretariat visited Cambodia in April 1999 to help Cambodia develop a program for compliance with CITES requirements.

### Protected Area Development

Declared in 1925 the Parc d'Angkor is regarded as first national park in mainland Southeast Asia. The designation of a more than two million hectares of wildlife reserve by the 1950's was followed by the collapse of this system with the onslaught of political instability and war in the 1970's. Attempts to re-establish this protected area system during the 1980's were ineffective and practical conservation was non-existent within the country for many years.

A revised national system of protected areas was designated by Royal Decree in 1993 and ratified by the Environmental Framework Legislation in 1996. This system incorporates over three million hectares within some 23 protected areas belonging to four management categories: National Parks, Protected Landscapes, Wildlife Sanctuaries, and Multiple Use Areas. The system incorporates a broad array of vegetation formations; however, management capabilities have been established in a limited number of reserves. The old Parc d'Angkor has been re-established as the basis for the Angkor World Heritage Site and portions of the Tonle Sap multiple-use reserve have been designated as a Biosphere Reserve. The Ministry of Environment has also established management activities at Ream, Bokor, Kirirom and Virachey National Parks as well as at the Boeng Per Wildlife Sanctuary.

### National Biodiversity Planning

IUCN has also initiated the first cycle of national biodiversity planning through the production of a national biodiversity prospectus (Ashwell 1997) which provides a profile of the Cambodia biological diversity and its organisation into seven Biodiversity Management Regions. This *Prospectus* also outlines elements of a national biodiversity strategy and action plan including;

- regional planning for critical and fragile habitats, areas sites and species
- the development of a national protected area systems plan
- systematic review of protected areas within the context of the biodiversity management regions
- institutional support
- information and understanding

- awareness, education and training.

### **Species Account: Khting Vohr (*Pseudonovibos spiralis*)**

The physical characteristics of *Pseudonovibos* remain unclear. Descriptions by hunters vary, and serve to emphasize the enigmatic nature of this reportedly heavy-bodied species. It is usually described as an agile, buffalo-like animal, uniformly black or gray in colour. Some hunters in Mondulkiri report that it is able to browse upon small trees by standing erect on its hind legs. In Preah Vihear hunters describe it as agile, a leaper and a jumper (Weiler *et. al.* 1998). This contrasts with descriptions of an estimated body weight of 200 to 300 kg. and a height at withers of 1.1 to 1.2m (Dioli 1997), *i.e.* of a heavy-bodied animal of similar proportion to, though larger than, a tapir, rather than agile or deer-like. The description also suggests an animal somewhat resembling the anoa.

Indeed there is a considerable amount of folklore pertaining to this species. *Pseudonovibos* is known in the Khmer language as *khting vohr*, "wild cow with lianas, (referring to the winding horns)" or *khting vohr vohr si puoh*, "wild cow that eats snakes" (Dioli 1997). When used alone the name *khting vohr* refers to gaur (*Bos gaurus*). The term "*khting vohr*" is widely associated with an animal horn that has medicinal properties in the treatment of snakebites and stings of poisonous animals (Dioli 1997, Weiler *et.al* 1998). Some Cambodians contend that this species can eat snakes and that the bones of snakes may be observed in the faeces.

However, the association with vines and snakes is more likely to be derived from a general resemblance between the spiral nature of the horns to both vines and snakes. A similar belief is reportedly associated with the spiral horns of the markhor (*Capra falconeri*) by some people in India (Dioli 1997). Indeed, the use of analogy to describe Cambodia's plants and animals is commonplace and is frequently used in the naming of medicinal plants (Martin 1971, 1974, 1986).

WPO interviewers report that some local hunters refer to the *khting vohr* by additional names (Weiler *et. al.* 1998). In Preah Vihear, a Khmer term meaning "Leaf-eating gaur" is used. In Kampong Thom, near Phnom Chi, Khting Pus is used, which loosely translated means "cobra gaur" or is understood to mean "cobra-eating gaur". Also, the name *khting preng* (Oily) is used for specimens with an oily coat. No other information is available about these names, but WPO interviewers state that all of the names refer to the same animal. This was determined through the interview process and use of the artist's rendition of a *khting vohr*.

#### Distribution & Population:

Cambodia and southern Vietnam remain the focus of discussion upon the

distribution of this species. However, nearly all Cambodian specimens of this species pertain to horns obtained from wildlife markets in Phnom Penh (Dioli 1995; 1997) or from other intermediaries (Peter and Feiler 1994b; Desai and Lic 1996) and have therefore been items of trade. Until recently the original specimen collected from Soui Kiet in Vietnam during 1929 was the only specimen with a clear locality. The set of horns photographed in Senmonorom, the capital of Mondulakiri Province in 1996, were obtained by the owner in Koh Nhek District in 1987 (Desai and Lic 1996.) In a personal communication in 1998, Lic Vuthy informed lead author Hunter Weiler that the horns he saw in Mondulakiri in 1996 came originally from Pursat Province, in the Cardamom Mountains. The recent collection of a portion of a horn from an animal shot near Kampong Sralau in Preah Vihear between 1960 and 1965 appears to be the only Cambodian specific location report supported by a specimen.

Most Cambodian specimens are said to have been obtained from remote forested areas of northeastern Cambodia (Dioli 1997). Initial reports obtained from local hunters and villagers claim that the animal is present in Cambodia's northeastern provinces of Mondulakiri, Rattanakiri and Stung Treng (Desai and Lic 1996; Dioli 1995, 1997; Peter and Feiler 1994b). Few details are available. Dioli identified three specific areas in his discussion of the Northeast: Phnom Aural, Phnom Chreau, and Phnom Yang Kwe. (Dioli 1997) Phnom Aural is the highest point in Cambodia, and it is in Kampong Speu Province in southwestern Cambodia. Phnom Chreau is located in the Cardamom range in Koh Kong Province. There is a Phnom Yang Ke in Mondulakiri, near the Vietnam border. This is probably the Phnom Yang Kwe referred to by Dioli.

The early reports have been interpreted to indicate that *Pseudonovibos* lives in small family groups in dry dipterocarp forests (see Vietnam chapter) loosely associated with the Darlac, Djiring and other plateaus adjacent to Cambodia's eastern border with Vietnam.

More recently, additional reports and information have come to light from a nation-wide survey of hunters undertaken by Cambodia's Wildlife Protection Office (Weiler *et. al.* 1998). This information suggests a broader distribution in areas west of the Mekong River, particularly in the southwestern mountains, and in association with isolated hills and evergreen forests on Cambodia's northern plains. These reports also include areas east of the Mekong River in Mondulakiri along the Vietnam border, though not in the northeastern provinces of Ratanakiri and Stung Treng.

This systematic interview survey was conducted in all 13 provinces in Cambodia that have large mammal habitat (Weiler *et. al.* 1998) A total of 150 pre-screened, experienced hunters were asked about the status of 35 mammals and birds, including *khting vohr*. Each hunter was shown an artists rendition of a *khting vohr*, clearly showing the unique horns. The hunters were asked if the animal was present, and if so, whether in low, medium, or high numbers. Twenty-seven

out of 150 hunters in Cambodia reported the presence of *khating vohr*. Twenty-three reported low numbers. Two hunters in the Cardamom Mountains and two hunters in the Elephant Mountains reported medium numbers.

One hunter interviewed showed WPO interviewer Sin Polin a *khating vohr* horn and cut off a piece for him. This is the only Cambodian specimen with a specific field location as referred to above. The hunter shot the animal between 1960 and 1965, seven or eight kilometers from Kampong Sralau between the Lao border and Ba Tho Mountain in Preah Vihear Province. Two other hunters also described shooting *khating vohr* on isolated hills (*phnom*) in northern Preah Vihear Province. Five hunters reported *khating vohr* in Kampong Thom Province, particularly from Phnom Chi, where several were shot during the 1960's.

Contrary to the earlier postulation that this animal was found in Ratanakiri, Stung Treng, and Mondulkiri, no hunters from Stung Treng or Ratanakiri reported the presence of this animal. Only three Mondulkiri hunters reported its presence, all in areas near the Vietnam border. In areas west of the Mekong, 16 hunters reported *khating vohr* from the mountainous evergreen forest containing the Elephant Range, the Cardamom (Kravanh), and the Phnom Aural complex. This contiguous region includes portions of Battambang, Pursat, Koh Kong, Kampot and Kampong Speu Provinces. During interviews with WPO officials in Koh Kong in April 1999, krasna (sandalwood) collectors and militia reported to WPO that *khating vohr* still inhabit the Cardamom Range. They also reported that *khating vohr* eat poisonous snakes and thorny vines.

No details of the current status or numbers are available. Most specific reports refer to encounters during the 1960's. It is clearly rare and may even be extinct. A provisional area of occupancy incorporates widespread localities within the southwestern mountains, a cluster of isolated hills in the north of the country, and in association with some lowland areas of Mondolkiri province. It is highly improbable that this species occurs in one or more populations exceeding 50 individuals.

#### Habitat, Food & Reproduction:

While earlier conjecture focused upon dry dipterocarp forest as the purported habitat the absence of this species from the substantial hunting and research record from this forest type adds to the enigma. The range extensions suggested by Weiler *et al.* (1998) imply a more intimate association with evergreen and semi-evergreen forest formations (*sensu* Legris and Blasco 1971, 1972) than previously proposed. These forest types are extensive in Cambodia's southwest mountains, portions of the northern plains, parts of Mondolkiri as well as upon isolated hills located within areas of dry dipterocarp and mixed deciduous forest.

There is no substantial or reliable information concerning the diet of this species. It is likely that the conjecture that such a heavy-bodied animal

habitually stands erect in order to browse as some antelope do appears contradictory and reflects inaccurate information. However, the name Leaf-eating Gaur, used by hunters in Preah Vihear, indicates that the *khting vohr* may be a browser. The belief that the faeces may contain the bones of snakes could indicate confusion with the faeces of reptiles such as the king cobra (*Ophiophagus*), or could be part of the legend that the animal eats snakes.

Nothing is known of the social organization or breeding biology of this species., other than reports that it lives in small family groups. (Dioli 1997)

#### Status:

Despite the enigmas surrounding this animal, it is certain that it existed in the past and may still exist in small numbers. However, this species is certainly close to extinction, if not already extinct. The horns have high value for medicinal purposes. Recent degradation of Cambodia's forests and extensive hunting with automatic weapons further threaten large rare species, and the end of the war has resulted in resettlement of refugees in forest areas and the construction of new roads. No sightings have been reported in recent years from the Vietnam border area or the Northern Plains of Preah Vihear and Kampong Thom, suggesting that the animal may now only be found in the southwestern mountains of Cambodia.

It is highly improbable that the population of this species exceeds 250 mature individuals. A continuing decline in numbers is inferred, and the population structure appears to be severely fragmented, with no subpopulation estimated to contain more than 50 mature individuals. Therefore, applying the *Red List Criteria* (IUCN 1994), the current designation of *Endangered* should be upgraded to *Critically Endangered* for the *khting vohr*.

#### Conservation Measures Taken

No specific conservation measures have been taken, although unconfirmed reports indicate the presence of *khting vohr* in Bokor National Park (Elephant Mountains), Phnom Aural Wildlife Sanctuary; and from the vicinity of Mount Samkos Wildlife Sanctuary (Cardamom Mountains), and the Nam Lyr Wildlife Sanctuary in Mondulkiri. As of April 1999 all hunting and catching of animals is prohibited in Cambodia. All firearms are outlawed and civilian firearms are to be turned in by July 1999.

#### **Discussion**

Speculation that the *khting vohr* is associated with the deciduous dipterocarp forest ecosystem, described by Wharton (1957, 1968) as one of the great grazing systems of the world, does not appear to be well supported. The apparent absence of this species from these areas in the 1960's, when large mammals

were more abundant than today, is implied by the work of Wharton (sic), Pfeffer (1969, Pfeffer and Ou Kim-San 1967) and by extensive game hunting expeditions. Furthermore, the lack of a clear physical description of the animal precludes speculation upon its adaptation to any particular habitat type.

The widespread reports from other areas enable the development of an alternative hypothesis that this species prefers an association with evergreen or semi-evergreen forests rather than open deciduous forests. The species may once have been widespread within Cambodia where the expansion of deciduous forest at the expense of more evergreen formations has been attributed to the incidence of fire over recent centuries (see Legris and Blasco 1971, 1972; Dy Phon 1981; Wharton 1968). The expansion of open forests has been particularly pronounced in the northern and northeastern regions (Legris and Blasco 1971).

Whilst Cambodia's southwestern mountains or the Plateau du Mnong may be sufficiently large enough to enable the radiation of small mammals or reptiles a larger area is required to allow for the radiation of larger mammals (Terbourgh 1992). The apparent absence of this species from both Thailand and Laos suggests that the distribution and perhaps the origin of the species within the Indochinese peninsula lie more southerly rather than northerly. Reported localities are clearly distinct from those of *Procarpa*; and with the other recently discovered bovid in Indochina, *Pseudoryx*. So vicariance from these stocks could have given rise to this species. However, the possibility of divergence from *Bos*, *Bulabis* or other stock on the basis of habitat preference cannot be ruled out in the absence of material suitable for DNA testing.

#### **Conservation Measures Proposed:**

Field surveys to assess current status, distribution, population size and habitat requirements should be undertaken to enable an action plan for its conservation to be drawn up. This requirement is also shared with other larger mammals species such as tigers, elephant and wild cattle. Efforts to clarify the status of the *khting vohr* should be integrated with these activities if separate funding is not available.

However, there is also a need to undertake systematic surveys for small mammals, which are better for training Cambodia's under skilled wildlife managers, as they yield more data. Efforts to clarify the status of the *khting vohr* should also be integrated with these activities.

Field surveys specifically for *khting vohr* should concentrate first on the southwestern Cambodia mountain complex. Camera trapping is the technique most likely to produce useful evidence of the presence and appearance of this enigmatic animal.

Once a suitable specimen is obtained DNA analysis should be undertaken to

determine the taxonomic affinities of this species.

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# **TIGER CONSERVATION WORKSHOPS AND HUNTER INTERVIEWS IN KOH KONG AND PURSAT PROVINCES**

**H. Weiler, Roth Bunthoeun & Uch Seiha**

## **INTRODUCTION**

In 1998, CAT-Cat Action Treasury organized a national survey of hunters to gather information on tiger and other large mammal distribution in Cambodia. The hunter interviews were conducted through the Wildlife Protection Office of the Ministry of Agriculture, Forestry, and Fisheries. The preliminary results of this survey were reported in Weiler, et al in 1998. A more detailed analysis of tiger distribution and estimated numbers was published by Nowell et al in 1999. A more in-depth analysis of the entire hunter survey is in preparation.

Based on the 1998 survey, funding was obtained from the EXXON Save the Tiger Fund through the National Fish and Wildlife Foundation to conduct three follow-up programs by CAT and WPO. These programs were to prepare and publish a detailed report, conduct a series of tiger conservation workshops for officials at the province and district level, and carry out a second round of hunter interviews to gather further information on wildlife status and hunter attitudes towards conservation.

The 150 hunter interviews in 1998 were conducted in 13 provinces. After analysis of the interview results, a decision was made to conduct workshops in six key provinces: Kratie, Stung Treng, Mondulhiri, Preah Vihear, Koh Kong and Pursat. These workshops were conducted February-March 1999. WPO also participated in a Wildlife Trade Control Workshop in Ratanakiri in May organized by the Ministry of Environment.

Following the workshops, a second round of hunter interviews were conducted in May/June 1999 in three critical wildlife areas: Kratie/Mondulhiri, Siem Reap/Preah Vihear, and Koh Kong. This effort was coordinated with the FFI/ARA/CAT/WPO Field Survey in Koh Kong/Pursat and the UN Refugee Needs Assessment in Pursat. The results of these latter two efforts are documented in separate reports in this volume.

This report briefly summarizes and integrates the results of the 1998 hunter interviews, 1999 workshops, and 1999 hunter interviews specifically for Koh Kong and Pursat Provinces. Emphasis is placed on 1999 information, since the results of the 1998 survey have been analyzed in two previous reports. A separate report on all six Cambodia workshops and another on all of the second-round hunter interviews in Cambodia are in preparation.

The selective information presented here is an attempt to present a representative picture of both the attitudes of officials and hunters and the general status of wildlife in the Cardamom Mountains Region. Presentation of this information does not necessarily mean that the authors agree with the attitudes or accept as proven fact the accuracy of the

wildlife reports. However, the authors believe the presented information is an accurate summary of the most important conservation attitudes and the most significant wildlife reports that bear consideration in developing future conservation programs in Koh Kong/Pursat and planning/conducting future wildlife surveys in the Cardamom Mountains Region. The views of local officials and local hunters are sometimes secondary considerations when international organizations work with national governments to develop wildlife conservation programs. The authors believe that local officials and hunters should be primary factors in not only developing but in implementing such programs.

### **SURVEY OF HUNTERS IN KOH KONG/PURSAT PROVINCES, MARCH 1998**

Using a five-page questionnaire, Cambodian Forestry graduates with thesis work on traditional hunting methods interviewed pre-screened experienced hunters. A map was prepared at each interview showing the area hunted. Combining the individual hunter maps of the 31 hunters surveyed in Koh Kong and Pursat Provinces produces a map covering most of the Cardamom Mountains Region, including the Mount Samkos complex and also some associated lowland and mid-level areas. Evergreen forest predominates, but there are significant mixed forest areas in the north, specifically in Veal Veng District. Despite this variation, the entire area is one interconnected block of contiguous wildlife habitat. See Figures 1 and 2.

This area has the highest reported density of tigers in Cambodia, with twenty-three hunters reporting high tiger densities and eight reporting medium. In the most detailed analysis of the 1998 hunter survey prepared to date (Nowell et al 1999), it is estimated that there are 11,846 km<sup>2</sup> of tiger habitat in the Cardamom Mountains Region, with a potential range of 162 to 217 adult tigers. See Table 1.

The elephant densities in the Cardamom Mountains Region are also, by far, the highest reported in Cambodia. High elephant densities are reported by 29 of 31 hunters. The lead author subjectively estimates a potential 300 elephants remain in the Cardamom Mountains Region, based on the 1998 and 1999 interviews and workshops and consideration of the size and quality of the habitat (Weiler and Men Soriyun 1999). The reported densities of tiger and elephant fall off significantly in the adjoining Phnom Oral, Elephant Range, and Pailin Regions, further reinforcing that the Cardamom Mountains Region is of special significance.

Herds of gaur and banteng are reported in low to medium numbers, but only for scattered sub-areas of suitable habitat. Eight of 31 hunters report the presence of the enigmatic Khting Vor. Further information on Khting Vor is presented in the 1999 workshops and hunter interviews sections. Sambar and Barking deer, key tiger prey, are reported in uniformly high densities from the Cardamom Mountains Region. Other species reported in consistently high densities are Black bear, Sun bear, Wild dog, Clouded leopard, and Fishing cat.

### **Seeing tiger**

- 100% of people interviewed have seen tigers
- On average, they have seen a tiger 4.2 times
- Lacking information on how recently these tigers were seen

### **Seeing tiger tracks**

- 100% of people interviewed have seen tiger tracks
- People say they have seen tracks an average of 12.1 times
- Lacking information on how recently tracks were seen

### **Tiger kills of prey**

- 100% of people say they have seen wild animals killed by a tiger in the forest
- These people say they have seen this, on average, 2 times
- Lacking information on how recently this was seen

The tiger-killed prey species reported were overwhelmingly Barking deer, Wild boar, and Sambar deer. These are the same primary prey species reported killed by tiger from all Cambodia provinces surveyed, respectively 43.3%, 36.7%, and 12.2%. There was some regional variation in %, but the rank order remained constant. For example, Koh Kong Province specifically reported 52%, 29%, and 19%.

### **Tiger predation on livestock**

- Only 14% of the hunters interviewed say this sometimes happens.
- No information on how recently these incidents occurred, but several cows and domestic buffalo were reported killed.

### **Man-eating tigers**

- 77% of hunters interviewed said they knew of incidents in which people were attacked and killed by tigers.
- People said they knew about an average of 8 cases, involving an average of 14 people.
- Due to the notoriety of man-eater news, it is certain that many people are reporting the same stories.
- Man-eating was reported from all districts. Most of these incidents appeared to involve chance encounters between tigers and lone hunters, soldiers, guerillas, woodcutters, and Krasna wood collectors.
- The Cardamom Mountains Region is the only Cambodia location reporting a significant man-eating tiger problem

- Additional details were obtained in the 1999 interviews and are reported in that section of this report.

### **Best places for tigers**

- 100% of interviewed people say the best places for tigers are those with good forest
- A large majority also say the best places have good wild prey populations

### **Perceived tiger population trend**

Trends perceived by the hunters were quite mixed. In Koh Kong district, half of the hunters think the tiger is declining, and half think it is increasing. In Botum Sakor District and Sre Ambel District, all hunters interviewed said declining. In Kiri Sakor District, all hunters said increasing. Most people in Mondul Sema District said increasing; most people in Thmar Bang District said declining. Overall for the entire Cardamom Mountains Region in Koh Kong and Pursat Provinces, 58% of hunters think the tiger tigers is decreasing and 42% increasing.

Of hunters characterizing the tiger as declining, in Koh Kong Province 46% say it is because of hunting, 15% because of war, and 11% because of deforestation. (In an interesting contrast, 68% of government officials in Koh Kong and Pursat, interviewed separately in a parallel survey conducted by the same team, felt tiger decline was because of deforestation, and 38% because of war.)

### **Tiger hunting**

On average, Koh Kong/Pursat hunters say they know 7-8 other people who hunt tigers in their general area. On average, they say 14 tigers were killed around their areas in 1997. There is obviously a high potential for the same incidents/hunters to be reported by different respondents. (Without taking this potential into account, an astounding total of 577 tigers were reported killed in Cambodia in 1997.)

### **Tiger trade**

100% of people in Koh Kong/Pursat say there is tiger trade. They say the average price of a tiger is US\$ 1,000. They do not give a separate price for tiger bone as is done in other parts of Cambodia. Everyone says the price has increased by three times over the last five years. Thailand was most commonly identified as the trade destination (48%), also Phnom Penh, China and Sre Ambel town. (Sre Ambel is the capital of the District by that name, a major seaport, and the only town in Koh Kong Province linked to Phnom Penh by paved highway.)

## KOH KONG TIGER CONSERVATION WORKSHOP, 25 March 1999

Thirty-six key province and district officials attended this workshop, such as governors, forestry directors, and police chiefs. All six districts in Koh Kong Province were represented. Presentations were made by both WPO and CAT on the results of the 1998 survey, the importance of wildlife conservation, and international aspects of tiger conservation. Then province and district officials reported on the status of tiger and other wildlife in each district. In general, it was reported that tigers are declining, and are still taken by hunters and soldiers using a variety of techniques.

Thmar Bang District encompasses the central Cardamom Mountains portion of Koh Kong Province and is where the 1999 field survey was conducted. The Thmar Bang District Governor estimates about 40 tigers in the district, but acknowledges this is a guesstimate and requests a formal survey to determine a more accurate number. In Mondul Sema District, which includes the southern reaches of the Mount Samkos complex, the Governor reported tigers were numerous until 1979, but declined thereafter.

The Military Commander for Koh Kong Province lived in the Cardamom Mountains for 19 years as a guerilla fighter. He has seen Khting Vor in the mountains and reports they are still found there. The Environmental Officer for Koh Kong Province pointed out that there is no staff, management, or any other kind of official presence in the Mount Samkos Wildlife Sanctuary, the largest in Cambodia.

Officials formed two discussion groups. Each addressed two questions: Why conserve tiger, and how should it be done? The tiger was deemed important as part of the world heritage, a symbol of power, a representation of moral conviction and Khmer civilization and a national treasure, a factor in a healthy environment, and a source of medical and health research benefits and traditional medicine. (The latter belief was expressed at several other workshops and indicates that tiger bone is considered to have medical benefits in Cambodians culture as well as Chinese.) It was stressed that it was important to conserve the tiger so that the next generation will know the tiger. The tiger was also considered important in making tourism more attractive and in attracting foreign aid from wildlife organizations.

A variety of conservation measures were recommended. Education at schools, pagodas, state institutions and of the public and people living near the forests was viewed a particularly important. Education was specifically recommended by means of radio, TV and posters. Strict enforcement of wildlife laws was stressed, as well as the prevention of illegal logging in wildlife sanctuaries. Research in known tiger areas was proposed, leading to the creation of additional wildlife sanctuaries. There was a consensus that soldiers, police and technical authorities must "know the interest of wildlife three times more than local people." There was agreement that mines must be cleared from the forest to protect the wildlife and to allow authorities to enter and properly manage key areas, illegal weapons must be collected, and wildlife trade must be stopped.

## **PURSAT CONSERVATION WORKSHOP, 6 April 1999**

Participating in the workshop were 43 province and district officials. Three districts were represented: Kravanh, Veal Veng, and Krakor. From Kravanh District, the Governor reports a variety of wildlife, but unfortunately much illegal hunting by machine guns, boom snares, pit traps, etc. The wildlife trade is quite active. Many hunter groups are supported by soldiers and rich and powerful men. The Governor outlined a number of measures were needed to bring the situation under control: progress in agriculture, finding hunters jobs, cracking down on wildlife trade, and setting up a corruption-free law enforcement system.

The Veal Veng Governor reports much hunting as well, particularly for tiger and elephant. The problem is acute because of the remoteness of the area, lack of knowledge of tiger benefits, support for hunter gangs by traders, widespread availability of guns, booms and mines in the forest, deforestation in the wildlife sanctuary, lack of law enforcement and easy selling of tiger bone and elephant tusk. (Veal Veng is a new district, created in 1999 from the western half of the old Kravanh District.)

The Veal Veng Police Chief added that Thai merchants were supplying hunter groups with modern high-velocity magnum elephant guns with telescopic sights, capable of dropping an elephant at the 300 to 500 meter range. Tiger are taken by placing mines under monkey carcasses. He implicated the military in supporting illegal hunting. He felt better intelligence was needed on the highly secretive and well organized hunter groups and supported jail terms for illegal hunting.

The Krakor District Governor said that wildlife was in decline after 20 years of civil war combined with continued anarchy by soldiers, militia and hunters. The presence of many wildlife shops compounds the problem, and many traders support the hunters. (Krakor District adjoins the Cardamom Mountains Region.)

Tiger conservation is made more difficult in Pursat because of the large number of very poor people and the lack of other work for hunters. To conserve tiger, officials stressed the need to educate soldiers, militia, police, hunters, traders, and local people. Forestry Officers were encouraged to cooperate with other Departments. Awareness of traders and hunters by requiring thumbprints was recommended to help stop the killing and buying of wildlife. Crackdowns on wildlife shops and cooperation with conservation NGO's was emphasized.

The officials concluded in their group discussions that tiger conservation was important because tigers are declining and they want to save the tiger for the next generation. They saw tigers as having commercial value by attracting international aid and extending the tourist sector of the economy. When there are substantial numbers of tigers in the forest, officials thought they should be considered for a source of medicine. They agreed that to conserve the tiger is to conserve other wildlife and the forest itself forever, that the tiger is an important symbol of power and Asian culture, and that conserving the tiger means

that agriculture will have to be more developed. The officials agreed that tiger conservation is an important part of being an honorable country in the world.

Specific recommendations were to set up law enforcement immediately, allow no logging concessions in the wildlife sanctuary, clearly mark the wildlife sanctuary border, and actually regulate and manage the sanctuary.

Wildlife programs should be integrated into school studies. Additionally, a media wildlife extension program was recommended. Various rich, powerful, and armed men must be convinced to cease supporting illegal logging, hunting and trading. Forest officers have to strongly carry out the law and fully cooperate with police, military police, and soldiers. There should be cooperation with other countries on tiger management.

### **SURVEY OF HUNTERS IN KOH KONG PROVINCE, MAY-JUNE 1999**

The strategy for conducting the second round of hunter interviews differed in important respects from the first round. A decision was made to focus on three critical core regions for large mammals in Cambodia, identified as a result of the first round interviews in 13 provinces. The core regions are Siem Reap/Preah Vihear in the Northern Plains, Kratie/Mondulhiri in the Northeast, and Koh Kong/Pursat in the Cardamom Mountains Region. The interviews were conducted in May/June. Due to an early rainy season, access to western Pursat was extremely difficult. A decision was made to concentrate on Koh Kong Province. Interviews were conducted in western Pursat during related efforts discussed in separate sections of this volume: the Field Survey and the Refugee Needs Assessment. Combining the results of all three efforts provided a much broader picture of the conservation status of the Cardamom Mountains Region. Seven additional hunters were interviewed in the course of setting up the Koh Kong workshop. These were special interviews to obtain information on man-eating tigers and Khting Vor. No structured form was used. Relevant information obtained from the special interviews is reported in this section.

A different questionnaire was developed for the second round. There were three sections in the Hunter Interview Form. Part I dealt with distribution of rare Cambodian species. Part II contained questions about tiger in the hunter's area in 1998. Part III contained questions about hunting and wildlife conservation. This report selectively presents some of the more interesting and significant results of the survey in an attempt to present a summary overview of wildlife status and conservation attitudes in the Cardamom Mountains Region from the point of view of the hunters themselves.

Twenty hunters were interviewed in Koh Kong Province. (Only one of these hunters was also interviewed in 1998.) As was done in 1998, a detailed map was developed showing each individual hunter area. These areas include portions of all six districts in Koh Kong Province. (Most of these areas overlap portions of two or more districts.) All areas are within one contiguous forest in or adjacent to the Cardamom Mountains, so the results of the interviews are presented in a summary manner to develop a general

impression of the area. It should be kept in mind that each hunter identified the exact area he hunts, so not all generalizations are applicable to all parts of the region.

### **Rare Cambodian mammals**

Regarding rare species, 11 were listed on the interview form.. Schomburgk's deer, Javan rhino, Malayan tapir, and Khting Vor were the only very large mammals on the list. No information was obtained in the interviews for Schomburgk's deer or Malayan tapir. (The other species on the list were various primates and other obscure small mammals, to be discussed in a future report.)

### **Khting Vor**

Khting Vor were reported by all four hunters from Mondul Sema District, on the southern edge of the Mount Samkos complex. Two hunters in the central portion (Thamar Bang District) of the Cardamom Mountains also reported the presence of Khting Vor. One claims he saw a Khting Vor in 1998. Furthermore, two militiamen in the Special Interviews reported they had seen Khting Vor in the central Cardamom Mountains. They both live in Thmar Bang District and confirm that the Khting Vor is still present. They described the animal as grey and dark and smaller than a buffalo. (They also said it eats poisonous snakes and thorny vines, which is also what hunters from eastern Cambodia, northern Cambodia, and Vietnam report. The consistency of the legend is striking.) These reports are consistent with and reinforce information from the 1998 interviews, in which eight hunters reported Khting Vor in the Cardamom Range. It appears that the central Cardamom Ridge in Thmar Bang District and the Mount Samkos area of Mondul Sema and Veal Veng Districts are the most likely place in the world that this animal is presently found. No scientist has yet seen this animal, and no photo exists. It is only known from hunter reports and from sets of horns which have been brought out of the forest. (See Weiler and Ashwell 1999 for further details.)

### **Javan rhino**

One hunter reported sighting a Rhino in 1997 in a river valley in Thamar Bang District, near the crest of the Cardamom Mountains and the Koh Kong/Kampong Speau Province boundary. He is a highly experienced hunter and says he saw the animal at a range of 30 meters. He also found the grass impression where the rhino had been resting and numerous distinctive tracks. The rhino was near a small pond. This report is particularly intriguing because in 1995 the Wildlife Protection Office received several reports of a small population of Rhino from Kampong Speau Province, near the Koh Kong border. Further investigation was conducted, and the reports seemed credible (WPO personal communication 1999.) Also, several Forestry Department personnel say that Khmer Rouge defectors report small numbers of Rhino in the Cardamom Mountains (Personal communication, Ty Sokun, Director General 1999). Furthermore, two reports of Rhino are documented in the Veal Veng Refugee Needs Assessment Report. Although the lead author has previously characterized Rhino as extinct in Cambodia (Weiler et al 1998), it is certainly possible that a few Rhino survive in the Cardamom Mountains Region.

### **Seeing Tiger Tracks**

- 100% of hunters saw tiger tracks within the last year
- 85% saw tiger tracks many times
- 15 % saw tiger tracks 2-6 times
- 70% distinguished tiger tracks from leopard tracks by size only
- 20% offered no explanation on how to distinguish tiger tracks from leopard tracks

It appears that 90% of hunters can't tell a leopard track from a tiger track for certain.

### **Seeing tiger**

- 75% of hunters saw tiger in the last year and described the most recent encounter in detail
- 65% of hunters saw a tiger one or two times
- 25% of hunters saw a tiger three to six times

### **Tigers killed**

- 50% of hunters reported tigers were killed in their area within the last year
- 35% reported one tiger killed
- 15% reported three to six tigers killed
- One hunter reported two leopards killed

### **Man-eating tiger: Information from May-June 1999 hunter survey**

A tiger killed two Krasna wood collectors in 1998, at 3:00 pm at in the forest near Kbal Chhai Veal 1 in Mondul Sema District. The tiger was killed at 5:00 pm. Their colleagues took the corpses back to the village.

A tiger attacked several people in 1997 while they were patrolling at Number 1 waterfall, Damnak KHLA, Kbal Chay in Knoh Por Area near the gulf waters in Mondul Sema District.

One man was killed by a tiger in 1998 in Thmar Bang District, Tatay commune, Dong Village while he slept in the forest.

### **Man-eating tiger: Information from March 1999 special interviews**

Five knowledgeable Krasna wood collectors and two militiamen were interviewed. Man-eating by tigers was common between 1994 and 1997, and peaked in March-May 1997. Most victims were Krasna wood collectors, woodcutters, and a few Khmer Rouge guerillas, killed while sleeping in their hammocks, usually around 9pm or 4am.

A total of around 55 people were killed in Koh Kong Province. Over 100 people total were killed within the larger area extending into Pursat and Kampong Speau Provinces. These estimates were arrived at from discussions with other Krasna wood collectors during meetings in the forest. Some interviewees had no numbers but confirmed there were a lot of man-eating tigers operating during this period.

This new information is fully consistent with the 1998 interview information, which indicated man-eating tigers were widely active throughout the greater Cardamom Mountains Region during the 1990's.

## Species hunters try to catch (all individual lists combined)

### Mammals

Banteng, Sambar deer, Barking deer, Mouse deer, Wild pig, Black bear, Sun bear, Serow, Wild dog, Hog badger, Porcupine, Slow loris, Whitehanded gibbon, Crab-eating macaque, Hairy-nosed otter, Pangolin, Rabbit, Civit, Fishing cat

(Hunters say they prefer smaller animals because they are easier to carry out. None of the twenty hunters interviewed listed tiger or elephant as species they hunt.)

### Birds

Red jungle fowl, Northern pintail, Lesser whistling duck, Peafowl, Great hornbill, Helmeted hornbill, Oriental pied hornbill, Pompadour green pigeon, Parakeet, Barred cuckoo dove

### Reptiles

Black spitting cobra, Rock python, Monitor lizard, crocodile

(Crocodile were not species listed on either the 1998 or 1999 interview forms. However, crocodile are widely reported from certain stretches of some of the major rivers of Koh Kong and from certain ponds and lakes in Koh Kong and Pursat.)

## Species protected by traditions against hunting

- Monkey and gibbon: Killing brings children disease
- Slow loris: Killing brings bad luck and depression to family
- Elephant: Killing brings bad luck to family
- Tiger: Killing brings depression, bad luck, children and wife disease
- Wreathed hornbill: Killing brings bad luck
- Fish eagle: (Always seen in pairs.) Killing brings divorce

Only 35% of hunters describe one or more of these traditions

## **Hunting methods**

- 90% of hunters use guns
- 80% of hunters use rope snares and traps
- 60% of hunters employ dogs
- 10% of hunters use steel traps

It is important to note that gun control measures have just begun to be employed in 1999. The high percentage of hunters reporting gun use significantly overstates the current situation. Most hunters reported during interview discussions that local authorities had withdrawn many hunters' guns during the first half of 1999.

## **Disposition of wildlife harvest**

- 80 % keep some wildlife and sell some
- 15% of hunters keep all for the family
- 5% of hunters sell most
- 65% of hunters think they receive a fair price for wildlife from town dealers

## **Importance of hunting to family**

- 85% say hunting is somewhat important to self and family
- 5% say hunting is very important
- 10% say hunting is not very important

All of the hunters surveyed work most of the time on a farm or plantation, and use hunting to supplement their meager lifestyle. None are professional hunters.

- 80% do not teach their children to hunt

Hunting is characterized as very hard and not offering as many benefits as farming and logging. Weapons have been confiscated, and there is not as much wildlife these days anyway.

## **Wildlife trends in the Cardamom Mountains Region**

- 100% of hunters say wildlife has decreased in their area over the last 5 years
- 90% of hunters are worried about this situation

## **Government policy on hunting**

- 60% of hunters say they know the current law
- 30% say hunting of large mammals such as elephant, tiger, and gaur is banned

- 20% correctly said that all catching and killing of wildlife is prohibited

When the law was explained, 65% said the policy should be changed, primarily to allow subsistence hunting of common small mammals such as Sambar deer, Barking deer, Wild boar, and Monitor lizard.

- 100% of hunters allowed themselves to be photographed while being interviewed by a Wildlife Protection Office official.

### **Wildlife conservation knowledge**

- 100% of hunters have no formal education
- 45% of hunters said they know what wildlife conservation means

They described it mainly in terms of protecting wildlife as a future food source and allowing the next generation to know wildlife. One hunter described conservation as protecting wildlife when populations are too low and catching wildlife when populations are too high.

- 85% of hunters agreed with the concept of wildlife conservation after it was explained

All hunters interviewed agreed to cooperate with the Wildlife Protection Office in the future as guides for wildlife surveys and as information sources

## **CONCLUSION**

The 1998 and 1999 CAT-Cat Action Treasury/Wildlife Protection Office hunter surveys and special interviews revealed that perhaps the most significant wildlife population in Cambodia is in the Cardamom Mountains Region. However, this wildlife is declining due to hunting and deforestation. The hunters interviewed expressed a keen interest in working with the government to develop a wildlife conservation program. This interest should be followed up on. The over 50 hunters surveyed in the region have a wealth of irreplaceable information on the forest and its wildlife.

Government officials from Koh Kong and Pursat attending the tiger conservation workshops were frank in their assessment of the severe problems facing wildlife in the Cardamom Mountains Region. They proposed thoughtful concepts for developing a wildlife conservation program, and were enthusiastic about working with the Wildlife Protection Office, other government agencies and international organizations. Officials from both provinces were extremely helpful in arranging and expediting the interview surveys, the workshops, and the field survey. There is a genuine commitment to implementing a long-term program. Province and district officials support working with the hunters, both to capitalize on hunters' knowledge of the forest and its wildlife, and to provide hunters with alternative employment opportunities.

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