

The hairy-nosed otter *Lutra sumatrana* in Cambodia: distribution and notes on ecology and conservation

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មូលនិយមសង្ខេប

ភេរោមច្រមុះ (*Lutra sumatrana*) មានវត្តមានតែនៅក្នុងតំបន់អាស៊ីអាគ្នេយ៍តែប៉ុណ្ណោះ តែកំណត់ត្រាមានតិចតួច និង ចំណេះដឹងពីប្រភេទនៅមានកម្រិត។ ការសិក្សានេះត្រូវបានធ្វើឡើងក្នុងជម្រកតំបន់ទំនាបដីសើមជាច្រើនទូទាំងប្រទេសកម្ពុជា ពីឆ្នាំ២០០៦ ដល់ ២០១៣។ វិធីសាស្ត្រនៃការសិក្សា គឺសំភាសន៍ជាមួយនិងសហគមន៍មូលដ្ឋាន ការអង្កេតដោយផ្ទាល់ មើលដាន ស្លាកស្នាម និង ការប្រើម៉ាស៊ីនថតស្វ័យប្រវត្តិដើម្បីថតរូបផ្ទាល់តែម្តង។ ភេរោមច្រមុះត្រូវបានគេប្រទះឃើញរស់នៅ៤កន្លែងក្នុងប្រទេសកម្ពុជាគឺ តំបន់ដីសើមបឹងទន្លេសាប តំបន់ជួរភ្នំក្រវាញ តំបន់ឆ្នេរខេត្តកោះកុង និង តំបន់វាលល្បាប់ដីសណ្តទន្លេបាសាក់។ កំណត់ត្រារបស់វា រួមមាន ភេរសំចំនួន៨ ស្បែកចំនួន១៨ និង រូបថតដោយម៉ាស៊ីនថតស្វ័យប្រវត្តិចំនួន៧១ពីតំបន់សិក្សាចំនួន២៦។ ប្រភេទនេះត្រូវបានរកឃើញរស់នៅក្នុងទីជម្រកប្លែកៗគ្នាដូចជា៖ ព្រៃលិចទឹកទំនាបបឹងទន្លេសាប ទន្លេបាសាក់ ព្រៃកោងកាង ព្រៃស្មាច់ តំបន់ទំនាបវាលភក់ និង ស្ទឹងតាមតំបន់ភ្នំដើម។ យោងតាមការសិក្សានេះ រដូវកាលបន្តពូជរបស់វាគឺ ចន្លោះខែវិច្ឆិកាដល់ខែមិនា និង កើតកូនចន្លោះខែមិនាដល់មេសា។ ភេរោមច្រមុះច្រើនមានសកម្មភាពនៅពេលព្រលប់ និង ពេលយប់ ត្រីជាអាហារសំខាន់ និង អាហារបន្ទាប់បន្សំមាន ពស់ទឹក ក្តាម និង សត្វតូចៗផ្សេងទៀតដែលវាអាចចាប់ស៊ីបាន។ យើងសូមផ្តល់អនុសាសន៍អោយមានការសិក្សាបន្ថែមនៅតាមដងទន្លេមេគង្គ រវាងបឹងទន្លេសាប និង តំបន់តាមព្រំដែនវៀតណាម ក៏ដូចជាតាមតំបន់ឆ្នេរនៃឧទ្យានជាតិរាម ដើម្បីយល់ដឹងកាន់តែប្រសើរឡើងពីរបាយភេរោមច្រមុះទូទាំងប្រទេសកម្ពុជា។

Abstract

The hairy-nosed otter *Lutra sumatrana* is endemic to Southeast Asia, however, records are few, and knowledge of the species is limited. This study was carried out in a range of wetland habitats throughout Cambodia between 2006 and 2013. Field methods included interviews with local communities, direct observations, and track and sign surveys combined with camera trapping. Hairy-nosed otters were confirmed from four regions in Cambodia: Tonle Sap Lake, Cardamom Mountains, Bassac Marsh and coastal areas in Koh Kong province. Records comprised eight live captive individuals, 18 skins, and 71 camera trap photographs from 26 trap locations. The species was recorded from several different habitats including flooded forest, mangrove and *Melaleuca* forest, marsh land and forest streams. Based on our records, we suggest the hairy-nosed otter in Cambodia may breed between November and March and give birth between April and June. We found the species was most active during dusk and at night, and although its diet mainly consists of fish, this is supplemented in Tonle Sap Lake with water snakes, crabs, and other small prey when the oppor-

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tunity arises. We recommend further surveys along the Mekong River between the Tonle Sap Lake and the Vietnamese border and at coastal sites such as Ream National Park to improve understanding of the distribution of the species in Cambodia.

Keywords

Cambodia, conservation, distribution, ecology, hairy-nosed otter, *Lutra sumatrana*, Tonle Sap Lake.

Introduction

The hairy-nosed otter *Lutra sumatrana* is endemic to Southeast Asia, with a historic range throughout the region (Aadreaan *et al.*, 2016). Little is known about the species and until 2008, it was mostly classified as insufficiently known or data deficient by the IUCN/SSC Otter Specialist Group (Hussein *et al.*, 2008). It was also believed by some to be extinct after several years of no field records in the 1990s (Wright *et al.*, 2008). The discovery of hairy-nosed otters in a peat swamp forest in Thailand in 1999 by Kanchanasaka (2000), followed by confirmed records from Vietnam, Peninsular Malaysia and Indonesia (Hussein *et al.*, 2008) indicates that the species still occurs in these countries, although probably at low densities at few and little surveyed sites. Poole (2003) provided the first confirmed record of hairy-nosed otters in Cambodia through records of captive animals in floating houses on the Tonle Sap Lake.

As information has slowly increased on the hairy-nosed otter, the species is now listed as Endangered A2cde on the IUCN Red List (Aadreaan *et al.*, 2015) due to a suspected population decline of at least 50% over the last three generations, extensive habitat destruction and conversion throughout its range, coupled with poaching for its skin and persecution as a pest (Yoxon, 2007). However, confirmed records are still few and far between, and knowledge of the species remains limited, making identification and prioritization of appropriate conservation measures difficult. Apart from a single individual held at the Phnom Tamao Zoological Garden and Rescue Center in Phnom Penh, Cambodia, no other captive individuals or breeding programs currently exist to the authors knowledge.

In this paper we document the presence and distribution of hairy-nosed otter in Cambodia and provide information on its ecology, which can inform efficient protection of the species and its habitats.

Methods

We carried out surveys in a range of wetland habitats throughout Cambodia between 2006 and 2013. These included Virachey National Park in northeastern

Cambodia, along the Mekong River between the Stung Treng and Kratie provinces, the eastern plains of Cambodia, Tonle Sap Lake, Bassac Marsh, Cardamom Mountains, Ream National Park and coastal areas in Koh Kong Province (Fig. 1, Table 1). Survey areas were chosen based on the habitat requirements of otters, unconfirmed reports of their occurrence and relative ease of access.

Survey sites

Virachey National Park covers an area of 3,325 km² in the Ratanakiri and Stung Treng provinces of northeastern Cambodia and comprises lowland, hill and montane evergreen forest, as well as upland savannah, bamboo and patches of mixed deciduous forest (Hon *et al.*, 2010). Surveys were conducted along Tabok and Ka shep streams in evergreen and bamboo forest.

Survey sites along the Mekong River in the Kratie and Stung Treng provinces were located near the villages of Sambour, O'krieng, O'yeay, Achen and Kompong Chrey, at the islands of Koh Dombong and Kbal O'chom and at sites in Prey Lang Wildlife Sanctuary. The Mekong River has a lot of deep pools, as well as numerous small islands and sandbanks during the dry season, which are important habitats for wildlife (Poulsen *et al.*, 2002). Prey Lang Wildlife Sanctuary is located in the Kratie, Stung Treng and Preah Vihear provinces and mainly comprises lowland evergreen and deciduous forest. Survey sites within the wildlife sanctuary included the O'krack, Ponror, O'long and Kbal Damrey streams, which are connected to the Mekong River (Olsson *et al.*, 2007).

Several sites were surveyed within Keo Siema Wildlife Sanctuary in Mondulakiri province and Sre Pok Wildlife Sanctuary in Ratanakiri Province. In Keo Siema, we surveyed along the Opam, Khlong Khnong, and Pour streams, which are surrounded by evergreen and bamboo forests (Keo & Evans, 2013). Surveys in Sre Pok Wildlife Sanctuary focused on the Sre Pok River, a major tributary of the Mekong River, which is surrounded by dense lowland evergreen forest (Constable, 2015).

The Tonle Sap Lake is the largest wetland in Southeast Asia, with a unique flood-pulse system, high biodiversity, and very productive fisheries (Arias *et al.*, 2013). Located in central Cambodia, the dominant habitat of the

floodplain surrounding the lake is generally described as 'seasonally flooded forest'. This is divided into several vegetation types, and large areas are inundated by up to nine meters of water during the wet season between July and November. Gallery forests with trees between 7 and 15 m tall occur on the inner edge of the lake near open water, rivers, streams, and ponds where the ground rarely dries up. Lower tree cover and scrubland occurs on a larger proportion of the floodplain, with vegetation reaching heights of up to 4 m. Stationary and floating aquatic vegetation and grasslands are also common. These can reach a height of up to 3 m, and floating islands of vegetation occur along the edge of the lake and in canals (McDonald *et al.*, 1997).

The Bassac Marsh is located between the Bassac and Mekong Rivers in Kandal Province, 40 km south of Phnom Penh. It consists of swamp forest and wetlands similar to Tonle Sap, with scattered trees and scrubs such as *Barringtonia acutangula* and most of the associated emergent plants comprising *Sesbania rixburghii*, *Eiahornia crassipes* and *Utricularia aurea* (UNEP, 2008). The marsh is inundated by up to 3 m of water during the wet season between July and November, and forms a wetland surrounding a narrow body of open water during the dry season. Due to its proximity to Phnom Penh and demand for land for rice cultivation, the site faces intense human pressure from agriculture and other development, such that the wetland is being converted to agriculture, landfills and human habituation (Heng, 2010).

The Cardamom Mountains span southwest Cambodia and neighbouring areas of Thailand. The mountains are heavily forested with hill and lowland evergreen forest and contain many rivers and streams which flow southwards into the sea and northwards into Tonle Sap Lake (Campbell *et al.*, 2006). On the northern side of the mountains, the Takong stream flows into the Pursat River and subsequently into Tonle Sap Lake. The stream is rich in fish and surrounded by evergreen forest. Little water is present in the stream during the dry season, especially in April, except in deep pools. A large flooded grassland is located next to the stream, which provides suitable habitat for otters.

The coastal zone of southwest Cambodia is dominated by rivers draining the Cardamom Mountains, estuaries, mangrove and *Melaleuca* forest, with evergreen and bamboo forests occurring further upstream. Peam Krasop Wildlife Sanctuary is located in this area and is dominated by mangrove and *Melaleuca* forests (UNEP, 2008). These are intermixed with agriculture areas and grasslands. The rivers are rich in marine and freshwater fish and provide good habitat for otters. Sand-dredging in the rivers, hunting and land conversion are major threats

to otters and other wildlife at the site (Dong *et al.*, 2010), and interviews indicate that local otter populations are in decline. Ream National Park, located in the coastal area of Sihanoukville Province, comprises similar habitats (Heng, 2010).

Sampling methods

Survey methods included semi-structured interviews of fishermen, hunters, rangers, and village chiefs whom often have good knowledge of local wildlife. Reference photographs of the otter species that occur in Cambodia were used during the interviews to aid species identification, although confirmed records of otter presence were not based on interview data alone. Interview results guided site selection for track and sign surveys and camera trapping.

As Hussain & Choudhury (1997) found otter signs were located within 12.5 m of water bodies, track and sign surveys were conducted within 20 m of water edges along rivers, streams and dry season ponds. Signs sought for included spraints, food remains, footprints, dens, and resting sites. The wetlands of Tonle Sap and Bassac Marsh are difficult to navigate through due to dense vegetation, which in some cases diverted survey effort. During the rainy season, boats were used to move around these areas. Although tracks of hairy-nosed otter and Eurasian otter *Lutra lutra* are very similar and difficult to distinguish (Kanchanasaka, 2001), the team learned to recognise spraints produced by different otter species from the IUCN Otter Specialist Group Chair Nicole Duplaix and so could confidently identify those produced by hairy-nosed otters. Despite this, records of otters were not regarded as confirmed unless substantiated by a camera trap photograph, skin or direct observation.

Camera traps were set at a total of 228 locations across the areas surveyed (Table 1). Different camera traps were used during the survey (Reconyx, Bushnell, and Woodland Outdoor Sport) and were deployed at all sites where signs of otters were found. These were attached to trees approximately 50 cm above the ground, on branches over the water, or on floating logs and vegetation. Camera traps were typically left in place for 3–4 weeks, and at some locations were used several times during the year. Habitats at the survey sites were described and recorded.

Results

Our surveys confirm the presence of the hairy-nosed otter in four areas of Cambodia: Tonle Sap Lake, Cardamom Mountains, coastal areas in Koh Kong province, and Bassac Marsh. No evidence of the species was found at