

A close-up photograph of a green praying mantis perched on the edge of a purple flower petal. The mantis is facing upwards and to the right, with its characteristic raptorial front legs raised. The background is a solid, dark green color. The text 'PREY LANG FOREST LANDSCAPE' is overlaid in the upper right quadrant, and 'A Biodiversity Assessment for Forestry Administration by Conservation International & Winrock International' is overlaid in the lower right quadrant.

PREY LANG FOREST LANDSCAPE

A Biodiversity Assessment for
Forestry Administration by Conservation
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THE SURVEY

Prey Lang is one of Cambodia's most significant unprotected landscapes, and in 2014 the Forestry Administration of the Royal Government of Cambodia requested a survey be undertaken to assess the areas' biodiversity.

With funds from USAID and in partnership with Winrock International, Conservation International coordinated a team of Cambodian and international specialists to survey the type, abundance and diversity of the flora and fauna of Prey Lang. Concluding in early 2015, the biodiversity survey found that Prey Lang supports an impressive range of species, including 55 listed by the IUCN as threatened.

A full technical report of the survey findings is available from Conservation International's Phnom Penh office (see page 41).





INTRODUCTION

The Prey Lang landscape is situated to the west of the Mekong River in North-Central Cambodia and stretches over four provinces: Kratie, Kampong Thom, Stung Treng and Preah Vihear. It lies within three watersheds, the Stung Sen, Stung Chinit and Siem Bok and traverses the hydrological divide between the Tonle Sap and Mekong Basins.

It is the largest lowland evergreen forest in Cambodia, and possibly the most expansive in the Indo-Burma region.

This landscape provides a range of important ecosystem services such as livelihoods for local communities and watershed protection, but it is also a crucial refuge for a diverse range of wildlife species that are facing increased threats throughout the country.

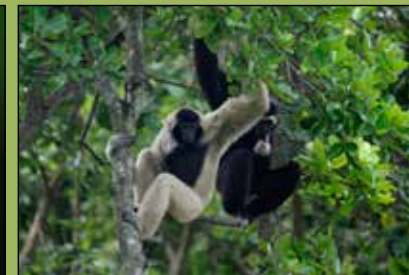
DECIDUOUS DIPTEROCARP FOREST

Primarily composed of flat lowlands, the Prey Lang landscape also comprises a diverse mosaic of habitats. Whilst the majority of the forest cover is evergreen, deciduous dipterocarp and semi- evergreen forest, mixed pine broadleaf forest and open grasslands are also present. An evergreen swamp forest contains permanent waterholes, which sustain both wildlife and local communities through the dry season; whilst a spectacular and biologically rich karst formation features in the northern part of the landscape.



EVERGREEN FOREST

Evergreen forests are dominated by evergreen species from the canopy to the ground layer. Often known as rainforest, this particular habitat, along with tropical coral reefs, supports the richest array of species diversity on the planet.





SWAMP FOREST

The central area of Prey Lang is covered by large areas of water in the rainy season, which are then reduced to smaller patches in the dry season. The many spring areas, permanent ponds and lakes provide important habitat for a variety of wildlife, especially birds such as painted storks *Mycteria leucocephala* and oriental darter *Anhinga melanogaster*. Local communities also rely on this water for domestic agricultural use.

Cool and calm, the evergreen swamp forest of Prey Lang is unique within Cambodia. Ecologically distinct from the swamp forests of Tonle Sap/Great Lake and Stung Sen, this very special natural feature hosts many aquatic and terrestrial species, and provides the valuable ecological function of helping to regulate underground water in the dry season.





KARST LIMESTONE FORMATIONS

A large karst formation is present in the north of Prey Lang. Karst landscapes are rare in Cambodia and seriously under represented in that nation's protected areas network.

Karst formations are noted for their caves, which are frequently biodiverse hotspots in terms of their levels of species endemism and threat. One taxon studied during the survey was bats. Twenty-four species were recorded, including Marshall's horseshoe bat *Rhinolophus marshalli*, which constitutes the first country record for Cambodia. 74% of these recorded species were found in this northern karst region.

Supporting at least a third of the Kingdom's bat species, Prey Lang and the northern karst formations are clearly important for Cambodian bat conservation.



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ELEPHANT, GAUR & BANTENG

The Prey Lang landscape is a crucial environment for populations of the three largest mammals found in Cambodia: Asian elephant, gaur, and banteng.

All three of these mega mammals are threatened throughout the Kingdom by habitat loss. The mosaic of habitats that composes Prey Lang is not only a vital resource for remaining large mammals, but also offers valuable habitat for the rehabilitation of lost or highly threatened species.

Surveys identified at least 13 individual elephants and estimate there may be as many as 20 individuals - a significant proportion of the number remaining in Cambodia.





CAMERA TRAPPING

In total, 36 species of mammals were recorded during the surveys. Many of these records were made using camera traps set to photograph animals remotely.

Most forest species are very difficult to see, either because they are extremely shy, particularly rare, or active only at night. The use of camera traps, which were left in position for a number of months, is the best way to record these seldom seen species.

For instance, Indochinese silvered langur *Trachypithecus germaini*, although arboreal and fairly easy to see, were not recorded during mammal surveys but were frequently captured on camera traps set at water holes.

Camera traps were also useful to record some of the shier, silent, or more terrestrial bird species, such as the pheasants.





BIRDS

Prey Lang is a nationally important bird sanctuary with 266 species of birds currently recorded. This number represents 44% of the bird species known to occur in Cambodia.

Fifteen birds that feature on the IUCN Red List, including the spectacular great hornbill *Buceros bicornis*, have been confirmed for the area. Other significant species include orange-necked partridge *Arborophila davidi*, green peafowl *Pavo muticus*, great slaty woodpecker *Mulleripicus pulverulentus* and greater adjutant *Leptoptilos dubius*.

Lesser adjutant *Leptoptilos javanicus* and woolly-necked stork *Ciconia episcopus* linger around seasonal pools and meadows. Other globally threatened large water birds, such as giant ibis *Thaumatibis gigantea*, white-shouldered ibis *Pseudibis davisoni* and sarus crane *Grus antigone* have been accurately described by local communities and are also likely to frequent these pools.





REPTILES & AMPHIBIANS

A total of 22 amphibians and 45 reptiles were recorded in Prey Lang, including many on the IUCN Red List. One reptile found in Prey Lang during the survey, *Gekko petricolus*, was the first record for Cambodia.

The high diversity and significant proportion of globally threatened amphibians and reptiles still present in Prey Lang is encouraging as these species are indicators of a healthy ecosystem.

The conclusion is that it is not too late to protect Prey Lang; yet as with many of the area's other animals, both amphibians and reptiles are suffering from hunting for both consumption and trade.





INVERTEBRATES

Not surprisingly, as a vast swathe of tropical forest, the Prey Lang landscape is rich in invertebrate species and is no doubt home to many species that are yet to be described by science. During the surveys many species were recorded across the various sites, from the world's smallest dragon fly *Nannophya pygmaea* (opposite) to the strange and fearsome-looking whip spiders (page 15) and scutiglerid centipedes (below, top right) found in the limestone cave systems.





FLORA

Of Prey Lang's many species of plants and trees, 11 are on the IUCN Red List. Fifteen of the 20 high-priority tree species determined by FA/DANIDA's Cambodia Tree Seed Project in 2003 are also found in Prey Lang.

Amongst the findings of the survey was the carnivorous pitcher plant *Nepenthes gracilis* and a delicate white orchid *Peristylus goodyeroides*, the first time this species has been found in Cambodia.





HYDROLOGY

The Prey Lang landscape is a significant watershed for the Tonle Sap Lake, and the forested areas reduce the flow of sediment into this critical fishery. Logging is changing forest composition and structure, altering the microclimate and increasing waterway sedimentation. Not only does this have the local implications of reducing breeding habitat and shelter for aquatic species, but if unchecked, may have serious cumulative downstream impacts.

The forests of Prey Lang also contributes to flood control in the peak rainy season between August and September and is believed to make a major contribution to the regulation of underground water in the dry season.

These substantial ecosystem services should be considered carefully in any discussions about the future development or protection of Prey Lang.



RESIN COLLECTING

More than 250,000 people live in the 340 villages within or adjacent to Prey Lang. Many of these villagers rely directly on the landscape for their livelihoods. Most of the population belongs to the indigenous group called Kuy and the forest also forms part of their cultural and spiritual life.

Collection of green cardamom, honey, rattan, bamboo, and wild fruits are all economic opportunities present in the area.

Resin tapping is a common livelihood strategy for forest dwelling communities in Prey Lang, with 5 *Dipterocarp* species providing this precious commodity throughout the landscape. There are five *Dipterocarp* species occurring which supply resin tappers. These include the three liquid-resin producers: *Dipterocarpus costatus*, *D. alatus* and *D. intricatus*, and two solid resin producers: *Shorea obtusa* and *S. siamensis*. Resin tappers are very protective of their trees. This gives conservation a head start in Prey Lang - many of the villagers don't want to see the forest destroyed because when the forest is lost so too are the resin trees.



DEFORESTATION

Illegal logging is evident throughout the landscape, occurring at an alarming rate. Most of the highly valuable timber species, such as rosewood *Dalbergia* sp., are already very scarce, and loggers are moving on to the next most valuable species. Land is also being cleared wholesale for new agricultural plots for both domestic and commercial uses.

Security staff and workers employed by commercial companies also contribute to unsustainable levels of illegal logging, fishing and poaching.





WILDLIFE TRADE

The illegal wildlife trade is flourishing in Prey Lang and many species of mammals, birds and reptiles can be found for sale in local markets or stored ready for purchase by middlemen who export to China and Vietnam. Hunting poses a major threat to many of the important species that occur in the landscape.



© Sokrith Heng (top) & Pengly La



THE VALUE OF PROTECTING PREY LANG

Prey Lang's distinctive biodiversity value, ecosystem services provided, and the significant economic opportunities that the area presents clearly justifies protection at the highest level. However, the landscape is detrimentally changing and at an ever increasing rate. Across Prey Lang there has been considerable habitat degradation, most noticeable south and north of the central evergreen forest region.

If action is not taken soon to protect the Prey Lang landscape then the forest's high value biodiversity and lucrative ecosystem services will soon be lost forever.



*Man did not weave the web of life, he is merely a strand in it.
Whatever he does to the web, he does to himself.*



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