

## Cat Project of the Month – November 2006

The IUCN/SSC Cat Specialist Group's website ([www.catsg.org](http://www.catsg.org)) presents each month a different cat conservation project.

Members of the Cat Specialist Group are encouraged to submit a short description of interesting projects

For application use this [standardised form](#) (an editable word document)

### Bornean Wild Cat and Clouded Leopard Project



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This project, a collaborative effort between the Global Canopy Programme and the University Malaysia Sabah, aims to assist the conservation of the five species of wild cat found on Borneo. The project will gather baseline information regarding the ecology of these felids, increase awareness of wild cats in Sabah, Malaysia, and build capacity for mammal field research in Malaysia.

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Andrew Hearn & Joanna Ross  
(Photo: John Pike/ GCP)

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#### Background and Justification

The tropical rainforests of the island of Borneo support five species of wild cat: clouded leopard (*Neofelis nebulosa*), bay cat (*Catopuma badia*), flat-headed cat (*Prionailurus planiceps*), marbled cat (*Pardofelis marmorata*), and leopard cat (*Prionailurus bengalensis*). Of these five felids, three are considered by the IUCN as *Vulnerable*, and one, the endemic bay cat, as *Endangered* (IUCN, 2003). The main threats to the Bornean wild cats are believed to stem from habitat degradation and fragmentation, as a result of widespread timber harvesting and conversion for agriculture (Nowell and Jackson, 1996). Borneo's forests are disappearing quickly. While in the mid 1980s forests still covered nearly three quarters of the island, today only 52% of Borneo remains forested (Rautner et. al., 2005). Hunting of wild cats and their prey may also pose a potential threat.

Conservation of the Bornean wild cats will benefit from field research that contributes to an understanding of their ecological requirements (Kitchener, 1991; Nowell & Jackson, 1996). Given the widespread forest conversion on Borneo it is imperative that we evaluate the responses of the Bornean felids to these habitat alterations and develop recommendations to minimise any negative impacts on these species. However, despite their threatened status the natural history and ecology of the Bornean wild cats remains poorly understood (Nowell and Jackson, 1996; Sunquist and Sunquist, 2002). With the exception of the preliminary clouded leopard density estimates of Wilting et al. (2006), data regarding the population ecology of any of the four threatened Bornean felids are lacking. Furthermore, the effects of selective logging and habitat conversion on these felids remains unstudied and the extent of hunting and trade of these species and their prey in Sabah is unclear.



The Segama River marks the eastern boundary of The Danum Valley Conservation Area. The vegetation here is classified as lowland evergreen. (Photo A. Hearn).

To address this paucity of information the Global Canopy Programme (GCP), in collaboration with the Universiti Malaysia Sabah (UMS), have initiated a multidisciplinary project, merging ecological research, environmental education and training. Through intensive field research, including camera trapping, radio tracking and prey base studies, our project will aim to provide baseline data regarding the behaviour and ecology of the Bornean wild cats and will investigate the potential effects of habitat disturbance on these felids. Ultimately, data collected during the duration of this project will be used to provide recommendations for a Bornean wild cat conservation action plan, which, it is hoped, will guide future changes to forest management practices in Sabah.

## Aims and outputs

*Specific aims will be to:*

1. Study the behaviour and ecology of the five species of Bornean wild cat and their prey, with a focus on the clouded leopard.
2. Investigate the effects of habitat alteration on Bornean wild cats.
3. Increase awareness of the Bornean wild cats and their conservation needs, using the clouded leopard as a flagship species.
4. Train host country scientists/students in a range of ecological/behavioural field techniques.
5. Investigate threats to the Bornean wild cats from hunting and trade in Sabah.



Photograph of a clouded leopard captured by a camera-trap at Danum Valley. The clouded leopards on Borneo typically have greyer base coat than those found on the mainland; melanistic specimens have been reported from Danum.  
(Photo Siew Te Wong)

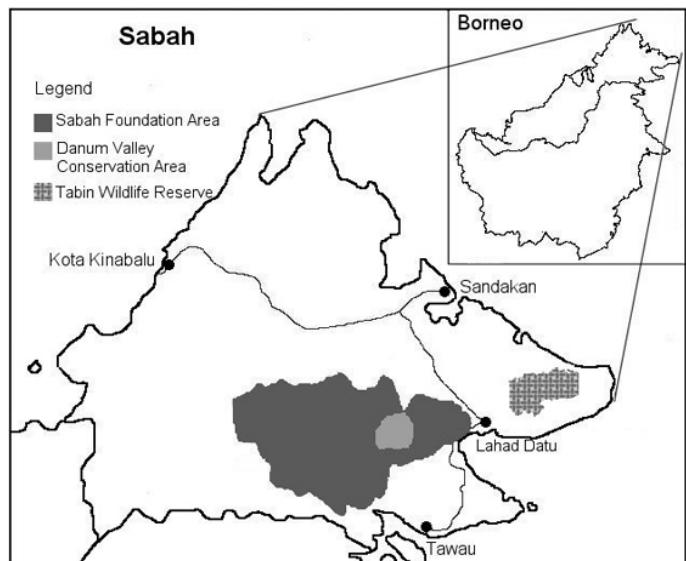
*Specific outputs of the project will include:*

1. Project dissemination workshop. Relevant stakeholders and project partners invited to attend workshop in Kota Kinabalu, Sabah during September 2009.
2. Recommendations for a conservation action plan for Bornean wild cats in Sabah. This will help the Malaysian Government meet its obligations under the Convention on Biological Diversity (Articles 7,8,12,13,14,19 and 18) and in particular the Work Programme on Forests.
3. An ongoing wild cat specific environmental education programme in Sabah aimed at schools, communities and tourists.
4. Sixty Malaysian students/scientists trained in mammal field research techniques, during six, five-day long, courses.
5. A report on the threats to Bornean wild cats from hunting and trade in Sabah.

## Study cite

Our project is based within Danum Valley Conservation Area (DVCA) and surrounding logging coupes, and the Tabin Wildlife Reserve (TWR), in Sabah, Malaysia. The DVCA encompasses 438 km<sup>2</sup> of primary lowland dipterocarp rainforest, within a 9730 km<sup>2</sup> timber concession (Sabah Foundation Area), making it an ideal site to obtain data on Borneo's wild cats in pristine and disturbed forests. TWR comprises 1205.2 km<sup>2</sup> of predominantly logged over lowland dipterocarp forest with a central primary forest area of approximately 20.1 km<sup>2</sup>. TWR is surrounded by a vast oil palm plantation and thus serves as an ideal site to investigate the effects that conversion to plantation crops may have on Borneo's wild cats.

Map highlighting the 2 main study areas, Danum Valley and Tabin Wildlife Reserve in Sabah, Malaysian Borneo



## Methods

### 1) Ecological Research

*Camera trapping survey* - We are using passive infrared digital camera traps to investigate the distribution, habitat associations, activity and abundance of the Bornean wild cats and their prey in managed and unmanaged forests and agricultural plantations. This camera survey will also enable suitable sites for live trapping to be identified. Camera traps are placed along animal trails, man-made trails, logging roads and watering areas at both Danum Valley and Tabin Wildlife Reserve, located so as to maximise the success rate of photographic 'captures'. Photographic capture rates of wild cats and their prey species will be used to calculate an index of relative abundance for each species, and capture-recapture techniques will be used to estimate the density of wild cat species in which individuals can be distinguished from one another. In addition, camera traps will be used during a pilot study to investigate the efficacy of placing camera traps in the forest canopy to study the arboreal habits of the clouded leopard and marbled cat. The project will use the skills of Malaysian scientists, previously trained in canopy access techniques by the GCP, to position camera traps in the canopy.



Joanna Ross & Andrew Hearn downloading images from a digital camera trap in the primary Dipterocarp forest in Danum Valley. (Photo R. Blake)

*Spatial ecology study* - In the second phase of our project we will use radio-tracking techniques to investigate the spatial patterns, ranging behaviour, activity and habitat use of the Bornean wild cats. Several large wooden log and steel mesh box traps will be used to capture and radio collar wild cats. Captured cats will be anaesthetised with an intramuscular injection of Telazol™. Sedated animals will be sexed, aged, measured, weighed and photographed; ectoparasites, hair and blood will be collected. Adult and sub-adult animals will be fitted with radio-collars, but juveniles will not be collared. Collared animals will be tracked on foot with receivers and hand held 3-element Yagi antennae. The location of animals will be estimated by triangulating from 2 or more radio-fix bearings. To estimate home range size and habitat preferences, fixes will be obtained at intervals of at least 24 hours to ensure data independence. To estimate activity, once a month each animal will be tracked for a full 24-hour period.

*Prey base study* - An intensive small mammal trapping programme will be conducted in the primary and secondary forests at Danum Valley and the secondary forests and oil palm plantations at Tabin Wildlife Reserve. This data will be used in conjunction with wild cat scat analysis data, and prey abundance data obtained from camera trapping, to gain an understanding of the population ecology of the wild cat prey species and to relate this data to the ecology of the wild cats.

### 2) Hunting and trade questionnaire survey:

In collaboration with a Malaysian ecologist, Siew Te Wong, and with the aid of locally employed assistants, we will conduct questionnaire surveys throughout the communities surrounding the Tabin Wildlife Reserve. Questions will be asked regarding the presence/absence of wild cats and their prey, and the level of hunting of these species. These questionnaires will use photos/pictures in order to ensure correct identification of the species in question.

### 3) Education:

In collaboration with the Conservation & Research Officer at the Danum Valley Field Centre, we will produce environmental education materials regarding the natural history and conservation issues of the endemic wild cat species of the area. These materials will be incorporated into the existing environmental education programme at Danum, and also displayed at two major tourist facilities in the region, the Borneo Rainforest Lodge and the Tabin Wildlife Resort and surrounding communities.

A leopard cat photographed at Tabin Wildlife Reserve. Leopard cats are frequently seen along the main access road to Tabin, which marks the interface between the secondary dipterocarp forest of the reserve and the vast oil palm plantations, which completely surround the reserve. (Photo J. Ross)



#### 4) Training

Over the duration of the project we will host mammal field research training courses for ASEAN region students and scientists at Danum Valley. Each year, twenty students/scientists will be trained during two 5-day field courses, covering a range of skills, including mammal live-trapping/handling, radio-tracking, camera-trapping, field sign identification and use of computer software. To enhance the legacy of the project two course attendees from our host country collaborating institution, the UMS, will be selected in year 1 to be trained as trainers for future mammal field research courses. In addition, a candidate from the UMS will be trained as a project counterpart, receiving three years on the job training whilst studying for their PhD. This candidate will also be offered a month long training scholarship at the Wildlife Conservation Research Unit, at the University of Oxford.

#### Progress to Date

The Bornean Wild Cat & Clouded Leopard Project is a new initiative funded by the UK's Darwin Initiative with co-financing from Wild About Cats. Fieldwork started in early November 2006, and consequently findings to date are limited.

Thirty camera traps have been provisionally positioned in the primary forest conservation area at Danum Valley. To date (November 2006), we have accumulated over 500 camera trap days (1 camera trap day = one camera trap operating for a full 24 hours), and we have obtained one of the first photographs of a bay cat, photo-captured walking along a trail within the primary forest at Danum Valley. Photographs have also revealed the presence of a healthy prey base.



A recently captured photograph of a bay cat (*Catopuma badia*) in the primary forest at Danum Valley. This elusive felid is endemic to the island of Borneo, and is rarely seen and seldom photographed; to date this species' ecology has never been studied.

(Photo A. Hearn and J. Ross)

In addition, visual sightings and pug-marks recorded during initial field sign surveys at Danum Valley have confirmed the presence of leopard cats and marbled cats. On the 23rd November, at around 9:00pm, a melanistic clouded leopard was observed by both principal researchers on the Danum Valley access road, approximately 8 km from the main Lahad Datu to Tawau road. Furthermore, interviews with field staff and researchers at Danum Valley Field Centre have provided photographic evidence of clouded leopard and marbled cat (Siew Te Wong, *pers com.*) and anecdotal evidence for the presence of flat-headed cat. Field sign surveys in the primary forest areas and selectively logged forest coupes at Danum Valley are ongoing, and data is being incorporated into a GIS.

#### Project Personnel

##### Principal Investigators:

Andrew Hearn. Research Associate, Global Canopy Programme  
Joanna Ross. Research Associate, Global Canopy Programme

##### Project Manager:

Katherine Secoy. Research & Conservation Programme Manager, Global Canopy Programme

##### Scientific Advisor:

Prof. David Macdonald, Director WildCRU, University of Oxford

##### Specialist Advisor:

Dr. Jim Sanderson, Research Scientist for ConservationInternational, member of IUCN/SSC Cat Specialist Group

##### Malasian Collaborators:

Dr. Maryati Mohamed, Director of the Institute for Biodiversity Conservation (ITBC), University Malaysia Sabah  
Dr. Henry Bernard. Research scientist at the Institute of Biology and Conservation, University Malaysia Sabah

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## Project Information

Duration:	2006-2009
Location (see map):	Danum Valley and Tabin Wildlife Reserve, Sabah, Malaysia
Partners	Maharashtra State Forest Department
Sponsor(s):	Darwin Initiative, UK Department for Environment Food and Rural Affairs, and Wild About Cats
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