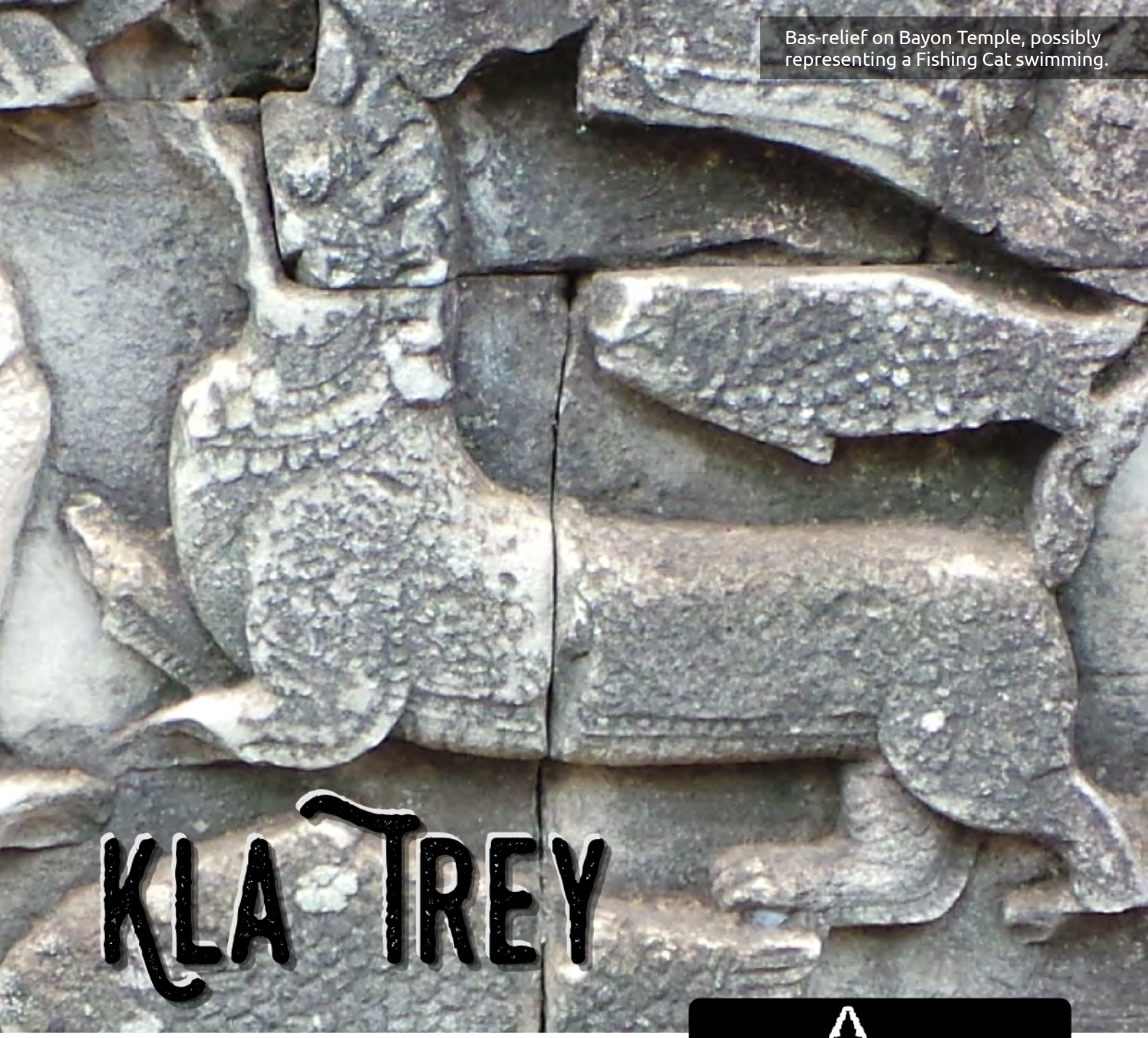


Bas-relief on Bayon Temple, possibly representing a Fishing Cat swimming.

KLA TREY

CAMBODIAN FISHING CAT PROJECT

ខ្លាត្រី

Conservation of a newly recorded population of Fishing Cat *(Prionailurus viverrinus)* at Peam Krasaop Wildlife Sanctuary, south west Cambodia.

www.fishingcatcambodia.org

ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

ក្រសួងបរិស្ថាន
អគ្គនាយកដ្ឋានរដ្ឋបាលការពារនិងអភិរក្សធម្មជាតិ
លេខ: ៣៩៦ អកជ.បស្ថ

រាជធានីភ្នំពេញ, ថ្ងៃទី ០៣ ខែ មិថុនា ឆ្នាំ២០១៦

ប្រតិភូរាជរដ្ឋាភិបាល
ទទួលបន្ទុក ជាអគ្គនាយក នៃអគ្គនាយកដ្ឋានរដ្ឋបាលការពារ និងអភិរក្សធម្មជាតិ
ជម្រាបជូន
លោកនាយកអង្គការសត្វព្រៃ និងរុក្ខជាតិអន្តរជាតិ(FFI)

កម្មវត្ថុ ៖ ករណីសុំការអនុញ្ញាតចុះសិក្សាស្រាវជ្រាវអំពីរបាយសត្វខ្លាត្រីនៅក្នុងតំបន់ការពារដែនជម្រកសត្វព្រៃពាមក្រសោប ឧទ្យានជាតិបុទុមសាគរនិងឧទ្យានជាតិរាម

យោង ៖ - លិខិតលេខ០១៣ សរអ ចុះថ្ងៃទី១២ ខែឧសភា ឆ្នាំ២០១៦ របស់អង្គការសត្វព្រៃ និងរុក្ខជាតិអន្តរជាតិ
- ចំណារឯកភាពរបស់ឯកឧត្តមរដ្ឋមន្ត្រីចុះថ្ងៃទី១៦ ខែឧសភា ឆ្នាំ២០១៦

តបតាមកម្មវត្ថុ និងយោងខាងលើ ក្រសួងបរិស្ថានសូមជម្រាបជូន **លោកនាយក** ជ្រាបថា ក្រសួងបរិស្ថាន ឯកភាពជាគោលការណ៍លើសំណើរបស់លោកនាយកក្នុងការចុះសិក្សាស្រាវជ្រាវអំពីរបាយសត្វខ្លាត្រីនៅក្នុងតំបន់ការពារដែនជម្រកសត្វព្រៃពាមក្រសោប ឧទ្យានជាតិបុទុមសាគរក្នុងខេត្តកោះកុង និងឧទ្យានជាតិរាម ខេត្តព្រះសីហនុ។ ជាមួយគ្នានេះ ក្នុងនាមក្រសួងបរិស្ថាន តម្រូវឱ្យអង្គការសត្វព្រៃ និងរុក្ខជាតិអន្តរជាតិ(FFI) ធ្វើកិច្ចសហការជាមួយមន្ទីរបរិស្ថានខេត្ត នាយកឧទ្យានជាតិ និងនាយកដែនជម្រកសត្វព្រៃខាងលើ រួមទាំងអាជ្ញាធរមូលដ្ឋាន ក្នុងការចុះបំពេញការកិច្ចឱ្យបានជោគជ័យ ព្រមទាំងធ្វើរបាយការណ៍លទ្ធផលនៃការចុះសិក្សាស្រាវជ្រាវជូនមកក្រសួងបរិស្ថាន ។

អាស្រ័យដូចបានជម្រាបជូនខាងលើ សូម លោកនាយក ជ្រាបជាព័ត៌មានតាមការគួរ។
សូម លោកនាយក ទទួលនូវការរាប់អានពីខ្ញុំ។

ចម្លងជូន
- សាលាខេត្តព្រះសីហនុ
- មន្ទីរបរិស្ថានខេត្តព្រះសីហនុ
- សាលាខេត្តកោះកុង
- មន្ទីរបរិស្ថានខេត្តកោះកុង
- ដើម្បីចូលរួមសហការអនុវត្ត -
- ឯកសារ-កាលប្បវត្តិ

ចាយ សាមិត្ត

KLA TREY

CAMBODIAN FISHING CAT PROJECT

Conservation of a newly recorded population of Fishing Cat (*Prionailurus viverrinus*) at Peam Krasaop Wildlife Sanctuary, south west Cambodia.

www.fishingcatcambodia.org

PROJECT SUMMARY

Categorised as Endangered (EN) on the IUCN Red List of Threatened Species, the Fishing Cat (*Prionailurus viverrinus*) had only been recorded through camera-trapping once in Cambodia. Fishing cats have declined sharply across South-East Asia where, according to the Fishing Cat Working Group, there might be new populations still to be found but the species could also be approaching extinction. In 2015, the CBC recorded[1] Fishing Cats at two sites with no previous records in south-west Cambodia: Peam Krosaop Wildlife Sanctuary (PKWS) and Ream National Park (RNP). We photo-captured two individuals at PKWS, one of the largest mangrove areas in South-East Asia. We were also informed of the killing of a Fishing Cat at PKWS soon after the study was completed in retaliation for raiding fishing nets. This project seeks to estimate population abundance and status in PKWS, assess threats and work with all the relevant stakeholders to develop conservation measures to protect this newly found Fishing Cat population.

THE TEAM

Principal Investigator: Vanessa Herranz Muñoz. She participated in the 2015 CBC Fishing Cat survey as Consultant. The Kla Trey | Cambodian Fishing Cat Project research will form her PhD from the Universidad Rey Juan Carlos (Spain).

Research Consultant: Thaung Ret. She was the PI of the 2015 CBC Fishing Cat survey. Currently working on the FFI Elephant Project, she will provide support and technical assistance to the Project.

Research Assistant: One CBC MSc graduate or student will be selected to assist throughout the project.

PROJECT ADVISORS

Fishing Cat Working Group

PROJECT PARTNERS

CBC Centre for Biodiversity Conservation

FAUNA & FLORA INTERNATIONAL

FUNDED BY

PANTHERA

DENVER ZOO

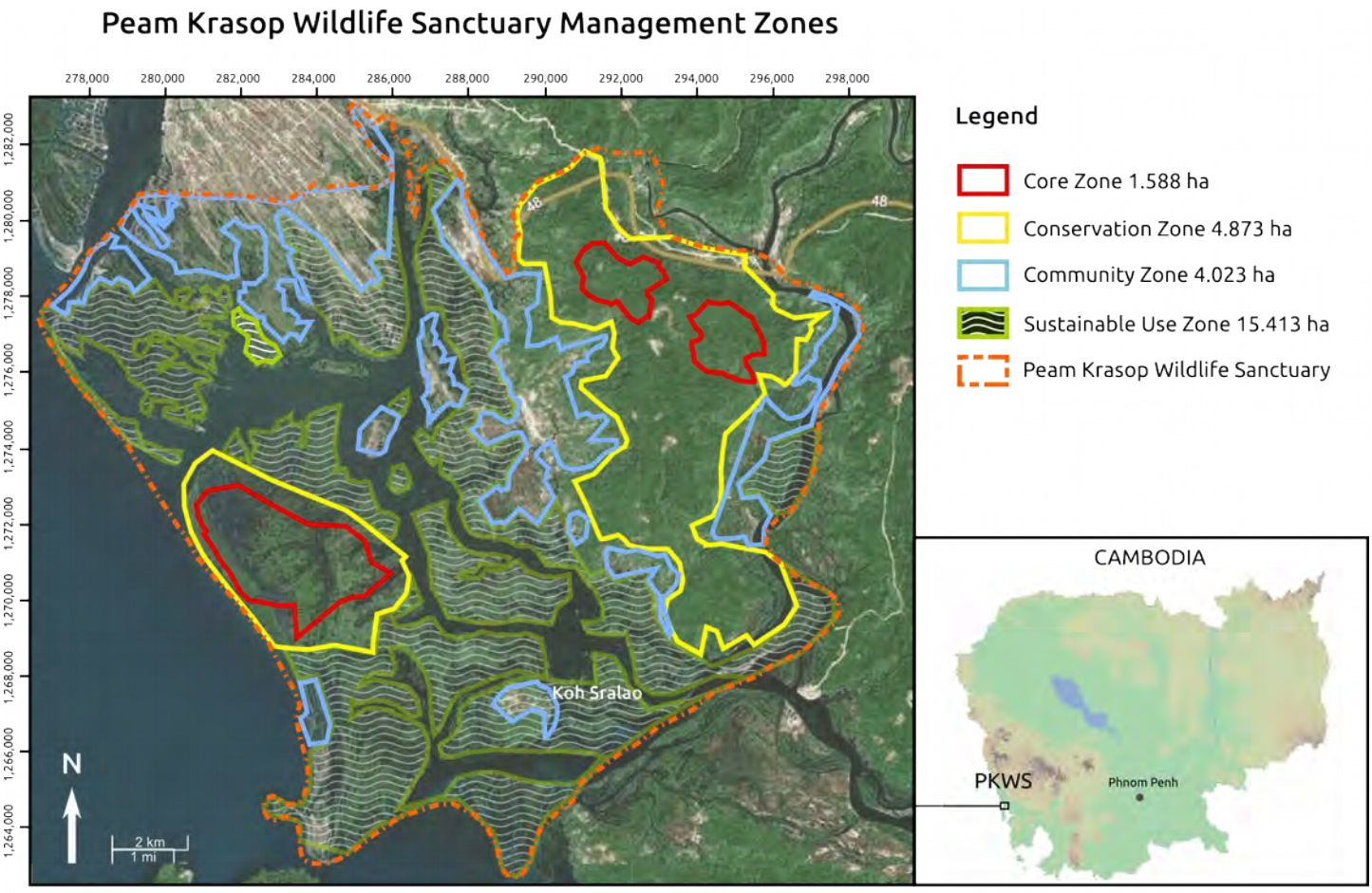
1. For more information see: Thaung R. and Herranz Muñoz V. (2016). Identifying priority sites and conservation actions for Fishing Cat in Cambodia. In Proceedings of the First International Fishing Cat Conservation Symposium.

PKWS

PKWS is situated in Koh Kong province near the border with Thailand and covers 237.5 km^2. PKWS was established in 1993 and holds one of the largest and densest mangrove forests in Southeast Asia. Over 10000 people live at PKWS in 13 villages within 6 communes and 3 districts (1). The human population is highly dependent on natural resources; livelihoods are mainly based around fishing, crabbing and charcoal kiln production and exportation. Overexploitation of wildlife and non-timber forest products (NTFPs), land clearance for agriculture, illegal hunting and sand-dredging of waterways are major threats to this ecosystem (2; 3).

Two main habitat types cover the sanctuary: mangrove forest to the west and evergreen forest to the east. The eastern area is contiguous with the Cardamom Mountains, one of the largest forested areas in Cambodia. A large diversity of wildlife is reported to inhabit PKWS including globally threatened species such as Critically Endangered sunda pangolin (*Manis javanica*), dhole (*Cuon alpinus*) and pileated gibbon (*Hylobates pileatus*) both Endangered (2).

PKWS is the first protected area in Cambodia to have been officially assigned management zones (see study area map) approved by a Royal Sub-Decree in 2011. It is considered a pilot area for the implementation of zoning best practice (2; 4). The IUCN zoning report (4) acknowledges the lack of data on globally threatened species including the Fishing Cat, and calls for further research to be carried out by taxon specialists to create species conservation plans.



Adapted from: An Dara, Kong Kimsreng, Hout Piseth, and R.J. Mather (2009). An Integrated Assessment for Preliminary Zoning of Peam Krasop Wildlife Sanctuary, Southwestern Cambodia. Gland, Switzerland: IUCN 52p.

BACKGROUND AND JUSTIFICATION

Fishing cats are classified as Endangered and their global distribution is very patchy due to a strong affinity to wetland habitats (6). At the last meeting of the Fishing Cat Working Group (Nepal, December 2015) it became apparent that the South East Asian population is very poorly understood even regarding its distribution and could be approaching extinction. One of the objectives of the Fishing Cat Conservation Strategy developed at the meeting is "*to close information gaps on conservation status*". The project will undertake several of the activities described in the Strategy and help achieve this objective for the Cambodian population.

Fishing cats are declining in Thailand and there is no confirmation of their presence in Vietnam and Lao (10; 11; 12). In Cambodia, they had been previously photo-captured only once in 2003 (13). Other records of the species come from captive animals, most of them confiscated (14). Further information about the population at PKWS will fill important knowledge gaps including whether there is potential for transnational connectivity.
During the 2015 CBC survey, two Fishing Cat individuals, a male and a female were photographed at PKWS (Figs. 1 & 2), indicating there might be a breeding population in the area. Our findings suggest PKWS might be of regional importance for the conservation of the species. We also documented the presence of Critically Endangered Sunda Pangolin (*Manis javanica*) (Fig. 3a), Endangered Hog Deer (*Axis porcinus*) (Fig. 3b), Smooth-Coated Otter and Large-Spotted Civet (*Viverra megaspila*), both Vulnerable. Data obtained throughout the project will be used to clarify the status of these and other globally threatened species in the area and provide recommendations for their conservation.

Interview data gathered during the course of the CBC project indicated that the Fishing Cat is not a direct target of hunting activities. However, soon after the project finished we were informed of the killing of a Fishing Cat at PKWS in retaliation for raiding fishing nets. PKWS may have sufficient area, resources and protective measures on paper to potentially sustain a healthy Fishing Cat population, but immediate actions are needed to manage human-Fishing Cat conflicts and control overexploitation of resources.

Figure 1: Fishing cat picture from PKWS. Note that the date should read 2015 not 2014.

Individual 1: Male

a) Video 192: 2/2/15 19:56

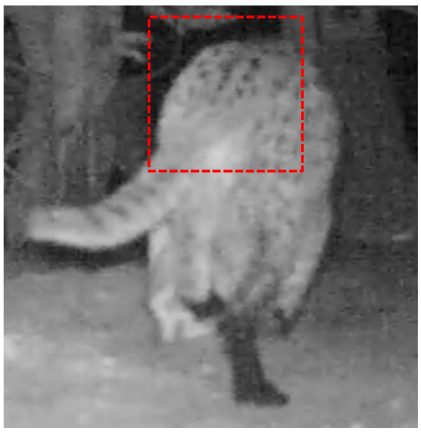
b) Video 204: 5/2/15 23:17

c) Video 378: 1/3/15 22:29

Individual 2: Female

d) Video 268: 11/2/15 23:53

e) Video 372: 1/3/15 19:14



f) Video 1006: 19/4/15 19:34

Figure 2: Frames extracted from videos taken in PKWS. Individual Fishing Cats were identified by the patterns of spots and stripes on their rump.

Figure 3: Other globally threatened species documented at PKWS: a) Sunda Pangolin at PKWS; b) Hog Deer.

PRIMARY GOAL

To estimate Fishing Cat population status in PKWS, assess threats and work with all the relevant stakeholders to develop conservation measures to protect this newly found Fishing Cat population.

OBJECTIVES

1. To estimate Fishing Cat population density, status and habitat use in PKWS.
2. To identify threats to Fishing Cat population preservation in PKWS.
3. To research and implement human-Fishing Cat conflict prevention and mitigation measures.
4. To collaborate with PKWS authorities, NGOs and local communities in creating an integrated wildlife conservation program for the area.

METHODS

The project will combine ecological and social approaches. Fishing cat ecology will be investigated through camera-trapping and habitat characterisation. Social data will be collected through interviews and workshops. Based on the threat information gathered though social research awareness actions will be undertaken. Measures to prevent and mitigate human-Fishing Cat conflict will be designed and tested. Whole project results will serve as a basis to provide recommendations for an integrated wildlife conservation program at PKWS.

1. Fishing cat population status and habitat ecology

Twenty camera-traps will be deployed in a grid design and moved sequentially between suitable sampling areas allowing for analysis through spacially-explicit capture-recapture (SECR) methods. Micro-habitat variables will be collected on 25m buffer areas around the cameras and along transects in the study area. Fish and crab biomonitoring will be carried out through stratified sampling (20) to investigate resource levels and compare resource abundance and habitat use. Micro-habitat selection will be analysed through generalized linear models (21).

2. Threat assessment

A series of workshops will be held to assess threats and local attitudes towards the Fishing Cat. Workshops and interviews will also be held with PKWS authorities and rangers to raise awareness of Fishing Cat conservation issues. Social data will be applied to develop education actions, conflict prevention and mitigation measures and assess potential alternative livelihood activities.

3. Threat mitigation

Conflict prevention techniques will be investigated, including testing both on captive Fishing Cats and *in-situ*. Prevention and mitigation techniques will be tested and applied at PKWS.

4. Creating an integrated wildlife conservation program for the area

The project will function in continuous collaboration with PKWS authorities and NGOs already working in the area. Ecological and social research results will be used to provide recommendations for an integrated conservation program. Rangers accompany researchers during field work, which will provide opportunities to train them in Fishing Cat research. Conservation program recommendations will include adaptive community-based management and evaluation procedures as well as ecosystem enhancement recommendations.

ANTICIPATED OUTCOMES

1) An improved understanding of Fishing Cat ecology, population density and status at PKWS. Submission of three scientific articles on Fishing Cat population status and ecology at PKWS, status of other threatened species at PKWS and impact of human disturbance.

3) An assessment of threats to Fishing Cat preservation at PKWS and a series of actions to raise local community awareness.

4) Implementation of human-Fishing Cat conflict prevention and mitigation measures.

5) A report with recommendations to create an integrated wildlife conservation program at PKWS.

6) Dissemination of outcomes to the IUCN Cat Specialist Group and relevant Cambodian Government ministries.

We will promote collaboration between local communities and park authorities to instil a sense of ownership and stewardship of their unique natural heritage that allows for community-based management of the protected area.

POST-PROJECT FOLLOW UP

After the first year of the project is completed we will promote the implementation of an integrated wildlife conservation program at PKWS. The Fishing Cat may become a flagship species for these area. The conservation plans will encompass whole ecosystem protection and enrichment actions. Plans may also propose measures to increase natural resource availability through carefully planned head-starting systems for species of importance to both humans, Fishing Cats and other wildlife, such as overexploited fish and crabs. Other proposed actions may include plans to restore and enhance habitats and reinforce bird populations. These plans would also be geared towards creating alternative livelihood activities and developing community-based eco-tourism initiatives to relieve pressure on natural resources and sustain further conservation needs.

The second and third years of the project will be dedicated to radio-collaring Fishing Cats to attain a deeper understanding of their ecology in mangrove ecosystems. We will also continue to raise community awareness and support local community involvement in Fishing Cat conservation.

The project will provide the scientific information necessary to ensure appropriate long-term protection of the Fishing Cat, other globally threatened species and their habitat. Our interventions will prevent human-Fishing Cat conflicts and empower the local communities to become the main protectors of this unique mangrove habitat and one of the few populations of Fishing Cat remaining in South-East Asia.

REFERENCES

1. Participatory Management of Mangrove Resources Team and M. Marschke (2000). Mangrove Meanderings. Learning about life in Peam Krasaop Wildlife Sanctuary. IDRC Canada and Ministry of Environment, Cambodia (65pp).

2. Dara, A., Piseth, H., Mather, R., & Kim Sreng, K. (2009). Integrated assessment for identification of a preliminary zoning scheme for Peam Krasob Wildlife Sanctuary in southwest Cambodia.

3. Kastl, B., Kimsreng, K., Kong, S., Chuerattanakul, S., Prohorsarith, N., & Ran, O. (n.d.). Study of Coastal Mangrove Forest Devastation and Channel Sedimentation: Community-based Solutions Koh Kong Province, Cambodia.

4. International Union for Conservation of Nature [IUCN]. (2009). Zoning Proposal for Peam Krasop Wildlife Sanctuary, Koh Kong Province, Cambodia, 1–8.

5. Emerton, L., Seilava, R., & Pearith, H. (2002). Bokor, Kirirom, Kep and Ream National Parks, Cambodia: Case Studies of Economic and Development Linkages. Field Study Report, Review of Protected Areas and their role in the Socio-Economic Development of the Four Countries of the Lower Mekong Region. International Centre for Environmental Management, Brisbane and IUCN – The World Conservation Union Regional Environmental Economics Program, Karachi., (May).

6. Mukherjee, S., Sanderson, J., Duckworth, W., Melisch, R., Khan, J., Wilting, A., Sunarto, S. & Howard, J.G. 2010. Prionailurus viverrinus. The IUCN Red List of Threatened Species 2010: e.T18150A7673993. http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T18150A7673993.en . Downloaded on 17 September 2015.

7. Davidson, N. C. (2014). How much wetland has the world lost? Long-term and recent trends in global wetland area. Marine and Freshwater Research 65, 934–941.

8. Cutter, P. (2009a). Recent sightings of Fishing Cats in Thailand. Cat News, 51, 12–13.

9. Adhya, T. (2011). (Prionailurus viverrinus) in Howrah and Hooghly, W. Bengal, 1–33.

10. Johnsingh, A. J. T. and Nguyen Huu Dung. (1995). Conservation status of felids in Viet Nam. WII Newsletter 2(1): 6.

11. Cutter, P. (2009b). Fishing Cat Research and Conservation Project Report, (February), 1–10.

12. Duckworth J.W, Stones T., Tizard R., Watson S., Wolstencraft J. (2010). Does the Fishing Cat in habit Laos? Cat News 52, 4-7.

13. Rainey, H. J., & Kong, K. (2010). A Fishing Cat observation from northern Cambodia. Cat News.

14. Duckworth, J.W., Poole, C.M., Tizard, R.J., Walston, J.L. and Timmins, R.J. (2005). The Jungle Cat Felis chaus in Indochina: A threatened population of a widespread and adaptable species. Biodiversity and Conservation 14: 1263-1280.

15. Efford, M. G., Dawson, D. K., & Robbins, C. S. (2004). DENSITY: Software for analysing capture-recapture data from passive detector arrays. Animal Biodiversity and Conservation, 27(1), 217–228.

16. Sunquist, M. and Sunquist, F. 2002. Wild Cats of the World. University of Chicago Press.

17. Karanth K.U., Nichols J.D. (1998). Estimation of tiger densities in India using photographic captures and recaptures. Ecology 79: 2852–2862.

18 .Karanth, K. U., N. S. Kumar, and J. D. Nichols (2002). Field surveys: estimating absolute densities of tigers using capture–recapture sampling. Monitoring tigers and their prey: A manual for researchers, managers and conservationists in tropical Asia. Centre for Wildlife Studies, Bangalore, India 139-152.

19. Schlexer, F. V. (2008). Attracting animals to detection devices. Non-invasive survey methods for carnivores, 263-292.

20. Hirzel, A., & Guisan, A. (2002). Which is the optimal sampling strategy for habitat suitability modelling. Ecological Modelling, 157(2-3), 331–341.

21. Barbet-Massin, M., Jiguet, F., Albert, C. H., & Thuiller, W. (2012). Selecting pseudo-absences for species distribution models: how, where and how many?. Methods in Ecology and Evolution, 3(2), 327-338.