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Modelling the Species Distribution of Flat-Headed Cats (*Prionailurus planiceps*), an Endangered South-East Asian Small Felid

Andreas Wilting[1*☯], Anna Cord[2,3☯], Andrew J. Hearn[4,5], Deike Hesse[6], Azlan Mohamed[7,8], Carl Traeholdt[9], Susan M. Cheyne[5,10], Sunarto Sunarto[11,12], Mohd-Azlan Jayasilan[13,14], Joanna Ross[4,5], Aurélie C. Shapiro[15], Anthony Sebastian[16], Stefan Dech[2,3], Christine Breitenmoser[17], Jim Sanderson[18], J. W. Duckworth[19], Heribert Hofer[1]

1 Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany, **2** Department of Remote Sensing, Institute of Geography, University of Würzburg, Würzburg, Germany, **3** German Remote Sensing Data Center (DFD), German Aerospace Center (DLR), Wessling, Germany, **4** Global Canopy Programme, Oxford, United Kingdom, **5** Wildlife Conservation Research Unit, University of Oxford, Oxford, United Kingdom, **6** German Institute of Human Nutrition, Department of Experimental Diabetes, Potsdam-Rehbrücke, Germany, **7** Institute for Tropical Biology and Conservation, University Malaysia Sabah, Kota Kinabalu, Malaysia, **8** WWF-Malaysia, Selangor, Malaysia, **9** Copenhagen Zoo, Department of Research and Conservation, Frederiksberg, Denmark, **10** Orang-utan Tropical Peatland Project, University of Palangka Raya, Kalimantan, Indonesia, **11** Department of Fisheries and Wildlife Sciences, Virginia Tech, Blacksburg, Virginia, United States of America, **12** WWF-Indonesia, Pekanbaru, Indonesia, **13** Department of Zoology, Faculty of Resource Science and Technology, Kota Samarahan, Sarawak, Malaysia, **14** School of Environmental Research, Charles Darwin University, Northern Territory, Australia, **15** Conservation Science Program, WWF-US, Washington, District of Columbia, United States of America, **16** Aonyx Environmental, Kuching, Sarawak, Malaysia, **17** IUCN/SSC Cat Specialist Group, c/o KORA, Muri b. Bern, Switzerland, **18** Small Wild Cat Conservation Foundation, Wildlife Conservation Network, Los Altos, California, United States of America, **19** Wildlife Conservation Society Asia Program, New York, New York, United States of America

Abstract

Background: The flat-headed cat (*Prionailurus planiceps*) is one of the world's least known, highly threatened felids with a distribution restricted to tropical lowland rainforests in Peninsular Thailand/Malaysia, Borneo and Sumatra. Throughout its geographic range large-scale anthropogenic transformation processes, including the pollution of fresh-water river systems and landscape fragmentation, raise concerns regarding its conservation status. Despite an increasing number of camera-trapping field surveys for carnivores in South-East Asia during the past two decades, few of these studies recorded the flat-headed cat.

Methodology/Principal Findings: In this study, we designed a predictive species distribution model using the Maximum Entropy (MaxEnt) algorithm to reassess the potential current distribution and conservation status of the flat-headed cat. Eighty-eight independent species occurrence records were gathered from field surveys, literature records, and museum collections. These current and historical records were analysed in relation to bioclimatic variables (WorldClim), altitude (SRTM) and minimum distance to larger water resources (Digital Chart of the World). Distance to water was identified as the key predictor for the occurrence of flat-headed cats (>50% explanation). In addition, we used different land cover maps (GLC2000, GlobCover and SarVision LLC for Borneo), information on protected areas and regional human population density data to extract suitable habitats from the potential distribution predicted by the MaxEnt model. Between 54% and 68% of suitable habitat has already been converted to unsuitable land cover types (e.g. croplands, plantations), and only between 10% and 20% of suitable land cover is categorised as fully protected according to the IUCN criteria. The remaining habitats are highly fragmented and only a few larger forest patches remain.

Conclusion/Significance: Based on our findings, we recommend that future conservation efforts for the flat-headed cat should focus on the identified remaining key localities and be implemented through a continuous dialogue between local stakeholders, conservationists and scientists to ensure its long-term survival. The flat-headed cat can serve as a flagship species for the protection of several other endangered species associated with the threatened tropical lowland forests and surface fresh-water sources in this region.

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* E-mail: a.wilting@gmx.de

☯ These authors contributed equally to this work.