

A SPECIES AND CLIMATE CHANGE BRIEF FOR



THE VANISHING TREASURES PROGRAMME

GETTING CLIMATE-SMART WITH THE ROYAL BENGAL TIGER IN BHUTAN



VANISHING TREASURES
PROTECTING ENDANGERED MOUNTAIN SPECIES



THE GOVERNMENT
OF THE GRAND DUCHY OF LUXEMBOURG



Authors:

Torjus Solheim Eckhoff, GRID-Arendal

Hanna Gjerdi, GRID-Arendal

Contributors:

Tshering Tempa, Bhutan Tiger Centre

Jessica Bitsch, UNEP

Maarten Hofman, UNEP

Björn Alfthan, GRID-Arendal

Reviewers:

Matthias Jurek, UNEP

Susan Mutebi-Richards, UNEP

Cover photo: iStock/Peerajit

Citation:

United Nations Environment Programme and GRID-Arendal (2020). *Getting Climate-Smart with the Royal Bengal Tiger in Bhutan: A Species and Climate Change Brief for the Vanishing Treasures Programme*. Nairobi: United Nations Environment Programme.

Disclaimer

The contents of this brief do not necessarily reflect the views or policies of UN Environment Programme or contributory organisations. The designations employed and the presentation of material on any maps in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

GETTING CLIMATE-SMART WITH THE

ROYAL BENGAL TIGER

IN BHUTAN



The goal of this information brief

This brief is one of three in a series that also includes the mountain gorilla and the snow leopard, produced under the Vanishing Treasures programme. Its goal is to highlight how climate change is – and will be – impacting the conservation of the Royal Bengal tiger in Bhutan.

The brief examines how climate change has multiple, and often interacting, impacts on the Royal Bengal tiger – be it on its physiology, on the ecosystems and prey species on which it depends, or on the behaviour of humans living in its surroundings – with important feedback loops that directly affect the conservation of this magnificent animal.

The brief also includes a series of possible options for policymakers and conservation practitioners in Bhutan. The potential solutions are based on consultations at the local and national level and

will be further explored and developed in the course of the Vanishing Treasures programme. They do not, however, refer to the definitive approach being taken by the programme.

The Vanishing Treasures programme is working to:

- integrate climate-smart measures into conservation planning, including ecological connectivity measures to take into account shifting and changing habitats and other changes as a result of climate change
- pilot ecosystem-based adaptation and other measures to increase communities' resilience to climate change and to promote alternative livelihood options that reduce or diversify the dependence on natural resources, such as water, that species depend on
- pilot specific measures to reduce human-wildlife conflict.



An adult Royal Bengal tiger. Credit: iStock/Amit Srivastava

“ We’re the true kings of the jungle. Our vast kingdom used to stretch over grasslands with plenty of prey to feed on, but they’re decreasing. Humans have always admired and feared us. The truth is we’re just trying to survive, like communities in Bhutan. We tigers need our territory to be restored, not torn into pieces, so we can hunt freely. It’s the best way to reduce unnecessary encounters between tigers and humans. I shouldn’t be saying this, but if you protected your livestock better, it’d be less attractive to us. Taking care of our habitats can also benefit the humans around here and increase their chances of earning a living, especially now that climate change is making things more difficult for everyone. I’m tired of being the big bad tiger. Just give me space... and peace.

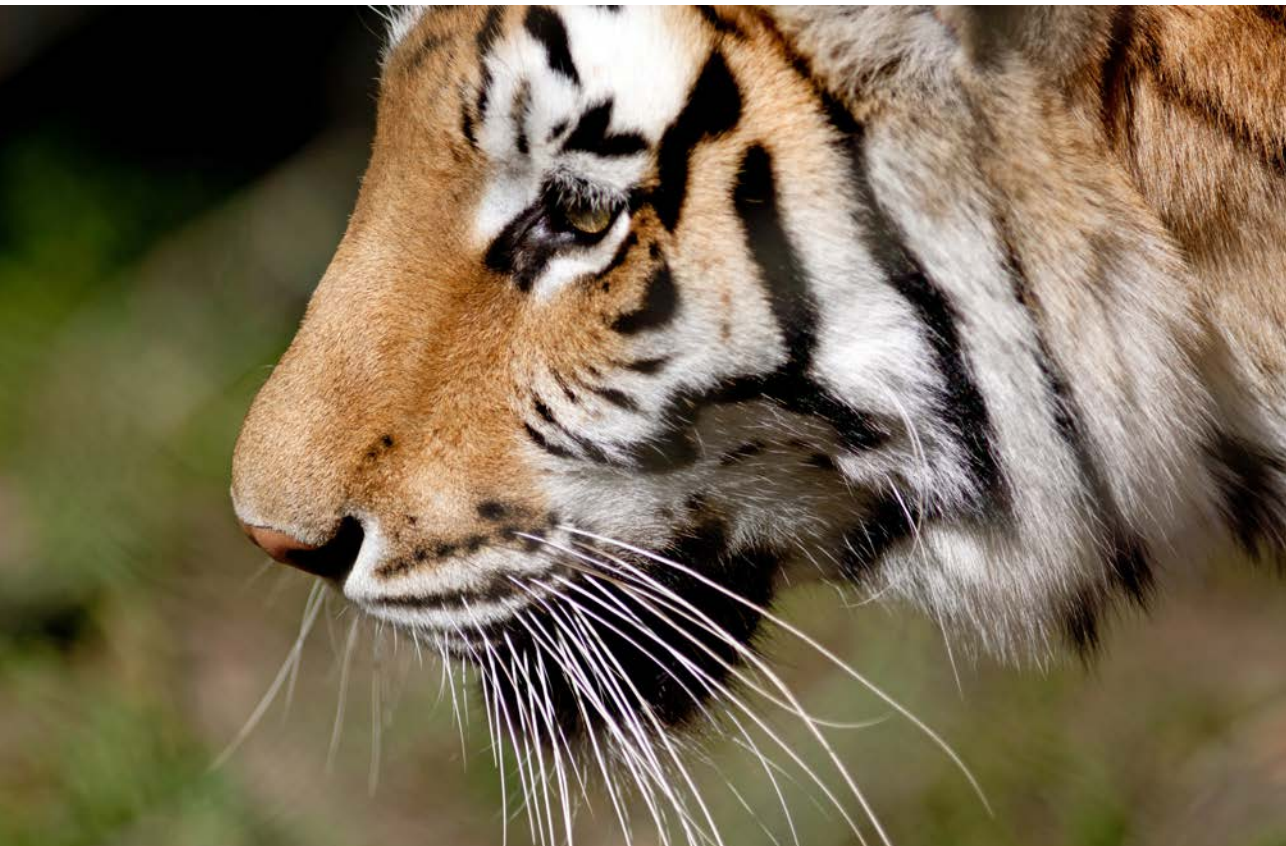
– Karma, Royal Bengal tiger, Himalayas

Introduction

The Royal Bengal tiger once ranged widely across Asia, but nowadays its habitat and population size has been drastically reduced. The International Union for the Conservation of Nature (IUCN) has listed this species as endangered, and it is estimated that there has been as much as a 50 per cent decline in global tiger populations over the last three decades, with around 5,000–7,000 tigers in 1998 compared with 3,500 in 2014 (Goodrich et al. 2015). Bhutan lies within the Greater Manas conversation landscape, and is one of eight countries where a breeding population can be found in the wild (World Wide Fund for Nature [WWF] 2012). The Bhutanese tiger population is estimated to be around 90 individuals (Tempa et al. 2019). Based on camera trap recordings, most of these identified tigers are distributed across the north-western, central, and south-central parts of the country

(see Figure 1), which are mainly conifer forests, alpine meadows, warm and cool broad-leaved forests and sub-tropical forests, which allow for a wide-ranging biodiversity (Ministry of Agriculture 2009; Sangay, Rajaratnam, and Vernes 2014). Tiger habitats in Bhutan range from 150 metres above sea level (a.s.l) in the southern region to 4,000 metres a.s.l in the northern region (Nature Conservation Division 2018; Tempa et al. 2019). Adult tigers maintain exclusive territories and are generally solitary animals.

The range of tigers' habitats depends on the availability of sufficient prey. Although tigers can eat almost anything they catch, the availability of their preferred prey (spotted deer, wild pig, other ungulates such as the sambar deer) is key to successful reproduction (Sunquist and Sunquist 2002). Livestock (horses and cows) also contribute



Royal Bengal tiger. Credit: iStock/demeri

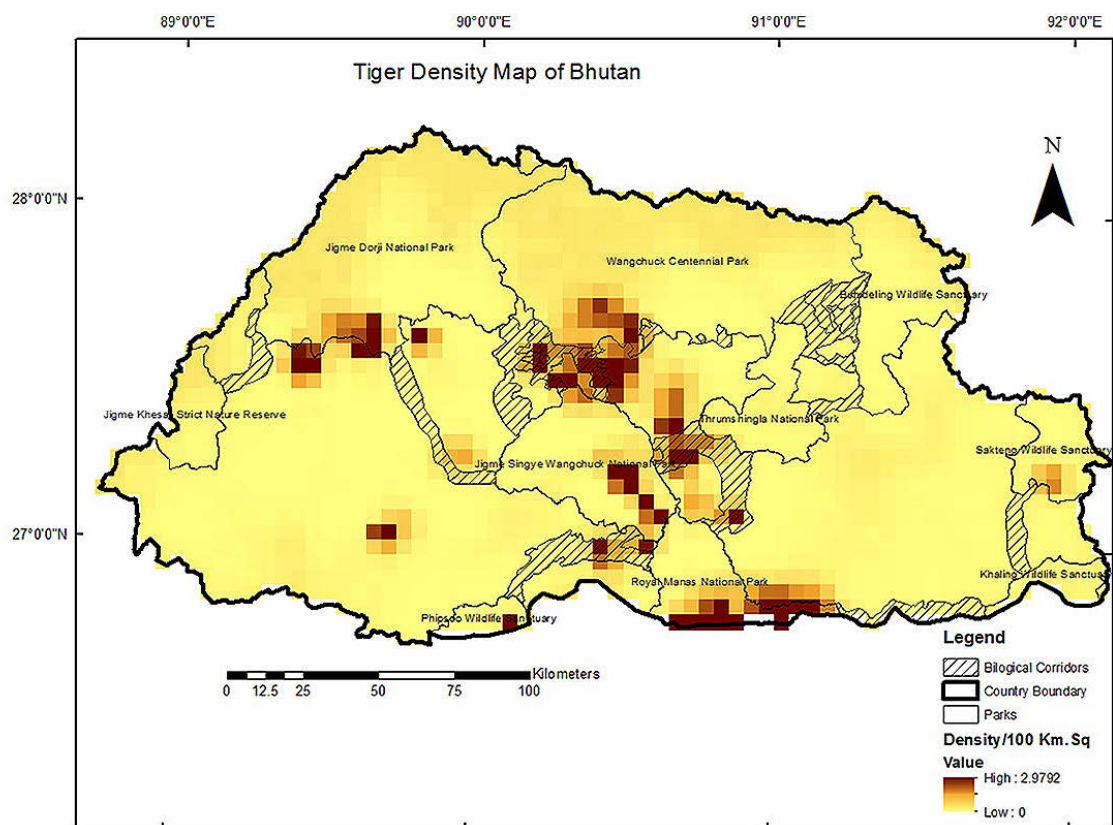


Figure 1: Map of tiger density in Bhutan using the Bayesian spatial capture-recapture model, $D + \sigma_{sex}$, 2014–2015. Source: Reproduced from Tempa et al. (2019), with permission from Elsevier.

Mountains are global biodiversity hotspots

Mountains are hugely important for biodiversity: about half of the world's biodiversity hotspots are located in highland or mountain regions (Myers et al. 2000). There are many reasons for this high biodiversity, including the varied physical terrain across steep altitudinal gradients that has encouraged a high number of endemic species, the historically low human population densities and the convergence of several ecosystem boundaries in one place. The Hindu Kush Himalaya region is currently considered a biodiversity hotspot by Conservation International, due to its rich combination of endemic species of plants, mammals, birds, reptiles, amphibians and freshwater fish (Wester et al. 2019).

Many of the same societal forces driving biodiversity loss in lowland areas affect mountains: increasing human populations, the expansion and intensification of agriculture, the exploitation of natural resources, infrastructure development and unsustainable tourism practices have transformed many mountain regions around the world, leading to the fragmentation of natural habitats and replacement by human-dominated landscapes (Peters et al. 2019). Conservation in the twenty-first century needs to fully consider and plan for all the impacts of climate change. Climate change is an important driver of change in ecosystems, in the behaviour of individual species and their prey, and perhaps just as crucially, in human behaviour, which has important feedback loops for ecosystems and individual species.



A camera trap with flash and motion sensor. Credit: BTC/DoFPS

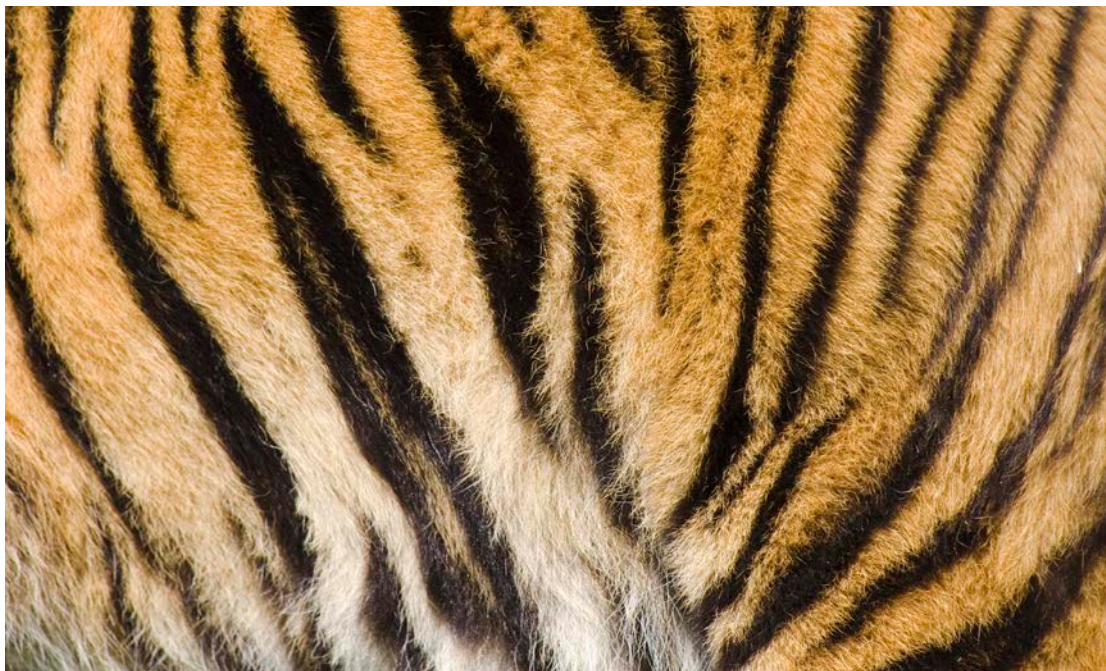
to their diet in the mid-temperate regions of Bhutan (Nature Conservation Division 2018). A yearly minimum kill for a tiger consists of 50–60 large prey animals (Karanth et al. 2004).

Bhutan has an extensive network of protected areas and corridors connecting its various national parks. A 2016 survey concluded that the network is ecologically representative and a well-connected system, though its effectiveness



A Royal Bengal Tiger captured on camera. Credit: BTC/DoFPS

is limited by inadequate financial and technical resources, as well as gaps in monitoring and research data (Wildlife Conservation Division 2016). The 2014–2015 National Tiger Survey (Dorji et al. 2015) also found that many tigers reside outside of conservation areas where they sometimes come into conflict with farmers, indicating that the tiger conservation regime needs to incorporate tiger habitats outside national parks.



By studying the pattern of the stripes on a tiger, it is possible to distinguish it from other tigers. Credit: iStock/ProjectB



预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_13738

