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Conservation implications of wildlife utilization by indigenous communities in the southern Western Ghats of India

Arun Kanagavel^{a,*}, Sethu Parvathy^{a,b}, Paingamadathil Ommer Nameer^c,
Rajeev Raghavan^d^a Conservation Research Group (CRG), St. Albert's College, Banerji Road, Kochi, India^b Department of Ecology and Environmental Sciences, School of Life Sciences, Pondicherry University, Pudhucherry, India^c Center for Wildlife Studies, College of Forestry, Kerala Agricultural University (KAU), Thrissur, India^d Department of Fisheries Resource Management, Kerala University of Fisheries and Ocean Studies (KUFOS), Kochi, India

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ABSTRACT

Wildlife utilization in the tropics is massive, with nearly 5 million tons of bushmeat consumed by local communities. In India, a megadiversity nation, hunting—although illegal—is widespread among indigenous communities. However, the extent, frequency, and rationale for hunting, and factors influencing wildlife utilization are poorly known. Our study, based on 19 different indigenous communities in the Western Ghats region, revealed the utilization of 54 wild species/taxa. Although freshwater fish, herpetofauna, and small mammals were most frequently utilized, enforcement by the Forest Department was largely focused on large mammals. Gender, land ownership, number of domestic meats consumed, distance to markets, time spent hunting, and distance to hunting areas were major factors that affected wild meat utilization in the region. Although conservation needs to be focused on the most utilized groups, increasing access to domestic meats at remote settlements and integrating utilization of common, culturally prominent species can improve conservation of threatened fauna.

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Introduction

Forest-dwelling communities have relied on wildlife as a source of protein and income, and wild meat continues to support the subsistence of numerous indigenous communities worldwide (Cowlshaw et al 2005; Mfunda and Røskaft 2010). In at least 62 countries, fish and wildlife contribute to about 20% of animal protein in rural diets (Nasi et al 2008), sometimes reaching 67–80% as in Sarawak and Central Africa (Peres 2000; Bennett et al 2002). Wild meat is also rooted within the culture of indigenous communities (Brown and Marks 2007; Chinlapianga et al 2013).

The scale at which wild meat is laundered from the tropics is massive, with several thousand tons being harvested annually from the forests of Africa, Asia, and South America (Fa and Peres 2001; Corlett 2007; Nasi et al 2011; Abernethy et al 2013). Data

collected in the 1990s revealed that local communities consumed more than 5 million tons of meat in Neotropical and Afrotropical forests (Fa and Peres 2001; Fa et al 2002). Such massive scale of overhunting for meat has resulted in local extirpation of numerous species (Milner-Gulland and Bennett 2003; Harrison 2011). However, wild meat also has significant impacts on the livelihoods of human communities that subsist on this resource (Bennett et al 2002; de Merode et al 2004). For example, in the Democratic Republic of Congo, 90% of the hunted meat is traded for vital commodities, medical supplies, or equipment to enhance the income-generating capacity of rural households (de Merode et al 2004).

In India, a megadiverse nation harboring four biodiversity hotspots, the Wildlife Protection Act (WPA) was formulated in 1972 to protect wildlife and their related habitats. Various taxa are listed in six schedules of the Act, with those listed in Schedule I and Schedule II (Part II) being accorded absolute protection. Hunting, collection, or trade of trophies and animal articles derived from species listed in all the schedules of the WPA except Schedule V is prohibited or controlled. Only the indigenous communities living in the Andaman and Nicobar Islands are allowed to hunt as per the WPA, whereas the Forest Rights Act of 2006 enables indigenous

* Corresponding author. Tel.: +91 996 343 0573.

E-mail address: arun.kanagavel@gmail.com (A. Kanagavel).

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communities throughout the country to sustainably harvest minor forest products such as honey, lac, cocoon, herbs, and freshwater fish. In reality, numerous indigenous communities in the North-eastern and southern regions of India continue to hunt wild meat for consumption, and for supply to eateries and markets near their settlements (Madhusudan and Karanth 2002; Aiyadurai et al 2010; Kanagavel and Raghavan 2013).

The Western Ghats region in peninsular India, comprising a major portion of the Western Ghats–Sri Lanka Biodiversity Hotspot, harbors exceptional diversity of flora, fauna, and fungi (Myers et al 2000; Bawa et al 2007; Molur et al 2011). Apart from its rich biodiversity, the Western Ghats is also known for its very high human population density and pressure (Cincotta et al 2000; Shi et al 2005). This high demographic pressure, coupled with macroeconomic factors, poverty, and poor governance have contributed to increasing anthropogenic impacts on the biodiversity of this region (Bawa et al 2007). Hunting driven by tradition, culture, subsistence, and demand for wild meat occurs across the Western Ghats (Madhusudan and Karanth 2002; Bawa et al 2007; Kanagavel and Raghavan 2013), with a recent study observing that 34 species are hunted in and around a protected area in the region (Gubbi and Linkie 2012). There is, however, a severe lack of understanding regarding the use of wildlife by indigenous communities (Velho et al 2012).

Through this study, focusing on the forests in the state of Kerala, which encompasses the southern region of the Western Ghats (Figure 1) and is one of the most biodiversity-rich regions in the Western Ghats–Sri Lanka hotspot, we aimed to (1) understand the extent, magnitude, methods, and rationale for wildlife utilization among indigenous communities; (2) examine the dynamics of meat consumption (wild vs. domestic); (3) generate information on the factors that influenced wild meat consumption; (4) assess the response to potential measures to reduce wild meat utilization; and (5) explore the existent law enforcement by the Forest Department (FD) towards wild meat utilization by indigenous communities.

Materials and methods

Study area

Kerala State (38,863 km²), located in the southwestern part of the Western Ghats (Figure 1), comprises of tropical wet evergreen, semi-evergreen, and tropical moist deciduous forests. These forests are protected by the Kerala State Forest and Wildlife Department through a network of protected areas spread across 3,212 km² (KFD 2012). For the purpose of territorial jurisdiction, the FD is composed of 5 administrative circles—Northern, Eastern, Central, High Range, and Southern (Figure 1). A population of 484,839 individuals (Census of India—2011) belonging to 35 forest-dwelling indigenous communities, each with its own set of traditions and culture, are known from this region. Most of these communities are historically nomadic hunter–gatherers (Sathyapalan and Reddy 2010), and the practice of wild meat consumption for subsistence, medicine, and local trade is reported among them—with Sambar deer (*Rusa unicolor*), wild boar (*Sus scrofa*), Grey Junglefowl (*Gallus sonneratii*), and monitor lizard (*Varanus flavescens*) being the most utilized species (Yeshodharan et al 2011; Gubbi and Linkie 2012; Vijayakumar et al 2015). Chelonians, by contrast, are a delicacy among the suburban and indigenous communities that consume them locally at their households, toddy (locally brewed liquor) shops and hotels; with no interstate trade (Krishnakumar et al 2009; Gubbi and Linkie 2012; Kanagavel and Raghavan 2013). Hunting is thought to have reduced among most indigenous communities in the region, and many of the local inhabitants have taken up farming as an alternative livelihood (Sathyapalan and Reddy 2010). Whatever hunting that continues is practiced largely using traditional techniques such as snares, scavenging from Asiatic wild dogs (*Cuon alpinus*) and domestic hunting dogs, with guns and explosive baits being rarely used (Gubbi and Linkie 2012).

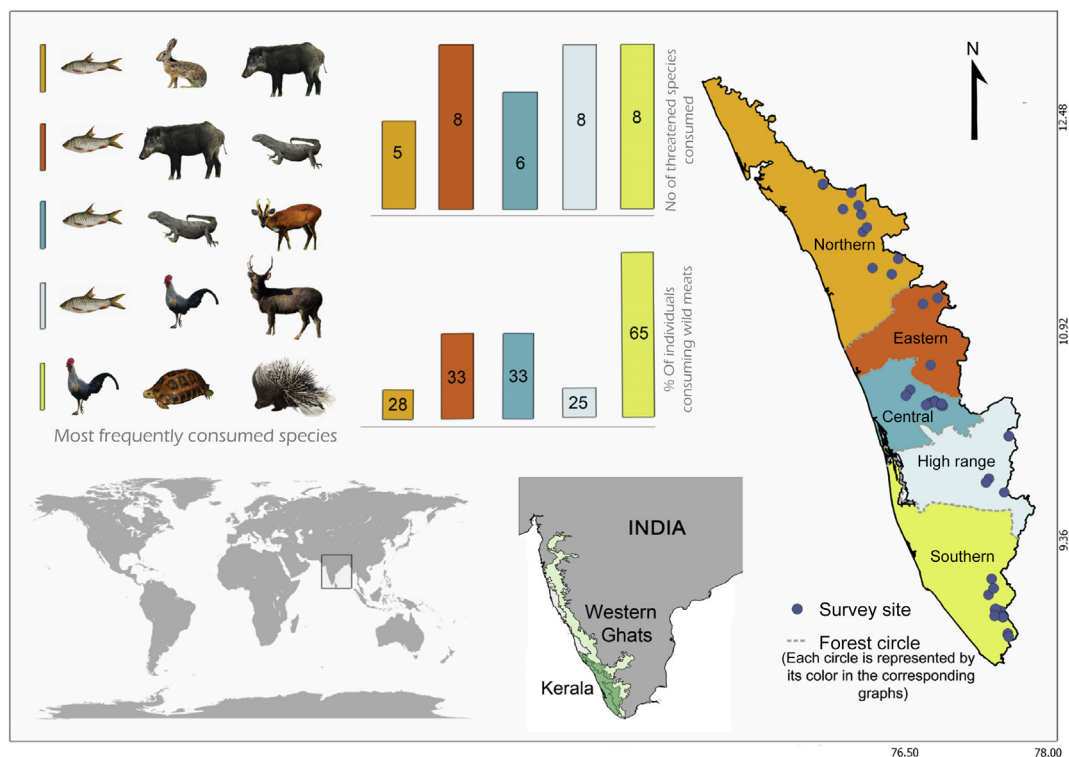


Figure 1. Map of the Kerala part of the Western Ghats with details of the frequently consumed wild species/taxa, number of threatened species consumed and extent of indigenous individuals consuming wild meat (mean percentage of all wild meat species/taxa consumed) in the five administrative forest circles.

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