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Tiger Becomes Termite Hill: Soliga/Solega Perceptions of Wildlife Interactions and Ecological Change

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The Solega community living in the Biligiri Rangan Hills (B. R. Hills) of Karnataka State, southern India, have noticed significant changes to the ecosystem of their forest homeland over the last four or five decades. Originally hunter-gatherers, who carried out swidden agriculture at a subsistence level, they were forced to abandon the semi-nomadic ways of their ancestors, and settle in permanent villages when these forests were first declared a wildlife sanctuary in 1974. In this paper, we present the views of Solega elders on the ecological changes that have taken place in the B. R. Hills, along with the subsequent changes in their interactions with the animals that also inhabit this landscape. The Solega way of life is accustomed to co-existing with wildlife, and they worship several animal deities. Their folklore and traditional ecological knowledge are also replete with ways of avoiding dangerous encounters with wildlife. Many of the detrimental ecological changes observed by Solega people are ascribed by them to the halting of their traditional litter fire regime, and the subsequent rampant growth of the exotic invasive plant *Lantana camara*, which now dominates the understorey in large swathes of the forest. These factors combine, according to Solega elders, to negatively impact the well-being of both animals as well as their own people. We hope to demonstrate how a deeper understanding of Solega language and culture, both essential facets of everyday life, as well as of their traditional ecological knowledge—can allow a full appreciation of the interactions between small Indigenous communities, such as the Solega, and the natural environment. We argue for a greater appreciation of, and engagement with, Indigenous knowledge in conservation efforts in countries such as India, where the protection of charismatic species, such as tigers, is often perceived to be at odds with the rights of small minority groups, such as the Solega.

Keywords: elephant, tiger, co-existence, indigenous community, traditional ecological knowledge, India, Karnataka, B. R. Hills

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INTRODUCTION

The traditional ecological knowledge (TEK) of indigenous communities is nowadays regarded as a valuable resource in efforts to conserve biodiversity (Maffi, 2001; Pretty et al., 2009; Vandebroek et al., 2011). TEK may be particularly useful in situations where a community has co-existed for an extended period of time with one or more endangered species, the protection of which is considered a high priority. Such a community may have, over numerous generations, developed practices,

beliefs, and behaviours that enable it to avoid conflict with the species in question. It is therefore a worthwhile exercise to document the TEK of such communities, and to engage indigenous peoples, with their diverse world views, experiences, and belief systems, to foster conservation and environmental stewardship (Appiah-Opoku, 2007; Beckford et al., 2010; Reo et al., 2017a; Nijhawan and Mihu, 2020). This paper presents aspects of the TEK of the Soliga/Solega[1] community of southern India, who live in a forest habitat that is also home to tigers, leopards, elephants and sloth bears, among others.

The Solega Community

The Solega are a small Dravidian-language-speaking community of around 30,000 people living in the Biligiri Rangan Hills (B. R. Hills) of Karnataka State in southern India. Recognised as a Scheduled Tribe in India, they traditionally practiced a hunter-gatherer lifestyle, along with small-scale swidden agriculture at a subsistence level (Madegowda, 2009, 2013). Currently, Solega people live in small hamlets or *po:ḍu*, which are located in a range of environments scattered across the B. R. Hills; these include high-altitude evergreen forest, moist deciduous forest and lowland scrub forest (Krishnaswamy et al., 2004).

In 1972, the Wildlife (Protection) Act was enacted by the Parliament of India, after which large swathes of forested land were declared as protected areas. During the implementation of such "fortress" conservation paradigms (Brockington, 2002), entire communities of indigenous people are often forcibly evicted from their homes. The adverse socio-cultural and economic effects of this process have affected generations of Adivasis (an Indian designation for indigenous people). India's Forest Rights Act (FRA), implemented in 2006, aims to reverse this historical injustice, and promote rights-based conservation of forest lands by indigenous communities[2]. While Solega traditional ways of living were significantly altered after the B. R. Hills were declared as a protected area (PA) under the Wildlife Protection Act, the FRA allowed them to revive some of these practices legally (Rai et al., 2019). When the area was declared a Tiger Reserve in 2011, there was a renewed threat of eviction to the Solega[3]. However, the provisions of the FRA enabled them to continue to reside within the reserve, and there are currently approximately 13,000 Solega living within the BRT Tiger Reserve. The B. R. Hills obtained iconic status as being the only Tiger Reserve in the country to have indigenous people residing within the reserve.

The Solega religion is a syncretic mix of animism and mainstream Shaivite Hinduism. While local Hindu festivals such as Gauri Habba and Sankranti Habba are celebrated by all, individual Solega hamlets also regularly organise feasts to honour clan and village gods, mark key stages of the agricultural cycle, and to placate wild animals that they regularly come into conflict with (see the section Wildlife as Agricultural Pests). They continue to worship their central deity, a huge *Magnolia champaca* tree known as "*doḍḍa sampige*," which is several hundred years old. They also have numerous other sacred sites within the forest dedicated to their own gods and goddesses. They continue to harvest and sell minor forest produce such as honey, gooseberry and lichen, and to collect *Dioscorea* tubers and edible mushrooms for consumption.

Recent Changes to the Forest Ecosystem

Since the late 1990s, the B. R. Hills have been heavily invaded by the non-native weed, *Lantana camara*, and the only remaining evidence of what the forest looked like before the invasion is in the collective memories of the older generations (40 years and above), and in Solega place names (Si and Agnihotri, 2014). This large-scale invasion has resulted in the local extinction of many herbs and grasses, several of which are important food plants for animals and humans alike, and are of cultural and medicinal value to the Solega. A preliminary list of 125 Solega plant ethnotaxa that are locally critically endangered or extinct, along with their uses, is provided in **Table 1**.

The spread of Lantana has also led to many parts of the forest becoming increasingly difficult to navigate, for the community as well as for large herbivores like sambar deer and elephants. This change in the structure of the forest is mentioned by every single Solega we have spoken to over the past decade: "*hinde ella bailu ittu, i:ga ekkalu pu:ra*" [earlier the understorey was open, now it is dense and impenetrable.] Another common comment is the drastic reduction in *ba:ṇe hullu* (*Cymbopogon* sp.), an important food source for large herbivores, which dominated the understorey before Lantana took over. Research by Sundaram and Hiremath (2012) described a four-fold increase in the mean density of Lantana, over the span of a decade. The resultant reduction in native woody plant diversity and abundance is corroborated by the Solega (Sundaram et al., 2012, and our recordings). Another major impact of the spread of Lantana and other invasives like *Ageratina adenophora* (called *kari kaḍḍi* locally) according to the Solega, has been the reduction in the natural flow of rainwater along streams and to water bodies (**Figure 1**).

It is perhaps worthwhile to mention that Lantana is now such a ubiquitous plant that the Solega have a name for it (*ro:jiga, ro:jana kaḍḍi*), and use a paste from the leaves to staunch blood flow from wounds. The ash from burnt Lantana stems is also used to clean one's teeth. However, there is no mention of this plant in their ritual song cycles or folklore, which indicates the relatively recent inclusion of this term in their life-worlds.

Topics Explored and the Nature of the Data

This paper draws on the combined experiences of authors SA and AS in documenting the language and ethnobiological

[1]The two spellings reflect the different pronunciations of the community/language name among outsiders (i.e., the exonym) and community members when talking to each other (the endonym). The name Soliga is used by Kannada speakers, including in the print media, and community members are also comfortable using this variant of the name. Careful elicitation and phonetic analysis of recordings from senior community members has shown, however, that the endonym is invariably pronounced as Solega [so:lega]. In the remainder of this article, the endonym is used.

[2]The Wire (2012). Available online at: https://science.thewire.in/environment/why-indias-forest-rights-act-is-the-most-viable-forest-conservation-law/ (accessed May 12, 2021).

[3]Frontline (2010). *Losing Homes*. Available online at: https://frontline.thehindu.com/social-issues/article30183011.ece (accessed May 12, 2021).

TABLE 1 | Plants identified by Solega consultants as being rare or locally extinct nowadays, along with scientific identifications (if known).

Solega name	Scientific name
arage ambu	
ba:ṇa si:ge ambu	
ba:ṇe hullu	*?Cymbopogon flexuosus*
ba:ye basale ambu	*?Anredera cordifolia*
baje hullu	
belarre geṇasu	*Dioscorea oppositifolia*
beṇḍigana ambu	*Embelia tsjarium-cottam*
beṭrupe	
beṭṭa sa:save giḍa	
biḷi ko:muḷḷi giḍa	*Rubus niveus*
bo:ḷi kurrugu	
bu:na:si giḍa	*?Anaphalis subdecurrens*
dodda aṇabe	(mushroom type)
dodda onṭe	*Cosmos caudatus, C. bipinnatus*
dodda tursa	*Girardinia urticifolia*
dodda uḍupe giḍa	*Grewia abutilifolia*
eḷavāna giḍa	
eḷagana geṇasu	
eṇṇe aṇabe	(mushroom type)
gaṇike soppu	*Solanum nigrum*
garagase ambu	
gersi mallige giḍa	*Hypericum mysorense*
gonde hullu	*Themeda triandra*
goṭṭi ambu	*Ziziphus rugosa*
gumuṭi giḍa	*Nicandra physaloides*
gunji ambu	
ha:le ambu	
haḷḷa se:bu	*Colocasia* sp.
handi ba:ṇe hullu	
handi nēvē geṇasu	*Dioscorea bulbifera*
aṇṭu pulle giḍa	
hattonṭe giḍa	
hora muni giḍa	*Biophytum reinwardtii*
hoṭṭeno:vina ambu	*Cissampelos pareira*
huḷi otta:ga giḍa	
ĩsilu	(rattan type)
ja:ji mallige ambu	*Jasminum angustifolium* and/or *J. azoricum?*
javanada giḍa	
joṇḍullu	
ju:jakki	*Lantana indica, L. veronicifolia*
ka:da imbi	(wild lemon)
ka:ḍa toḷasi giḍa	*Ocimum* sp.
ka:ḍavare	(wild bean)
ka:ḍu arsina giḍa	(wild turmeric)
ka:du ba:ḷe	(wild banana)
ka:ḍu jeerage	
ka:ḍu kotambari	
ka:ḍu suṇṭi	(wild ginger)
ka:du kaḍale	*Hibiscus lobatus*
ka:ḍu uḷḷi	
kaĩye sunḍe	*Solanum violaceum*
ka:ḷega	
kaḷḷāna giḍa	*Argyreia cuneata*
kapi kumbaḷada ambu	
karaṇa kuṇḍala giḍa	*Impatiens* sp.
karibevu	
kasaporke	
kaṭṭuguḷi, kaṭṭu:ḷi giḍa	*Ardisia solanacea*
kaūri	*Helicteres isora*
kiribidiru	*Dendrocalamus strictus*
ko:ḷi hullu	
ko:ḷi kuṭuma	*Gloriosa superba*
koḍajalli giḍa	*Orthosiphon rubicundus*
koḍamaṭṭana giḍa	
koṇana ambu	
ku:ginele giḍa	*Schumanianthus virgatus*
ku:guri ambu	
ku:re pandi giḍa	*Curculigo orchidoides*
kuri onṭe	*Urena lobata*
lingadonde ambu	
lole giḍa	
ma:raḍe soppu	
ma:ta:ḍakana ambu	
maṇḍala ma:ri giḍa	
mande si:ge	
maraḷi giḍa	*Indigofera wightii*
meṭuḷḷi ambu	
miḍaje giḍa	
minciga giḍa	*Exacum bicolor* and/or *E. tetragonum*
mu:guti giḍa	
mu:r ele na:ga giḍa	
muṭṭada muni, ola muni	*Mimosa pudica*
nasuguṇi ambu	
nela baccaṇike	(ground orchids)
nela honne giḍa	*Tephrosia calophylla*
nela ma:gaḷi ambu	*Hemidesmus indicus*
nela nelli	*Phyllanthus niruri*
nela te:ku giḍa	*Clerodendrum serratum* var. *dentatum*
nellakki giḍa	
nēvē geṇasu	*Dioscorea glabra*
ni:ru betta	*Calamus* sp.
nose hullu	
nu:rre geṇasu	*Dioscorea hispida*
oḍe hullu	
ondelegāna giḍa	
onṭe giḍa	*Bidens pilosa*
pa:paṭe	*Pavetta indica*
paṭike giḍa	*Acanthaceae;* cf. *Dicliptera*
pulluḷi	*Oxalis* sp.

(Continued)

TABLE 1 | Continued

Solega name	Scientific name
puṇḍāna giḍa	*Azanza lampas*
sabbe hullu	
sāya	(various ferns)
saṇṇa kuguri	
saṇṇa kurugu giḍa	*Strobilanthes* sp.
saṇṇa tursa	
seṇabbāna giḍa	*Crotolaria pallida*
simuṭada ambu	*Thunbergia fragrans*
sipure ambu	*Asparagus* sp.
so:lana geṇasu	
sokku si:ge	
su:rsette	*?Ageratum conyzoides*
suḷḷi	*Curcuma* sp.
sunḍe giḍa	*Solanum torvum*
suruki ambu	
tagate giḍa	*Cassia hirsuta* and/or *C. floribunda*
taṇiki giḍa	*Maesa indica*
taṇṇuḷiga ambu	*Ampelocissus tomentosa*
tonde ambu	
tumbe giḍa	*Leucas aspera, L.* spp.
uccu katti avare	
uccu tagate giḍa	*Indigofera astragalina*
uccu togari giḍa	
uḍupe giḍa	*Grewia hirsutifolia*
udure ambu	
uttara:ne giḍa	*Stachytarpheta indica*

FIGURE 1 | The rock formations on top of the hill in the background are a sacred site known as *Honnatti vi:ru*. Thick undergrowth of Lantana blocks the flow of rain water from the hill tops to smaller waterholes like this one, and forces animals and humans to use the same paths (Photo: Samira Agnihotri).

knowledge of the Solega community. The documentation project began in late 2008, and engagement with key community members has continued to this day. Author CMG has decades of experience carrying out social work in the B. R. Hills, and is highly regarded locally as a prominent social activist and Solega community leader. The findings presented in this paper consist of information from numerous interviews carried out over the years by SA and AS, as well as the personal experiences of CMG, who has lived his entire life in the village of Hosapodu in the B. R. Hills. The current study is ethnographic in nature, and attempts to provide a holistic account of Solega people's experiences with the wild animals in their forest home. We have made a conscious decision to not separate the domains of language, culture, sociology, ethnobiology, or religion in our analyses, as to do so would run counter to how Solega people themselves perceive their environment. The information presented in this paper is but a tiny part of Solega traditional ecological knowledge regarding their forest home and the plants and animals found within it. Other aspects of this knowledge, and its linguistic and cultural correlates, have been documented in Si (2016).

Three main themes are explored in this paper. The first two are directly related to wildlife, and include: dangerous animals and how people protect themselves from them, and Solega encounters with wildlife in the context of their agricultural practices. The third is the effect that Lantana has had on the behaviour and well-being of the animals, and subsequent impacts on their interactions with humans. The first two themes are also viewed through the lens of the changing forest ecosystem, as mentioned above. We discuss not only the challenges presented by ecological change with regard to the two themes, but also the steps taken by Solega people (if any) to mitigate these challenges. Data are presented below in the form of direct quotes (in the Solega or Kannada languages) from interviewees, along with English translations (see Garde et al., 2010; Blodgett et al., 2011 for further examples of this practice). Our aim is to allow the reader direct access to the Solega consultants' own words and observations, which should help corroborate our generalisations.

This paper is not intended as an objective, empirical investigation of Solega people's attitudes toward, and practices regarding, conflict with wild animals. Instead, we present the following information with a two-fold aim. The first is to give a voice to Solega people, as indigenous voices and points of view are often absent from discourses surrounding endangered wildlife, invasive species, and general biodiversity conservation (Barbour and Schlesinger, 2012; Bhattacharyya and Larson, 2014). When indigenous people are mentioned in these discourses, they tend to be portrayed in familiar, conventionalised ways (Reo et al., 2017b). Moreover, even researchers who are sympathetic to indigenous concerns may find it appropriate to suppress the more emic aspects of their study in the name of objectivity, quantifiability, scientific rigour and neutrality (Datta, 2018). In the following, we present indigenous voices in a more or less literal fashion, by including transcripts of the actual utterances made by key community members. The second aim is to demonstrate to non-indigenous stakeholders (such as forestry officials, conservation scientists, wildlife enthusiasts in the general public) that core elements of Solega culture predispose the community to playing a key role in conservation efforts, should they be afforded the opportunity to do so.

METHODS

As mentioned earlier, much of the data for this paper was collected as part of a documentation of the language and ethnobiological knowledge of the Solega. Data collection was accomplished through a number of techniques, including semi-structured interviews with knowledgeable informants, discussions of prepared stimulus sets (e.g., to elicit the names and folklore associated with culturally relevant organisms), recorded forest walks with field assistants and participant observation.

Interviews were carried out in Kannada or Solega, and transcribed in Roman script. Interviews in Solega were carried out by native-speaker research assistants, who have worked with the authors over a long period of time. While excerpts from interviews with seven speakers (all male, aged 40–70 at the time of recording) are presented in this paper, the authors' understanding of the main concepts of the paper has been shaped by countless conversations with Solega people from a variety of villages over the course of over a decade. A more detailed description of the methodology used in the elicitation of bird names and folklore can be found in Agnihotri and Si (2012). Standard language documentation techniques, such as the recording of narratives of various genres, and the transcription of some of these narratives with the assistance of a native speaker, were also carried out in the field. Recordings were made using a Zoom H4N audio recorder and Rode NTG1 shotgun microphone, and transcriptions were carried out using the free software ELAN. Many of these recordings are housed in the online Endangered Languages Archive (ELAR, https://www.soas.ac.uk/elar/, Archive ID: solega-si-0150). The transcription of narratives concerning the natural environment and the elicitation of technical vocabulary for the purpose of creating a Solega-English Dictionary (Si, 2020) contributed greatly to the authors' understanding of key Solega cultural and ethnobiological concepts.

Informed consent was obtained orally from all consultants prior to each interview. Consultants were free to refuse to talk about any issues that they may have found sensitive or controversial. Ethics approval was granted by the Human Research Ethics Committee of the Australian National University, where author AS was based at the time of fieldwork.

RESULTS

Our interviews with elderly and middle-aged Solega consultants give a clear picture of the Solega's complex relationship with the wild animals that share their forest home. We would like to state here that Solega perspectives on Lantana and wildlife are based on their own lived experiences with the spread of the invasive through their forest home. While "awareness campaigns" by conservation NGOs might have influenced how communities view wildlife or ecological change in other parts of India, it has been the other way round in the case of the B. R. Hills and the Solega. Research since the 1990s by various institutions on the impacts of Lantana has been informed and guided by Solega field assistants.

In the following sections, we describe how Solega people protect themselves from encounters with dangerous animals, and how they protect their crops from raiding herbivores. Very often, Solega informants mentioned direct links between Lantana and its effects on the well-being and behaviour of wild animals. Bird folklore is an important part of Solega culture, and we also show how people attend to bird calls to obtain warnings about the presence of dangerous wildlife.

The Effects of Lantana

As mentioned above, the invasion of the woody weed Lantana has had a serious negative impact on the forest ecosystem, and Solega people have also noticed, with a mixture of despair and anger, the effect of the weed on the animals of the forest. In particular, they bemoan the fact that grasses that were once common, and that large herbivores relied on for foraging, are now locally extinct in many parts of the B. R. Hills. As a result, many Solega people have noticed that large herbivores are frequently malnourished, with elephants often resorting to food sources that they had never previously exploited (see extract 1 below). Moreover, the loss of typical understorey plants has had a direct impact on Solega livelihoods and food habits, as the diversity and abundance of different types of honey has also reduced (extract 2). The structural changes in the forest due to widespread Lantana invasion have also altered the composition of tree assemblages (Sundaram and Hiremath, 2012). Ramaswami and Sukumar (2016) point out that "in several tropical dry forests including the B.R. Hills, Lantana has even invaded the mid-storey and canopy, growing as a woody climber on tree trunks." Drawing upon decades of living with Lantana, the Solega observe that only saplings of shade-loving species like *ne:ri* (*Syzigium* sp.), *karava:di* (*Persea macrantha*) and *toṇḍe* (*Viburnum punctatum*) can survive to become trees in such areas. After a decade or so, the lantana that has penetrated up into the canopy dies off, and these then patches resemble "*ka:nu*" or evergreen forest. These long-term observations of changes in the floristic composition of forest patches where Lantana has grown into the canopy are of immense value to our understanding of ecology of invasive species. The implications of this increase in the areas covered by evergreen tree species on the well-being of the wildlife and the Solega, remain to be seen.

They also say that very few old-growth trees survive, and as very few saplings of other species survive under Lantana thickets, these old trees have not been replaced (Sundaram et al., 2012; our interviews). This has had a huge impact on the numbers of rock bee colonies that favour old trees, and many consultants rue the fact that earlier there would be colonies of 50–60 hives on a single tree, but now they find 2–3 hives.

In the following interview extracts, the speaker's initials occur in parentheses, along with the language being used (S = Solega, K = Kannada).

1. (ACG, S)
   marada sekkeya tindurtu a:ne baduku endale elli ella badukadu? marave ella tinda:kittu. i:ga doḍḍa doḍḍa marave

mugi ho:gi tinda:kittu. no:ḍu ka:ta:ḷe mara ille, beṇḍe mara ille, kauri kaḍḍi ille, ta:ma:yave ille, inne:n i:te alli? a:gaḷe te:kina mara tinduru ho:davane, adakka e:na ma:ḍakka:ddu? ka:re mara uvve mugisikina, adava muṭṭiteravve ille pa:pa. adave tindu badukittu endale e:na? udda:rava adu pra:ṇiya? ka:ta:ḷe mara uvve mugisikittu, i:ga honne mara tinda:de, matti marada sekke tinda:de… modale idda ka:ṭigaḷa ni: no:ḍtiddeya? ka:ṭiya ittu a:ne a:pa:ṭi. i:ga mu:ḷe, i:pa:ṭika sirturu ipipa:ṭi bagguri mu:ḷe sirturu pa:pa.

How can elephants flourish when they only have tree bark to eat? They've eaten all the trees. Many of the big trees have now been stripped bare. You see? There are no more *ka:ta:ḷe* trees (*Eriolena quinquelocularis*), no more *beṇḍe* trees (*Kydia calycina*), they're all gone! What else is left? Nowadays elephants go around eating teak tree (bark) (*Tectona grandis*), what can you do about that? They've finished the *ka:re* trees (*Canthium* spp.) Now, they never even used to touch those before, the poor things. And now when they depend on that for food, is that any good for the animal? The *ka:ta:ḷe* trees have also gone. Now they're eating *honne* trees (*Pterocarpus marsupium*), they're eating the bark of *matti* trees (*Terminalia crenulata*) … Did you ever see the gaur (that used to roam the forest) before? They used to be as big as elephants! Now you can see their ribs sticking out, the poor things!

2. (BG, S)

i:ga e:n a:gide, ka:ḍiga ro:jiya banda:de, ne:ri hu: ondu, matti hu: eraḍu, honne hu: mu:ru. je:niga hu: ille. a:ga e:na ma:dtittu, saṇṇa nela hu:vina je:nu ondu, hullu hu:vina je:nu eraḍu, beṇḍe hu:vina je:nu mu:ru, a:ga, ne:ri hu:vina je:nu, honne hu:vinadu, ishṭella a:ru aidu tarada hu:vina je:na siktittu.

What's happened now, is that Lantana has come to the forest, and *ne:ri* flowers, *matti* flowers and *honne* flowers (are all that's left). There are no flowers for the bees. In earlier times, bees used to go to the flowers of small groundcover plants, to grass flowers, to flowers of the *beṇḍe* tree, the *ne:ri* tree (*Syzygium* spp.), the *honne* tree, and we could get five or six types of honey.

The loss of grasses from large parts of the forest has also impacted populations of apex predators, such as the tiger. In the following excerpt, author CMG shares his views on grass availability in the B. R. Hills.

3. (CMG interviewed by MRM, S)

CMG: *i:ga hulllu nanjurodde, namma avaru he:ḷdavarella 15, 10 tarada hullu ittu. i:ga hullu illa. i:ge hullu illa enda:ki e:n a:dde? pra:ṇi ella be:re kaḍe oitave.*

MRM: *na:ḍu ka:ḍiga.*

CMG: *ã, na:ḍu ka:ḍiga oḍabe:kaitade, hullu tinnada:ge, elli sikkido hullu, alliye ho:ga be:ku. I:ga hullu ira:du elli andare idaralli, kuracilu ka:ḍinalli ade. namma male ka:ḍinalli uvve, i: ka:nu ka:ḍu, idaralli elli iddadu? po:ḍinalli solpa solpa nanji ku:tade. i:ga nanji ku:tarinda hullu elli tinnakka:ddu? ave ella kaḍeka oitade.*

CMG: The grass grows weakly now. Our people say that there used to be 10, 15 types of grass. There's no grass now, and so what happens as a result? The animals move elsewhere.

MRM: To the lowland forest.

CMG: Yes, they are forced to move to the lowland forest to find grass. Where the grass grows, that's where they have to go. And where does the grass grow these days? You wouldn't find it growing in our mountain forests, or in the evergreen forest. It grows sparsely near our villages, but how can the animals eat that? They all go elsewhere.

And contrary to the officially reported increases in tiger numbers (Jhala et al., 2020), the Solega believe that the ecosystem changes brought about by Lantana have an adverse impact on tiger populations (extract 4).

4. (ACG, S)

illi modalu biri huli ja:tiye iddadu, pu:rti… huli sa:ka be:ka:dale na:vu modalu hullu ga:valu iṭṭru a:mele pra:ṇiya sa:kuru a:mele huliya sa:ka:du. ashṭu iddale ma:tra huliya sa:ka:ge, elli hullu illavo alli pra:ṇi ira:dilla, a:ga elli pra:ṇi illavo alli huli ira:dille.

There used to be tigers all around here… if you want tiger numbers to increase, you need to first make sure that there is enough grassland. Then you bring back the herbivores, and finally the tigers. Tigers will only come back if you do this—where there is no grass, there are no herbivores, and where there are no herbivores, there are no tigers.

Solega Perspectives on Dangerous Wildlife

It is interesting to note that Solega people do not feel any animosity toward a potentially dangerous predator, and are in fact open to the idea of an increase in its numbers. This is partly because of their acceptance of tigers as a natural part of the forest, and partly due to the very important role that this and other large forest mammals play in their religion. The latter topic is discussed in more detail in the following section.

5. (BG, S)

a: huliyanta he:ḷdale ma:desuranadu anta he:ḷtivi na:vu, a: pera:ṇika kai ha:kida:ga ma:deswarane e:ṭ ha:kidavane namaga. a: pera:ṇika konda:ga, namaga e:ṭ ha:kurtavane ma:desurā. be:ḍa! a: pera:ṇi senda:gi irali. pandesurā a:nemale de:varu, a: a:neve de:varu namaga.… matte ka:ṭi antivialla, ka:ḍemme endavare, adu ka:rappanadu. ka:ḍinalle avanella ka:raĩya? adu avanadu. kaḍave endadu ka:ḍoḍeya muttara:ya antadu hesaru. ka:ḍoḍeya, avanadu adu a: pera:ṇi. adaka na:vu tondari koṭṭale namaga tondari aitade. ashṭella na:vu, baguti.

As for the tiger, we say that it's Madeswara's animal. If we harm that animal, Madeswara himself will punish us. If we kill that animal, Madeswara will punish us. You mustn't! Leave the animal in peace. Pandeswara is the elephant god, the elephant itself is our god. And the gaur, outsiders call it "forest buffalo." That animal belongs to Karappa, the god Karaiyya who resides in the forest, it's his. The sambar is the animal of the god we call Kadodeya Muttaraya. If we harm the animal, trouble will befall us. That is how we show our devotion.

The Solega worship several animal deities representing the elephant, the tiger, the sloth bear, the gaur and the wild pig, to name a few (Extract 5). They believe that if they lead a life of truth

that is sin-free, then their gods will always protect them from dangerous animals. And they perform rituals of appeasement during all their major festivals for these animal deities (Extracts 6 and 7).

The vehicle or *vaahana* of the god Madeswara, who is worshipped as the creator of the Solegas, is the tiger. The tiger and many other animals and birds feature in the dusk to dawn song cycle performed at major festivals, and older Solega will often refer to the tiger as *doḍḍa na:yi* (big dog). While the origins of this term are no longer remembered, most Solega will say that they would rather refer to the tiger as *doḍḍa na:yi*, as they believe that it will get embarrassed and slink away (CMG, pers. comm.)

6. (KSG, S)
   "nanna makka banda:ve…kaṇṇige ka:ṇs ba:radu…huli hutta, karaḍi kallu a:gumaku, a:ne beṭṭa, ha:vu sette"…i: ri:te sha:pa koṭṭidara, namma de:varu namage sha:pa koṭṭidare …na:vu ji:vana ma:ḍadu…ni:nu yenu a:duru tappu ma:ḍidare ma:tra ho:gli guarantee *ninna se:rika. na:vu tappu maḍido a:ne illi banditu. "aitu tappu aitu na:ḷe ninna pu:je koḍtini ho:gu"…nambike…avaniga pu:je a:ga:ku…*
   "My children are coming...you shouldn't be visible to them [said Madesura]... tiger: become a termite-hill, sloth bear: become a boulder, elephant: become a hill, snake: become a weed"... this was the boon that our god gave us...so that we could lead our lives. But if you make a mistake (commit a sin), then they will definitely come near you [these animals]. See I must have done something wrong and so the elephants came near my home. "Alright, I have sinned, I will perform a puje (ritual appeasement) in your name, now go" [I said]. This is what we believe. If we sin, we must appease the gods.
7. (HMA, S)
   u:riga baradu pera:ṇi ella ottuninda a:cege ho:gadu... i:ga mu:ru divasa i: ba:ḷeka bandu kai ha:kiradu… a:ne… paṭṭe eḷkonḍu ho:gadu. ba:ḷe muri alla … adella ta:yine nija... avara yena:dalluvve heccu kammi namage tappu bandu uṭṭare … a: ka:ḍinalli guḍḍru ha:kirtade …de:varu … "o: inta ja:ti banda:de heccara:giri!" varshaka ondu bi:su … roṭṭi suḍtivi, ka:yi oḍitivi, pu:je ma:ḍtivi...arake tirsurtu…
   The animals that come to our lands, they come after the sun sets. For 3 days elephants have been coming to these banana plants, but they didn't destroy the plants. They just pulled off the sheath. All this is due to the gods and goddesses' goodwill. If there is danger in the forest, we will be warned by the growls…our gods do this to alert us to the presence of the animal. Once a year we make offerings of ragi (finger millet) rottis, break coconuts, and conduct puje for our gods...that is how we seal our pact with the god.

Solega also avoid certain areas of the forest where dangerous animals abound, and are not scared of humans (Extract 8). These are typically local corridors of animal movement, often influenced by topographical features, such as *kaṇuve* (flat land between two slopes) or *aragu* (narrow valleys and gorges, between two ridges). People also warn against digging for yams in the *maṭṭa ka:ḍu* or *dimbaga:ḍu* (flatland forests), because that is where elephants are most numerous; similarly, rocky places such as *oḍḍuga:ḍu* (boulder field) can be home to bears and leopards. They used to perform ritual divinations to infer whether a particular part of the forest was safe to settle in (Extract 9) and place wards (objects of protective magic) to keep dangerous or destructive creatures away from their lands.

8. (ACG, S)
   kirubã huligaḷuvve tondari koḍtave, ond-ondu ka:ḍinalliye tondari koḍa:du, ella ka:ḍinalli tondari koḍa:dille. gaṇḍu ka:ḍu endu irtade, a: ka:ḍinalli ma:tra huli tondari koḍa:du, alli e:ḷadille. be:re kaḍeli manasana kaṇḍu e:ṭinalli huli oṭṭo:da:de, a:dare a: ja:gadalli huli manasana kaṇḍale ho:ga:dille. alliye ku:turu mansanige gaḍrra:ka:du, gurruga:du, i: tara tondari koḍa:du gaṇḍu ka:ḍinalli. a: tara ka:ḍiga, a:ga alli solpa baya. a: ka:ḍiga ho:ga:dille. ho:dale ku:ḍa:gi be:gane oṭṭo:ga:ku. i:ga na:vu mara etturu hejje:nu a:ḷe ettivi, adara ra:ḍeya etti keḷeka kittu tiṭṭivi, a:mele huli uvve alliye tinda:de, na:vu uvve alliye je:nu ginu aḷturu na:vu iṇḍa:du, a: huli uvve ra:ḍeya tinda:de.
   Leopards and tigers cause problems for humans, but only in particular locations in the forest, it doesn't happen everywhere. There are forests called *gaṇḍu ka:ḍu*, and it's only there that tigers are dangerous. They no longer avoid you. In other forest types, tigers will avoid humans if they see them, but in this place, they don't go away. They just sit where they are, and growl and snarl at people. That's how they antagonise you in a *gaṇḍ ka:ḍu*. We are a bit afraid of that sort of forest. We normally don't go there, and even when we have to, we try to leave quickly. [In other forests], when we climb up a tree to get honey from the giant honeybee, we take the empty honeycomb and throw it on the ground. A tiger will come and eat that later. We just squeeze the honey out and leave, and the tiger comes and eats the honeycomb.
9. (GMG, S)
   i:ga jami:na na:vu e:na alli keṭṭadiddada oḷḷididdada endu buṭṭu alli bu:mika pu:je ma:ḍu buṭṭu, a:mele i: haḷḷadella, a: haḷḷaka oṇṭo:gi maḷḷa surdu uṭṭu maḷḷina me:le e:ḷu ko:ṭe ha:ku uḍtiddõ. a: e:ḷu koṭeli e:na:daluvve alli jami:ninalli tondari iddare a: koṭella pu:ra ella guḍḍe ma:ḍu buḍtittu. de:viti! a: ja:gaka na:vu se:rta iralle. a: koṭe na:vu he:ge ha:kiddavõ ha:ge iddu uṭṭre a: ja:ga oḷḷidu. va:sa ma:ḍbodu endaki alliga ella jana oitavare.
   We would ask ourselves, "Will it be good or bad to live there?" We would first pray to the Earth Goddess, then go to a stream, make a pile of sand, and place seven wards on top of the pile. If there was any problem with that location, the seven wards would collapse in a heap (by the next morning). An evil spirit! We wouldn't live in that place. If we found the wards the way we'd left them, we would know that was a good location. We would know that we can lie there, and move to that place.

It is important to mention in this context that while birds play important roles in Solega myth and folklore, certain birds are a part of everyday life in the forest (Agnihotri and Si, 2012). These are the woodpeckers, known as *sa:vhakki* (death bird), *sivanakki* (the god Shiva's bird), or *ka:rihakki* ("calling" bird). The calls of these birds are considered to be portents. They signal the presence or absence of dangerous animals on the path ahead, or a death in the community. These birds have been identified

as the Flameback woodpeckers (all three species Greater, Black-rumped, and Common) and the Rufous woodpecker.

10. (BG, S)
a: hakki adu...olledu keṭṭadu yella ma:ta:ḍtade... trrrrrrr... nammage… i: da:rige ho:ga be:ku enda:ga...hakki siḍi be:ku...siḍḍu buḍta:de a:ga ye:na:daru geranṭi alli ade. ye:na:daru pera:ṇi ade, a: ja:gake na:vu ho:gadilla, na:vu i: kaḍe horto:gu buḍabe:ku.
That bird, it tells us of both good and bad [things in the forest] … trrrrr… [it goes]. When we want to go on a certain path, if the bird calls, that means there is an animal there for sure. We avoid that place and take a different path.

On hearing the calls that signal danger, Solega will often respond with their own vocal signal (a click-whistle), which serves as an acknowledgement to the bird and is meant to pacify it as well.

Wildlife as Agricultural Pests

Before they settled in permanent villages, Solega people used to carry out swidden agriculture in small groups. They would select an open patch of forest, clear the land by means of a slow moving and low intensity leaf litter fire, and grow a number of staple crops, including millets, maize, banana, pumpkin and a handful of bean varieties. The land would be cultivated ideally for 3 years, following which it would be abandoned, due to decreasing fertility and the proliferation of weeds. In our interviews, both older and younger consultants were very stoic and pragmatic about the impact of wild animals on their farms and on crop yields. The animals most commonly implicated in the destruction of crops were elephants, gaurs, sambar, wild pigs, birds such as the Blossom-headed Parakeet, the Blue-winged Parakeet, and the Rose-ringed Parakeet, squirrels and a number of small rodents.

11. (MK, K)
Ondu e:kareli handigaḷella, be:re pra:ṇi ella tindu namma guḷi oḷage heccu kaḍime ondu eraḍu mu:ṭe ra:gi baratte. Arda pra:ṇige ho:gutte, arda namage sigutte.
After the pigs and other animals have eaten, one acre yields about one or two sacks of grain to put into our storage pit. Half goes to the animals, and we get the other half.
12. (BG, S)
hola ma:ḍino hindina ta:ta:davaru. a:ga na:vella ashṭ-ashṭa:galla hola ma:ḍu uṭṭu ma:ḍu uṭṭu, a:ga beḷe beḷedu uṭṭu eraḍu varsha mu:ru varsha ma:ḍu uṭṭu, a:ne gine bandu nuggu uḍtu andale tindu uḍtittu adava, a: jami:n tindu uṭṭattu enda:gi a:ne pu:ra e:ṭu, matte "a:sarika sarka:ye beṭṭa hoḍeya:vẽ neḍi!" alli sarka:ye beṭṭa ho:gi hola eḍiya:du. alli hola ella ma:ḍa:du alli uvve a:ne tindu uṭṭu, a:ne tindattu enda:ga a: ka:ḍinalli ra:gi, jo:ḷa, idella a:ne tinda:kittu ella me:le, innu u:ṭakka ille allava? a:re kola taṭṭa:ku innu…ha:ḍa:du sariya:gi ba:ye ma:ḍi iḍturu, "matte neḍi matte! i: oḍḍu ka:ḍiga ho:gõ! bela-gilare i:teno no:ḍduru ba:rõ…"
Our forefathers used to grow crops (in the forest). We would all clear a bit of land here and there, and harvest the crops over 2 or 3 years. But if elephants or other animals came to the fields, they would eat it all, they would eat all the crops in the field, and it would be very bad. Then (we would say), "Let's move over there to Sarkaye Mountain." We'd go to Sarkaye Mountain, and clear some land. We'd grow crops, and the elephants would eat it all again. They would eat all the millet, sorghum, and then we'd have no food to eat. We would forge an iron rod… hammer it to a point, pick it up and say, "Let's go! Let's go to the boulder field! Let's go and see if there are any *belare* yams there…"

Solega farmers appear to be quite accepting of the fact that they stand to lose part or all of their harvest to wild animals, perhaps even periodically. It is interesting to note that the sharpened iron rod mentioned in the last excerpt is not meant as an offensive weapon, but rather as a digging implement used in the search for an alternative food source, i.e., yams. However, this is not to say that farmers will stand idly by, and watch their fields be ravaged; concrete action is taken to protect their crops, but these are invariably non-lethal, and arguably also non-violent. This is in keeping with the Solega people's reverence of the large mammals of the forest, as described above. In the following two extracts, the speakers talk about how they merely try to frighten away the elephants that raid their fields.

13. (ACG, S)
na:vu ka:ḍinalli hola maḍḍuru ira:ga ondu na:laku kuṭumba aidu kuṭumba modalu iddadu. a:nega alliga banda:ga, kavaṇe endu he:ḷtivi na:vu, adari hoḍadale, kiccaka attisuru hoḍḍale a:seka kalliga a:nega daṇḍeka bardille. adu roĩ roĩ roĩ roĩ enduru ho:da:de, adara daṇḍeka hogane gaṭṭa uvve roĩ karduru ho:gi bidda:della, "o: idu ba:ri e:ṭe" enda:ki a:seka a:nega sikka ille. o:ḍu uḍtiddo.
When we used to live in the forest and grow crops, it would be in groups of four or five families. When elephants came to the fields, we would use a slingshot. We would light a fire and shoot our slings, and the elephants wouldn't come close. The slings would spin with a whooshing sound, and even when the stones landed near the elephants it would be with a whoosh. Then the elephants would think, "Oh, this isn't going to be easy!" and run away.
14. (BG, S)
na:vu sandeka a:ne bantu enda:ga, beḷaganuvve biri "ho, ho, ho, ho!" enna kelsave. a:ga ha:ge puna matte ondu ra:tre banda:tu. a:ga "ho ho! a:ne bandbuḍtu" anta "ho, ho, ho, ho!" aika-makkella beḷa-beḷaganuvve, a:ga ondu ba:ga oṇṭottu. a:ga mu:ru divasaka na:ku divasaka clean-*a:gi tinde buḍtiddo.*
If an elephant came one evening, we would have to be (out in the fields) going "Ho, ho, ho, ho!" till morning. And then they would come again the following night, and we would have to go, "Ho, ho! The elephants are here! Ho, ho, ho, ho!" The children would be out there too, till morning, but half of our crop would disappear. And if that happened over 3 or 4 days, everything would be gone.

There appear to be differing opinions on the question of whether raids on fields by wild animals have become worse in recent years. While all agree that the changes to the forest ecosystem discussed above have had a negative impact on local fauna, especially large

herbivores, consultants disagreed on the exact impact this had had on their raiding behaviour. In the following extracts, the first person (GMG) talks about animals being driven to Solega farmers' fields out of hunger. According to him, the situation is much worse currently than in the past. The second person (BG), on the other hand, talks about a general reduction in the abundance of raiding wildlife (including birds), and a reduction in damage to crops.

15. (GMG, S)
ka:ḍinalli na:vu hinde bahaḷa santosdalli iddō. ba:ḷe ha:ktiddō togari avare, matte jo:ḷa ra:gi kumbaḷa soĩte partiyondu pada:rta ella, namaga ka:du oḷḷeda:gi ittu. i:va:ga namaga ba:ri tondariye, adu e:ka endale matte a:ne e:ṭu desti, matte ka:ḍinalli kaḍave matte i: handi de:sti.
i:g-i:ga ka:ḍu ella lantana *bandu buḍtu. ka:ḍina pera:ṇika me:vu illa, a:neka me:vu illa. uṇṇe desti uṇṇe endare namma ma:tinalli atte entivẽ, ella pera:ṇi ella arda ba:ga adaralli sa:ya ade…* lantana *oṇṭo:dara me:le, a:ga ba:ṇe hullu ko:ḷi hullu matte idu beṭṭadalli innu ondu tarada ide anci hullu, adu idda:ga ka:ḍinalli a:ne ella inta pera:ṇi ella chenna:gittu.*
We used to live very happily in the forest in the past. We planted bananas, different types of beans, sorghum, millet, pumpkin, gourd, all kinds of food crops, and we prospered in the forest. Nowadays life is very hard, and it's because of all the raids from elephants, and also from sambar and pigs with greater frequency.
Nowadays, the forest is full of *Lantana*. The forest animals have nothing to graze on, elephants have nothing to eat. There are more ticks on the animals—we call them *atte* in our language—and all the animals are half-dead from them. When the *Lantana* goes away—back then there were many kinds of grass, *ba:ṇe* grass, *ko:ḷi* grass, and another type that grew on mountains, *anci* grass, when these grasses were plentiful, it was good for elephants and all the other animals.
16. (BG interviewed by AS, S)
BG: *a:negaḷu ja:sti a: ka:ladalli ittu i: ka:ladalli illavalla nugga:dakave da:ri illavalla?*
AS: *nimma po:ḍina pakka baralla?*
BG: *ille, baradille. hinde bartittu, hinde bailu a:gittalla. eshṭo du:rada bailu a:gittalla, alli jami:niga bandu pasila tinde buḍtiddo. ra:gi, jo:ḷa, ba:ḷe, idu nuṇṇa:ge tinde buḍtiddo adave.*
e:kendare i: po:ḍina savi sadura e:na ba:ṇe hullu, na:rina hullu ko:ḷi hullu oḍḍana hullu anche hullu, matte ishṭondu hullu beṇḍe, daḍsu, kaũri, ishṭondu na:ru adaka tinna:daka ondute adu soppu. bidiru a:sari soppu innu saṇṇa saṇṇada puṭṭa soppu ashṭella tintidda:ga a:ne jo:ru. a:negaḷa ondu pa:linalli hattu ka:lnaḍe hadinaidu ka:lnaḍe ippattaidu ka:lnaḍe a:ne.
BG: There used to be many more elephant (raids) back then. Nowadays they can't get through the forest (to the fields).
AS: They don't come to your village?
BG: No, they don't. They used to, when the forest was more open. There would be large stretches of open forest, and they would come to the fields and eat the crops—millet, sorghum, banana, they would eat it all!
It's because the villages used to be surrounded by many grass types—*ba:ṇe* grass, *na:rina* grass, *oḍḍana* grass, *anci* grass, and also *beṇḍe*, *daḍasu* and *kaũri* trees. All this was available for the elephants to eat. The elephants would eat leafy greens like bamboo leaves, and small herbs and other plants, and multiply. There would be 10 animals in one group, 25 animals in another group!
17. (BG interviewed by NG, S)
BG: *a:ga hinde beṇḍe daḍsu kaũri, inta:du idda ka:ladalli… hakki a:ga pili-pili-pili-pili entiddo. e:n appa ondu olaka noggu uṭṭale endale i: mo:ra gi:ṇana aiaiaiaio! ondu hattu mu:ṭe, ondu olada ra:gi tene ille, anta taradalli a:ga idda hakki pakshi. i:ga hakki pakshi teḷḷa:ne a:gottu i:ga e:nu apuru:pada kaḍame i:ga.*
NG: *andare hinde ja:sti iddo?*
BG: *hinde ja:sti iddo, a:giddadu ondu holada ra:gi tene uḍiteralle gi:ṇa mo:ra. A:mele i: ka:ṭuko:ḷi ka:ḍako:ḷi, e:v e:va ja:gadalli ho:gi kẽ- kẽ gakku-gakku ante:ḷide… i:ga e:va de:shadalli e:va ka:ḍina no:ḍidaluvve sadda uvve ille soundu ille, i:ga ko:ḷiye ille. kuriḷi hatt hattu ippipattu iddo…*
BG: In the time when there were lots of other trees, there would be birds fluttering everywhere. You know, when those parrots and parakeets came to a field, oh! They would eat up sackfuls of grain! All the seed heads in a millet field would vanish—that's how many birds there were. Nowadays birds are scarce, and you only see them every now and then.
NG: So you mean there used to be more in earlier times?
BG: There used to be more earlier. The parrots wouldn't pass up on a millet field. And then the jungle fowl – Wherever you looked, you'd find them going "Cluck, cluck!" Nowadays you don't hear a sound from them anywhere in the forest. There are no jungle fowl anymore. You also used to see quails in groups of 10 or 20…

One reason for the above difference in opinion could be the fact that the two speakers, BG and GMG, live in very different parts of the forest. BG lives in Keredimba village, which lies in the heart of the high-altitude evergreen rainforest, whereas GMG comes from Kuntugudi village, in the lowland dry scrub forest zone. An important difference between communities in the two zones is that people living in the highlands, with very few exceptions, have mostly turned to coffee cultivation, and given up the cultivation of traditional staples, such as millet and corn. People in the lowlands still grow food crops as climatic conditions there are not suitable for growing coffee, and are therefore disproportionately affected by raiding wild animals (Mundoli et al., 2016) And coffee is not a favoured food item by elephants or wild pig, which would explain the different perspectives on raiding frequencies given by Solega from the higher elevations vs. those from the foothills.

DISCUSSION

The traditional view of conservation that wilderness areas should be human-free, and that human activity invariably causes damage to ecosystems, has the potential to severely impact the well-being and livelihood of rural or indigenous peoples (Kothari, 2003; Kabra, 2009; Aiyadurai, 2018). At the same time, it is tempting to label many of the interactions that Solega people have with wild animals on a regular basis solely as instances of human-wildlife conflict, just as it is easy to argue that Solega people

should be relocated to an area outside the borders of the B. R. Hills Tiger Reserve. It is interesting to apply the "levels of conflict over wildlife" framework developed by Zimmermann et al. (2020) to the Solega situation. According to the authors, conflict can be classified at three levels (with level 3 being the most severe), depending on a community's responses to questions regarding the species, the conflict situation, the history of attempts to resolve conflict, willingness to find solutions, and perception of other parties involved. For the most part, Solega people's neutral or positive perceptions of the species involved, their evaluation of the conflict situation and their willingness to find solutions would likely place them in level 1, simply labelled "dispute." Many of the quotes presented above appear to support this classification. However, it is possible that some other aspects of the conflict situation, such as Solega people's attitudes toward the actions of non-Solega stakeholders, particularly with regard to tiger conservation, would see the community placed partly in level 2 "underlying conflict" or even level 3 "identity-based conflict." This assertion remains to be empirically investigated, but if true, would suggest that the Solega situation is more complex than the scenarios presented in the Zimmermann et al. (2020) framework.

Drawing upon their fieldwork studying crocodile attacks in west India, Pooley et al. (2021) argue for a shift in focus from conflict-oriented frameworks to co-existence, which include the cultural lens through which communities negotiate their interactions with wildlife. They define co-existence as "a sustainable though dynamic state, where humans and wildlife co-adapt to sharing landscapes and human interactions with wildlife are effectively governed to ensure wildlife populations persist in socially legitimate ways that ensure tolerable risk levels." This definition can be applicable to not only large carnivores, but also to other potentially dangerous or destructive animals, such as the wild pig in the case of the Solega.

Nelson et al. (2003) mostly blame human-induced phenomena (such as changing patterns of land use, artificial water sources, human-induced habitat shrinkage due to encroachment) for perceived increases in human-elephant conflict. To this list, we add ecological change due to the introduction of an invasive weed, as is the case in the B. R. Hills. From the point of view of the Solega, none of the issues mentioned in Nelson et al. (2003) is relevant to the B. R. Hills, as they have been co-existing with tigers and elephants for countless generations. Moreover, many of the interview extracts presented above indicate that there is also a high degree of willingness, among the Solega, to co-exist with their animal neighbours. Solega people acknowledge that a certain degree of conflict with animals is natural and inevitable, and have developed cultural, religious and behavioural coping mechanisms to mitigate the impact of wildlife on their lives. As the Solega religion forbids the harming of the very animals that pose the greatest threats to life and property, these mechanisms are invariably non-violent. It could be argued that there is even a degree of cooperation between humans and tigers, as honey gathering activities by humans attract the attention of the latter, and humans routinely leave discarded brood combs for the tiger to consume. In a similar case of human-wildlife co-operation from Africa, honey-hunters use a variety of acoustic signals to elicit the co-operation of the honeyguide bird to lead them to beehives (Wood et al., 2014; Spottiswoode et al., 2016). In this case, such inter-species acoustic communication facilitates a mutually beneficial relationship between the bird and the honey-hunter. As mentioned earlier, the Solega rely on the call of woodpeckers to know when to avoid coming face-to-face with a potentially dangerous animal. The calls of several bird species are recognised as ecological or cultural indicators by speakers of the Arandic languages in central Australia (Turpin et al., 2013).

Solega attitudes toward dangerous mammals are reminiscent of the beliefs held by the farming communities of the Kerinci area of Sumatra, Indonesia (Bakels, 2000; McKay et al., 2018). Historically, for the Kerinci,

> On the one hand, the tiger is a friend and ancestor bringing prosperity. On the other hand, the tiger attacks and kills people who break the law… and violate the social and cosmological order. (Verpoorte, 2002, p. 130).

Although spiritual beliefs regarding dangerous animals may not always guarantee pro-conservation attitudes and behaviours (Streubig et al., 2018), there is evidence, from numerous communities around the world, to suggest that customary laws against harming certain animals tends to increase tolerance of those animals (Aiyadurai, 2018, also reviewed in McKay et al., 2018). The Solega seem to follow this trend, as their ways of dealing with tigers and elephants are characterised by avoidance behaviours (e.g., avoiding those places where dangerous animals are known to occur), or at most, by measures to frighten animals away using non-lethal means. Lopes and Atallah (2020) recently developed an ecological-economic model that incorporates the spiritual and non-use existence value of the tiger to the Solega. They demonstrated that the ideal scenario for tiger conservation is attained under conditions of secure property rights for the Solega, and their study further illustrates the policy implications of including indigenous TEK in management practices for endangered species.

While we have not touched on people's attitudes toward external actors in this paper, it may be the case that the Solega "conflict over wildlife" is not really a conflict between Solega people and wild animals, but really one between Solega people and outside forces that, in their desire to protect wild animals, are seen to be threatening the community's self-determination. This conflict is reflected in the fact that Solega claims about reduction in tiger numbers contradict the findings of the national tiger census. While the national census and its methods have been the subject of scrutiny, and actual tiger numbers may not be as high as those projected by the government agencies[4,5] the Solega point of view also warrants a deeper analysis. The Solega are well aware of the threats of tiger

[4]The Hindu (2019). Available online at: https://www.thehindu.com/news/national/karnataka/experts-question-tiger-numbers/article29976354.ece (accessed May 12, 2021).

[5]The Indian Express (2019). Available online at: https://indianexpress.com/article/india/tiger-count-india-census-panel-calls-for-revamp-6183627/ (accessed May 12, 2021).

conservation policies to their own livelihood, culture and access to traditional lands, and it is possible that their persisting views on a decline in tiger numbers is a way of "survivance"—an attempt to manage their interactions with various outside actors, and to defend their way of life from these threats (Rubis and Theriault, 2020). Further research is needed to shed light on this important issue.

The ability of the Solega, like other indigenous communities in India, to adapt their own activities to mitigate conflict with wild animals, along with their extensive traditional knowledge on various aspects of forest ecology and animal behaviour, make them ideal partners for conservationists in the fight to preserve local biodiversity, and protect endangered species (Nijhawan and Mihu, 2020). Their presence in the forests of the B. R. Hills should not be viewed as aberrant, problematic or contrary to conservation goals, but as a distinct advantage, given that they have already lived for generations as stewards of the forest.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Human Research Ethics Committee of the Australian National University, Canberra. The participants provided oral informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

SA, CM, and AS carried out data collection and analysis. SA and AS wrote the manuscript. All authors contributed to the article and approved the submitted version.

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