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Reforming How India Governs the Human-Wildlife Interface

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Many low-income communities in India face serious burdens because the Wildlife Act prohibits killing certain wild species. The challenge is to reform wildlife management in a practical way while keeping it in line with our unique values on animal life.

Human-wildlife conflict, where human and animal lives and human property are lost as people and wildlife struggle over space and resources, is a vexing problem for those interested in wildlife conservation and social justice. Urban macaques assaulting people for food, wild pigs raiding farmers' crops, and tigers taking human lives are all manifestations of an underlying dilemma. On the one hand, India is the last best hope for many of the world's most charismatic species. The country presents a somewhat quixotic image of coexistence at a time when humanity's capacity for destruction makes all animals seem like underdogs. On the other hand, the damages suffered because of the cheek-by-jowl distribution of humans and wildlife in India are disproportionately felt by the country's most economically and politically disempowered people.

Recently, the ecologist Madhav Gadgil has proposed resolving this dilemma through dramatic changes to the Wildlife (Protection) Act, 1972 (WLPA). In articles in *The Times of India*, *Onmanorana*, *The New Indian Express*, *The Hindu*, and *The India Forum*, Gadgil has declared the WLPA unconstitutional on the grounds that it prevents people – often poor – from defending themselves against wildlife that threatens their crops, property, livestock, and even their lives. The solution, he has stated, is straightforward – the WLPA should be "scrapped." A new regime should be constructed where the government compensates losses or allows people to kill any wildlife "trespassing" on human property or outside protected areas.

Gadgil is especially clear about the wild pig, saying that the species is in no danger of extinction globally and the ban against hunting it is "the most irrational of all." Across animal species, he paints a rich picture of a very different public relationship with wildlife than we know in India today, describing potential regulated markets for monkey meat, tiger skins, and elephant ivory. Gadgil believes sustainable hunting could allow for local people's economic uplift without costing the country any of its native species or biodiversity.

> The ecologist Madhav Gadgil has declared the WLPA unconstitutional on the grounds that it prevents people – often poor – from defending themselves against wildlife that threatens their crops, property, livestock, and even their lives.

To some degree, Gadgil's campaign against the WLPA must be seen as deliberately and provocatively simplistic. For instance, he suggests that the Scandinavian countries' greater scores than India on happiness indices are not because of superior healthcare, more effective education, or the absence of 1.5 lakh road fatalities a year, but because those countries have less crop raiding by wild animals and have freezers full of hunted moose. Further, Gadgil neglects to mention the dire state of many wildlife populations in India before the WLPA was enacted. He probably suspects that policies from Scandinavian countries, with human population densities about 1/30 that of India, cannot simply be copy-pasted into our law books. He also takes some liberties in describing Indian law, ignoring that Section 11(2) of the WLPA allows killing animals in self-defence and that the Indian Penal Code does not generally allow citizens to use lethal force while defending their property from human thieves.

Still, there is no denying that Gadgil's core concerns are legitimate. Many low-income communities face severe burdens due to the WLPA's prohibition on killing certain wild species. Controlling wildlife populations that outstrip their natural resource base may be necessary. The challenge for India's conservationists today is to reform wildlife management in a way that aligns with our unique values on animal life and is yet practical, given our institutions' limitations.

Wildlife is not just a resource

The continued survival of the world's largest wild populations of tigers, one-horned rhinos, Asian elephants, Asiatic lions, gaur, and many other iconic species alongside more than 1.4 billion people in India is a global conservation miracle. Regions in Southeast Asia and South America, with lower human population densities than India, have ended up with what experts call the "empty forest

syndrome." The trees may be standing, but mammals and birds above a certain body size are hard to find (Redford 1992, Wilkie et al. 2011).

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In part, India's success has come because of top-down legislation, which has sometimes been implemented in overbearing or even cruel ways. But there is also a bottom-up part to this story.

Many Indians have found ways to coexist with wildlife because they see animals as sharing something with them. They relate to many animals' efforts to find food, explore their environment, raise their offspring, interact with each other, and sometimes to just survive. This empathy is highly uneven, varying across regions and between species (elephants, large carnivores, and primates, for instance, seem to receive more compassion than equally intelligent pigs and the beleaguered broiler chicken). There is even variation among people in the same village. But just about every Indian conservationist we know believes that the survival of wildlife in the country has been crucially aided by this empathy across much of the population.

It is unclear what the legitimisation of commercial hunting would mean for Indians' broader cultural orientation towards wildlife. Would empathy for wildlife remain if the government encouraged communities to view animals primarily as a resource to be bought and sold? In a sea of 1.4 billion people, can wildlife survive even a 10 or 20 percentage-point increase in the number of people who view animals as just another commodity? It is almost impossible to know without trying.

If we try, a strong cultural shift may not be reversible until it is too late. In the United States of the 1800s and 1900s, government support for hunting led to the near eradication of wolves and grizzly bears across the lower 48 states (Musiani and Paquet 2004, Mattson and Merrill 2002). Thankfully, Alaska and Canada were available as refuges from which these species have been able to return to the mainland US as economics, politics, and culture became more conducive to conservation. But South Asia is now the most crowded human landscape in history – we have no Canada-style refuges for our wildlife here.

The light-hearted discussion on legalising hunting also disregards the numerous cultures in India that counsel against avoidable violence towards animals. This is regrettable because, in an essential sense, these concerns have been validated by science. After centuries of following Western European thinkers who said that animals were incapable of thought or emotion, modern scientists have used neuroscience, behavioural science, and evolutionary biology to conclude that all mammals and birds (and possibly all vertebrates and some invertebrates like octopuses) can experience emotional joy and suffering (Low et al. 2012, Sekar and Shiller 2020).

For anyone concerned with ethics, this means that we should consider how our actions affect animals. Even the Scandinavian countries, often celebrated as praiseworthy examples of modern governance, have formally recognised this reality. For instance, Norway passed an Animal Welfare Act in 2010 to safeguard the interests of animals as they "are sentient beings and which have an intrinsic value irrespective of the usable value they may have for people."

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Recognition of animal sentience is not an argument against all killing or harming animals. In a world of limited space and resources where all ecosystems are at least partly structured by predation, some harming of animals is probably unavoidable. But the fact that animals can think and feel is an argument for minimising the harm we cause them. Animals should be killed only when they endanger human life or livelihoods, and there is no reasonable alternative. When animals are harmed, it should be done in such a way that minimises pain and suffering. For instance, hunters may be allowed to use guns but not country bombs or leg traps. Flippantly talking of animals as commodities short circuits such discussions on animal welfare and is ethically a step in the wrong direction.

Sustainable hunting needs strong institutions

Notwithstanding the ethical risks of fully commodifying wildlife, establishing a sustainable hunting regime may not be practically possible in India at this time. Perhaps the most essential element of a sustainable hunting policy is the ability to determine approximately how many animals can be "harvested" without jeopardising the population of a species. Without this estimate, there is a danger of killing too many, say, wild pigs or monkeys or elephants, leading to local extirpations of those species.

Gadgil claims that "the numbers of wildlife species have skyrocketed over the last 50 years," but given the absence of credible data (which Gadgil himself notes), it is not clear that this is true across all species. Currently, the populations of wildlife species in India other than the tiger are not effectively measured or reported. Even when it comes to counting the country's wild Asian elephants, experts recognise several limitations in the methods that make it difficult to assess whether populations are increasing or decreasing. For smaller species, such as wild pigs or bonnet macaques (Milda et al. 2022, Singh 2019), we have limited data to assess populations, especially beyond protected areas.

Local perceptions that populations have increased need to be corroborated with data. Even where animal populations may have increased locally, a species' overall population may not be on the rise. For instance, any increases in wild pig populations in agricultural areas of the Western Ghats may be offset by reductions in their populations in forest areas due to habitat degradation (for example, due to invasive species like *Lantana camara*). As such, the assumption that any animals found wandering outside protected areas represent overabundance could be inaccurate.

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This makes determining a reasonable hunting quota challenging, and the rarer and more slow-breeding the animal, the lower our margin of error in estimating how many individuals may be removed without endangering the population or the ecosystem. The conservation community widely believes that India's protected areas do not provide sufficient food, water, or even space to support viable populations of elephants, with herds ranging over areas as large as 1,000 square kilometres (Shaffer et al. 2019). Researchers have found that almost 60% of the space used by elephants is outside protected areas (Madhusudan et al. 2015), with most individual animals venturing out at some point (Baskaran et al. 2018, Sukumar et al. 2003). Allowing the hunting of all elephants wandering outside protected areas could pose an existential threat to India's national heritage animal.

Even if we could determine sustainable hunting quotas or demarcate reasonable hunting spaces, we would be left with another vexing challenge. The country's understaffed and under-supported wildlife management institutions would have to ensure hunting remains within the permitted quotas. Currently, the fact that killing any Schedule I animal is illegal simplifies the task of law enforcement officials – if they see any product from any such animal, they know it is contraband and can seize it. If some commercial hunting is made legal, officials will have to somehow distinguish between legally procured wild pig meat, tiger skins, and elephant ivory and that

obtained through poaching.

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In other contexts, this has been done using a documentation system. For instance, the Convention on the International Trade in Endangered Species (CITES) allowed a one-time legal sale of ivory from southern African countries to China and Japan in 2008. China introduced permits to distinguish legal from illegal ivory. A secondary market in ivory permits followed, which masked the sale of illegal ivory products. Distinguishing legal ivory products from illegal ones proved too burdensome to Chinese authorities.

A similar phenomenon seems to have occurred amongst consumers. Chinese citizens who previously knew all ivory to be illegal and who were inclined to operate within the bounds of the law simply avoided it before 2008. After it became known that some legal ivory was available, these consumers began to purchase ivory. With many consumers unable to distinguish legal ivory from illegal ivory, this effectively increased the demand for both, apparently fuelling a surge in the poaching of African elephants. According to one econometric study, the partial legalisation of ivory by the CITES corresponded with a 66% increase in elephant poaching globally (Hsiang and Sekar 2016). If hunting is even partly legalised in India, it might be hard for our overstretched forest departments to ensure that it remains within limits.

Building on our strengths

The proposition that hunting is the best way to achieve both conservation and social justice is highly suspect. But given that wild animals and humans share space in India, how do we correct a conservation paradigm that now places the greatest burden on our most marginalised fellow citizens?

Unfortunately, there does not appear to be a single easy solution to ensure an equitable future for people and wildlife.

Instead, there are some themes that unify the best next steps. Conservationists should partner with local and regional institutions to enhance the mitigation of human-wildlife conflict, starting with interventions that most resemble the existing abilities of the state and building towards more complex institutions that address our country's unique ecological and cultural requirements. We should also work towards pragmatic processes that take individual animal well-being seriously. Most importantly, conservationists should help restructure the relationship between communities and local governments so that the latter are more collaborative and responsive.

> Given that wild animals and humans share space in India, how do we correct a conservation paradigm that now places the greatest burden on our most marginalised fellow citizens?

As a first step, urgent efforts must be made to prevent human casualties, the most severe outcome of human-wildlife conflict. Conservationists and government officials should work closely with communities to understand how to minimise the safety risks faced by people living alongside wildlife. While addressing landscape-level forces that ultimately drive conflict (for example, deforestation) will take a long time, in many cases, simple interventions could dramatically reduce risks for the time being.

For instance, in northern West Bengal, research revealed that human-leopard conflicts were occurring partly because tea was plucked near leopard resting sites without giving the animals sufficient warning to move away. Banging pots and pans before tea plucking appears to have dramatically improved the situation, lowering human casualties (Kshettry et al. 2020). In Karnataka, conservationist Nishant Srinivasaiah found that dairy farmers were more likely to be killed by elephants because they began moving around early in the morning in anticipation of the 7 am milk collection time. Changing the milk collection time to around 10 am allowed the farmers to stay home later until elephants left the village outskirts, reducing the risk of fatalities

In Mumbai, conservationists formed rescue teams that were highly responsive to local concerns about leopards, discussing how to stay safe with communities, showing up to monitor leopards that caused concern, and identifying and capturing individuals that attacked people. These measures reduced conflict and the pressure to translocate leopards seen in the area, an intervention that can lead to increased conflict as the leopards try to return. Conservationists and local government officials should launch a campaign to work with all communities where human fatalities due to wildlife are a chronic problem and attempt to enact such interventions.

> A proactive and community-based approach would be the most effective way to prevent and mitigate non-lethal human-wildlife conflict. But as scaling up such decentralised efforts will take time, systems for providing just and transparent compensation for losses due to conflict must be established immediately.

Identifying and prioritising such conflict "hotspots" for intensive intervention requires adopting efficient data collection, storage, and analytical systems that allow officials, experts, and the general public to understand the distribution of conflict cases. The technology necessary to enable officials to view plots and maps of such data is readily available. Some state forest departments and non-governmental organisations have begun piloting applications for this purpose. Officials should be fully supported in building and using these data systems.

A proactive and community-based approach would be the most effective way to prevent and mitigate non-lethal human-wildlife conflict. But as scaling up such decentralised efforts will take time, systems for providing just and transparent compensation for losses due to conflict must be established immediately. Almost all states provide ex-gratia payments for losses of property or life due to wildlife damage. But this system has two common problems.

The first problem is that these payments can be extremely slow, and the lack of transparency or time-bound disbursement can increase people's antipathy towards the forest department and the species that caused the loss. Verification and processing of compensation claims could be made faster and more efficient through smart governance tools that include an app and public-facing database, allowing claimants to monitor the status of their claims and helping officials more easily track and assess applications. State forest departments should publicly establish reasonable time limits for processing claims. States such as Karnataka and Maharashtra have already started implementing these steps.

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The second problem with the current system is that almost no state has a policy to fully compensate villagers who lose a cow to a tiger or a house to an elephant. Instead, farmers and villagers receive ex-gratia payments that are a small fraction of their losses, even if they did their utmost to prevent the conflict from happening. By and large, India's courts have agreed that such partial compensation is unconstitutional. In nine out of 12 high court cases, the judges have ruled that the Indian state is fully liable for whatever damages are caused by protected wildlife. As such, India's states should transition from ex-gratia to full compensation policies for human-wildlife conflict.

Critics might rightly note that fully compensating losses could lead to a perverse incentive for farmers. They may stop trying to defend their crops or livestock from wildlife (Rangarajan et al. 2010), leading to spiralling compensation costs. But once systems for data collection and more just compensation are in place, governments should be able to add more complex layers, like making compensation conditional on maintenance of barriers such as predator-proof corals or non-lethal electric fences. Programmes could subsidise the

transition to ecotourism, agroforestry, or crops unpalatable to wildlife in areas with high conflict. Ultimately, the aim should be to proactively minimise losses to conflict (and thus compensation). But fairly compensating the losses that still occur must inevitably be a part of the solution.

Once these steps are taken, the conservation community can focus on activities that allow for more adaptive, collaborative, and proactive decision-making that addresses the root causes of conflict. By working with forest departments to help implement the Forest Rights Act (2006), conservationists can help build community-based institutions that are able to advocate for local interests and participate in finding solutions.

> Without a doubt, the road we recommend sounds more complicated than just scrapping the Wildlife Protection Act and legalising the hunting of wild animals.

By gradually building more sophisticated data systems, scientists can help us better understand whether wildlife populations are increasing or decreasing and what might be driving levels of human-wildlife conflict. In areas where camera trapping has been conducted regularly for tiger monitoring, researchers can start by using occupancy modelling to assess how the relative abundance and intensity of forest use by other species (including wild pigs) have changed. While imperfect, even these assessments could help us better understand if efforts to reduce local populations of conflict species might be justifiable.

For slow-breeding and low-population density species such as elephants, populations could potentially be managed using injectable contraceptives. This has been done with elephants in some parts of South Africa (Bertschinger et al. 2018). For others, authorities will likely have to develop institutions to manage the use of lethal force on wildlife, moving towards a world where animals are killed humanely and only when necessary.

> Often the best solution to a complex problem is also complex. The initial steps we recommend involve incremental and achievable improvements to the systems we already have.

This might include limiting the actual killing of animals to forest department-authorised hunters, or systems in which local government officials authorise hunting by prescribed means under forest department supervision (as is done in Kerala). Whatever the system, it should result in timely decisions and prompt action so as not to frustrate complainants. Hopefully, as the application of interventions that prevent conflict improves, the demand for lethal interventions even for relatively common species will shrink to a minimum.

All of these changes will require assessments to make sure they improve human-animal relations and outcomes. The road we recommend sounds more complicated than just scrapping the Wildlife Protection Act and legalising the hunting of wild animals. It is hard to beat the allure of a simple market-based solution. But often, the best solution to a complex problem is also complex. The initial steps we recommend involve incremental and achievable improvements to the systems we already have.

Gadgil is correct in saying that our approach to managing human-wildlife conflict urgently needs an overhaul. With proper investments and emphasis, we can achieve a more socially just version of conservation without reducing our unique natural heritage to a soulless resource.

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