

# **Empowering Forest-Fringe Panchayats:**

A Policy Reflection on the Solution to the  
Shrinking Human-Wildlife Interface in Kerala



Research Unit on Local Self-Government (RULSG)

**CENTRE FOR DEVELOPMENT STUDIES**

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## Acknowledgements

This is the fourth policy advocacy note prepared by the Research Unit on Local Self-Government (RULSG), Centre for Development Studies, Thiruvananthapuram. Like the other three, this too has been an effort to develop policy through systematic engagement with all stakeholders in the issue, as well as enable a connect between the government and voices from civil society, especially those that were either not present or inaudible in the earlier days of decentralized governance in Kerala. The planning and research for this note was carried out by J Devika and Chithira Vijayakumar; however, the authorship of the note belongs equally to all those who have participated in this policy dialogue. The pandemic conditions made it difficult for us to complete this work in 2020, but the interest shown and time offered by all participants has been especially heartening. Our interviewees included twenty-one leaders of forest-fringe LSGs, several officers of the Forest Department, researchers, wildlife and nature activists, activists of urban animal protection groups, and representatives of forest-fringe farming communities and organizations. Special thanks are due to Dr T V Sajeew, Anitha S, Dr Meera Oommen, Dr S Faizi, Radha Gopalan, James Zacharias, Latha Indira, C R Bijoy, Thomas Kalappura, Jose Mathew, Tomy Mathew V, Usha S, Baby Kurian, and others who have contributed immensely to our understanding of this issue.

The earlier policy advocacy notes of the RULSG may be found [here](#).

## **Abstract**

The shrinking of the human-wildlife interface and the problem most exacerbated by it, namely, the heightened human-wildlife conflict, especially acute in Kerala's forest-fringe areas, is one that calls for urgent attention of policy makers for it has serious bearing upon a range of vital livelihood and health issues, including that of local food security. By human-wildlife interface, one means the space that serves as both a separator as well as one of meeting and interaction between human and non-human worlds. The shrinking of this space implies that the meeting and interaction of these worlds is now more direct and intense, which may be perceived as threatening by either. In this policy dialogue we attempt to address these issues avoiding binary thinking that sets up the interests of forest-fringe communities against that of wildlife and vice-versa, and seeking to empower local democracy in forest-fringe panchayats so that affected communities are enabled to work actively and equally with government agencies to resolve the problem. We also seek to enlarge the frame of consideration by pointing out that the human-wildlife conflict may longer be just a forest-fringe or rural concern – and hence local bodies everywhere in Kerala, including urban areas, may need to be strengthened and empowered to address it.

## **Introduction**

Over the past thirty years, all regions of Kerala have seen an acceleration of the ecological crisis, but far from altering the frameworks of our social and economic policy to address it urgently, interest in the issue has been meagre and fluctuating. There is plenty of research, cutting across scientific and social scientific disciplines, which indicates that excessive local human intervention, for instances, the rapid, unregulated urbanization and natural resource predation (besides global climate change and regional factors) is taking a toll on Kerala's ecological health, and by extension, on a range of vital aspects of human life ranging from rural livelihoods to public health. Assessments of the 'Kerala Model' in the 1990s often claimed that it was "closest to the sustainable development ideal in practice" (Parayil 1996: 953). However, this optimism fades in the literature with time: there is greater recognition that the pressure of environmental degradation may have been less apparent in Kerala because of evenly-distributed rainfall and because of the resistance offered by its topography to environmentally unsustainable Green Revolution technologies (Veron 2000). Rene Veron, particularly, pointed to the emergent issues in the 1990s, besides deforestation in the earlier decades – of paddy land conversion,

chemical-dependent agriculture, air and water pollution, mounting non-biodegradable waste from increasing urbanization, and so on (ibid.) Veron also noted elsewhere in 2001 that “the normative concept of sustainable development has not yet become a general cultural value in Kerala” because the region did not face a severe ecological crisis (Veron 2001: 19). This impression, however, was not shared by others. For example, Ramakrishnan Korakandy(2000) argued that the people of Kerala were demanding environmental protection, which was being ignored by the government which was now keener to throw open natural resources to exploitation by the agents of globalisation; it was pointed out that a fresh look at ecology was now necessary. In development research, these concerns began to surface in the 1990s and grew stronger later (for instance, Narayanan 2003).

Ten years later, it was evident that the government had begun to recognize the issue. The Kerala State Environment Policy of 2009 listed loss and degradation of forests, loss of mangrove ecosystems, threats to coastal ecosystems, increase in sand and clay mining, overexploitation of freshwater and marine fauna, conversion of paddy land, deterioration of rivers, water scarcity, loss of farmland productivity, alarming rise in air, water, and soil contamination, industrial and electronic pollution, the menace of untreated waste, and rapid urbanisation as the chief aspects of the environmental crisis facing the state. The recent Kerala State Action Plan on Climate Change (2014) is a more explicit admission of the ecological crisis. After the 1990s,Kerala enacted several Union government rules and laws (for example, the Municipal Solid Wastes (Management & Handling) Rules 2000; the Biological Diversity Act 2002 and the Biological Diversity Rules 2004; Kerala River Bank Protection and Sand Mining Regulation Act (2001)), set up special planning committees and task forces (Environmental Protection Programme Planning Committee (EPPPC); the Environment Protection Task Force; Kerala State Biodiversity Board; Kerala State Disaster Management Authority, both mandated by Union government rules ) for managing the environment and related activities.

This could be seen as marking a certain shift from the approaches followed hitherto. The coming of panchayati raj in the 1990s marked the popularisation of a specific approach to the environment that emphasised local and sustainable development based on an understanding of the local environment as a set of usable, efficiently-conservable, and renewable natural resources. Many functions transferred to the local governments had strong implications for the environment: agriculture, land improvement, conservation, and consolidation, minor irrigation, watershed development, water management, social and farm forestry, drinking water, non-conventional energy, health, and solid waste management and sanitation. However, local governance in Kerala, right from the early phase of People’s Planning in the 1990s, tried to focus on the sustainable use of natural resources. The planning exercises that were to be undertaken in the 1990s by local bodies involved Panchayat Resource Mapping (PRM) – in 1990, the

PRM was first introduced as a programme conducted jointly by the Centre for Earth Science Studies, the Kerala Sastra Sahitya Parishath, and Kerala State Land Use Board, with a pilot study launched in 25 selected panchayats. Later, the Government of Kerala gave it official recognition, scaling it up to all village panchayats, to be covered in a period of five years from 1991. Initially led by volunteers of the KSSP, after 1992, the panchayats were instructed to take the lead in organizing volunteers, taking help from local civil social organizations (Chattopadhyay et al 1999: 3-4).

The thrust however, was less ecological and more on enabling panchayats to “depend more and more on local resources and concentrate on productivity enhancement.” (ibid.: 80). The Kerala Panchayat Raj Act (1994) and the Kerala Municipalities Act (1994) gave the local bodies considerable power to enable environmental conservation, including prevention/control of pollution and nuisance; several major environment-related policies enacted by the government of India envisaged major roles for local governments. The 1990s also saw the Watershed-based Development Plan at the block panchayat level (1998) which tried to introduce decentralized planning based on geohydrological units. But local governments rarely made full use of the powers conferred on them: for example, the participatory initiatives envisaged in the National Forest Policy (1988) in forest-fringe panchayats are often under the initiative of the Forest Department, not the panchayats. And despite, for example, the fact that protests about the solid waste management practices of urban bodies were already being heard in the 1990s – for example, in Lalur, against waste-dumping by the urban body of Thrissur. In short, the thrust of the LSG environmentalism was on mobilizing local natural resources for local-level development for sustained use and PRM was its instrument; the problems it addressed were distinctly different from the ecological crisis that looms in Kerala twenty years later, in the present.

Nevertheless, once problems especially to do with everyday management of the environment – for example the problem of solid waste – began to manifest seriously, there were efforts to bolster the local bodies to meet these challenges. After the establishment of the LSGs, the Kerala Total Sanitation and Health Mission (1999) which ran the Total Sanitation Campaign, the Clean Kerala Mission (2002), and later, (when the two missions were amalgamated) the Suchitwa Mission (2008) sought to enable the local governments to fulfil their environment-related functions. These met with some successes: for example, rural Kerala was declared free from open defecation in 2016 through the efforts of the Suchitwa Mission working with LSGs and mobilizing corporate social responsibility funds (<https://www.keralacm.gov.in/open-defecation-free/>, accessed 14 September 2020). However, research on the impacts of these efforts notes the striking failure of these missions to solve the mounting problem of solid waste in Kerala in both urban and rural areas, especially, the solid waste treatment plants established in the outskirts of urban bodies (for example, see Subair 2018 ). Not surprisingly,

the 1990s and after were also years in which popular struggles intensified or newly erupted around waste dumping often directed specifically against urban bodies – to mention just a few, in Thiruvananthapuram (Vilappilsala) in 2010-12; Thrissur (Lalur), from the 1960s, but intensifying in the 1990s and after; Thalassery (Pettipalam) in 2012.

Generally, policy impacting on or oriented towards the environment in Kerala in the new millennium has been beset with frustrating internal contrariness. The institutionalisation of local self-government through the panchayati raj institutions and the adherence to the rhetoric of local democracy notwithstanding, there is now a great emphasis on the ‘mission mode’ – of deploying special vehicles – to tackle specific issues. Likewise, the State Environmental Policy of 2009 seemed to mark a shift from the PRM exercises in its increased focus on the ecological crisis and away from merely sustainable development, but special purpose vehicles devised later to work on specific aspects of the crisis addressed mostly those aspects limited to consumption-oriented mainstream urbanised life (solid waste management for example), with little attention paid to the alarming resource predation in the rural areas. For example, the Haritha Mission set up in 2016 directly addresses water shortage, accumulation of waste, and safe food. Meanwhile, despite policy pronouncements, rock quarrying and other forms of natural resource predation have continued unabated (Sajeev and Alex 2017) even after devastating landslips in the monsoons since 2018; quarrying has recently received further assent from the Kerala government despite widespread apprehension in lay and expert circles (The Hindu 2019). Generally, the Kerala government has tended to relax the safeguards against environmental predation, rather than tighten them even after the unprecedented flooding during the monsoons of 2018, 2019, and 2020 (Pillai 2018; onmanorama 2020; The Hindu 2019a; Shaji 2020). While laxity towards ecological security seems characteristic of policy-making at the level of the State government, at the level of the LSGs, policy-making around the environment seems focused on everyday environment management, disaster preparation, and biodiversity mapping, all of which are at present either top-down or largely technical exercises with little popular participation. There have been significant exceptions, success stories of widespread empowered-citizen participation, which, however, remain strangely neglected in public discourse, for example, the Alappuzha model of waste management (Subair 2018).

Indeed, the violations and deviations of the government in favour of vested interests and against long-term ecological security in the past decades are numerous.<sup>1</sup> There is no doubt that a key driver of this trend is the government’s understanding of development as indistinguishable with neoliberal capitalist growth, and the obsession with ‘world-class’ spaces of investment for global capital (various kinds of

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<sup>1</sup> For an incomplete list of such violations, see <https://www.ecologise.in/2016/04/07/a-green-development-manifesto-for-kerala/> (accessed 11 August 2020)



‘cities’, from ‘smart cities’ to the latest ‘GIFT city’ in Kochi (<https://www.thehindu.com/news/national/kerala/gift-city-proposal-approved/article32457498.ece>, accessed 14 September 2020). However, the violations are also driven by a greater dependence on resource-intensive economic activities such as mining, as well as the demand for housing from Malayalis and so on. The approval of projects ranging from port-building devastating to marine ecology (at Vizhinjam) and with significant downstream hydrological impacts, to the proliferation of quarrying has been much easier in the recent years.

In the new millennium the negative effects of ecological degradation became more and more apparent, especially through the rise of new vector-borne communicable diseases in Kerala: especially bird flu, chikangunya, leptospirosis, dengue, malaria, and nipah (Kuriakose et al 2008; Vijayakumar et al 2010). Research now links it clearly to the specific form taken by urbanisation in post-1990 Kerala – altered land use, inappropriate disposal of waste, pollution and filling up of water bodies and wetlands, rising temperatures from expanded built-up areas, and the destruction of forest land (for example, Sheela et al 2017; Kumar 2005; Kumar 2018). The steady destruction of forests and climate change narrowed the human-wildlife interface; pre-existing issues such as crop-raiding, destruction of dwellings and human life, intensified in forest-fringe areas (Rohini et al 2016; Easa and Sankar 2001). Water shortages are frequent all over the state now (Kelkar-Khambete 2015); air and water pollution rampant. The impact of climate change and unpredictable weather have wreaked havoc on the coast and the highlands.

Unlike in the 1990s when the powers enjoyed by the local body to protect natural resources for local use were considerable, (and hence prominent struggles for the protection of local natural resources, such as, for instance, around pollution and ground water exploitation by Coco Cola at Plachimada and even against the powerful chemical industry at Eloor (Raman 2010; Vijayakumar et al 2019), were spearheaded by local bodies), they are considerably depleted now. For instance the Kerala Investment Promotion and Facilitation Act (2018) required major amendments to the Kerala Panchayats Act which would take away the local governments’ control over industries through the grant and withdrawal of No Objection Certificates. Local governments in Kerala are now largely implementing agencies of top-down policies on which they have little control – set by agencies outside local government, some of which have very weak, or thin, ecological perspective. Even the more promising institutions – for example, the biodiversity management committees of the local governments – which have been recognized by the government as environment watch groups at the local level – lack the capacity to undertake their responsibilities. In specific areas of social disadvantage, for example the coasts and the tribal areas, decentralized governance has been simply inadequate to meet the needs of ecosystem people. For example, in the Coastal Regulation Zone Notification, the local governments are only

implementers of the coastal zone management plans prepared by higher agencies. The role of local governments in disaster mitigation was conspicuous in 2018, but the disaster management system does not empower them enough, built as it is around the revenue authorities under the District Collector<sup>2</sup>.

Local governments have been granted a central role in Kerala's State Action Plan on Climate Change (KSAPCC) (2014). It calls for area specific climate change plans to be formulated through participatory processes at different levels of local governance, which identify "adaptation needs at the local level that focuses on reducing local level climate risk and vulnerabilities and ways of increasing resilience." (p. 138). It suggests that functional committees be constituted at the local government level "for planning, implementation and monitoring of various projects ... [from a] climate change perspective." (p. 140). It also recommends coordination between different departments and the local government. Yet it was evident that despite this plan of action, local governments in particular and the state government in general, were totally unprepared for both the devastating cyclone Ockhi of 2017 and the catastrophic floods of 2018 (John 2018).

## **I. The Approach**

Our advocacy note is based on the realization that an effective policy that aims at a balance between livelihoods and ecological security must:

- (a) Move beyond the above-mentioned contradictoriness of policy that speaks the language of participation but remains highly top-down.
- (b) Focus on effective empowerment of local governments and communities – and the broadening and deepening of local democracy, such challenges cannot be met. Indeed, the neglect of this task can only lead to the further intensification of surveillance technologies and the loss of citizen voice.
- c. Focus closely on specific issues thrown up by the ecological crisis, one by one, tracing their interlinkages carefully.

Given that ecological health also implies livelihood and food security at the local level (and not just of people directly dependent on natural resources for their livelihoods, in the ongoing context highlighted by the pandemic) and that this level is best managed by the institutions of local democracy including local governments, the thrust of our reflection is on empowering the local governments of Kerala to contribute to ecological security at the local level. The question of ecological security is a very broad

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<sup>2</sup> For a detailed discussion of refurbishing the legal and policy framework for an ecologically sound response to the recent ecological catastrophes that Kerala has faced, see Jojan et al 2018.

one, calling for a range of policy initiatives tackling a number of sub-themes, which have to be taken up by a series of policy dialogues.

The present exercise focuses on one of these challenging issues: that of the steady erosion of the human-wildlife interface in Kerala, which in itself consists of a number of distinct, if related issues. The most prominent of these has undoubtedly been concentrated in the state's forested or forest-fringe panchayats – the rise of human-wildlife conflict which seriously impacts small scale agriculture and even security of human life there. However, the heightened presence of wild animals now is not confined to these places; they are sighted far away from forests, even in urban fringes. The explanations offered invariably point towards changes due to anthropogenic interference in forest-fringe areas – ranging from the claim that wildlife populations are booming due the enhanced state protection for wildlife, to the degradation and destruction of wild habitats due to quarrying, tourism etc. However, the recent rise of zoonotic diseases might call for a fundamental rethink of the very assumptions that gird our everyday life – especially the idea that the worlds of human beings and wildlife is/ought to be/can be clearly separated (Greger 2007)<sup>3</sup>.

This advocacy note is based on consultations with all stakeholders involved; including panchayats most affected by the erosion of the human-wildlife interface. The continuing pandemic situation made it impossible for us to follow the methodology developed over the past few years to conduct the RULSG policy dialogues – since it was impossible to gather different groups of stakeholders at CDS and encourage mutual engagements to identify core issues and policy insights from each. Instead we had to be content with conducting interviews with different groups of stakeholders. Twenty-one panchayat presidents from Kerala's forested and forest-fringe panchayats spread over nine districts were interviewed. Other stakeholders interviewed included six leading officials of the Forest Department with considerable interest in the issue, representatives of farmers' organizations in Wayanad and Kannur, the leading wildlife researchers as well as environmental activists, urban animal rights activists, and wildlife/conservation activists.

## **II. The Erosion of the Human-wildlife Interface in Kerala**

The available research literature on the human-wildlife interface in Kerala focuses mostly on an aspect of it that has become a seriously divisive socio-political issue here: human-wildlife conflict. It emphasises a number of exacerbating conditions and triggers: : due to the shrinking of forest areas, the proliferation

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<sup>3</sup> Michael Greger concludes his study thus: "The recognition that nearly three-quarters of emerging diseases may have arisen from the animal kingdom highlights how artificial the separation is between the human species and the rest of the natural world." (Greger 2007: 278).

of wildlife after the enforcement of the Wildlife Protection Act (1972), ecological changes which have led to food and water shortages in forests, the fragmentation and degradation of forested areas and the concomitant rise of human settlement, resorts, plantations etc., as well as the undemocratic and highhanded forest management structures and practices, the human-wildlife interface has also shrunk quite considerably (Easa and Sankar 2001). This is a pattern that has emerged world-wide in the twentieth century (Barua et al 2013).

The most visible impact of such shrinkage has been the violent attacks by wildlife resulting in deaths and physical injury of human beings. Crop raiding by animals, which destroys human livelihoods, and the destruction of property, especially housing, are among the most severe and frequently-experienced impacts, as evident from available research on the human-wildlife conflict in Kerala (for example, Oommen 2011; Rohini et al 2016; Easa and Sankar 2001; Veeramani et al 1996; Govind and Jayson 2018, 2018a). While elephant attacks and intrusions of other forest animals like wild boar are more noticed in the media, the crop raiding by birds like peafowls and issues related to migratory wildlife in the Kole paddy lands (Srinivasan 2010) are perhaps comparatively less discussed. The negative impacts of the shrinkage of the human-wildlife interface also fall upon wildlife, though this aspect also seems less highlighted in public discussions – for example, there is evidence of pesticide poisoning of wildlife in Kerala, for example, of wild boar scavenging for food waste in garbage dumps close to human habitation as well as elephants, gaur and other species from exposure to pesticides (Radhakrishnan 2018), and retaliatory poisoning (Kalaivanan et al. 2011).

This is however an issue no longer relevant just to forested or forest-fringe areas. Newspaper reports and anecdotal evidence indicates the intrusion of wildlife in places relatively distant from forest areas. there have been newspaper reports of wild boar foraging in farms in the non-forest fringe, relatively urbanized taluks of Chengannur and Mavelikkara (<https://www.manoramaonline.com/district-news/alappuzha/2020/09/15/alappuzha-wild-boar-attack.html>, accessed 15 September 2020) and in non-forest-fringe areas of the Pathanamthitta district in February 2020 (<https://www.thehindu.com/news/national/kerala/wild-boar-threat-to-pathanamthitta-villages/article30729084.ece>, accessed 15 September 2020) and even in the outskirts of Thiruvananthapuram City. Secondly, it is noted that in many places, relatively unfamiliar animals are being sighted more frequently -- for example, just this year, there is anecdotal evidence for wild otters in the Pampa river near Thrikunnappuzha in the Alappuzha district (reported by local researcher V Sasikumar, from Thrikkunnappuzha). . Urban-based animal rights activists pointed out that the sightings of snakes, particularly cobras, have increased in frequency in the cities, leading to anxiety about and

killings of all of snakes. Another important issue of concern is about feral dogs which have been proliferating all over Kerala – this has led to local protests against dogs attacking human beings and general hostility towards the stray dog population in general.

But perhaps most striking recent development is the larger problem of the shrinking human-wildlife interface is the appearance of zoonotic diseases in Kerala. The issue of the transmission of diseases from wild animals to humans came into public attention during the Nipah infection in 2018 in which bats came to be blamed and were even culled, unmindful of the grave ecological consequences of destroying these animals that perform very important ecosystem functions necessary for agriculture. However, in a laudable move, the government of Kerala stayed firm against any mass culling of bats and issued firm warnings to the public against it (Narayan 2019). It has been noted that the viruses tends to be much more virulent in bats that are stressed, hungry, and with lowered immunities, all as a result of habitat loss, climate change, and deforestation (Dutta 2019)<sup>4</sup>. Nipah has resurfaced again in the Kozhikode district in 2021 too (<https://www.indiatoday.in/india/story/boy-dies-nipah-virus-kerala-kozhikode-1849329-2021-09-05>, accessed 23 September 2021). The Kysanur Forest Disease (monkey fever) is also now being reported in Wayanad. A study of the disease notes that between 1957-2012, it was limited to the Western Ghats districts of Karnataka, but in 2013-15, cases began to be reported in Kerala (Munivenkatappa et al 2018). Recent studies have supported the conclusion that KFD is an ‘ecotonal’ disease with greater prevalence in diverse forest-plantation mosaics (encompassing higher cover of plantations over evergreen forests), lower cover of dry deciduous forest and high densities of indigenous cattle (Purse et al. 2020).

However, despite the recent new challenges, a key aspect of the shrinking human-wildlife interface – that of human-wildlife conflict in forest fringe areas – is certainly not new at all. It is important to note that the new research on the history of human-wildlife conflict in this region completely gives up any notion of a pristine forest untouched by human hand that must be preserved thus. Indeed, this research contests any such romanticisation of the wild strongly. An excellent instance of such new work is that of the wildlife researcher and historian Meera A Oommen, who argues quite convincingly that the conflicts with wildlife and people in this region can be traced back at least to the period 300 BCE -300

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<sup>4</sup> Groups such as bats are the reservoirs of a large number of viruses but pathogen spillover is often a complex process that involves the viruses overcoming certain critical barriers. Both human and vector behaviour would be relevant in this context but it would be interesting to look at the root causes especially in policies and overarching structural frameworks that support pathogen emergence. An interesting perspective for this has been in the conceptualisation of ‘neoliberal ebola’ by Wallace and Wallace who point out the role of neoliberal economics in creating agroforestry conditions that support the emergence of zoonoses. See for example, Wallace and Wallace (2016)..

ACE, through the descriptions in Sangam poetry (Oommen 2019). As she traces it, the conflict took a distinctly different shape in the colonial period, and questions about wildlife intrusion and destruction in human-occupied forest-fringe areas were quite frequent in the legislative assemblies of Travancore and Kochi; the demarcation of forests and cultivated lands, which was quite indistinct in earlier periods, began to grow more and more distinct after colonial control intensified. The post-independence period, she argues, tended to exacerbate the trends in policy, practice, and power distribution that were set up under colonialism.

Three aspects of this history flagged by Oommen's work are especially relevant for our discussion: first, she highlights the desperate situation in which large-scale migration from lowlands to elephant country happened around the mid-twentieth century. Specifically, the migration was from Travancore and Cochin in response to near-famine conditions during which the Grow More Food campaign was launched – her oral sources reveal the tremendous dangers faced by early settlers in elephant country and their techniques and constant vigil to guard crops and lives against animal depredation. As Oommen perceptively notes, the early place-making in the forest-fringes was an interactive process with non-human agents playing a significant role; the process enabled a mutual adaptation which seems to have been upset by the protection afforded by the Forest Department to the animals<sup>5</sup>. In different parts of Kerala, the place-making processes varied, and hence no single solution can be found to the problem. However, it appears from Oommen's work and the available literature on the issue as well as our own interviews that memories of trauma have been passed on from the earlier to latter generations among settlers and the fear of marauding wildlife is a very real and serious problem to be addressed. In our interviews, this trauma found echo again and again.

Secondly, Oommen points out that the differentiation between forests and cultivated lands, that was never so acute in pre-colonial times, has steadily intensified through the colonial period and after – as she highlights, this differentiation was 'cemented' further in the post-independence 'conservation era' with exclusionary spaces that increasingly separated people and wildlife in physical space. From the accounts of human-wildlife conflict that we collected in the interviews for this policy exploration, it appears that the psychological effects of such separation are now bearing bitter fruit: people refer to the wildlife that destroys their farms (especially wild boar) as 'the government's wild boar/elephant', wild that should stay within designated wild spaces and not spill on to their space – or human space. The resolution imagined is also often of further bolstering the divide, through the construction of solid and

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<sup>5</sup> This of course is not to blame the Forest Department wholly – it happens to be merely the agency implementing a mandate set by the state of protecting animals through a legal instrument that covers the entire country.

impregnable boundaries separating human and animal, culture and nature – by building high granite walls etc.

Thirdly, Oommen stresses the continuity of policy between colonial and post-colonial times which have remained ‘extra-local, top-down strategies’ that were blind to local contexts. In her handbook on balancing human needs and ecological functions in human-modified forest-fringe landscapes in the Western Ghats region of Kerala (2011), Oommen notes (from her fieldwork in forest-fringe areas of the Ranni forest division) that the negative effects of top-down conservation were especially apparent in the efforts to preserve natural vegetation within individual plots of land. While the legislations enacted by the state government to protect trees on such plots were meant to curb rampant clearing of the tree cover and promote soil and water conservation, these were perceived as hostile moves by forest-fringe small farmers, in a place already troubled by issues around tenure (2011:7).

This history has made human-wildlife conflict a particularly sensitive and difficult problem in recent times. On the one hand, relations between the state and forest-fringe farmers have been historically a tense one, with the latter organizing frequently in response to their vulnerability. Wildlife seems caught in the middle of this tension, especially conservation flagships such as the elephant and the tiger, identified as the (distant, uncaring, bureaucratic, indifferent) state’s pampered wards. On the other hand, now, besides the farmers, there are multiple interest-groups that seek a stake in the control of forest-fringe areas. This may include different sorts of capital interests including the contractor (seeking to profit from wall- or fence-building), miner, tourist-resort owner, as well as criminal interests seeking to plunder public wealth, all seeking to profit from the lowering of guard. Capital interests, in the long run, may be totally detrimental to small-farmer interests, but in the short-run it may not appear to be so. Also community-elite interests have been at the forefront in the anti-conservation discourses that have gained ascendancy in the anti-Gadgil Committee agitations in Kerala’s forest (Suresh and Suchithra 2021). In other words, the state-farmer conflict (which is what is displaced by the ‘human-wildlife’ conflict in Kerala) no longer falls into a neat, reassuring pattern of oppression vs. resistance – and this is indeed an important reason for it being a thorny problem for policy. Indeed the deeply polarising debate around the Gadgil recommendations for the conservation of Western Ghats ecology, much of which was outright misrepresentation of its contents has actually served only to further consolidate and strengthen the deep distrust of the state as uncaring, and its top-down policies ostensibly made to increase farmers’ vulnerabilities among the forest-fringe farming communities. Organisations that attempt to address the issue have come up, for example, the Wayanad Action Committee to Prevent Attack of Wild Animals, Kattikulam which have pointed to increasing numbers of human casualties, sought to bring attention to the effects of plantations of teak, eucalyptus etc. in

Wayanad which have drastically reduced the food available to animals, and urged the Forest Department to take urgent action. This, and other groups such as the Fair Trade Alliance Kerala, represent a civil society that has grown around the issue around it. Similarly, a civil society around animal welfare is now audible in Kerala's urban areas and they have been active in many debates, especially about feral/street dogs. They are voices that need to be listened to seriously in any policy process<sup>6</sup>.

Also, human-wildlife conflict seems to have recently induced greater cooperation between the local bodies and the Forest Department – though most presidents of forest-fringe panchayats interviewed clearly felt that it was not still effective enough to solve the issue. This might indicate a greater possibility of effective and equal cooperation between the two agencies.

We believe that the following shifts are inevitable in the resolution of the human-wildlife conflict in its present shape:

- (a) First, the vulnerable small farmer must be adequately empowered and supported in all aspects of forest-fringe farming,
- (b) The perception of the state as distant, uncaring, and oppressive has to be altered significantly, and it is here that the significance of strengthening the LSG institutions lie. In the 1990s, Kerala entrusted the distribution of welfare to the federations of women's self-help groups in the panchayats formed under the aegis of the Kerala State Poverty Alleviation Mission, popularly known as the Kudumbashree. This took away much of the local clout of the officials of the Department of Rural Development; however, the new arrangements under which the Panchayat and the Community Development Society of the Kudumbashree, which functions as the relevant community-based organization work with each other as the channel through which welfare benefits flow to the beneficiaries, with the overall support of government departments has worked excellently well. There are many studies that affirm the fact that welfare delivery has improved substantially in Kerala after the community-based organization (CBO) and the local panchayat have been granted considerable powers and significance in welfare distribution. *Likewise, we would like to propose that a relevant community-based organization – of self-help groups of forest-fringe farmers – be*

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<sup>6</sup> Researchers point out that while unnecessary conversion to plantation is definitely a problem, if there is food crop cultivation in the vicinity, many species will prefer to raid crops even if natural forage is available in the forest. This is likely due to the high calorific content, ease of access and other features of food crops. Elephants, wild boar, etc. are known to do this form of preferential foraging. So unless at least some effective deterrents are in place crop raiding is likely to continue even if adequate forage is available in the forest.



*created in all forest-fringe and forested panchayats, to work with each other with the overall support of the Forest Department. The panchayat-CBO combine should be on equal terms with the Forest Department if this is to be effective.*<sup>7</sup>

It must be noted that we are not proposing that the LSGs in their present form be entrusted with more responsibilities to do with human- wildlife conflict mitigation. Rather, we are demanding a further democratisation there – through the enabling of a new community-based organisation to deal with the issue. It is true, as many forest officials and others remarked to us, that LSGs in their present form may not necessarily be capable of handling new responsibilities, funds, and commitments – and we do not deny in toto the charges of corruption raised by some against the LSGs as well as the propensity of many LSGs to prefer projects with larger outlays than efficacy.

(c) The voices of the civil society that have grown around the issue of human-wildlife conflict need to be acknowledged. Efforts could be made toward seeking a middle ground that explores realistic co-existence frameworks and solutions that both value wildlife as well as the rights of local communities.

(d) The problem of human-wildlife conflict itself needs to be projected differently – as not something germane to merely the forest-fringe communities, but as affecting almost all parts of Kerala, including urban areas, where the problems of wildlife, feral, and stray animal populations are increasing. This is important to alter the perception that the forest-fringe communities will be targeted primarily when a resolution is found, and that they will be made to pay the larger price. As centres of food production that contribute to the sustenance of Kerala's population, forest fringe landscapes of the Western Ghats are of critical importance to the state as a whole. It must be presented as the sub- problem of the larger issues of the shrinking of the human-wildlife interface – everywhere, due to a variety of reasons – and one to be resolved through taking seriously these specific histories of the shaping of the conflict, both

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<sup>7</sup> C R Bijoy reminds: The nature of human-wildlife coexistence which includes conflict would vary in time and space given the very nature of specie existence and the dynamic nature of ecology. Therefore techno-managerial formulations as "the solutions" are highly limiting in its scope and application over time, ecologies and localities. These necessarily vary and that too continuously. Therefore the issue is to ask what could be a workable mechanism that is able to respond constantly and consistently to the emerging needs which are always in a flux. This would require delineating the governance structure such as Forest Department, the Gram Sabha in the FRA areas, the PRIs and municipalities outside etc in different clearly demarcated geographical spaces. Forest Department in this instance has jurisdiction over wildlife outside forest areas too. These require critical analysis.... Therefore, what is relevant is to conceptualize and operationalise a WORKABLE MECHANISM that would constantly address the issue. This can only be a mechanism that is highly democratic, non-centralised, localised functioning on direct or participatory democracy providing space for concerns of everyone to be taken on board to formulate relevant intervention strategies progressively. Such a mechanism does not exist in the arena of forest and wildlife governance or panchayat governance. Therefore, this is to be flagged for reform. [via Email]

human and non-human agency<sup>8</sup>, and the potentials of technology as well. Indeed, as the recent zoonotic diseases indicate, deforestation and degradation of tree cover now affects human populations settled far away from the forest-fringe areas also.

(e) The value of wildlife and the ecosystem services rendered by forests for farming in forest-fringe farming and any farming, for that matter – and the interdependence of human and animal survival in both forest-fringe and other areas needs to be strongly emphasized (for example, the services of honey bees, spiders, pollinators earth worms, snakes, insectivorous birds etc. are vital). The abandoning of binary thinking at the level of official discourse and policy practice might be a key move here.

(f) Embracing respect for sentience and calls for peaceful coexistence with wildlife are values that do counteract the all-consuming hungers of globalized capitalism. However, they cannot be viewed without taking equal note of Northern political and moral hypocrisy as well as the political resonances they may have in the local context. Rather than deploy these in the discussion of the human-wildlife conflict, it may be more appropriate to use them in all public education in Kerala such that the nature-culture binary is no longer propagated as a fundamental truth.

### **III. Empowering Local Bodies to Strengthen the Human-Wildlife Interface**

Trying to solve the human-wildlife conflict either through relocation of forest-fringe dwellers or through planting crops unpalatable to wildlife is at best a stopgap effort as it is quite possible (given the behavioural modification evident in wildlife species) that wildlife may well reach human habitations crossing the plantations and abandoned areas and this may be actually be made easier as human habitation declines. Species such as wild pigs are known to travel several kilometres each night in search of food when the need arises. Besides, encouraging the small farmer to leave can have more deleterious consequences: the land may be acquired by such interests like resorts and quarries, which have a far more destructive impact on forest lands. Empowering forest-fringe farmers, both adivasi and non-adivasi, remains therefore a key path towards managing human-wildlife conflict. The following policy reflections emerged from the discussions:

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<sup>8</sup>There is much literature now on the responses of long-lived species such as elephants to such conflicts which are transferred among generations. Elephants learn to negotiate boundaries, overcome obstacles, remember traps and so on, as Oommen (2019) notes.

1. It was pointed out that the data available on forested and forest-fringe panchayats in Kerala is very sparse. As a preliminary to any major policy intervention, a concerted effort to remedy this lack has to be made – details regarding the extent, population, forest-boundaries and pockets, finances, agriculture, livelihoods, and social(gender, caste, ethnic, age) dynamics, details about human-wildlife interaction (for example, frequencies, durations, intensities, and patterns of crop-raiding by different species) of these areas must be collected.
  
2. Fair and adequate compensation must be made available to farmers who lose crops to wild animals, instead of the pittance received now – though the compensation amounts are revised time to time, they are still too low. Almost all stakeholders were in agreement that an adequate compensation and insurance programme, speedily implemented, would be the single most important instrument to relieve the anxiety and tension that heightened human-wildlife conflict has generated among forest-fringe dwellers. It was pointed out that what the Forest Department now offers is not compensation but ex-gratia payments – this needs to be elevated to compensation with insurance. Further, it was suggested that the Compensatory Afforestation Funds should also be used for this. Compensation must be heightened not just for commercial crops but also for crucial food crops which are also climate-change resilient – such as tapioca – and others which ensure local food security, particularly tubers and vegetables. The compensation amounts, including those for loss of human life, must be decided by district-level committees set up by the government with adequate representation of all stakeholders including the Department of Agriculture, representatives of tribal and non-tribal forest-fringe farming communities, joint liability groups undertaking farming, and organizations of farmers. Representatives of tribal and forest-fringe farming communities must be formally empowered through rules in this committee to take the lead -- make assessments and suggest amounts and types of compensation – and their assent must be made necessary for any decision regarding compensation and payment. Most importantly, the legal status of the Committee should be affirmed.
  
3. From the interviews with stakeholders, it appears that all agree in their own distinct ways, that the distance of the state from the forest-fringe dwellers is a serious hurdle in the way of the latter's participation in efforts to ameliorate the human-wildlife conflict on the ground. It is therefore necessary to transfer key decision-making and maintenance responsibilities on a number of vital issues – including deterrent measures such as solar fences, payment of compensation, and insurance, to the panchayat – so that regular maintenance of the fences and speedy and easy delivery of compensation to affected farmers are made possible. The panchayat should also be

empowered to work as an equal partner with the Forest Department and the Revenue Department in all forest rejuvenation activities in the buffer zone. This will also prevent double payment by the forest and agriculture departments which has been detected recently. The panchayat should be empowered to appoint local guards to prevent animal intrusion when breakdown of existing animal-deterrent mechanisms is confirmed and until these are effectively renewed<sup>9</sup>.

4. In the present, no forest-fringe panchayat has the financial capability to undertake the above responsibilities. Forest-fringe and forested panchayats, therefore, must receive much larger support from the State Government – that is, the State Government may have to go beyond facilitating just the convergence of different departmental allocations -- and the funds to be made available to respective panchayats must be decided on the basis of the data on human-wildlife conflict, agricultural patterns, and other relevant variables. Special allocations, proportionate to the size of the problem, must be allocated to districts/panchayats that abut major wildlife protection areas. Apart from financial support, many panchayaths may require capacity strengthening and even hand holding in the initial stages.
5. The present Janajagratha Samithis must be further democratized by making them accountable to the Ward Sabhas of the wards adjoining the forests in the forested and forest-fringe panchayats<sup>10</sup>. The mandate of the Samithis, which already have representation of wildlife-affected farmers, could be further expanded, with local Ward Sabhas having a key role in the issues that the Samithis attend to, and having the right to monitor their work. The full potential of the Jana Jagratha Samithi needs to be expanded further. Each high conflict spots can have a system of Primary Responders which has been found to be very effective in some other states. Ideally, Primary Responders Teams of the panchayat and the Rapid Response Team of the Forest Department should work in tandem.

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<sup>9</sup> Interestingly, since the past few years, the panchayats have already been empowered through a GO on Jana Jagratha Samithis to deal with issues of Human-Wildlife conflict but they shy away from taking leadership or responsibility. Why are panchayats are not emerging as major players, is manifestation of a larger issue of ownership- who 'owns' wildlife: government or people is a question indeed. Thanks to James Zacharias for pointing this out.

<sup>10</sup> As Radha Gopalan mentioned, successful experiments have been recorded of community effort. See for example, <https://www.aljazeera.com/features/2019/3/14/rohingya-tusk-force-keeps-refugees-safe-from-deadly-elephants> , accessed 18 Oct. 2021.

6. Forest-fringe and forested panchayats need to be empowered to utilize the MNREGS labour as well as set up special self-help groups of local farmers paid from specially-allocated funds and accountable to the Jana Jagratha Samithis and relevant Ward Sabhas. In a larger sense, the LSG must become the meeting-ground between authorities and the civil society which has grown up around this issue. MNREGS workers must be employed in the panchayat's joint work with the Forest Department to help rejuvenate the health of the buffer zones such that invasive plants and other dangers do not threaten the availability of food to wildlife species there. The farmers' self-help groups must be entrusted with the selection, supervision, and maintenance of animal-deterrent devices and practices, as an ongoing effort. It was remarked that the early stirrings of such an approach were already evident in the response to the destructive forest fires of 2019 – and that plans were drawn up for joint efforts between panchayats and the Forest Department (which were unfortunately stalled by the pandemic situation). Indeed, forest fires are a major reason for wild areas becoming foodless and wild animals turning into marauders. Panchayats using the MNREGS labour should be granted a major role along with the Forest Department in checking forest fires. However, the key idea here is also to make the panchayat an equal partner – and not merely an obedient implementer – in key activities related to reducing and managing human-wildlife conflict.

### **Box 1: Farmers Helping Each Other: An Instance from Kannur**

At Kannur, farmers in the forest fringes have been struggling for more than twelve years with the intensification of wild life intrusion. They faced a terrible crisis: it becoming nearly impossible to protect or harvest crops, even more difficult to plant new varieties. Many gave up farming altogether, and many more are on their way out. In the past six years, the attacks of wild elephants have become very frequent; they now pose a threat not just to agriculture but to human life itself. Herds of wild elephants from the wild life sanctuary enter the Aralam farm area, cross the Bavaliriver at night and wreak havoc in the nearby farms. The farmers there were at their wits' end as the authorities – the various departments – could do nothing effective and often resorted to blaming each other. Six people lost their lives (and as this note was being prepared, another man lost his life at Ulikkal, attacked by a wild elephant on the Hill Highway). The authorities make a mere show of driving the elephants back into the forests; when they go away, the elephants return. Building the a wall to keep the elephants away, rail fencing, trenches and so on have all been tried – poorly planned and badly executed, and involving immense waste of precious funds, time, and resources.

In response to this state of misery, a group of farmers in Kannur formed a People's Committee to try on their own a new method to deter elephants, using the hanging fence. They received no help whatsoever from the government. However, some four hundred families in the affected area got together, pooled funds to buy materials and set up the fence, dividing the total boundary into five areas, Of the eight and a half kilometres to be covered, eight have been covered till now. The rest will soon be covered once funds are mobilised. The total estimate is five lakhs rupees for the entire distance. The cost-effectiveness of the method adopted by the farmers' group is striking. The wall built to prevent elephant intrusion cost a crore of rupees for each kilometre. This experiment, the farmers note, has been fully successful and environment-friendly. In the past one and a half months (from August 2021), there has not been a single instance of wild elephant intrusion. Not a single tree has had to be cut. This method involves connecting farms at the boundary, the river bank, hanging the wires on the tree-branches. This was set up in a way that does no harm to humans or animals, and it is widely reported to be successful. The People's Committee for Electrical Hanging Fencing, Madappurachal has been approached by others too for help.

This experience indicates that the involvement of local farming communities who bear the brunt of wild life intrusion the most is vital in resolving the problem of wild life intrusion – the solution they found is suited to local conditions, cost-effective, and requires much less maintenance. Besides, the active involvement of farming families directly involved in maintenance does away with bureaucratic delays which have plagued regular maintenance of fences.[Inputs from Baby Kurian, People's Committee, Electrical Hanging Fencing, Madappurachal, Kannur]

7. Forest-fringe panchayats should be encouraged to set up a locally-effective Primary Responders System. Local experts as well as students of local engineering colleges doing projects could be roped in to find solutions using cheap technology like cell phones and camera traps. Competitions could be organized among students and others to keep these efforts alive and renewed.

8. In a similar spirit, the suggestions for animal deterrence put forward by the civil society in Wayanad (where the conflict is perhaps most acute) need to be taken up immediately for discussion. The District Panchayat is perhaps the best platform to initiate this process. Unfortunately, such initiatives favour the dominant voices which keep demanding a 'permanent solution' which is impossible to attain. Instead, focus should be on efforts to reduce conflicts to acceptable levels that involve better knowledge of ecology of conflict animals, certain behavioural changes in conflict zones (which is surely not impossible – for instance, one may note that people have quickly adapted to wearing masks in the pandemic), an appreciation of benefits of conflict animals (huge money generated from tourism) and of course, new technologies for example, at Valparai.
9. In time, it may be possible to create a pool of human resources for managing human-wildlife interactions through offering internships and gap-year options to outsiders who wish to gain experience of rural life and wildlife. This is a very common practice in many forest-fringe communities around the world. Short-term introductory programmes could be designed with the help of wildlife researchers and NGOs and supervised by forest-fringe farmers, and students from Kerala and outside may be encouraged to gain exposure. This is also a way of acknowledging the skills and knowledge of forest-fringe communities and ending a sense of isolation and public neglect which seems palpable among them now – besides possibly bringing families an additional income. This will also expand wildlife researchers' and students' understanding of the complexities of socio-ecological relationships and how traditional ecological knowledge can be integrated into responding to human-wildlife interactions.
10. Members of forest-fringe farmers' SHGs should be given access to regular and up-to-date training in forest-fringe crop-protection organized by wildlife research institutes and the Forest Department– and the reverse sharing as well may be facilitated in this fashion. Annual workshops with NGOs working on the issue in India and abroad, as well as annual meetings with forest-fringe farmers facing similar issues elsewhere in India could be organized. For example, effective ways of controlling the monkey-menace are known to have been developed in Himachal Pradesh, which could be adapted to local purposes. The connections built through regular interactions between farmers from different states facing similar issues will help in knowledge-sharing and network-building, both of which are materially and psychologically empowering. Farmers who have gained from such regular exposure must be special invitees to panchayat

committees during discussion of issues pertaining to human-wildlife conflict and should leading the working groups in the planning process.

11. Forest-fringe farmers' SHGs should be exposed to joint marketing efforts that make effective use of the payment for ecological services (PES) framework. However, many participants in this policy dialogue were sceptic about the PES, pointing out that it posed problems similar to the carbon trading and carbon credits market. Funds under PES are very limited and not large enough to compete for instance when greater price is offered for forest land conversion to plantation. However, others pointed to successful local instances, agreeing that the PES framework has to be carefully modified to the advantage of local farmers. It is possible, for example, they argued, to gain markets for 'elephant-friendly cashew' or 'elephant-friendly coffee' – and it has been successfully attempted too. Farmers should be offered material incentives – fair amounts paid as incentives, regularly through the panchayat – for planting and maintaining native trees on their land, as the ecological benefits of maintaining these trees are shared by society in general, while farmers' resources may indeed be reduced by them<sup>11</sup>.

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<sup>11</sup>Here is the question whether the 'Carbon-Neutral Meenangadi' project initiated in the Meenangadi panchayat in Wayanad in 2016 which offered farmers 'tree loans' can serve as a model for rewarding local people and institutions for protecting such areas. The panchayat offered trees for free to local farmers willing to care for them. Each tree would bring the farmer Rs 50 as an interest-free loan if it was cared for three years, and this would continue for 10 years. The interest of the loan would be paid by the panchayat and the principal was to be paid back only if the farmer cut down the tree. See, <https://www.thenewsminute.com/article/kerala-panchayat-rewards-farmers-not-cutting-down-trees-140724>, 2 January, 2021 (accessed, 30 August 2021). While hailed as a possible model for other panchayats to emulate, from the viewpoint of small farmers, this may be indeed quite a top-down and exploitative one. Critics point out it is not conceived well enough and may leave farmers mired in bureaucracy as proof must be produced each year to show that the tree is still thriving for the loan to be not recalled. Also, it is pointed out that Meenangadi is coffee terrain and that coffee farms must have an optimum number of trees for shade management. One cannot indiscriminately plant more trees in it without affecting coffee yield. So adding to the tree cover in coffee farms is not a viable proposition. It could at best incentivise planting trees in coffee farms with denuded tree cover, but since the existing trees and its ecosystem services are not paid for or incentivized, it is actually profitable in short term monetary terms to cut and sell existing trees and in the space created plant new trees on which there is small change to be got as a loan. Thirdly, the need for surveillance, geotagging and documentation to make sure that the tree is still there makes this a very costly affair, especially with the involvement of external actors / NGO. Finally, it is pointed out that even as there is effort to make a panchayat like Meenangadi carbon neutral (when it is indeed already close to it), the government encourages and stoutly defends quarries and small and medium enterprises which are in dire need of rigorous environmental impact assessment. Interview with Tomy Mathew V, Promoter, Fair Trade Alliance Kerala, 25 August 2021.



**Box 2: 'Jumbo Nuts' and 'Aanakkaappi'**

Fair Trade Alliance Kerala (FTAK) is a small-farmer collective of about 4500 farmers whose farmlands are spread across the hill tracts of Malabar, which form part of the Western Ghats, a World Heritage Site recognised by the United Nations. A significant portion of it also falls under the Nilgiri Biosphere, constituted under the Man and Biosphere programme of UNESCO. Early on in its formation, FTAK recognised that the environmental sensitivity of its farming operations are critical not just for the sustainability of its member farmers, but for the survival of a climate challenged planet. Several of these farmlands adjoin forests and man animal conflict is a reality the area confronts. It is one of the robust habitats of the Asiatic elephant. Solar fencing erected by use of the Fair Trade social premium acts as a gentle deterrent to the giant mammals from trespassing in to farm lands. The cashews grown by these farmers are hailed as jumbo nuts not just for their size, but because they are elephant friendly. And the coffee is *Aana* (elephant) *Kappi*. The Elephant Family, a charity in the U.K, declared as much – hailing these cashews as Elephant friendly nuts. FTAK products find traction with conscious consumers in the global market place who believe responsible consumerism is critical in shaping the world they want to leave behind for their children.

<http://elementsindia.net/blog/harrys-nuts-decreed-to-be-elephant-friendly/>  
<https://www.foodndrink.co.uk/fairtrade/harrys-nuts-decreed-to-be-elephant-friendly/>

12. Since the shrinking of the human-wildlife interface is a leading concern all over Kerala now, it is only appropriate that it is proportionately reflected in the planning priorities and processes of the LSGs. It must be made a formal concern of the Development Standing Committees and Working Groups should be constituted on it during the planning process.

13. Special funds must be allocated to support training efforts aimed at local people— some successful models of training which have been developed by NGOs outside Kerala could be adapted – to deal with and prepare for local manifestations of animal intrusion. These trainings may be conducted for specific sections or in specific institutions in the panchayat such as health workers, development workers, SHG members, or in schools, colleges etc. Of course, such training has to be appropriate to the specific circumstances, capable of sensitising people to the extant manifestation, the specific problems, in each LSG.

**Box 3: Training for Forest-Fringe Protectors**

In 2019, the Kerala Veterinary and Animal Sciences University (KVASU) conducted a training programme for building the abilities of students who have studied up to tenth standard from among the tribal community. These students who underwent a six months certificate course were prepared to meet the requirements of the present day in managing and protecting the wild flora and fauna. The experts in the field, faculty of Universities, adjunct/guest faculties and experienced instructors including retired personnel from the respective fields (zoo keepers) and forest department were the resource persons. The course envisaged a basic knowledge in communication skills and management. It also included visits to different zoos and forest stations in and outside Kerala. The first batch of 30 students belonging to ten districts was fully sponsored by scheduled tribe development department, Govt. of Kerala. The first batch of students comprised two female and 28 male students from the scheduled tribe communities from various districts of Kerala. However, it is reported that the programme did not succeed because of the determined resistance from the much-better organized temporary workers in the zoos.

[Input from Dr T V Sajeev]

14. Educating the general public as well as adding components to existing school and college education aimed at removing distrust and fear towards animals and the false sense of separation of the living world into human and non-human compartments should be a key goal. Encouraging Animal Clubs in educational institutions to impart respect of sentience and openness to the presence of non-human life must be a key priority; these could also be forums in and through which young people may participate in animal-related activities in urban areas.

15. Culling was a contentious issue among the different groups we spoke with. However, no group denied the extremely damaging impact of species such as wild boar and monkeys. Wild boar and deer were mentioned as the most troublesome of the species mentioned. Recent effort on the part of the government has also been centred on wild boar, and authorities, including courts, have suggested the culling of wild boar. We suggest that wild boar be shifted from Schedule 3 to Schedule 5 and instead of culling, limited hunting of just these may be permitted, to tribal communities which practiced hunting<sup>12</sup>. This of course is a move that requires a national discussion which Kerala might need to initiate<sup>13</sup>. It is however a fact that wild boar hunting is common; and the fear of wild meat in the recent pandemic situation obscures the fact that farmed meat is as, or more dangerous than wild meat, and many indigenous communities around the world do consume it quite safely. Permitting hunting for food instead of culling solves many issues: many panchayat presidents interviewed mentioned that burying the killed animals safely was a worse worry; but equally or worse is the psychological impact of culling – it is likely to only increase the psychological alienation of human beings from the natural world and to reinforce the idea that human spaces need to be totally insulated from all sorts of wildlife. Hunting however does not carry such implication, connected as it is to human nourishment. It adds to the food security of local communities and could well attract a market for wild meat and for value-added products based on it. The Meat Products of India (MPI) which process and supplies the best meat in Kerala and which is a government owned institution with in-house doctors could be roped in to handle the hunted boars. Hunting rights of course must be limited to local tribal communities and closely monitored – a sharp fall in the hunted population would call for a suspension of hunting rights until the population is restored. This shift might crucially empower forest fringe tribal communities if executed carefully.
16. In the context of (9), it is crucial to emphasize the significance of implementing the Forest Rights Act (FRA) to empower tribal communities in Kerala. As the last RULSG policy dialogue affirmed, panchayats, and especially forested and forest-fringe panchayats, could play a vital role

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<sup>12</sup>The Gadgil Committee Report recommended this explicitly, noting that the wild boar was indeed a menace to farmers in many places and the only solution was to cull them under strict guidelines and make commercially-viable value-added products as local cottage industry ( Part 2, 2011 : 42)

<sup>13</sup> . In India, there is a very strong movement against using wild species for nutrition or commercial use. This is despite the fact that sustainable use is one of the three central tenets of the Convention on Biological Diversity. Much of the anti-use sentiments are also linked to historical legacies of the ideologies of elite, upper caste and class groups in conservation that continue even to this day. Kerala with its multicultural society as well as a forward looking Forest Department could well be a pioneer in managing wild boar populations in a sustainable manner.

in implementing this FRA. Doubtless, this would have implication especially for the Forest Department-constituted committees such as the Vana Samrakshana Samithis and Harithavasantham committees for eco-restoration. It is also worth noting that the panchayat presidents interviewed quite often acknowledged the far-superior skills of tribal communities in dealing with animal attacks and managing the human-wildlife conflict, and keeping it more of an interaction rather than conflict. The Gadgil Report recommends this explicitly and notes that all existing Joint Forest Management Programmes should be replaced with Community Forest Resource Provisions under FRA (Part 1, 2011: 43)

17. A important common concern raised by all stakeholders about the slack and inadequate waste management in Kerala's LSGs despite the government's launching of many special vehicles such as the Suchitva Mission and the Haritha Keralam Mission. It was repeatedly pointed out to us that the heaps of waste in forest-fringe panchayats and other LSGs were attracting both wild species such as wild boar and snakes (because of higher rodent population) and that this posed the single biggest challenge to LSGs. Some panchayat presidents of forest-fringe LSGs pointed to people leaving waste in forest fringes, and LSGs being powerless to stop them. Installing security cameras in such places and entrusting their maintenance to the local panchayat authorities, combined with hefty fines and other punishments including confiscation of vehicles, may be unavoidable in such places. A stable solution to the waste dumping problem everywhere is a crucial aspect of tackling the problem. Some interviewees suggested a ward-centric waste management experiment to be piloted in forest-fringe areas, especially the more urbanized ones, focused on groups of adjacent households cooperating in monitoring common areas and managing biodegradable waste, with non-biodegradable waste being collected regularly and efficiently by external agencies. In any case, the discussion about the dimensions and specific features of the waste problem in particular LSGs and the solutions to it needs to be urgently initiated from the local level itself – through Grama Sabha meetings convened for this very purpose, mobilized through a campaign around the issue.
18. Researchers also highlight the importance of maintaining forest patches, riparian corridors, live fences, hedgerows and so on throughout the state to facilitate the movement of animal species. LSGs should be offered substantial incentives to develop and maintaining these as part of LSG development effort, and LSG-level biodiversity committees should be enabled to identify spots that could be developed into beneficial habitats for biodiversity, and with the tasks related with monitoring, maintenance and planning activities pertaining to these. Campaigns to improve waste

collection could begin with clearing up such spots in LSGs which are now, sadly enough, mostly waste-dumping grounds. Making these efforts species-specific – focused on non-conflict species such as birds, butterflies etc. is important –so that conflict species do not proliferate further.

19. The infestation by alien invasive species (AIS) into forested landscapes has significantly eroded ecosystem functions including the food availability for herbivores. The massive invasion of *Senna spectabilis* in Wayanad, *Mikania micrantha* in Aralam Wildlife Sancturay, *Lantana camera* in Nilgiri Biosphere Reserve have all displaced native food flora. While there is no consensus on this, the researchers we spoke with agreed that all invasive species have complex consequences detrimental to local biodiversity. This cascade of events has a direct role in escalating human-wildlife conflicts in forest fringes.
20. Civil society groups trying to highlight the problem of human-wildlife conflict have frequently pointed to the fact that a large share of Kerala's forests are plantations – which do not serve animals as food sources at all. There must be a clear decision to allow the natural forest vegetation to regrow in parts of the plantations after the felling of plantations such as teak. It is this alone that can ensure a steady and sustainable supply of food for the animals inside the forests.
21. A serious issue mentioned by many panchayat presidents and Forest Department officials is about the prevalence of absentee landlordism in forest-fringe areas. The neglect of rubber plantations and other land bought by people settled in urban areas or abroad is identified as a chief reason for the greater presence of species such as wild boar and snakes. The same applies to abandoned plantations or those subject to litigation. The owners of these lands should be made obliged to maintain these areas regularly or face heavy fines from the panchayat. They should also be made obliged to lease out the land to locals for cultivation in case they cannot manage the lands directly. Panchayats should be empowered to enter and clear untended property on forest fringes and pass on the costs, besides a hefty fine, to the errant owners. However, exceptions should be made, for example, for poor Adivasi owners in wildlife-affected areas who may not be able to afford this. The state government needs to allow panchayats to clear plantations under litigation and provide special funds for this, collected from the litigants.
22. In our interviews with Forest Department officials, a recurring concern was about the severe lack of staff strength, weapons, and supporting implements and tools. This must be immediately rectified, even as the allocation of tasks and resources as well as the justification of such allocation must be clarified and transparently done.

23. The issue of quarrying and exploitation of forest-fringe resources by external elements is a burning issue in Kerala today – the deleterious long-term effects of reckless quarrying on local communities is evident too, in research on sites like Mookkunnimala in Thiruvananthapuram, where more than fifteen years of quarrying has completely destroyed forest cover, intensified wildlife intrusion to the extent that small-scale agriculture has become very difficult, and led to considerable water scarcity. There is evidence, therefore, to demand that such activities as quarrying and road-building which may lead to the further narrowing of the human-wildlife interface should be subjected to very close local scrutiny. The recent relaxation of rules and norms in local bodies for the promotion of industrial activities needs to be re-examined seriously. Allowing uncontrolled quarrying and road building can make agriculture completely unviable by causing the displacement of wildlife and their greater intrusion into residential areas.

**Box 4 : Listen to Forest-Fringe Dwellers!**

“When we were children [which would be around fifty years or so] the Chetty community here were cattle-herders and had large flocks of cattle which they grazed in the forest-fringe areas. Every day, they would drive these large flocks of animals, each with a wooden bell on its neck, into the forests’ fringe. The bell’s sound was strikingly loud, and the combined sound of so many bells was very loud of course. Indeed, this was the unique aural experience you’d have in these parts. This was also recognized by wild animals as the sound indicating human presence; they kept away from the noise and thus wildlife intrusion in the places where the flocks grazed was never too much. Now this does not exist. This grazing was banned by the Forest Department. The disappearance of the sound must have had important consequences for animals too, for this must have breached a psychological boundary which gradually induced them to wander into human spaces.” (Jose Mathew (age 53), Forest-fringe dweller, Nadavayal, Wayanad) Local residents in Nadavayal also remembered that in general, the *regular* human use of forest-fringes especially by women entering to collect firewood and fodder, was a deterrent for animals. These practices are now non-existent, and the irregular and reduced entry into forests, largely by adivasi folk, is now fraught with danger as the animals do not receive any regular signals marking human presence.

#### **IV. Addressing the Human-Wildlife Interface in the Urban Scenario**

It is to be noted, as mentioned earlier, that the issue of human-wildlife conflict and the broader problem of the narrowing of the human-wildlife interface, is not just rural and hence it is important that it is now factored in actively into the planning processes of urban local bodies and urban governance itself. Urban

governance around the world is attempting this now, in the wake of climate-change challenges. Urban planning and disaster risk mitigation in the light of climate change must bear in mind that humans are but one of tens of thousands of species that exist here, and that planning for one alone is likely to create an imbalanced ecosystem that will, eventually, be unable to support us as well. Therefore, mitigation and preparedness plans should be developed keeping in mind a larger view of the city in mind. For instance, rising temperatures owing to the urban heat island effect, vehicular traffic, construction projects, industrial spaces, and of course, climate change, make cities uninhabitable for several insects, reptiles, amphibians and animals.

In Kerala, urban living cultures are spreading rapidly into peri-urban areas which may abut forests – in Thiruvananthapuram, for example, the urban areas are now close to forested and forest-fringe areas and wildlife intrusion into these areas is very common. The general common sense about urban life, however, continues to be the same: it is understood as completely insulated from wildlife, an understanding that is simply outdated. Therefore any larger policy framework built to tackle the challenges outlined here must necessarily include the consideration of the manifestation of these challenges in urban areas as well<sup>14</sup>. The following points are offered in this spirit:

1. There is a dearth of information regarding the kinds of fauna that exists in the urban landscape in Kerala. As per the 2011 Census, close to 48% of the state's population live in urban areas, with urban development spreading rapidly into adjacent areas. This makes the absence of data even more important to address. Ecological maps of urban areas need to be generated immediately with citizen participation. One of the greatest challenges to green spaces in urban areas is its increased fragmentation. Therefore, any requests for tree felling, constructions, infrastructure projects or clearing of vegetation should be analyzed with the use of ecological maps to prevent this.
2. This also means that there is no information available about the role these animals play in the ecosystem of urban spaces. From bees that pollinate fruit trees, mongooses that catch reptiles, squirrels that eat ticks, to amphibians, insects, worms, arthropods, etc., we need a comprehensive study of what the urban ecosystem in Kerala looks like, as well as the threats it is currently facing, not least because they are threats that face us as well. Since many of these animals such as butterflies and birds are also bioindicators, it could also help us to

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<sup>14</sup>As James Zacharias pointed out from his experience of four decades of work in Kerala's forests, except for elephants, tigers, and the occasional sloth bear, most conflict animals (including wild boar) need not have any necessary connection with the forests, except in the fringe areas.

understand the health of the environment we live in, and how to prepare better for natural + manmade calamities before they occur.

3. This information can be used to generate Urban Wildlife Plans to combat the habitat destruction and fragmentation occurring in cities (and beyond). Cities offer an excellent space for humans to co-exist with nature, which can go a long way into transforming how we as a society think about the role of non-human life on the planet.
4. One component of this can be the rewilding of the city and its fringes, encouraging the growth and movement of birds and animals throughout urbanized spaces, both by the state as well as private actors. There can be subsidies or tax concessions given to businesses, institutions and homes that put this into action. eg: apartments or constructions that offer spaces for birds to roost and lay eggs, plots of land with undisturbed spaces for reptiles, amphibians, insects, etc. Also, in areas where there is cultivation and lie on the fringe of more thickly forested areas, they can provide wildlife corridors for animals to move freely between different landscapes.
5. Modifications, renovations, or constructions on government lands and parks that are covered by trees, thickets, vines, etc should be closely monitored to prevent the construction of buildings or other structures that reduce the amount of green cover. (A good example of this not happening is the erstwhile Children's Park opposite Kanakakunnu in the city of Thiruvananthapuram, which used to be a haven for small animals and birds in the middle of the city. The recent renovations there have brought huge concrete structures that are brightly lit at all times of the day and night in the name of 'beautification', which has rendered the space nearly useless at supporting most forms of life. They have also felled trees and covered the rich soil with tiles set in concrete.)



**Box 5: Urban Rewilding at the Centre for Development Studies Campus**

The twelve-acre campus of the Centre for Development Studies was originally developed on a grassy hill-slope abutting paddy land in a peri-urban area of the Thiruvananthapuram city in the 1970s. The land, being at a higher elevation and in a rain-shadow zone was drier and hotter compared to the rest of the city though Laurie Baker's architecture ensured that the trees that existed there were preserved more or less fully and the land was not levelled for construction. Over the years, with the increase in population on campus, the usual problems of small spaces getting choked with waste, increasing temperature, and water shortages began to be felt here, not to speak of the proliferation of stray dogs. In 2006, CDS changed its fundamentals of campus maintenance, and moved to 'ecological maintenance', which included focusing not just on the maintenance of buildings and roads but more importantly, on setting up proper waste collection and disposal, protecting and increasing tree-cover, rainwater harvesting through pits, eco-restoring waste-choked areas, and promoting ecological awareness on campus. The result was palpable after a few years – the campus is now nearly self-sufficient in drinking water, the daytime temperature in the height of summer here is on an average six degrees below that which is reported at the nearby Ulloor junction, the biodiversity on campus has vastly increased, with the campus becoming a refuge for many creatures such as mongooses, civet cats, squirrels, toads, and a large variety of birds. The challenge however has been the sighting of snakes – especially the cobra, which is quite common in Thiruvananthapuram. However, snake sightings have steadily reduced over the years with a set of practices including regular clearing of the spaces around habitations, strict action against leaving food waste improperly disposed (which attract rodents, which in turn, attract snakes), and ecological awareness-building. A small patch of seven cents in a corner of the campus has been left completely free of plough and to grow wild – this has not only improved rainwater percolation hugely, it also seems to have reduced snake sightings considerably. The added benefit also has been the striking increase in numbers and variety of butterflies and fireflies on campus. Through conducting an ecological orientation at the beginning of every new batch, we encourage our students to practice peaceful coexistence with non-human life.

6. The state must create pockets of protected areas for non-conflict animals that do not thrive well in areas with high levels of foot/vehicular traffic. They can partner with NGOs that specialise in the field to guide them on this. For instance, create nature parks within the city which are not heavily disturbed in the name of tourism or maintenance. Allow visitors to access one portion of it, leaving the rest alone. The new collaborative effort between Samagra Shiksha, Kerala and Kerala Forest Research Institute is an attempt in this direction envisaging creating of butterfly gardens in schools which would graduate to green spaces. These green spaces will also act as sinks of water as well as places of air purification in the middle of cities.

7. Illumination and lighting in cities need to be done in consultation with urban wildlife experts who can advise on their location, frequency and brightness, as well as intervals during which they should be turned off. eg: mating seasons of certain species require darkness so that the animals hatch/are guided to the right location by natural light/are not blinded at birth etc.
8. Bring watersheds and riversides under the aegis of protected areas and manage them as sensitive ecological zones, while ensuring access to communities that have traditional linkages with the water bodies.
9. Do away with programs such as the conversion of lakes into urban swimming pools, as they are polluted with highly toxic concentrations of chlorine in the name of 'cleaning and sterilization', and disrupt the habitat of hundreds of species of birds, fish, and other animals that depend on it. It also completely shuts out poor and disenfranchised communities that have used these lakes as sources of drinking water, cleaning, and recreation for centuries.
10. The creation of green spaces is also vital in these times where the mental health crisis, especially amongst children, has been steadily worsening. Having access to nature has been shown to reduce stress and promote better mental and physical health. Instead of these spaces only being accessible to a small fraction of the population that can afford to access them, making them public spaces would revolutionise the way we think of nature in the city. An effort to review and if need be revamp the existing procedures like Tree Committee which decides along with Social Forestry wing the permission for cutting trees and or green spaces is urgently needed. Since green spaces are vital in keeping urban spaces liveable, strengthen the regulatory process so that it is protective of green spaces, viewing them as essential to sustain the city and its human and non-human life forms. A special body with experts from fields relevant to conservation of green spaces must be constituted immediately and mandatory protection should be extended to such areas by legislative measures. Requests or plans for tree-felling now are not public and are revealed only after the axing. Also, democratic processes should be strengthened: avenues for citizens to directly file grievances around indiscriminate felling of trees/clearing of green spaces and violations of provisions that are protective of them should be set up, for example, by including a feature in the Smart Trivandrum app to complain against such violations/willful destruction and damage to trees and green spaces through disposal and/or burning of waste etc. Greater engagement and collaboration with civil society organisations to create / promote awareness on the value of

green spaces in the overall health and well-being of the city and its inhabitants can no longer be avoided.

11. Experts, both on and outside the existing Tree Committees have pointed out that they are toothless. They have no power to enforce or penalize any decision, and can only demand compensatory planting. Questions have also been raised about the legal sanctity of these Committees. This defeats the very purpose for which these local committees are intended. In fact, as it is almost impossible to deny requests for tree-felling under the current rules, this enables a high rate of deforestation. The norms surrounding these Committees need to be redrafted so as to make sure that any tree-felling, particularly of mature trees and in green spaces, is done only after extensive scientific assessments by ecologists, horticulturists, and sociologists.
12. The Public Works Department, Irrigation Department etc. who are in the process of maintaining and extending roads and waterways need to make their designs and plans nature-inclusive. They should also address the predictions on climate change by the IPCC panel on south Asia.
13. Building a relationship with the flora and fauna around us, as opposed to imaginings of nature as rainforests far away from us can help in the preservation of these life forms as well. Encouraging children to interact with these animals, as opposed to growing up in a society that encourages eliminating them with poisonous chemicals, or treating them with fear and disgust, can help in the long run. Modules that introduce children to the living non-human world and to the interdependencies that sustain the human and non-human worlds must be introduced at the school-level; at the college-level, certificate courses and internships in fostering urban ecological health must be made mandatory for degree-level students.

### TREE WALK

Tree Walk is a citizens' collective in Trivandrum that was formed in response to repeated instances of trees being felled and biodiverse green spaces being cleared in the name of road widenings and construction projects. Founded in 2012, Tree Walk not only builds awareness around the need for and protection of green spaces in the city, but also works with the local administration, the Education Department and the Forest Department to develop scientific ways of protecting biodiversity and plan development projects.

As the name suggests, one of their main modus operandi involves taking people on walks, to understand and observe trees in different parts of Trivandrum. They've also worked with the students of several schools and colleges, to document the biodiversity on their campuses.

Tree Walk has intervened to save several trees in the city from being axed, and also nursed back to health several trees that have been damaged by illness, or human actions such as waste-burning, nailing boards to the bark, and cementing roots. They have also collaborated with the Corporation to ensure that these trees are not damaged further. Tree Walk, along with other environmentalists, campaigned and moved legally to protect the historical Attakulangara school and hundreds of old and rare trees and vegetation on its grounds, which was set to be converted into a shopping mall and a bus terminal, under the aegis of the Trivandrum Development Authority (TRIDA). Owing to the campaigns and protests, the project was shelved in 2013. Their recent work includes documenting the ecological services and diversity of green urban spaces in the context of climate change.

[Inputs from Anitha S, TreeWalk]

14. Regulate the use of chemicals used as pesticides, insecticides, herbicides, and fertilizers within urban spaces. Everything from rat poison to weed killers used in millions of homes in the states can be gradually shifted to more ecologically safer alternatives.
15. Have local ecological committees that monitor the populations of fauna in their area, so that we are aware of any change in their population size and health. This could also be helpful in preventing and treating zoonotic diseases, which are on the rise in the state.
16. Solid waste management in urban centres also needs to be tackled if we are to address the health and well-being of humans and other animals, and the prevention of zoonotic diseases. Several animals and birds have now come to depend on the burning piles of garbage on city streets as a source of food, increasing the chances for spread of illness and infection.
17. We need to rethink our idea of the use of lawns and exotic flowers, as also the monocultural tree-planting drives, as the idea of 'beautification' in urban centres - they

provide no food to local species and are ecologically useless at best, or at worst, turn out to be toxic to birds and animals, or become invasive and threaten local flora. Encourage the use of local and traditional herbs, flowering and medicinal plants etc, which are suited to the climate here, so that they do not need excess use of chemicals or water in order for them to grow. This can be done in spaces such as traffic islands, highway dividers, small parks, etc. The present drive to plant Miyawaki forests in urban centres can attract birds, insects, and butterflies, but the push towards planting Miyawaki forests as part of corporate social responsibility or to compensate for cutting down fully-grown trees or wild patches is likely to be harmful. In other words, Miyawaki forests can supplement or complement the existing green cover in cities, and not replace them. Further, Miyawaki forests are resource intensive and therefore should not become a priority over rewilding and rejuvenating and maintaining existing green spaces.

18. We need to realize that most of the greenery we see in urban spaces and invasive alien species which have come here from alien locations inadvertently by us or for some specific purpose which the species has outlived. Management of such species should be incorporated into urban ecological governance which would open up space for indigenous species and better ecological associations.
19. Ensure that tree-planting drives that happen in urban cities are scientifically planned, maintained, and monitored, and that they increase the availability of food, perching and roosting spots, nesting areas etc. to birds and other creatures. Mandate into building codes the need to design structures that integrate existing trees and green spaces.
20. Also, there has been an exponential rise in the number of cases of violence and cruelty to animals in Kerala in the last few years. This is especially the case with street dogs. The severity of the incidents, sometimes enacted even by minors, have gone up as well. There has also been a lobby of corporate interests who have drummed up a narrative that animals 'do not belong in cities' and that they are all equally 'dangerous' to humans. It is no accident that the two are occurring together. This needs to be countered with good science and good education, as well as through facts. The placement of trained snake catchers in all districts by the Kerala Forest Department is a move in this direction. But there is a need and space for many more such educators and experts to come forward. LSGs could take a lead in promoting such public education – since the role that such animals as street dogs

and snakes play in keeping the rodent population down and hence in securing public health is well-known. At the same time, keeping the stray dog and cat population at a viable level is vital to maintaining biodiversity in urban areas – thus sterilizing stray animals safely should remain a top priority.

21. LSGs need to play a lead role in dispelling the popular contempt and abuse of street animals, especially dogs, and bringing to light the importance of this animal population for human health. There is now an active civil society in urban areas around this issue. As the organization People for Animals has recently pointed out in a recent submission to the Kerala High Court: “Community feeding is very important to retain a healthy and friendly dog population. NGOs working in this area claim that the numbers of stray dog bites are reduced in areas where people feed stray animals. Feeding will also enable people to take a census and to monitor the health of homeless animals. Feeders in the ground level will be able to keep a count of the animals they feed regularly and can help in vaccination and sterilization. Leftover food from restaurants and other eateries can be utilized for feeding stray animals. Local bodies should be entrusted to feed stray animals by starting community feeding centres using local people and Government should give them necessary infrastructure and financial support.. Residents’ associations should be encouraged to feed animals in their area and gather information regarding them.” (p.3) Above all, the drive to encourage families and individuals to adopt local native dogs should be energised, with special incentives from the government.

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