



Spotting the Problem:

**Understanding Complexities
in Tourism and Nature at
Yala National Park**

Senith Abeyanayake and Minuri Perera

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List of acronyms and abbreviations

CSF	Centre for a Smart Future
DWC	Department of Wildlife Conservation
GDP	Gross Domestic Product
LKR	Sri Lankan Rupees
SLTDA	Sri Lanka Tourism Development Authority
SNR	Strict Nature Reserve
SSM	Soft-Systems Methodology
USD	United States Dollars
YNP	Yala National Park

Executive Summary

Tourism in Sri Lanka has a paradoxical relationship with nature. It is heavily reliant on the very same natural resources that it threatens to destabilize through rapid and unsystematic development. Following the multiple and overlapping crises Sri Lanka faced since the 2019 Easter Sunday bombings, there are high expectations for tourism to drive the economic recovery through foreign exchange income in the short term. However, for long-term sustainability of both the tourism sector and natural resources of Sri Lanka, it is critical that tourism sustainably balances the use, preservation, and potentially, the regeneration of natural resources.

Through findings from a mixed-methods exploratory study on how local stakeholders in tourism destinations perceive the interactions between tourism and nature, this report makes the case for viewing tourism and nature as two complex systems. Taking the issue of overcrowding and Safari misbehaviour in Yala National Park (YNP) Block 1 and using a systems mapping of perceptions on the issue as an example, the report explores the familiar interaction between tourism and nature through the lens of complexity theory and presents five insights.

These insights demonstrate how complex systems such as tourism consist of many stakeholders who directly and indirectly influence issues such as Safari misbehaviour and overcrowding inside YNP Block 1. Interactions between such stakeholders can materially change the incentive structure and power dynamics within which different jeep drivers operate, thus making members of even one stakeholder group vastly diverse. Effective solutions require the collaboration of a wide range of public and private actors. Though interventions such as jeep driver trainings are vital to solving the problem, negative feedback loops such as tip and commission-based compensation structures and lack of enforcement can severely impede their effectiveness. While robust regulations and their enforcement is critical, YNP is deeply politicised with a history of regulatory failure. So, imposing to issuing regulations without support from non-regulatory interventions such as price incentives, marketing strategies, training and awareness building may be unsustainable and further deteriorate stakeholder trust.

This study contributes to a nascent body of literature advocating for a deeper understanding of destination level realities in Sri Lanka which is required to realise a tourism sector that is economically and environmentally sustainable.

1

Tourism and Nature: A Complex Relationship

Tourism is a core driver for growth and development for Sri Lanka, contributing 5 percent of GDP at its peak in 2018.¹ The sector is also a critical source of foreign exchange inflows recording USD 2.53 billion in earnings in the first 10 months of 2024.² The economic expectations for the sector are high with an unprecedented target of 5 million annual travellers by 2030 doubling the 2018 record.³

However, Sri Lankan tourism overwhelmingly relies on its fast-depleting natural assets. Sri Lanka is a world biodiversity hotspot, with less than 30 percent of its highly endemic natural vegetation left intact.⁴ Rapid, unsystematic, and unsustainable tourism development contributes to environmental degradation and threatens to destabilize ecosystems.⁵ Therefore, it is critical that tourism sustainably balances the use, preservation, and potentially, the regeneration of natural resources. While there is an increasing focus on sustainable tourism practices from government and non-governmental actors, it is unclear if the speed and scale of adoption can cope with the rapid demand-side expansion pushed through tourism promotion efforts.

To better understand this paradoxical relationship, the Centre for a Smart Future (CSF) conducted an exploratory study on how tourism in Sri Lanka interacts with nature.

How do local tourism stakeholders perceive their interactions with nature?

Motivated by a disconnect between national tourism policy making and local realities amidst a constantly shifting policy landscape, this study focused on destination-level interactions. 123 tourism destinations were reviewed, and three sites were selected; YNP, Kalpitiya,⁶ and Maskeliya.⁷ The study focused on local supply-side actors in tourism to explore the tourism service ecosystem in each destination. Therefore, tourists were not included as a stakeholder group.

¹SLTDA, "Annual Report 2018," 2018, https://www.slttda.gov.lk/storage/common_media/03.%20English%20Annual%20Report%202018_Compressed2145817347.pdf.

²"Tourism Earnings Top \$ 2.5 b Mark by October | Daily FT," accessed December 18, 2024, <https://www.ft.lk/front-page/Tourism-earnings-top-2-5-b-mark-by-October/44-769102>.

³"Tourism Earnings Top \$ 2.5 b Mark by October | Daily FT."

⁴"What Are Biodiversity Hotspots?," accessed December 18, 2024, <https://www.conservation.org/priorities/biodiversity-hotspots>.

⁵Senith Abeyanayake, "Re-Defining Destination Identities for Sustainable Tourism in Sri Lanka," Re-defining Destination Identities for Sustainable Tourism in Sri Lanka, accessed December 18, 2024, <https://www.csf-asia.org/re-defining-destination-identities-for-sustainable-tourism-in-sri-lanka/>.

⁶Kalpitiya Pradeshiya Sabha Wards 1-7 (Palliyawatta, Anawasala, Mandalakudawa, Kandakuliya, Musalpitiya, Thalawila, and Ettale) and the surrounding islets.

⁷The 7 Grama Niladhari (GN) divisions of Moray, Mocha, Seethagangula, Maussakale, Brownslow, Brownswick and Norwood, in addition to Maskeliya GN.

To understand how tourism in the chosen destinations interact with nature, in addition to stakeholder groups directly involved in tourism and natural resource management such as accommodation providers, tour operators, government authorities protecting nature and wildlife, and environmentalists, the study also engaged with stakeholder groups such as local government authorities, transportation providers, local religious leaders, financial institutions, and roadside vendors.

Three reasons motivated the study to focus on perceptions and beliefs held by local stakeholders. Firstly, such notions may translate into how said stakeholders interact with nature.⁸ Secondly, such perceptions can be a critical determinant of success and failure of policy implementation.⁹ Thirdly, perceptions and beliefs of a few stakeholders with large influence may be crucial for system-wide change.¹⁰

Using complexity theory to unpack tourism interactions

Guided by insights from the study, this report shows why complexity theory is useful in unpacking problematic interactions between tourism and nature. By using the issue of overcrowding and safari misbehaviour in the YNP as case study, the report explores how moving beyond a linear conceptualisation of tourism may help reimagine familiar problems and unlock creative solutions.

Part I of the report contains the research methodology of the study, an overview of complexity theory and its applications in tourism, an overview into the issues in YNP, and an introduction to a system mapping of perceptions on the issue of overcrowding and safari misbehavior in YNP.

Part II contains five insights derived from the the system mapping of perceptions using concepts from complexity theory.

⁸John T. Wixted, ed., *Stevens' Handbook of Experimental Psychology and Cognitive Neuroscience*, 1st ed. (Wiley, 2018), <https://doi.org/10.1002/9781119170174>.

⁹Alexander Phuk Tjilen et al., "Engaging Stakeholders in Policy Decision-Making for Food Security Governance: Identification, Perception, and Contribution," *Corporate Governance and Organizational Behavior Review* 8, no. 1 (2024): 144-54, <https://doi.org/10.22495/cgobrv8i1p12>.

¹⁰Derek H. T. Walker, Lynda Margaret Bourne, and Arthur Shelley, "Influence, Stakeholder Mapping and Visualization," *Construction Management and Economics* 26, no. 6 (June 1, 2008): 645-58, <https://doi.org/10.1080/01446190701882390>.

PART I

“Tourism should ideally contribute to conservation but that is not the case with Yala. The balance between ecology and economy is not there. There is no sustainable long-term vision.

Very soon Yala is going to go downhill.”

-Resident Naturalist at an Accomodation Provider

2

Research Methodology

A comprehensive literature review was conducted for each site prior to field interviews. Based on the literature review, and validated through expert interviews, broad groups of relevant stakeholders were identified per site. The selection of respondents for the interviews was based on a combination of non-probability sampling methods. Initially, representatives of each stakeholder group were approached through convenience sampling,¹¹ either prior to or during the field visits. Respondent-led snowball sampling¹² was used thereafter to identify other relevant respondents to capture sentiments of respondents who are considered relevant and influential by local stakeholders.

Given the aim of capturing perceptions held by stakeholders the study did not adopt quantitative methods such as surveys, which elicit only average sentiments of chosen stakeholder groups. Instead, interviews with minimal structure were conducted using laddering as a method¹³ to uncover perceptions and beliefs.

A quantitative analysis of reviews and accommodation listings on platforms such as TripAdvisor, Booking.com, and Google Maps are used to further explore insights from the field.

This report focuses exclusively on insights from YNP Fieldwork was conducted in July 2024. A total of 31 interviews were conducted averaging 54.3 minutes per interview.

¹¹ Convenience sampling is a non-probabilistic sampling method based on the accessibility of respondent populations. See Jawad Golzar, Shagofah Noor, and Omid Tajik, "Convenience Sampling," *International Journal of Education & Language Studies* 1, no. 2 (December 1, 2022): 72–77, <https://doi.org/10.22034/ijels.2022.162981>.

¹² Snowball sampling is a non-probabilistic sampling method used to identify relevant new respondents through existing respondents. See Mahin Naderifar, Hamideh Goli, and Fereshteh Ghaljaei, "Snowball Sampling: A Purposeful Method of Sampling in Qualitative Research," *Strides in Development of Medical Education In Press* (September 30, 2017), <https://doi.org/10.5812/sdme.67670>.

¹³ Laddering is an interview method used to uncover deeper beliefs through repeated probing. See Scott Smith, "LADDERING THEORY, METHOD, ANALYSIS, AND INTERPRETATION," n.d.

2.1 Methodological considerations

The field visits were done during the non-tourist season in YNP,¹⁴ which may influence the perceptions and attitudes of the respondents. 90 percent of the interviews were conducted in person, while 10 percent were virtual.

Snowball sampling is subject to biases of respondents and symptomatic of under representations in the tourism industry at large. For instance, only 7 percent of total respondents in YNP were female.¹⁵ The interviews in YNP were conducted in English and Sinhala languages. Both field-researchers are native bilingual speakers in Sinhala and English.

Some concepts such as 'tourism' and 'nature' do not have direct translations in vernacular languages¹⁶ and best efforts have been made to express intended meanings in English.

A feature of perceptions is the existence of multiple truths and causal claims.¹⁷ Fact-checking the statements made by stakeholders is beyond the scope and objective of the study. However, the study notes contradictory observations made by stakeholders, wherever they arose.

For an in-depth discussion on the rationale, methodology, and related considerations of this study, refer to the CSF background and scoping report titled 'How Tourism and Nature interact: Studying perceptions in three sites in Sri Lanka' available at the CSF website.

¹⁴The peak tourism season in YNP is typically from December to March. See Camp Leopard, "Best Times to Visit Yala," accessed December 18, 2024, <https://campleopard.com/best-times-to-visit-yala/>.

¹⁵Some estimates suggest that only 10 percent of the tourism workforce are women. See International Development Group, "Recommendations for Proposed New Sustainable Niche Tourism Categories in Sri Lanka," 2023.

¹⁶The word 'tourism' has no direct translation in Sinhala. The closest translation is Sanchaaraka Vyaaparaya. Elements of nature is captured through words such as Sobadahama and parisaraya which were used interchangeably by interviewers depending on the context.

¹⁷Cory, "Perceptual Truths Vs Existential Truths," Spiritual Secrets (blog), August 6, 2021, <https://medium.com/spiritual-secrets/perceptual-truths-vs-existential-truths-79970704ed3f>.

3

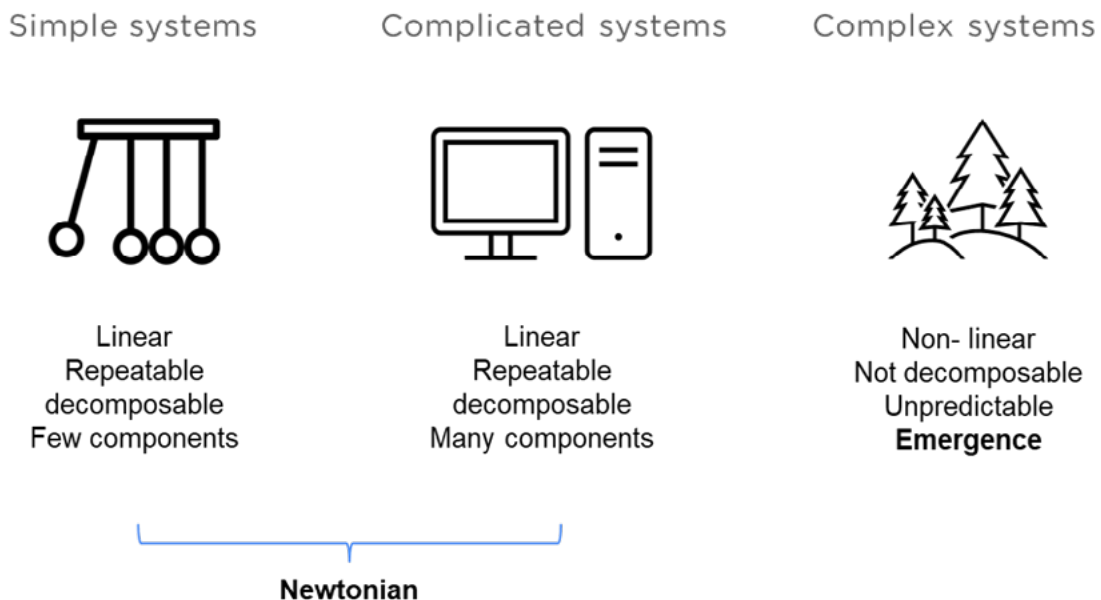
Introduction to complexity theory and applications to tourism

For an intuitive understanding, a complex system can be described by comparing it with its ideological predecessors: simple systems and complicated systems.

As illustrated in Figure 1, a simple system has several features. They consist of few components with linear relationships where clear cause-effect connections can be observed. Therefore, such systems can be decomposed to its constituent parts for analysis. Simple systems are both predictable and repeatable.

Both simple and complicated systems are based on Newtonian (Analytical) thinking where a system is a sum of its parts and can be understood by breaking it into its constituent parts.¹⁸ Complex systems depart from the above principles with parts interacting in non-linear ways. Such systems are unpredictable and cannot be decomposed into parts for analysis. Therefore, a complex system is where the whole is greater than the sum of its parts. A forest is an example of a complex system.

Figure 1: Simple, complicated, and complex systems



Source: Authors' construction

¹⁸ Dirk Inghels, "Systems Thinking and Introduction to System Dynamics Modeling," Springer Books, 2020, 141-47.

3.1 Selected features of complex systems

While there is no consensus on a 'typical' complex system, Table 1 outlines brief introductions to some features that inspire the discussions that follow.

Table 1: Descriptions of selected features in a complex system

Memory, adaptation, and path dependence	Complex systems may learn and adapt based on past events. They can also be path dependant: where they are sensitive to initial conditions and a small change in such conditions can create significant and long-term impacts. For example, a Nation-State is sensitive to initial conditions such as constitutions and institutional structures and possesses a historical memory which shapes its trajectory.
Feedback loops	Complex systems recognise feedback loops created by non-linear interactions of components. Such loops may dampen (negative feedback) or amplify (positive feedback) the impact of actions and energies. A small action can have large effects and conversely, large actions may not make significant impacts. Funding conservation of a national park from tourism revenues, which increases its attraction and generates more tourism revenue, is one such example.
Openness	Complex systems are open, subject to influence from external factors such as other systems. A country's economy, a complex system, can be influenced by external factors such as weather patterns and cultural festivals.
The myth of stable/final equilibria	The dynamism and openness of complex systems may result in such systems being in a constant state of flux. They may never settle on an equilibrium but will keep learning, adapting, and evolving. ¹⁹ Periods of stability may be temporary phases, often followed by rapid transition, creating a pattern of punctuated equilibria. Earth's climate is an example of a complex system with non-stable equilibria.
Non-linear interaction of actors	Actors may change based on different interactions they have with other actors, and as a result also change the system that they are a part of. An example following Estrada (2023) is that of a house cat. ²⁰ A cat can interact with other cats in the neighbourhood, form a colony, and be a social individual engaging in mating and defending the territory. The very same cat can interact with a family of humans and assume the role of a pet. The cat can also interact with other species in the ecosystem such as a mynah bird as a predator, and with an eagle as prey. In each scenario, the cat and the respective system may change based on the interactions the cat has with other actors.

Source: Authors' compilation

¹⁹ Bernardo Mueller, "Why Public Policies Fail: Policymaking under Complexity," *Economia* 21, no. 2 (May 2020): 311–23, <https://doi.org/10.1016/j.econ.2019.11.002>.

²⁰ Ernesto Estrada, "What Is a Complex System, After All?," *Foundations of Science*, May 30, 2023, <https://doi.org/10.1007/s10699-023-09917-w>.

3.2 Tourism as a complex system: an evolution of ideas

Complexity theory is increasingly used to develop tourism models given that traditional models have fallen short in explaining ground realities. Highlighting the deficiencies of existing tourism models, McKercher proposed viewing tourism as a complex system functioning like, “living ecological communities”, in an open, non-linear and dynamic manner.²¹ This model highlights the role of externalities that impact tourism. In later works, McKercher and Prideaux apply complexity theory to explain the evolution of destinations.²² Moving away from the notion of predictable and stable lifecycles, they observe tourism undergoing rapid transformation in-between periods of relative stability, as a destination constantly evolves and changes its character.²³ Baggio considers tourism to be a complex adaptive system, and presents empirical tools to illustrate aspects of real-world complexity.²⁴ Jere Jakulin designs models of complex tourism systems with the potential for statistical simulation.²⁵

Complexity theory has also been used to understand destination development and governance. Farsari reviews the nexus between the sustainable governance of tourism destinations and complexity research.²⁶ Hartman uses a complex adaptive systems perspective to explore policy avenues for sustainable destination development.²⁷ Studies have also used complexity to diagnose specific tourism destinations. Speakman and Garay reconceptualises Acapulco, Mexico as a complex adaptive system to diagnose a failure in effective policymaking.²⁸ They propose complexity theory as an approach to destination management. Similarly, Ricaurte-quijano observes tourism planning, policymaking, and governance in Santa Elena Ecuador through a complex systems lens.²⁹

²¹ Bob McKercher, “A Chaos Approach to Tourism,” *Tourism Management* 20, no. 4 (August 1999): 425–34, [https://doi.org/10.1016/S0261-5177\(99\)00008-4](https://doi.org/10.1016/S0261-5177(99)00008-4).

²² Bob McKercher and Bruce Prideaux, *Tourism Theories, Concepts and Models*, 1st ed. (Goodfellow Publishers, 2020), <https://doi.org/10.23912/9781911635352-4280>.

²³ McKercher and Prideaux..

²⁴ R. Baggio, “Symptoms of Complexity in a Tourism System,” *Tourism Analysis* 13 (January 1, 2008), <https://doi.org/10.3727/108354208784548797>; R. Baggio, “Studying Complex Tourism Systems: A Novel Approach Based on Networks Derived from a Time Series,” February 24, 2013.

²⁵ Tadeja Jere Jakulin, “Systems Approach to Tourism: A Methodology for Defining Complex Tourism System,” *Organizacija* 50, no. 3 (August 1, 2017): 208–15, <https://doi.org/10.1515/orga-2017-0015>.

²⁶ Ioanna Farsari, “Exploring the Nexus between Sustainable Tourism Governance, Resilience and Complexity Research,” *Tourism Recreation Research* 48 (May 17, 2021): 1–16, <https://doi.org/10.1080/02508281.2021.1922828>.

²⁷ Stefan Hartman, “Destination Governance in Times of Change: A Complex Adaptive Systems Perspective to Improve Tourism Destination Development,” *Journal of Tourism Futures* 9, no. 2 (January 1, 2023): 267–78, <https://doi.org/10.1108/JTF-11-2020-0213>

²⁸ Mark Speakman and Alejandro Díaz Garay, “Perspectives on Tourism Development Planning in Acapulco: Conventional Methods and Complexity Theory,” *International Journal of Tourism Sciences* 16, no. 4 (October 1, 2016): 203–21, <https://doi.org/10.1080/15980634.2016.1257541>.

²⁹ Carla Ricaurte-Quijano, “SELF-ORGANISATION IN TOURISM PLANNING: COMPLEX DYNAMICS OF PLANNING, POLICY-MAKING, AND TOURISM GOVERNANCE IN SANTA ELENA, ECUADOR,” n.d.

4

YNP: an overview of the issues

YNP is the second largest national park in Sri Lanka and the oldest wildlife sanctuary in Asia, having been declared a wildlife sanctuary in 1900 and a national park under the Flora and Fauna Protection Ordinance in 1938.³⁰ YNP has been under the administration of the Department of Wildlife Conservation (DWC) since its establishment in 1949, and the DWC manages and regulates tourism activities within the park. The park straddles two administrative districts in two separate provinces - Hambantota District in the Southern Province and Moneragala District in Uva Province.

The park is divided into several blocks, each with distinct geographical characteristics. Spanning across 40,775 ha, YNP Block III is the largest administrative block within the park, whereas Block V is the smallest block with an area of 6,656 ha. Blocks I, II, and IV consist of 14,101 ha, 9,931 ha, and 26,418 ha, respectively.³¹ In addition to these blocks, YNP also includes a Strict Nature Reserve (SNR) of 28,905 ha, where entry is strictly regulated and permitted only for authorised personnel, to ensure the protection of its sensitive ecosystems. Lunugamwehera National Park, bordering YNP to the West, was declared as YNP Block VI in 2021.³² YNP also shares its borders with Kumana National Park to the east, creating a contiguous protected area that enhances biodiversity conservation efforts.

Since the end of Sri Lanka's civil war, YNP has witnessed a substantial increase in tourism with visitor numbers rising sharply from 154,000 in 2000, to 466,437 by 2023.³³ The origin of tourists has also evolved. In 2000, 81 percent of visitors were of domestic origin, but by 2023 the balance had shifted, with 46 percent being of foreign origin.³⁴ Tourists can enter the park by hiring a Safari Jeep (the predominant method) or through a private vehicle with an accompanying tracker of the DWC. Over 2500 hotel rooms are estimated to exist around YNP³⁵ and approximately 700-1200 Safari Jeeps operate in the park.³⁶

³⁰ M Hellen, "Top 10 Remarkable Facts about Yala National Park," Discover Walks Blog (blog), August 29, 2022, <https://www.discoverwalks.com/blog/sri-lanka/top-10-remarkable-facts-about-yala-national-park/>.

³¹ Hellen.

³² "Lunugamwehera National Park to Be Named as Yala Zone No VI," Daily News, accessed December 18, 2024, <https://archives1.dailynews.lk/2021/12/14/local/267343/lunugamwehera-national-park-be-named-yala-zone-no-vi>.

³³ J. Buultjens et al., "Tourism and Its Implications for Management in Ruhuna National Park (Yala), Sri Lanka," *Tourism Management* 26, no. 5 (October 1, 2005): 733-42, <https://doi.org/10.1016/j.tourman.2004.03.014>. and Sri Lanka Tourism Development Authority, "Year in Review - 2023," 2023, https://www.sltta.gov.lk/storage/common_media/YearInReview2023Latest-2024-06-26.pdf.

³⁴ Buultjens et al., "Tourism and Its Implications for Management in Ruhuna National Park (Yala), Sri Lanka."

³⁵ While not explicitly clarified, it is likely that 'hotel rooms' in this estimation refer to rooms provided by all categories of registered accommodation providers. See Srilal Miththapala, "Yala Worth More than Rs.7 B for Sri Lanka," 2017, https://www.academia.edu/35320490/Yala_worth_more_than_Rs_7_B_for_Sri_Lanka.

³⁶ "An Action Plan for Improving the Overall Wildlife Tourism Experience in Yala National Park (Block I)" (Policy Development Office Prime Minister's Office, n.d.); Dinesha Senarathna, "Managing Protected Area Tourism for Sustainable Community Development: The Case of Ruhuna National Park (Yala), Sri Lanka," 2023.

4.1 Overcrowding and misbehaviour when chasing leopard sightings

Though YNP hosts 41 species of mammals, including sloth bear, deer, and a population of 400-500 elephants³⁷, it is most popular for its high density of leopards, with an average of one leopard per square kilometre recorded in Block I.³⁸ Given this fact and poor infrastructure and other barriers of access, despite all blocks being open for tourism except for the SNR, most tourist activity is concentrated in Block I. In addition, many instances of Safari misbehavior have occurred within the park ranging from speeding and roadkill, to deviating from permitted vehicle routes as illustrated by Table 2.

Table 2: Selected examples of YNP safari misbehaviour reported in media

Year	Description
2011	Speeding vehicle kills a leopard inside the park
2012	Speeding causes head injury to a tourist
2015	Herd of deer and a leopard (suspected) killed by speeding vehicles.
2022	A fleet of private vehicles accompanied by safari tour guides drive recklessly

Source: Authors' compilation

4.2 Selected insights from literature³⁹

Many studies and op-ed articles have analysed issues regarding overcrowding and safari misbehaviour in YNP using both qualitative and quantitative methods. Buultjens et al. highlights the need to increase funding to better manage tourism within the park through upgrading infrastructure and upskilling staff.⁴⁰ Miththapala distils tourism related issues in YNP to three factors: over visitation and increasing tourist demand for YNP; the resulting increase in supply-side tourism activity around YNP; and weak enforcement of park rules. They propose a range of targeted solutions including higher patrolling and punishments, countering political interference, limiting visitation, and introducing DWC operated tours.⁴¹ Perera suggests the use of incentives as an alternative to tightening regulations, such as increasing access to other Blocks in YNP by improving road networks, and surcharges for driver misbehaviour.⁴² Miththapala also highlights the overemphasis of the leopard in tourism marketing and suggests removing marketing tools such as images of leopards to promote tourism.⁴³ Ushantha et al. list the excessive promotion of leopards as one of 8 tourism related issues in YNP.

³⁷ Ministry of Wildlife and Forest Resources Conservation, "Episode 4 - Yala National Park," accessed December 18, 2024, <https://www.mwfc.gov.lk/2022/03/05/episode-4-yala-national-park/>.

³⁸ Senarathna, "Managing Protected Area Tourism for Sustainable Community Development: The Case of Ruhuna National Park (Yala), Sri Lanka."

³⁹ A non-exhaustive list of literature and op-ed pieces on YNP is included in Annex 1.

⁴⁰ Buultjens et al., "Tourism and Its Implications for Management in Ruhuna National Park (Yala), Sri Lanka."

⁴¹ Srilal Miththapala, "Yala - Ruined by Its Own Popularity?," Sunday Times, March 10, 2013, <https://www.sundaytimes.lk/130310/plus/yala-ruined-by-its-own-popularity-35838.html>.

⁴² Sarinda Perera, "Conserving Yala: An Alternative Approach," Groundviews (blog), November 10, 2017, <https://groundviews.org/2017/11/10/conserving-yala-an-alternative-approach/>.

⁴³ Miththapala, "Yala Worth More than Rs.7 B for Sri Lanka"; Srilal Miththapala, "A Spotted Affair: Has Sri Lanka over-Promoted the Iconic Sri Lankan Leopard?," WNPS, 2024, <https://www.wnpsl.org/news/spottedAffair.html>.

Through a survey of safari jeep drivers, Aththanayake et al. recognize 16 solutions proposed by drivers to mitigate overcrowding, such as banning mobile phone usage, expanding road networks, and limiting time spent at wildlife sightings.⁴⁴ Pilapitiya discusses the importance of driver and tracker trainings.⁴⁵ Prakash et al. through an analysis of Trip Advisor reviews highlighted the impact that issues such as park congestion have on visitor satisfaction.⁴⁶ Through a survey of tourist groups conducted in 2015 when the mobile towers in the park were switched on and off, Fernando et al. observed that reduced mobile coverage decreased sightings, which in turn reduced visitor satisfaction.⁴⁷

Senarathna's PhD thesis is the only study in the literature review which featured a qualitative exploration into perceptions held by local stakeholders about the interaction between tourism in YNP. The study provides rich insights into the power dynamics among relevant stakeholders such as jeep owners, park officials and politicians.⁴⁸ They link issues such as salary structures of jeep drivers and trackers, access to education, and a lack of trust in regulations and enforcement to tourism issues within YNP.

4.3 Attempts to reform are sporadic and reactive

The DWC and the government-at-large have made several attempts to tackle these issues as seen in Table 3. However, the success of such measures varies. In 2017, a limit of 150 vehicles per day was imposed. However, amidst protests by jeep drivers, the limit gradually increased to 500. Recent reports suggest that this limit is increasing further.⁴⁹ An E-ticketing system was introduced in 2022 and is currently successfully in operation. The most comprehensive reform effort was the formulation of an Action Plan to improve tourism in YNP Block 1 (YNP Block 1 Action Plan). The plan formulated by a group of experts was submitted to the Prime Minister's Office in 2017, to be implemented from 2017-2023. After inconsistent implementation it was revisited in 2022 with a revised timeline of 2023-2028. An independent monitoring committee of three experts was appointed. The current status of the plan and the committee is unclear.⁵⁰ In reaction to a widely publicised incident of a fleet of misbehaving private SUVs in 2022, the DWC mandated that a DWC safari guide (commonly called a 'tracker') must accompany all private vehicles entering the park. This was not applicable for DWC-registered safari jeeps.

⁴⁴ A. Aththanayaka, D. Siyasinghe, and T. G. Supun Prakash, "Commercial Safari Jeep Drivers' Perspectives on Mitigation of Traffic Congestion in the Ruhunu National Park (Yala), Sri Lanka" 7 (June 1, 2019): 59-64.

⁴⁵ Sumith Pilapitiya, "Can Yala Be Saved?," Daily Mirror, 2023, <https://www.dailymirror.lk/print/onmobile/Can-Yala-Be-Saved/374-257849>.

⁴⁶ Supun Lahiru Prakash et al., "Reasons for Visitor Dissatisfaction with Wildlife Tourism Experiences at Highly Visited National Parks in Sri Lanka," *Journal of Outdoor Recreation and Tourism* 25 (March 1, 2019): 102-12, <https://doi.org/10.1016/j.jort.2018.07.004>.

⁴⁷ Prithiviraj Fernando et al., "Is Restricting Mobile Communication a Solution to Overcrowding? A Test from Yala National Park, Sri Lanka Is Restricting Mobile Communication a Solution to Overcrowding? A Test from Yala National Park, Sri Lanka," *Ceylon Journal of Science* 53 (May 13, 2024): 243-51, <https://doi.org/10.4038/cjs.v53i2.8289>.

⁴⁸ Senarathna, "Managing Protected Area Tourism for Sustainable Community Development: The Case of Ruhuna National Park (Yala), Sri Lanka."

⁴⁹ S Fernandopulle, "Yala National Park Overcrowded Again - Breaking News," accessed January 1, 2025, <https://www.dailymirror.lk/breaking-news/Yala-National-Park-overcrowded-again/108-298022>.

⁵⁰ Field interview - Wildlife Expert.

Table 3: Reform efforts at YNP reported in media

Year	Proposed reform
2017	YNP Block 1 Action Plan (2017-2023) proposed
2017	Implementation of a daily vehicle limit
2017	Considering a time-based ticketing system
2022	E-Ticketing system introduced
2022	Mandatory DWC guide for private (non-safari) vehicles
2022	YNP Block 1 Action Plan (2017-2023) revisited
2024	Only certified and trained safari jeep drivers to operate in Yala National Park

Source: Authors' compilation

5

Perceptions on overcrowding and safari misbehaviour in YNP block 1 - a system mapping

During the field visit to YNP, the issue of overcrowding and safari misbehaviour was consistently highlighted as a key interaction between tourism and nature. Given the diversity of stakeholder groups interviewed, many perspectives on factors contributing to the issue were discussed.

While this study was not designed to perform a system mapping of the issue of overcrowding and safari misbehaviour in YNP, the loosely structured interview format and the diversity of stakeholders interviewed allowed the researchers to simulate a soft-systems methodology (SSM) approach in exploring and visualising the problem.⁵¹ This section discusses methodological considerations and provides an overview of the mapping.

5.1 Methodological considerations regarding the mapping of perceptions

Individual semi-structured interviews have been explored as a method to collect information for systems and causal mapping.⁵² Pyrko and Dorfler uses recordings and transcriptions of semi-structured interviews to construct causal maps ex-post.⁵³ However, unlike the above, the CSF study was not designed to focus purely on the issue that is being mapped, nor intended to be used for a mapping exercise.

Therefore, the objectives of the visual mapping presented in this section are; to be an interactive medium to explore relevant qualitative insights from this study, a blueprint for further research on this issue, and an inspiration to use system mapping exercises to diagnose sustainable tourism policy issues in Sri Lanka. It is not meant to be an exhaustive causal-mapping.

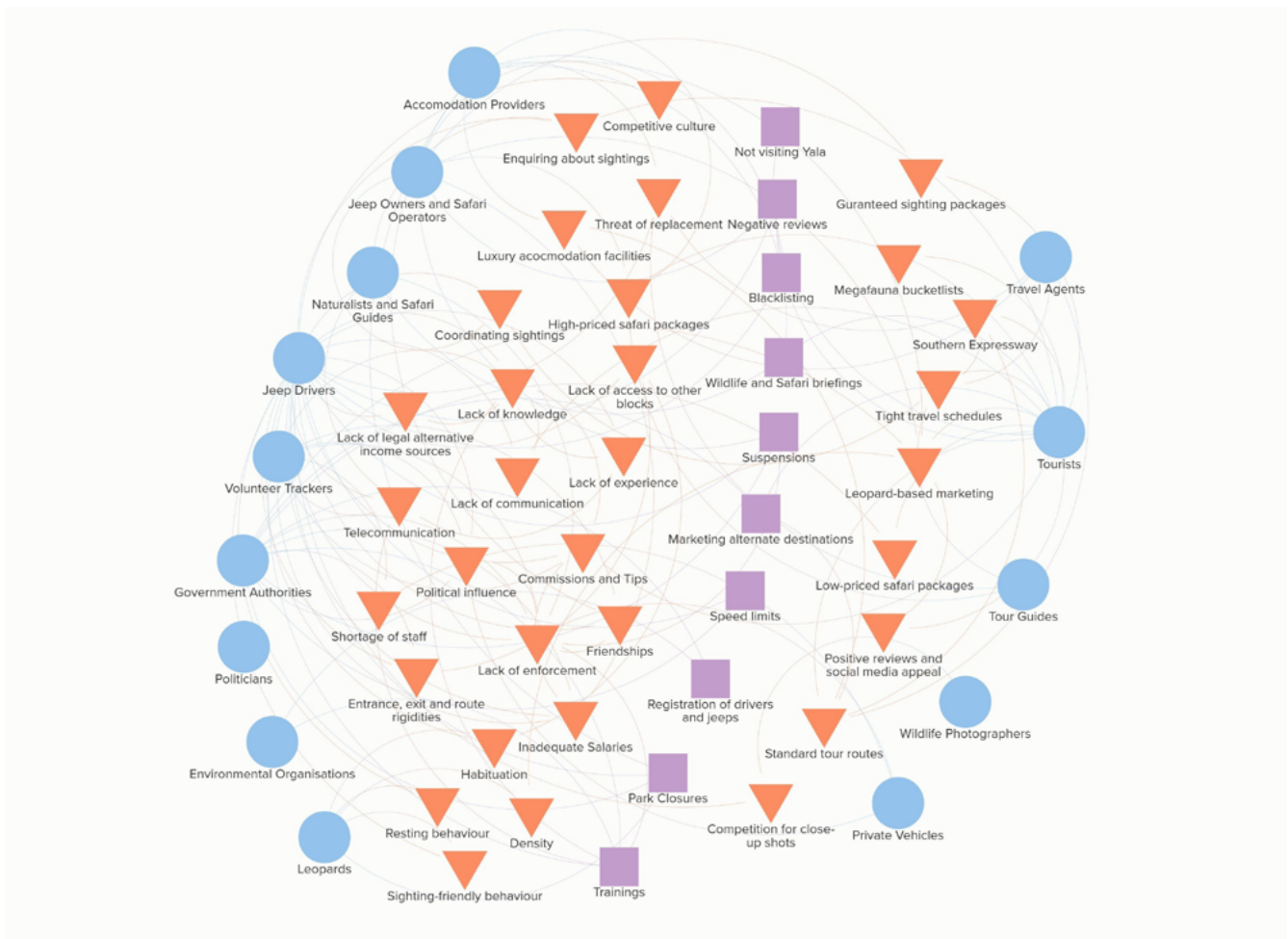
⁵¹ Soft-systems methodology (SSM) is based on the principle that problems must be defined by collaboratively exploring perspectives of different stakeholders. See Institute for Manufacturing, "Soft Systems Methodology," University of Cambridge, accessed December 18, 2024, <https://www.ifm.eng.cam.ac.uk/research/dstools/soft-systems-methodology/>.

⁵² Erin S. Kenzie et al., "Protocol for an Interview-Based Method for Mapping Mental Models Using Causal-Loop Diagramming and Realist Interviewing," *Evaluation and Program Planning* 103 (April 1, 2024): 102412, <https://doi.org/10.1016/j.evalprogplan.2024.102412>.

⁵³ Igor Pyrko and Viktor Dorfler, "Using Causal Mapping in the Analysis of Semi-Structured Interviews," *Academy of Management Proceedings* 2018, no. 1 (August 2018): 14348, <https://doi.org/10.5465/AMBPP.2018.14348abstract>.

The formulation of the map followed the methodology of Kiekens et al.⁵⁴ Firstly, a high-level coding was done on all the anonymized transcripts of interviews on YNP. Thereafter, sections that discussed the issue of overcrowding and safari misbehaviour in YNP were isolated. Longer sections were split where necessary. Then a second-level coding was done tagging elements mentioned. The elements were categorised into stakeholders, enablers, and interventions (see Section 5.2 below). Connections between elements was also coded. All coding was done manually on Microsoft Excel by the researchers who conducted the interviews. Thereafter, all the elements and their unique connections, along with an example quote illustrating such connections were compiled and uploaded to Kumu, an online mapping tool for visualisation (See Figure 2 below). 16 out of 31 interviews on YNP provided insights into the issue of overcrowding and safari misbehaviour.

Figure 2: The systems mapping of perceptions (which can be accessed online [here](#))



Source: Authors' construction

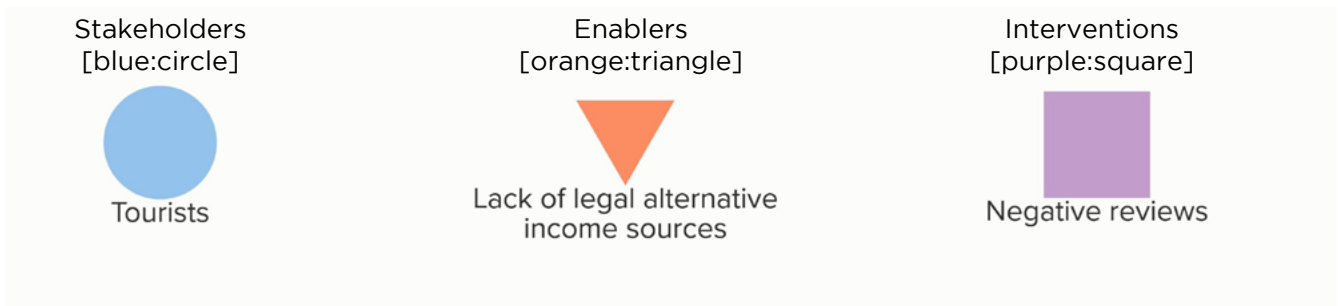
⁵⁴ Anneleen Kiekens, Bernadette Dierckx de Casterlé, and Anne-Mieke Vandamme, "Qualitative Systems Mapping for Complex Public Health Problems: A Practical Guide," PLoS ONE 17, no. 2 (February 25, 2022): e0264463, <https://doi.org/10.1371/journal.pone.0264463>.

5.2 Overview of elements: stakeholders, enablers, interventions, and connections

Elements are categorised into three groups in the mapping as seen in Figure 3.

1. **Stakeholders** are any actors mentioned explicitly or implicitly by an interviewee when discussing the issue of overcrowding and safari misbehaviour in YNP.
2. An **enabler** is a factor that facilitates and/or exacerbates chasing leopard sightings and/or overcrowding.
3. An **intervention** is an action taken by one or more stakeholders to reduce and/or stop an enabler or influence a stakeholder.

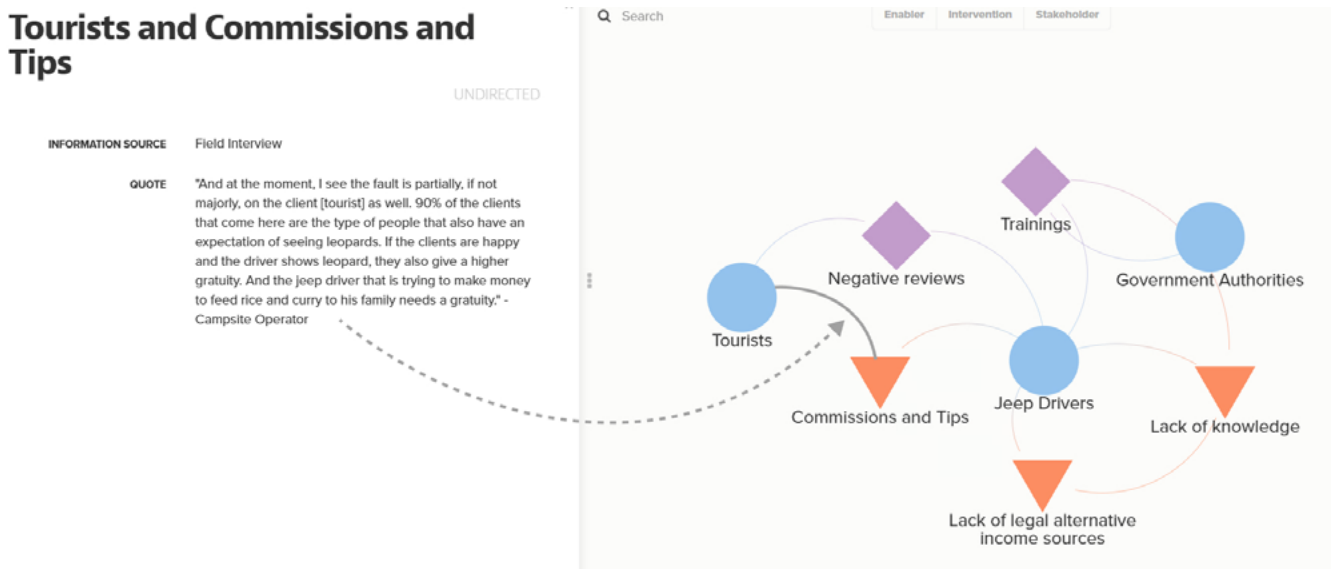
Figure 3: Categories of elements



Source: Authors' construction

A total of 54 elements (14 stakeholders, 32 enablers, and 10 interventions) and 121 connections were identified. As highlighted in Figure 4, each connection includes an illustrative quote from the field research.

Figure 4: The illustrative quote for the connection between tourists and commissions and tips



Source: Authors' construction

PART II

“They [tourists] get into the jeep asking us if they will be able to spot leopard. We try to somehow show them the animal that they want to see. There is competition, undoubtedly. If some tourists make a comment about spotting a leopard to other tourists that have not spotted a leopard, the latter is immediately dissatisfied with the driver’s performance.

It is a complex interaction”

-Jeep Driver

6 Complexity in practice: overcrowding and safari misbehaviour in YNP

The issue of overcrowding and safari misbehaviour in YNP is at the intersection of two complex systems - tourism in YNP and the ecosystem within YNP.

Using concepts of complex theory, the following five insights are derived from the systems mapping presented in Section 5:

1. Many stakeholders affect the issue, some more apparent than others
2. Jeep drivers' interactions with other actors may impact the issue
3. Negative feedback loops may dampen the benefits from jeep driver trainings
4. External systems affect the issue: Southern expressway and improved road network
5. Path dependence and memory may impede enforcement and policy implementation

6.1 Many stakeholders affect the issue, some more apparent than others

A key message from complexity theory is that many interacting actors influence a system. The perception mapping identified 14 connected stakeholders with varied proximities to the issue of overcrowding and safari misbehaviour in YNP (see Figure 5). While the impacts from stakeholders such as jeep drivers, tourists and government authorities like the DWC to the issue are frequently discussed,⁵⁵ the roles of some others are underexplored. Two such underexplored stakeholders identified through the mapping are jeep owners and safari operators, and accommodation providers.

Figure 5: Stakeholders identified in the perception mapping



Source: Authors' visualisation

55 See Aththanayaka, Siyasinghe, and Prakash, "Commercial Safari Jeep Drivers' Perspectives on Mitigation of Traffic Congestion in the Ruhunu National Park (Yala), Sri Lanka"; Fernando et al., "Is Restricting Mobile Communication a Solution to Overcrowding?"; Shanuka Kadupitijage, "Taming Yala's Anarchic Drivers," Ceylon Today (blog), November 3, 2023, <https://ceylontoday.lk/2023/11/04/taming-yalas-anarchic-driver>

6.1.1 Jeep Owners and Safari Operators

As recognised in the YNP Block 1 Action Plan, most safari jeeps are owner-operated, with some fleet owners in operation.⁵⁶ Some of these fleets are large in number, allowing a few jeep owners to exert considerable influence on the conduct of safari jeeps within the park. Most jeep owners are locals in the area.⁵⁷

“There are some [fleet owners] who own more than 50 jeeps in Tissamaharama.”

-Manager, Tourist Accommodation

So, three distinct groups exist in this setting; jeep owners who hire drivers, jeep owners who drive their own jeeps, and hired jeep drivers. Therefore, at least identifying jeep owners and jeep drivers as distinct stakeholder groups is important since owning or not owning the jeep can have a material impact on the incentive structure and power-dynamics faced by jeep drivers.

“I think both the driver and the jeep should be suspended because the jeep owner can continue to generate an income by hiring another driver. So, they do not feel the severity of the punishment and they are not motivated to encourage their drivers to adhere to the park rule. I have X jeeps and X jeep drivers.”

- Manager, Tourist Accommodation

“When given a suspension, it is both the driver and the vehicle that are suspended. That is because, the jeep owners too can compel their drivers to adhere to the park rules since suspension of their vehicle means they too are losing an income that they could have earned.”

- Public Official

There are 5 Sri Lanka Tourism Development Authority (SLTDA) registered associations relating to safari jeep tours in YNP with one exclusively for jeep drivers.⁵⁸ Some interviewees noted that traditionally jeep owners and their associations are better represented in stakeholder dialogues compared to hired jeep drivers.⁵⁹ This is a concern since addressing grievances unique to hired jeep drivers is critical to the issue as explored in Section 6.3.

⁵⁶ “An Action Plan for Improving the Overall Wildlife Tourism Experience in Yala National Park (Block 1),” 3.

⁵⁷ Senarathna, “Managing Protected Area Tourism for Sustainable Community Development: The Case of Ruhuna National Park (Yala), Sri Lanka.”

⁵⁸ SLTDA, “Downloads - Registration of Associations Involved In Tourism,” SLTDA, accessed December 18, 2024, <https://www.slt-da.gov.lk/en/download>.

⁵⁹ Field interview – Wildlife Expert

More ambiguous are safari operators. While this term may include jeep drivers and owners depending on the context, we particularly focus on individuals and groups who position themselves not merely as jeep drivers or jeep owners, but as value-added safari operators. Such operators may also include intermediaries who include safaris in YNP as a component of a larger tour. The distinction between such safari operators and jeep owners is not always clear, both in our field research insights and on TripAdvisor listings of safari tours. Therefore, in this study jeep owners and safari operators were grouped together as it was assumed more likely that safari operators providing value-added services were owners rather than hired drivers.

The price of a safari tour in YNP consists of two core components: (1) the entrance fees paid to the DWC and (2) the price charged for the safari jeep and driver along with any value-added services offered by the safari tour. Despite dictating the price of component (2), safari operators' role in the issue is underexplored in existing literature.

The price paid by tourists is a significant determinant of both the expectation and satisfaction of the safari experience.⁶⁰ The higher the price, the higher the value that the safari operator has to offer. If a component of that value is based on leopard sightings, it will influence safari operators and in turn, jeep drivers to adopt an unsustainable focus on leopards.

“But the danger of this is the experience in the park is not worth \$100-\$150. So, you are ensuring unsustainable wildlife tourism in Sri Lanka.”

- Wildlife Expert

This issue is exacerbated by the existence of intermediaries who might drive the price of a safari tour higher.

“It is understandable why guests are motivated by sightings. They spend a substantial amount on a safari, especially if they book the safari through a tour company. For example, we independently charge USD 150 per safari party. But if a tour company is involved, they may charge USD 250 and absorb at least USD 100.”

-Safari Operator

⁶⁰ Kanesh Suresh et al., “Which National Park Attributes Attract International Tourists? A Sri Lankan Case Study,” *Tourism Economics* 28, no. 7 (November 2022): 1848–71, <https://doi.org/10.1177/13548166211019865>.

A trip advisor analysis of safari tour listings indicates that the mean price increase for value-addition is approximately USD 36.11 per person⁶¹ and the leopard features most among megafauna in the branding and marketing of such tours (see Box 1).

Alarming, perspectives from the field also highlighted instances where safari operators make their value proposition entirely contingent on the sighting of a leopard by guaranteeing sightings. If such practices do occur, they pose a significant stress on jeep drivers to chase sightings at all costs.

“So what some safari operators do is they will say we will show you a leopard guaranteed but the cost is higher. And by any chance if we don’t see a leopard, you can have 50 percent off. If it’s a normal safari jeep, its LKR 15000 for a jeep of 6 people. In this situation they charge LKR 25000 per seat. Even the tourist can’t say anything because they have committed. Then they anyway get charged additionally for the [entrance] tickets. So even with the 50 percent refund, the Safari operators earn much more than a usual safari ride.”

-Manager, Tourist Accomodation

⁶¹This must be considered as the price for foreign tourists since most TripAdvisor listings target foreign tourists.

Box 1: Pricing and expectations: insights from a TripAdvisor analysis

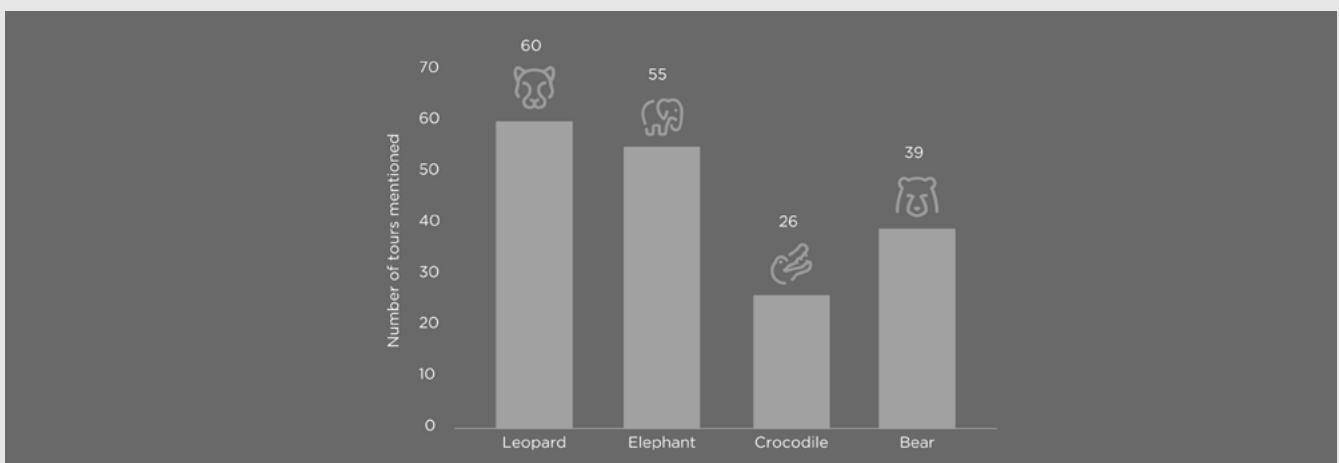
A TripAdvisor analysis of YNP safari tour listings on the 16th of November 2024 recorded 362 tours offered. Filtering out non-safari tours, and multi-day safari excursions for comparability, leaves a remainder of 147 safari tours in YNP. From a price perspective, without controlling for variations such as distance of tours and other value-added services, the mean per person cost for a TripAdvisor listed safari is USD 130.51. The 1st quartile value is USD 73.75, and the 3rd quartile value is USD 180. These prices do not necessarily include the entrance ticket price, as such inclusions vary across Safari Operators.

Field interviews highlighted that the basic price (local or “budget” foreign rate) for a 6-person safari jeep (Mahindra Maxi and Tata Jeep Models) is LKR 13,000. This translates into approximately USD 45 per person (Exchange rate as at 05.12.2024) if the tourist is not sharing the ride with anyone else. Assuming that an entrance ticket price of USD 25, a service charge of USD 10 and an 18 percent Value-added Tax (VAT) is incorporated into all listed safari prices on Trip Advisor, the mean mark-up for pure value-addition will be approximately USD 36.11 per person. (This calculation does not include rupee denominated charges such as the vehicle fee and the local ticket for the driver, assuming the driver is local).

Given that the markup is 27 percent of the mean safari price, if value-addition is contingent on leopard sightings, then such pricing policies may add to the issue of overcrowding and safari misbehaviour.

Among the 147 listed safari tours, 17 (11 percent) have included the word leopard in the title of the Safari experience, thus calling the experience a “leopard” safari or an iteration. In contrast, other charismatic megafauna (Elephant, Sloth bear, and Crocodile) do not feature on titles at all. When analysing the descriptions of the listed safari tours, the leopard features the most with 60 (40 percent) closely followed by the Elephant (see Figure 6). This maybe symptomatic of leopard sightings being a general component of the value-addition offered by safari operators.

Figure 6: Comparison of charismatic megafauna featured in safari tour descriptions



Source: Authors’ calculation

6.1.2 Accommodation Providers

The second underexplored stakeholder group are accommodation providers. Accommodation providers range from small-scale establishments by local community members to mid-sized and star grade hotels mostly owned and operated by those outside the community.⁶² There are two distinct channels through which they can exacerbate the identified issues in YNP. Firstly, by increasing room numbers around YNP and secondly, by relying on leopards in branding and marketing to attract tourists.

“When you take the big hotels, boutique hotels, the guest houses, the bungalow all that around Yala from the Kataragama side as well as the Tissa side, from what I have heard, it’s over a thousand hotel rooms. Now if you put a cap on visitation [in Yala National Park], you are going to face problems with the tourist demands.”

-Wildlife Expert

The YNP Block 1 Action Plan recognises the need for a carrying capacity assessment for YNP Block 1 conditional on the existing room capacity.⁶³ However, as of date, a carrying capacity assessment has not been conducted and an exact record of accommodation providers around YNP is not available in the public domain. Popular estimates on number of rooms around YNP vary from above 1000 as mentioned in the above quote to 2500.⁶⁴ The lack of data is partly due to many accommodation providers not being registered with the SLTDA (see Figure 7).

An estimation by the researchers suggests that the number of rooms offered by accommodation providers could be at least 2700 with most unregistered accommodation providers being smaller establishments (see Annex 2 for an overview of the estimation). It is likely that for most of the smaller accommodation providers with little inbuilt facilities, the unique selling point is entirely the proximity to nature and wildlife in YNP. In addition, the lands within and around YNP are administered by different institutions with varied mandates. Field insights highlighted the DWC, the Department of Forest Conservation, the Local Authorities of Kataragama and Tissamaharama,⁶⁵ the Urban Development Authority, and the Ruhunu Maha Kataragama Dewalaya as examples of such institutions.

Senerathne illustrates several examples of community members who have converted their houses and farmland to provide accommodation services coordinating primarily with local authorities.⁶⁶ There is no evidence of a common policy across such stakeholders to manage and monitor the rise of accommodation providers around YNP.

⁶² Senarathna, “Managing Protected Area Tourism for Sustainable Community Development: The Case of Ruhuna National Park (Yala), Sri Lanka.”

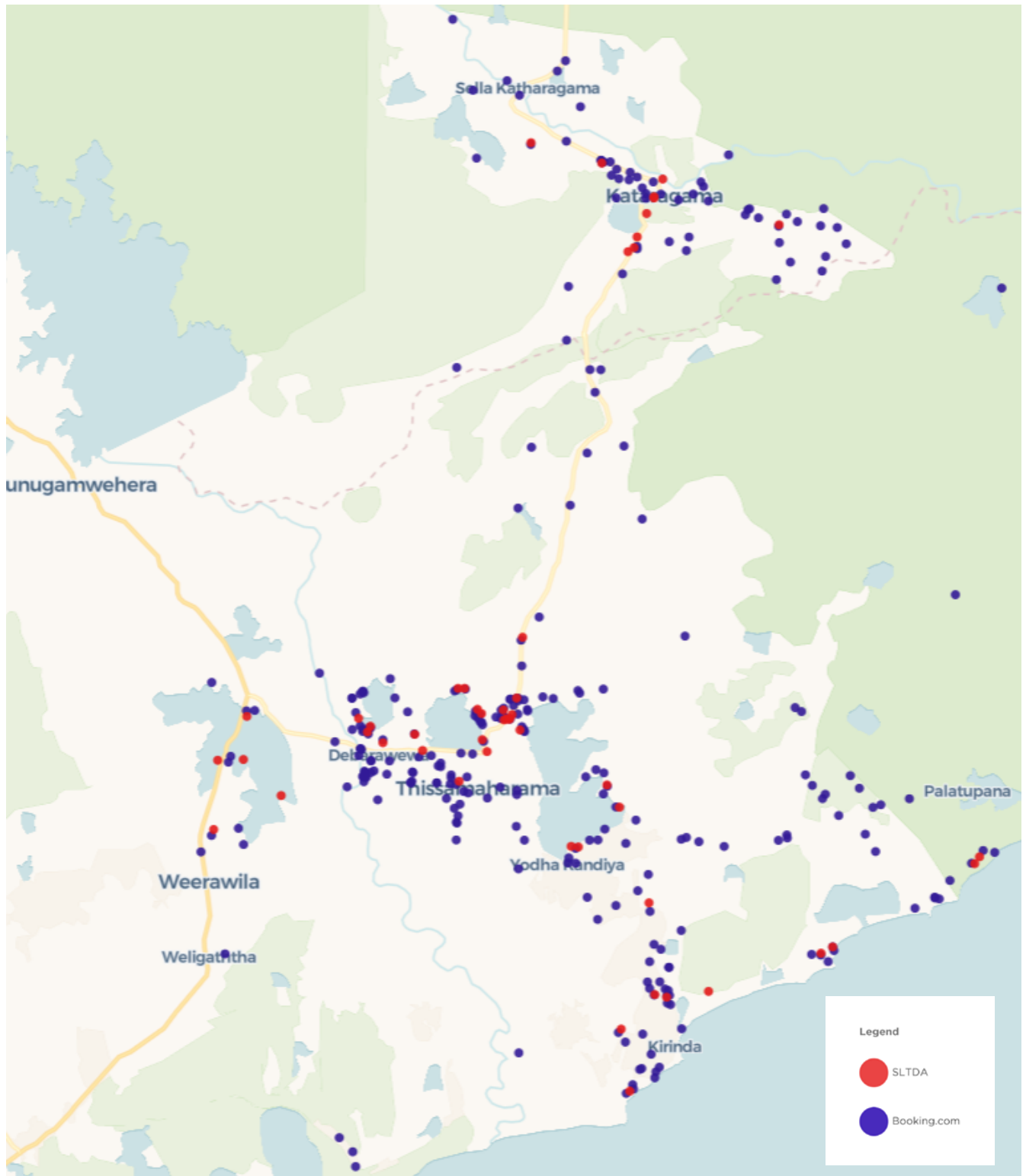
⁶³ “An Action Plan for Improving the Overall Wildlife Tourism Experience in Yala National Park (Block 1).”

⁶⁴ Miththapala, “Yala Worth More than Rs.7 B for Sri Lanka.”

⁶⁵ YNP and the neighbouring cities of Tissamaharama and Kataragama are part of two different districts (Hambantota and Moneragala) in two separate provinces (Southern and Uva). Therefore, many local government authorities (Provincial councils, Divisional Secretariats and Pradeshiya Sabhas) have land use related mandates around YNP.

⁶⁶ “Managing Protected Area Tourism for Sustainable Community Development: The Case of Ruhuna National Park (Yala), Sri Lanka.”

Figure 7: The spread of accommodation providers around YNP



Source: Authors' visualisation

“All tourism service providers - starting from tour companies to hotels - promote leopards in Yala. So, tourists come with the objective of seeing a leopard.”

- Public Official

Accommodation providers also rely on leopard-based marketing to attract tourists. There is a growing call for accommodation providers and the tourism industry at large to divert their marketing away from the leopard. However, as shown in Box 2, marketing efforts typically feature hard and soft dependencies. While soft dependencies such as featuring images of leopards in their websites and platform profiles are easier to adjust, hard dependencies such as featuring the term “leopard” in the name of the establishment are less amenable to change. Addressing such dependencies will contribute to reducing pressure exerted by accommodation providers on overcrowding and safari misbehaviour in YNP.

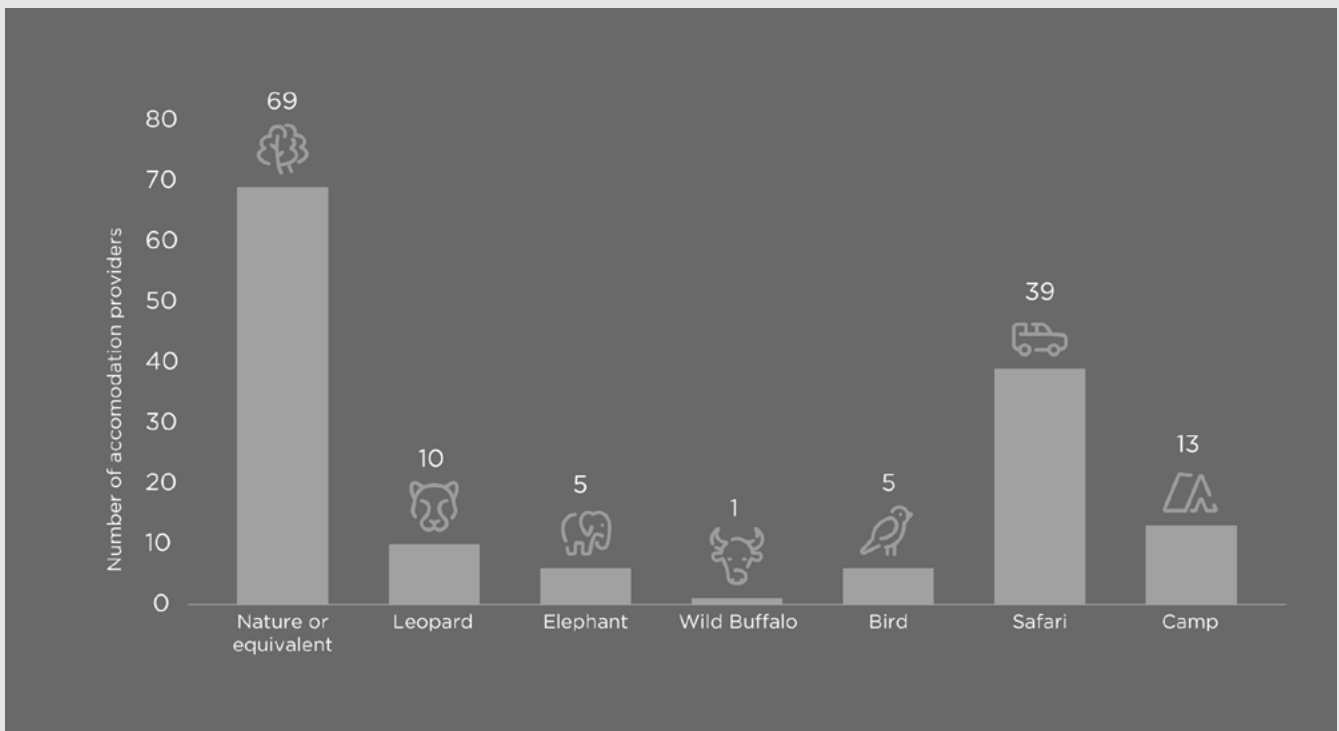
⁶⁷ Action Plan for Improving the Overall Wildlife Tourism Experience in Yala National Park (Block 1)”; Miththapala, “Yala - Ruined by Its Own Popularity?”

Box 2: Hard and soft dependencies in marketing: insights from a Booking.com analysis

A Booking.com analysis of accommodation listings around YNP on the 18th of November 2024 recorded 297 accommodation providers. 75 (25 percent) of the listed provided had featured at least one image of a leopard on their page.

When analysing the usage of nature-related words in names of the establishments, 69 (23 percent) feature nature as an element in their name (ex: Eco, Wild, and Forest) and 39 providers (13 percent) have included the term 'Safari'. The leopard features most among megafauna with 10 accommodation names.

Figure 8: Concepts featured in names of accommodation providers around YNP



Source: Authors' calculations

6.2 Jeep drivers' interactions with other actors may impact the issue

As highlighted in Section 5, complexity theory views interactions between actors as dynamic, often changing the actors themselves and the broader system. This notion is useful in unpacking dynamics of jeep drivers and exploring pathways of combatting the issues in YNP.

Discussions on overcrowding and safari misbehaviour implicitly consider jeep drivers as a monolithic stakeholder group with similar incentives and functions.⁶⁸ Aththanayake et al. conducted a quantitative survey of commercial jeep drivers disaggregated to subgroups such as age, type of tourists served, frequency of committing offences and education level and found no statistically significant evidence of differences in opinion on congestion in parks.

In contrast, field research from this study highlighted perspectives on how jeep drivers may function very differently based on interactions they have with other actors, like interacting actors in a complex system. The following are two such interactions.

Interaction 1: Being part of a fleet of safari jeeps or not

Though acknowledged in the YNP Block 1 Action Plan, the distinction between a jeep driver in a fleet and others does not materially appear in the proposed short or medium-term actions in the plan.⁷⁰ However, several interviewees highlighted this interaction and observed how being a part of a fleet changes the behaviour and therefore the propensity to cause overcrowding and misbehaviour in YNP.

“For example, all safari drivers who are employed by one owner/company are connected. So, they forego all park rules and rush to where the leopard is spotted. Because they somehow have to show a leopard within the three-hour window given to a safari.”

- Public Official

“These jeep owners are very demanding. They force other people out of buying more than one safari jeep to minimize competition and ensure that their market share is not reduced. Their drivers do not adhere to safari guidelines.”

- Manager, Tourist Accommodation

⁶⁸ Kadupitiyage, “Taming Yala’s Anarchic Drivers”; Thilini Udeshika Hettiarachchi, “SENSE OF PLACE AND WILLINGNESS TO PAY FOR HISTORICAL AND CULTURAL PLACES IN SRI LANKA” 5, no. 1 (2020).

⁶⁹ The study was conducted in several national parks including YNP. See Aththanayaka, Siyasinghe, and Prakash, “Commercial Safari Jeep Drivers’ Perspectives on Mitigation of Traffic Congestion in the Ruhunu National Park (Yala), Sri Lanka.”

⁷⁰ “An Action Plan for Improving the Overall Wildlife Tourism Experience in Yala National Park (Block 1).”

Interaction 2: Being exclusively hired by an accommodation provider or not

While accommodation providers generally display preference and loyalty to chosen jeep drivers, some larger scale accommodation providers have formalised their partnerships and made arrangements to be exclusive. Such interactions also materially change the incentive structure of jeep drivers compared to others and has the potential to provide system-wide benefits such as reducing misbehaviour.

“There are an identified team of safari operators. There have been changes in some of the drivers because of misbehaviors and we have banned some drivers.”

-Naturalist, Tourist Accomodation

“Yes, we can earn more than what we would independently earn. We usually charge Rs 15,000 for a half-day safari. The hotel would pay us around Rs 16,000.”

-Jeep Driver

However, such exclusivity can have the opposite effect as well, and further exacerbate the issues in the park. This largely depends on the priorities of the accommodation providers.

“Because the drivers are worried if they don’t show leopard, they will not get business the next day from that hotel.”

-Wildlife Expert

These different dynamics existing within the same stakeholder group suggest that designing interventions which target and leverage such interactions may be a worthwhile exercise to reduce tourism pressures on YNP.

6.3 Negative feedback loops may dampen benefits from driver trainings

The identification of feedback loops is a key tenant in complexity theory. The effectiveness of interventions or lack thereof may be explained through negative and positive feedback loops existing in a system. Jeep driver trainings conducted by the DWC in association with environmental organisations is a critical intervention designed to tackle the issues of overcrowding and safari misbehaviour.

“There have been many trainings conducted. But these jeep drivers continue to make the same mistakes. Even if they get suspended for a week, they come back and commit the same errors.”

-Jeep Driver

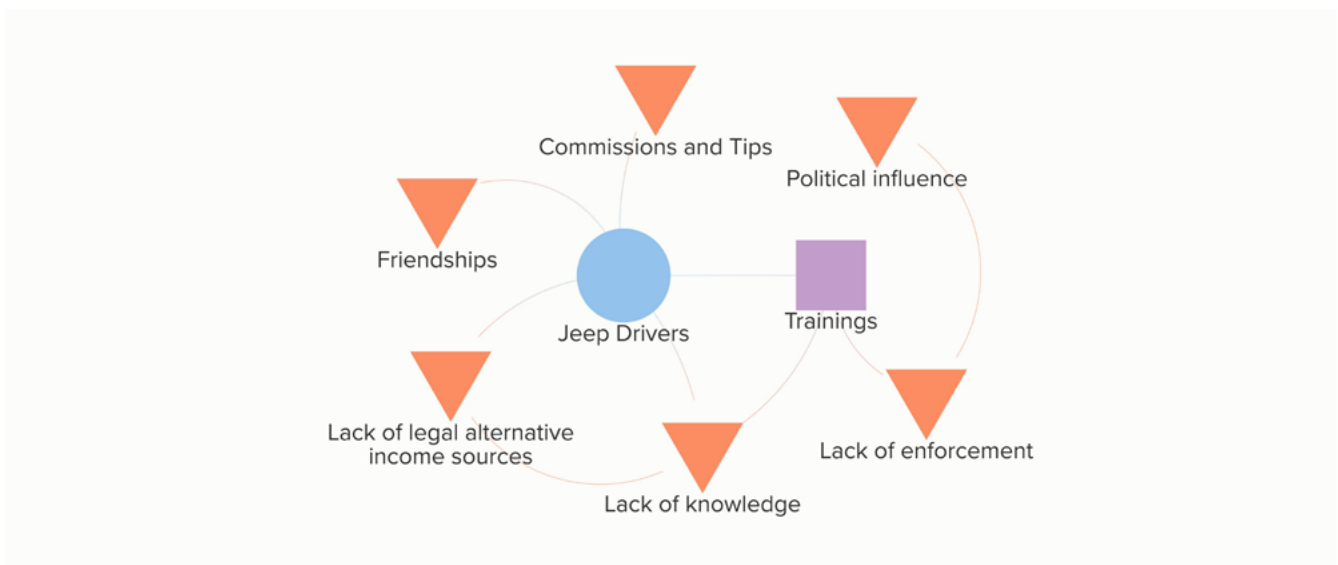
A common concern raised during field research was the ineffectiveness of jeep driver trainings. The issues highlighted were never about the quality of the trainings themselves, which are considered informative and received positively, but of the lack of supporting structures after such trainings take place. This suggests the existence of negative feedback loops that dampen the effects of the trainings.

Some stakeholders point to a lack of enforcement as a negative feedback loop. Both political influences and friendships among trackers and drivers contribute to lack of enforcement as highlighted in the perception mapping excerpt in Figure 9.

“I think the training is good because drivers who received the training do not have to be accompanied by a voluntary tracker or guide. However, the authorities should make sure that the drivers who received the training are adhering to the park rules. The moment they are given any leniency, the impact of the training will reduce.”

-Owner, Tourist Accomodation

Figure 9: Potential negative loops that may dampen driver training



Source: Authors' construction

Others point out the highly variable tip and commission-based compensation structures as a key barrier even in situations where owners drive the jeep. Given the high competition among safari tours, the standard price for 6-seater safari jeeps is LKR 13-15,000⁷¹ unless the jeep owner/safari operator provides value-added services, thereby increasing the price. Therefore, tips and commissions are seen as a key source to increase the profit margins of tours. This exacerbates the issues in YNP since visitor satisfaction and therefore the tip amount is dependent on leopard and other charismatic megafauna sightings.⁷²

“Many training sessions with jeep drivers have been conducted but none of them have been very successful. The main reason why they are not sensitised to the issues of the park is because they are motivated by financial gains. In addition to the hire cost of the vehicle, they are also paid by commissions and tips.”

-Public Official

⁷¹ As at July 2024.

⁷² Fernando et al., “Is Restricting Mobile Communication a Solution to Overcrowding?”

Field insights highlight that hired jeep drivers have little financial security without tips. The current understanding among the safari jeep associations and the industry at large is that a hired jeep driver would receive between LKR 1700 - LKR 2000 per half-day safari session priced at LKR 15000 on average.⁷³ However, representatives for hired jeep drivers observe consistent pressures by other stakeholders to reduce such fixed margins. Fleet owners are particularly perceived to create starker financial conditions for hired drivers.

“I think some fleet owners pay drivers only once a year. So, their drivers are largely dependent on tips to meet their day-to-day expenses.”

-Public Official

The jeep drivers are not the only stakeholders who face this structural issue. Volunteer trackers of the DWC also have a highly skewed fixed to variable income ratio, incentivising them to seek tips. Some trackers compete over foreign tourists expecting higher tips.⁷⁴

Furthermore, volunteer trackers lack a career path with a grading system and incremental transition to permanent positions, thus frustrating long-term trackers and providing little incentive to obtain formal training.⁷⁵ Especially given that both stakeholders are the most proximate actors in the issue of overcrowding and safari misbehaviour, this problem becomes particularly concerning.

“Their [volunteer trackers’] behaviours are also tied to how poorly they are compensated. So, they violate park rules and regulations just to be able to earn a tip from their clients.”

-Wildlife Expert

“You cannot really blame them [volunteer trackers] too because they earn only LKR 1,000 a day. Which is not enough at all. So, they look for other ways of generating money.”

-Naturalist, Tourist Accomodation

This situation clearly indicates the existence of negative feedback loops that dampen the positive effects of driver trainings over time. Exploring meaningful solutions to such feedback loops is critical for a sustained change in jeep driver behaviour.

⁷³ Field Interview – Member, Jeep driver Association.

⁷⁴ Senarathna, “Managing Protected Area Tourism for Sustainable Community Development: The Case of Ruhuna National Park (Yala), Sri Lanka.”

⁷⁵ Senarathna.

6.4 External factors affecting the system: Southern expressway and improved road networks

Complex systems are open, subject to change by external factors and other systems. Tourism in YNP is an open system, so factors external to the tourism system will impact tourism around and within YNP. A significant external factor that materially impacted tourism in YNP is the Southern Expressway connecting Colombo and Hambantota.⁷⁶ Field research findings suggest how the resulting changes from such road networks can contribute to increased pressure on overcrowding and misbehaviour in YNP.

“However, one thing that happened with the highway was that people stopped staying over in Kataragama. They can sightsee around Kataragama in one day and move to other parts of the country - such as Ella or Arugam Bay - without having to stay over in Kataragama”
-Jeep Driver

What used to be at least an over-night journey due to long drives is now turning into a day excursion. Safari tours are being conducted for as short as 3 hours so that tourists can travel to other destinations for the night.

“They can sightsee around Kataragama in one day and move to other parts of the country - such as Ella or Arugam Bay - without having to stay over in Kataragama”
-Jeep Driver

In a TripAdvisor.com review of 147 safari tour listings, 42 (28 percent) of tours record the minimum tour time to be less than 5 hours out of which 10 (6 percent) are 3-hour safari-rides.⁷⁷

“For example, if you take the Yala/Ella itinerary, they are picked up at around 3am, and in the morning, the programme will include activities like going in the Ella train, doing Ravana Falls, 9 Arches Bridge and Little Adams Peak. Then at around 12.30/1pm, they will come to Tissa to refresh and eat from a restaurant. The target for the tour guides is to send them off to the Safari’s by about 2/2.30pm for about 3/3.30 hours and go back.”
-Manager, Restaurant

This factor may also contribute to the observation made in the YNP Block 1 Action Plan on newer visitors arriving to YNP preferring overcrowded wildlife ‘sightings’ instead of high quality ‘observations’.⁷⁸ Shorter safari times may not only increase the potential for overcrowding but also intensify the expectation to see leopards and other charismatic species within shorter time windows, causing a higher propensity for misbehaviour such as speeding. Adapting to such changes in the tourism system requires the concerted efforts of multiple stakeholders including travel agents, tourism authorities, accommodation providers, and safari operators.

⁷⁶ Suresh et al., “Which National Park Attributes Attract International Tourists?”

⁷⁷ The median safari tour length is 6 hours.

⁷⁸ “An Action Plan for Improving the Overall Wildlife Tourism Experience in Yala National Park (Block 1),” 4.

6.5 Path-dependence and memory can impede enforcement and policy implementation

Complex systems can possess memory functions thus displaying path-dependence and adaptation. This is especially prominent in social systems.⁷⁹ The institutions and actors who interact with tourism activities in YNP can also adapt to developments across time.

As outlined in Section 4, there have been many policy interventions to address issues in YNP. Such attempts have generally favoured regulatory approaches. Most of the solutions to the issues proposed by the interviewees in this field study also favour making current regulations stricter and introducing new regulations. However existing literature, and insights from the field show signs of actors in YNP responding to regulations by findings loopholes or making outright violations.

“74 percent of the respondents [jeep drivers] have been disciplined by the park administration for offenses related to the violation of traffic rules, 18 percent had not been punished while 8 percent had not got caught for violating traffic rules. From those who were disciplined, 48 percent were one-time offenders and 52 percent were repeat offenders (more than one time).”

- Aththanayaka et al (2019)⁸⁰

A chronic lack of enforcement contributes to this issue with frequent political influences being cited as a primary barrier in existing literature, the YNP Block 1 Action Plan, and field insights.

“Jeep drivers who think they can get away with it or think they are connected to dirty politicians will use that in order to guarantee themselves extra financial income.”

-Wildlife Expert

“But private vehicles that enter the park, especially those who are connected to politicians, are much worse and much difficult to control. At least safari jeep drivers are somewhat driven by the fear of being suspended. But private vehicles are not.”

-Public Officials

Senarathne notes that due to double standards displayed by management officials, the community is inclined to follow suit and disregard regulations.⁸¹ Therefore, political influences and a lack of faith in regulation and enforcement is entrenched within the tourism system in YNP.

⁷⁹ WAITS Software-und Prozessberatungsgesellsch mbH, “Complexity Basics — Part II: Types of Systems,” WAITS on Complexity (blog), October 21, 2024, <https://medium.com/waits-on-complexity/complexity-basics-part-ii-types-of-systems-a8295ba53d>.

⁸⁰ Aththanayaka, Siyasinghe, and Prakash, “Commercial Safari Jeep Drivers’ Perspectives on Mitigation of Traffic Congestion in the Ruhunu National Park (Yala), Sri Lanka.”

⁸¹ Senarathna, “Managing Protected Area Tourism for Sustainable Community Development: The Case of Ruhuna National Park (Yala), Sri Lanka.”

A concern that complexity theory raises is that given the institutional memory that the tourism system in YNP holds, each time a new regulation or a policy reform is proposed and/or fails, the regulator is facing not the same regulatory environment as the previous reform attempt but one that has adapted and possibly entrenched itself deeper against regulation.

This leads to three policy considerations: (1) the introduction of new regulations must be carefully considered, (2) smaller regulations with easier enforcement may be preferable to larger reforms which cannot be practically enforced, and (3) non-regulatory interventions that create positive incentives may enable positive outcomes. Interventions such as tourist briefings by accommodation providers, regular meetings between the DWC and Safari Jeep drivers, trainings, and marketing other destinations are examples of non-regulatory interventions that stakeholders highlighted.

While the above five insights focused on the complexity of the tourism system in YNP, as Box 3 highlights, the ecology in and around YNP is another complex system that is constantly adapting to tourism activity in YNP. Though beyond the scope of this study, scientifically understanding such adaptations is vital to designing sustainable tourism activities in YNP.

Box 3: The ecosystem of YNP is a complex system adapting to tourism activity

Tourism in YNP is not the only complex system involved in the issue, the ecosystem of YNP is another. It is commonly observed that the ecosystem within YNP is adapting to tourism.

Habituation is one such adaptation. The popularity of Block 1 and its frequent leopard sightings is attributed to the habituation of wildlife. The habituation of wildlife can in turn enable overcrowding as animals become comfortable around many safari jeeps, creating a vicious cycle.

“Leopards in Block 1 are habituated. Leopards in other blocks try to avoid humans and vehicles.”

- Public Official

“Leopards can stay in the same spot for hours, so vehicles accumulate around the site where they are spotted, resulting in vehicular congestion.”

- Public Official

However, there can be negative adaptations to tourism activity as well. Some expert interviewees noted potential impacts from overcrowding that may impact wildlife.

“Studies that have been done in Udawalawe show that if you crowd elephants with vehicles, they get into a more protective mode and stop feeding or feed less. And if you have 6 to 8 hours a day of vehicles crowding you, they start feeding less and there can be implications on reproduction.”

- Wildlife Expert

Given the extensive tourism activity in YNP Block 1, anthropogenic interventions such as filling waterholes and expanding road networks too may change the ecosystem within YNP. Expert interviewees were not in consensus on the extent to which DWC should engage in such anthropogenic interventions to facilitate tourism in a national park such as YNP.

7

Policy considerations and concluding remarks

As Sri Lanka prepares to welcome an unprecedented number of tourists from 2025 onwards,⁸² it is critical that tourism is reoriented towards nature positive pathways. This is not only to ensure the protection of Sri Lanka's natural resources, but also its continued success as a sought-after tourist destination.

This report makes the case for exploring the interactions between tourism and nature as a meeting of two complex systems. The issue of overcrowding and safari misbehaviour in YNP highlights how complexity theory can help revisit familiar problems from fresh perspectives.

Insights from this study demonstrate how many stakeholders can directly and indirectly create the circumstances which result in Safari misbehaviour and overcrowding inside YNP. Such interactions between stakeholders and jeep drivers can materially change the incentive structure and power dynamics within which the latter operates. Though initiatives such as jeep driver trainings are vital, their impact can be dampened through negative feedback loops such as tip and commission-based compensation structures and lack of enforcement. While robust regulations and their enforcement is critical, YNP is deeply politicised, and its actors display consistent adaptation to such political interferences. In such a context, repeated regulation alone may not be adequate to solve issues and non-regulatory interventions such as price incentives, marketing strategies, training and awareness building should be utilised.

The insights emphasise the policy dynamism required to sustainably manage interactions between tourism and nature in YNP. While consistently implementing good policies is a vital first step, such policies must constantly adapt to keep up with complex systems such as tourism and nature. Therefore, ideally the DWC should not only implement the YNP Block 1 Action Plan, but also update it periodically to reflect the changing conditions of tourism and ecology in the park.

Finally, even though the mandate of managing the park and tourism activities rests solely with one institution (DWC), without collaboration and support from other institutions and actors in the system, desirable outcomes cannot be realised. The restructuring of the Ministry of Environment to align all related departments such as DWC and the Department of Forest Conservation is an encouraging development.⁸³ However, such alignment and collaboration must extend across thematic areas (e.g., tourism, urban planning), and beyond government to other stakeholders such as jeep drivers and accommodation providers.

⁸² Editor, "Sri Lanka Aims for 3 Million Tourists in 2025," Aviation Voice, December 5, 2024, <https://aviationvoice.lk/sri-lanka-aims-for-3-million-tourists-in-2025/>.

⁸³ Parliament of Sri Lanka, "Gazette Extraordinary No. 2412/08 - 25/22/2025," n.d.

“I’m not a person who has lost hope for Yala, but I think the changes that it requires are not things that are going to happen in one or two years.

The only way to change things for the best is to change the mentality of the stakeholders”

-Accommodation Provider

8

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9

Annexures

Annex 1: Non-exhaustive list of studies on tourism in YNP

This non-exhaustive list of studies and articles on interactions between tourism and nature in YNP provides insight to the complexities present in the park and is useful for conducting further research.

Table 4: Compilation of resources on tourism and nature in YNP

Title	Author	Year
Commercial safari jeep drivers' perspectives on mitigation of traffic congestion in the Ruhunu National Park (Yala), Sri Lanka	Aththanayake et al.	2019
Tourism and its implications for management in Ruhuna National Park (Yala), Sri Lanka	Buultjens et al.	2005
Is restricting mobile communication a solution to overcrowding? A test from Yala National Park, Sri Lanka	Fernando et al.	2024
Taming Yala's anarchic drivers	Kadupitiyage	2023
Yala - Ruined by its own popularity?	Miththapala	2013
Yala worth more than Rs.7 B for Sri Lanka	Miththapala	2017
Conserving Yala: An Alternative Approach	Perera	2017
Can Yala Be Saved?	Pilapitiya	2023
Reasons for visitor dissatisfaction with wildlife tourism experiences at highly visited national parks in Sri Lanka	Prakash et al.	2019
Managing Protected Area Tourism for Sustainable Community Development: The Case of Ruhuna National Park (Yala), Sri Lanka	Senarathna	2023
Which national park attributes attract international tourists? A Sri Lankan case study	Suresh et al.	2022
15-20 safari jeep drivers penalised every month	Sheshadhi	2024
An 'ecotourist's recent experience in Sri Lanka	Newsome	2013
Causes for the Rude Behavior of Elephants in and around the Yala National Park	Ishthikar	2016
Demand for Responsible Tourism in Sri Lanka: A Case Study of Yala Wildlife Destination	Duminduhewa et al.	2020
How Previous Visits Shape Trip Quality, Perceived Value, Satisfaction, and Future Behavioral Intentions: The Case of Forest-Based Ecotourism in Sri Lanka	Perera and Vlosky	2013
Motivational and Behavioral Profiling of Visitors to Forest-based Recreational Destinations in Sri Lanka	Perera et al.	2012

Impact of vehicular traffic on vertebrate fauna in Horton Plains and Yala national parks of Sri Lanka: some implications for conservation and management	Karunaratna et al.	2017
Recreationist perspectives, attitudes, and perceptions towards national park management in Sri Lanka	Perera et al.	2015
Jeep limits in Yala – Shifting interests, rising numbers	Basnayake	2018
Local Tourists Of Ruhuna (Yala) National Park: Zonal Visitation, Travel Cost and Willingness To Pay	Weerasinghe et al.	2002
Ruhuna (Yala) National Park in Sri Lanka: Visitors, Visitation and Eco-Tourism	Weerasinghe et al.	2003
Saving Yala From Its Own Success	Echelon	2019
Speeding and danger in Sri Lanka’s safari parks	Haviland	2012
Sri Lanka scams in Yala National Park out of Tissamaharama	Travelling Ted	2024
Tackling Over-Tourism In Sri Lanka’s Yala National Park	Clark	2024
The ecology and behaviour of a protected area Sri Lankan leopard (Panthera pardus kotiya) population	Kittle et al.	2017
The Study on Level of Visitor Satisfaction at Different Park Attributes of Yala National Park, Sri Lanka	Wadippuli Arachchi et al.	2018
The Yala debacle and the need for accountability	Wijeratne	2022
Visitors’ On-site Wildlife Viewing Experience and Becoming Africa in Asia: Empirical Evidence from Yala National Park, Sri Lanka	Ushantha et al.	2024
What Makes Wildlife Tourists Happy and What Disappoints Them? Learning From Reviews Posted on Tripadvisor	Istvan et al.	2019
Yala Congested	Mendis	2022
Improving Jeep Driver Behaviour at Yala National Park: Four Ideas from Regulatory Economics, Big Data and Behavioural Science	Curionomist	2015
Yala National Park a mess due to political meddling	Hettiarachchi	2024
Yala National Park: Focus returns to regulating vehicle movement	Gunasekara	2023
Yala National Park: Increasing Problems and Possible Solutions	Miththapala	2013
Yala: Is over-visitation the problem or overcrowding?	Miththapala	2017

Source: Authors’ compilation

Annex 2: Accommodation providers around YNP: Chasing the elusive number

The only official and publicly available microdata set that the researchers could find on accommodation providers is the SLTDA registered accommodation provider micro dataset for the year 2018 published in the government open data portal.⁸⁴ While aggregate figures are provided annually in the SLTDA Statistical reports, they are not helpful when analyzing destination-level developments.⁸⁵ While market research organizations may possess accurate destination-level data, barriers to access such as paywalls hinder the widespread use of such data to inform policy debates. The researchers undertook a preliminary exercise to obtain a rough estimate of currently operating accommodation providers around YNP through the creation of two scraped datasets: the listing of accommodation providers in the Sri Lanka Tourism website by the Sri Lanka Tourism Promotion Bureau, and Booking.com. The Sri Lanka Tourism website has up to date information of all accommodation providers with a currently valid or expired license from the SLTDA. The data includes room numbers and location coordinates.⁸⁶

When comparing the data scraped from the Sri Lanka Tourism website in comparison to both the 2018 microdata set and the aggregated statistics in the SLTDA statistical report, the scraped data underrepresent total accommodation providers included in the SLTDA statistics (See Table 5).

Table 5: Comparison of SLTDA based accommodation statistics

District	SLTDA Statistical Report 2023	Scraped Results - 2024	Underrep ratio: 2023/2024	Official dataset 2018	Increase ratio: 2024/2018
All districts	53,229	50,530	1.05	36,129	1.39
Hambantota	2,477	2,234	1.10	1,695	1.31
Moneragala	711	668	1.06	450	1.41

Source: Authors' calculations

Booking.com data was scraped on the 20th of November 2024, using the search results that appeared when 'Yala National Park' was entered as the destination. Booking.com data is likely to be an underestimation for two reasons: firstly, it will only capture accommodation providers registered on the platform. Trip Advisor has more accommodation providers since it sources data from multiple booking platforms.⁸⁷ Secondly, accommodation providers may not list all their rooms on Booking.com, or all rooms may not appear for scraping (given that rooms are listed based on dates). Despite these limitations, Booking.com was selected for the study due to the reliability of the data and country-wide usage.

⁸⁴ "Open Data Portal - Sri Lanka," accessed January 2, 2025, https://data.gov.lk/search/field_topic/tourism-and-leisure-71.

⁸⁵ SLTDA, "Annual Report 2018."

⁸⁶ "Sri Lanka Tourism - The Official Website of Sri Lanka Tourism," accessed January 2, 2025, https://www.srilanka.travel/www.srilanka.travel/index.php?route=travel/tostay&hotel_type=&hotel_district=&is_expired=false

⁸⁷ On 18th November 2024, 64 accommodation providers were listed in Booking.com for Kalpitiya while TripAdvisor featured 131. The same pattern was observed for Hambantota and Moneragala, the districts in which YNP is situated..

Booking.com featured 297 accommodation providers around YNP while in the similar coordinate range, only 51 accommodation providers were listed on the Sri Lanka Tourism website.⁸⁸ Therefore, despite not all accommodation providers being on the platform, Booking.com still has 5.82 times the listings than SLTDA registered accommodation providers in the Sri Lanka Tourism website.

Estimating the number of rooms through the Booking.com data is a less straightforward process due to the multiple intervening factors noted above. However, for a rough estimation, the accommodation providers on Booking.com were matched to the Sri Lanka Tourism Website scraped data and the number of rooms listed in the two platforms were compared. On such accommodation providers featuring on both datasets, on average, Sri Lanka Tourism Website room numbers were 1.6547 times higher. Therefore, as shown in Table 6, inflating the actual Booking.com data of 1691 with this ratio leads us to a room estimate of 2798.

Table 6: Estimation of rooms around YNP

Site	Sri Lanka Tourism Website (SL Tourism)	Booking.com (actual)	Booking.com (adjusted)	Informality Ratio (actual/SL Tourism)
YNP	895	1,691	2,798.09	1.8893

Source: Authors' calculations

When comparing the average rooms per accommodation, it is clear that SLTDA registered accommodation providers are relatively larger (See Table 6). This suggests that the unregistered accommodation providers tend to be small scale.

Table 7: Comparison of average rooms per accommodation

Site	SLTDA Scraped - 2024	Booking.com (actual)	Booking.com (adjusted)
YNP	17.5	5.69	9.421

Source: Authors' calculations

⁸⁸ To increase comparability, only accommodation providers within latitude coordinates of 6.189296: 6.579432 and longitude coordinates of 81.12643: 81.51667 were considered.



Image courtesy Anushka Wijesinha, 2024

Acknowledgements

We extend our sincere gratitude to the stakeholders of Yala National Park, Kalpitiya, and Maskeliya who were gracious to share their knowledge, time, and energy to help us understand the complexities of tourism and nature, and the numerous experts in the public and private sector who guided us throughout the project from conceptualization to review.

Please cite the work as follows

Abeyanayake, Senith and Perera, Minuri. 2025. 'Spotting the Problem: Understanding Complexities in Tourism and Nature at Yala National Park.' Centre for a Smart Future, Colombo.

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