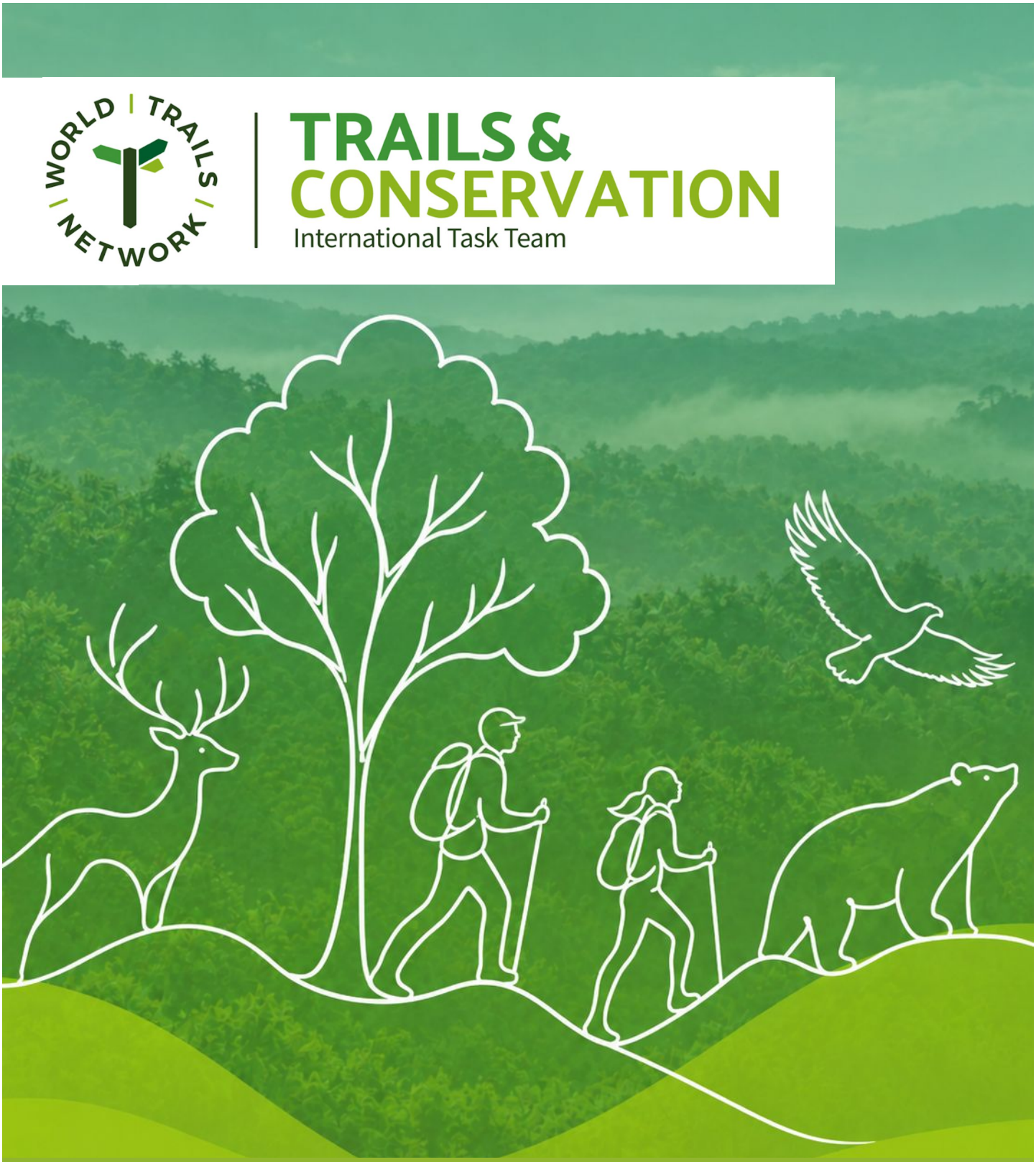
WORLD TRAILS NETWORK

TRAILS & CONSERVATION
International Task Team



Trails and Conservation:

Key Intersections, Emerging Opportunities and Collaboration Priorities

A World Trails Network Discussion Brief 2026

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Discussion Brief

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Description

A concise international discussion brief that identifies key intersections between trails and conservation. It draws together engagement between trail practitioners, academics, conservation professionals, protected-area specialists and others within the World Trails Network Trails and Conservation Task Team. The brief asks priority questions highlighting why the intersection between trails and conservation matters now.

Prepared through: World Trails Network Trails & Conservation Task Team 2024 - 2026

Table of Contents

1. Introduction **2**
1.1 Context and Objective 2
1.2 Opportunity 2
1.3 Why Trails and Conservation Belong in the Same Conversation 4
2. Key Intersections **5**
2.1 Access and Visitor Management 5
2.2 Ecological Impacts and Conservation Intersections 5
2.3 Stewardship, Education and Nature Connection 6
2.4 Conservation Management, Monitoring and Resilience 7
2.5 Tourism, Socio-economic Impact and Conservation Finance 7
2.6 Habitat Restoration, Landscape Connectivity and Trail-associated Corridors 8
2.7 Governance, Rights and Responsibility 9
3. What some of the emerging opportunities mean for both sectors **9**
4. Action, Research and Knowledge Gaps **10**
5. A Shared Agenda and Pathway Forward **11**
Selected References 12

1. Introduction

1.1 Context and Objective

The World Trails Network Trails and Conservation Task Team was first established in 2012 as a key focus area for the network. Emerging conversations that occurred at the 2014 IUCN World Parks Congress in Australia, which saw multiple agencies including the World Trails Network participating in the recognition of the role trails play in protected areas and as landscape-wide conservation proponents. Since the 2022 World Trails Conference the Task Team has strategically partnered closely with the IUCN, academia and platforms such as Adventure Scientists and leading trails to further unpack a programme of work and to identify opportunities where trails may play an increasing role in landscape connectivity, in conservation stewardship and in building relevance. It has noticed opportunities for increased advocacy, research and collaboration required to demonstrate where, how and when trails contribute to effective conservation outcomes.

The brief outlines the main dimensions of the increasingly relevant relationship between trails and conservation and unpacks a potential shared agenda to take forward between trail managers and conservationists, in a manner that deepens awareness and understanding of their respective fields and how each can support the other to consolidate insights and actions. It identifies areas where collaboration, research, comparative case studies, landscape-scale projects and future guidance could strengthen emerging opportunities.

1.2 Opportunity

Trails and conservation have a long-standing relationship.

Trails provide access to natural and protected landscapes, facilitate management and research, support recreation and nature-based tourism, and create opportunities for public engagement and stewardship within protected areas. Conservation, in turn, protects many of the landscapes through which trails pass. Trails are a primary infrastructure through which people access and move through natural, rural, cultural and protected landscapes. Many occur within or connect protected and conserved areas, while others cross landscapes important for biodiversity, local livelihoods and ecological connectivity. This creates a substantial, but still incompletely explored, intersection between trail planning, recreation and conservation. (Leung et al., 2018; Marion & Wilkins, 2024; Timothy & Boyd, 2015; Aspiazu, 2025).

Foundational research has taken place over the last two decades in relation to trails, their management and impact, yet emerging developments in both the trails and conservation sectors demand a better understanding of the wider relationship between trail systems and landscape-scale conservation, including the mechanisms through which trails may contribute to improved access management, ecological and habitat connectivity, ecosystem restoration, land protection, species monitoring, stewardship, conservation finance, resilience and cross-boundary governance.

The Task Team’s deliberations suggest that the conservation relevance of trails extends across several scales from the trail itself to systems of trails and then a broader landscape that includes socio-economic benefits.

Trails are a significant form of infrastructure through which people access and move through natural, rural, cultural and protected landscapes. Many occur within or connect Protected and Conserved Areas, while others cross landscapes important for biodiversity, local livelihoods and ecological connectivity. This creates a substantial, but still incompletely explored, intersection between trail planning, recreation and conservation. (Leung et al., 2018; Timothy & Boyd, 2015).

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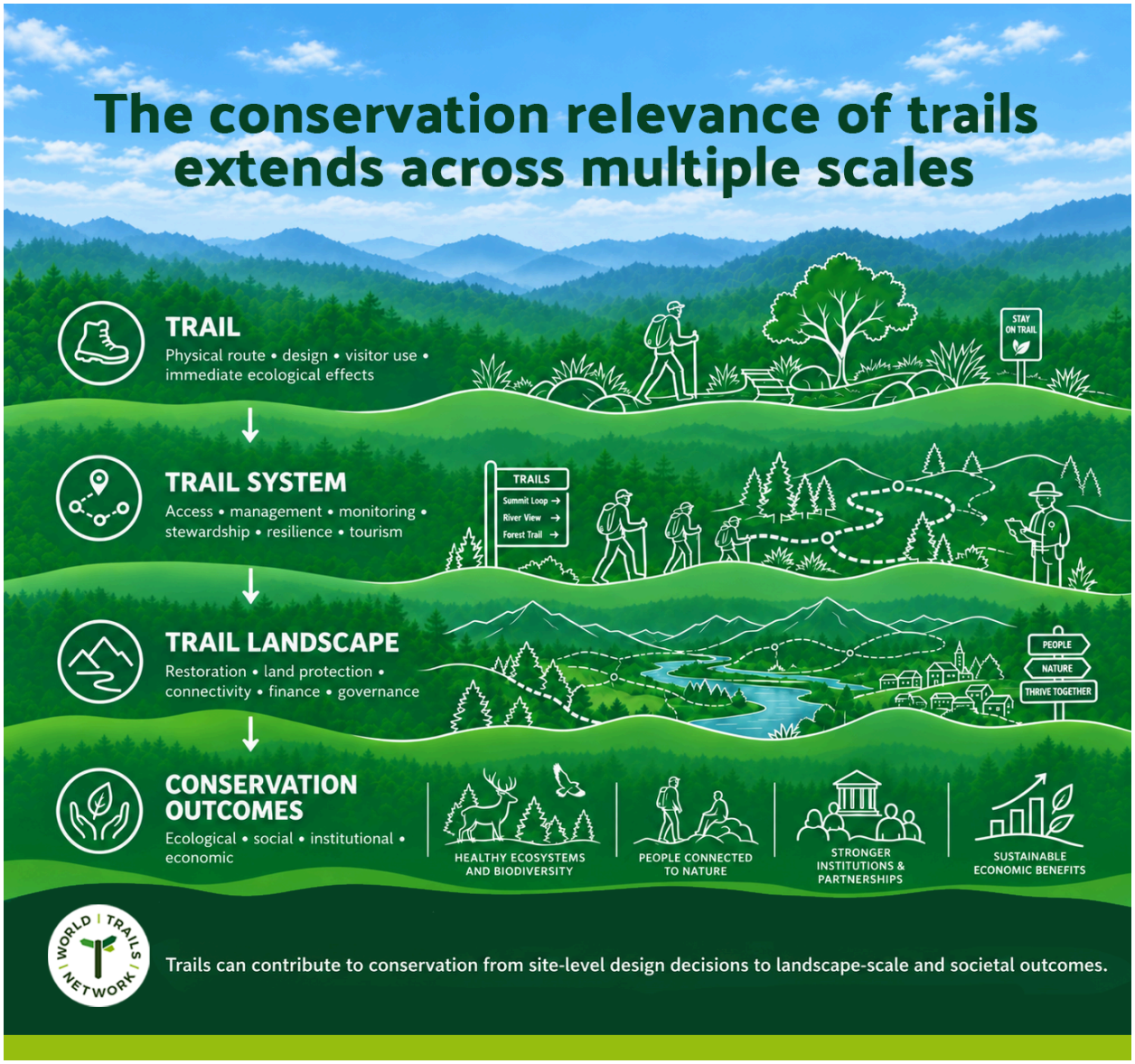

This wider perspective raises some of the following questions:

> *How can trails provide access while supporting ecological integrity? When do trail user experiences lead to stewardship? How better can trail networks support conservation monitoring*

and management? How might trail economies contribute more directly to conservation? Can trail-associated landscapes support ecological restoration and ecological or habitat connectivity? What governance arrangements make collaboration across landscapes possible? Can trails play an increasingly beneficial role as a form of conservation infrastructure?

Understanding the circumstances in which trail systems can function as conservation-enabling systems or as conservation-supporting infrastructure that bring together access, management, people, land, economies and institutions around shared conservation objectives helps define a way forward.

We ask:

Under what circumstances can trail systems contribute more deliberately to conservation outcomes, and what research, collaboration and practical actions can demonstrate such contributions going forward?

1.3 Why Trails and Conservation Belong in the Same Conversation

Protected areas rely on trails for visitor access, interpretation, research and management. Conservation management itself depends on routes that enable rangers, scientists and other practitioners to reach species, habitats and ecosystems. Trails also provide some of the principal ways through which the public experiences conserved landscapes and support the key economic benefits of nature-based tourism (Leung et al., 2018; Timothy & Boyd, 2015).

Several developments taking place across conservation make a deeper conversation particularly timely.

Conservation increasingly works at landscape scale, with growing attention to ecological networks, connectivity, restoration and relationships between protected and conserved areas, transboundary conservation and Biosphere Reserves. (Hilty et al., 2020).

Trail systems—particularly long-distance trails—often cross these same landscapes, jurisdictions and land tenures and engage with the broader public and civil society.

Significant growth in recreational use since 2020 has increased the importance of awareness and management approaches to ecological thresholds, visitor management and the careful route planning of trails. Recreation ecology provides a substantial knowledge base on the relationships between trail design, visitor use and ecological conditions, (Marion et al., 2016; Marion, 2023), yet important research insights are not always applied in practice.

Climate change and natural disasters add another dimension. Trail systems can provide access for restoration, invasive-species management, wildfire response, climate monitoring, emergency management and search and rescue operations.

The Task Team discussions point toward seven grouped intersections where deeper collaboration, increased research and best practices could be particularly valuable to help research insights become applied practice.

2. Key Intersections

2.1 Access and Visitor Management

Providing access to nature is one of the most direct functions of trails and one of the clearest intersections they have with conservation.

Protected areas frequently face the responsibility of both conserving ecological systems and landscapes while also allowing people to experience them. Trails provide a means of organising and managing such public access. Well-designed and maintained trails concentrate human activity onto defined pathways, channel movement towards appropriate locations and away from environmentally sensitive sites, and provide access to landscape features without requiring unrestricted movement across the wider environment (Marion, 2023; Leung et al., 2018).

Trails appear to occupy a potentially important middle ground between access and protection.

Research in recreation ecology demonstrates that trail impacts are influenced by alignment, environmental sensitivity, visitor intensity, behaviour and management capacity. Formal trails can concentrate use on defined routes and support visitor-management strategies, while monitoring and adaptive management allow managers to respond as conditions change (Marion et al., 2016; Marion, 2023; IVUMC, 2019).

Examples: Protected-area systems routinely use zoning, designated routes, seasonal access and monitoring to guide visitor movement. The Appalachian Trail and other major trail systems also use systematic trail condition and visitor-use monitoring.

Emerging opportunity: *Improving the integration of ecological sensitivity, visitor-use monitoring and adaptive management more systematically into trail planning and management across scales. This includes stronger work around route location, ecological thresholds, seasonal management and informal trail networks.*

> How can trail systems better provide meaningful access to nature while supporting ecological functions?

2.2 Ecological Impacts and Conservation Intersections

Trails by their very nature can produce both direct and indirect environmental impacts.

The recreation-ecology literature cites soil compaction and erosion, trail widening, vegetation loss, water-quality effects, wildlife disturbance, invasive-species spread and habitat fragmentation as important concerns (Marion et al., 2016; Pickering & Hill, 2009; Salesa & Cerdà, 2020; Sumanapala & Wolf, 2019).

Wildlife on the other hand may respond to recreational use through disturbance, displacement and changes in behaviour. A range of visitor-related wildlife impacts and management responses, including spatial separation, seasonal restrictions, wildlife-viewing practices and food-storage measures should be considered (Marion, 2019; Marion et al., 2019).

Examples:
Invasive species present a different form of impact and in some places significant concern. Dolman and Marion (2022) examined hikers' knowledge and behaviour relating to invasive plants, while Chisholm and McCune (2024) demonstrated that trail type and vegetation context influenced the magnitude and extent of exotic plant impacts. Many Australian trails have key policies and practices in place to limit invasive species spread.

Trail degradation itself is strongly affected by location, alignment, drainage, substrate and maintenance. Marion (2023) provides a state-of-knowledge review of trail sustainability, while Marion and Wimpey (2017) and Meadema et al. (2020) examine how alignment and layout influence soil loss and other impacts.

Emerging opportunity: *Establish a clearer understanding and communication of the impacts trails make on the natural environment and explore where key sustainable "best practice" policies and actions need to be included in trail standards to mitigate such impacts. Conservation considerations need to be integrated at the beginning of trail planning and continue through design, visitor management, maintenance and monitoring phases. For example, the 8-phase trail development planning approach of Western Australia provides a good example to build on.*

> What additional metrics and factors does appropriate trail planning need to consider to mitigate potential negative trail impacts?

2.3 Stewardship, Education and Nature Connection

Trails create direct encounters with landscapes, species and conservation activity, and as such provide important and easily accessible platforms for environmental education, interpretation, volunteering and citizen science participation.

Research suggests that direct nature experience can contribute to environmental awareness and appreciation of place, while trail organisations regularly mobilise communities around maintenance, restoration, monitoring and stewardship (Dorwart et al., 2010; Bratman et al., 2019; Viveiros-de-Castro et al., 2024). Long-distance trails may have an additional role to play because they connect people with landscapes at larger spatial scales, Viveiros-de-Castro et al. (2024), such "mega trails" help create a sense of place and meaning at a broader landscape scale not only for trail users but also for local communities.

Examples: Programmes associated with the likes of the Jeju Olle Trail, Trans Canada Trail and other trail organisations combine recreation with outdoor education, interpretation and volunteer participation. Citizen-science initiatives such as those provided by Adventure Scientists make extensive use of trails for data gathering and observations.

Emerging opportunity: *How to develop clearer pathways connecting trail experience with stewardship, volunteering, citizen science and long-term participation in landscape conservation.*

> Which trail experiences and programmes lead to sustained conservation engagement and increased public support?

2.4 Conservation Management, Monitoring and Resilience

Effective conservation depends on access. Rangers, researchers, restoration teams, volunteers, emergency personnel and fire-management teams all use trail and access networks to reach key protected areas and undertake field work. The relationship between trails and conservation management has received less attention than their associated recreational and tourism benefits, yet it may represent one of the most practical areas of collaboration between trail organisations and conservation agencies.

Long-distance trails can provide repeated access across environmental gradients and have been proposed as large-scale transects for biodiversity monitoring and validating remote-sensing observations. (Strohbach, Schmiedel & Finckh, 2018). Trail systems also support invasive-species management, habitat restoration, wildfire response and emergency access.

Examples: Trail networks in fire-prone landscapes can provide operational access for fuel management and wildfire response. Citizen-science platforms such as iNaturalist allow observations made along trails to contribute to biodiversity knowledge.

Emerging opportunity: *Trail systems as distributed infrastructure for conservation management might be worth exploring, linking ecological monitoring and landscape resilience planning and the definition of quality-control and monitoring conditions necessary for trail-derived citizen-science data.*

> How can trail systems more effectively support the practical work of conservation?

2.5 Tourism, Socio-economic Impact and Conservation Finance

Trails are a significant component of nature-based tourism and outdoor recreation. Protected-area trail systems support walking, hiking, mountain biking, horse riding, birding and other activities (Leung et al., 2018; Timothy & Boyd, 2015). Trails are often the key attraction and support associated economic activities such as guiding, accommodation, transport, food services and other local enterprises. (Lukoseviciute et al., 2021; 2022). In many protected landscapes, outdoor recreation and trail tourism form part of the economic value associated with conservation.

The income generated through trails and associated activities can be substantial and can take various forms from visitor fees and permits, guiding revenue, memberships and donations, conservation levies, fundraising events, concession fees, sports events, restoration finance and land acquisition to local employment and trail-related businesses.

Examples: The Bruce Trail Conservancy provides an important example of a trail organisation acquiring land and establishing nature reserves as part of securing and managing the wider trail corridor.

Emerging opportunity: *Consider developing and comparing mechanisms through which trail-generated economic value supports conservation, restoration and local stewardship. The question is whether the value created by trail activity contributes to maintaining landscapes, funding conservation activity or providing livelihoods that reinforce local incentives for conservation action.*

> At what degree does trail-generated economic value contribute directly to conservation funding and capacity?

2.6 Habitat Restoration, Landscape Connectivity and Trail-associated Corridors

Many long-distance trails pass through protected areas, private lands, working landscapes and areas where restoration or stronger ecological connectivity could be valuable.

Connectivity conservation aims to maintain, enhance and restore ecological flows, species movement and ecological processes across fragmented and intact landscapes. IUCN guidance emphasises ecological networks and corridors as important components of conservation systems, (Hilty et al. (2020).

Examples:

1. Wilson and Belote (2022) assessed lands adjacent to the Pacific Crest Trail / Continental Divide Trail (USA) as possible conservation corridors linking protected areas in the western United States. Their analysis found substantial conservation value within 2-km-wide trail-associated corridors.

2. Research on the Appalachian Trail (USA) provides another important example. Viveiros-de-Castro (2023) compared connectivity changes along the trail with control areas and identified greater improvement in structural connectivity within the trail corridor, associated in part with civic action, land protection and route protection.

3. The Bibbulmun Track (Australia) provides a different mechanism. A management buffer originally intended to protect the visual experience of hikers from forestry operations also resulted in additional vegetation protection adjacent to the trail, a clear case of incidental conservation benefit.

Important further work is required to determine when the concept is ecologically meaningful and how it should be defined to enhance the field. Initiatives to explore include the Brazilian Trails Network (Brazil) which incorporates connectivity into trail planning, and the Eden to Addo Corridor Initiative (South Africa) explicitly connecting trails and corridors as part of landscape-wide strategy.

Landscape-scale trail planning can create opportunities for trail planning to engage with wider conservation priorities rather than being undertaken solely for recreation purposes.

As trails provide access to restoration sites, and trail edges and associated lands may offer opportunities for revegetation and habitat improvement, restoration associated with trail landscapes may become a significant conservation function of trails. Linear landscape elements can contribute to ecological networks when appropriately designed and managed (Bennett, 1999; Hilty et al., 2020).

Emerging opportunity: *Invite key selected long-distance trails working at landscape level as organising structures for habitat and landscape restoration, land protection and ecological connectivity to participate in a global research programme. This may combine spatial analysis, species assessment, restoration planning, land tenure and governance to test where this opportunity is strongest.*

> What are the key considerations necessary to enhance and demonstrate the contributions long-distance trails can make to ecological connectivity and habitat restoration?

2.7 Governance, Rights and Responsibility

Trail systems frequently cross community landscapes, private land, protected areas, municipal boundaries and Indigenous territories.

Landscape-scale conservation faces many of the same institutional and governance challenges as long-distance trails that raise questions regarding rights, authority, access and benefit-sharing as well as ecological management.

The National Trails System in the USA and the Appalachian Landscape Partnership highlight how long-distance trails also frequently cross multiple landowners and jurisdictions, creating the need for collaborative and adaptive governance approaches. Lockwood (2010), Borrini-Feyerabend *et.al.* (2013), Wyborn (2014), Cerveny (2020; 2022), Aspiazu (2025).

Both trails and conservation may be competing for access to a landscape for different reasons, when they can align their objectives this can have increased overall benefits for the entire region and at different scales.

Examples: The Appalachian Landscape Partnership brings conservation organisations, agencies and researchers together around a shared landscape. Transboundary systems such as Peaks of the Balkans demonstrate the role trails can play in practical cross-border collaboration. Other examples include trails in UNESCO Biosphere Reserves.

Emerging opportunity: *Explore how trail systems might function as platforms for collaborative landscape governance across tenures, communities and jurisdictions.*

> What governance arrangements allow trail and conservation objectives to be pursued together more effectively for collective outcomes?

3. What some of the emerging opportunities mean for both sectors

For the trail sector: this discussion expands the opportunity to integrate conservation objectives more intentionally into trail design, route planning, management, monitoring, restoration, finance and landscape partnerships. It also creates opportunities to measure and communicate conservation outcomes more systematically and demonstrate the sector's conservation roles.

For the conservation sector: trail systems offer established infrastructure, organisations and communities that may support managed access, monitoring, restoration, public engagement, local livelihoods, resilience and cross-boundary collaboration, while unlocking greater conservation awareness and funding sources.

Bringing these perspectives and respective expertise together creates the potential to move from a long-standing overlap between trails and conservation towards more deliberate and impactful collaboration.

4. Action, Research and Knowledge Gaps

This brief captures the major areas of discussion that have emerged through the Task Team process.

It also identifies key gaps in coordination, knowledge and action needed to take the work forward:

Terminology
Developing a shared language and providing clear distinctions between physical trails, trail corridors, trail-associated landscapes, ecological corridors, conservation corridors and long-distance or “mega” trails.

Case studies as evidence
Building a structured international evidence base that examines where trail systems have

generated measurable conservation outcomes and through which mechanisms. Where has the existence of a trail resulted in additional land protection, restoration, stewardship or conservation investment?

Monitoring indicators
This continues from the above point, developing indicators that can measure ecological, social, stewardship and conservation-finance outcomes associated with trail systems will support both conservation and trails.

Landscape and habitat connectivity
Increase studies to undertake spatial, ecological and species-specific research on selected long-distance trail landscapes.

Ecosystem and habitat restoration
Champion a global programme of trails engaged in habitat restoration and improved ecosystem functioning, where the trails themselves become conduits for resources and facilitation.

Conservation-informed trail planning
By bringing recreation ecology, conservation planning and visitor-management practice into closer alignment with trails even outside conservation priority areas we deepen the connection between both sectors and further conservation influence.

Practical projects and guidance
Use selected landscapes as demonstration sites or projects and capture emerging knowledge into practical guidance where the evidence is sufficiently developed.

5. A Shared Agenda and Pathway Forward

This brief represents both a consolidation of the Task Team's work to date and an invitation to the next phase.

The World Trails Network contributes practitioner knowledge and brings together a global trail-sector network, international examples, accumulated experience of trail organisations and case studies.

The IUCN Trails and Conservation Task Force provides an opportunity to take the wider questions identified through this discussion into deeper conservation science, evidence review, policy, publication and guidance.

Together, these communities and their respective networks can develop research partnerships, comparative case studies, landscape pilots and practical guidance that test and refine the ideas outlined here and shape the ongoing conversation between trails and conservation.

Embracing a shared agenda, the next phase can progress from discussion, learning and research to validation, guidance and application across a collaborative landscape.

The purpose for this WTN discussion paper remains, and that is to bring conservationists and trail practitioners into closer conversation and to collaborate to strengthen the conservation outcomes trails can deliver.

Where conservation objectives are deliberately integrated into trail planning, governance and management, trail systems may provide opportunities extending well beyond recreation alone and play an important role as a form of conservation infrastructure. Understanding when, where and how this occurs is an important agenda for the trail and conservation communities.

The opportunity ahead is to better understand how trail systems can contribute to conservation, and to create the research, partnerships and practical projects through which those contributions can be strengthened and demonstrated.

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