NOVA SCHOOL OF BUSINESS & ECONOMICS

Travel by B Corp

CITIZEN SCIENCE

GUIDANCE AND IMPLEMENTATION TOOLKIT

MARCH, 2026



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1. Why **Citizen Science** in Travel Matters



Purpose of the Toolkit

Travel has the potential to create value far beyond economic benefit. When designed intentionally, travel can deepen connections to a place, support scientific knowledge and contribute to the long-term health of destinations. As a component within a wider arsenal of science-led, place-based activities, travellers can be enabled to become active contributors to scientific research (citizen science).

When delivered within an overarching nature-focused business strategy travellers can be more than just observers within a place, they can help support practical ways to fully unlock the potential for travel.

The purpose of this toolkit is to equip all travel and hospitality businesses with the knowledge of how to integrate citizen science into their experiences.

Why Now? A Changing Landscape

The travel landscape is changing. Travellers are increasingly seeking purposeful experiences that allow them to learn, engage, and contribute. At the same time, adopting legislation to address climate and nature crises often requires greater evidence through data collection and monitoring, as well as growing a stronger public awareness of species depletion and the need to prioritise and protect natural ecosystems.

With over 1.5 billion international visitors in 2025 and billions more staying domestically, there is a huge cavalry of people who could engage in nature and community protection. Citizen science in the travel and hospitality industry can be one response to these challenges within a wider nature strategy. It can help scientists address data gaps while giving travellers the chance to contribute meaningfully on an issue of wide relevance.

Beyond data, citizen science can foster a deeper connection with nature, helping people develop a stronger attachment to the environments and places they visit. By creating opportunities for participation, the travel industry is a facilitator in engaging more people in supporting and conserving biodiversity for the long term.

Travel by B Corp

- **Travel by B Corp** (TbBC) is a collective of Certified B Corp companies that work within or as suppliers to the travel and hospitality industry to practise, prove and promote travel and tourism that benefits all. The group recognises that often the industry is undermining our future by acting in a way that damages our natural world and exploits host communities. **TbBC** member companies believe that together it's possible to imagine, design and scale a travel industry that benefits everyone, including generations to come.

- The **TbBC** collective is self-organised into Shared Impact Projects (ShIPs) that plan, pilot, practise and prove interventions.

- This **Citizen Science toolkit** is the outcome of one ShIP and has been built so that any travel or hospitality company can encourage and support their customers to take part.

2. What **Citizen Science** is - and isn't

What does Citizen Science mean?

In simple terms, citizen science is when guests contribute to real scientific research during their travels.

THREE KEY CHARACTERISTICS:

a) **Real data for real research**: Participants collect observations, photos, videos, audio recordings, or measurements that scientists actually use in studies and databases.

b) **Validated by experts**: Scientific institutions (such as universities, research centers, NGOs) verify and manage the data. These partners ensure that data collection methods are credible and that contributions are integrated into research.

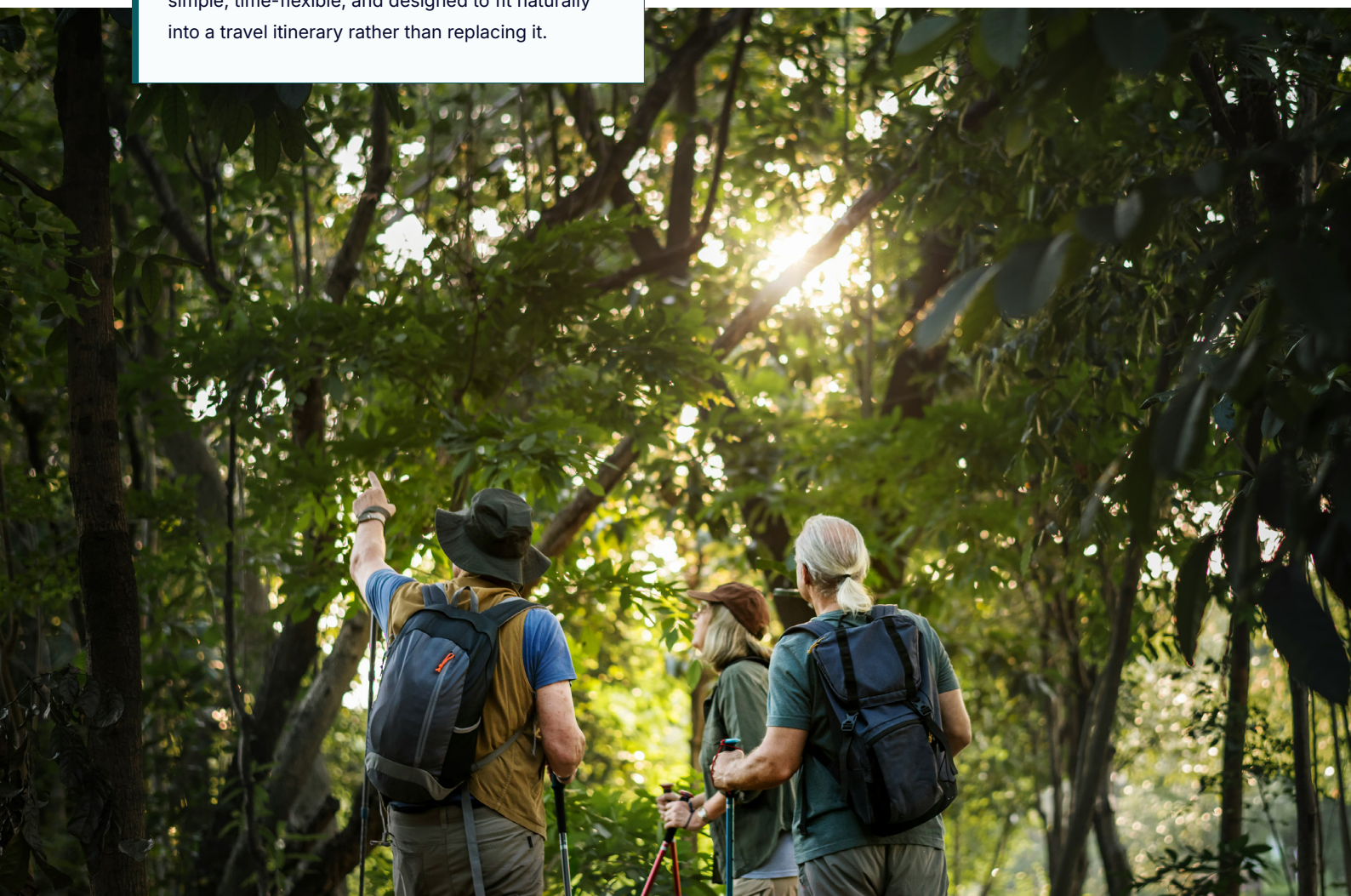
c) **Flexible integration**: Citizen science activities can be adapted to different tourism contexts: guided tours, hotels and lodges, family programmes, or self-guided experiences. Activities are typically simple, time-flexible, and designed to fit naturally into a travel itinerary rather than replacing it.

Citizen Science is not...

- ... one-off or tokenistic activities that have no scientific purpose.
- ... educational experiences where data is collected but never used, validated, or shared with a scientific body.
- ... marketing-led activities presented as research without a clear scientific direction.

Why is Citizen Science needed?

- **Addresses data gaps** - particularly in biodiversity monitoring and remote or seasonal locations
- **Supports destinations** - in tracking environmental change over time
- **Builds traveller awareness and connection** - to local ecosystems and scientific work
- **Contributes to transparency and impact measurement** - across the travel sector



3. **Safeguarding Integrity**: Avoiding Greenwashing



Regulation Snapshot

Regulation around environmental and sustainability claims is tightening rapidly, particularly in Europe and the UK. Relevant frameworks include the **EU Green Claims Directive** and the **UK Green Claims Code**, both of which take action to make environmental claims truthful, clear, evidence-based, and not misleading to customers.

For travel businesses, this is not just a compliance issue, it is a *trust* issue. Claims about positive impact, regeneration, conservation, or biodiversity shape customer expectations. Citizen science supports learning and science, but only clear, evidence-based claims protect businesses and customer trust.

HOW TO TALK ABOUT CITIZEN SCIENCE WITHOUT GREENWASHING?

Ensure that citizen science activities are just one part of an overall business strategy to protect nature and communities focus on **what guests contribute and how that contribution is used**, rather than on promised outcomes.

a) Only present citizen science opportunities that link to a real scientific partner.

b) Travellers contribute data, not guaranteed conservation outcomes - Avoid implying guaranteed ecological benefits unless there is evidence for it.

c) Use simple, factual language to explain what guests will do and where their data goes.

Checklist: Before promoting a citizen science activity, ask:

- ☐ **Is the scientific partner clearly identified?**
- ☐ **Is the data used or validated?**
- ☐ **Is the activity realistic for typical guests?**
- ☐ **Can the claim be measured and explained?**

4. How Citizen Science can Work in **Tourism and Hospitality** Settings

Citizen science does not need to be complex, time-consuming or disruptive to guest experiences. Across different tourism contexts, successful initiatives share common features: a clear purpose, simple protocols, strong scientific partners, and thoughtful integration into operations.

A) For Tour Operators (small groups, guided trips)

Tour operators are well placed to integrate citizen science into guided experiences, particularly where knowledgeable guides already support tours.

Common Activities:

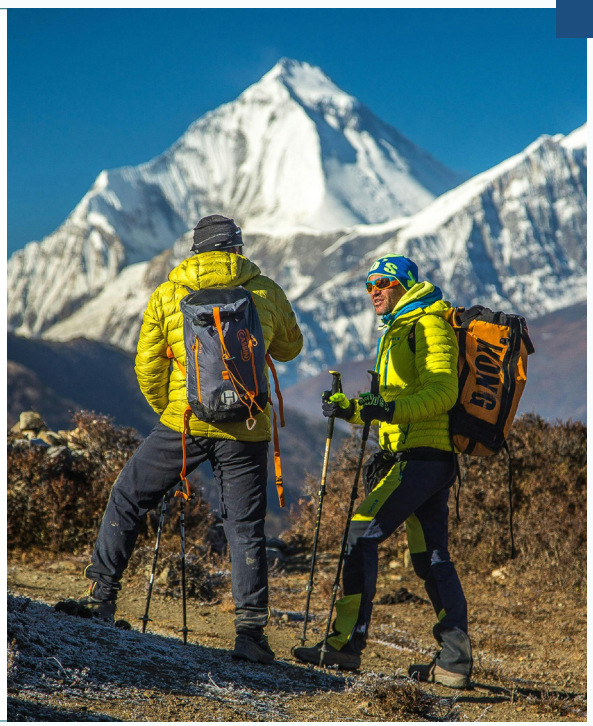
- Species observation and logging data (birds, whales, plants, etc.)
- Simple water or soil sampling following scientists' protocols
- Photographic documentation via platforms such as iNaturalist or eBird

Case Snapshot:

Altitude sickness study on Himalayan treks organised by Intrepid Travel

On high-altitude treks in Nepal, travellers contributed overnight oxygen level data to a large-scale study on acute mountain sickness led by the University of Birmingham. The aim of the research was to better predict which trekkers were most at risk of altitude sickness and improve safety guidance for future expeditions. Researchers worked closely with tour operators and local guides to ensure safe participation and minimal disruption to itineraries. The project demonstrates how adventure travel can support meaningful medical research, with plans to expand in future seasons.

Source: University of Birmingham



BEST PRACTICES:

a) Train guides to introduce the activity and support data quality
b) Focus on species/activities relevant to the destination
c) Keep activities optional and time-limited



B) For Hotels and Lodges

Hotels and lodges can host low-effort, place-based citizen science that guests engage with at their own pace.

Common Activities:

- Garden biodiversity monitoring stations linked to scientists
- Shoreline/beach monitoring at coastal sites
- Quiet-time night sky or bat listening activities

Case Snapshot:

Resort-led Marine Monitoring

Nay Palad Hideaway, a coastal resort in the Philippines, partnered with The Long Run, a UK registered conservation charity, to document sea turtles using photos for identification. Guests contributed images from boat trips, while trained staff ensured adherence to safe, non-invasive protocols. Data was then fed into a national database tracking turtle migration patterns.

Source: The Long Run

BEST PRACTICES:

a) Integrate activities into guest touchpoints

b) Prioritise observation over intervention

c) Ensure staff understand both the "how" and the "why"



C) For Families and Children

Citizen science for families and children works best when framed as play, discovery, and exploration rather than formal data collection.

Common Activities:

- Scavenger-style biodiversity hunts
- Nature journaling that feeds into apps
- Simple challenges or mini-leaderboardss

Case Snapshot:

Exploration as a Gateway

At Lovat Parks, sustainability initiatives aimed at children use digital badges and rewards to encourage engagement. While not a formal citizen science programme, this gamified model is now being explored for nature observation activities, helping make environmental participation easy and fun during holidays. Such approaches can act as a gateway to future citizen science engagement.

Source: LovatParks

BEST PRACTICES:

a) Keep tasks short and intuitive that naturally fit into the guest experience

b) Avoid technical language so guests feel confident taking part

c) Reward curiosity and participation through small incentives

Suggested Approach: **Gamification / Low-barrier Ideas**

Gamification and low-barrier design can increase participation across tour operators, hotels, and family-focused experiences. The goal is not to trivialise science, but to make participation accessible, motivating, and easy to understand.

Simple approaches can include:

- Leaderboards or counters showing contributions
- Monthly challenges (such as “species of the month,” etc.)
- Optional digital badges or certificates

These tools work best when participation remains voluntary, clearly structured, and linked to a real scientific purpose.

Case Snapshot:

Partnering with iNaturalist

Exodus Adventure partners with iNaturalist, one of the world’s leading citizen science platforms, to enable travellers to record wildlife observations during selected trips. Guests use the free iNaturalist app to photograph and identify species, with observations added to a global biodiversity database used by researchers and conservationists.

Source: ExodusAdventure







5. Engaging **Customers** Effectively

Successful citizen science experiences rely on understanding what motivates travelers and designing activities that fit into their journey. Research and industry experience show that travelers are most engaged when they can make a meaningful contribution, satisfy their curiosity, learn something new and connect with the local environment or community.

How to introduce Citizen Science Opportunities?

- **At booking**: Offer a short, clear explanation of the activity with a simple opt-in.
- **Pre-arrival**: Share digital briefings or guides explaining what guests will do and why it matters.
- **On-site staff**: Train staff to introduce activities enthusiastically, answer questions, and show the value of participation.

What Increases Participation?

- Emphasise that guest contributions support real scientists or local communities.
- Keep tasks simple, flexible, and time-friendly, allowing guests to engage without pressure.
- Provide feedback and results, such as a summary of species recorded, photos, or badges earned, which helps explain the impact of travellers' participation.
- Highlight credible partnerships with recognised scientific organisations to build trust.

What Reduces Participation?

- Activities that are too technical or time-consuming.
- Tasks that are perceived as extra work during a holiday.
- Lack of clarity about the purpose or value of the activity.
- Overly complex digital tools or apps that frustrate users.

BEST PRACTICES

- **Explain clearly what participants will do and why it matters.**
- **Make participation optional and flexible.**
- **Use visual feedback (leaderboards, badges, species counts) to show impact.**
- **Train staff to guide, encourage, and celebrate guest contributions.**





6. How to **Find Genuine Citizen Science Partners** (or Build Your Own Local Model)

Partnering with credible citizen science organisations ensures that guest activities contribute to real research, strengthen credibility, and avoid greenwashing. Travel businesses can either collaborate with established partners or design simple initiatives that meet scientific standards.

HOW TO SET UP A LOCAL PARTNERSHIP?

a) Identify a local issue that aligns with scientific or conservation priorities (e.g., turtle nesting, water quality, bird counts).

b) Reach out to local academic or NGO partners to explore collaboration.

c) Co-design a simple protocol suitable for guests, ensuring tasks are feasible, safe, and scientifically valuable.

d) Pilot with small groups, gather feedback and refine the activity before scaling.

e) Add clear communication guidelines to avoid greenwashing: focus on transparency and education, not guaranteed ecological outcomes.

Checklist: How to assess a potential Citizen Science partner?

- ☐ **Is the scientific partner clearly identified?**
- ☐ **Is the data used or validated?**
- ☐ **Is the activity realistic for typical guests?**
- ☐ **Can the claim be measured and explained?**

Example Types of Partners

- **Universities** researching health impacts, biodiversity mapping, environmental monitoring, or eDNA studies.
- **National Parks and Reserves** managing species counts or habitat restoration programmes.
- **NGOs** running citizen science monitoring, such as for marine species, birds, or terrestrial wildlife.
- **Global CS platforms** such as iNaturalist, Seek, eBird, or Reef Check, which provide tools, protocols, and community validation for contributions.

KEY TIPS FOR TRAVEL & HOSPITALITY BUSINESSES

- **Ensure staff or guides are trained to facilitate and explain the activity.**
- **Share results with guests to reinforce impact and motivation.**
- **Start small and scale gradually. Even a simple activity can produce meaningful data.**
- **Use digital tools or apps where possible, but avoid overly complicated technology that can reduce participation.**

7. Building Long-Term **Impact & Legacy**

A) **Co-design activities with scientists and local stakeholders**

To create lasting value, citizen science programmes should go beyond one-off activities and contribute to scientific knowledge, community engagement and wider business nature strategy. Involving local communities and scientists in co-design ensures that activities are relevant, culturally appropriate and scientifically credible.

Case Snapshot:

The Polar Collective: Co-designing Citizen Science in Polar Tourism

The Polar Collective brings together tour operators, scientists, expedition guides and travellers to co-design citizen science initiatives across the Arctic and Antarctic. They support projects such as seabird surveys and wildlife monitoring that are scientifically credible and practical for guides to deliver. This collaborative model helps close critical data gaps in remote regions while ensuring activities are meaningful, well-supported and integrated into the tourism experience.

Source: **Pollar Collective**



B) **Make results visible and meaningful to guests**

Sharing results publicly and transparently (through newsletters, social media, or post-trip reports) builds trust with guests, highlights their contributions, and demonstrates the real impact of the programme.

Case Snapshot:

Flooglebinder: Post-Trip Impact Reporting

Flooglebinder structures citizen science into learning programmes and provides post-trip impact reports summarising collected data and learning outcomes. These reports are made publicly available annually, showing exactly how participants' efforts contribute to research, community knowledge and conservation goals.

Source: **Flooglebinder**





C) Encourage repeated contributions from returning guests

Getting guests to take part again helps them feel more connected and allows businesses to build up valuable data over time. Simple strategies such as follow-up emails, seasonal challenges, or loyalty-style badges can motivate guests to contribute again and deepen their bond with the place and science.

Case Snapshot:

FjordPhyto: Ongoing Engagement via Newsletter

FjordPhyto keeps participants connected to ongoing research through a bi-monthly newsletter. Guests and supporters receive updates on discoveries and project progress, allowing them to see the outcomes of their contributions and stay engaged with science over time.

Source: FjordPhyto



Welcome to the FjordPhyto Newsletter!

We are excited to bring you the **first issue** of our **FjordPhyto newsletter, Bloom Edition** – delivered to your inbox **every two months** — to stay directly connected with the project and the incredible discoveries we are making together. As a collaborative participatory science project, **FjordPhyto** relies on the efforts of the polar travel industry. Working with our team of scientists from Scripps Institution of Oceanography, UC San Diego (USA), and the Universidad Nacional de La Plata (Argentina), participants aboard expedition vessels in Antarctica collect vital data and samples with FjordPhyto-trained Expedition Guides. Each contribution helps us **monitor phytoplankton**, the microscopic

In this and future issues, we will share the la
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and involving more people in the scientific p

Phytoplankton, publica

Field Adventures

Blue Green Expeditions

Martina in the Arctic

Svalbard and Greenland with Blue-Green Expeditions

Let's observe what we found in those samples!

Here we see **crab larvae** (megalopa larvae). The megalopa is the larval stage of many crustaceans (such as crabs, which go through it after the zoea stage) that precedes the juvenile adult form. This larva already resembles a miniature crab and abandons its planktonic life to begin living on the seabed.

Tripos is one of the largest dinoflagellate genera with ~800 reported species widely distributed in global marine ecosystems. *Tripos* species are ecologically important as critical primary producers.

These small crustaceans are called **copepods**. They are related to shrimp and crabs, and are essential to many ecosystems! Copepods are abundant and found in nearly all aquatic habitats, acting as a vital link in the food web by eating phytoplankton and serving as food for larger animals.

Chaetoceros is a genus of diatom, widely distributed throughout the world's oceans. They form chains, which help them to maintain their buoyancy. The cells are joined together with lon extensions called setae, which are like hollow spines.

Pyramimonas is a group of green algae with almost 50 species. The organisms are solitary and flagellated; some of them are marine, but they are also freshwater. Some species are found in **both the Arctic and Antarctica**. It is nearly impossible to differentiate the species with a standard

Get to Know Us

Tobías Chavero

New PhD student at Universidad Nacional de La Plata

Tobías was born in La Plata, Argentina. He joined the project in 2022 and in 2025 became a PhD student at the Phycology Division at Universidad Nacional de La Plata.
His research focuses specifically on diatom blooms and their sedimentation to the seafloor along the coastal areas of the Antarctic Peninsula. His scholarship is funded by the Comisión de Investigaciones Científicas (CIC) of Buenos Aires.

"I have always been drawn to polar science, the ocean, and conservation. Working on projects focused on phytoplankton biodiversity and climate change in Antarctica seems like the perfect way to combine my interests, and I am grateful to be able to do it." -Tobías

Tobías presented his preliminary results at a conference in Argentina, entitled "Phytoplankton of the Errera Channel (Antarctic Peninsula): Blooms, biomass, abundance and composition (2016-2024)". He analyzed 7 years of data collected from the Errera Channel by FjordPhyto citizen scientists. He is working on writing these results for publication.

The results show that the community of phytoplankton found in the Errera Channel changes dramatically from year to year. Some of the phytoplankton 'blooms' - or number of phytoplankton rapidly growing - reach over a million cells in a single liter of water. Dramatic year-to-year variability in phytoplankton is a sign



8. Additional Resources



A) Interviews for this Guidance

- **Senderos:** B2B Marketing for conservation lodges; clients include Polar Latitudes, Steps Travel, Journeys with Purpose
- **Lovat Parks:** UK holiday park chain using gamified recycling & sustainability app project with Falmouth University; starting to integrate iNaturalist for guests
- **Exodus Adventure:** CS "departures" collecting DNA water samples via NatureMetrics partnership
- **The Long Run:** Organising CS in tourism at Nay Palad Hideaway for biodiversity management in the Philippines
- **Flooglebinder:** Organising conservation tours for students around the world
- **Intrepid Travel:** Organising adventure travels for small groups around the world
- **University of Birmingham:** Exercise and Rehabilitation Sciences, medical research expedition led by Dr. Kelsey Joyce (altitude sickness study in Nepal in collaboration with Intrepid Travel), citizen science integrated into the mountaineering season
- **University of Tasmania:** Prof. Elizabeth Leane, Antarctic Studies Professor taking part in CS tours
- **FjordPhyto:** Allison Cusick, project leader, biologist, oceanographer
- **The Polar Collective:** Annete Bombosch, co-founder of the collective, leading citizen science projects in the Arctic and Antarctic

B) Examples of Citizen Opportunities*

- Adventure Scientists (access here)
- SciStarter (access here)
- eBird (access here)
- iNaturalist (access here)
- Globe Observer (access here)
- European Citizen Science Association
- Zooniverse (access here)

**The citizen science opportunities listed are provided for illustrative purposes only. We have no affiliation with or endorsement of any organisations mentioned, and the initiatives have not been independently tested or verified by the authors. They were included based on publicly available information.*

C) Examples of Activities by Travel Setting

SETTING	ACTIVITY EXAMPLES	BEST PRACTICES
Tour Operators (small groups, guided trips)	• Species observation and logging (birds, whales, plants) • Water/soil sampling, photographic documentation	• Assign roles to participants; brief guides thoroughly; data feeds into scientific databases
Hotels & Lodges	• Garden biodiversity monitoring • Shoreline/beach monitoring Night sky or bat listening	• Integrate activities into the guest experience; make participation optional but engaging
Families & Children	• Scavenger-style biodiversity hunts • Nature journaling linked to apps • Mini-leaderboards	• Gamify learning; keep tasks simple and low-pressure
Solo Travellers / Low-Barrier Options	• Seek app observations • Seasonal challenges • Digital badges	• Self-guided; flexible timing; provide feedback and recognition

D) Further Readings

- Understanding Tourists' Transformative Experience: A systematic literature review (access here)
- The Benefits of Citizen Science and Nature-noticing Activities for Well-being, Nature Connectedness and Pro-nature Conservation Behaviours (access here)

Travel by B Corp

We are a coalition of B Corp businesses across the travel sector who believe in a world where people and planet-positive travel is the norm; a norm that delights travellers and that supports the long-term health of the travel industry.

To learn more: **www.travelbybcorp.com**

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For over 40 years, **NOVA School of Business and Economics** has been committed to shaping a better future by advancing knowledge, developing responsible leaders, and fostering meaningful impact in Portugal and internationally.

The **Westmont Institute of Tourism and Hospitality** aims to become a renowned leading, international centre of excellence in the field of Tourism & Hospitality education and research, fostering a culture of leadership, entrepreneurship, innovation, impact, and collaboration

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