

Issue #2 | 2025



INTERNATIONAL ZOO  
EDUCATORS  
ASSOCIATION

# news

## The Ripple Effect: Leading Social Change for Biodiversity Conservation

**How can one action cause tides to turn?**

This special edition explores the power of social change in driving biodiversity conservation. Through inspiring stories from zoos and aquariums worldwide, discover how engaging visitors and communities creates ripples that protect wildlife and habitats far beyond their walls.

*Together, we can shape a future where people and nature thrive.*

**Editors:**

Dr Judy Mann-Lang,  
Dr Sarah Thomas, Lian Wilson  
and Rosa Pons

**Reviewers:**

Marion Karam and  
Thalia Pelegrin

**Proofreader:**

Laurie Clinton

**Layout and design:**

Ink Design  
Publishing Solutions

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## WAZA Executive Office

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**Postal Address:**

WAZA Executive Office  
Carrer Roger de Llúria 2, 2-2  
08010 Barcelona  
Spain



+34 936638811



[secretariat@waza.org](mailto:secretariat@waza.org)



[www.waza.org](http://www.waza.org)



@officialWAZA



@wazaglobal



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**WAZA**

World Association  
of Zoos and Aquariums



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INTERNATIONAL ZOO  
EDUCATORS  
ASSOCIATION

## WAZA Executive Office Staff

---

**Chief Executive Officer:**

Martín Zordan ([ceo@waza.org](mailto:ceo@waza.org))

**Director of Membership and Events:**

Janet Ho ([membership@waza.org](mailto:membership@waza.org))

**Membership and Events Assistant:**

Nicole Whittle ([membership@waza.org](mailto:membership@waza.org), [conference@waza.org](mailto:conference@waza.org))

**Head of Conservation and Animal Welfare:**

Paula Cerdán ([conservation@waza.org](mailto:conservation@waza.org), [animalwelfare@waza.org](mailto:animalwelfare@waza.org))

**Conservation and Animal Welfare Assistant:**

Thalia Pelegrin ([conservation@waza.org](mailto:conservation@waza.org), [animalwelfare@waza.org](mailto:animalwelfare@waza.org))

**Head of Partnerships and Advocacy:**

Loïs Lelanchon ([advocacy@waza.org](mailto:advocacy@waza.org))

**Head of Communications:**

Rosa Pons ([communications@waza.org](mailto:communications@waza.org))

**Communications Assistant:**

Marion Karam ([communications@waza.org](mailto:communications@waza.org))

**Finance and Office Manager:**

María Jesús Sanz ([administration@waza.org](mailto:administration@waza.org))

## IZE Executive Office Staff

---

**IZE Executive Office Staff Administrator:**

Nette Pletcher ([izeaoffice@gmail.com](mailto:izeaoffice@gmail.com))

### WAZA Membership as of 1 October 2025

Affiliate:	9
Association:	18
Corporate:	39
Institution:	286
Life:	98
Honorary:	31

### IZE Membership as of 12 October 2025

Institutional:	89
Individual:	121
Associate:	33

### 2025 WAZA Conference

**2025:** Cali Zoo, Colombia,  
26 to 30 October 2025

### 2026 WAZA Conference

**2026:** Cologne Zoo, Germany,  
25 to 29 October 2026

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# WAZA PRESIDENT'S LETTER

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**K**ia ora/Hello WAZA and IZE community, I am delighted to introduce our special joint edition of the WAZA magazine, published in partnership with the International Zoo Educators Association (IZE), titled *Leading Social Change for Biodiversity Conservation*. In an era when the urgency of conservation has never been greater, this edition seeks to highlight the vital role that behavioural and social change plays in safeguarding our planet's biodiversity. By bringing together practical case studies, innovative initiatives and a diversity of perspectives, we hope to inspire and equip zoos and aquariums worldwide to amplify their impact through meaningful engagement with visitors, local communities and policy-makers.

Zoos and aquariums have a unique capacity to foster connection between people and the natural world. Every visit, educational programme and outreach activity represents an opportunity to influence attitudes, shift behaviours and cultivate a sense of stewardship. When we design initiatives grounded in robust social theory – whether drawing on behavioural science, community psychology or conservation education research – we are better positioned to achieve lasting outcomes. By showcasing projects ranging from educational programmes that encouraged communities to cut plastic consumption to school mentoring schemes embedding conservation values, this edition illustrates how behavioural interventions can be developed, assessed and expanded to foster community impact, drive policy change and enhance wellbeing.

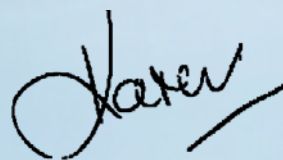
Yet, no single organisation can address the multifaceted challenges of biodiversity decline on its own. Our collective strength lies in collaboration. When zoos and aquariums work together – pooling resources, sharing insights and coordinating campaigns – we can reach broader audiences and foster systemic change. In showcasing these case studies throughout the magazine, we aim to encourage further cooperation between WAZA and IZE members, as well as with local NGOs, academic institutions and government agencies. Together, we can

ensure our collective impact in safeguarding our planet's biodiversity is greater than ever.

Beyond policy and advocacy, social research remains critical to guide our initiatives. Understanding the values, motivations and barriers experienced by different audiences enables us to tailor messages and interventions more effectively. Whether it is evaluating how a school outreach programme shifts student perceptions of endangered species or assessing the long-term wellbeing benefits of immersive nature encounters for urban communities, rigorous evaluation informs future practice and enhances credibility. As you read through the featured articles and reflections in this edition, I encourage you to consider how the lessons shared might be adapted to your own context, and how you could partner with other institutions to co-create new projects and action.

In closing, *Leading Social Change for Biodiversity Conservation* represents more than a collection of articles – it is a call to action. It reminds us that an important mission entrusted to zoos and aquariums is about driving positive change in the hearts, minds and behaviours of people for the benefit of animals and their environments. By centring social change within our conservation strategies, we amplify our ability to halt biodiversity loss, restore habitats and foster a more sustainable future. I thank each of you – educators, researchers, keepers, communicators and policy-advocates – for your dedication to this endeavour. Let us seize this opportunity to learn from one another, strengthen our partnerships and lead our communities towards a world where humans and wildlife thrive together.

Ngā mihi/Warm regards,



Karen Fife MNZM  
WAZA President



# WAZA CEO'S LETTER

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Dear WAZA and IZE members,

Over the past two decades, The World Association of Zoos and Aquariums (WAZA) and the International Zoo Educators Association (IZE) have forged a steadfast partnership grounded in our shared conviction that aquariums and zoos can be powerful agents of social change. Our journey has always been driven by a common vision: to harness education and engagement for measurable conservation outcomes.

In 2020, that shared vision took concrete form when we jointly published [Social Change for Conservation](#) – the first unified global strategy guiding aquariums and zoos towards clear educational and behavioural objectives. One year later, in 2021, we cemented our long-standing cooperation with a Memorandum of Understanding (MoU). Far from being a starting point, the MoU was a public affirmation of the trust, dialogue and pilot initiatives we had already cultivated – ranging from nature-play programmes to collaborative research – reinforcing our commitment to pool expertise in conservation education, visitor engagement and behaviour-change methodologies.

This joint edition of the WAZA magazine, *Leading Social Change for Biodiversity Conservation*, is both a celebration of those shared efforts and a springboard for deeper impact. Within these pages, you will find case studies reflecting four sub-themes: community engagement to drive behaviour change, empowering youth to drive social change, influencing policy and decision makers, and nurturing wellbeing as a foundation for social change – each illustrating how WAZA and IZE members are designing and evaluating programmes that shift mindsets and mobilise local communities. Whether it's a community outreach project that fosters human wellness and intentional connections with the natural world, or a campaign halting local extinction through conservation education, every story underscores the power of coordinated action.

Our partnership continues to leverage complementary strengths: IZE's longstanding fostering of the connection between different audiences with nature and WAZA's global convening power. By sharing data, resources and communication channels, we amplify our reach and ensure best practices travel swiftly from one region to another. This reciprocal exchange not only enriches our institutions' capacity to deliver impactful programmes but also creates a unified voice in international conservation forums.

Finally, I want to extend my heartfelt thanks to everyone who contributed to this magazine – authors, peer reviewers, designers and the WAZA and IZE teams whose dedication ensured seamless



coordination. Your collective efforts exemplify the spirit of collaboration that has defined our relationship since we first began working side by side. By continuing to learn from one another and to share our successes and challenges openly, we reaffirm that no single organisation can tackle the complexities of biodiversity loss alone. Together, as WAZA and IZE, we will continue to advance conservation education, foster transformative social change, and secure a brighter future for wildlife and people around the globe.

With sincere appreciation,

Dr Martín Zordan  
WAZA Chief Executive Officer

# IZE PRESIDENT'S LETTER

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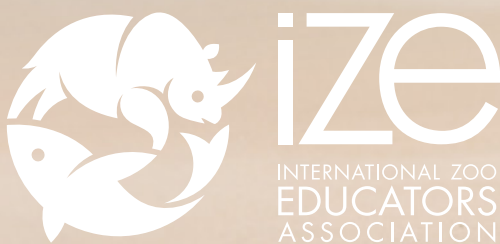
It gives me enormous pleasure to write this letter for the WAZA IZE Publication on the vital topic of *Leading Social Change for Biodiversity Conservation*. This joint publication highlights the close relationship between WAZA and IZE, a partnership that was cemented in 2020 through the publication of the WAZA IZE [Social Change for Conservation Education Strategy](#), strengthened in the 2021 MoU and reinforced by the decision in 2024 to allow each organisation to appoint a representative to serve as an observer on the other's board. We have indeed come a very long way since 1985 when the WAZA Council discussed whether the President of IZE should be invited to the Annual Conference and they *'agreed that such a move might be premature and might disturb some colleagues'*.

Just as WAZA has recently redefined their strategy, the IZE has also been through a period of introspection which has resulted in a revised mission and vision. The Mission of the IZE is to be a trusted leader for conservation education professionals, dedicated to guiding zoos, aquariums and other conservation organisations

to achieve educational and social outcomes crucial to their organisational missions. Our vision is to multiply the educational impact of zoos and aquariums worldwide. We deliver on our vision by:

- Providing leadership for conservation education professionals in social change for biodiversity conservation
- Evolving into a truly international membership organisation
- Supporting our diverse members' needs to meet the recommendations in the World Zoo and Aquarium Conservation Education Strategy
- Strengthening our partnerships and leveraging collaborations
- Advancing diversity, equity, access and inclusion

As can be seen, the visions of WAZA and the IZE are well aligned to support our complementary missions. Our new website [Globalizing Conservation Education in Zoos and Aquariums](#) clearly articulates how we serve our almost 700 members from 50 countries.





This special publication highlights and showcases the ways in which zoos and aquariums contribute to species and ecosystem conservation through community engagement. The timing of this publication could not be better with increasing global attention on biodiversity loss and climate change. People are at the heart of these twin challenges – they are our biggest challenge and our most powerful solution. As zoos and aquariums, we have a unique opportunity to contribute solutions to these challenges through our animal care and population management, and our contributions to conservation and sustainability.

But I would argue that our exceptional ability to connect people to animals across the world is our secret weapon. The increasing need for people to adopt more environmentally responsible behaviour in their everyday lives to secure the future of the planet has given zoos and aquariums both greater relevance and additional challenges. We can no longer simply help visitors understand ecosystems and animals and encourage a love of nature; we need to go beyond awareness and knowledge, and into the realm of behaviour change. We have a responsibility to use our animals to engage, inspire and focus visitor attention on the urgent need for action, and then inspire and empower them to act.

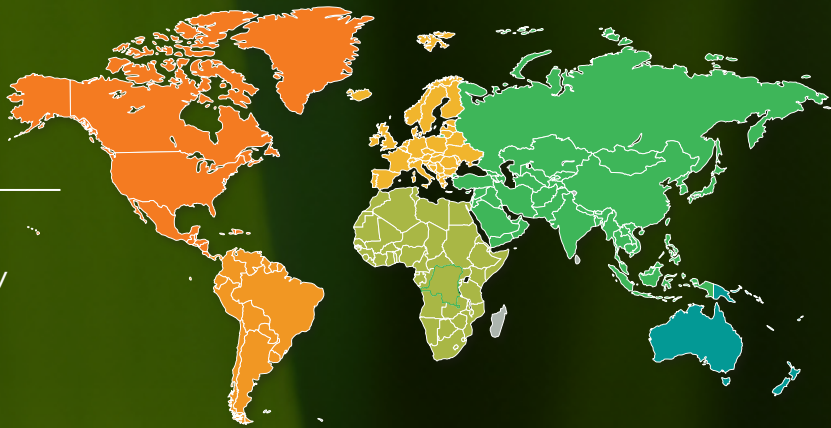
The articles in this special edition showcase some of the incredible ways in which zoos and aquariums are addressing this call. Advanced zoos and aquariums are drawing on social marketing techniques, conservation psychology, as well as theories of learning and behaviour change, to inform the design and presentation of their visitor interpretation and educational programmes. This is enabling them to support the much-needed change in visitor engagement from ‘knowing’ to ‘caring’ to ‘acting’ for animals and nature.

Now is indeed the time for greater synergy between the IZE and WAZA. The world needs excellent zoos and aquariums more than ever before. Together, WAZA and the IZE possess the passion, unique skills, wisdom and experience needed to connect people with nature and inspire the behavioural changes essential for our planet to sustain us and the incredible biodiversity we care for.

With sincere appreciation,

Dr Judy Mann-Lang  
*IZE President*

# EDITORIAL: SHAPING CHANGE TOGETHER



Dr Sarah Thomas, *Head of Conservation Advocacy and Engagement – Auckland Zoo*, Lian Wilson, *General Manager Community Conservation and Learning – Zoos Victoria*

**W**e are delighted to introduce this special publication: ‘Leading Social Change for Biodiversity Conservation’.

This collaboration between the World Association of Zoos and Aquariums (WAZA) and the International Zoo Educators Association (IZE), highlights the increasingly important role of zoos and aquariums in behavioural and social change.

As described in [Social Change for Conservation – The World Zoo and Aquarium Conservation Education Strategy](#):

*“Zoos and aquariums play a critical role in building diverse and sustainable futures for people and nature. Rapidly changing environments, a global pandemic, and devastating biodiversity loss due to human*

*activities make this role increasingly important. Urgent, effective, and collaborative action is therefore needed to change how people collectively think, feel, and act toward the natural world. This context presents a unique opportunity for zoos and aquariums to take a leadership position in contributing to this social change for conservation” (Thomas, 2020).*

This publication showcases practical examples that demonstrate the impactful ways our global zoo and aquarium community is connecting with diverse communities to encourage positive change for people and nature. This involves recognising that long-term success hinges on understanding and influencing human behaviours, fostering deeper connections to nature and building resilient, environmentally responsible communities.



## Theme – Community engagement to drive behaviour change

Several articles highlight innovative approaches to help communities support conservation. The **Uganda Wildlife Education Centre (UWEC)** has effectively increased numbers of the iconic shoebill by integrating conservation education with livelihood improvements, training local guides and establishing community organisations, thereby reducing destructive practices and fostering local ownership. **Chester Zoo’s** ‘Networks for Nature’ and the **Animal Park Bern** are both empowering local communities, leading to nature-rich landscapes. Using citizen science, influencing local policy and applying a robust behaviour change model they are connecting diverse audiences to nature. In South Africa, the **Two Oceans Aquarium’s** ‘Rethink the Bag’ campaign exemplifies large-scale behaviour change. Using direct engagements, incentive and public commitments they were able to reduce single-use plastic bag consumption. While in Australasia, the **Zoo and Aquarium Association Australasia’s (ZAA)** ‘Safe Cat, Safe Wildlife’ campaign uses behavioural science to encourage cat owners to keep their pets at home. The **Welsh Mountain Zoo’s** ‘Conservation Christmas Campaign’ provided a simple, replicable skill (making seed paper cards) to foster sustainable attitudes, reaching learners in deprived areas and supporting a shift away from traditional Christmas cards.



### Theme – Empowering youth to drive social change

A significant focus of this publication is on empowering the next generation and those who guide them. The **Singapore Oceanarium's** 'Youth Ocean Ambassador' programme empowers youths through science-based problem-solving, fostering empathy for marine life and advocating for marine stewardship. **Zoos Victoria's** Mentoring Program in Australia, **North Carolina Zoo's** UNITE program in Uganda and **Fundación Ternaikèn's** 'ConCiencia Activa' programme in Argentina all focus on teachers and community educators as environmental multipliers. These three projects have demonstrably increased teacher confidence, led to significant curriculum integration, participatory environmental projects and measurable behaviour changes that benefit both communities and biodiversity.



### Theme – Influencing policy and decision makers

Beyond direct action, these articles demonstrate the significant influence of zoos and aquariums in shaping policy and shifting overarching narratives. **Brookfield Zoo Chicago**, for instance, successfully spearheaded a public referendum to secure substantial funding for the Forest Preserves of Cook County, leading to increased protected land, habitat restoration and pollution combating efforts. **Reverse the Red's** World Species Congress exemplifies a strategic effort to shift the conservation community's narrative from despair to hope and action, mobilising professionals globally through storytelling and public pledges.



### Theme – Nurturing wellbeing as a foundation for social change

The **Monterey Bay Aquarium** has undertaken a transformative journey in its education programmes, shifting programming to support the emerging emotional needs of teens and educators. This holistic focus on emotional well-being as a prerequisite for engaging with and acting for nature strongly aligns with **Auckland Zoo's** 'Wellbeing in Nature' approach, which emphasises that fostering human wellness and intentional connections with the natural world are essential drivers of conservation action and broader social change.

These articles collectively illustrate that zoos and aquariums are no longer just places for fun; they are dynamic catalysts for social change, enhancing their role as 'places of connection' where people and nature thrive together.

By prioritising community engagement, promoting well-being, fostering hope, empowering education, and advocating for policy shifts, these zoos and aquariums are not only enhancing

individual lives but also contributing to a collective societal shift, where nature is valued as essential to well-being and conservation becomes a shared social responsibility.

We invite you to explore these compelling narratives, learn from the diverse strategies, and consider how we can all continue to scale such efforts, fostering a more empathetic, resilient and environmentally conscious future.

# HOPE IN ACTION: HOW THE WORLD SPECIES CONGRESS MOBILISED SPECIES RECOVERY ACTION IN THE CONSERVATION COMMUNITY



**GLOBAL**  
Reverse the Red



Influencing policy and decision makers

Megan Joyce and Jenny Gray – Reverse the Red

**R**everse the Red is not only a platform for accelerating species recovery – it’s a space for professional transformation. It nurtures the belief that change is possible, not just at a societal level, but within the spirit and actions of those leading the way.

In May 2024, Reverse the Red held the first-ever World Species Congress (WSC) as a 24-hour virtual event, and the Congress emerged as a pivotal moment. It brought

together over 10,000 registered participants from 203 countries and territories, with an additional estimated 100,000 joining satellite events online.

What made this event extraordinary was not just its scope, but its strategy: galvanising the community of conservation professionals – zoos, aquariums, botanic gardens, researchers, students and policymakers – around hope and action for species recovery.



Oceanário de Lisboa held a Red Book event, the first time an event was organised with the participation of all the Portuguese Red Books, creating a unique opportunity to find common ground, create bridges and raise interest in future meetings for coordinated work © Oceanário de Lisboa

## Reframing the Narrative Within the Conservation Community

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Too often, conservation messaging has leaned on fear, loss and urgency. While these emotions have power, they can also overwhelm and demoralise – particularly for those working on the frontlines who may believe in their own individual work, but find it hard to muster optimism for collective success in protecting biodiversity. The WSC sought to shift this internal narrative by embedding optimism and hope as central pillars of the conservation identity. In doing so, it acknowledged a critical psychological truth: hope is a precondition for sustained engagement.

Research consistently shows that hope and optimism are not just feel-good concepts – they are empirically linked to higher motivation, goal pursuit and resilience (Alarcon et al., 2013; Marton et al., 2020). Within conservation science specifically, hope can play a pivotal role in overcoming paralysis and inspiring forward momentum (Swaigood and Sheppard, 2010; Knight, 2013). By cultivating these qualities within professional ranks, Reverse the Red aims to counter the burnout and fatalism that often pervade the field.

## Building a Community of Possibility

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Reverse the Red is a coalition that calls for strategic conservation action and seeks to foster a global sense of community and shared goals. It has a unique role as a convener and catalyst, engaging deeply with those already committed to biodiversity protection and aligning isolated and reactive conservation interventions to collective, recovery-driven strategies for species.

Through online forums, regular webinars and the use of collaborative tools, Reverse the Red builds community by cultivating ongoing relationships between institutions across sectors and borders. The rapid 550% growth of Reverse the Red's online community leading up to the Congress signals a profound hunger within the conservation space for connection and adaptive learning.



Dr Jane Goodall opens the World Species Congress with a message of encouragement for all the conservationists in attendance worldwide  
© *Reverse the Red*

This communal model aligns with findings that conservation professionals who maintain optimism are more likely to persist and innovate in their work (Pienkowski et al., 2022). A staple of the Congress was also to encourage connections among attendees, helping to form networks based around regional groups and connections outside their own organisations.

By prioritising inclusion, storytelling and co-learning, the WSC transformed the landscape of conservation work to accelerate actions.

## The Psychology Behind the Congress

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The WSC was rooted in well-established behavioural science. It drew on the Theory of Planned Behaviour (Ajzen, 1991), which identifies attitudes, perceived behavioural control and social norms as key determinants of individual action. By showcasing tangible conservation wins – such as the recovery of the Iberian lynx and saiga antelope – the Congress shifted attitudes from defeatism to agency where individuals felt empowered to influence outcomes. Public pledges reinforced evolving social norms, while practical toolkits bolstered confidence in participants' ability to make a difference.



The Congress took place fully virtual over 24 hours, with several teams behind the scenes working to make the event accessible © 3 Monkeys Creative Consulting

The event also leveraged Diffusion of Innovations Theory (Rogers, 2003), enlisting early adopters such as leading zoos and aquariums to model the behaviours and strategies others could emulate and providing a forum to showcase those successes. Peer-to-peer learning, rooted in trust and relatability, made conservation feel less like a burden and more like a shared opportunity.

Importantly, the WSC was not targeted at the general public – it was designed for the conservation community, by the conservation community. In this way, it recognised that lasting change begins internally. Only by transforming the mindset and behaviours of those within conservation can we expect to influence broader societal change.

## Strategies for Mobilising Action

Several strategic mechanisms underpinned the impact of the Congress:

- **Storytelling for Strategic Optimism:** Documentary segments and live panel discussions provided vivid illustrations of conservation success. These stories served not just to inform but to inspire – a technique supported by evidence showing that emotionally resonant narratives increase engagement (McAfee et al., 2019).
- **The Species Pledge:** Commitments were made publicly for nearly 3,900 species prior to the Congress – a number that continues to grow – creating accountability and visibility. These were not symbolic gestures

but measurable action plans, like the Bristol Zoological Society’s pledge to recover 97 species by 2030. Public commitment is a proven motivator in shifting intention into action (Dean and Wilson, 2023).

- **Accessible and Inclusive Engagement:** The event was free, multilingual and globally accessible. This not only expanded reach but modelled the equitable principles needed to sustain global conservation partnerships.
- **Fostering Dialogue and Connection:** With over 3,000 connections and conversations generated and 96 satellite events hosted worldwide, the Congress became a global classroom and strategy lab – democratising conservation expertise.

## Impact: Confidence, Collaboration and Culture Shift

Reverse the Red’s post-Congress evaluation revealed striking outcomes. A full 91% of respondents reported increased confidence in achieving conservation goals and nearly 70% said they were likely to refine their strategies. With attendees reporting increased optimism about global efforts to recover species, 13,531 direct conservation actions were recorded during the event.

Perhaps more profound than the numbers, however, was the emotional feedback. Participants spoke of being moved to tears, of rediscovering their purpose and of feeling reconnected with a global community that shares their mission. This kind of emotional re-engagement is not incidental – it is essential. As Beever (2000) argues, conservation without hope becomes a hollow exercise; but with hope, it becomes a calling.

## Lessons for Zoo and Aquarium Educators

For those in the zoo and aquarium sector, the WSC presents a replicable model for driving internal cultural change. By embedding hope, community and action into their programmes – not just for the public but for their own staff and

partners – these institutions can lead a deeper kind of transformation.

This includes embracing success stories, fostering inclusive dialogue, and aligning institutional plans with collaborative tools similar to the Species Pledge. More than education, it's about modelling a new kind of conservation leadership – one that prioritises hope not as an ideal, but as a strategic imperative.

As Marton et al. (2020) affirm, “Optimism is a strategy for making a better future.” Reverse the Red is proving that this strategy works. It is not offering false assurance, but empowering a global network to act with renewed energy, purpose and belief in shared success.

## Conclusion: Hope as a Catalyst for Change

In a world where environmental headlines often evoke dread, the World Species Congress offers a counter-narrative: one rooted in courage, cooperation and belief in possibility. For the conservation community – especially those in zoos and aquariums – this is more than inspiring. It is instructive. Behind every species brought

back from the brink is a network of people who chose collaboration over isolation and action over despair. By focusing on species recovery outcomes, fostering genuine community and embracing hope as a driver of change, Reverse the Red is not just reversing extinction trends – it is reversing despair.



News of events and organisations making Species Pledges was widespread © Reverse the Red

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# DRIVING SOCIAL CHANGE TO BUILD HARMONIOUS FUTURES FOR PEOPLE AND NATURE



**OCEANIA**  
Auckland Zoo



Nurturing wellbeing as a foundation for social change

Dr Sarah Thomas – Auckland Zoo, New Zealand

*He kapanga manawa o te taiao, he kapanga manawa o te tangata*  
*The heartbeat of nature is the heartbeat of people*

## Introduction

**A**s we journey to position Auckland Zoo as te pā hono – a place of connection, we are evolving our purpose to ensure we are an inclusive, accessible gateway that helps reconnect people with nature, enhances community well-being, fosters empathy, builds optimism and contributes to mobilising social change that benefits both people and nature.

As a wildlife conservation science and community-serving cultural organisation in Tāmaki Makaurau (Auckland), the Zoo has been an integral part of our communities’ social and cultural fabric for over 100 years. Through a new strategic roadmap launched in 2021, we recognised the importance of enhancing the well-being of our communities and nurturing a lifelong connection with nature. We also strengthened our relationship with ‘te ao Māori’ – the Māori worldview which emphasises the importance of relationships between nature and people. A holistic worldview that focuses on interconnections. These are essential elements of our authentic value to deliver our mission.

This strategic direction laid the foundation for developing our ‘Wellbeing in Nature’ approach, which aims to improve the well-being of diverse communities by providing increased

access to and (more importantly) intentional connections with nature. Our theory of change is grounded in a growing body of global research that demonstrates that when we feel more connected to nature, we are happier, our lives seem more worthwhile, and we are more likely to take action to help wildlife, our environment and our communities. This issue is particularly important, as poor mental health and wellbeing are widespread in Aotearoa, New Zealand – especially among young people, whose wellbeing has declined even further since the COVID-19 pandemic.

Sunda gharial (*Gavialis gangeticus*) © Auckland Zoo

## Theoretical Underpinning

Our theoretical framework for the Wellbeing in Nature approach draws from a range of research that explores the links between wellbeing and nature (Knight, 2020), and more specifically, how we can promote the range of positive benefits cited from being near and intentionally connected with nature (Lumber, 2017; Williams, 2017). Studies show that intentional engagement with the natural world not only improves individual and community wellbeing but also fosters motivation to adopt pro-environmental attitudes and behaviours that support the health of our planet (Louv, 2008; Lumber, 2017; Knight, 2020; Williams, 2017).

To guide our approach, we drew on three key frameworks: the Five Pathways to Nature Connection (Lumber, 2017), the Five Ways to Wellbeing (Aked et al., 2008), and the Māori health model Te Whare Tapa Whā (Durie, 1994). These models provided a robust, culturally responsive foundation for our wellbeing in nature approach. Te Ao Māori (Māori worldview) was woven throughout, acknowledging the holistic and relational perspectives of indigenous knowledge systems at Auckland Zoo.

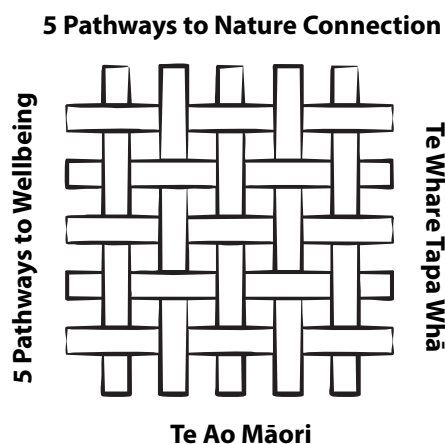


Diagram for a visual of woven frameworks  
© Auckland Zoo

Now, four years on, our Wellbeing in Nature approach is deeply ingrained in who we are and everything we do at Auckland Zoo. It is applied in nuanced ways through multiple touchpoints,

including staff recruitment, onboarding and ongoing staff development, conservation learning, visitor and community programming, volunteer engagement, social media and media/communications, marketing campaigns, site infrastructure, animal habitat design and the progression of our masterplan. Since 2024, we have been a recognised provider for Te Whatu Ora (New Zealand Health Service) as a non-clinician provider, supporting the improvement of wellbeing outcomes for young people and their families.

## Case Study 1: Wellbeing in Nature Community Programme

Since its inception in November 2021, this programme has supported over 30,000 people from communities across Tāmaki Makaurau (Auckland). Initially, it was established as a recognition of the statistics indicating a city-wide decline in health and well-being resulting from the direct and indirect effects of the COVID-19 pandemic. We recognised how vital natural spaces – like the Zoo – are for reparation, recovery and respite, and a tangible way for us to serve our communities better was to support their waiora (wellness) in a post-COVID world.

The main aims of the programme were to:

- Give equitable opportunities for diverse and often underserved communities to access and deeply connect with nature at Auckland Zoo.
- Support whānau (families) to spend time together to build social cohesion and positive relationships.
- Nurture lifelong connections to nature.
- Enhance the well-being of our communities.

This application-based programme is designed to raise awareness of how increased visits to and deeper connections with Auckland Zoo can support personal wellbeing. The programme includes a range of digital and printed resources which highlight the various pathways to connect with nature at Auckland Zoo and in their local environment.

We now work with and support hundreds of community groups, iwi, hapu, schools and kura to participate in this programme, enabling us to better serve their wellbeing needs, so that communities across Tāmaki Makaurau (Auckland) thrive.

More details of the programme can be found here:



## Measuring effects and impacts

Following participation in the Wellbeing in Nature Community Programme, participants are invited to complete an online survey to provide feedback. We explain that their insights help us better understand the programme's impact on communities across Tāmaki Makaurau and inform its continued development. The survey invites participants to reflect on the wellbeing benefits they experienced – both hedonic (pleasure-based) and eudaimonic (purpose- and meaning-based) – and to describe these benefits in their own words.

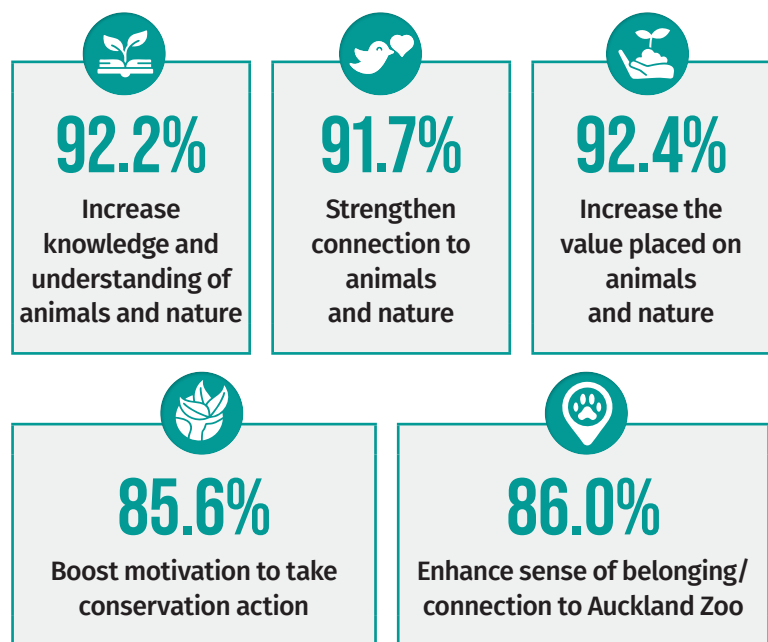
Data from an early phase of the programme from May to July 2022, showed that out of the 1,484 survey invitations sent, 924 were completed – a 62.3% response rate. From the data it was possible to calculate that the responses represented a total of 5,285 individuals, as participants reported on the number of adults, children and infants who accompanied them on their visit to the zoo.

The top five wellbeing outcomes, each selected by over 75% of respondents, were:

1. quality whānau (family) time together,
2. feeling happy,
3. improved mood,
4. creating new whānau memories and
5. enjoying a good day out.

*"The whole experience was amazing, there was laughter, excitement, conversations, time well spent and needed, experience of a new environment and space, and most importantly being together."* (Wellbeing in Nature Community Programme participant)

We also gather evidence aligned with Auckland Council's conservation outcomes (Ovenden and Roberts, 2021), which tracks Aucklanders' knowledge, values, connections and actions toward New Zealand biodiversity (the Zoo is part of a charitable trust and Tātaki Auckland Unlimited, an Auckland Council-controlled organisation). Among survey respondents (n = 924), the following agreed or strongly agreed that participating in the Wellbeing in Nature Community Programme and visiting Auckland Zoo helped:



Wellbeing campaign bus wrap for inner city in Auckland Tāmaki Makaurau © Auckland Zoo

## Case Study 2: Wildlife is Good for You – Marketing Campaign 2024/25

Running throughout the summer from November 2024 to January 2025, this marketing campaign focused on using wellbeing as a value proposition for visitation and increasing brand equity. It focused on how visitors and our audiences can look after their wellbeing when they visit the zoo. This was underpinned using the Five Pathways to Wellbeing framework. It was articulated through the campaign slogan, 'Wildlife is good for you' combined with playful visual creatives.

The campaign was deployed through several touchpoints, including static and video social media adverts, as well as a partnership with a radio station for a wellness giveaway. Additionally, contextual copy was used for adverts in out-of-home locations, such as billboards, buses, gyms and cinemas, to connect with different audiences.

To complement the campaign, we created a new wellbeing in nature webpage, with resources and links to highlight how nature is good for us:



And we created a 'Science of Wellbeing at Auckland Zoo' video:



### Measuring effects and impacts

The objectives of the campaign were met through measuring visitation levels, membership sales, click-throughs on adverts and time spent on our wellbeing webpages and resources. We have incorporated wellbeing and nature connection outcomes within our Visitor 360 (exit survey) using the following two items:

- A visit to the Zoo has a positive impact on my personal sense of well-being.
- I feel closer to nature as a result of my visit to the Zoo.

There is growing awareness among Aucklanders who are recognising the wellbeing benefits of Auckland Zoo and indicating wellbeing and nature-connection outcomes in our exit surveys.

## Conclusion – Evolving our organisation to drive social change

We aim to reflect and serve our communities, cultures and landscapes, building a harmonious future for people and nature. We know that our Wellbeing in Nature approach is positively influencing multiple community wellbeing pathways.

Auckland Zoo is evolving as a catalyst for social change – deepening its role as *te pā hono*, a place of connection where people and nature thrive together. Through our Wellbeing in Nature approach, we help communities across Tāmaki Makaurau (Auckland) reconnect with nature, strengthen *whānau* (family) bonds, and improve mental and emotional wellbeing. These efforts contribute to fostering a more empathetic, resilient and environmentally conscious society in Aotearoa, New Zealand. We are not only enhancing individual lives but also contributing to a collective shift – where nature is valued as essential to wellbeing, and conservation becomes a shared social responsibility. Auckland Zoo stands as a beacon of hope for a harmonious future where people see themselves as part of nature, not separate from it.

*Ko au te taiao, ko te taiao ko au –  
I am nature, and nature is me*

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# SAFE CAT, SAFE WILDLIFE – A REGIONAL BEHAVIOUR-CHANGE CAMPAIGN



**OCEANIA**

ZAA  
Australasia



Community  
engagement  
to drive  
behaviour  
change

Simran Maurya and Helen Church – Zoo and Aquarium Association Australasia (ZAA)

**M**any of Australia and Aotearoa New Zealand's (NZ) native species are found in urban areas, where they face a wide range of threats including habitat loss, competition from invasive species and predation. A key threat for many of our critical weight range species is free-roaming domestic cats. Despite this, and the litany of welfare issues that roaming cats also face, many pet owners still allow their cats to roam freely (Bruce et al., 2019; Legge et al., 2020).

The Safe Cat, Safe Wildlife (SCSW) campaign encourages cat owners to keep their pets at home to promote better welfare for their pets and to support native wildlife.

The programme was developed by Zoos Victoria and expanded across Australasia by the Zoo and Aquarium Association (ZAA), in partnership with the Royal Society for the Prevention of Cruelty to Animals (RSPCA) Australia, and The Royal New Zealand Society for the Prevention of Cruelty to Animals (SPCA) NZ. The campaign mobilises zoos and aquariums to promote cat containment messages, driving visitors to subscribe to the campaign's email journey encouraging readers to keep their cats contained and providing practical advice for promoting good welfare in cats at home. Audiences' attitudes and behaviour changes are measured through ongoing surveys.

## Campaign Purpose and Theory

Research shows that cats kept at home live longer, healthier lives by minimising dangers such as injury, disease, getting lost, unexpected pregnancies and conflict with other animals (Australian Veterinary Association, 2022).

The campaign was designed to address this using the Connect, Understand and Act (CUA) framework (Zoos Victoria, n.d.), a behavioural science-based tool developed by Zoos Victoria. It also draws on Social Cognitive Theory (Bandura, 2001) and Nudge Theory (t-three, 2019) to influence attitudes and behaviours.



Safe Cat, Safe Wildlife signage © Perth Zoo

Audiences are invited to join an email journey that explores the risks associated with roaming cats, offers guidance for creating enriching and healthy lives for them, and provides practical steps for transitioning roaming cats to a life at home. The information is presented through engaging stories, mixed media and easily digestible tips.

The overall goal is to inform and empower audiences to make choices that enhance their cats' well-being while protecting native species. The campaign appeals to owners' affection for their cats and their desire to provide them with safe, enriching lives, while fostering positive feelings and a sense of stewardship towards native wildlife.

## Audience and Engagement Channels

Modern zoos are increasingly recognised as trusted conservation centres committed to animal welfare and species preservation (Greenwell et al., 2023).

By targeting pet owners through zoos and aquariums, we can deliver the campaign utilising onsite and digital channels. These include engaging signage, keeper talks and interactive workshops on cat enrichment. Ideas include creating cardboard box castles, mazes and tunnels, crafting simple toys from recyclables, or building a scratching post. The campaign is also promoted via social media, dedicated websites and newsletters.



Te Nukuao Wellington Zoo's signage comparing big cats to pet cats © Te Nukuao Wellington Zoo

## Implementation and Activities

SCSW's strength lies in its adaptability across different platforms and contexts. In addition to core strategies, zoos and aquariums have explored localised channels such as radio appearances, conference presentations and partnerships with animal welfare agencies. These multi-channel touchpoints ensure that the campaign remains accessible and relevant.

### Case Study 1:



Te Nukuao Wellington Zoo displaying campaign poster © Te Nukuao Wellington Zoo

Te Nukuao Wellington Zoo in Aotearoa NZ adopted a community-focused approach, installing signage comparing big cats to pet cats and running workshops to make cat toys out of recycled materials. The zoo also promoted the campaign through their website, social media and newsletters.

For about six months, they appeared fortnightly on a radio show to share conservation messages including Safe Cat, Safe Wildlife. One of the episodes was solely dedicated to the campaign and featured a vet from the zoo.

The zoo also addressed the issue of free-roaming cats in the zoo by returning them to owners with a letter promoting SCSW and encouraging sign-up. Recently, they were involved in consultation with a national Domestic Cat Microchipping Bill. These efforts led to increased local awareness and engagement.

## Case Study 2:



Catio workshop © Perth Zoo

Perth Zoo in Australia took a solutions-focused approach, emphasising practical action and skill-building. In 2023, they installed signage linking big cat care to pet cat welfare in their African Savannah area, using minimal text, visual storytelling and QR codes. During a cat enrichment pop-up, staff showcased DIY enrichment and scent-based activities used for big cats and demonstrated how they could be adapted for pet cats.

Perth Zoo also participated in a 'catio' workshop as part of a local government initiative, demonstrating how big cat habitats relate to domestic cat environments. A catio is an enclosed outdoor space for cats that keeps them safe and prevents them from harming wildlife. Follow-up surveys revealed that attendees had built or upgraded catios, introduced enrichment or started keeping cats indoors at night, highlighting the power of storytelling and tangible examples in driving behaviour change.

## Impact and Behaviour Change

SCSW has gained traction across Australia and New Zealand in recent years, with more than 10 Zoo and Aquarium Association (ZAA) members contributing to the programme. Core evaluation metrics include subscriber numbers (~225 in Australia and ~190 in NZ as of June 2025), as well as website and email journey engagement. Surveys at sign-up, after six months and after twelve months track behavioural shifts.

Preliminary results show increased rates of microchipping, registration and desexing. The data also suggests that more owners are keeping their cats indoors in the evenings and overnight, motivated by concerns for their cats' safety and wildlife protection.

So far, about 50% of respondents agreed that the campaign raised their awareness of the benefits of containment and supported them in creating more enriching home environments. Over 60% reported that they gained new ideas for cat care, and 53% felt more motivated to prevent their cat roaming as frequently.

Member organisations also use their own evaluation methods, including surveys, staff feedback, and activity engagement. They have observed increased community engagement, particularly when messaging is linked to storytelling and relatable comparisons.

While long-term behaviour change is complex, these results suggest the campaign is influencing attitudes and encouraging practical action.

### AUDIENCE BEHAVIOUR CHANGE

More owners are keeping their cats indoors in the evenings and overnight

**±50%**

Respondents agreed that the campaign raised their awareness

**+60%**

Reported that they gained new ideas for cat care

**53%**

Felt more motivated to prevent their cat roaming as frequently



Safe Cat, Safe Wildlife branded poster © ZAA

## Challenges and Adaptation

As a regionally coordinated initiative, SCSW has faced several challenges. The campaign launched just before the global pandemic disrupted zoo operations and limited capacity for new initiatives. Staff turnover also affected continuity and support.

Another challenge is the inconsistent capacity for impact measurement across member organisations. While some have tools and staff to track behaviour change, others face resource constraints. A few found that messaging alone could not shift public opinion without collaboration with other entities.

To address these challenges, ZAA developed an online portal to centralise campaign resources, templates and updated messaging, making it easier for members to activate the campaign locally. Regular working group meetings provide space to share learnings, troubleshoot barriers and refine strategies. This collaborative approach helped the campaign evolve while maintaining cohesion and momentum.

## Global Relevance and Conclusion

SCSW offers a replicable model for conservation behaviour change that zoos and aquariums worldwide can adopt. Its flexibility allows institutions to tailor messages to local contexts

while working toward a shared goal. By focusing on pet welfare and using trusted community institutions as messengers, the campaign shifts behaviours through empathy, practical guidance and social connection.

Ultimately, SCSW demonstrates how zoos and aquariums can lead social change through advocacy, education and collaboration. As the campaign continues to grow, it reinforces the role of these institutions as catalysts for biodiversity conservation and helps communities reimagine their relationship with nature in everyday life.

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# EMPOWERING TEACHERS FOR CONSERVATION: EVIDENCE AND IMPACT OF ZOOS VICTORIA'S MENTORING PROGRAM



**OCEANIA**  
Zoos Victoria



Empowering youth to drive social change

Chris Vella, *Fighting Extinction Schools Coordinator* – Zoos Victoria, Australia

## Introduction

Zoos Victoria's Fighting Extinction Schools (FE Schools) programme is a conservation education initiative that supports schools in driving community-wide behaviour change. Enhancing this initiative is the FE School Mentoring Programme, launched in 2021, which enables teachers to embed conservation into their classrooms through sustained, personalised engagement. This article presents evidence of the programme's impact, including increased teacher confidence, curriculum integration and real-world conservation actions. It explores why these changes matter and discusses the programme's potential for replication by zoos and aquariums globally.

## Background

Conservation education is essential for cultivating environmentally responsible citizens, yet it remains underrepresented in formal curricula. In Victoria, Australia, conservation action or advocacy is not mandated in the Foundation to Year 10 (5 to 16 years old) curriculum, and sustainability education is often perceived as difficult to teach (Barnes et al., 2019). Zoos Victoria's Fighting Extinction (FE) Schools programme addresses this gap by encouraging schools to take real-world action for wildlife.

A Mentoring Programme was established after Monash University (BehaviourWorks, 2020) delivered research on the FE Schools programme in 2020. Monash assessed the programme's effectiveness in creating "wildlife-friendly communities that not only value nature and biodiversity but are willing to do something about it." While the study found that excursions and resources positively impacted students' connection to conservation, the translation into action was "mixed for both teachers and students." Perhaps the most influential finding was that the positive impact of these offerings rapidly dissipated if used in isolation.

Raggiana Bird of Paradise (*Paradisaea raggiana*)  
© C. Banks

The study recommended that Zoos Victoria address additional curriculum needs and generate support for teachers and zoo educators to adapt their practice to the needs of individuals, classes, and schools.

In response, the FE School Mentoring Programme was launched to provide targeted, sustained support to teachers, enabling them to lead conservation efforts within their schools.

## The Mentoring Process

The Mentoring Programme begins with mentor training and a teacher application process, where participants are selected based on their project proposals and alignment with mentor expertise. After an online orientation, teachers are introduced to their mentors and receive up to 20 hours of personalised support throughout the year. It is expected that once the planned project is completed by the teacher and their students, it will be shared with the zoo, and they become an official FE School. This support given to teachers is flexible and tailored to each teacher's goals, school context, and availability, ensuring relevance and long-term impact.

## Evidence of Change: Teacher Engagement and Student Action

The Mentoring Programme highlights the value of continued collaboration between schools and Zoos Victoria, keeping sustainability conversations alive beyond the mentoring period. Additionally, the programme is designed to fit with the education staff's project workload. As a result, Mentoring remains an exclusive offering. Between 2021 and 2024, 46 schools participated in the Mentoring Programme. Of these, 63% of teachers reported leading students in a conservation action within the same year. These actions included habitat restoration, fundraising, citizen science, awareness campaigns and systems change, marking a shift from passive learning to active engagement.

To contextualise this impact, Zoos Victoria surveyed 1,128 teachers between 2020 and 2025 who used conservation education programmes without mentoring. Only 18% of these teachers led students in conservation actions, compared to 63% of mentored teachers. This stark contrast highlights the Mentoring Programme's effectiveness in fostering deeper, sustained engagement.

Further evidence comes from the annual FE Schools Showcase, where schools present their conservation projects at Melbourne Zoo. From 2021 to 2024, 47% of participating schools had been part of the Mentoring Programme.

**BETWEEN  
2021 AND 2024,  
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**63% of teachers  
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**These actions included  
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citizen science.**



**It included awareness  
campaigns and systems  
change, marking a shift  
from passive learning to  
active engagement.**



## Case Studies

### Dallas Brooks Community Primary School

Mentored in 2021, this school has since independently run new FE Schools projects annually. Their work has been a part of the annual Fighting Extinction Schools Showcase and documented on the FE Schools collaborative web platform (Padlet).



Watch their story:  
<https://vimeo.com/823617163>

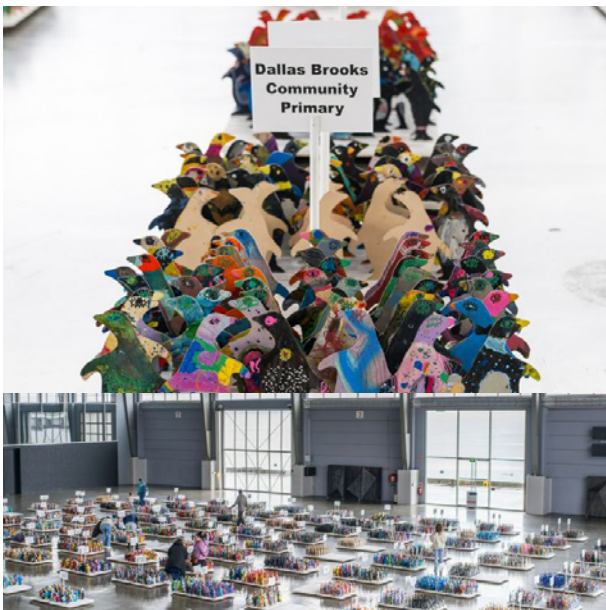
### Sunshine Heights Primary School

Already engaged with Zoos Victoria, mentoring helped this school embed conservation more deeply into existing sustainability projects, enhancing relevance and impact.



Watch their story:  
<https://vimeo.com/825274745>

These examples illustrate how mentoring increases teacher confidence, inspires curriculum innovation, and leads to meaningful student engagement.



Dallas Brook's FE School project in 2024 included artwork exhibited as part of the Australian Antarctic Festival© Dallas Brooks Community Primary School

## Why These Changes Matter

### Curriculum Integration

Conservation action is not mandated in the curriculum, so its inclusion depends on teacher initiative. Mentoring empowers teachers to embed conservation across subjects, making it accessible and relevant.

### Teacher Confidence and Autonomy

Many teachers lack the confidence to teach conservation independently. Mentoring builds this confidence through co-design, aligning with the 'IKEA Effect' – people value what they help create (Hattie and Yates, 2014).

### Student Agency

Conservation projects foster critical thinking, collaboration and civic responsibility. Students learn not just about biodiversity, but how to take action – skills that are essential for environmental leadership.

### Community Impact

Schools become conservation hubs, influencing families and communities. This aligns with Zoos Victoria's goal of creating 'wildlife-friendly communities' that value and act for nature (Zoos Victoria, 2024).

### Planning the Frog Bog and Sustainability Hub

We began planning the extension of our frog bog with the addition of our new sustainability hub. We wanted to create a place where native frogs could thrive. But it didn't stop there—we started thinking about other endangered animals, like the Victorian Earless Dragon, and how we could help them too.

Sunshine Heights project in 2024 included the design of a new habitat at their school using technology-activated interpretations  
© Sunshine Heights Primary School

## Applicability to Other Zoos and Aquariums

The Mentoring Programme's flexible, scalable structure makes it suitable for adoption by other zoos and aquariums globally.

Key features include:

- **Low Resource Requirement:** 20 hours of engagement per school annually is manageable within existing staff workloads.
- **Customisable Framework:** Tailored to each teacher's interests and school context.
- **Evidence-Based Design:** Responds to research findings and real barriers.
- **Professional Development:** Keeps zoo educators aligned with current teaching practices.
- **Strategic Alignment:** Supports the World Zoo and Aquarium Conservation Education Strategy (Thomas, 2020).

## Steps for Replication

- Partner with local universities to assess educational needs
- Train education staff in mentorship
- Develop a flexible toolkit of conservation resources
- Establish feedback loops to monitor and refine the programme.

## Conclusion

Zoos Victoria's FE School Mentoring Programme offers a powerful, scalable model for conservation education. By empowering teachers to lead conservation projects, the programme transforms schools into agents of change. Evidence shows that when teachers are supported and involved in project creation, they are more likely to integrate conservation meaningfully into their classrooms. As environmental challenges intensify, programmes like this will be essential in building the next generation of conservation leaders. Zoos and aquariums worldwide have a unique opportunity to adopt and adapt this model, amplifying its impact across communities and ecosystems.



Dallas Brooks Community Primary School Teacher, Yun  
© Zoos Victoria



Sunshine Heights Primary School Teacher, Astor  
© Zoos Victoria

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# YOUTH OCEAN AMBASSADOR PROGRAMME



ASIA  
Singapore  
Oceanarium



Empowering  
youth to  
drive social  
change

## Introduction

The Youth Ocean Ambassador (YOA) is a programme that was created in 2023 with the aim of providing youths with a platform for empowerment at the Singapore Oceanarium. The intention of the programme is to foster a sense of involvement and attachment among young people, encouraging empathy for marine life and habitats, and ultimately advocating for marine stewardship. Through YOA, we aim to engage youths from 15 to 18 years to apply science as a process of inquiry, evaluation, reasoning and solution-building, helping to foster appreciation and awareness of marine-related climate issues.

The main programme format for YOA was adopted from the Ministry of Education (MOE) Science Curriculum Framework (Ministry of Education Singapore, 2022). The Science Curriculum Framework has established procedures and practices associated with scientific enquiry and outlined how scientific knowledge can be applied to society. From this, we built an educational experience that would enable participants to be involved in science-based problem solving through a practical approach.

The YOA programme places strong emphasis on empowering young people, as the Oceanarium believes that they represent the future and are catalysts for change. This programme has helped to create a sense of involvement and attachment for each succeeding new generation, leading to our goal of nurturing stewards of the ocean. Youth empowerment is also one of the long-standing key priorities of our education philosophy as it helps us to support the growth of young people into passionate advocates for marine conservation. These youths are at an age where they begin to discover causes they're passionate about; marine environmental issues resonate with them and help foster a deeper connection with the ocean. Our vision is to achieve a growing community of enthusiastic youths who will become future marine conservationists. We envision them becoming passionate volunteers in our conservation efforts, deepening their connection with the Oceanarium – and potentially joining the team as future staff members. Marine science remains a relatively underrepresented field in Singapore. Through YOA, we aim to spark meaningful engagement with the marine environment, while helping participants build valuable soft skills and strengthen their sense of confidence and purpose.

**FIGURE 1:** Introductory session for participants of the June 2024 iteration of YOA © Singapore Oceanarium

## The YOA Programme Outline

A first of its kind at the Singapore Oceanarium, the YOA programme is a cross-departmental collaboration led by the Education Department. Key partners include the Animal Care, Conservation and Science teams, all of whom played critical roles by contributing their expertise.

As part of the programme, mentorship opportunities are offered to previous participants who expressed an interest in volunteering. This initiative provides them with a platform to share their knowledge and guide other enthusiastic young people, helping to build capacity for deeper learning in environmental conservation, strengthening their advocacy efforts. Through multiple iterations, the programme is steadily cultivating a growing community of capable and confident youths committed to contributing meaningfully to marine conservation.

Organisations across the world, including aquariums, have a varied range of programme durations – ranging from a few days to a few weeks. These programmes include workshops that involve design thinking and marine conservation knowledge acquisition. Upon careful review and planning, the Oceanarium has developed an extended learning programme spanning seven days, comprising of activities and experiences that encapsulate our key focus areas of marine education and conservation.

Each iteration of YOA has a different topic focus, all of which are centred around marine conservation. A sample outline of the programme is included below:

### DAY 1 – INTRODUCTION:

Overview of the programme and its deliverables. Explore the Oceanarium and gain an understanding of its contribution to marine biology.

### DAYS 2 TO 3 – TOPIC OF INTEREST:

Seminars on theory and awareness. Followed by field trips and expert talks (Figure 2).

### DAYS 4 TO 5 – GROUP RESEARCH SESSIONS:

Evaluation of a problem statement and challenge application capabilities through debates and presentations (Figure 3).

### DAYS 6 TO 7 – PROTOTYPE CREATION:

Final solution to the problem statement and presentation of findings.



**FIGURE 2:** Participants on a field trip at Sungei Buloh Wetland Reserve to deepen understanding of the environment of mangrove forests in Singapore, June 2024  
© Singapore Oceanarium



**FIGURE 3:** Participants presented their findings on topics related to mangrove conservation  
© Singapore Oceanarium

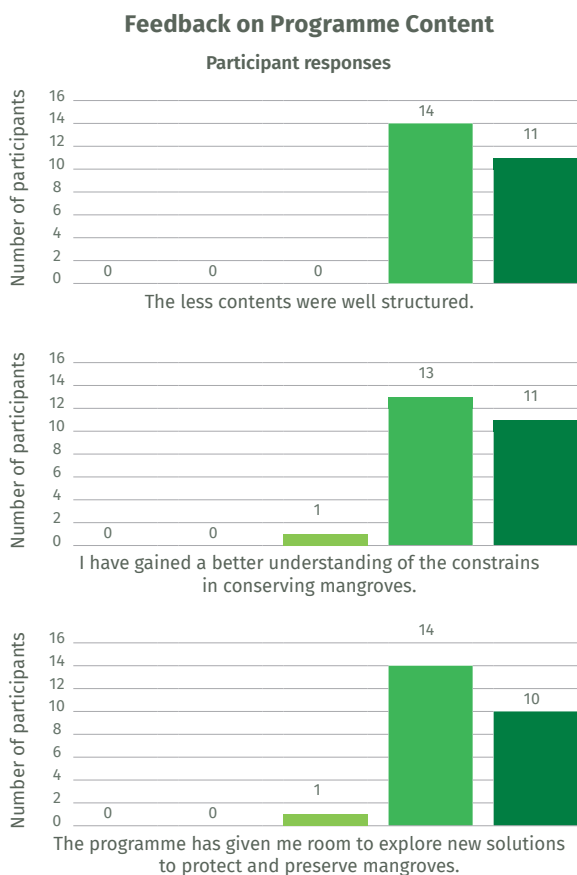
## Programme Feedback

The success of this programme lies in the outreach to youths and how their perspective towards marine conservation has shifted and potentially strengthened. Figures 4 and 5 depict the results of the feedback that participants provided during the latest iteration of the programme in June 2024. In this particular iteration, mangrove conservation was the topic of focus.

Across the board, the majority of participants answered 'agree' and 'strongly agree' to all questions posed (Figures 4 and 5). This demonstrates the effectiveness of YOA in strengthening their understanding of the climate crisis and supporting them to identify novel solutions. Success of youth empowerment was observed by the

participation of mentors, with many returning for more than one iteration of the programme.

The role of the mentors was to assist with the lessons, provide guidance to participants and accompany them on outdoor excursions. They observed that the participants were engaged with and empowered by the programme, some of whom were repeat attendees. Many of the mentors developed a rapport with the participants, which led to increased self-confidence in connecting with other youths in the programme. One mentor secured employment as a casual staff member with the Education Department, where she received training to conduct tours for paying guests of the Oceanarium.



**FIGURE 4:** Programme feedback from 25 participants about the programme content. Responses were recorded and portrayed in the graph from left to right: Strongly disagree, Disagree, Neutral, Agree, Strongly Agree. © Singapore Oceanarium



**FIGURE 5:** Programme feedback from 25 participants about the programme content. Responses were recorded and portrayed in the graph from left to right: Strongly disagree, Disagree, Neutral, Agree, Strongly Agree. © Singapore Oceanarium

## Conclusion

YOA has set the precedence for a new type of educational experience for young people. We have gone beyond traditional guided tours to establish a foundation for scientific learning, integrating problem-based learning, critical thinking and collaborative project work to actively engage participants in the application of science. This aligns with the standards set by the Ministry of Education Singapore in providing participants with experience in scientific enquiry and learning (MOE Singapore, 2022). This programme has also opened new pathways to connect youths with like-minded individuals, creating opportunities for them to reach communities outside of Singapore Oceanarium.

The first of its kind, this has kickstarted the process of developing a new type of programme that focuses more on students' capabilities for science-based problem solving. The Singapore Oceanarium Education Department is currently working on our next YOA experience to meet the growing demands of the programme. Educators across the country have expressed interest in exclusive iterations of the programme for their students, and we continue to receive requests from young people who wish to attend future sessions.

The YOA programme is designed to continuously evolve in response to the needs and expectations of our participants, with the aspiration of becoming a leading platform of ocean literacy for young people.

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**SCIENTIFIC  
ENQUIRY AND  
LEARNING**



**CREATING  
OPPORTUNITIES**



**LEADING  
PLATFORM OF  
OCEAN LITERACY  
FOR YOUNG  
PEOPLE**

**“This programme has also opened new pathways to connect youths with like-minded individuals, creating opportunities for them to reach communities outside of Singapore Oceanarium”**

# THE TWO OCEANS AQUARIUM RETHINK THE BAG CAMPAIGN – A CASE STUDY FOR SOCIETAL BEHAVIOUR CHANGE



**AFRICA**  
Two Oceans  
Aquarium



Community  
engagement  
to drive  
behaviour  
change

Helen Lockhart, *Conservation and Sustainability Manager – Two Oceans Aquarium, South Africa*

## Introduction

In South Africa, the single-use plastic shopping bag is known as the country's 'national flower' as it is ubiquitous in terrestrial, aquatic, urban and rural environments across the country. According to Dikgang et al. (2012), South Africans purchase eight million plastic shopping bags annually.

A tax levy was introduced in 2004 in an effort to reduce the number of plastic bags being used and subsequently littered. However, the levy has failed to effectively reduce the number of bags purchased over time and there is no data to assess the levy's impact on littering of plastic shopping bags (Dikgang et al., 2012).

South Africa has a relatively high per capita plastic consumption of 32 – 41kg compared to the global average of 29kg (Rossouw et al., 2003).

The Two Oceans Aquarium and its non-profit Foundation in Cape Town, South Africa, see firsthand the impact of plastic on marine life through its work with turtles, seals and seabirds.

Every year, the Turtle Conservation Centre rescues and rehabilitates stranded turtles, many of which are victims of plastic ingestion. Two rescued turtles provided clear evidence of plastic bag ingestion: **Alvi had a plastic bag removed** from his throat, and **Bob excreted intact pieces of plastic bags**. Alvi and Bob were fortunate survivors, while many cases of plastic ingestion in animals are fatal.

Cape fur seals in the V&A Waterfront harbour are regularly rescued by the Foundation's Marine Wildlife Management team, who remove plastic entanglements of varying severity from their necks.

A local retailer sponsored Aquarium staff with reusable bags  
©Two Oceans Aquarium





A Cape fur seal is entangled in plastic shopping bag with the retail brand clearly visible © *Two Oceans Aquarium*



A local retailer developed a reusable bag to raise funds for conservation © *Two Oceans Aquarium*

## Rethink the Bag

In 2010, the Two Oceans Aquarium hosted the **5 Gyres Institute**, a non-profit organisation that focuses on reducing plastics pollution, during their stopover in Cape Town. At the same time, the Aquarium collaborated with a local artist on its first plastic awareness exhibit.

Having been exposed to the messages of the 5 Gyres team and experiencing increasing distress around the impacts of plastic pollution, Aquarium staff member Hayley McLellan was compelled to act. In her personal capacity, she initiated *Rethink the Bag* and launched a petition urging the South African government to ban plastic bags, following the example of many countries and cities worldwide. In support of this initiative, the Aquarium banned single-use plastic shopping bags from its premises in 2011.

In 2013 *Rethink the Bag* became an official Two Oceans Aquarium campaign. The Aquarium then created a full-time environmental campaigner role, appointing Hayley to lead *Rethink the Bag* along with other anti-plastic initiatives.

*Rethink the Bag* became a core part of the Aquarium's sustainability efforts and was promoted widely through exhibits, signage, staff training, awareness initiatives, festivals, expos, internal presentations, blogs, social media, traditional media (including radio, TV and print) and education programmes.

The campaign was endorsed by the Pan-African Association of Zoos and Aquariums (PAAZA), the Animal Keepers Association of Africa (AKAA) and Penguin Promises.

### Moving beyond awareness to action using community-based social marketing techniques

According to Mann et al. (2020), knowledge and awareness alone doesn't result in pro-environmental behaviours. Community-based social marketing (CBSM) techniques were employed to complement the Aquarium's awareness-raising efforts to inform the public about the issues of plastic pollution.

The *Rethink the Bag* campaign employed CBSM tools, including:

- Direct engagements and commitments
- Prompts and incentives
- Education outreach
- Public commitments.

### Direct engagements

Between 2013 and 2020, as the Aquarium's environmental campaigner, Hayley personally interacted with schools, environmental and social clubs, communities, companies, organisations, congregations, tourism bodies, government and retailers. In 2018 and 2019,



The Aquarium used art to tell the story of plastic pollution © Two Oceans Aquarium



The V&A Waterfront put together an exhibition in its shopping mall telling consumers why it was 'breaking up with plastic' © Two Oceans Aquarium



Hayley McLellan, the Aquarium's Environmental Campaigner, shared her personal story behind creating the Rethink the Bag Campaign with thousands of South Africans © Two Oceans Aquarium

Hayley delivered 169 presentations to these various audiences, reaching 17,964 people in 2019 alone.

Rather than sharing facts and statistics about single-use plastic bags, the associated pollution, and their impact on ocean life, Hayley told her personal story about how and why she had started the *Rethink the Bag* campaign. "Over more than two decades, the variety of animals in my care taught me so much about the natural

world that, in 2007, I found my voice as an advocate for the planet. Constantly observing unconscious and crass consumer behaviour spurred my desire to drive change in hideous plastic packaging trends and, so, *Rethink the Bag* was born – to ban plastic shopping bags in our country" (McLellan, unpublished).

The power of a dedicated campaigner sharing a personal story should not be underestimated.

### **Prompts and incentives**

The Aquarium participated in several International Plastic Bag Free Days, which are held annually on 3 July. One year, visitors to the Aquarium were encouraged to bring ten single-use plastic shopping bags in exchange for a reusable bag, reinforcing this positive behaviour through reward-based motivation. This was an opportunity to highlight an accessible solution to overcoming the problem.

Several local retailers also adopted the bag exchange idea, encouraging positive consumer behaviour and demonstrating their commitment to consumers. This had the obvious benefit of enhancing the retailers' reputation and increasing their brand visibility.

*Rethink the Bag* stickers were designed for placement in shop windows, stating that the shop was a plastic bag-free zone. The tactic had two objectives: first, the shop publicly committed to not offering its customers single-use plastic shopping bags, and second, customers were prompted to bring their own reusable bags.

In 2019 the V&A Waterfront, on which the Aquarium is situated, placed posters in the parking lots reminding people to take their reusable bags from the car into the shopping mall. Regular reminders at key places were another means of entrenching the habit of using reusable bags.

In 2016 the Aquarium launched a competition for its members to create designs for reusable bags. The best designs from three age categories were selected and printed on reusable shopping bags which were then sold in the Aquarium Shop.

### Education outreach

Hayley presented the campaign at schools around South Africa, and *Rethink the Bag* was also incorporated into the educational curriculum at the Aquarium. Two puppet shows and associated puppet books were developed to share the message about the dangers of plastic bags to ocean life with children. The human puppet characters took the *Rethink the Bag* pledge, promising to “no longer purchase or accept any plastic bags. Instead, I will take my own reusable, long-life shopping bag every time I go shopping” (Venter, 2013).

### Public commitments

- In 2014, Greyton, a small town in South Africa’s Western Cape, became the first to commit to banning single-use plastic bags. This community recognised the growing concern over pollution in their environment and chose to ban the bag to draw attention to all forms of waste. Their ingenious approach of transforming ‘trash to treasure’ was most effective in encouraging the locals to view their garbage in a whole new light. Several other towns made similar commitments in subsequent years.
- In 2015, D.H. Malherbe High School in the Eastern Cape, South Africa, became the first plastic bag-free school. Additional schools committed to becoming plastic-bag-free zones.
- In 2016, South African retailer SPAR launched the ‘It’s our plastic, it’s our problem’ initiative.
- In 2018, fifty prominent South African celebrities and influencers committed to using alternative reusable shopping bags and sharing on their social media platforms to amplify the *Rethink the Bag* message.
- The Aquarium assisted the V&A Waterfront with its ‘Breaking up with plastic’ campaign. The Waterfront committed its tenants to phasing out 12 single-use plastic items, including plastic shopping bags, by 2025. However, this is a collaborative journey, and the Waterfront “continues to engage with stakeholders and refine its approach, recognising that sustained dialogue, innovation, and education are key to transforming shopper and retailer habits in the long term” (Myburgh, 2025).

- Through interaction and consultation with the *Rethink the Bag* campaign, several national retailers committed to phasing out the sale of plastic shopping bags. Woolworths was the first retailer to stop issuing plastic bags from its food market stores in 2022.

Pledges and public commitments encourage individual responsibility. By making a public commitment, these schools, companies and individuals reinforced accountability through social norms, making the choice of alternative reusable bags visible and normative.

Between 2013 and 2020, the Aquarium’s *Rethink the Bag* campaign evolved from a personal, local initiative into a nationwide movement supported by towns, schools, corporations, media and prominent celebrities and influencers across South Africa.

The campaign demonstrated what can be achieved when a passionate, committed staff member is backed by a credible, well-resourced organisation working across all levels of society to drive change.

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# HALTING LOCAL EXTINCTION OF THE SHOEBILL IN UGANDA THROUGH CONSERVATION EDUCATION



**AFRICA**  
Uganda  
Wildlife  
Education  
Centre



Community  
engagement  
to drive  
behaviour  
change

Ruhinirwa Francis William, Dr James Musinguzi, Musingo David, Katabulawo Philip, Lugumya Douglas and Oti Richard – *Uganda Wildlife Education Centre, Uganda*

## Introduction

**Z**oos have played a critical role in the recovery of species that are considered extinct in the wild (Miranda et al., 2023). The survival of endangered species like the shoebill hinges not only on habitat protection but also on transforming human behaviours that threaten its existence. While past conservation efforts often focused on ecological interventions (Twinomujuni et al., 2024), Uganda Wildlife Education Centre (UWEC) initiated a project in Makanaga Wetland with community driven behaviour change as a key strategy.

By integrating Conservation Education with livelihood improvements, the project reduced destructive practices such as bush burning, nest disturbances, overharvesting of wetland resources and poisoning of the shoebill by fishermen while fostering local ownership and protection of the wetland.

This article highlights how tangible shifts in community behaviour can contribute to halting local extinction of the shoebill in Makanaga Wetland.

## UWEC and Makanaga Wetland – a community driven behaviour change project

The population of the shoebill (*Balaeniceps rex*), also known as the whale-headed stork, and shoe-billed stork, is estimated to be less than 6,000 individuals in the world and about 300 to 600 are remaining in Uganda. This community-based project integrated ecological conservation with socioeconomic incentives to protect the shoebill in Makanaga Wetland.

Makanaga is a wetland on Lake Victoria, near Kampala, Uganda – known for its rich biodiversity, particularly its birdlife, and is considered an Important Bird Area (IBA).

The project team guided and supported local residents in establishing a community-based organisation.

Makanaga Wetland © Kibuuka Diana

Key interventions included:

- Quarterly stakeholder meetings held with local leaders from the Wakiso and Mpigi District.
- Residential workshops organised at UWEC to train youths in customer service, birding, safety, public speaking, ecotourism, tourism and wildlife conservation in Uganda.
- WAZA sponsored exposure visits to UWEC for 60 community members to connect families with nature.
- Homesteads identified and community members trained in homestay experiences to enhance tourism offerings.
- Infrastructure development – boat trails, observatory towers and sanitary amenities established to enhance the tourism experience.
- Cultural, religious and local leaders trained in tourism, wildlife conservation and waste management so they can act as agents of change in the community.

Pre-evaluation and post-evaluation field interviews were conducted in the community (n=60) to assess the impact of the project (Figure 1). Results demonstrated successful alignment of species conservation with livelihood improvement opportunities. Climate variability and youth rural-urban migration require continuous adaptive management. The model highlights how multi-stakeholder engagements can achieve both biodiversity conservation and community development goals in fragile wetland ecosystems.

## Results

Quarterly meetings were organised during the project funding period from 2013 to 2015. Beyond the United Nations Development Programme (UNDP) funding, UWEC continued to organise annual meetings with support from the Government of Uganda (Figure 2). Mpigi District local Government has integrated Makanaga wetland into their annual budgets and produced information panels to market the site for ecotourism. Access roads to the site have also been maintained by the local government.



**FIGURE 1:** Interviewing community members  
© Kafuko Derrick



**FIGURE 2:** Community meeting © Kibuuka Diana



**FIGURE 3:** Shoebill trafficker arrest © Kafuko Derrick

Two training sessions were organised to equip 60 youths with tourism and wildlife management skills and knowledge. Of these, 26 youths are still active as local guides in the project area. The guides monitor shoebill population and report illegal activities, which has led to the arrest of a shoebill trafficker in 2021 (Figure 3). The Community members were actively involved in the rescue of the shoebill and later its release back to the wetland (Figure 4).



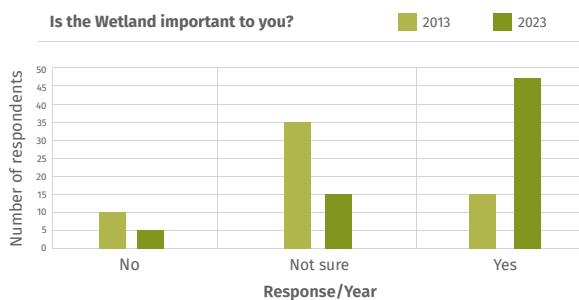
**FIGURE 4:** Shoebill Rescue © Kafuko Derrick



**FIGURE 5:** MWESUA guide with domestic tourists enjoying seeing a shoebill © Kibuuka Diana

Twelve families with a total of 60 members had had an excursion to UWEC, to spend more time in nature, and get a chance to see their totems up close for the first time. There has been a notable shift in people’s attitude towards the importance of the wetland as the majority now confirm that it is important to them (Figure 6).

Five homesteads have taken up the opportunity to conduct homestay experiences. This has improved community livelihoods and appreciation of the importance of the shoebill and ultimately conservation of the Makanaga Wetland.



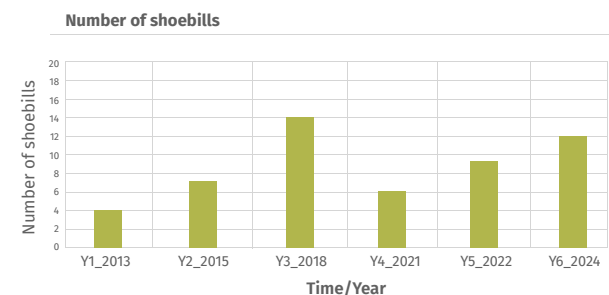
**FIGURE 6:** Response of community members to the question ‘is the wetland important to you?’ In 2013 and 2023

A community-based organisation, Makanaga Wetland Ecosystem Users Association (MWESUA) was established and registered with Wakiso District. The membership has since grown from 15 members in 2015 to 55 in 2024. The members actively participate in ecotourism activities (Figure 5) and report any illegal activities. The MWESUA members conduct monthly clean-ups at the landing sites and use this opportunity to sensitise the community members about the importance of the wetland.

The improved ecosystem health in Makanaga wetland has seen the shoebill population increase from 4 in 2013 to 12 in 2024 with a peak in 2018 as reported by the MWESUA members (Figure 7).

## Discussion

This project demonstrates how integrating socioeconomic incentives with conservation fosters species recovery. The rise in shoebill population in Makanaga reflects successful ecotourism and Conservation Education initiatives. However, the fact that the post 2018 fluctuations were possibly linked to climate driven hydrological changes (Pietroiu et al., 2024), highlights the need for adaptive management. The multi-stakeholder collaboration exhibited by UWEC’s post funding support, Mpigi District budget commitment and MWESUA’s growth of members, proves critical for sustainability (Armitage et al., 2020). Community-led conservation, as seen in Makanaga, often



**FIGURE 7:** Shoebill population in Makanaga from 2013 to 2024

outperforms top-down enforcement, supporting evidence that locally managed ecosystems are more resilient (Zhang et al., 2023). Ecotourism has created livelihoods, but youth rural to urban migration and competition from Mabamaba Bay, another wetland area on the edge of Lake Victoria and a popular destination for birdwatchers, poses challenges (Ntege et al., 2023).

Strategic tourism product diversification, branding and digital marketing could help address this disparity as suggested by recent ecotourism research (Muwani et al., 2024).

Aligning with Uganda's Vision 2040, the model emphasises adaptive management to balance ecological and livelihood needs.

## Conclusion

The Makanaga project demonstrates that saving endangered species like the shoebill requires a combination of ecological protection initiatives with community incentives. As wetland ecosystems are declining in Uganda, it is vital to scale this model to other ecosystems.

Future efforts must proactively address the effects of youth migration from rural to urban areas to ensure Makanaga has enough workers with tourism and wildlife management expertise. Continued support from local governments is essential to highlight the importance of climate change and to sustain ecotourism in the wetland region.

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# CONSERVATION HOLIDAY: A WELSH PERSPECTIVE



**EUROPE**  
Welsh  
Mountain  
Zoo



Community  
engagement  
to drive  
behaviour  
change

Alexandra Davies, *Education Manager – Welsh Mountain Zoo, Wales, United Kingdom*

## Introduction

**C**hristmas, while festive, is a period of significant environmental impact. In the UK alone, 30,000 tonnes of Christmas cards are discarded annually, with over 33 million trees cut down to produce them, contributing to habitat loss. The *Conservation Christmas Campaign* was developed to offer a sustainable alternative by teaching learners the skills to make eco-friendly seed paper cards. Free outreach and virtual workshops were offered to learning organisations, along with resources to encourage continued sustainability-focused education. 1,666 learners from 24 organisations participated in the project, 95.2%, of which, created seed paper cards. Notably, 66.7% reported they would no longer buy traditional cards, and 90% stated they would reuse the seed paper method. The campaign empowered 76% of participants toward lasting sustainability and offers a replicable model for zoos worldwide to foster community-led conservation action.

## Introducing the Conservation Christmas Campaign

While awareness of sustainability is growing, many individuals underestimate their own impact on the environment (Taylor and Duram, 2021). This lack of ownership can be attributed to a deficit of effective sustainability education and connection to nature (Chawala, 2020). The disconnection from nature contributes to this attitude and limits motivation for change (Clayton et al., 2009).

Christmas can often be a time of excess.

In the UK alone, over 8 million Christmas cards are sent annually. When covered in glitter, or other accessories, they are no longer recyclable (Yurtsever, 2019), and over 30,00 tonnes end up in landfills each year (Waste Mission, 2024). Paper is utilised worldwide and is one of the largest contributors to solid waste in landfills, with over 26 million tonnes present (Smith, 2011). Additionally, when paper decomposes in landfills, methane is released, a gas 23 times more potent than CO<sub>2</sub> (Auer, 1996). Equally, over 33 million trees are cut down, in the UK, to produce cards, catalysing habitat loss (Beckline et al., 2016). Whilst a seemingly heartfelt gesture, Christmas cards can have a significant impact on the environment.

Zoos are an effective bridge to deliver environmental learning, and tackle sustainability issues (Luebke and Grajal, 2011). Zoos work to inspire people to lead a more sustainable lifestyle. Sustainable alternatives can be simple; however, people often lack the skills or knowledge to action them.

Brown bear (*Ursus arctos*) © Pexels



The *Conservation Christmas Campaign* aimed to tackle environmental issues caused by Christmas cards, whilst fostering lasting sustainable actions. It is hypothesised that learners who engage with awareness campaigns, and skill-based education, will foster a more sustainability-conscious attitude.

## Sustainable seed card workshops

The sessions occurred between 2–14 December 2024. The project team travelled 357 miles across North Wales to deliver the sessions and virtual sessions were also held. Each 45-minute session outlined the unsustainable issues surrounding Christmas cards, and a practical element to produce sustainable seed paper Christmas cards (Figure 1). Seed paper is recycled paper embedded with seeds. The process involves creating a paper pulp from shredded paper and mixing it with seeds. Once dried, the paper can be used to make cards.

To reduce the campaign's own carbon footprint, travel was made in an eco-hybrid vehicle donated by a local company. Hybrid cars are believed to cause significantly less damage to the environment than a standard combustion engine (Beliveau et al., 2010). Routes were optimised using eco-travel software, lowering CO<sub>2</sub> emissions by 18.2 kg. Educational resource packs in English, Welsh and Sign Language aligned with the UK national curriculum and included cross-disciplinary activities, were provided to reinforce sustainability-conscious learning.

## Campaign results

The campaign reached 1,666 learners across 24 organisations. As the project was free of charge, the demographic was investigated. When exploring the Welsh Index of Multiple Deprivation, 28.2% of these organisations were in the most deprived areas of Wales, underlining the accessibility achieved by offering the programme at no cost (Figure 2).

Overall, 95.2% of participants made their own seed paper Christmas card, but the entire collective was taught this sustainable skill. To evaluate the impact on learners and staff feedback forms were distributed.

The data highlighted that 66.7% learners would no longer buy standard cards, following the awareness raised by the campaign (Figure 3).

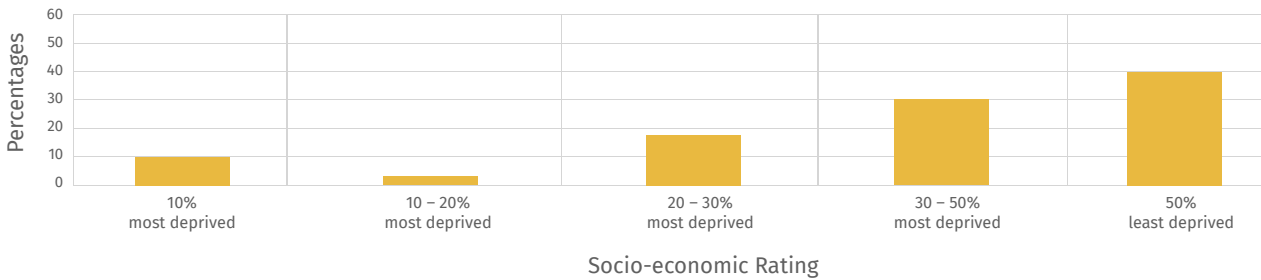
Furthermore, 90.5% confirmed they would make seed paper cards again (Figure 4). To determine if the campaign fostered a lasting sustainable attitude, further data analysis highlighted that 76% of respondents confirmed that the project had influenced learners to adopt more sustainable behaviours (Figure 5), whilst 66.7% affirmed that it would have a lasting impact on their future actions.

These findings indicate both immediate skill adoption and potential for sustained behaviour change.



**FIGURE 1:** Conservation Christmas Outreach Workshop at a local school © Welsh Mountain Zoo

Percentage of booked organisation based on the Welsh Indices of Multiple Regression

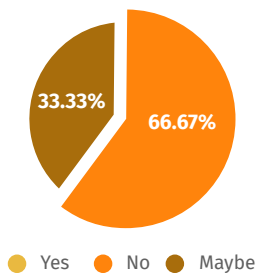


**FIGURE 2:** The percentage of booked organisation categorised by their Welsh indices of multiple regression. 10% (n=3), 10–20% (n=1), 20–30% (n=5), 30–50% most deprived (n=10), 50% least deprived (n=13) © Welsh Mountain Zoo

## Discussion

Visiting a zoo or aquarium fosters knowledge building and emotional connections (Clayton et al., 2009). However, lasting impact requires practical, accessible actions (Pettersson, 2022). Providing simple skills, which are easily assimilated into people’s daily lives are most effective. Seed paper making offered a low-barrier, repeatable skill with a direct environmental benefit. Whilst all learners were taught the skills, 95.2% of learners created seed paper Christmas cards. The high percentage of learners willing to repeat the activity (90.5%) and abandon traditional cards (66.7%) signals a positive behavioural shift (Figure 3). Whilst it is understood that knowledge gain doesn’t automatically sequent into long-term behaviour changes, these positive affirmations of sustainable action and a simple skill learned, could be a foundation to facilitate an eco-friendlier lifestyle (Nordström Källström and Ljung, 2002).

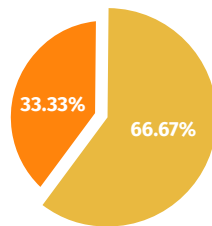
Would you still send unsustainable Christmas cards?



● Yes ● No ● Maybe

**FIGURE 3:** The results based on a learner and teacher feedback survey asking if they would still send unsustainable Christmas cards. Yes (n=0), Maybe (n=7), and No (n=14) © Welsh Mountain Zoo

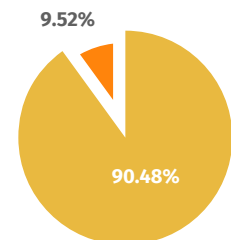
Will the campaign have a lasting impact to be more sustainable?



● Yes ● Somewhat ● No

**FIGURE 4:** The results based on a learner and teacher feedback survey asking if the campaign would have a lasting impact to be more sustainable. No (n=0), Maybe (n=7), and Yes (n=14) © Welsh Mountain Zoo

Would you make seed paper again?



● Yes ● Maybe ● No

**FIGURE 5:** The results based on a learner and teacher feedback survey asking if they would make seed paper again. No (n=0), Maybe (n=2), and Yes (n=19). © Welsh Mountain Zoo

Zoo-led education constitutes a low-pressure learning environment, in which to explore conservation. Zoos have a wide-reaching demographic, engaging audiences at the zoo and in the community (Taylor and Duram, 2021). With the current raised cost of living, trips to the zoo are often financially unfeasible. 28.2% of the organisations committed to the project were located in the 20% of the most deprived areas in Wales. Furthermore, the campaign’s free delivery eliminated financial and geographic barriers, particularly

benefiting learners in deprived areas. Education sessions, regardless of their location, have a positive impact on establishing knowledge of environmental concerns to a greater extent than receiving no intervention at all (Collins et al., 2021). Targeting eco-education to a child-based audience could potentially affect their sustainable actions as they mature (Taylor and Duram, 2021). Given that the audience was predominantly primary schools, these eco-friendly skills and messaging may influence a long-term pro-environmental attitude. Thus, by connecting a relatable festive tradition with an environmental message, without financial and geographical barriers, the campaign empowered young learners across the community to make lasting changes.

Although based in Wales, the *Conservation Christmas Campaign* can be relatable to zoos worldwide. Seed paper creation requires minimal resources, and providing virtual delivery options

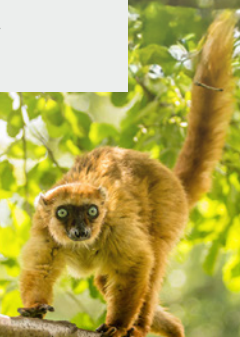
broadens accessibility, supported by multilingual resources to ensure inclusivity. Zoos globally can adapt this model to focus on localised environmental issues, including regional seeds, and exploring their own traditions. This flexible, replicable approach supports global sustainability goals while reinforcing each institution's conservation mission.

To confirm this impact, future work to reconnect with learners should be undertaken. Continuing research could explore the biodiversity impact of planting the seed paper Christmas cards and analyse if people buy or make unsustainable cards or seek sustainable alternatives. Whilst this project only tackled one aspect of an unsustainable Christmas, it can be considered that the project contributed towards its outcome of awareness and knowledge-building on sustainability and empowering achievable skills towards eco-friendly choices.

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Blue-eyed black lemur (*Eulemur flavifrons*) © Zoo Ostrava



# Creating Networks for Nature at the Chester Zoo



EUROPE  
Chester Zoo



Community engagement to drive behaviour change

Hannah Brooks, *Senior Community Participation and Engagement Manager and*  
Charlotte Smith, *Director of Conservation Education – Chester Zoo, United Kingdom*

**‘N**etworks for Nature’ is an ambitious, collaborative initiative led by Chester Zoo, aiming to create a thriving, nature-rich landscape for both people and wildlife. The project area stretches across approximately 60 square miles, from the River Dee to the River Mersey, encompassing Chester Zoo’s site, Chester and Ellesmere Port.

In partnership with Cheshire West and Chester Council, The Land Trust, Cheshire Wildlife Trust, Canal & River Trust and Sustrans, this place-based project is grounded in the principle that nature recovery is more sustainable when it’s driven by community participation (Anderson and McGee, 2025). Its core belief is simple but powerful: when local people

are empowered to take an active role in the stewardship of green spaces, both nature and communities flourish.

## Project development

Chester Zoo has a long track record in delivering impactful community programmes and in improving green spaces to benefit UK wildlife, including creating its own free to access nature reserve on the zoo site.

The success of Networks for Nature is rooted in this experience, underpinned by robust research, an evidence-based theory of change, and a deep commitment to partnership and collaboration.

Conservation action – Volunteers removing invasive pennywort  
© Chester Zoo



The project applies the COM-B/Behaviour Change Wheel (Michie et al., 2014) model of behaviour change, focusing on building Capability, Opportunity and Motivation for behaviours associated with creating and improving habitats for UK wildlife. Interventions are aligned to the following Behaviour Change Taxonomy (BCT) technique groupings (Michie et al., 2013):

- **Goals and planning:** As green spaces are developed participants are involved in goal setting (BCT 1.1), problem solving (1.2) and action planning (1.4) – and where appropriate commitments (1.9) in the form of pledges are used.
- **Social support:** Building strong social networks, both in person and through digital means is a key aspect of the project. Social support is offered both practically and emotionally (3.1, 3.2 and 3.3).
- **Shaping knowledge:** Hands-on training and participatory workshops provide specific instruction on how to create and maintain habitats for a range of wildlife species (4.1).
- **Comparison of behaviour:** Successes from community groups and schools are shared with others (6.2) and demonstration sites used to show what could be done (6.1).
- **Repetition and substitution:** Conservation action days and other interventions provide opportunities to rehearse behaviours (8.1).
- **Comparison of outcomes:** Chester Zoo and its partners are positioned as credible sources (9.1).
- **Reward and threat:** No financial incentives were used, but social rewards (10.4) were implied as habitats and the contributions of community members were celebrated through events, awards, project communications and interpretation.

In addition to behavioural impacts the project also aspires to connect participants to nature and enable a more diverse range of people to benefit from the newly created and improved green spaces delivered through the project. This principle was important, as research shows that individuals who self-report are more connected to nature, and are more likely to take pro-conservation action (Eeden et al., 2025). To create opportunities for participants to increase their connection to nature, the ‘Five Pathways to Nature Connectedness’ are built into the



Youth Engagement – Inspiring the next generation  
© Chester Zoo



Nature Connection – Exploring nature through senses  
© Chester Zoo

design of all participatory activities (Lumber et al., 2017).

## Engaging diverse audiences

At its heart, Networks for Nature is about working with people, not for them. From schools and community groups to faith organisations, local authorities and landowners, the project engages a diverse range of stakeholders to make local green spaces better – for biodiversity and for community wellbeing.

Special attention is given to removing barriers for those often excluded from nature-based activities, including individuals from socio-economically disadvantaged backgrounds, global majority communities, and people with special educational needs and/or disabilities.



Wildlife Champions – Creating a network of empowered community leaders © Chester Zoo

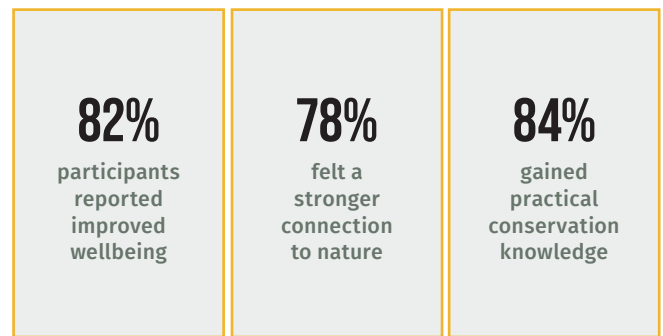
Delivery methods are tailored to meet the needs of these diverse audiences and participants are encouraged to contribute to the design of activities throughout. There is no ‘one size fits all’ approach, but the project has centred around the following strands of work:

- Yearlong projects with schools and community groups – combining habitat improvements with education and engagement focused interventions.
- Training and networking for community group leaders.
- One-off events and conservation action days bringing together a broad range of participants.
- Focused habitat improvement work with large landowners.

## Evaluation and outcomes

The work has been evaluated through documenting habitat improvements, post activity questionnaires with event attendees and depth interviews with longer term participants. In its first 18-month phase (2021–2022), funded by the Green Recovery Challenge Fund, our evaluation demonstrated the following results:

Quantitative data from post-intervention surveys, completed by event attendees and participants in shorter term activities, showed:



Qualitative interviews with long-term participants further highlighted improvements across all focus areas: skills and knowledge, health and wellbeing, connection to nature and self-reported conservation behaviours. Interpretive Phenomenological Analysis (IPA) of the interviews enabled us to uncover unexpected results, including some evidence for wider benefits of long-term engagement activities such as:

- Teachers discovering new ways to integrate nature-based approaches into their lessons.
- Adults forming new friendships and strengthening family bonds through shared experiences.

We also compiled case studies for each long-term school and community group, this included gathering comments which highlighted some of the individual benefits of the project. Two examples are included below:

*“I didn’t think you’d get a word out of Child X, let alone have them talking to the rest of the class,”* said one teacher, after a quiet student eagerly shared findings from a bug hunt.

*“I’m over the moon with Child X – I didn’t think they’d interact at all,”* noted another, after a typically reserved child fully engaged with peers and activities.





# INVERTEBRATE CONSERVATION AND CITIZEN SCIENCE: SOCIAL AND COMMUNITY IMPACT IN BERN



EUROPE

Animal  
Park Bern



Community  
engagement  
to drive  
behaviour  
change

Dr Friederike von Houwald and Cornelia Mainin – *Animal Park Bern, Switzerland*

**T**he conservation of invertebrates, particularly saprophytic beetles, represents a crucial but often overlooked aspect of biodiversity preservation. In Bern, Switzerland, the Animal Park (Tierpark Bern) and the City Department of Parks and Greenspace Service (Stadtgrün Bern) have developed a

unique approach by integrating invertebrate conservation with citizen science and community engagement. This project highlights the ecological importance of beetles and demonstrates how conservation efforts can drive social change and community development.

## Ecological role and conservation status

Saprophytic beetles are vital for forest and garden ecosystems. They decompose organic matter, recycle nutrients and support soil health. Their larvae are also important food sources for many birds and small mammals. Despite this, these insects often receive little attention from the public and policymakers. Many 'wood' beetles are still mistakenly associated with harmful bark beetles (*Scolytinae*) that damage forests.

In 2016, The International Union for Conservation of Nature (IUCN) Red List assessed 256 beetle species in Switzerland from the jewel beetle (*Buprestidae*), longhorn beetle (*Cerambycidae*), flower chafer (*Cetoniinae*) and stag beetle (*Lucanidae*) families. Of these, 118 (46%) are red-listed and 47 (18%) are near threatened. The assessment revealed that wood beetle species are under pressure across Switzerland, even at higher altitudes, indicating urgent need for action for nearly every second species (Monnerat, 2016).

Great capricorn beetle (*Cerambyx cerdo*) © Nordens Ark



## Project structures and aims

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Recognising the challenges faced by saprophytic beetles, the Animal Park Bern and the City Department of Parks and Greenspace initiated a multi-layered project with the following aims:

- Build suitable habitats
- Breed selected beetle species for release
- Raise public awareness about beetles
- Directly involve citizens in conservation.

The project comprises several key components:

1. **Build habitats:** deadwood logs are collected and suitable habitats called Beetle Meeting Points are developed in and around the animal park as well as on city-owned land.
2. **Breeding Selected Beetle Species:** the Animal Park breeds specific beetle species for release and education.
3. **Beetle Release and Meeting Points:** beetles are released at the 'Beetle Meeting Points'.
4. **Beetle Education Hotspot:** The 'Beetle Mobile', a mobile beetle-themed truck located in the zoo, educates visitors about beetle biology, ecology and conservation.
5. **Community Collaboration:** private garden and forest owners, as well as schools and other public institutions like museums or cemeteries collaborate with the zoo and city to create beetle habitats.
6. **Citizen Science Project:** citizens are encouraged and educated to observe, document and report beetle sightings, contributing to scientific data collection.

As part of Bern's Biodiversity Concept 2025–2035, the Animal Park contributed expertise in *ex situ* breeding, genetic diversity and nature education (Tschäppeler, 2024). The city decided to focus on saprophytic species, choosing the rhinoceros beetle (*Oryctes nasicornis*) and the European stag beetle (*Lucanus cervus*) as two flagship species. *Oryctes nasicornis* has been extinct in Bern for about 100 years and both are a protected national priority species for conservation. They serve as effective ambassadors for other saprophytic species due to their charismatic appearance.

## Community engagement and behavioural change

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A major outcome of the project is the high level of community engagement and behavioural changes among citizens and schools. After media coverage of the breeding programme, private forest and garden owners as well as schools contacted the Animal Park Bern and the city to participate. Experts visited potential habitat areas which were then integrated into the project. Over five new habitats were created at the animal park.

The animal park offered new guided tours focussing on beetles and their ecological importance which were well attended. During the tours, interesting discussions about ecological relationships and a greater reflection on personal behaviour, with many asking 'what can I do' were observed.

The 'Beetle Mobile' attracted significant interest, especially from children, who were eager to learn about the importance of beetles in general and especially of saprophytic species and their role in the ecosystem.

Children also spend considerable time in the new indoor beetle enclosures with exotic species like the Goliath beetle (*Goliathus goliathus*), which was integrated into the new bee-eater enclosure, showing increased curiosity for beetles in relation to the other exhibits located nearby.

## Citizen Science as a conservation tool

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The project's citizen science component empowered individuals to contribute to research and to participate in direct conservation actions. After breeding rhinoceros beetles at the Animal Park Bern, the species was released on previously prepared areas. All citizen science participants were invited to attend these releases and were given the opportunity to become familiar with them. Experts attending the releases provided valuable information on the species and their ecosystem. Each citizen science participant released a beetle or larvae on their own. This hands-on experience fostered

European male Stag beetle (*Lucanus cervus*)  
© Copenhagen Zoo



5 Female rhinoceros beetles prior release  
© Animal Park Bern



Beetle Module © Animal Park Bern

emotional connections and demystified science, making it more accessible and memorable.

Participants were instructed on how to find and document rhinoceros beetle sightings as they differ from screening for other beetle species which they had worked with before. By sharing their observations, they became part of a larger scientific community and got to know many experts working with various beetle species. This not only provides valuable data for researchers but also makes science more accessible to the public and creates lasting memories for each participant.

## Strengthening Social Networks and Partnerships

The project united families and local organisations interested in making their gardens more insect friendly. The City Department developed a concept for insect friendly gardens and collaborative activities – such as building new beetle habitats, planting more insect friendly flowers and participating in citizen science. This concept strengthened social bonds and created new networks. An insect-friendly gardening community was established, and the number of enthusiastic gardeners continues to grow.

Follow-up surveys by the City Department showed a measurable increase in pro-environmental behaviours among participants, including changes in gardening practices to support invertebrates. The project also influenced local policy, with invertebrate conservation incorporated into the city's biodiversity strategy.

## Shifting public awareness

Initially, some public and media voices were critical of the zoo's focus on saprophytic beetles. Over time, attitudes shifted, especially after the reintroduction of the rhinoceros beetle, extinct in Bern for over a century. Positive and informative articles about beetles and their ecological roles were published on a regional and national level.

Interest in breeding, releasing and improving habitats for saprophytic beetle species attracted the attention of the Canton of Bern – the regional authority in the Bern area of Switzerland. As part of their biodiversity action plans for selected insects, they approached Animal Park Bern with a request to specifically breed stag beetles (*Lucanus cervus*) for new release projects in the canton.



Beetle release with citizen science participants  
© Animal Park Bern



Breeding saprophytic beetles species  
© Animal Park Bern

## Conclusion

The invertebrate conservation and citizen science project in Bern demonstrates how conservation initiatives can drive social change and community development. By focusing on the social and community aspects, the project has not only advanced ecological goals but also fostered a sense of ownership, education and collaboration among participants. The evidence of behavioural and social change highlights the importance of such initiatives for both biodiversity and society. As the project continues to grow, it serves as a model for other communities seeking to integrate conservation with citizen engagement and social innovation.



Male rhinoceros beetle © Animal Park Bern

For Animal Park Bern, this project is a milestone. Beyond driving social change, it has brought political recognition to the vital work of zoos and animal parks.

This recognition is especially significant, as Animal Park Bern is the first zoo in Switzerland to become an official partner with governmental agencies concerning conservation initiatives including *ex situ* breeding, improving the genetic diversity of local species and playing a key role in nature education.

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# CURRENTS OF CARE: SHIFTING AQUARIUM EDUCATION TO FOSTER WELLNESS



**NORTH AMERICA**

Monterey Bay Aquarium



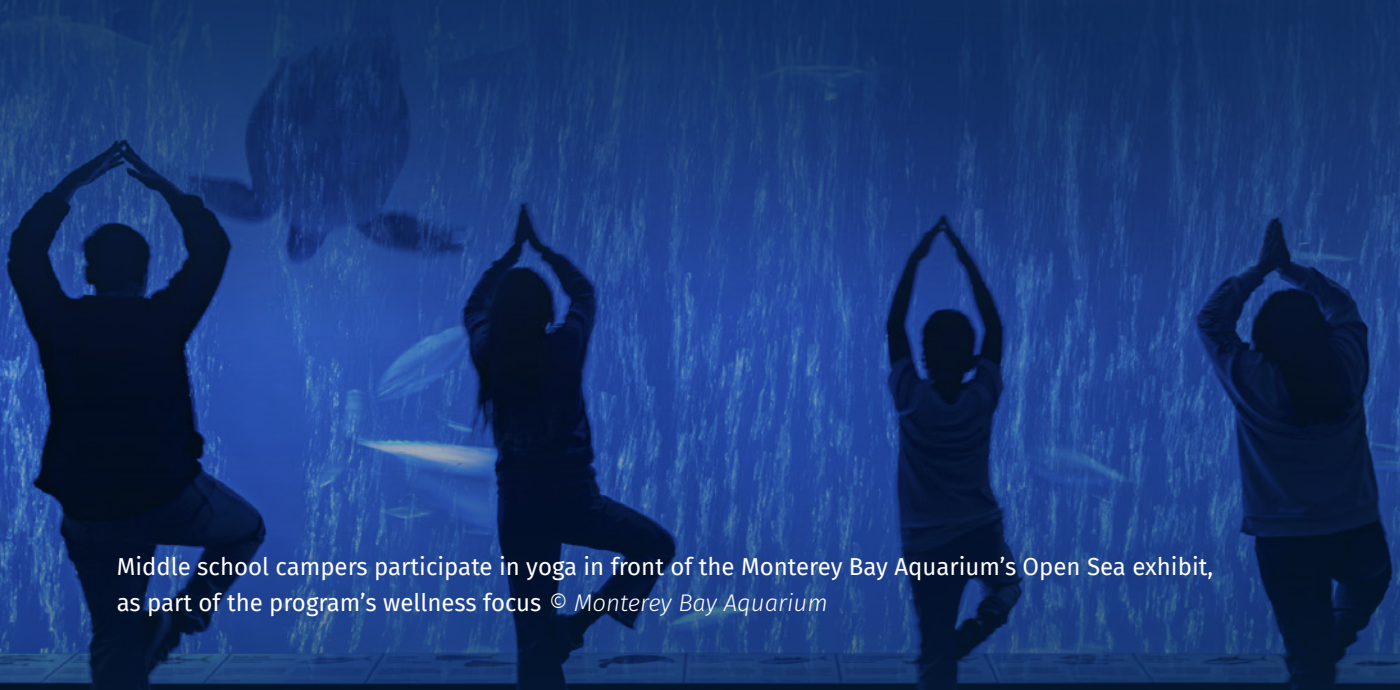
Nurturing wellbeing  
as a foundation for  
social change

Bonnie Benham and Katy Noelle Scott – Monterey Bay Aquarium, United States of America

**I**t was before opening hours at the Monterey Bay Aquarium and a group of 15 educators were standing at the top of the iconic Kelp Forest exhibit. They were circled around the open pool as an interpreter from Guest Experience instructed them to toss krill into the tank. She spoke about the wave machine, the engineering feat that helps sustain the life of the kelp ecosystem with a gentle sway mimicking what occurs in its natural habitat. Some educators were actively listening to our presenter while a few leaned on the railing with their heads raised toward the sun. The soundscape included much more than what was being spoken. There was the swish of the wave machine, the subtle splash of krill landing on the surface of the water and the frequent call of a gull. These sounds plus the warmth of the sun on our faces and a slight breeze all connected us to that place, to ourselves and to one another as we shared this experience.

Nearly all of us are moving through the world carrying some form of trauma. This is especially true as we examine the long-lasting impacts of climate change, the COVID-19 pandemic and identity-based prejudice (Scott and Clemente, 2024). These issues are impacting adults as well as children, who often don't have the coping skills to deal with them. Additionally, educators across the United States are reporting increased feelings of isolation, burnout and overall stress (Marken and Agrawal, 2022).

Aquariums and zoos are uniquely positioned to provide connections to animals and natural spaces, which are proven to reduce stress, as well as improve overall well-being (Capaldi et al., 2015) and cognitive performance (Schertz and Berman, 2019). Further, short times in nature can “wake up a tired brain” and restore attention (Lee et al., 2015).



Middle school campers participate in yoga in front of the Monterey Bay Aquarium's Open Sea exhibit, as part of the program's wellness focus © Monterey Bay Aquarium

At the Monterey Bay Aquarium, supporting wellness is an integral part of our mission. We view children as vital partners in ocean conservation today. We also recognise that educators can be powerful change agents within their schools, communities and for the ocean. But for children to be ready to connect with the ocean – and for educators to be prepared to guide them – their basic needs for safety and belonging must first be met (Cantor et al., 2020). When stress levels decrease, our audiences are better able to form meaningful connections with each other and with the ocean – benefiting us all.

As such, the Aquarium’s education team has undertaken a transformative journey. We have shifted our programming to support the emerging emotional needs of teens and educators, including using time in nature to support wellness. In this article we discuss our successes and lessons learned, and offer specifics that will allow other organisations to try similar strategies. We focus on how these shifts have impacted three of our programmes: professional development for PK-12 educators, a service learning programme for high school students aged 14 to 18, and a five day camp for middle school students aged 11 to 14.

## Wellness in aquarium exhibits

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Historically, we welcome programme participants into the Aquarium before the guests arrive to give them the opportunity to observe the grandeur of our exhibits without having to compete with the public. Up until recently, the intent of pre-opening activities has been to build ocean literacy. We viewed warm feelings or moments of awe from participants as a means of achieving ocean literacy. As we have become more aware of the emotional burdens youth and educators carry, we’ve started to reimagine our exhibitions as spaces for reflection, connection and healing.

We started small, inviting participants to watch the movement of water or illustrate what they observe. Over time, we’ve begun to rely on three specific activities to get participants relaxed and ready for the day ahead:

1. **Sit spots:** A sit spot is an invitation to slow down, pause and observe. It creates a habit of

“noticing, wondering, and caring” (Smith, 2025). During our pre-opening activities, we invite participants to adopt a sit spot to observe an exhibit. Prompted to understand their relationship with the system they observe, they can journal, draw, or just think. The intended outcome is not meant to be a tangible artifact, but a new way of thinking about their sense of self in a new place. The goal is to provide a calming and mindful experience that connects participants to the Aquarium.

2. **Animal encounters:** Animal encounters are familiar activities in zoos and aquariums. While these activities are great opportunities for learning, they can offer more. Research shows that encounters with animals may contribute to human mental well-being and nature connectedness (Yerbury and Lukey, 2021). In our programmes, participants have the opportunity to feed and touch animals in our learning labs and in the exhibits. While we know these help participants build empathy for the animals (Seattle Aquarium, 2019), we also find they help them connect to each other through a shared experience. For example, when attempting to feed bat rays who were not taking the food, one teacher said, “bat ray, we are teachers. We have so much wait time to give.” The group then laughed together.

3. **Movement:** Studies conducted on movement show that it can increase the level of myokines in the brain, which act as an antidepressant (Scisciola et al., 2021). Further, movement in a space makes us feel more like we belong to it (Mackey, 2017), thus building belonging. Recently, we began to use the exhibits to inspire movement. We’ve led participants through yoga poses as they face a 1.2 million-gallon tank that houses a diverse array of marine life in our Open Sea exhibit. Using our Kelp Forest exhibit as an inspiration, participants sway back and forth and move their arms like the animals that live therein. We’ve used this experience as a sort of guided mindfulness activity for both educators and youth. After movement in the Kelp Forest, one educator said, “I never thought of what my body was telling me when I entered a space. Of course my body was there, but I didn’t pay attention to it. The movement helped me connect to my body.”



From her sit spot on Macabee Beach, a teacher uses her senses to connect to the Monterey Bay  
© Monterey Bay Aquarium

## Wellness outdoors

For more than 20 years, we've brought students and educators to natural spaces, for kayaking excursions, tide pooling, guided hikes, boogie boarding and even to surface SCUBA – a type of scuba diving where participants use SCUBA gear near the surface of the water, rather than diving deep. The main outcome of these experiences was to aid participants to create a deep connection with and love for nature and, therefore, want to conserve it. Any added emotional benefit was considered to be secondary. Since the pandemic, our goals have evolved. We're now talking explicitly with participants about nature's healing benefits and designing activities centred on wellness. While fostering a connection to nature remains important as a foundation for conservation action – it has become a secondary outcome for many of our activities.

In many ways, we're making minimal shifts. With our youth participants, during outdoor activities, we take time to check in on our bodies, hearts

and minds. We invite students to think about how they feel in these natural spaces, moving their bodies. And we remind students that they can try activities like these on their own, as coping strategies. As one middle school student shared, "it showed me all of nature and it calmed me down" (Ancelet and Talbert, 2024).

In other ways, our programming has shifted intensely. In the past, we've invited educators to return for a Saturday event a few months after they experienced a five day summer programme with us. Often, this day was filled with curriculum activities they could take back to their classrooms. In 2024 we tried something different: we invited teachers for a day on an electric boat, spending time together in a local waterway with a naturalist. The stated goal of this day was to 'attend to healing'. At the end of the day, all of the teachers told us it was exactly what they needed. But we only had a 60% turn-out. One of our part-time staff, who is also a teacher, suggested, "Coming for healing feels selfish. Coming to get something for their students feels better." So we're planning to collect more specific evaluation data to help us better understand what educators need and want.

## Trauma-informed practices

In our work to ensure all participants in our programmes feel safe, supported, and have a sense of belonging, we've long known that some young people – specifically those who have experienced more Adverse Childhood Events – have greater needs (Soleimanpour et al., 2017). However, as we returned to programming after the pandemic, amid economic, political, climate and social turmoil, it was clear that a much greater number of students were in need of additional support (Scott and Clemente, 2024).

It was necessary for us to meet young people's basic needs, so they would be ready and able to learn and connect with the ocean. In order to do that in our new reality, we needed to embed trauma-informed practices into our programming (National Education Association, 2023). To initiate this approach, in 2022, we created a full-time position for a certified school counsellor to support our work with young people.

After two years, we added an additional seasonal counsellor position to support our summer programmes. With the help of our counsellors, we've been able to offer intensive support to young people within our programmes.

Coupled with on-staff counsellors, using a web service called 'Closegap' for daily check-ins has been the most transformative aspect of our wellness work. Every day a student is in one of our youth programmes, we invite them to login to their Closegap account. Closegap is a fee-based third-party software that was developed in collaboration with mental health experts (Closegap, 2025). Before the Aquarium implemented the use of Closegap, it was solely used in K-12 (kindergarten through 12th grade) schools across the world.

In their daily check-in, students are guided through an age-appropriate process that offers a series of progressively more specific questions, asking them how they're doing, what they're feeling emotionally and physically, and whether they'd like to talk to an adult. The programme then triages students as 'urgent', 'could benefit', or 'good to go'. Our on-site counsellors meet with anyone who comes up as 'urgent' within a few hours. If possible, our counsellors also connect with those triaged as 'could benefit'.

While the Closegap system offers many advantages, one of the most significant for us is its ability to identify the needs of students quickly – especially since some of our programmes run for only five days. Our staff often spend the first day simply learning students' names, meaning deeper needs may not emerge until later in the week, if at all. However, with Closegap, we've been able to identify and support students within the first few hours of their arrival in a programme. In the summer of 2024, our counsellors checked in with students 102 times due to a 'could benefit' need, and 21 times due to an 'urgent' need. One crisis protocol was activated for a student with serious needs, which were indicated via Closegap on the first day of their arrival in camp. Overarching needs that students indicated throughout the summer included academic pressure, anxiety, hunger, hurt/sick, loneliness, low self-worth, peer issues, social life, stress and tiredness.

## Lessons learned

After three years, we're still at the start of exploring what wellness can and should look like within education programmes at the Monterey Bay Aquarium. Some elements are definitely working – 100% of our 58 high school students agreed that they felt safe during the 2024 summer programme. Additionally, 95% agreed that they felt supported by adults during the Teen Conservation Leaders (TCL) program, with none disagreeing, and 93% agreed that they felt included (Ancelet and Talbert, 2024). Students who feel safe, supported, and included are far more likely to learn, try new things and be open to connection (Hammond, 2015).

While 80% of our high school students reported that they benefited from doing wellness activities and two-thirds (66%) said they were likely to continue wellness activities in the future, our findings with middle school students weren't as promising. Of the 91 students surveyed after participating in our 2024 camps, nearly 69% said they benefited from doing wellness activities, and only half (50%) said they were either 'extremely likely' or 'likely' to continue doing wellness activities in the future (Ancelet and Talbert, 2024).

We're still unpacking these findings. Our high school and middle school students were led through various activities, with high school students being given more choices. In our middle school camps, wellness activities included yoga and meditation in exhibit spaces, as well as beach games and outdoor activities. In 2023, after our first summer of integrating these activities, our evaluation found that students only recognised the yoga and meditation as wellness activities, but not the beach games or outdoor activities. Some students even told us they didn't like the wellness activities, and that one of their favourite things was the beach games.

Chambered nautilus (*Nautilus pompilius*)  
© Monterey Bay Aquarium

The following summer, our staff worked hard to be more explicit about what constitutes ‘wellness’ and the reasoning behind all activities. Our youth programme teams have continued to modify wellness activities, specifically with middle school students. We’ve begun to focus more on social-emotional learning goals of self-awareness, self-management, social awareness, relationship skills and responsible decision-making.

Simultaneously, our educator programmes team has identified wellness as an outcome so we can intentionally provide experiences that nourish the well-being of our participants. We’re currently collecting data to better understand how educators define and place importance on their well-being. This requires us to be responsive to what we’re seeing in our programmes. A curiosity we had a year ago was

whether or not we should have a later starting time so educators could get more sleep. In the closing survey, one educator wrote, “what best supported my learning were the interactions with the animals at the Aquarium before it was open to the public.” Perhaps they don’t need more sleep, but more time before the Aquarium opens to engage in activities that attend to their wellness.

We’re constantly learning, adapting, and discovering new ways forward. To fulfill our mission, we realise that our participants must be well – but beyond that, we care about them as whole people. Whether they’re educators or youth, we want them to feel seen. Because when people feel seen, they begin to feel they belong – at the Aquarium and in the broader world of ocean conservation.

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# COMMUNITY-BASED ENVIRONMENTAL EDUCATION, CONSERVATION, AND SUSTAINABILITY PRACTICES



**NORTH AMERICA**

North Carolina Zoo



Empowering youth to drive social change

Andy David and Beth Folta – North Carolina Zoo, United States of America

**U**NITE for the Environment (UNITE) is a community-based environmental education, conservation and sustainability programme of North Carolina Zoo. UNITE uses a multifaceted approach to promote behaviour change toward sustainable practices that reduce the environmental impact of rural communities and foster environmental stewardship. Since 2002, UNITE has worked with communities within a five kilometre radius of Uganda’s Kibale National Park and has recently expanded its efforts to include communities bordering Queen Elizabeth National Park (QENP).

These are two areas rich in biodiversity, and despite the parks nearly bordering each

other, they are comprised of very different environments: Kibale National Park is predominantly tropical rainforest, home to one of the highest primate densities in the world, while Queen Elizabeth National Park is primarily savanna (a type of grassland ecosystem with scattered trees).

These areas also face distinct challenges. Kibale contends with illegal logging and poaching, which pose a major threat to its chimpanzee population, along with recurrent crop raiding. Meanwhile, Queen Elizabeth experiences significant levels of human-wildlife conflict, including livestock predation, property destruction, crop raiding and illegal fishing.

Students observe wildlife during a UNITE field trip  
© North Carolina Zoo.



## Strengthening Teacher Capacity

To address these issues through a long-term, sustained approach, the UNITE team – composed of four full-time staff and four community stewards – work with local schools and communities. UNITE has successfully integrated environmental education into the schools through teacher workshops, conservation clubs and hands-on field trips to natural areas. Every trimester, UNITE hosts a teacher training session in each area – one for the 12 schools near Kibale, then another for the 14 schools near Queen Elizabeth. These sessions equip teachers with the knowledge and skills to integrate environmental education into both their classrooms and daily lives, while also creating space for peer-to-peer sharing and learning. Collectively, these teachers reach approximately 10,000 students daily. The influence of teachers extends well beyond the classroom, particularly in rural settings where they are often regarded as trusted community leaders, shaping not only student learning but also community perspectives through their example and engagement (Lukas et al., 2019).

## Hands-On Learning

Conservation clubs at UNITE schools provide students with hands-on experience in sustainable practices – such as creating kitchen gardens, composting and managing beekeeping projects on their school grounds. Each year, teacher advisors work closely with club members to draft and implement a sustainability project work plan, often inspired by activities introduced during teacher training. Produce grown is used in the schools' kitchens, and any revenue generated from these projects is reinvested into the school. Conservation clubs also organise community events such as litter clean-ups and tree plantings.

Despite living just outside park borders, many students have limited or no first-hand experience within them. Field trips allow students to deepen their understanding and appreciation of their local environment. Teachers are trained in environmental interpretation ahead of time, giving them the tools to better engage and educate their students during park visits.



A UNITE teacher training session © North Carolina Zoo.



A UNITE steward demonstrating how to recycle plastic bottles into a waste bin during a training session © North Carolina Zoo.

## Building Sustainable Communities

UNITE's community training focuses on developing skills for sustainable living and livelihoods. Sessions cover topics such as fuel-efficient stove construction, animal care and management, the use of organic fertiliser, agroforestry and sustainable agriculture – practices designed to reduce human impact on the environment while addressing both longstanding and emerging environmental and economic challenges.

Across its multiple programme areas, UNITE's efforts have collectively resulted in the construction of 980 fuel-efficient stoves and 24 waste incinerators, the planting of 260 vegetable gardens and over 5,600 trees, and the establishment of 130 beehives.

## Community Centred Conservation and Conflict Mitigation

UNITE's community stewards, who serve communities around QENP, play a key role in extending the programme's reach and impact. As liaisons between UNITE staff and the QENP communities, they help strengthen relationships and ensure the programme remains responsive to local needs.

They also facilitate programme activities, promote sustainable practices and play an active role in one of UNITE's most challenging areas –mitigating human-wildlife conflict. They help construct, monitor and maintain mitigation infrastructure such as bomas, water troughs and deterrence lights. They also monitor

human-wildlife conflict incidents within their communities, providing critical data that guides evidence-based conservation efforts.

Crocodile attacks on individuals illegally fishing in protected nearshore waters are among the most frequently recorded conflicts, often resulting in life-threatening or fatal outcomes. In response, UNITE is working with former illegal fishing groups to develop sustainable income-generating work plans, aiming to create alternative economic opportunities that encourage others to move away from this dangerous and environmentally harmful practice.

## Measuring Impact

Robust monitoring and evaluation are core pillars of UNITE's programming. Student learning gains are assessed annually through pre- and post-tests and compared to those of students at control schools. Evaluations consistently show that students participating in UNITE programmes demonstrate significant improvements in conservation knowledge, a stronger sense of environmental responsibility, and a greater belief in their ability to make a difference.

Surveys of student and teacher households are conducted to assess whether lessons taught through UNITE are being carried into the home. Findings show that, compared to households from control schools, those associated with UNITE schools adopted more sustainable practices in 12 out of 13 behaviours tested, including fuel-efficient stoves, multi-cropping



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A student building a fuel-efficient stove  
© North Carolina Zoo

and waste separation. These results demonstrate that teacher-centred, community-based conservation education can lead to measurable behaviour change at the community level (Kendall et al., 2022).

While the regions surrounding Kibale and Queen Elizabeth National Parks each have their own unique challenges and needs, both have benefited from adopting and scaling sustainable behaviours. “It is powerful to witness the impact of UNITE’s conservation efforts, evident in the sustainable projects implemented in schools, communities, and the homes of students and teachers,” says UNITE Director Tinka John. “By expanding our work to Queen Elizabeth National Park, we can share our long-term expertise in conservation education and support another vital ecosystem in Uganda.”

UNITE’s approach emphasises addressing local environmental challenges through culturally relevant and science-based solutions. By influencing behaviour at multiple levels – teachers, students, and their families – UNITE showcases the potential for community-based conservation initiatives to simultaneously protect biodiversity and support sustainable development in rural areas. This model serves as a valuable example for scaling similar efforts in other biodiversity hotspots globally.

## UNITE HOSTS A TEACHER TRAINING SESSION IN EACH AREA

One for the 12 schools  
near Kibale



Another for the  
14 schools near  
Queen Elizabeth



Collectively, these  
teachers reach  
approximately 10,000  
students daily



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# VOTE YES FOR CLEAN AIR, CLEAN WATER AND WILDLIFE



## NORTH AMERICA

Brookfield Zoo Chicago



Influencing policy and decision makers

Jennifer Baader – Brookfield Zoo Chicago, United States of America

**T**his year, the Forest Preserve District of Cook County in Illinois, reached a momentous milestone – officially holding more than 70,000 acres of land for the first time in its 110-year history. The Forest Preserve District is a unique system of protected lands that aims to preserve and restore natural areas for recreation and education. It is the oldest and largest forest preserve system of its kind in the United States. At a time when dense population and development make valuable conservation land scarce, the Forest Preserves were able to reach this significant marker thanks to help from partners like Brookfield Zoo Chicago and their work to advance a countrywide ‘Vote Yes for Clean Air, Clean Water and Wildlife’ referendum.

Brookfield Zoo Chicago is a private non-profit organisation operated on land owned by the Forest Preserves of Cook County. With a relationship that dates back to 1921, this nationally-recognised public-private partnership frequently collaborates on conservation issues

including local wildlife population-health and conservation leadership programming for youth and adults.

In 2014, planning an ambitious blueprint for the future, the Forest Preserves of Cook County adopted a ‘Next Century Conservation Plan’ which called for the expansion of restoration efforts and land acquisition across the county to elevate the ecological health of open spaces and wildlife habitats. It became clear that additional support would be needed to achieve these ambitious regional conservation goals. At the same time, Brookfield Zoo Chicago was approaching its 100-year anniversary in 2034 – just a decade away – many of the Zoo’s buildings, constructed in the early 1940s, were beginning to show their age. Like the Forest Preserves, additional support was needed to ensure the Zoo could continue to be a recognised leader in scientific research and conservation, and act as a lasting source of joy and education in the community.

Camp group canoeing in the Forest Preserves of Cook County  
© Forest Preserves of Cook County





Children engaged in Nature Play © Forest Preserves of Cook County

In order to support both of these needs, the ‘Vote Yes for Clean Air, Clean Water and Wildlife’ campaign was started by a group of Forest Preserve supporters including Brookfield Zoo Chicago, the Chicago Botanic Garden, Friends of the Forest Preserves, Trust for Public Lands, The Nature Conservancy, Openlands land trust and the Illinois Environmental Council. Each organisation had a conservation-focused mission, and was dedicated to growing support around local habitat restoration and open space expansion.

Along with the Zoo, these organisations formed a Steering Committee to advance a referendum supporting the goals of the Next Century Conservation Plan. The referendum asked voters to consider an increase in property taxes, equal to one-fourth of one-tenth of 1%, in order to support the Forest Preserves with an additional \$40m of funding annually. It was proposed that this funding would enable investments in clean air, clean water and wildlife habitats throughout Cook County and provide support for Brookfield Zoo Chicago and the Chicago Botanic Garden.

Specifically, this additional funding would advance policies that support conservation, environmental education and animal habitat protection within the Forest Preserves, including:

- **Protecting open land:** Approval of the referendum would allow the Forest Preserves to purchase and protect an estimated 2,700 additional acres of open land for future generations.
- **Restoring nature to ecological health:** Ecosystems face threats from pollution, invasive species and the changing climate. A successful referendum would allow for the restoration of an additional 20,000 acres over the next 20 years.
- **Giving wildlife a home:** Because native habitat has been protected and restored, you can once again find bald eagles, Blanding’s turtles, river otters and other species in the Forest Preserves that had almost disappeared from the region. Acquiring more land ensures these animals will have protected habitat – forever.
- **Combating pollution:** With tens of millions of trees, the Forest Preserves cleans and cools the air residents breathe. The land absorbs as much greenhouse gases annually as is produced by more than 330,000 cars, and stormwater filtration provided by the Forest Preserves keeps pollution from entering the waterways.

The Steering Committee understood the need to grow a base of support around the referendum that was reflective of the broad diversity seen throughout the county. Over the course of the campaign, over 170 environmental, labour, civic, business and community organisations signed on as supporters of the referendum. These coalition organisations were given tangible ways to help promote the campaign and the Steering Committee continued to engage with the groups on a regular basis through election day. A public campaign committee of influential regional leaders was also formed, which demonstrated community trust for the campaign and its objectives.

**BROOKFIELD  
ZOO CHICAGO  
WORKED TO  
GROW SUPPORT  
FOR THE  
REFERENDUM**



**THEY FOCUSED  
ON BUILDING  
A BROAD AND  
INCLUSIVE  
COALITION BY  
ALIGNING WITH  
ORGANISATIONS  
THAT SHARED  
COMMON GOALS**



**THE ZOO  
HELPED BUILD  
THE CAMPAIGN  
COALITION TO  
NEARLY 170  
DIVERSE AND  
ENTHUSIASTIC  
PARTICIPANT  
GROUPS,  
INCLUDING  
MANY OTHER  
LOCAL  
INSTITUTIONS  
SUCH AS  
MUSEUMS,  
ZOOS AND  
AQUARIUMS**

The Steering Committee worked with campaign managers to advance TV adverts (featuring Brookfield Zoo Chicago volunteers), digital media buys, direct mail initiatives, calling and texting programmes, earned media strategies and targeted radio spots.

Brookfield Zoo Chicago worked to grow support for the referendum both inside and outside of the organisation. The Zoo reached into communities, sharing information on the benefits of a successful referendum with community groups and participants of their neighbourhood programming. They focused on building a broad and inclusive coalition by aligning with organisations that, while diverse in focus, shared common goals and reached different segments of the community, as residents and decision makers are more likely to support a cause championed by a group or voice they identify with. The strategy emphasised partnering with groups that held strong credibility and trust within their communities, especially those with engaged members likely to take action. Through town halls, tours at the Zoo and presentations at community meetings, the Zoo helped build the campaign coalition to nearly 170 diverse and enthusiastic participant groups, including many other local institutions such as museums, zoos and aquariums.

Internally, the Zoo disseminated the campaign to their biggest advocates. They presented information on the referendum to staff and volunteers at town hall meetings and encouraged them to spread the word to family and friends. The Zoo engaged in a months-long social media campaign to build a drumbeat of support with followers online. Updates on the referendum and its benefits were included in numerous newsletters to their over 110,000 member households, as well as a full spread story in their member magazine, called Gateways. Right before the vote, the Zoo engaged volunteers onsite, activating at the entry gates with flyers and palm cards highlighting the importance of the referendum and the date of the election. The success of the campaign would not have been possible without the support of Zoo staff, board members, volunteers and guests who voted, donated, volunteered and raised awareness to friends and family.



Vote Yes advocacy  
© Brookfield Zoo Chicago



Supporters in the preserves  
© Brookfield Zoo Chicago

When it came time to vote on 8 November 2022, the residents of the county were incredibly supportive, and had come to the realisation that this tax increase was a small price to pay to protect, restore and expand the Forest Preserves, ensuring cleaner air and drinking water, reduced flooding and additional habitat for wildlife. The initiative passed countywide with a 69%–31% margin, far exceeding the minimum threshold of 50% +1 that was required for adoption. Though the measure passed overwhelmingly in both the city and suburbs, city residents showed even greater enthusiasm for the referendum, with nearly 75% voting yes, compared with 63% in suburban Cook County.

Notably, the Vote Yes question was supported by every township and ward in the county, receiving the majority of support in even some of the most conservative portions of the electorate while approaching 90% levels of support in other wards and townships. From the results it was clear that residents deeply valued the benefits of having such a large Forest Preserve system in their community, along with the environmental benefits of a large open space and restored habitats within the community.

This vote was a pivotal moment for the county – by supporting and voting for this measure, residents and leaders showcased their collective appreciation for the nature around them, as well as a general appreciation or belief that a healthy environment supports a better future for us all.

Ultimately, the passing of the referendum paved the way for future conservation initiatives and protections in the area, setting an example for other communities who hoped to engage their residents in supporting nature, recreation and conservation. The forest preserve districts in DuPage, Kane and Lake counties, along with the McHenry County Conservation District, started to consider whether a similar campaign and referendum could help support their land acquisition and restoration work, to the benefit of their local communities. In 2024, after active campaigns that utilised the research and knowledge gained through the Vote Yes referendum, each one of the four counties passed successful tax increases that

will collectively raise over \$609m in additional funding to support habitat for native species, cleaner air and water, more accessible open space and a healthier region for generations to come.



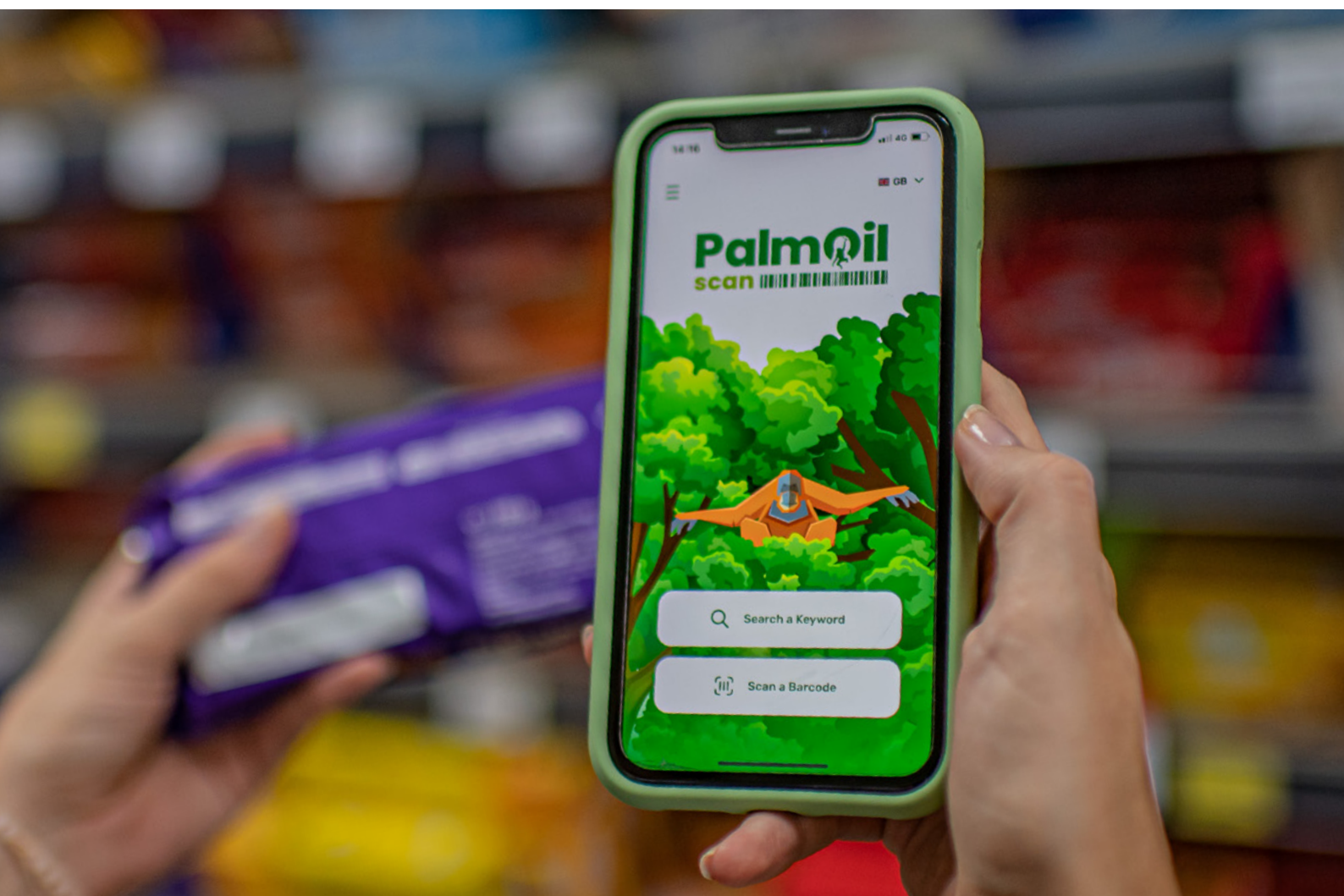
Spears Woods restoration work © Forest Preserves of Cook County

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# EMPOWERING COMMUNITIES FOR CONSERVATION: THE IMPACT OF THE CONCIENCIA ACTIVA PROGRAMME



**SOUTH AMERICA**  
Fundación Temaikèn



Empowering youth to drive social change

Laura López Ojeda, Ma. Catalina Beltramo, Ma.  
Alejandra Romeo – *Fundación Temaikèn, Argentina*

**B**iodiversity loss is progressing at alarming rates, affecting the quality of life of millions of people and jeopardising sustainable human development. In this critical context, it is urgent to rethink the relationship between society and nature and promote profound cultural transformations that integrate environmental care as a core value.

In this context, zoos and aquariums face a unique opportunity: to assume a leadership role in building an environmentally responsible society. As educational, scientific and conservation spaces, they can offer meaningful environments for learning, reflection and taking action. Since 2013, Fundación Temaikèn has implemented the ConCiencia Activa programme with the aim of promoting the development of environmentally responsible citizens and strengthening the capacity of key stakeholders to care for and conserve the environment.

ConCiencia Activa Festival  
© Fundación Temaikèn

## A programme with a purpose: sowing environmental co-responsibility

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The purpose of the ConCiencia Activa programme is to promote the design and implementation of participatory educational projects aimed at the conservation of local environments. Its main objective is to foster a cultural shift: for more people – and especially educational leaders – to recognise themselves as co-responsible agents in the protection of biodiversity.

The overarching aims are to raise awareness, motivate and support those who have the capacity to train others, such as teachers, community educators, or professionals in education for people with disabilities.

In this way, the programme acts as a multiplier, generating a network effect which expands the reach of the environmental message and action.

Although the programme does not present a single theory as an explicit framework, it is part of the critical and participatory approaches to Environmental Education. These approaches, inspired by authors such as Paulo Freire (1970) and Lucie Sauvé (2005), understand education as a tool for social transformation, and promote meaningful learning from an active commitment to the environment.

It is also based on the premises of project-based learning (John Dewey, 1938) and the Sustainable Development Goals (especially SDG 4 – Quality Education and SDG 15 – Life on Land). Participation, interdisciplinarity, collaborative work, respect for diversity and action situated in real-life contexts are some of the pillars that guide the implementation of ConCiencia Activa.

### Who is it aimed at?

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The ConCiencia Activa programme is aimed at:

- Teachers of early childhood, primary, secondary and special education levels.
- Socio-community educational leaders (NGOs, parishes, youth groups, among others).
- Professionals in the field of education for people with disabilities.
- Other actors interested in Environmental education.

These cohorts were selected as part of a clear strategy: to support individuals who already have the capacity to create direct impact in communities, educational institutions and informal training spaces.

They are the driving force behind the cultural change that ConCiencia Activa seeks to foster.

### Structure and intervention strategies

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The programme is organised through various training sessions that combine theory, practice and personalised support:

#### 1. Training cycle (open and free)

This is a series of training sessions where specialists share knowledge, tools, and experiences related to the current challenges of the educational environmental agenda. These spaces are designed as areas for collective reflection and learning.

#### 2. Support in project development

Each participating team is supported by Environmental education specialists from

Fundación Temaikèn, who provide guidance on planning, methodology, design of teaching resources and systematisation of the process.

#### 3. ConCiencia Activa Festival

This is the annual closing event, where the projects developed are publicly exhibited. Students, teachers and community leaders share their experiences, celebrate achievements and generate exchange networks.

The festival has already brought together more than 85,599 people in eleven editions, becoming a powerful space for visibility and engagement.

**CONCIENCIA ACTIVA HAS  
GENERATED QUANTIFIABLE  
AND QUALITATIVE RESULTS  
OF GREAT VALUE**



**4,306**

**TEACHERS AND LEADERS HAVE  
PARTICIPATED IN THE TRAINING  
SESSIONS HELD**

**949**

**ENVIRONMENTAL PROJECTS  
HAVE BEEN DESIGNED AND  
IMPLEMENTED IN VARIOUS  
COMMUNITIES**

**14,370**

**CHILDREN, ADOLESCENTS AND  
ADULTS WITH AND WITHOUT  
DISABILITIES – HAVE SHARED  
EXPERIENCES AND LESSONS  
LEARNED AT THE FESTIVAL**

## **Impact: What we have achieved in the past 11 years**

Since its inception in 2013, ConCiencia Activa has generated quantifiable and qualitative results of great value:

- 4,306 teachers and leaders have participated in the training sessions held.
- 949 environmental projects have been designed and implemented in various communities.
- Nearly 14,370 people – children, adolescents and adults with and without disabilities – have shared experiences and lessons learned at the Festival.

In 2024, monitoring of the programme yielded significant data:

Fifty-seven percent of teachers reported that student participation in project development was very high. Furthermore, 79% mentioned that the projects involved other social actors, for example, teachers of other subjects (50%), other grades (29%), the municipality (29%), and families (21%), which illustrates the projects' potential to go beyond the classroom, be interdisciplinary and promote situated and meaningful learning.

In addition, 71% of secondary school and special education teachers, who participated in the programme for over two years, recognised themselves as environmental multipliers at the intermediate level.

This indicates that they have successfully acquired key tools, although they recognise that they need to continue training, especially to engage more community members.

Likewise, 64% of the teachers observed that their students deepened their understanding of the natural and cultural values of the local ecosystem, the threats it faces, and the project-based work methodology.

It was clear that the project could provide a valuable contribution in reducing local environmental problems by raising awareness among students and their families to achieve the first step of conservation education.

Secondary school projects © Fundación Temaikén



Jane Goodall's talk © *Fundación Temaikèn*

Additionally, in August 2024, in partnership with the Jane Goodall Institute Argentina, Dr Jane Goodall gave a talk at Temaikèn Biopark on the transformative power of education for biodiversity conservation. The talk was attended by 28 groups from primary, secondary and special education schools, as well as 34 primary school teachers participating in the ConCiencia Activa programme. In advance of the event, the students created an artistic representation of an endangered species such as printed T-shirts, models, sculptures and masks to celebrate Dr Jane Goodall's visit.

## Emerging results and next steps

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An unforeseen aspect, but highly valued by the participants, was the consolidation of the Festival as a space for meeting and collective recognition. Many schools and organisations reported that the experience strengthened their sense of group identity, institutional self-esteem and family commitment.

Some of the emerging challenges that guide our future steps are:

- Accompany more teachers so that they can become advanced multipliers, consolidating their environmental leadership.
- Generate more ongoing training opportunities and specific resources that strengthen work with students with disabilities, from an inclusion and accessibility perspective.
- Evaluating the impact on students and exchange processes that occur at the Festival.



Primary school projects  
© Fundación Temaikèn



Teacher training  
© Fundación Temaikèn



Teacher training group photo  
© Fundación Temaikèn

## Final thoughts

The ConCiencia Activa programme proves that zoos and aquariums are platforms for educational transformation, promoting more conscious, empathetic and sustainable links with nature.

The path toward a culture of environmental care requires time, listening, training, and collective action. ConCiencia Activa is committed to this methodical approach, placing education at the centre of conservation.

Today, more than ever, it is vital that we collaborate in every possible space – schools, NGOs, community groups, scientific and cultural institutions – to increase knowledge, respect and action for nature.

For further information contact:  
[departamento\\_educativo@temaikèn.org.ar](mailto:departamento_educativo@temaikèn.org.ar)

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Black-and-white ruffed lemur (*Varecia variegata*)  
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