

TAKING ACTION FOR CONSERVATION OF A LOCAL BUTTERFLY SPECIES – A COLLABORATIVE APPROACH ACROSS MULTIPLE AUDIENCES

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Abstract

Zoos Victoria's *Totes for Wildlife* community conservation program profiles each year one of the 27 native threatened species Zoos Victoria is working to protect. The program aims to boost awareness, recognition and care of the species and provides audiences with an opportunity to support conservation projects, through the sale of specially-designed tote bags.

In 2022 we profiled the Golden-rayed Blue, a small butterfly found only in one part of western Victoria, Australia. This species was not held at any of our zoos, posing a new challenge for this program as the only exposure visitors would have to the Golden-rayed Blue was through visitor activations. Despite these challenges, the program had high levels of engagement with over 18,000 totes sold and an increase in the proportion of visitors who could correctly identify the species from a photo. Tote bag sales funded direct conservation action through the planting of 5,000 food plants for the butterfly in western Victoria, undertaken by conservation partners and four local schools. Additional plants were also provided to schools to plant within their grounds and education programs developed to further connect local students with the species. This demonstrates the effectiveness of the Totes for Wildlife program in raising the profile of threatened species and achieving conservation actions for the species.

As a zoo-based conservation organisation, Zoos Victoria identified 27 endemic species that are at risk of extinction without conservation intervention. Each species faces a range of complex and often intertwined threats to their continued existence. Zoos Victoria's contributions to the conservation of these species historically has largely been through biological interventions such as habitat improvement, removal of introduced predators, and translocation or zoo-based breeding programs. Involvement of zoo audiences with these 'lesser known' local species previously focused on building awareness through zoo activations and events (Pearson et al., 2022).

Within Zoos Victoria's Connect-Understand-Act model (Lowry, 2009), previous activations for these species featured elements of building 'Connection' and 'Understanding', however there was no 'Action' for visitors to take to support conservation. Providing an action for visitors to do is important for both improving visitor satisfaction of a zoo visit (Smith et al., 2012), and for increasing species recognition which leads to greater support for the conservation of that species (Pearson et al., 2022).

To empower our zoo audiences with a clear action for these species, *Totes for Wildlife* community conservation program launched in 2019. Audiences can contribute to conservation efforts of local species through the purchase of an exclusively designed tote bag. Profits from the sale of these bags are directed to an in-situ project, such as planting of habitat trees or protection of suitable habitat, delivered with the help of conservation partners. Each bag equates to a direct outcome for the species in the wild, which is used to communicate impact with the action (for example, "You buy a bag. We plant a tree. Together we help a species").

Rather than highlighting all species simultaneously, each campaign focuses on a single species, with a new species profiled each year. The chosen species is depicted as a large illustration on the tote bag, displaying key physical features of the animals and their habitat. Tote bags are available within retail stores at Zoos Victoria and online, with the species profiled on signage within the zoos, to continue to build awareness and recognition of these priority local species.

In 2022, Zoos Victoria launched *Totes for Wildlife* for the Golden-rayed Blue (*Candalides noelkeri*), a butterfly endemic to a small region of western Victoria, Australia.

THE GOLDEN-RAYED BLUE

The Golden-rayed Blue is a small butterfly measuring less than 3cm in wingspan (Figure 1). It is restricted to the margins of ephemeral salt lakes within the western region of the state of Victoria, known as the Wimmera, on the traditional lands of the Wotjobaluk Nations. Within this area, the butterfly has been recorded at 12 sites that are both highly fragmented and very limited in area (Douglas, 2022).

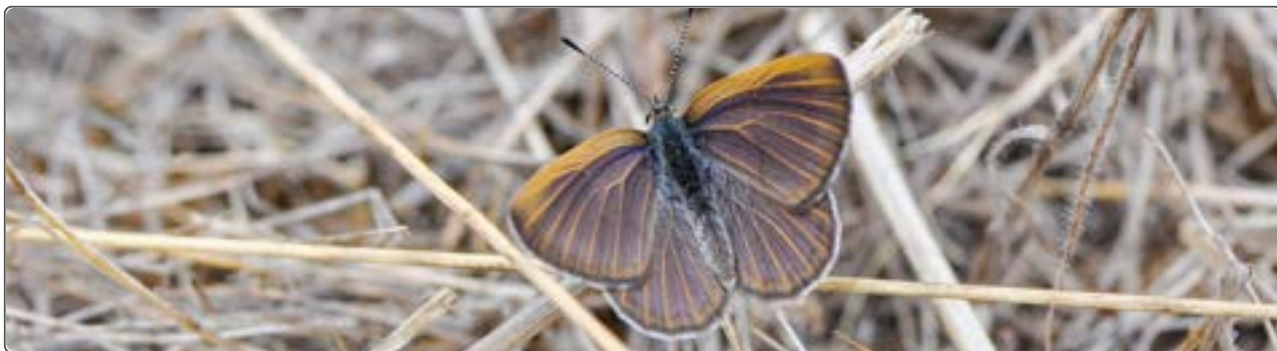


Figure 1: The Golden-rayed Blue butterfly (photo credit: Kate Pearce).

The Golden-rayed Blue is found in areas linked with the presence of a ground cover plant known as Creeping Boobialla (*Myoporum parvifolium*). This is the only host plant for the Golden-rayed Blue, with caterpillars feeding on the leaves, and adults using the flowers as their sole nectar source. The butterfly is unable to live along any ephemeral lakes or locations that don't have this host plant.

Due to historical habitat loss and fragmentation, as well as invasive species and climate change impacting both the Creeping Boobialla and the Golden-rayed Blue, the butterfly is listed as endangered (Victoria State Government, 2022).

'YOU BUY A BAG': CONSERVATION ACTION IN A ZOO SETTING

Totes for Wildlife for the Golden-rayed Blue was activated across three of Zoos Victoria properties (Melbourne Zoo, Werribee Open Range Zoo, and Healesville Sanctuary) in September 2022. Every bag sold (Figure 2) would generate funds to plant locally cultivated Creeping Boobialla within the Wimmera region, improving and expanding future available habitat for the species.



In previous *Totes for Wildlife* programs, the species was featured within a visitor facing habitat or zoo-based breeding population at one of the Zoos Victoria properties. However, for the Golden-rayed Blue this wasn't the case. There are no individual animals of this species for visitors to visually see or connect with at Zoos Victoria, nor had there been any large-scale engagement or communication about the species to zoo audiences prior to *Totes for Wildlife*.

Figure 2: The Golden-rayed Blue tote bag, showcasing the upper and lower wing colouration of the butterfly, as well as the Creeping Boobialla plants they rely upon.

Signage featuring oversized Golden-rayed Blue were installed at the zoos to showcase the beautiful colouration of the species that their common name reflects (Figure 3). On this signage, the real-life size of the butterfly was also shown to invoke a sense of awe at their small size. The Butterfly House at Melbourne Zoo already communicated the ecological role of butterflies and so, presented an ideal location to install new Golden-rayed Blue dedicated signage and grow Creeping Boobialla for visitors to see the plant. The other two zoos also planted Creeping Boobialla to help demonstrate the tangible outcome that a tote bag purchase during a visit will help the butterflies in the wild.



Figure 3: Signage featured oversized Golden-rayed Blue butterflies, while also showcasing actual size of the butterfly and the Totes for Wildlife slogan (photo credit: Peter Lancaster).

Staff and volunteers wore Golden-rayed Blue badges, and staff members carried *Totes for Wildlife* bags as part of presentations or encounters, helping to start conversations with visitors about the species and role-modelling the behaviour. To further provide opportunities for connection and understanding, staff facilitated activities with visitors to colour and paint enlarged wings of the Golden-rayed Blue, with children able to take their wings and wear them for the rest of their zoo visit.

RESULTS

As part of *Totes for Wildlife*, recognition and understanding of the focus species within our zoo-based audiences are measured through surveys undertaken within the zoo prior to, and then during the *Totes for Wildlife* activation.

Visitors were shown a photo of the Golden-rayed Blue (Figure 1) and asked to name the species. Before the campaign period launched, only 11.8% of visitors were able to correctly name the butterfly. Once the campaign launched this figure nearly doubled, with 19.6% of people able to correctly identify the butterfly from a single photo (Figure 4).

Compared to other species previously profiled within *Totes for Wildlife*, Golden-rayed Blue had a lower baseline level of recognition (Figure 4), which was expected given the lack of prior engagement in the species across Zoos Victoria prior to *Totes for Wildlife*.

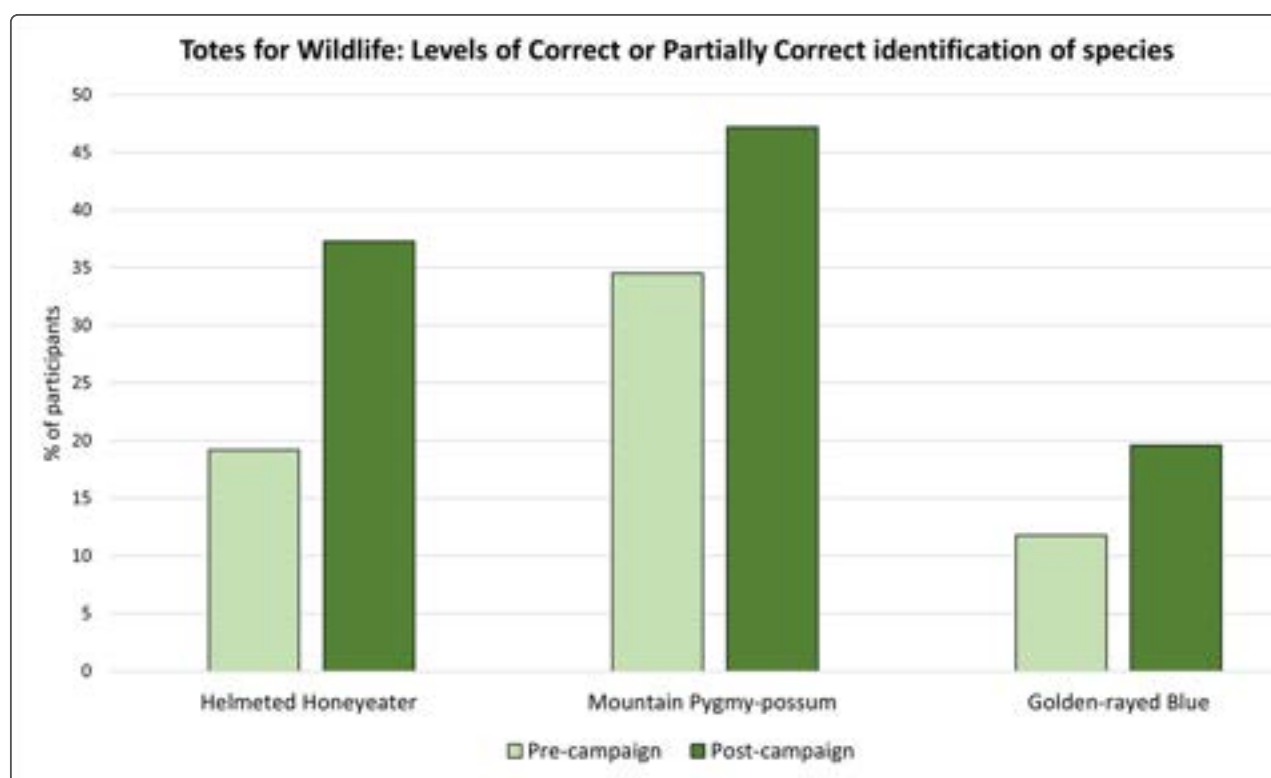


Figure 4: The percentage of visitor's pre-campaign and post-campaign launch who were able to correctly identify each of the *Totes for Wildlife* focal species from a photo. Helmeted Honeyeaters saw an 18% increase in correct identification, Mountain Pygmy-possums saw a 13% increase, and Golden-rayed Blue Butterflies saw an 8% increase. A response was considered correct if they provided the full species name or the majority the species name (e.g. "Golden Blue Butterfly").

With 18,012 tote bags sold during the campaign, this became the highest-selling bag for the program to date. This is an amazing result given it's the first to feature an invertebrate and the first *Totes for Wildlife* species to not have any onsite zoo presence.

Profits from the sale of the bags were directed to Dalki Garringa Native Nursery to collect and propagate cuttings of the locally growing Creeping Boobialla and cultivate ready for planting.

'WE PLANT A FLOWER': CONSERVATION THROUGH SCHOOL PLANTING

Rainbow Lake, located in western Victoria, was identified as an ideal and important future bridging habitat for the butterfly. Rainbow Lake is also a recreational community space, making it possible for members of the public to assist with planting. This provided an amazing opportunity to work with the local community and educate them on this special species that's found only in their local area.

Working with the local Committee of Management, the Rainbow P-12 College (combined primary and secondary school from approx. 5 years old to 18 years old) was identified as a suitable group to help plant, and a planting day excursion was planned. Prior to planting, zoo staff collaborated with the teachers at the College to create and deliver bespoke lessons to their students about the Golden-rayed Blue and the importance of Creeping Boobialla for conservation of the butterfly.

In June 2023, students from all year levels came together to plant 250 Creeping Boobialla plants around Rainbow Lake (Figure 5).



Figure 5: A student from Rainbow P-12 College planting a Creeping Boobialla plant within the Rainbow Lake habitat.



Figure 6: Example of ephemeral artwork created by one the students (photo credit: Rachel Morton).

In addition to planting, students went on a nature walk around Rainbow Lake with zoo staff to survey wildlife in the area. During the walk, they created ephemeral art of the butterflies, using natural materials found along the way (Figure 6). Both the planting and the associated activities provided students with hand-on learning opportunities about the butterfly while also directly contributing to conservation through planting Creeping Boobialla.

Once plants were established, zoo staff returned to Rainbow P-12 College to run a lesson to build knowledge and confidence in looking for Golden-rayed Blue butterflies and how to log any sightings using the iNaturalist app, providing opportunities to contribute to citizen science for the species. Since this visit, the school is now expanding their involvement in this species' conservation with a project being delivered through Years 7-10 (approx. 12 to 16 years old) to further understand life cycles of the butterfly.

'TOGETHER WE HELP A BUTTERFLY': CONSERVATION THROUGH WITHIN LOCAL COMMUNITY

Other planting days took place at strategically chosen locations with the local Landcare (a community-based volunteer movement for the environment) and community groups from March to August 2023. Creeping Boobialla plants were also able to be distributed to community groups, private landholders, schools, and other groups to plant within their gardens, helping to further provide bridging habitat for the butterflies throughout the region. This initial planting in 2023 resulted in 5,000 plants planted and distributed, with more planned in the future.

Three additional schools within the Wimmera region were identified as being valuable to engage in the Golden-rayed Blue butterfly program. In consultation with the lead teachers from each of these local schools, the existing [Golden-rayed Blue Animal Resource Kit](#) was modified to fit these teachers' specific lesson plans, with the addition of local information and context specific to the Wimmera. Using lessons from the [Fighting Extinction Schools program](#), students were able to share their project using an online sharing platform Flip, for feedback and communication with Zoos Victoria staff, such as this [example from Horsham Primary School](#).

Rainbow Lake will continue to be a hub for this species into the future, a space for people to come together and continue to learn about this local butterfly and survey for the presence of the Golden-rayed Blue. The site will feature repurposed signage from the onsite zoo activations, showcasing the Golden-rayed Blue and highlighting the importance of the Creeping Boobialla plants now surrounding the lake.

Through results of annual species surveys for the butterfly, Zoos Victoria will continue to have ongoing engagement with local schools and the community about the survival rates of the plants and any use of the habitat and plantings by the butterflies.

CONCLUSION

Long term success of the conservation of threatened species and habitats will always need engagement and involvement of people. Going beyond connection and understanding to providing an action for our zoo audiences has created conservation outcomes for several local species within the state of Victoria, and in this instance allowed us to engage and involve additional audiences in conservation action.

With the common goal of supporting the Golden-rayed Blue, different audiences took action relevant to their local context. Firstly, 400km away from the habitat of a Golden-rayed Blue at Melbourne Zoo, a zoo visitor learnt of a small special butterfly and purchased a tote bag to help this species. Months later, in the heart of its known geographical range, on Wotjobaluk country, a local school student learns about this local butterfly, before planting a critical Creeping Boobialla food plant. A plant that was able to be propagated because of that tote bag sale at Melbourne Zoo.

Being able to provide opportunities for our audiences to contribute tangibly to the conservation of these local species not only benefits our visitors, but also improves conservation outcomes, and excitingly, in this case provides an opportunity to create new local stewards of these species and their habitats into the future.

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