

A citizen science and community engagement program to help conserve the southwestern snake-necked turtle

SEEKING PARTNERS



March 2023

Project summary

The southwestern snake-necked turtle (*Chelodina oblonga*) is endemic to south-west Western Australia and potentially under threat of extinction. There has been two collaborative projects focussed on saving the species, Turtle Trackers and the Saving Our Snake Turtle Program (SOSNT). These have been highly successful in empowering local community members in monitoring and protecting their local turtle populations.

This project will extend and expand the SOSNT program to engage people across south west WA in hands-on conservation and citizen science to better understand and protect this iconic species. The project will provide critical information that will be used to create and implement conservation management plans with input from all partners to protect local populations.

We are seeking proactive Local Governments and catchment groups across south-western Australia to partner with us on a State NRM application to deliver the next phase of this exciting and critical project. The project is being led by the Perth South West Metropolitan Alliance (PSWMA), a regional organisation of Local Governments in the South West Metropolitan Region. The project funds will be administered transparently via the South West Corridor Development Fund, an Incorporated Association with its home in South West Perth. Murdoch University will provide scientific expertise, citizen science training and support from the Turtle Ecology Team at the Harry Butler Institute, in association with NatureLink Perth and in collaboration with a national consortium (1 Million Turtles) dedicated to conserve freshwater turtles across Australia. We are also collaborating with the Department of Biodiversity, Conservation and Attractions. Through our partners we will look to engage Noongar groups to participate and share knowledge with SOSNT.



The project will involve training of community members to monitor and assess turtle populations. Image: City of Cockburn

Why is the project important?

People in south-western Australia have a fascination with, and great appreciation of southwestern snake-necked turtle within their local wetlands and rivers. Unfortunately, the species is under threat and populations are declining across metropolitan Perth. A recent Murdoch University study found practically no juvenile turtles of this long-lived species in 35 urban wetlands surveyed (Santoro *et al.* 2020). Major threats to the species include terrestrial predation of nesting females, eggs, and hatchlings by introduced species (such as foxes) and subsidised populations of native predators (such as ravens), as well as mortality from road strikes (Fig. 2). It is highly likely that this trend is happening across the whole of their range, from Jurien Bay south and east along the coast to the Fitzgerald River National Park, but we do not have the research to prove it. If left unmanaged, there is a significant risk of localised extinction of the species that would have major ecological impacts given it is the apex predator in aquatic ecosystems. Effectively addressing this risk requires increased understanding and management of individual *C. oblonga* populations, nesting and pressure from threats across their range.

This project provides a wonderful opportunity to engage people in meaningful citizen science including Noongar traditional owners, and take immediate action to help prevent local extinctions of the snake-necked turtle. At the same time, we can increase our knowledge on the current distribution and status of *C. oblonga* populations, with a view to development of long-term conservation strategies and preventing species extinction.

Turtle nesting is an annual event that occurs mostly during spring in the terrestrial environment surrounding wetlands and waterways. This provides a unique opportunity for engaging the local community in on-ground conservation efforts that protect the nesting females and their nests. 'Turtle Trackers' is a citizen science project that does just that.



Juvenile turtles, such as this one, are becoming incredibly rare and this project will help understand the causes of recruitment failure across the species range



Locations of nesting female deaths (left) and predated nests (right). In both images white and red dots represent 2018/19 and 2019/20 nesting seasons, respectively. This loss represents up to 100% of the turtles' annual reproductive effort. Without recruitment, extinction is inevitable. Image: Anthony Santoro

Building upon previous success

Thanks to the support and development by the City of Cockburn, in partnership with the Turtle Ecology Team at Murdoch University (science), Department of Biodiversity, Conservation and Attractions (PWS volunteer program), WA Wildlife (animal handling and health) and The Wetlands Centre Cockburn (educational facilities), the Turtle Tracker program was developed, test driven and improved over the nesting seasons of 2019, 2020 and 2021. In its first two years of operation around Bibra Lake, over 50 nests were protected and reductions in nesting female mortality were observed.

Building upon the success of the Turtle Tracker project, the Saving Our Snake Turtle Program (SOSNT) began in 2022 across 11 partner council areas with funding from LotteryWest and led by Perth South West Metropolitan Alliance with support from Murdoch University's Harry

Butler Institute, Conservation Volunteers Australia, the City of Cockburn, NatureLink Perth and 1 Million Turtles, as well as many other partner organisations and councils. The project aimed to engage, educate and train turtle tracker volunteers across a number of Perth metropolitan Local Government areas to monitor and protect turtles and their nests.

The SOSNT project has so far achieved:

- Involvement from 11 Local Government partners.
- Held 22 Local Government turtle information and tracker training sessions.
- Trained and/or educated 547 community members.
- Tracked turtles across 19 wetlands.
- At least 550 turtles observed and 280 nests protected, potentially resulting in more than 3000 eggs and juveniles protected from predation.

Hundreds of community members have also been engaged and informed about the project through the frequent community events, school outreach activities and media posts undertaken by the project team. The dedicated [Saving Our Snake-Necked Turtle Facebook page](#) has garnered a strong following and provided a central point for public project updates.

What will this project do?

The project will extend and expand the SOSNT program throughout the species range, and extend it to at least the end of 2025. The project will provide information and on-ground training for local community members to survey and monitor southwestern snake-necked turtle populations throughout southwestern Western Australia. The surveys they conduct will provide wetland-river specific information on numbers of nesting females, when and where nesting occurs, and the amount of predation pressure females and nests are experiencing. This data will directly inform the conservation and management actions that may be required at each wetland.

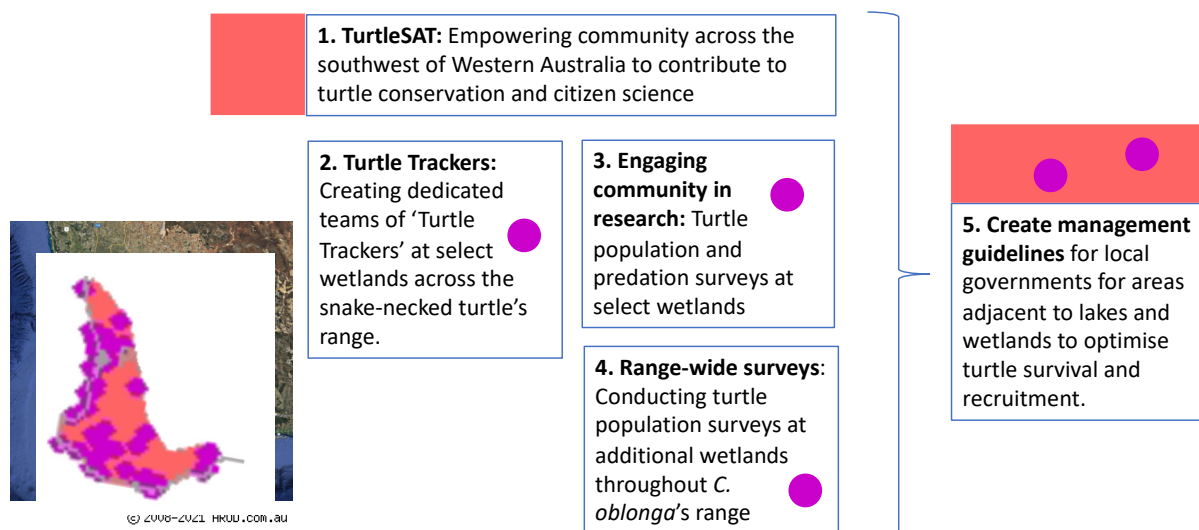


Figure 3. Five elements of the Saving our Snake-necked Turtle Program incorporating citizen science programs across the turtle's range (orange shading) and specific wetlands where turtles are found (purple dots).

The SOSNT project has five elements. Partner organisations can choose their level of engagement incorporating any or all of elements 1 to 3. Elements 4 and 5 support or provide deliverables to the project and partner organisations.

- 1) **TurtleSAT:** Empowering the public across the southwest of Western Australia to contribute to turtle conservation and citizen science by recording turtle or nest sightings using the national TurtleSAT app. Promotion of TurtleSAT, together with educational messages on how people can help turtles will be spread through media, social media and interpretative signage at wetlands and rivers. Messaging information will be made freely available to any council or organisation that requests it.

TurtleSAT will integrate the records into a national database of turtle abundance and nesting hotspots increasing our understanding of the distribution and status of turtles across southwest WA. The data from WA will be collated by the team at Murdoch University and reported annually to the community through the TurtleSAT website, social media and community information sessions. Correct engagement between people and nesting turtles and hatchlings will enable anyone to directly benefit turtles by reducing predation of turtles and nests.

- 2) **Turtle Trackers:** Creating dedicated teams of ‘Turtle Trackers’ at selected wetland or rivers across the snake-necked turtle’s range. Workshops and training sessions in wildlife management will be provided for community volunteers, teaching them how to find and monitor turtles nesting at the hotspots they have identified and how to protect nests from predators. The workshops and turtle tracker teams will be coordinated by each local council/‘Friends’ group. Information and training at the workshops will be provided by Turtle Ecologist Team from Murdoch University. Dedicated ‘Turtle Tracker’ teams will be kept informed of the outcomes of their efforts and be eligible to volunteer in turtle research (element 3 below).

- 3) **Engaging community in research:** Members of the community may engage in two research opportunities at the discretion of partner organisations.

- a. Turtle tracker teams will be provided the capacity to undertake wetland habitat monitoring. Through monitoring of simple parameters (e.g. water regime, salinity, aquatic plant presence) we can determine the environmental thresholds that define where *C. oblonga* can live. Engaging the community to gather this information about their local wetland/s and where *C. oblonga* lives will inform management guidelines to conserve its habitat, but will also enable them to more closely engage and understand their local wetland, as well as educate and empower people to be directly involved in turtle conservation efforts.

- b. National Predation survey: As part of our national collaboration with [1 Million Turtles](#) community members will be invited to engage in a citizen science experiment to determine predation pressure on turtle nests around selected wetlands and rivers. This research is particularly suitable for school groups.

- 4) **Range-wide surveys:** Conducting turtle population surveys at additional sites throughout *C. oblonga*’s range by the Murdoch University turtle ecologists. These wetlands and rivers



will be selected by the team from Murdoch University based on historic presence information and data gathered from TurtleSAT. The surveys at these sites will enable a comparison of the turtle populations over time at wetlands supported by Turtle Trackers and unsupported wetlands. This will enable us to track and report the impact of Turtle Trackers. For example, in wetlands where Turtle Trackers are protecting turtles, juvenile presence may increase and adult female abundance may stabilise.

- 5) **Informing management plans:** Using the above information, workshops will be undertaken with relevant local governments to develop management plans for *C. oblonga* and local wetlands. We will also create a generic guidelines manual for parks management adjacent to lakes, wetlands and rivers to enable turtle recruitment.

Project partners and their contributions

1) Perth South West Metropolitan Alliance

Role: Organisation developing a funding proposal to seek support for this project from State NRM. If the bid is successful, will undertake project management: receipt and distribution of funds, communication across councils. Note: The project funds will be administered transparently via the South West Corridor Development Fund, an Incorporated Association with its home in Perth's South West Region.

Contribution: The Perth South West Metropolitan Alliance (PSWMA) will provide project manager (Kathleen Broderick) (in-kind time commitment). PSWMA is a regional organisation of Local Government Agencies in the South West Metropolitan Region including City of Cockburn, Town of East Fremantle, City of Fremantle, City of Kwinana, City of Melville and City of Rockingham. Local Governments -not already contributing funds to PSWMA will be requested to contribute \$1000 toward project costs.

2) Murdoch University

Role: Turtle ecologists from Murdoch University will lead the training of the local Turtle Trackers team, and also be responsible for leading the on-ground surveys of wetlands likely to harbour southwestern snake-necked turtle populations. For each partner jurisdiction this will include 1. Turtle Tracker training; 2. Supervising volunteer research in population and turtle habitat studies; and 3. additional research into turtle populations and habitat. Murdoch will be responsible for data analysis that will underpin the development of southwestern snake-neck turtle management plans within each jurisdiction.

Contribution: Murdoch will also provide field equipment required to conduct the surveys. Murdoch will provide in-kind salary support of experienced ecologists, Drs Jane Chambers and Stephen Beatty, to manage the Turtle Ecologist Team.

3) Department of Biodiversity, Conservation, and Attractions

Role: We are seeking support from DBCA for our community volunteers for licencing and engagement with the Parks and Wildlife Service Volunteers program.

Contribution: Licencing and potential PWS volunteer program

4) One Million Turtles/TurtleSat



Role: These national collaborations are partners in this proposal, providing the national resources and capacity to enable nationwide community conservation networks.

Contribution: Coordination of One Million Turtles/TurtleSat programs, workshops and online resources

5) Local Governments / Catchment Councils

Role: We are seeking contributions of cash and in-kind support from partners to support the project. In-kind support would depend on which elements partner organisations wished to engage with. It would include use of partner facilities for workshops, promotion of the project through their media and social media outlets, installation of interpretative signage at wetlands and rivers (Element 1), overseeing organisational aspects for dedicated 'Turtle Tracker' teams (Element 2) or community volunteers for research (Element 3) within partner jurisdiction.

Contribution: A cash contribution is sought to support each partner's Turtle Tracker program, citizen science training and support and research (field work, data analysis). Depending on the scale of the Turtle Tracker and citizen science program (see Budget Table at end of this document), an **indicative cash contribution would be between \$5-10K per year for each partner over the three-year project.**

6) External Funding Agency: State NRM

Role: We will be seeking State NRM funding for the cash balance, to fund the community training for Turtle Trackers, community volunteer researchers and the on-ground community-based surveys of turtle populations. This will support a dedicated Turtle Ecologist (full-time post-doctoral Research Fellow/3 yrs) and a half-time community engagement officer /3yrs.

Contribution: The total project will cost around \$500K over 3 years.

Project Outputs

By extending the SOSNT project to the end of 2025 and expanding it throughout the species range in the southwest of Western Australia, the project will:

- Train community members in the monitoring of freshwater turtle populations to empower them to contribute to the long-term conservation of turtles and enhance local stewardship of wetlands and rivers.
- Actively protect numerous nests in local partner wetlands, that will greatly increase natural recruitment of juvenile turtles to their populations across multiple years.
- Provide a sense of belonging and empowerment for communities across southwest WA (especially children and older people) through engagement with the natural environment, which has been shown to help reduce mental stress and increase physical activity.
- Determine the current distribution and status of *C. oblonga* populations throughout its range in the southwest of Western Australia and their true conservation status.
- Determine the environmental thresholds within which *C. oblonga* persists in order to ensure *C. oblonga*'s persistence in a drying climate (e.g. water-regime, salinity, macrophyte presence).
- Update the 25-year-old 'near-threatened' status of *C. oblonga* turtle in the IUCN.



- Create and implement necessary management strategies, with input from all stakeholders, to conserve the species and prevent its extinction.

Project Outcomes and Legacy

- Enhanced community connection to, and understanding of, their wetlands and rivers through empowering the community in a real-world/on-the-ground citizen scientist programme where conservation efforts directly protect nesting female turtles, their nests, and hatchlings.
- By expanding the network of TurtleSAT app users, we will develop an ongoing assessment of turtle populations and nesting hot and cold-spots.
- The project will also provide information for management of invasive species, road impacts on wildlife, and changes to water flows, which are three of the largest threats to turtles.
- Help prevent further declines and possible extirpation of southwestern snake-necked turtle populations.
- Elevate wetlands as significant environmental sites through using *C. oblonga* as a flagship of wetland conservation in southwestern Western Australia.

Proposed Budget for the Saving Our Snake-necked Turtle Program and Partner Support Options

Organisation	Contribution	In-kind/cash \$	Comments
Perth South West Metropolitan Alliance	IN-KIND Project manager time (amount)		Project management
South West Corridor Development Fund Inc	IN-KIND Project governance		Financial management and community oversight
Murdoch University	IN-KIND Turtle ecologists time (0.05 time each) -Dr Jane Chambers -Dr Stephen Beatty Equipment		Supervision of entire project
1 Million Turtles/ TurtleSat	IN-KIND Coordination of Programs Prof. Ricky Spencer, Western Sydney University NSW Dr James Van Dyke, Latrobe University, VIC Provision of resources		TurtleSAT and 1 Million Turtles web resources
DBCA	IN-KIND PWS volunteer support		PWS volunteer support
Three levels of engagement	Local Government Partner Support Options		
	LEVEL 1:	\$1000/yr +	IN- KIND support required:



and contribution	<p>Community engagement partner</p> <p>RECEIVES: Education and engagement of local community through use of TurtleSAT /signage at wetlands or river/media/information provided at workshop Generic management guidelines</p> <p>REQUIRED: In-kind (see comments) and letter of support + cash</p>	\$1000 if non-PSWMA member	<p>Media services – project promotion through your organisation’s networks/ social media Creation of signage and installation at local wetlands Use of facilities for workshop (2 days per year)</p>
	<p>LEVEL 2: One wetland Turtle Trackers partner</p> <p>RECEIVES: All deliverables of Level 1 partner as well as Turtle Tracker support and population survey for one wetland/river</p> <p>REQUIRED: In-kind (see comments) and letter of support + cash</p>	\$5000/yr = + \$1000 if non-PSWMA member	<p>IN- KIND support required: Media services – project promotion through your organisation’s networks/ social media Creation of signage and installation at local wetlands Use of facilities for workshop (2 days per year)</p> <p>Management and supervision of Turtle Tracker team (may be done by local ‘Friends’ group)</p>
	<p>LEVEL 3: Multiple or large wetlands Turtle Trackers partner</p> <p>RECEIVES: All deliverables of Level 1 partner as well as Turtle Tracker support and population survey for more than one wetland/river</p> <p>REQUIRED: In-kind (see comments) and letter of support + cash</p>	\$10000/yr (negotiable depending on partner requirements) + \$1000 if non-PSWMA member	<p>IN- KIND support required: Media services – project promotion through your organisation’s networks/ social media Creation of signage and installation at local wetlands Use of facilities for workshop (2 days per year)</p> <p>Management and supervision of Turtle Tracker teams (may be done by local ‘Friends’ group)</p>
External funding agency: State NRM	CASH	~ \$500K less partner contributions	Supports a dedicated Turtle Ecologist to run program and a Community engagement officer to support Turtle Trackers and workshops
TOTAL		~\$500K	

For more information please contact the Turtle Ecology Team at Murdoch University:

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