

Frog Engagement and Protection Project



Ensuring the frog populations of Wyndham are never forgotten

JULY 2022 – JUNE 2023

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Kindly supported by Wyndham City



PROJECT OVERVIEW

The knowledge about the number of frog species and the size of their populations in Wyndham was previously limited due to lack of repeated surveying and reporting.

The completion of this *Frog Engagement & Protection Project* across **5 sites in Wyndham**, has increased understanding regarding the distribution of frogs. The **50 surveys from August 2022 until the end of May 2023 confirmed that several frog species were present in Wyndham waterways.**

Engagement with the local community was also a key project target. Volunteers were invited to participate in all 50 of the frog surveys. They were also able to engage via social media posts on the Werribee River Association (WRA) Facebook page, reading information posted in the monthly newsletter or attending community events, i.e. Children's Week Picnic.

Over 500 students at four Wyndham schools and one kindergarten were also introduced to the local frog species through interactive presentations as part of the *Frog Engagement and Protection Project*.

61 volunteers contributed more than 260 volunteer hours through their involvement in frog surveys.

561 frogs were visually detected, consisting of:

- 1 Striped Marsh Frog *Limnodynastes peronii*
- 80 Common Eastern Froglets Crinia signifera
- 103 Growling Grass Frogs *Litoria Raniformis*
- 137 Eastern Banjo Frogs (Pobblebonk) Limnodynastes dumerilii
- 240 Spotted Marsh Frogs *Limnodynastes tasmaniensis*

Grahams Wetland Reserve had the highest number of frog sightings – 255 detections, including 53 Growling Grass Frogs (and even more heard). As this species is listed as endangered, this current population remains vital for their future preservation. Therefore, it is paramount that their habitat, within the reserve, continues to be maintained and protected to a high standard.

A positive flow on effect from these actions should see the **Spotted Marsh Frogs** and **Pobblebonks** continue to thrive. Invasive weeds, such as blackberry and thistles, need to be managed on a regular basis to prevent them from competing with native aquatic emergent flora, grasses and shrubs that are essential for healthy Growling Grass Frog habitat.



Despite the number of frogs visually detected and heard at Skeleton Creek being lower than the other survey locations, the fact they were Growling Grass Frogs, increases the sense of urgency to prioritise habitat protection within the survey site given their threatened status.

50 Growling Grass Frogs and 2 Pobblebonks were detected at Skeleton Creek (although some of these frogs may have been seen on multiple surveys). The rehabilitation, planting, and continued maintenance of the area by Wyndham City and Friends of Skeleton Creek is to be commended and it is hoped this work will have an ongoing positive impact for the Growling Grass Frogs ensuring their longevity.

Networking with Melbourne Water personnel has the potential to further develop future frog projects, leading to healthier and self-sustaining frog populations.

FROG SURVEY METHODOLOGY

Frog surveys were completed across five suburbs in Wyndham with sites at:

- Grahams Wetland Reserve, Werribee South
- Cunninghams Wetland, Point Cook
- Harpley Discovery Trail Boardwalk,
 Werribee
- Skeleton Creek, Hoppers Crossing
- Davis Creek, Tarneit

Advertising for frog survey volunteers was undertaken through the Werribee River Association Facebook page, newsletters, and emails.



Survey dates were set in advance for a month at a time and consequently there was no control over weather conditions.

5 surveys were undertaken each month (once per each site) for **10** consecutive months from the beginning of August 2022 until the end of May 2023; a total of 50 survey nights.

During frog surveys, participants were taught frog calls and ways to identify frog species that they were likely to encounter. Everyone was equipped with a torch and would carefully look for frogs amongst grasses, shrubs, trees, on pathways and in the water.



Surveys commenced after dusk and lasted for approximately 1 hour. Temperature, wind speed and direction, whether it had rained during the day or was raining during the survey, and humidity were all recorded. The survey routes remained the same each month to ensure data consistency.

Participants identified the species and estimated the length of each frog they saw for recording on the survey data sheet. Drop pins were also made for each frog sighting to get an understanding of spatial distribution.

The Melbourne Water Frog Census App was used to upload a sound recording, images and data regarding frogs seen and heard during each survey. When no frogs were detected, a 'no frogs' submission was made because it still provides valuable information to scientists regarding frog presence and activity.

Volunteers used these Data Sheets to record their data

Location:	Date:	
Time start:	Time finish:	
Team:	.001010001000101010101010101	
Temperature		
Wind speed and direction		
Humidity		
Rainfall		
Other notes:		

Frog species	Present (Y/N) – Call detection
Common Eastern Froglet	
Growling Grass Frog	
Southern Banjo Frog (Pobblebonk)	
Spotted Marsh Frog	
Striped Marsh Frog	
Bibrons Toadlet	

Species	Size (cm)	Species	Size (cm)	Species	Size (cm)
1.	- 8	16.	-	31.	
2.		17.	- 1	32.	
3.	i.e.	18.		33.	
4.	10	19.		34.	
5.	- 8	20.		35.	
6.	15	21.		36.	
7.	20	22.		37.	
8.		23.		38.	
9.		24		39.	
10.	0.0	25.		40.	
11.		26.		41.	
12.		27.		42.	
13.		28.		43.	
14.		29.		44.	
15.		30.		45.	

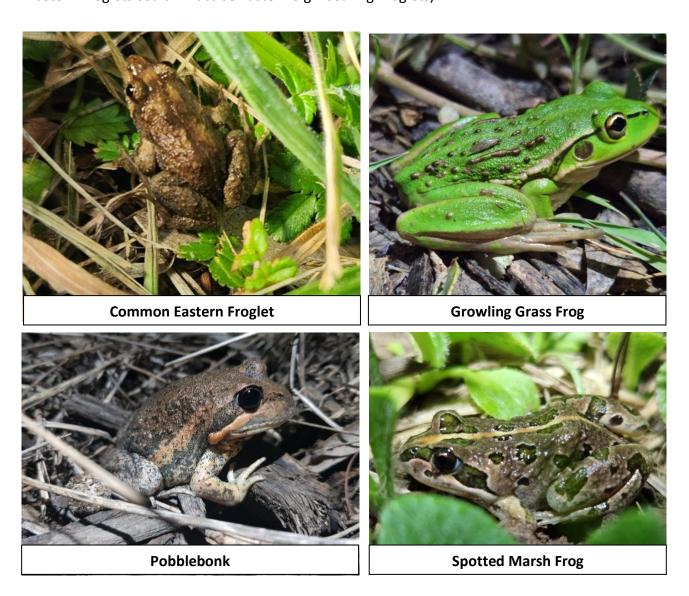
^{***} CEF = Common Eastern Froglet, GGF = Growling Grass Frog, P = Pobblebonk, SMF = Spotted Marsh Frog, SBTF = Southern Brown Tree Frog, STMF = Striped Marsh Frog, VTF = Verreaux's Tree Frog, VSF = Victorian Smooth Froglet, WTF = Whistling Tree Frog



FROG SURVEY RESULTS

A total of **5 species of frogs were visually recorded** throughout the 10 months of frog surveying. This included **1 Striped Marsh Frog, 80 Common Eastern Froglets**, **103 Growling Grass Frogs**, **137 Pobblebonks** and **240 Spotted Marsh Frogs** (refer to figure 1). These species were also heard calling at certain times throughout the survey period.

Some further species were detected solely through their vocalisations - **Bibron's Toadlet** and the **Eastern Sign-bearing Froglet**. (Disclaimer: it is very difficult to distinguish between the Common Eastern Froglet and the Eastern Sign-bearing Froglet when they aren't calling and thus there is potential that some species visually detected and recorded as Common Eastern Froglets could in fact be Eastern Sign-bearing Froglets).





Grahams Wetland had the highest number of frog sightings (255), followed by 126 at Davis Creek, 104 at Cunninghams Wetland, 52 at Skeleton Creek and 24 at the Harpley boardwalk (refer to figure 2).

Despite only 24 frogs being seen at Harpley, it is important to recognise that the calls of particularly the Spotted Marsh Frogs, indicated a high abundance.

Grahams Wetland had the highest number of sightings for 7 out of 10 months, with the only exceptions being October and May when Cunninghams Wetland led and December which was Skeleton Creek.

December was the month where the lowest accumulative total of frogs was sighted, with only 1 at Harpley and 6 at Skeleton Creek. Frog sightings occurred at 74 percent of the surveys, with none seen at each site a minimum of once.

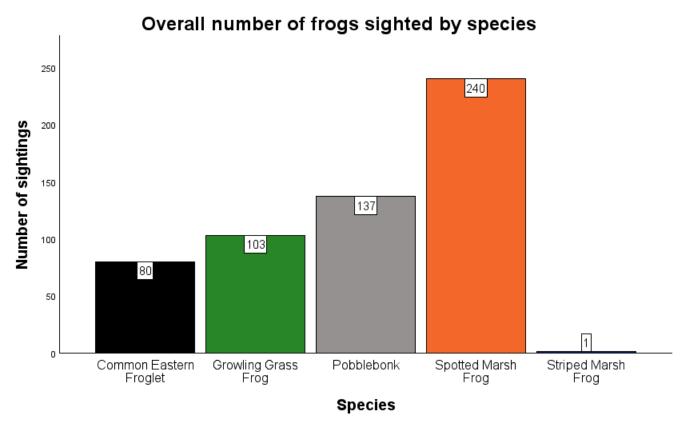


Figure 1. Bar graph depicting the total number of each frog species visually detected throughout the 10 months of surveys (Created using IBM SPSS Statistics, June 2023)



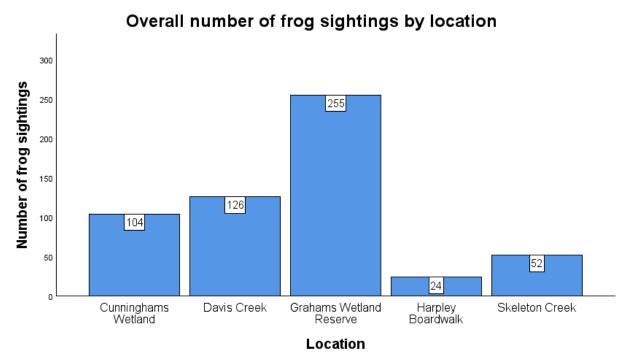


Figure 2. Bar graph depicting the total number of frogs visually detected across the 5 survey sites from August 2022 until the end of May 2023 (A total of 10 surveys per site with each site being surveyed once each month) (Created using IBM SPSS Statistics, June 2023)

GRAHAMS WETLAND

Frogs were visually observed at Grahams Wetland every month, except for December (refer to figure 3).

Spotted Marsh Frogs were seen more times than **Pobblebonks** and **Growling Grass Frogs** on 8 out of 10 surveys, with the exceptions taking place in December (no frogs sighted) and January where only Growling Grass Frogs were observed.

Despite no frogs being spotted in December, there was still an abundance of calling activity with Growling Grass Frogs, Pobblebonks, Spotted Marsh Frogs and a couple of Striped Marsh Frogs all heard.

Growling Grass Frogs were heard in August, November, and December; however, they were not seen until the survey in January. They were then seen for the final five months at this site. This demonstrates the importance of surveying both visually and audibly.

Growling Grass Frogs ranged from 5cm to 10cm, with the average length being 7.3cm. Female Growling Grass Frogs are known to be typically 6cm to 10.4 cm whereas males are smaller with dimensions ranging 5.5cm to 6.5cm (DCCEEW n.d). Alternatively, variations in size could be indicative of the stage of development (juvenile or adult) as some of the



Growling Grass Frogs were significantly smaller than others. Only male frogs call and therefore the distinct chorus of Growling Grass Frogs demonstrated their presence during the November and December frog surveys.

Many observed frogs exceeded 6.5cm and are therefore likely to be female, suggesting there are adequate numbers of each gender for future reproductive events. No tadpoles or metamorphlings were sighted during the surveys.

Spotted Marsh Frogs were heard for the first 6 months of frog surveys and not thereafter. This highlights how essential it is that frog surveys occur on multiple occasions throughout the year because if frogs were only being surveyed once per year, they may be continually undetected. These frogs ranged from 1cm to 4cm, with an average size of 2.4cm.

There were certain areas, such as along the brick wall at the entrance of Grahams Wetland, where Spotted Marsh Frogs tended to congregate. They were often seen in left over holes, from when grasses had been planted, and cracks in the soil that emerged during the drier months. However, they were still detected across the entire extent of the survey area.

Pobblebonk activity tended to be correlated with warm humid nights, particularly after rain. They ranged from 2.5cm to 7cm, indicating presence of juveniles and adult within the population. Pobblebonks were only heard here during the November survey.

Frogs have already been seen among the grasses which were planted by Wyndham City and Werribee River Association. Blackberry removal from the waterway and spot spraying of herbaceous weeds was already evident and should be continued to ensure ongoing habitat protection.

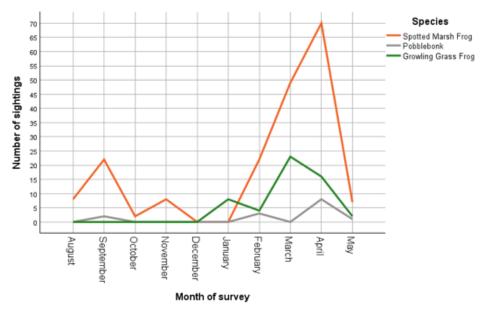


Figure 3. Graph depicting the number of each frog species visually detected at Grahams Wetland each survey month (Created using IBM SPSS Statistics, June 2023)



CUNNINGHAMS WETLAND

Spotted Marsh Frogs, Striped Marsh Frogs and Common Eastern Froglets were often heard calling at Cunninghams Wetland. However, Eastern Sign-bearing Froglets and Bibrons Toadlets were also calling in low numbers at a couple of the surveys.



This survey site extended from

the roadside across mowed grass to the water. Although documented as Common Eastern Froglets, there is a chance that some of these sightings were Eastern Sign-bearing Froglets given they are close relatives and difficult to differentiate between when calling is absent.

48 Spotted Marsh Frogs, 55 Common Eastern Froglets and 1 Striped Marsh Frog were seen. During the March survey, which was particularly dry, team members had the opportunity to walk out part way on the mudflats to search for frogs – an area that is generally inaccessible due to being covered in water. Common Eastern Froglets varied in size from 0.5cm to 3cm.

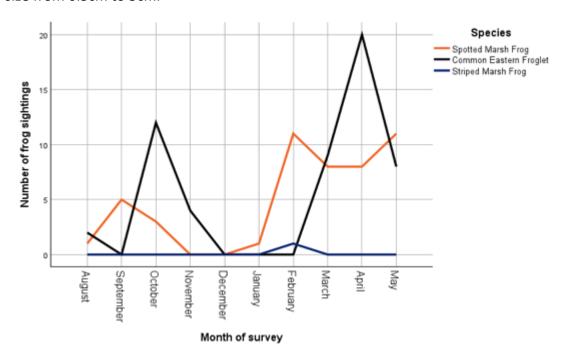


Figure 4. Graph depicting the number of each frog species visually detected at Cunninghams Wetland each survey month (Created using IBM SPSS Statistics, June 2023)



HARPLEY BOARDWALK

Spotted Marsh Frogs and Common Eastern Froglets were particularly vocal at Harpley Wetlands, however, this site had the lowest number of visual detections.

In January and March no single frog could be heard nor seen. Visual detections may have been reduced due to the elevated nature of the platform from which the survey was conducted, the high density of vegetation, and water not always being near the boardwalk where the survey was taking place.

The October survey was not long after a significant amount of rain, resulting in an abundance of water around the boardwalk. All frogs identified in October were in the water which appears to be a key contributing factor for their sightings. Subsequent observations of Common Eastern Froglets were in puddles next to the platform. This is the only site where Common Eastern Froglets were seen whilst also calling. There were also signs of recruitment, given tadpoles were seen during the September survey.





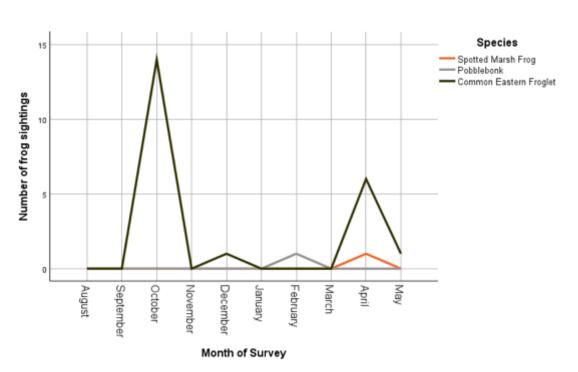


Figure 5. Graph depicting the number of each frog species visually detected at Harpley boardwalk each survey month (Created using IBM SPSS Statistics, June 2023)



SKELETON CREEK

It was disappointing to see so much litter had made its way into the creek, especially given that it is a home to Growling Grass Frogs. It is recommended that action be taken to clean the site and foster an appreciation of wildlife that inhabits the creek. It is possible that the October frog survey would have resulted in a higher number of Growling Grass Frogs and Pobblebonk observations if it didn't have to get cut short due to thunderstorms and lightning!

Growling Grass Frogs were seen for 7 out of 10 surveys (refer to figure 6). 14 were observed in September, and even more were heard calling from among the shrubs. There was a clear trend for where these frogs were sighted with all observations occurring within the planted area. It was exciting to film frogs vocalising in the water. This video was a favourite for school kids and allowed them to understand how the species would have come to be given its common name – it growls.

Given the presence of the nationally threatened Growling Grass Frogs it is important this site remains prioritised for protection into the future. It was great to confirm that the plantings and rocks placed between the pathway and water provided a refuge for all frogs inhabiting the creek. Growling Grass Frogs were regularly seen on top of or hiding underneath the rock ledges. Wyndham City and Friends of Skeleton Creek have done a great job enhancing the frog habitat and it is only hoped this continues.

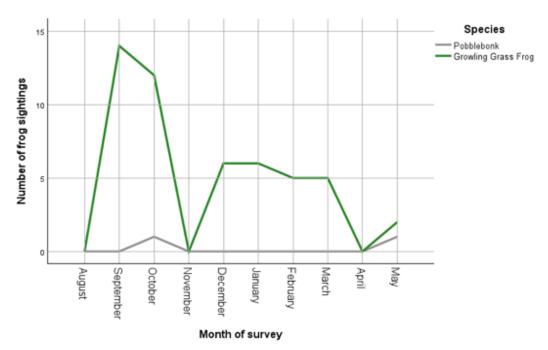


Figure 6. Graph depicting the number of each frog species visually detected at Skeleton Creek each survey month (Created using IBM SPSS Statistics, June 2023)



DAVIS CREEK

Up until February there had **only been 8 frog sightings at the creek** – 1 Spotted Marsh Frog,
2 Common Eastern Froglets and 5
Pobblebonks. These three species along with
Eastern Sign-bearing Froglets were all heard.

Unexpectedly, sightings peaked in February when 55 Pobblebonks and 1 Spotted Marsh Frog were observed. 53 of these Pobblebonks were less than 3cm long and had appeared to have recently metamorphosed into frogs.



A high proportion of the Pobblebonks seen in March and April were also juveniles. This tells us that Pobblebonks were successfully breeding at the site.

A significant quantity of blackberry and typha is growing at the site and requires attention to ensure it does not take over the frog habitat.

The smallest Pobblebonk detected here was 1.5cm and the largest 7cm. Two Pobblebonks were seen on the 50th survey in May, marking the end of the 10 months of consecutive surveys.

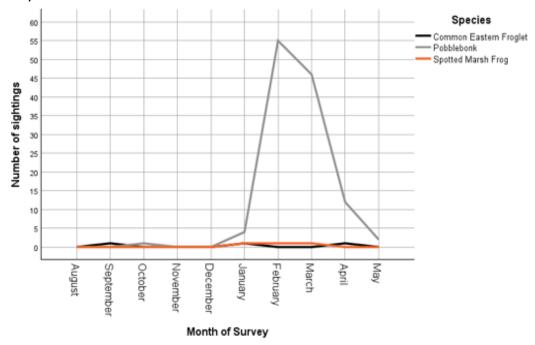


Figure 7. Graph depicting the number of each frog species visually detected at Davis Creek each survey month (Created using IBM SPSS Statistics, June 2023)



There were variations between which species occurred at each site. Growling Grass Frogs were only detected at Grahams Wetland Reserve and Skeleton Creek. Spotted Marsh Frogs were observed at 4 of the 5 survey sites, with Skeleton Creek being the only place where none were detected. Pobblebonks were identified at all sites except for Cunninghams Wetland.

Whilst there were no Growling Grass Frogs detected at Davis Creek, Cunningham's Wetland and Harpley, it doesn't necessarily mean they are absent from these entire waterways since these surveys only sampled a small section. It would be interesting to conduct surveys at different places along Skeleton Creek to determine the extent of their presence.

FROG SURVEY PARTICIPATION

61 volunteers participated in the surveys, with ages ranging from 6 years old to over 70. Some individuals took part only once whilst others came more regularly. **This amounted to over 260 volunteer hours contributed by attendees.**

STAKEHOLDER ENGAGEMENT

Meeting with members of the Melbourne Water Frog Census and Environmental Water teams, both virtually and in person, was a great opportunity to connect and collaborate on frog conservation initiatives. It provided an opportunity to discuss progress on the *Frog Engagement & Protection Project* and we were invited to post on the Melbourne Water Frog Census Facebook page, engaging with a much wider audience interested in frog conservation. We were also fortunate to showcase our frog work to two Melbourne Water staff members who attended one of our frog surveys at Davis Creek.



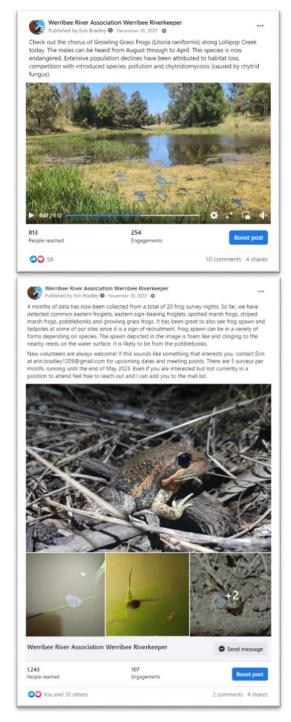


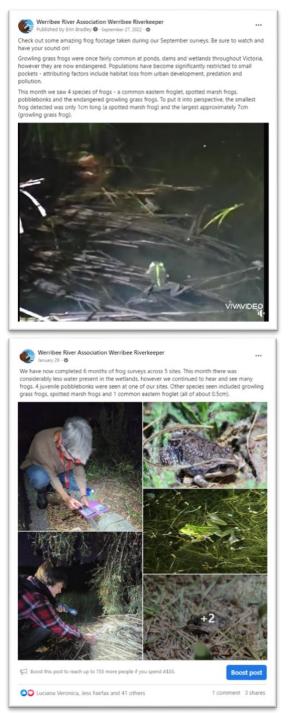


SOCIAL MEDIA ENGAGEMENT

Twelve social media posts were made on the Werribee River Association Facebook page relating to the *Frog Engagement & Protection Project*, to share project updates, support volunteer engagement and broad learning about frog conservation.

These photographs and sound recordings were popular, indicating community support for protection and enhancement of waterways and local frog populations.







EDUCATIONAL ENGAGEMENT

Attendance at the hugely popular Children's Week Picnic in October 2022, at Werribee Mansion, allowed for photographs and recordings that had been taken during the August, September and October surveys to be shared with families. A photograph compilation of different frog species was developed as part of the project's educational resources.









A Nature Play session at Harpley Wetlands in January 2023, provided another chance to showcase knowledge of local frog species. The session was attended by 25 people, primarily children, near the boardwalk where the monthly frog surveys were being conducted. The conversation about frogs in the wetlands even led to chalk drawings of frogs on the concrete.

The *Frog Engagement & Protection Project* effectively utilized WRA stalls, also at the **Christmas Market weekend at the Piazza** in Watton St, Werribee, in December 2022, to share information and engage with the community about the project.



Three visits were made to Vista Way Kindergarten to teach 3–5-year-old children about local frogs and how we can look after frog habitats. The kids particularly loved having Coco, the paper mache frog, come along.

Coco is named after the township of Cocoroc which means frog in the Wathaurong language.

It was great to share the excitement from the kids about a frog which they had found, in the sandpit, in their kindergarten playground. Each child had the opportunity to pull something out of a bag and think about whether it belonged in a frog habitat — since some rubbish was also included as

pod letering.

Valing

they had been learning in class about water pollution.

Together a 'mock' frog habitat was assembled, and we talked about how things like water, food, shelter (under dirt, in vegetation, in the water) and a place to lay their eggs is important for frog survival.

Photographs of frogs, habitat, and volunteers undertaking frog surveys were passed around the room so children could understand that frogs come in many shapes, sizes, and colours.



Education events also took place at 4 local schools, reaching over 500 students. This included:

- Lessons for 3 classes of grade 2's at St Francis of Assisi Primary School
- 7 sessions at Alamanda College engaged the thirteen classes of grade 1 students
- A presentation to 3 classes of grade 1's at Wyndham Christian College
- 2 classes at Manor Lakes College with special needs kids in their environmental elective class (1 with primary school kids and another with secondary students)



Coco was a favourite among the students at each of the respective schools. A PowerPoint presentation included a variety of videos, photographs and information that challenged student's perceptions of frogs.

Responding to a question about what sound frogs make resulted immediately in lots of 'ribbit ribbit' noises, however when asked if frogs make other calls, they were not so sure.

Students learnt about different frog sounds by listening to a variety of recordings and watching videos that demonstrated the movement of the vocal sac used for amplification.

They also learnt about frog habitat, lifecycle, identifying local frog species, adaptations that aid in their survival, threats to frog populations and how they too can become citizen scientists.

Students at all educational sessions were provided with a Growling Grass Frog sticker and a photograph containing images of local frog species.





PROJECT FEEDBACK

"Amazing work Erin and all who have participated! This is a great example of a comprehensive and professional community survey"

James Frazer, Former Frog Census Coordinator at Melbourne Water

"It was such a pleasure to see the kids engaged fully to learn about our local species and some of the challenges they face. Erin did a wonderful job and absolutely enchanted both my secondary and Primary Students with her colourful and informative session"

Teacher at a local school

"It's been great to come along to a couple of frog surveys. I've learnt new things about frogs. Looking forward to seeing your report. Hope it will continue again"

Survey volunteer



DISCUSSION

The *Frog Engagement & Protection Project* has identified several areas for improvement and future considerations.

Managing the communications and logistics of 50 surveys was challenging. To streamline the process, it is suggested to reduce the overall number of surveys while still obtaining valuable data. This can be achieved by conducting surveys during Melbourne Water's recommended fixed frog census months of April, August, October, and November. Focusing on these months ensures maximum opportunities for detecting a wide range of frog species during their calling periods (Melbourne Water n.d).

Conducting surveys in optimal weather conditions is needed for efficient management with community volunteers. It is recommended to schedule surveys when there is no heavy rain and wind speeds are less than 20km/h (Melbourne Water n.d). This will make the survey process more conducive and improve data collection accuracy.

To support the long-term health of frog populations, it is important to engage in ongoing activities such as weed control, rubbish removal, habitat maintenance, and planting events. Focussing on areas with large expanses of mown grass at Davis Creek, Skeleton Creek, and Cunninghams Wetland can be particularly beneficial for frog habitats. Additionally, installing signage to educate the public about frogs can raise awareness and promote their protection.

Continued collaboration with organizations such as Melbourne Water, Frogs Victoria, Wyndham City Conservation Crew, and Zoos Victoria is encouraged. These partnerships can provide valuable expertise, resources, and opportunities for further research and conservation efforts. Exploring the extension of the research site along Skeleton Creek and

conducting surveys along other waterways like Lollipop Creek can provide additional insights into frog populations and their habitat utilization.

By implementing these suggestions, the *Frog Engagement & Protection Project* can optimize its survey efforts, improve data collection, and ensure the long-term conservation of frog populations in Wyndham.





CONCLUSION

The *Frog Engagement & Protection Project* achieved significant engagement and participation, with impressive numbers across various activities.

A total of 61 individuals actively participated in the survey for 260 volunteer hours. This indicates a strong interest and involvement from the community in studying and protecting frog populations in Wyndham.

Over **500 students were engaged in the project**. Their participation indicates the project's successful integration into educational initiatives, allowing young learners to gain knowledge about local frog populations and contribute to scientific research.

Approximately 500 attendees took part in community events associated with the project. These events served as platforms for community members to directly learn more about local frog populations. This high attendance demonstrates the project's ability to engage and educate a broad audience.

The project was shared on social media platforms and through email communications. This approach ensured a broad reach and increased awareness about the project among a wider audience. The online dissemination of information likely contributed to the high turnout of participants and attendees.

Sound recordings and frog sighting numbers were uploaded to the **Melbourne Water Frog Census App** at the conclusion of each survey. This data collection approach enabled scientific research and provided valuable information regarding frog populations in Wyndham.

Volunteers played a crucial role in spotting and recording frog sightings. They successfully identified and documented 561 frogs throughout the project. The data collected, including information about frog size and distribution, holds immense value for studying and understanding the local frog populations.

Overall, the *Frog Engagement & Protection Project* achieved remarkable engagement targets, successfully involving community members, students, and online audiences. **The significant number of frog sightings and the valuable data collected through the project contributes to scientific research and conservation efforts in Wyndham.**

REFERENCES

Australian Government Department of Climate Change, Energy, the Environment and Water n.d, 'Species Profile and Threats Database', Australian Government DCCEEW, accessed 5 June 2023.

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