

# BUILDING BARCODING TO SAVE BIODIVERSITY

■ Pauline Charman

The new era of EnviroSTEM for Schools– Harry Butler Institute Education Program invites schools to be a part of the solution in West Australia. Look out as Big Data, Genomics, AI, Waste Management and more are coming in 2024.

*“Keep Caring. This is our only world.”* Harry Butler

Since 2020, Australian schools have been challenged with some of the most significant disruptions ever faced. A pandemic and extreme weather events (fires/floods) have thrown school communities into chaos. The world as we knew it, changed forever. A new West Australian partnership of social enterprise, BioBarcode Australia and the Harry Butler Institute at Murdoch University will be providing new educational experiences and resources that prioritise students as ‘active contributors’ to problem solving. The programs in development currently involve data collection and immersive research contributions while learning how West Australian environmental sustainability research is world class and technology driven; all proudly embracing two-way science exchange with Indigenous knowledge to solve our biggest problems.

The Harry Butler Institute, Murdoch University’s world-leading environmental research institute, comprised of four research centres, including the **Centre for**

**Biosecurity and One Health**, the **Centre for Sustainable Aquatic Ecosystems**, the **Centre for Terrestrial Ecosystem Science and Sustainability**, and the **Centre for Water, Energy and Waste**.

The Institute impressively leads in this research field via collaborative work with industry, government and community to develop innovative solutions to complex environmental problems. Research topics including renewable energy developments, novel geopolymer concrete development, waste management solutions, algal research and biotechnology, oceanography and marine ecology, fire ecology, island biosecurity, dolphin and sawfish research, extractive metallurgy and tailings waste treatment, unique conservation initiatives, freshwater ecology and conservation, preventing species extinction, biosecurity and pest management, environmental restoration, ticks and tick diseases, the use of AI and robotics, and many more.

WA science educator and ‘biotech ed guru’ leader Pauline Charman founded BioBarcode Australia in 2020 with the vision to provide opportunities for Australian schools to identify, map, and monitor species in their school grounds using DNA barcoding. The data generated is then contributed to authentic genomic reference libraries of species which contributes to building our knowledge of biodiversity.

Using portable research grade equipment and safe, user-friendly protocols, the first trial was successfully run at Willetton Senior High School in 2022. New loan kits of equipment available through the Education Dept Regional Laboratory Technician Pool as of 2023 and BioBarcode, schools can begin to participate in these exciting hands on and relevant STEM opportunities that offers it all – field collection, lab work and computer data analysis.

Now, Pauline and BioBarcode is partnering with the Harry Butler Institute to begin the process of developing education programs that will be introduced from 2023 and 2024 when the Harry Butler Science Centre opens on the edge of the Beeliiar National Park at Murdoch University. Experiences and resources featuring current WA based research, data collection opportunities via citizen science projects, wetland field visits (The Wetlands Centre Cockburn and Herdsman Lake Discovery Centre) and environmental engineering aimed at solving our biggest challenges including reduction in waste, renewable energy options and sustainable water resource management would all be on offer.

You may check out the new Harry Butler Science Centre on <https://youtu.be/OGmrrldrw6E>.



### **About the Author**

Pauline Charman is the Education Officer at the Harry Butler Institute at Murdoch University. She is working in partnership with the Wetlands Centre Cockburn to build innovative, collaborative educational programs with an emphasis on two-way science exchange underpinned by local Indigenous knowledge and the Institute's research projects.

Pauline is a highly experienced science educator, having held a variety of roles in WA secondary education and established WA's first immersive biotechnology education centre for schools at the Harry Perkins Institute of Medical Research in 2013. She founded BioBarcode Australia in 2020 with the vision to demystify DNA for the community.