

Edward Narayan

Edward Narayan is a Senior Lecturer of Animal Science at the University of Queensland, Australia. He leads the Stress Lab which focuses on building resilience in animals to boost animal health, welfare, and productivity. Edward is an Associate Editor for *Conservation Physiology* journal.



www.edwardstresslab.org

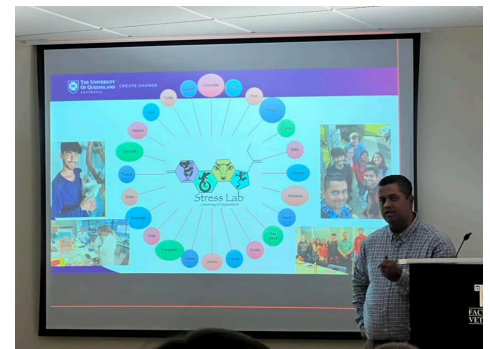
Tell us about your background. How did you first become interested in conservation physiology?

I am an animal biologist with a PhD degree in Biology. My interest in conservation physiology started early on while conducting my PhD on the conservation biology of the IUCN Endangered species, the Fijian ground frog. Physiology as a scientific subject matter was always my strong point, and during my PhD I was able to apply my undergraduate knowledge and training in animal physiology towards conservation of an endangered frog species. This knowledge was very handy while planning research and designing experiments. My work involved validating enzyme immunoassays to quantify steroid metabolites of reproductive and stress hormones in frog urine. Collecting frogs in the field on a remote island was the fun bit while lab work involved intensive

day and night shifts in the laboratory working with chemicals. I was strongly supported by my PhD supervisors from Fiji and New Zealand. My PhD was highly successful and validated the immunoassays for the first time for frogs. This was also the first time that Fijian ground frogs were successfully bred in captivity. This is a highly cryptic and direct-developing species, so not easy to breed *ex-situ*. Upon completing my PhD, I joined Griffith University in Australia to study hormone monitoring in native frog species. During this time, I diversified my skills to study the conservation physiology of native small mammals and zoo animals.

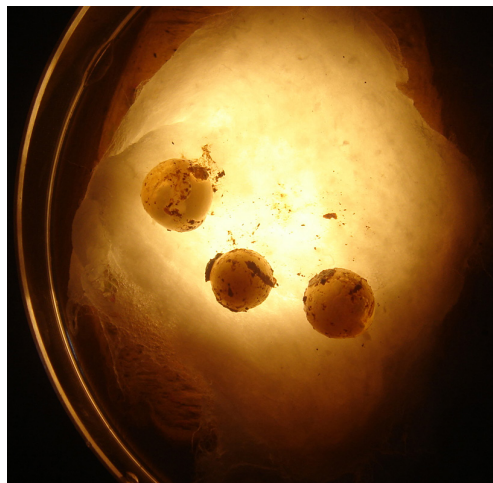
What are you working on currently?

I am leading a research group called the Stress Lab which comprises Honours, Master's and PhD students and postdocs. These students work on specific research projects within the themes of conservation physiology and animal welfare, and their projects involve cool animals such as koa-



Above: Edward delivering a Conservation Physiology talk at the Autonomous University of Barcelona, Spain.

las, fish, bilbies, and sheep! Our lab optimises minimally-invasive hormone monitoring tools for animals. One of the most productive outcomes of our Stress Lab team was our review paper on the impacts of climate change on animal welfare, submitted just before Christmas with over 10 graduate students as co-authors!



Left: Fijian ground frog eggs with developing embryos. Right: Edward holding the first-ever successfully captive bred endangered ground frog froglets.

What does a typical day look like for you?

I can be out in the field studying koalas or teaching at uni. Each semester I teach over 200 undergraduate students in anatomy and physiology.

What do you most enjoy about your work?

Interacting with my postgrad students, seeing them progress and feeling confident about their research work. Also celebrating student-led publications and awards! I am an Associate Editor of *Conservation Physiology* journal, which gives me a great opportunity to learn about exciting research works in conservation physiology from around the globe.

What do you find most challenging?

I feel as conservation physiologists we can often become over-passionate about our work and sometimes this can be challenging for our mental health and wellbeing. We should step back and realise the broader picture. Funding opportunities can be limited in our field of research so this requires outside-the-box thinking, a positive attitude, and teamwork to move together during challenging times.

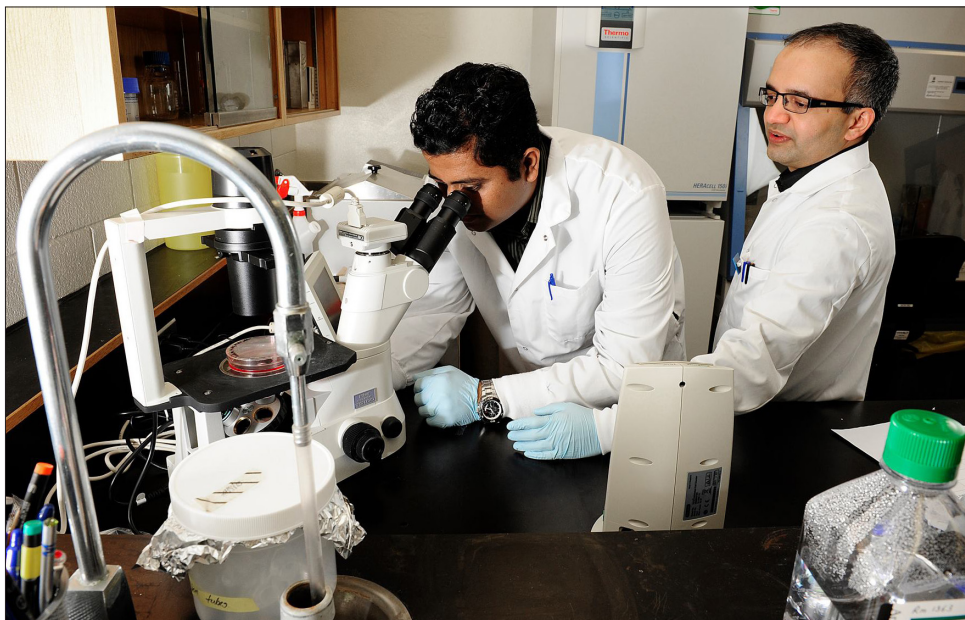
What are you hoping to work on in the future?

I am keen to study marine mammals, arid landscapes, and animals in very cold places.

“I am an Associate Editor of *Conservation Physiology* journal, which gives me a great opportunity to learn about exciting research works in conservation physiology from around the globe”



Above: Edward's PhD field site, Viwa Island, home of the IUCN endangered Fijian ground frogs.



Above: Edward during his postdoc at the University of Saskatchewan, Canada.

What advice would you give to aspiring scientists in this area?

At the beginning it may all look fuzzy and confusing when finding the first postdoc is so challenging. Never lose the drive to keep trying and success will reach you eventually. Family support and professional networks are very important pillars of this game so keep on working hard and realise your dream goals, the journey is long but an exciting one too (believe me!).

Who are your scientific heroes?

I have worked with many heroes, so the list is long. To name a few it will firstly be my PhD advisors Craig Morley, Frank Molina, John Cockrem and Ketan Christi. Also my postdoc advisors Jean-Marc Hero, Tim Jessop and Craig Franklin. I absolutely love the works of Steven Cooke, Michael Romero, Janine Brown, Rudy Boonstra, and all conservation physiology mentors out there!

Selected Publications from SEB Journals.

Beaman EJ, Mulligan C, Moore C, Mitchell D, Narayan E, Burke da Silva K. 2023. [Resident wild koalas show resilience to large-scale translocation of bushfire-rescued koalas](#). *Conservation Physiology* 11, coaco88.

Narayan E. J. 2013. [Non-invasive reproductive and stress endocrinology in amphibian conservation physiology](#). *Conservation Physiology* 1, coto11.

Pahuja HK, Narayan EJ. 2021. [Reactive scope model and emergency life history stage provide useful tools for evaluating the stress responses of native Australian lizards living in disturbed landscapes](#). *Conservation Physiology* 9, coab09.

Parnell T, Narayan EJ, Magrath MJL, Roe S, Clark G, Nicolson V, Martin-Vegue P, Mucci A, Hero, J. 2014. [Evaluating physiological stress in Sumatran tigers \(Panthera tigris ssp. sumatrae\) managed in Australian zoos](#). *Conservation Physiology* 2, couo38.

Parnell T, Narayan EJ, Nicolson V, Martin-Vegue P, Mucci A, Hero J. 2015. [Maximizing the reliability of non-invasive endocrine sampling in the tiger \(Panthera tigris\): environmental decay and intra-sample variation in faecal glucocorticoid metabolites](#). *Conservation Physiology* 3, covo53.