

The sad tale of the urban frog

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In the battle for survival, the impact of climate change may tip the balance against Australia's dwindling urban frog populations.

"Who'd be a frog in the suburbs?" asks [conservation biologist](#) Joab Wilson from the ARC Centre of Excellence for [Environmental Decisions](#) (CEED) at RMIT.

"Not only do they have to contend with [habitat loss](#), fragmentation and degradation, now there's [climate change](#), too. They really are stuck between a rock and a hard place.

"Given that frogs around the world are suffering significant declines – some 30% of species are threatened with extinction – it's a situation Australia needs to deal with better than we have till now," he says.

Joab and his colleagues have just completed a major study of how frogs are likely to cope in [Australian cities](#) as the climate warms – and the answer is: not well.

"Frogs need to keep on the move, in order to find suitable wet areas as temperatures go up," he explains. "In rural areas, there are plenty of alternative habitats – but in fragmented landscapes, such as our cities, this isn't the case."

The team's study produced a series of best- to worst-case climate and [urban](#) growth scenarios for the suitability of pond habitat for the spotted marsh frog (*Limnodynastes tasmaniensis*) – a typical urban [amphibian](#) –

using the Merri Creek area on the fringes of Melbourne as a case study.

"It's expected that many ponds will become less suitable as frog habitat as they dry out under climate change. We also wanted to see what this might mean under different development pathways in the suburbs," Joab explains.

The researchers used advanced mathematical and hydrological modelling to predict where the best frog ponds might be by 2070, given current urban development plans which, they note, keep on being 'extended'.

Under medium climate change predictions, they found the spotted marsh frog is around 10% less likely to occupy its current urban ponds by 2070 - whereas at the upper end of the [climate predictions](#), the species was 40% less likely to be occupying them by 2070.

However under an intermediate urban growth scenario, the probability of sites being occupied by frogs declined by about 30%, whereas under high levels of urban development the probability of frogs surviving locally fell by more than 90%.

"All of which makes grim reading, especially if you're a frog," Joab says.

"Pond habitats in the Merri Creek catchment are likely to become less suitable for amphibians under both climate and urbanisation scenarios. An increasingly warm and dry climate is likely to provide less standing water for species to be able to breed and for tadpoles to develop."

Under the scenario that combined high levels of development with the upper range of climate change predictions, there was less than a 1% chance the frogs would survive in their present ponds.

Joab says that a vital finding of the study is that urban development

poses a bigger risk to frog survival even than does climate change.

"When you consider how much attention it being given to climate change while so little is being given to the impacts of urban expansion on wildlife, it could be we are ignoring the elephant in the room.

"Given that current urban planning laws are the largest threat to amphibians such as the spotted marsh frog, maybe it's time we started focussing more on the impact of urban expansion on our native wildlife – and finding ways to limit it," he concludes

The team's paper "Impacts of climate change and [urban development](#) on the spotted marsh [frog](#) (*Limnodynastes tasmaniensis*)" by Wilson JN, S Bekessy, KM Parris, A Gordon, GW Heard & BA Wintle appears in the journal *Austral Ecology*.

More information: [onlinelibrary.wiley.com/doi/10 ... 012.02365.x/abstract](https://onlinelibrary.wiley.com/doi/10.1111/1365-3113.12365)

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