

Inquiry into Crocodile Control and Conservation Bill 2025

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Forecast Trends in Queensland Estuarine Crocodile Populations and Human-Crocodile Interaction Risk

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We used historical survey data on crocodile abundance and size to forecast changes to estuarine crocodile abundance across Queensland. These data were drawn from large-scale field surveys across the state's bioregions in 1984-89 and 2016-19, which gathered information on both total estuarine crocodile density and size [1]. We calculated the historical rates of change in both abundance and size. Since trajectories showed little evidence of density-dependence [1,2], we used historical trends directly (e.g., linear extrapolation) to predict the distribution of crocodile abundance and size in 2050.

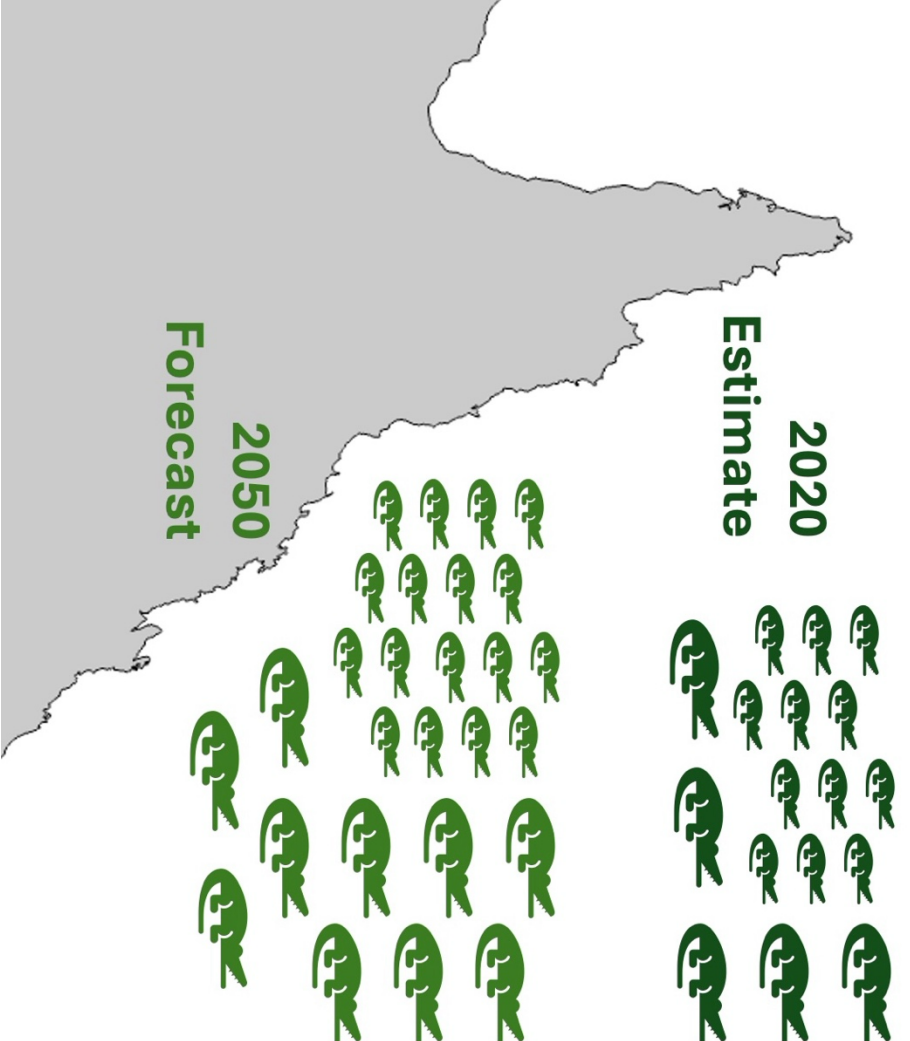
In parallel, we used *Australian Bureau of Statistics* estimates and forecasts of the human population in each coastal Local Government Area (LGA) in Queensland's crocodile range [3]. These data predict population trends in Queensland to 2046. We calculated a risk index for each LGA as the product of the density of human populations and large crocodiles. This allowed us to forecast changes in the risk of human-crocodile interactions.

These assumptions imply that:

- The total number of non-hatchling crocodiles in Queensland is projected to increase by **57%**, from approximately 17,400 today to more than 27,400 by 2050.
- The number of large crocodiles ($>2\text{m}$), which pose the greatest risk to humans, is projected to double by 2050, rising by **107%** from approximately 5,100 to over 10,500.
- By 2050, our measure of human-crocodile interaction risk is projected to increase by **227%** statewide.

Risk is projected to grow more rapidly in certain LGAs. For instance, in the Whitsunday (287%), Townsville (295%), Cairns (298%), and Douglas (253%) regions, projected increases in risk exceed the statewide average. The largest risks are not always found in the largest regional centres. In Cook Shire, for example, the risk of human-crocodile interactions is projected to increase by 332%.

Together, these trends imply that the challenge of managing human-crocodile interactions in Queensland – especially along the state's populated east coast – is likely to escalate substantially by mid-century. With additional refinements, validation, and uncertainty modelling, forecasts like these should be taken into account when evaluating the feasibility and consequences of crocodile management strategies and community safety planning in Queensland.



References cited

- [1] Taplin, L. *et al.* (2023) Estuarine Crocodile Population Monitoring in Queensland (1979-2019) Technical Report. Cairns: Department of Environment and Science, Queensland Government.
- [2] Taplin, L. (2023) Modelling Population Dynamics of Estuarine Crocodiles on Queensland's Northern Populated East Coast. Cairns: Department of Environment and Science, Queensland Government.
- [3] Aust. Bureau of Statistics (2023). Population Projections by Region, 2022-2071. [Accessed](#) 23 March 2025.

Figure 1: Estimated statewide abundance of small (non-hatchlings less than 2m in length) and large (animals greater than 2m in length) estuarine crocodiles, in 2021 and 2050. Each icon represents 1,000 crocodiles.