

# Hydropower dams worldwide cause continued species extinction

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New research led by the University of Stirling has found a global pattern of sustained species extinctions on islands within hydroelectric reservoirs.

Scientists have discovered that reservoir islands created by large dams across the world do not maintain the same levels of animal and plant life found prior to flooding.

Despite being hailed as conservation sanctuaries that protect [species](#) from hunting and deforestation, islands undergo sustained loss of species year on year after [dam](#) construction, a pattern otherwise known as 'extinction debt'.

These findings represent a significant environmental impact that is currently missing from assessment procedures for proposed new dams.

Isabel Jones, PhD researcher at the University and Lead Author, said: "We found a devastating reduction in species over time in the majority of reservoir islands we studied. On average, islands have 35 per cent fewer species than nearby mainland sites, however one South American bird community suffered as much as 87 per cent loss of species on reservoir islands.

"We know flooding reservoirs causes immediate loss of habitat and species, but we now find there is also a significant future biological cost as the 'extinction debt' is paid.

"No matter where the dam is located, the island size, or which species are present, there is sustained loss of species, with many in existing dams still potentially facing extinction."

Conservation experts examined research covering changes in species richness of birds, mammals, amphibians, reptiles, invertebrates and plants on more than 200 islands created by large dams, including Brazil's Balbina reservoir and China's

Thousand Island Lake.

Loss of species was investigated over a period of less than one year to over 90 years from when islands were created by reservoir filling.

With more than 50,000 [large dams](#) operating globally, including in highly biodiverse regions such as the Amazon Basin, and many future dams planned to help meet rising energy demands, researchers believe more needs to be done to account for the long-term loss of species on reservoir islands.

Co-author of the research, Professor Carlos Peres of the University of East Anglia, added: "Current practices to minimise the detrimental impacts of major hydroelectric dams include tropical forest set-asides, but this is a mirage if the remaining terrestrial biota becomes stranded in small [islands](#) - this needs to be taken into account in new infrastructure developments.

"Strong environmental licensing should be put in place to assess species losses versus the amount of hydropower output to even-up the biodiversity balance sheet."

**More information:** Isabel L. Jones et al, Extinction debt on reservoir land-bridge islands, *Biological Conservation* (2016). [DOI: 10.1016/j.biocon.2016.04.036](#)

Provided by University of Stirling

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