



Faunal extinctions – Where and how have populations disappeared?

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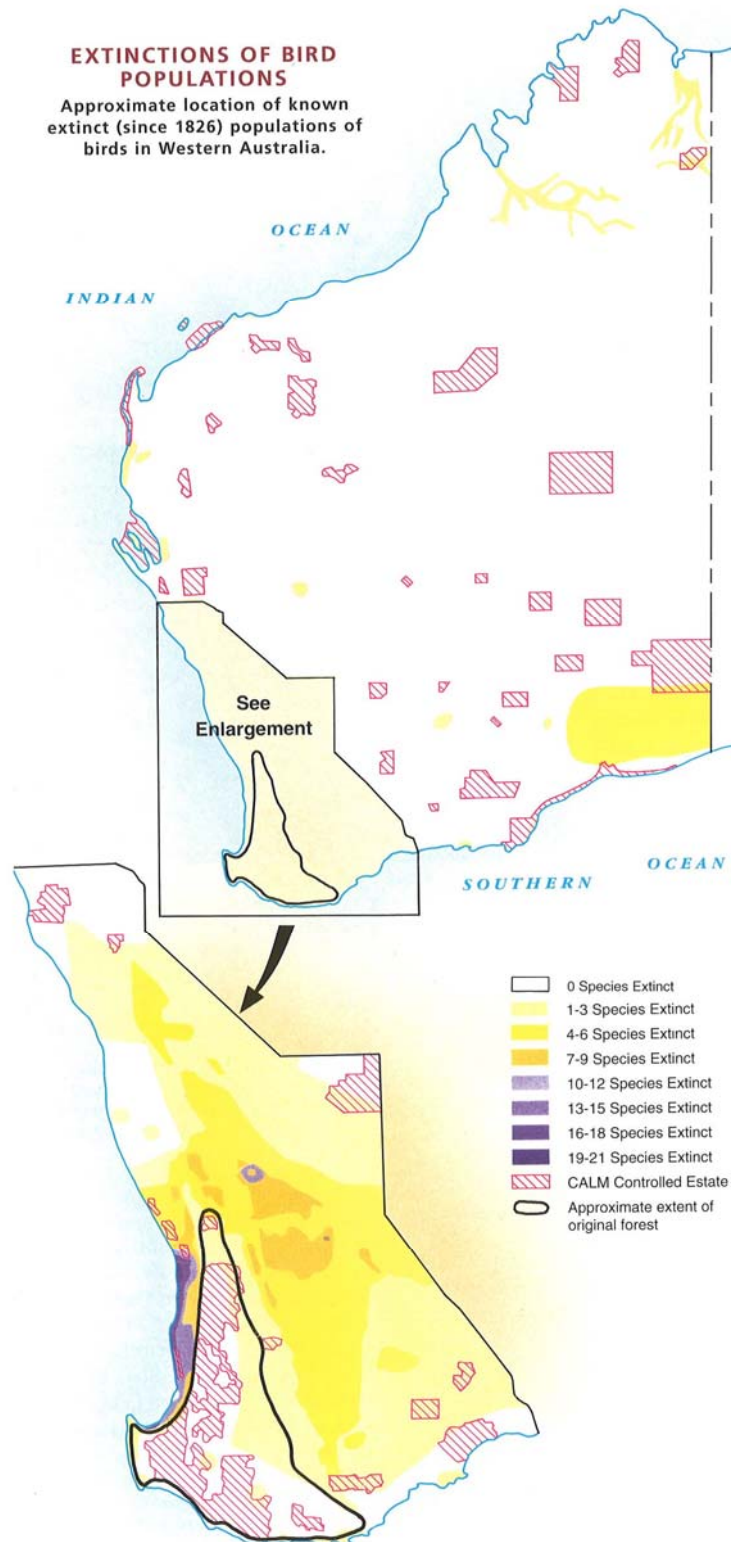
Introduction

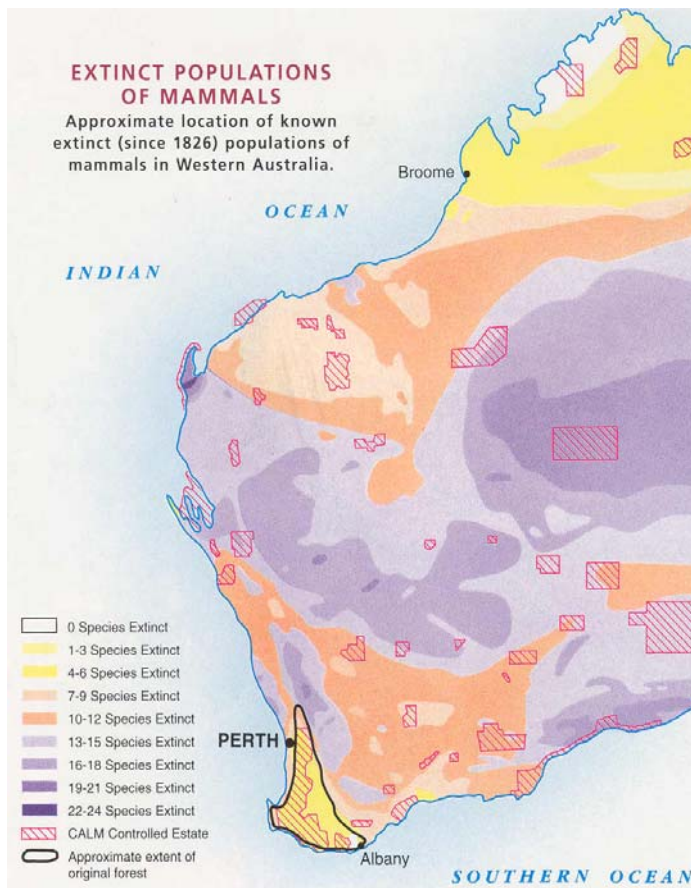
When the British settled Western Australia (WA) in 1829, the bird and mammal species present were the legacy of two opposing processes operating in geological time – extinction and speciation. Bones in caves near Cape Leeuwin indicate the extinction of the koala and wombat in WA some 30 000 yrs ago and the occurrence of rock wallabies there 5 000 yrs ago. These extinctions probably resulted from a change in climate, possibly with the help of hunting by Noongars.

From the few hundred immigrants who landed at Fremantle in 1829, humans have spread far and wide throughout WA, and in doing so have cleared native vegetation to provide shelter, food, energy, and income. Livestock were introduced, some of which have become feral. Other introduced animals made their own way from South Australia.

After nearly 200 yrs of European settlement, how do we sort out the many potential factors involved in causing extinctions? Why is it necessary to know this?

The first step is to reconstruct from all information available where populations of each species are known to have disappeared (local extinction), map these, and combine these into a single map showing the pattern for all species.





Findings

Birds

The map (previous page) shows (at this scale) that most extinctions have been on the Swan Coastal Plain followed by the central wheatbelt. This has resulted from native vegetation being destroyed to create the city and suburbs of Perth, and to grow crops and pasture. In much of the interior, extinctions have been few, even though many species are less common than before pastoralists occupied the land. The largest part of the south-west with the fewest extinct bird populations is the jarrah and karri forest.

Mammals

The map to the left shows (at this scale) a pattern of extinction dissimilar to birds. Most extinctions of mammal populations have been in the least settled parts of WA. Unlike birds, there is no single dominant cause responsible. The first wave of extinctions was in the period 1880-1920 and these occurred in the western half of WA. A disease was probably responsible.

The second wave of extinctions commenced soon after 1911 with the arrival of the fox from South Australia. Some populations recovered after the first wave of extinctions, only to succumb to predation by the fox. The prior arrival of the rabbit from South Australia in 1895 helped maintain large populations of foxes, thus intensifying predation of native mammals. Although cats were feral throughout WA by 1890, observations in northern South Australia and southern Northern Territory in the 1920s/1930s reveal that the mammal fauna was intact there until the fox arrived in 1930.

The Canning Stock Route (Halls Creek to Wiluna) and the Nullarbor Plain still retained many native mammal species until the 1930s, even though the feral cat had been present for many decades. It seems that traditional mosaic burning by desert Aborigines helped buffer native mammals against predation by cats and foxes, for when Aborigines left the deserts for towns, fuel levels increased and subsequent lightning strikes caused extensive wildfires. These removed the shelter of native mammals, making it easier for cats and foxes to kill any surviving or recolonising animals.

Relevance to management

Knowledge of where extinctions have occurred means that DEC can attempt to restore original distributions with confidence, once threats are diminished. DEC staff have translocated numerous species to Peron Peninsula, Lorna Glen, Dryandra, and elsewhere.