

A test of the habitat mosaic hypothesis

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The habitat mosaic hypothesis suggests that medium-sized mammals in the spinifex deserts require a fine-grained mosaic of at least two habitats - one to provide shelter, another to provide food. The loss of this mosaic due to a change in fire regime in the 1940s - 1950s may have contributed to the regional extinction of many species of medium-sized mammals.

This hypothesis was tested on Barrow Island where four medium-sized mammals persist. These species have either greatly declined or are extinct on the mainland. Abundance, condition indices, and reproductive status of burrowing bettongs, golden bandicoots, and northern brush-tailed possums were assessed at 24 locations across the island that differed with respect to habitat diversity, mosaic scale, and disturbance due to oil-field operations. Habitat diversity (measured as the Shannon - Wiener index of vegetation associations within a radius of 1 km² of the trapping grids) and mosaic scale (measured as total boundary length of vegetation associations) are created by edaphic factors rather than by fire on Barrow, with areas of highest diversity and finest mosaic scale typically being close to the coast.

No significant trends were found other than that due to seasonality. Scale of mosaic and habitat diversity had no detectable impact on population parameters.