

Talking turkey about future conservation directions: how to cater for dispersive species in dynamic landscapes?

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Many birds of Australia's arid and monsoonal regions are characterised by dispersive or nomadic movements and large population fluctuations in response to variable climatic conditions. These characteristics, compounded by our generally limited knowledge of bird movements and population dynamics, complicate population monitoring and conservation for such species. Indeed, the protection of dispersive fauna in general is regarded as one of the greatest challenges for conservation biology because conventional conservation practices and representative reservation cannot adequately cater for such species.

This presentation discusses these issues in light of a study that used the Australian Bustard as a 'model' for developing techniques to monitor and predict population fluctuations and dispersive movement patterns over broad spatial and temporal scales. If the locations and preferred habitats of dispersive species such as the bustard are known or can be predicted at particular times, then such sites can be prioritised for protection at critical times. Such knowledge would effectively facilitate predictive or pre-emptive conservation planning (e.g., by developing mobile or shifting conservation zones in time and space), thereby overcoming the limitations of current static reserve design and conservation strategies. For example, refugia required during drought, or breeding habitats and lekking areas used by bustards, could be protected at key times by controlling introduced predators, managing for appropriate fire regimes, minimising stocking rates for livestock, or implementing moratoria on hunting.

Continental-scale analyses of distributional data of bustards, and satellite tracking of individuals, suggest that their movement patterns vary widely across the country. The seasonality of bustard occurrence is generally more pronounced in regions characterised by predictable seasonal conditions. Seasonal patterns are also evident in more climatically unpredictable regions, although here they may be increasingly overlaid by more idiosyncratic movements as a result of longer term variation in rainfall and associated patterns of vegetation greenness. Limited evidence was found that bustards respond to inter-regional irregularities in rainfall events, suggesting that nomadic movements are generally not continental but rather intra-regional. However, longer term data sets that cover several more, or more extreme, climatic fluctuations than that considered here, are needed to assess these relationships adequately.

Complementing this broad-scale approach was a detailed study of the ecology of the bustard at two representative sites in northern Australia. This study also demonstrated the variability of the bustard's ecology. The species' widespread distribution and variable biology and threats mean that there are no simple, homogenous prescriptions for its protection - illustrating the challenge and need for lateral and creative approaches for the protection of the bustard and other similarly dispersive species over continental scales.