

Response of White-bellied Sea-Eagles *Haliaeetus leucogaster* to encroaching human activities at nest sites

S.J.S. Debus¹, G. Baker², D. Owner³ and B. Nottidge⁴

¹Honorary Associate, Division of Zoology, University of New England, Armidale, NSW 2351, Australia. Email: sdebus@une.edu.au

²PO Box 433, Aitkenvale, Qld. 4814, Australia. Email: cgbretired@hotmail.com

³Benchmark Environmental Management, PO Box 1944, Coffs Harbour, NSW 2450, Australia. Email: don.owner@benchmarkenvironmental.com.au

⁴GreenLeaf Ecology, 79 Birdsong Drive, Mooloolah Valley, Qld. 4553, Australia. Email: ben@glecology.com.au

Nest sites of the White-bellied Sea-Eagle *Haliaeetus leucogaster* are under increasing pressure from encroaching development and other human activities in coastal south-eastern Australia. Nests in the path of development have sometimes been destroyed or displaced, or become too disturbed for continued successful breeding. This paper reviews eight such cases, six for which mitigation measures (artificial platform, exclusion or environmental protection zones, forced rebuilding at safer sites) were attempted, successfully in three of these (i.e. young fledged) after management actions:

- Relocation of the intact nest to a platform among other trees nearby (successful in the short term (6 years), ultimately abandoned);
- Removal of a pair's nests in a highway upgrade zone, to encourage rebuilding in safer forest sites nearby (initially successful);
- Exclusion zone (50 m and 130 m radius) buffering a long-term nest from a new housing estate on three sides (successful in the short term, 2 years);
- E3 zoning ('Environmental Management') of a bushland remnant enclosing a formerly productive eagles' nest adjoining a new housing estate (nest unsuccessful then abandoned after development proceeded);
- Site management of a long-term nest in a recreation reserve 30 metres from a new housing estate (inconclusive, as the eagles left the site before clearing commenced);
- Deactivation of an established nest in a pipeline easement, to encourage rebuilding in safer forest sites nearby (use and outcome of a possible alternative nest not determined by the proponent).

Overall, buffer zones (50–130 m around active nests) had mixed success, and the more highly and frequently disturbed nests had low breeding productivity or were abandoned. With rapid expansion of urbanisation likely to continue in coastal northern New South Wales, this region may become a population sink for the White-bellied Sea-Eagle. Therefore, given its small population (~800 pairs in NSW) and the potential for an estimated 10 percent decline in abundance in three generations (this study), it is recommended that the Sea-Eagle be considered for listing as *vulnerable* in NSW.

Modelling the nesting habitat requirements of the Wedge-tailed Eagle *Aquila audax* in the Australian Capital Territory using nest site characteristics

Felicity Hatton¹, Patrick Hamilton Mickan², Bernd Gruber¹ and Jerry Olsen¹

¹Institute for Applied Ecology, University of Canberra, Australian Capital Territory 2601 (Email: FelicityHatton@hotmail.com)

²Mallee Catchment Management Authority, Mildura, Vic. 3500

Nest site characteristics of the Wedge-tailed Eagle *Aquila audax* were investigated during the 2011 breeding season within the Australian Capital Territory (ACT). Our objectives were to determine the nesting habitat requirements of this species in the ACT by surveying nest sites and identifying differences between habitat characteristics of nest trees and reference trees and active and inactive nest sites. A landscape model was created using maximum entropy distribution modelling (MaxEnt), predicting suitable nesting habitat for Wedge-tailed Eagles by extrapolating field measurements. This study found that during the 2011 breeding season Wedge-tailed Eagles in the ACT showed a preference for northeast facing aspects ($P < 0.01$). Nests were located mid-slope, at elevations between 457 and 777 metres on slopes less than 30 degrees. Nests averaged 13 ± 3 metres above the ground (range 5–19 m, $n = 34$), in trees averaging 18 ± 3 metres tall (range 11–26 m, $n = 34$). Our results agree with previous research on Wedge-tailed Eagles in that the species chooses the largest trees available by height ($P < 0.0001$) and girth ($P < 0.0001$). Distance to urban areas from nests was measured using GIS spatial analysis, and revealed active nests to be on average 2850 metres (± 1.70 m) (range 350–7100 m) from built-up areas. The mapping and modelling applications used in this study identified the Molonglo and Murrumbidgee River corridors as essential breeding and foraging habitat for the Wedge-tailed Eagle. These applications can be used to aid management for the conservation of the Wedge-tailed Eagle, and species of concern such as the Little Eagle *Hieraetus morphnoides* by identifying potential areas of nesting habitat and assessing the risks of future urban development.

Social group persistence over time in Brown-headed Honeyeaters *Melithreptus brevirostris*, as revealed by trapping records

John Rawsthorne

Honorary Fellow, Research Institute for Environment and Livelihoods, Charles Darwin University, Northern Territory 0909, Australia

Present address: 10 Macartney Street, Fannie Bay, NT 0820, Australia. Email: kim_john@bigpond.net.au

Brown-headed Honeyeaters *Melithreptus brevirostris* are commonly captured in groups in mist nets. Social network analysis was applied to multiple-capture data between 1986 and 2009 at a single banding site at Weddin Mountains, central western NSW, to infer the long-term persistence of a single social group of Brown-headed Honeyeaters at the banding site. Of the 162 individual Brown-headed Honeyeaters trapped at the site, 83 can be linked to a single social group that has persisted at the site through the entire 24-year study period. In this region, nomadism appears to be rare for this species.