

NSW SCIENTIFIC COMMITTEE

Final Determination

The Scientific Committee, established by the *Threatened Species Conservation Act 1995* (the Act), has made a Final Determination to list the Dusky Woodswallow *Artamus cyanopterus cyanopterus* (Latham, 1802) as a VULNERABLE SPECIES in Part 1 of Schedule 2 of the Act. Listing of Vulnerable species is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. The Dusky Woodswallow *Artamus cyanopterus cyanopterus* (Latham, 1802) (family *Artamidae*) is a medium-sized bird (35 g) predominately smoky blue-grey, dusky brown or grey in colour, with white-tail-tips and a white streak at the edge of the wing (Higgins and Peter 2002). The Dusky Woodswallow appears similar to the Little Woodswallow (*Artamus minor*) but the former is distinguished by its larger size and bulkier appearance, distinctly paler and with more grey and a diagnostic prominent white stripe along the leading edge of the folded wing (Higgins and Peter 2002). Juvenile Dusky Woodswallows can be distinguished from adults by plumage although once mature, adults cannot be aged and sexes are alike (Higgins and Peter 2002). The Dusky Woodswallow is unlikely to be confused with other species in the field (Higgins and Peter 2002).
2. The Dusky Woodswallow is widespread in eastern, southern and southwestern Australia (Higgins and Peter 2002; Barrett *et al.* 2003). In New South Wales (NSW) it is widespread from the coast to inland, including the western slopes of the Great Dividing Range and farther west. It is sparsely scattered in, or largely absent from, much of the upper western region (Higgins and Peter 2002).
3. The Dusky Woodswallow is often reported in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests and very occasionally in moist forests or rainforests (Higgins and Peter 2002). At sites where Dusky Woodswallows are recorded, the understorey is typically open with sparse eucalypt saplings, acacias and other shrubs (Higgins and Peter 2002). The ground cover may consist of grasses, sedges or open ground, often with coarse woody debris (Higgins and Peter 2002). Birds are also often observed in farmland, usually at the edges of forest or woodland or in roadside remnants or wind breaks with dead timber (Higgins and Peter 2002; M. Schulz *in litt.* November 2014). In western NSW this species is primarily found in with River Red Gum/Black Box/Coolibah open forest/woodland associated with larger river/creek systems and is less common and far more patchily distributed in other communities such as mallee and cypress-pine woodland (M. Schulz *in litt.* November 2014).
4. Despite records showing a wide distribution and occurrence in a variety of habitats, the Dusky Woodswallow is considered to be a woodland-dependent bird (Bennett and Ford 1997; Reid 1999; Major *et al.* 2001; Kavanagh *et al.* 2007). The majority of breeding records for this species, as well as presence records within the breeding period, occur on the western slopes of the Great Dividing Range, a region dominated by woodland and open dry forest (H. Ford *in litt.* May 2014).
5. Dusky Woodswallows breed from late September to late February, with eggs present between September and January, although most eggs are present between October and early December (Higgins and Peter 2002). The nest is an open shallow untidy cup (Higgins and Peter 2002), frequently built in an open hollow, crevice or stump. Clutch size is 1–4 and pairs may breed twice in a season. The fledging period is 16–20 days. Reported fledging success is 21% and hatching success is 41% (Higgins and Peter 2002). Both parents brood the eggs and feed the nestlings and fledglings need care

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for about a month (Higgins and Peter 2002). Fledglings appear to disperse with the flock but return to the birth site in subsequent years (Higgins and Peter 2002). Nesting is usually solitary but occasionally occurs in loose colonies of up to 20 nests (Higgins and Peter 2002). The Dusky Woodswallow is monogamous and nests in pairs although cooperative breeding sometimes occurs (Higgins and Peter 2002). Although Dusky Woodswallows have large home ranges, individuals may spend most of their time in about a 2 ha range and defend an area about 50 m around the nest (Higgins and Peter 2002).

6. The Dusky Woodswallow primarily eats invertebrates, mainly insects, which are captured whilst hovering and sallying above the canopy or over water (Higgins and Peter 2002). Unlike other woodswallows, it also frequently hovers, sallies and pounces under the canopy, particularly over leaf litter and dead timber. Occasionally nectar, fruit and seed are also ingested (Higgins and Peter 2002). Due to its foraging mode, this species has been classified as an aerial insectivore (Loyn *et al.* 2010; Birdlife Australia *in litt.* June 2015).
7. The generation length of the Dusky Woodswallow is uncertain. BirdLife International (2016) estimated the generation length to be five years. A generation length of five years was also estimated for the Bismarck Woodswallow (*Artamus insignis*), White-breasted Woodswallow (*A. leucorhynchus*) and Shy Woodswallow (*A. fuscus*) (BirdLife International 2016). Banding studies indicate a maximum recapture interval of eight years for the Dusky Woodswallow (Higgins and Peter 2002). The estimate of five years is used as the generation length in this Determination.
8. Depending on location and local climatic conditions (temperature and rainfall) the Dusky Woodswallow can be resident year round or migratory (Higgins and Peter 2002; M. Schulz *in litt.* November 2014). In NSW, birds migrate after breeding to the north of the state and to southeastern Queensland, while Tasmanian birds migrate after breeding to southeastern NSW (Higgins and Peter 2002). Migrants generally depart March–May moving north, along the coast or inland slopes of the Great Dividing Range (Higgins and Peter 2002). Migrants generally move south in spring (September–November) to breed (Higgins and Peter 2002). There is some evidence of site fidelity for breeding (Higgins and Peter 2002). Despite breeding solitarily or only in small flocks, large flocks of up to 300 have been reported in winter at abundant food sources *e.g.* grasshopper swarms and flowering trees (Higgins and Peter 2002). The species may also gather in flocks before migration and often migrates with other species (Higgins and Peter 2002).
9. The total population size of the Dusky Woodswallow in NSW is unknown. Using published density estimates H. Ford (*in litt.* May 2014) calculated an estimated population size of approximately 200,000 adults in NSW. Whilst this population estimate is coarse, the total population in NSW is unlikely to be low or moderately low.
10. The distribution of the Dusky Woodswallow is not moderately restricted. The extent of occurrence (EOO) for the Dusky Woodswallow is approximately 888,000 km² based on a minimum convex polygon enclosing all mapped occurrences of the species in NSW, the method of assessment recommended by IUCN (2014). The area of occupancy (AOO) is estimated to be 5,024 km² based on 1,256 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2014). At the site level, the abundance of this species is known to fluctuate, both seasonally as a result of migration or seasonal movements and in response to favourable conditions. As the distribution is variable depending on conditions, this species could be considered to fluctuate spatially but neither EOO nor AOO would exceed an order of magnitude change. The western extent of the range is the most elastic as this species can move into arid areas when rainfall allows (*e.g.* Ellis and Taylor 2014).

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11. The Dusky Woodswallow appears to have undergone a moderate reduction in population size. This is based on three lines of evidence: 1) decline in the state-wide reporting rate of this species, 2) decline in abundance of this species at specific sites and 3) reductions in habitat quality.
12. There is evidence of at least 30% decline in reporting rate (the proportion of surveys where the species was recorded as present) for the Dusky Woodswallow over three generations (15 years). Birdlife Australia performed a state-wide analysis using a slightly modified version of the methods of Cunningham and Olsen (2008). Reporting rates within standardised surveys (2 ha, 20 minute see Barrett *et al.* 2003) were used as an index of abundance. Mean reporting rate declined from ~4.5% (range ~3.75–5.2 at 95% confidence interval (CI)) at the beginning of the period (spring 2001) to ~2.5% (range ~1.5–3% at 95% CI) as of 2013 (Birdlife Australia *in litt.* June 2015). This approximates a 52% (range 24–79%) decline in reporting rate over three generations (15 years) at the state scale. While the lower end of the confidence limit is only 24% decline, trends in reporting rates are likely to underestimate rates of decline for this species for several reasons. Presence/absence data poorly document declines of abundance within sites for an easily observed species such as the Dusky Woodswallow (H. Ford *in litt.* May 2014). In addition, to ensure the analysis was statistically robust, a subset of sites that had sufficient repeat visits over time was used, which means that poor quality sites or sites where habitat was cleared were likely to be excluded despite the fact that such sites might show the most marked decline. Nonetheless, reporting rate analyses provide important insight into decline because they represent evidence available at the state scale (Hope 2015) which is useful in the absence of long term datasets from regular targeted surveys.
13. Analyses of declines in actual abundance from well-designed investigations are less prone to underestimate rates of decline but tend to be limited temporally and spatially. Reid and Cunningham (2008) analysed data from 2002 to 2007 for the Cowra region on the NSW southwest slopes as part of the Cowra Woodland Birds project (run by Birdlife Australia). Using a nonlinear analysis which provided the best fit to the actual abundance data, abundance of the Dusky Woodswallow was shown to decline by ~73% over the study period in that region, with total abundance at 34 sites dropping from ~49 in 2002 to ~13 in 2007. While this is only one region within NSW, the degree of past habitat clearing and ongoing threats are similar to those of other parts of the western slopes of the Great Dividing Range, the core breeding habitat for the species.
14. There is also substantial evidence for both past and ongoing reductions in habitat quality for the Dusky Woodswallow, which are likely to lead to a reduction in population size. Historical rates of land clearing are high in the regions in which this species is most often reported with most remaining vegetation consisting of paddock trees, windbreaks or small remnants (Benson 2008). Both Kavanagh *et al.* (2007) and Debus (2006) found that Dusky Woodswallows prefer larger remnants over smaller remnants. Past clearing could be leading to continuing declines as a result of extinction debt (Ford *et al.* 2009). In addition, competitive exclusion by Noisy Miners (*Manorina melanocephala*) is a significant threat to this species (Maron *et al.* 2013) and there is evidence that Noisy Miners are increasing in abundance in the woodland habitats of the Dusky Woodswallow (NSW Scientific Committee 2013). Currawongs, magpies and butcherbirds are also positively associated with Noisy Miners (Maron *et al.* 2013) and are significant nest predators. A meta-analysis by Remes *et al.* (2012) found that daily nest predation rates on open nests in southeastern Australia have increased from 1% in 1970 to 2.5% in 2010 with the likely cause a large-scale ecological phenomenon, such as an increase in nest predators. Given the foraging habit of the Dusky Woodswallow and its association with dead timber, other disturbances to the ground layer that impact invertebrate availability such as inappropriate fire regimes, excessive grazing and removal of coarse woody debris are potential threats to this species that decrease habitat quality. ‘Clearing of native vegetation’, ‘Aggressive exclusion of

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birds by noisy miners (*Manorina melanocephala*), and 'Removal of dead wood and dead trees' are listed as Key Threatening Processes under the Act.

15. The Dusky Woodswallow *Artamus cyanopterus cyanopterus* (Latham, 1802) is not eligible to be listed as an Endangered or Critically Endangered species.
16. The Dusky Woodswallow *Artamus cyanopterus cyanopterus* (Latham, 1802) is eligible to be listed as a Vulnerable species as, in the opinion of the Scientific Committee, it is facing a high risk of extinction in New South Wales in the medium-term future as determined in accordance with the following criteria as prescribed by the *Threatened Species Conservation Regulation 2010*:

Clause 6 Reduction in population size of species

The species has undergone, is observed, estimated, inferred or reasonably suspected to have undergone or is likely to undergo within a time frame appropriate to the life cycle and habitat characteristics of the taxon:

- (c) a moderate reduction in population size, based on either of the key indicators:
 - (a) an index of abundance appropriate to the taxon, or
 - (b) the geographic distribution, habitat quality or diversity, or genetic diversity of the species.

Dr Mark Eldridge
Chairperson
Scientific Committee

Exhibition period: 05/08/16 – 30/09/16

Proposed Gazettal date: 05/08/16

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