

NSW SCIENTIFIC COMMITTEE

Square-tailed Kite *Lophoictinia isura*

Review of Current Information in NSW

June 2009

Current status:

The Square-tailed Kite *Lophoictinia isura* (Gould 1838) is currently listed in Victoria as Threatened under the *Flora and Fauna Guarantee Act* 1988 (FFG Act; Vulnerable on Advisory List), Endangered in South Australia under the *National Parks and Wildlife Act* 1972 (NPW Act) and Rare in Queensland under the *Nature Conservation Act* 1992 (NC Act). The species is not listed under Commonwealth legislation. The NSW Scientific Committee recently determined that the Square-tailed Kite meets criteria for listing as Vulnerable under the NSW *Threatened Species Conservation Act* 1995 (TSC Act), based on information contained in this report and other information available for the species.

Species description:

The Square-tailed Kite is a medium-sized (50-55 cm in length), slender bird of prey with very long wings. The adult is brown dorsally and rufous ventrally, with a white cap, pale band across the upperwings, and heavy black streaks on the chest. The bill and feet are small and pale, with short bare legs. The widely spread wing-tip feathers are boldly banded, with a pale panel towards the bend in the wing, and the long tail is square-cut or slightly notched, with sharp corners. The juvenile is more uniformly rufous on the head and body. The very similar Black Kite *Milvus migrans* is duller and browner, with black rather than barred wing-tip feathers, yellow cere (enclosing the nostrils) and feet, and a more deeply forked tail (which can appear square-tipped when widely spread). The Little Eagle *Hieraaetus morphnoides* is similar but much 'chunkier', with larger head and bill, rusty black-streaked head, fully feathered legs, and large feet and claws.

Taxonomy:

Species: *Lophoictinia isura* (Gould 1838) (Accipitridae), monotypic (*i.e.* no subspecies); an endemic Australian species and genus.

Distribution and number of populations:

The Square-tailed Kite is distributed sparsely throughout most of NSW, except inland treeless parts and the highest alpine areas, as a single population (*e.g.* Blakers *et al.* 1984; Marchant & Higgins 1993; Barrett *et al.* 2003).

Ecology:

The knowledge on general biology and ecology of the Square-tailed Kite is considered to be good based on recent studies (Marchant & Higgins 1993; Debus 1996; Barnes *et al.* 1999, 2001; Brown *et al.* 2000; Griffiths *et al.* 2002; Lutter *et al.* 2003, 2004; Stowe 2009).

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Key habitat requirements

The Square-tailed Kite forages over coastal and subcoastal, eucalypt-dominated open forests and woodlands, and inland riparian woodland. It particularly favours productive forests on the coastal plain, box-ironbark-gum woodlands on the inland slopes, and Coolibah/River Red Gum on the inland plains (Marchant & Higgins 1993). It also forages over coastal heathlands, and often near openings and edges of forest. The Square-tailed Kite will forage around suburban trees and shrubs, and nest in urban bushland. On the Mid-north Coast of NSW, landscapes within a 2 km radius of the nest sites of 11 pairs of Square-tailed Kites had a high proportion of young and older-aged regrowth Blackbutt forest, when compared with random sites (Kavanagh *et al.* 2001).

Breeding biology

The Square-tailed Kite builds a large stick platform in a living tree, in open forest or woodland or near edges or openings in forest. A clutch of one or two eggs is laid in winter, with a single attempt per season. The incubation period is about 40 days, the nestling period about eight weeks, and the post-fledging dependence period lasts about two months. Breeding productivity is 0.7 young per pair per year in NSW.

Diet

The Square-tailed Kite feeds mostly on small birds and the contents of their nests, taken from the canopy. The species' diet also includes large insects, reptiles and occasionally small mammals.

Social biology

The Square-tailed Kite occurs solitarily, in pairs, or family groups of parents and dependent juveniles.

Territoriality/home range

Resident pairs of Square-tailed Kites defend exclusive breeding territory against conspecifics and other raptors. In eastern NSW, neighbouring nests of the Square-tailed Kite are about 13 km apart, with a density of one pair per 170 km², and home range of roughly 50 km² (Lutter *et al.* 2004).

Generation length

The generation length of the Square-tailed Kite is estimated as 10 years (Garnett & Crowley 2000).

Ability to disperse/susceptibility to population fragmentation

The Square-tailed Kite is highly mobile and dispersive, with southern populations migrating to winter in the tropics (Marchant & Higgins 1993). It is inferred not to be susceptible to population fragmentation.

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Number of mature individuals:

The number of mature individuals of the Square-tailed Kite is uncertain. Globally, it has been estimated that there are between 1 000 and 10 000 birds (Ferguson-Lees & Christie 2001), or, another estimate suggests there are 7 000 breeding birds (Garnett & Crowley 2000). The latter estimate was assigned low reliability on the basis of geographic range and reporting rate. The number of breeding animals in NSW is 10% of the global estimate, or between 100 and 1 000 birds.

Threats:

Historically, the main threats to the Square-tailed Kite have been clearing and degradation of foraging habitat, and clearing of breeding habitat or nest trees. Over 50% of forest and woodland has been cleared in NSW, and over 80% of temperate woodlands in Australia have been cleared, and the process is continuing (Lunney 2004; Olsen *et al.* 2005; Johnson *et al.* 2007). Important bioregions on the NSW tablelands and western slopes containing Square-tailed Kite breeding records are 53-84% cleared and moderately to highly stressed (landscape stress factor 3-5 out of 6: Morgan 2000; Barrett *et al.* 2007). Some other western bioregions are up to 40% cleared and/or have landscape stress ratings of 2-4 (*e.g.* Riverina, Darling Riverine Plains: Morgan 2000; Barrett *et al.* 2007). Coastal bioregions are 16-33% cleared, with landscape stress ratings of 2-4 (Morgan 2000; Barrett *et al.* 2007). Direct human threats to the foraging and breeding habitat of the species are most evident around expanding coastal cities, where urbanisation and rural-residential expansion appear to be displacing breeding pairs, *e.g.* Port Macquarie (expert advice 2009). 'Clearing of native vegetation' is listed as a Key Threatening Process in NSW under the *Threatened Species Conservation Act 1995*

Windfarms may cause occasional collision mortalities of Square-tailed Kites, although this species is a very manoeuvrable, slow flyer and is probably capable of generally avoiding collisions with turbine blades. There may, however, be other adverse effects associated with windfarms (*e.g.* habitat loss, direct mortality from collisions with transmission lines). Threats to the Square-tailed Kite's foraging or breeding habitat and nest-site security are suspected to be moderate, while other threats (anthropogenic mortalities) are suspected to be low.

Extreme fluctuations:

There is no evidence of extreme fluctuations in this species.

Population reduction and continuing declines:

The Square-tailed Kite was reported in 23 one-degree grids in NSW in the first national bird atlas in 1977-1981, at mostly low reporting rates (less than 11% of surveys per grid), with breeding in just one grid (Blakers *et al.* 1984). The species was reported in 30 one-degree grids in the second national bird atlas in 1998-2002, at low reporting rates (less than 10% of surveys per grid), with breeding in three grids (Barrett *et al.* 2003). Based on atlas data, the index of abundance (reporting rate) for the Square-tailed Kite in NSW has shown an increasing, though non-

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significant trend (41% increase in reporting rate between atlases, Barrett *et al.* 2007). Annual reports from the NSW Field Ornithologists Club since the late 1990s have remarked that more Square-tailed Kite records or locations are recorded each year, which also suggests population increase. However, the increase suggested by atlas data may be exaggerated because rare species, such as the Square-tailed Kite, may have been recorded more frequently in Atlas 2 since observers were more aware of its threatened status and hence more likely to conduct surveys where such species were known to occur (Barrett *et al.* 2007). No national trend can be determined for the species owing to insufficient records (Barrett *et al.* 2003), although population increase is suspected in south-east Queensland (Garnett & Crowley 2000).

The species is data deficient in relation to extent of possible recovery, largely because its historical population size is unknown and a comprehensive assessment of population trend across NSW has not been made. The increase in sightings is attributed to increasing food supply in coastal areas, and the species' ability to colonise fragmented coastal forests (*e.g.* Bischoff *et al.* 2000; Griffiths *et al.* 2002; Lutter *et al.* 2004). However, the Square-tailed Kite remains conservation dependent with respect to security of nest sites and nesting patches, notably protocols that protect nest sites (by buffer and exclusion zones) in state forests and in areas subject to highway upgrades or expansion of human settlements.

Extent of Occurrence (EOO) & Area of Occupancy (AOO):

The Square-tailed Kite's EOO is effectively most of NSW except the driest, treeless parts and the highest elevations, or about 700 000 km². Even if only 10% of EOO is occupied, AOO remains roughly 70 000 km².

Severe fragmentation:

There is no evidence of population fragmentation in this species, although woodland habitat is increasingly fragmented on the tablelands, slopes and plains. For example, the relevant bioregions where the Square-tailed Kite occurs and breeds have been cleared by up to 84% and some are highly stressed landscapes (*e.g.* NSW Southwestern Slopes, stress rating 5 out of 6: Barrett *et al.* 2007). The species is highly mobile, able to soar or glide high over open country.

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Explanatory note

Between 2007 and 2009 the NSW Scientific Committee undertook a systematic review of the conservation status of a selection of plant and animal species listed under the Threatened Species Conservation Act. This species summary report provides a review of the information gathered on this species at the time the Review was undertaken.

The Scientific Committee's report on the Review of Schedules project and final determinations relating to species that were either delisted or had a change in conservation status can be found on the following website: www.environment.nsw.gov.au.

The Committee gratefully acknowledges the past and present Committee members and project officers who ably assisted the Committee in undertaking the Review of Schedules Project. Information on the people involved in the project can be found in the Acknowledgement section of the project report entitled "Review of the Schedules of the Threatened Species Conservation Act 1995. A summary report on the review of selected species" which is available on the abovementioned website.

This species summary report may be cited as:

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