

# NSW SCIENTIFIC COMMITTEE

## Eastern Osprey *Pandion cristatus*

### Review of Current Information in NSW

June 2009

#### **Current status:**

Eastern Osprey *Pandion cristatus* (previously Osprey *Pandion haliaetus*) is currently listed as Endangered in South Australia under the *National Parks and Wildlife Act 1972* (NPW Act). It is nationally listed as 'Migratory' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), as *Pandion haliaetus*, though status under EPBC Act as *cristatus* is unknown (*i.e.* subject to international agreements (Bonn Convention)). The NSW Scientific Committee recently determined that the Eastern Osprey meets criteria for listing as Vulnerable in NSW under the *Threatened Species Conservation Act 1995* (TSC Act), based on information contained in this report and other information available for the species.

#### **Species description:**

The Eastern Osprey is a large (50-65 cm long) hawk, with long, angular wings and heavy feet. It is brown on the upperparts and white on the underparts, with a pale head, dark line through the eyes, mottled brown 'necklace', barring under the wings and tail, and bare grey legs. The larger immature White-bellied Sea-Eagle *Haliaeetus leucogaster* is similarly coloured, but has a shorter, pale tail, lacks barring or a dark line through the eyes, and glides with its wings held in a shallow V.

#### **Taxonomy**

Formally known as *Pandion haliaetus* (Linnaeus 1758), the Australasian population, subspecies *cristatus*, has been recently raised to full species rank as the Eastern Osprey *Pandion cristatus* (Vieillot 1816) (Christidis & Boles 2008).

#### **Distribution and number of populations:**

In NSW, the breeding population occurs from the Queensland border (contiguous with the Queensland population) south to Gosford and recently (2005-2007) to Sydney, with a more recent (2008) breeding attempt recorded further south at Ulladulla, where a bird has been observed nest-building (Clancy 2008, 2009). Vagrants occur south to and beyond the Victorian border.

#### **Ecology:**

The knowledge on general biology and ecology of this species is considered to be good (Marchant & Higgins 1993; Rose 2000; Bischoff 2001; Clancy 2005a,b; 2006; Kennard & Kennard 2006; Dennis 2007).

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## Key habitat requirements

The Eastern Osprey forages over clear estuarine and inshore marine waters and coastal rivers, and nests in tall (usually dead or dead-topped) trees in coastal habitats from open woodland to open forest, within 1-2 km of water.

## Breeding biology

Eastern Ospreys build a large stick bowl usually in the top of a dead or partly dead tree, from isolated trees in open country to open forest, with prominent emergent perches nearby (*e.g.* dead trees). The species is increasingly seen making use of artificial structures for nest sites and lookout perches (*e.g.* power pylons, towers, bridges) and purpose-built nest platforms on poles. A clutch of usually three eggs is laid in winter, with a single attempt per season. The incubation period is about 38 days, the nestling period 9-11 weeks, and the post-fledging dependence period lasts two to three months. Breeding productivity is 0.9-1.1 young per pair per year in NSW.

## Diet

Eastern Ospreys feed mostly on surface-swimming, schooling fish caught by diving into water.

## Social biology

Eastern Ospreys occur solitarily, in pairs, or family groups of parents and dependent juveniles.

## Territoriality/home range

Resident pairs of Eastern Ospreys defend exclusive breeding territory against conspecifics and other raptors. In NSW, neighbouring nests are rarely less than 1 km apart and more often are between 1-3 km apart (Marchant & Higgins 1993; Kennard & Kennard 2006). Parent Eastern Ospreys range at least 3 km from the nest to forage (Kennard & Kennard 2006).

## Generation length

Generation length is estimated as 10 years for similarly sized raptors (Garnett & Crowley 2000).

## Ability to disperse/susceptibility to population fragmentation

The Eastern Osprey is highly mobile and dispersive, with known movements of dispersing juveniles of up to 700 km in NSW (Clancy 2006). The species is inferred not to be susceptible to population fragmentation.

## **Number of mature individuals:**

There are about 120 breeding pairs and a total population of less than 300 Eastern Ospreys in NSW (Clancy 2008, 2009).

## **Threats:**

Former threats to the Osprey (direct persecution, DDT-related contamination) have largely abated, but remaining threats include loss of breeding habitat and nest trees, pollution of foraging habitat and prey with agricultural and industrial chemicals, and entanglement in fishing gear

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(Clancy 2008). For instance, about 10% of natural nest sites (mainly dead trees) are lost per year (Bischoff 2001). Increased turbidity of coastal waters, from sediment loads entering streams, may hinder foraging (cf. Clancy 2005b). Windfarms may cause occasional collision mortalities of Eastern Ospreys, however, modelling of the currently small data set for windfarm collisions involving the White-bellied Sea-Eagle suggests that the few deaths nationwide (less than five per year), will have no significant population effect at the current scale of windfarm development (Smales 2005) Although there is no comparable data are available for the Eastern Osprey, observed eagle casualties around windfarms in Tasmania (at least 12 in two years) exceed the modelled predictions (Mooney 2009). Mortality of Eastern Osprey due to collisions with windfarms may increase in the future, as this industry expands.

## **Extreme fluctuations:**

There is no evidence of extreme fluctuations in the NSW population of the Eastern Osprey.

## **Population reduction and continuing declines:**

The Eastern Osprey population appears to be increasing in NSW and expanding southwards. The species' index of abundance (reporting rate) increased significantly, by 206% over 20 years (two generations) between the first and second national bird atlases in 1977-1981 and 1998-2002 (Barrett *et al.* 2007). This increase was most evident on the North Coast (cf. Blakers *et al.* 1984; Barrett *et al.* 2003). However, rare species with a high profile may have been recorded more frequently in Atlas 2 because observers were more aware of their threatened status and hence more likely to conduct surveys where they were known to occur (Barrett *et al.* 2007). The apparent increase in population may therefore be exaggerated. Similarly, it is difficult to determine whether the apparent increase in the total number of breeding pairs of Eastern Osprey in NSW reflects population recovery, increased survey effort or a combination of both. Moreover, the 1970s baseline population is uncertain (Clancy 2008, 2009), making it hard to ascertain the extent of any population recovery. The apparent population recovery is attributed to threat abatement and recovery actions (e.g. cessation of persecution, reduction of pollution, protection of nest sites, and provision of artificial nest sites: Clancy 2008, 2009). However, the species remains conservation dependent with respect to security of nest sites, and replacement of lost natural nest sites with artificial nest sites (*e.g.* Moffat 2009).

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

The Eastern Osprey's extent of occurrence (EOO, IUCN 2008) in NSW is effectively all of the coastline and coastal drainages, or 15 one-degree coastal grids of *c.* 100 x 100 km (Barrett *et al.* 2003), equivalent to roughly 150 000 km<sup>2</sup>. The area of occupancy (AOO, IUCN 2008) of the core breeding population for the species is two-thirds of the NSW coastline of about 12 000 km (*i.e.* 8 000 km) by an average 10 km wide coastal plain (20 km wide in the Richmond and Clarence Valleys, <10 km wide elsewhere). This is equivalent to 80 000 km<sup>2</sup>.

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## Severe fragmentation:

There is no evidence of population fragmentation, as the Eastern Osprey is highly mobile, able to soar or glide high over open water.

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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](http://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:

NSW Scientific Committee (2009) Eastern Osprey *Pandion cristatus*. Review of current information in NSW. June 2009. Unpublished report arising from the Review of the Schedules of the Threatened Species Conservation Act 1995. NSW Scientific Committee, Hurstville.