

# NSW SCIENTIFIC COMMITTEE

## Wompoo Fruit-dove *Ptilinopus magnificus*

### Review of Current Information in NSW

June 2010

#### **Current status:**

The NSW Scientific Committee recently determined that the Wompoo Fruit-dove *Ptilinopus magnificus* (Temminck 1821) 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. The Wompoo Fruit-dove is not currently listed under any other State or Commonwealth legislation.

#### **Species description:**

The Wompoo Fruit-dove is the largest Australian Fruit-dove measuring 35-45cm in length. The back and wings are green with a prominent yellow wing-bar. The species has purple plumage under its neck and on the chest and upper belly. The lower belly is yellow. The head is pale grey, the bill is orange-red with yellow tip and the iris is red-orange. Legs and feet are yellow green. Both sexes have similar plumage. Young birds are duller and greener than adults. The most characteristic calls are a deep 'wollack-wa-hoo, or a quieter 'wompoo' (Higgins & Davies 1996).

The similar Rose-Crowned Fruit-dove, *P. regina*, and the Superb Fruit-dove, *P. superbus* are mostly green, with bright colouring around the head and neck. Both species are much smaller than the Wompoo Fruit-dove, measuring around 20 cm - 24 cm in length and have shorter tails.

#### **Taxonomy:**

Seven subspecies of Wompoo Fruit-dove are recognised; four in New Guinea and three in Australia. The subspecies in Australia are separated geographically and each is restricted to one of the three main blocks of rainforest habitat along the east coast. *Ptilinopus m. magnifica* occurs from central eastern New South Wales to central eastern Queensland; *P. m. keri*, in north-eastern Queensland; and *P. m. assimilis*, in northern Cape York Peninsula.

Synonym: *Columba magnifica*.

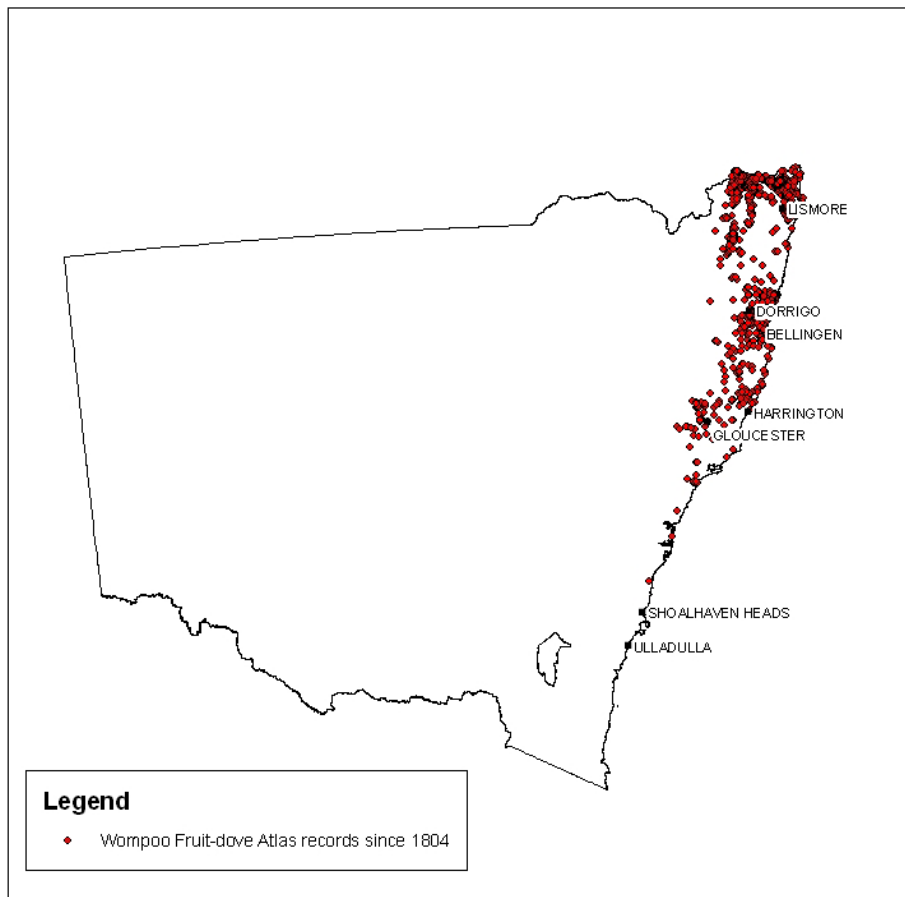
#### **Distribution and number of populations:**

Historically in Australia, the Wompoo Fruit-dove was found from the Illawarra district in NSW to the tip of Cape York Peninsula, however the most southerly populations have now disappeared, most likely due to habitat clearance (Figure 1). The species was last recorded south of Sydney in the 1920s (Recher *et al.* 1995) although there are unconfirmed records more recently at Mt Ouseley (1977), Macquarie Pass (1982), Farmborough Heights (1982; 1986) and Mt Kembla (1994) (Chafer *et al.* 1999).

Currently in NSW, the species is distributed along the eastern slopes of the Great Dividing Range from the Queensland border south to the Hunter River (Milledge & Bower *in litt.* 2009) (Figure 2).

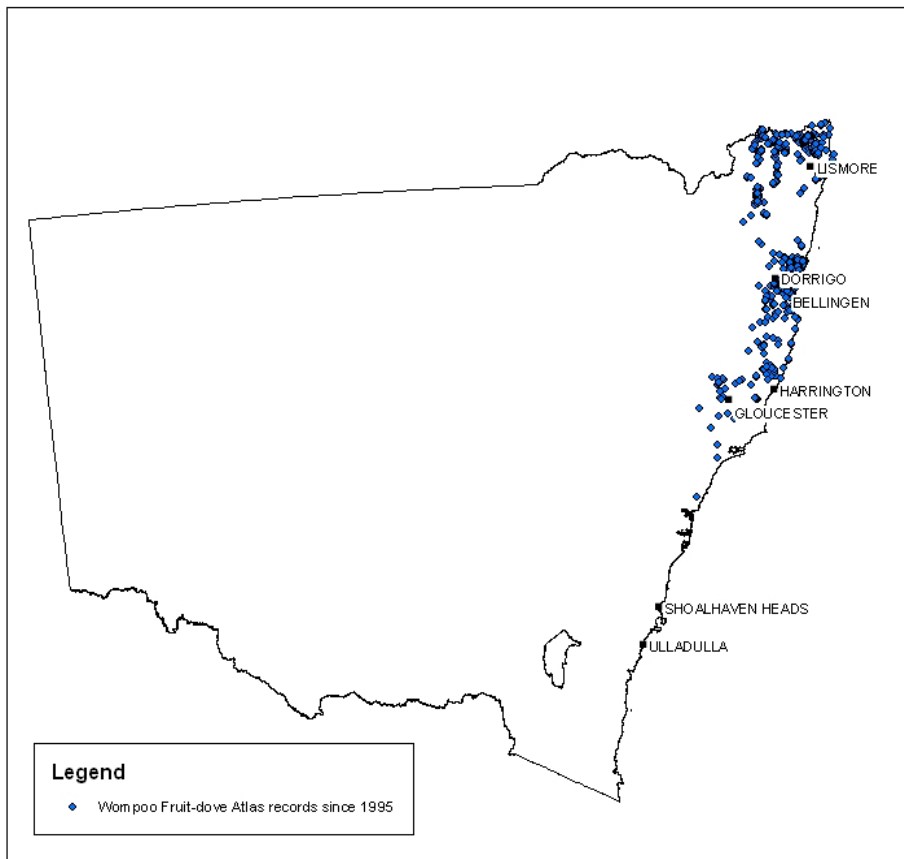
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Breeding of the Wompoo Fruit-dove in NSW is mainly confined to the area from the Queensland border south to Coffs Harbour and the Dorrigo Plateau (Milledge & Bower *in litt.* 2009). The core breeding range occurs at mid to high elevation sites around the Mt Warning and Focal Peak shield volcanoes, although important breeding areas also occur in the Washpool- Chaelundi area and Dorrigo Plateau (Milledge & Bower *in litt.* 2009). In far north NSW, breeding extends to lower elevations in forest continuous with extensive mid to high elevation forests (Milledge & Bower *in litt.* 2009). Much of this core breeding habitat occurs in conservation reserves (Hawkins *in litt.* 2009) including Washpool, New England Dorrigo, Mt Warning and Nightcap National Parks.



**Figure 1:** All Wompoo Fruit-dove Atlas records in NSW since 1804.

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**Figure 2:** Wompoo Fruit-dove Atlas records in NSW between 1995 and 2010.

## **Ecology:**

### Key habitat requirements

In NSW, the Wompoo Fruit-dove occurs in patches of subtropical rainforest and adjoining wet sclerophyll habitats (Recher *et al.* 1995; Higgins & Davies 1996) but has also been recorded using single trees in farmland (Hawkins *in litt.* 2009). They appear to be most abundant in warmer, mature rainforests dominated by *Ficus* spp. (Recher *et al.* 1995; Hawkins *in litt.* 2009) and less common in fragments. Moran *et al.* (2004) classified the Wompoo Fruit-dove as a ‘decreaser’ on the basis that it was significantly more common in extensive rainforest (2.65 birds per count) than in remnants (1.00 bird per count) or regrowth (0 birds per count).

Much of the habitat of the Wompoo Fruit-dove has now been heavily modified, particularly at lower elevations, and consists of habitat fragments and regrowth forest of native and invasive species (Date *et al.* 1996).

Unlike the Rose-crowned Fruit-dove, the Wompoo Fruit-dove does not appear to have altered its behaviour to exploit weedy exotic vegetation and therefore does not seem to greatly benefit from the proliferation in northern NSW of species such as *Cinnamomum camphora* (Camphor Laurel). For example, Neilan *et al.* (2006) recorded the Wompoo Fruit-dove at just three of 24 Camphor Laurel regrowth sites in the Lismore region, and nowhere were the birds abundant.

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The Wompoo Fruit-dove makes a significant contribution to ecological functioning in rainforests through their dispersal of the seeds of rainforest plants. Due to their relatively large gape, Wompoo Fruit-doves are particularly important to the dispersal of trees bearing fruit too large to be taken by other frugivorous species (Milledge & Bower *in litt.* 2009).

## Breeding biology

Breeding of the Wompoo Fruit-dove takes place from late winter to mid-summer; varying in response to suitable weather conditions.

Both sexes share in the construction of the nest which is a small, sturdy, flat platform made from twigs and is usually positioned low in the tree, between 2-10 m from the ground (Recher *et al.* 1995).

A single white egg is laid, and both sexes share the incubation and care of the chick. Only one chick is raised in a season, but birds may breed a second time if the first attempt fails (Higgins & Davies 1996).

## Diet

The Wompoo Fruit-dove is an obligate frugivore, feeding on a variety of rainforest fruits. Often fruits are large and eaten whole. Most foraging is done high in the canopy (Recher *et al.* 1995), but the species will also secure food in the lower storeys of the forest (Higgins & Davies 1996).

The Wompoo Fruit-dove selectively forages on species that are more common in well-developed rainforest than in regrowth. Fruit is taken from palms (Arecaceae), vines (Vitaceae) and trees in the families Araliaceae, Cunoniaceae, Ebenaceae, Elaeocarpaceae, Lauraceae, Meliaceae, Moraceae, Myrtaceae, Oleaceae, Pennantiaceae, Rutaceae and Sapindaceae (Innis 1989; Milledge & Bower *in litt.* 2009). Individual mature paddock trees such as figs (*Ficus* spp.) may also be visited during fruiting (Milledge & Bower *in litt.* 2009).

## Social biology

Wompoo Fruit-doves usually occur singly or in pairs, although sometimes small to large groups congregate at food sources (Higgins & Davies 1996).

## Territoriality/home range

The Wompoo Fruit-dove does not travel large distances, but rather moves around in small localised areas in response to food availability and nesting requirements (Higgins & Davies 1996). Nevertheless, the species has a seasonal altitudinal migration, spending time in upland forests during summer and moving to lower elevations during winter (Milledge & Bower *in litt.* 2009). Occasionally, particularly during autumn and winter when rainforest fruit is scarce, individuals will move up to 15 km to temporarily occupy more open country (Higgins & Davies 1996).

The species has an estimated home range requirement of approximately 20 ha when breeding (Milledge & Bower *in litt.* 2009).

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## Generation length

The generation length for the Banded Fruit-dove *Ptilinopus cinctus* is estimated as five years (Garnett & Crowley 2000). It is thought the generation length of the Wompoo Fruit-dove is similar.

## Ability to disperse/susceptibility to population fragmentation

The Wompoo Fruit-dove is usually described as sedentary or locally nomadic (Recher *et al.* 1995), but individuals are known to travel some distances in cooler months in search of food (Hawkins *in litt.* 2009). Milledge & Bower (*in litt.* 2009) consider the Wompoo Fruit-dove to have 'high dispersal ability', however, as the species shows a preference to disperse within continuous habitat (Date *et al.* 1996) it is inferred to be susceptible to habitat fragmentation.

## **Number of mature individuals:**

The Wompoo Fruit-dove is considered uncommon in NSW, with highest densities occurring in extensive rainforest patches with mature canopies (Milledge & Bower *in litt.* 2009).

Morris *et al.* (1981) also described the species as uncommon, with an estimated population size of between 1 000 and 10 000 individuals. In the mid-1990's the NSW population of the Wompoo Fruit-dove was estimated as more than 7 000 birds (Recher *et al.* 1995). No other population estimates are available and there are insufficient data with which to estimate the total number of mature individuals with any certainty.

## **Threats:**

The main threat to the Wompoo Fruit-dove is the clearing and fragmentation of subtropical rainforest. Although much of the higher altitude breeding habitat for Wompoo Fruit-doves is now protected within conservation reserves, important patches of non-breeding lowland habitat are currently unreserved and hence remain vulnerable to clearing (Hawkins *in litt.* 2009). During cooler months, Wompoo Fruit-doves move from their summer breeding habitat to feed on winter fruiting species such as *Melia azedarach* (White Cedar) and remnant figs within unreserved farmland and regrowth (Hawkins *in litt.* 2009). Although the species shows a preference away from these more isolated habitats, in times of food scarcity these areas become significant (Moran *et al.* 2004; Hawkins *in litt.* 2009).

Other threats to the species include the degradation of rainforest remnants by fire, grazing by domestic stock and weed invasion.

With the expansion of urban areas in eastern New South Wales, the risk of bird strike on windows increases. Mortality of fruit-doves generally are known to result from bird strike, however, the extent of this impact on Wompoo Fruit-dove populations is unknown (Darney *in litt.* 2009). The disturbance in rainforest reserves from increased recreation by tourists is also a potential threat to the species (Recher *et al.* 1995).

The Wompoo Fruit-dove was formerly hunted as game, but has not been hunted since 1948 (Recher *et al.* 1995).

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'Clearing of native vegetation', 'High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition' are listed as Key Threatening Processes under the TSC Act in NSW.

## **Extreme fluctuations:**

There is no evidence of extreme fluctuation in this species.

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

The large-scale clearing of subtropical rainforest in NSW early last century destroyed much of the most productive habitat of Wompoo Fruit-doves and current populations are restricted due to the limited area of this resource (Recher *et al.* 1995).

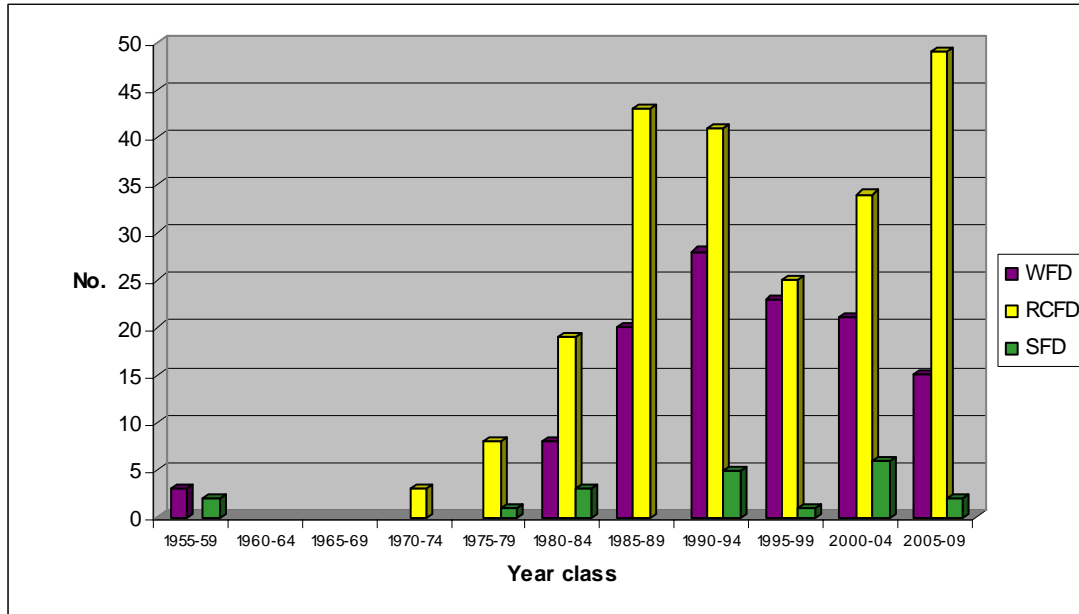
In the southern parts of its range (i.e. southern NSW), the species suffered population declines and localised extinctions during the early part of the 20<sup>th</sup> century as rainforests in the Illawarra District (near Wollongong) underwent extensive clearing for farming (Recher *et al.* 1995). At this time, the species also appeared to be declining in northern NSW following widespread rainforest clearing and fragmentation around the Richmond, Clarence, Tweed, Nymboida and Orara River Valleys (Recher *et al.* 1995).

Despite the phasing out of rainforest logging in NSW state forests, the establishment of national parks and reserves with extensive rainforest during the late 1970s and 80s, and the recent listing of all remaining coastal subtropical rainforest as an Endangered Ecological Community under the TSC Act (as *Littoral Rainforest in the NSW North Coast, Sydney Basin and South East Corner Bioregions* EEC), food trees for the Wompoo Fruit-dove in disturbed stands are generally not yet mature enough to support the species (Milledge & Bowen *in litt.* 2009). In addition, much of the regenerating patches of subtropical rainforest contain a high proportion of the introduced Camphor Laurel (Milledge & Bower *in litt.* 2009).

Between the two national bird atlases in 1977-1981 and 1998-2002, the index of abundance (reporting rate) for the Wompoo Fruit-dove in NSW increased by 77% ( $P = 0.059$ ) and 76% nationally ( $P < 0.05$ ) (Barrett *et al.* 2003; 2007). In addition, data from Byron Shire Council show Wompoo Fruit-dove records have steadily increased but there is a slight decline since 1990s (Figure 3). Records however, are not based on systematic seasonal surveys (Darney *in litt.* 2009) and given the lack of increase in some food resources, there is no evidence that recent observations constitute a recovery of the species to past population levels. Over the past one to two decades there appears to be no evidence that the Wompoo Fruit-dove has expanded its overall range in NSW (particularly the breeding range) nor has population density increased (Milledge & Bower *in litt.* 2009). Moreover, the species has not yet re-established as a resident through many parts of its former range (e.g. the Illawarra).

It is predicted that there will be further declines of fruit-doves generally if there are further declines in rainforest habitat (Moran *et al.* 2004).

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**Figure 3.** Records of Wompoo Fruit-dove (WFD), Rose-crowned Fruit-dove (RCFD) and Superb Fruit-dove (SFD) in Byron Shire Council by time (Darney *in litt.* 2009).

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

The past EOO of the Wompoo Fruit-dove in NSW was 72 400 km<sup>2</sup> (based on the distance between the most widely separated occurrences and the linear alignment of locations, the method recommended by IUCN (2008) for assessment of EOO) and the AOO was 2 800 km<sup>2</sup> (based on 2 x 2 km grid cells, the scale recommended by IUCN (2008) for assessment of AOO). However, it is evident that Wompoo Fruit-doves have not recovered their resident population in their former range south of Sydney and based on Atlas records over the last 15 years (3 x generation length), the AOO and EOO of the species in NSW are currently estimated at 1 600 km<sup>2</sup> and 61 000 km<sup>2</sup>, respectively.

## Severe fragmentation:

As a result on past clearing for urban development and agriculture, the habitat of the Wompoo Fruit-dove is now severely fragmented. Although the species can travel between isolated fragments, it shows preference for movement through continuous habitat (Date *et al.* 1996; Moran *et al.* 2004) and may be at risk of population fragmentation in heavily cleared landscapes.

## References:

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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:

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