Image by Simon Plowright

Ceyx azureus subsp. *diemenensis*

Tasmanian Azure Kingfisher

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Common name: Tasmanian Azure Kingfisher

Scientific name: ***Ceyx azureus*** (Latham, 1802) **subsp. *diemenensis*** (Gould, 1846)

Group: Vertebrate, Class Aves (birds), Family Alcidinidae

Name history: *Alcedo azurea* subsp. *diemenensis*

Status: *Threatened Species Protection Act 1995*: **endangered**

Environment Protection and Biodiversity Conservation Act 1999: **Endangered**

IUCN Red List: **Not listed**

Distribution: Endemic status: **Endemic to Tasmania**

Tasmanian NRM Region: **Cradle Coast, North, South**

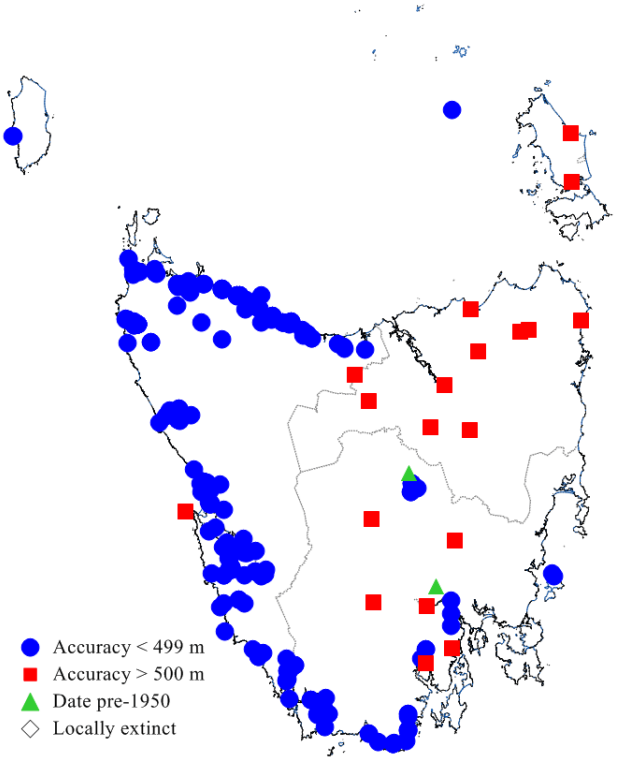

Figure 1. Distribution of the Tasmanian Azure Kingfisher, showing NRM regions

Plate 1. Tasmanian Azure Kingfisher, perched on branch over the River Inglis (Image by Marlene Lyell)

The Tasmanian Azure Kingfisher (*Ceyx azureus* subsp. *diemenensis)* is a small brightly coloured bird. This subspecies is restricted to Tasmania where it is thought to number fewer than 250 mature individuals. The species is found along the forested margins of major rivers, where it usually occurs in shady and overhanging forest vegetation. The Tasmanian Azure Kingfisher is found on rivers on the south, west, north and northwest coasts with outlying occurrences in the northeast, east, centre and Bass Strait islands. The species catches prey by plunging from perches overhanging the water. It feeds on small fish, freshwater crayfish, aquatic insects, and occasionally frogs. The main threats to the Tasmanian Azure Kingfisher include historical and continuing modification of riverside vegetation. The main objective for its management is to maintain the quality of potential habitat and to protect known breeding sites to ensure maintenance of population numbers.

IDENTIFICATION AND ECOLOGY

The Tasmanian Azure Kingfisher is a small brightly coloured bird with a long slender black bill, red legs, and a short tail. The head, neck, upper parts and breast sides are deep royal blue to azure blue with a violet (purplish) sheen. The neck has a distinctive orange stripe on each side and there is a small orange spot before each eye. The throat is pale orange-white, grading to orange-reddish on belly and undertail. The flanks and sides of the breast are washed purple to violet. The legs and feet are red with only two forward toes. The lores (region between the eye and bill on the side of the head) are white and inconspicuous except in front view, where they stand out as two large eye-like white spots. The eyes are dark brown. The sexes are similar. Young birds have a darker cap and are generally duller.

The Tasmanian Azure Kingfisher is larger in body proportions than mainland Australian subspecies (Schodde & Mason 1976), and has larger eggs (Campbell 1901 cited in Schodde & Mason 1976).

The Azure Kingfisher breeds in a hole drilled in a river bank (Green 1995, Higgins 1999, Morcombe 2003). Nests may be solitary or in loose colonies, with pairs defending nest territories. Non-migratory adults probably spend their lifetime within a territory, often using the same nesting hole for successive years. The species breeds between September and February and may have two broods. The species generally breeds as simple monogamous pairs, with young expelled from territories annually.

The nest is in the end of a narrow tunnel drilled in an earth bank beside or very close to water. The entrance is usually near the top of the bank. The tunnel extends 20 to 40 cm to a widened nest chamber, where 4 to 6 elliptical glossy white eggs are laid on bare earth. Incubation and care of young is by both parents. The young fly after 22 to 28 days, quickly become independent, and start feeding themselves within 10 days of fledging.

The Azure Kingfisher catches prey by shallow plunging from perches overhanging the surface of water (Higgins 1999). It feeds on small fish, freshwater crayfish, aquatic insects and their larvae, occasionally amphibians, and occasionally forages on the ground taking beetles and other terrestrial insects and it may catch dragonflies in the air (Shields 1994, Higgins 1999, Hollands 1999).

There is anecdotal evidence that whitebait and trout fingerlings provide an important food source. There is some anecdotal evidence that the Azure Kingfisher is more prevalent in the lower reaches of rivers during the time of the whitebait run. In addition, some anecdotal information suggests that the species takes advantage of artificial structures such as weirs to feed on schools of fish backed up against obstructions.

Survey guidelines

There are no formal survey guidelines available. Most sightings of the species are made opportunistically (e.g. by kayakers, rafters, from river cruises, from bridges and river walks, workers at sites such as weirs, etc.). There is some evidence that more sightings are made in the spring-summer (breeding season) period (Wapstra et al. 2010), although this may be a reflection of observer bias.

Confusing species

The Tasmanian Azure Kingfisher is highly distinctive, and unlikely to be confused with other species in Tasmania. No other riverine bird combines the same behaviours (e.g. perching and diving foraging, darting flight over water, hole-nesting in river banks) and appearance (i.e. distinctive glossy azure blue upperparts and orange breast). The Sacred Kingfisher is a reported vagrant to Tasmania but has a wholly different appearance (i.e. metallic blue upperparts and white breast).

DISTRIBUTION AND HABITAT

The Tasmanian Azure Kingfisher is endemic to Tasmania (Figure 1), occurring along several river systems on the south, west, north and northwest coasts with outlying occurrences in the northeast, east, centre and Bass Strait islands. Beyond the apparent "core" breeding range of western and northwestern Tasmania, there are also recent sightings from the Cressy area in the northern Midlands, the Bridport area in the northeast, the wider Central Plateau (e.g. Dee Lagoon, Woods Lake area, Junction Lake, etc.). Reports of the species from Flinders Island (1960s), Bass Pyramid (1980s) and King Island (1980s, 2000s) are likely to be vagrant birds from Tasmania or Victoria.

The Azure Kingfisher occurs along the forested margins of major river systems. It usually occurs in shady and often overhanging vegetation of riverine forests dominated by wet sclerophyll and mixed forest supporting mainly eucalypt species. Occasional sightings of individuals in other habitats have been reported but these are atypical.

The distribution and habitat of the Azure Kingfisher is intimately linked to its breeding and feeding biology. Information suggests that pairs on mainland Australian rivers are sedentary and resident, with pairs found about every kilometre along major rivers (e.g. Shields 1994), maintaining permanent territories all year along watercourses of about 200 to 500 m of river bank. In Tasmania, the size of territories appears to be much smaller.

Plate 2. Habitat of the Azure Kingfisher at Birchs Inlet (Image by Barry Batchelor)

If the populations on major river systems are assumed to represent locally resident populations (based on the fact that several such river systems are represented by several sightings over many years), then the Azure Kingfisher is known from at least 60 locations (Figure 1). However, other methods of defining a 'location' may be more applicable to the species. For example, the Azure Kingfisher occurs in 30-33 major catchments, and numerous additional sub-catchments.

POPULATION PARAMETERS

There are no published accounts of past or present population numbers, and no estimates of future changes to population numbers. Garnett et al. (2011) state that "although widely distributed, few birds are seen. Densities of 1-3 pairs along 10-20 km of Arthur River suggest very small numbers, but recent reports of birds every few kilometres along the Salisbury and Jane Rivers suggest a higher density in some rivers (M. Wapstra in litt.). The population is assumed to be very small and probably does not exceed 1000 mature individuals". Garnett et al. (2011) assessed the estimate of 1000 mature individuals' as 'low' reliability. Only with further survey work on the Tasmanian Azure Kingfisher can the range, population size and conservation status of this subspecies be better defined.

RESERVATION STATUS

Due to the low precision of many database records, it is difficult to provide a clear indication of the reservation status of the Azure Kingfisher in Tasmania. However many sightings are strongly associated with major river systems which are afforded some protection as Public Reserves under the Tasmanian *Crown Lands Act 1998*.

Overlaying database records with the reserve system indicates that sightings (and probably resident subpopulations) are associated with the following reserves under the Tasmanian *Nature Conservation Act 2002*: Arthur-Pieman Conservation Area, Franklin-Gordon Wild Rivers National Park, Southwest Conservation Area, Mount Dundas Regional Reserve, Southwest National Park, Rocky Cape National Park, Donaldson River Nature Recreation Area, and historically Maria Island National Park and Mount William National Park.

Several sightings are associated with major river systems located on State forest, the majority of which are afforded management protection through Forestry Tasmania's Management Decision Classification system (Orr & Gerrand 1998).

CONSERVATION STATUS

The Azure Kingfisher was listed in 2001 as endangered on the Tasmanian *Threatened Species Protection Act 1995*, meeting criterion C: total population estimated to number fewer than 2,500 mature individuals, specifically criterion C2: a continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of a(i): severely fragmented (i.e. no subpopulation estimated to contain more than 250 mature individuals).

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Identifying specific threats, and the magnitude of the threats to the population, is complex because of the apparently disjunct distribution of the species, combined with its usually low population numbers and the infrequency of sightings. There is no long-term monitoring project on the Azure Kingfisher (or other riverine birds) that can provide useful data on demographic and distributional changes to the species.

Whitebait fishery: The distribution of historical whitebait fishing in Tasmania overlaps substantially with the reported historical and present distribution of the Azure Kingfisher (Thomas 1979), and this has been noted as a possible threat to the species (Garnett & Crowley 2000). Blackburn (1950) noted that fishing usually occurred between August and October. Wapstra et al. (2010) considers that there is very little evidence to suggest that the Azure Kingfisher is affected by fluctuations in whitebait numbers (and therefore illegal or legal fishing) because many sightings are strongly associated with known sites for whitebait accumulations such as at weirs on many river systems including Deep Creek, Rubicon River, Gawler River and others.

Habitat clearing and disturbance: Many major river systems that may have supported the Azure Kingfisher have had extensive clearing of the riparian vegetation, and this may have contributed to the localised extinctions of the species from some localities. However, many river systems in eastern and northeastern Tasmania have extensive sections in very good condition with respect to natural riparian vegetation and water quality. Some sections of northwestern river systems have been historically extensively cleared to their banks but broadscale clearing of forest from streamside reserves is no longer permitted under State legislation, so this threat is likely to now be minor.

Other factors: A range of other activities have been suggested as potential threats to the Tasmanian Azure Kingfisher but have been poorly documented. These include acid mine drainage from tailings dams, bridge construction, river cruise and recreational boating alteration to riverbanks, collision with windows and vehicles, and willow removal (Shields 1994, Higgins 1999, Wapstra et al. 2010, Wapstra pers. comm.).

Dams: Fluctuating water levels may flood nest tunnels drilled low in the banks of large streams (Shields 1994). While many Tasmanian river systems are affected by dams and weirs,

including major hydro-electric impoundments on some of the west and southwest rivers, the degree of impact on the Azure Kingfisher is entirely unknown. It appears that small in-stream barriers such as weirs may enhance localised feeding opportunities for the kingfisher taking advantage of backed up schools of small fish.

Willow removal: There is some anecdotal evidence that the Azure Kingfisher may benefit locally by infestations of in-stream willows, which create slow-moving to still backwaters on some drainage systems and allow schools of small fish to back up at certain times of the year. Willow removal may remove both the opportunity for the fish to school and also remove perching sites for fishing birds. Wapstra et al. (2010) suggested that well-intentioned riparian rehabilitation activities may have a possible, albeit localised spatially and probably temporally, adverse impact on the Azure Kingfisher.

MANAGEMENT STRATEGY

What has been done?

There is currently no Recovery Plan for the Tasmanian Azure Kingfisher.

Management objectives

The main objective for the management of the Azure Kingfisher in Tasmania is to reduce the extinction risk to the species by maintaining quality of potential habitat and protecting known breeding sites to ensure maintenance of population numbers.

What is needed?

The following actions are recommended:

- To improve understanding of the status of the species – assess population size to establish a baseline for future monitoring;
- To improve protection of the species – characterise occupied and unoccupied streams in terms of water quality, prey availability and likely threatening processes;
- To improve understanding of the status of the species – conduct surveys of streams in northwest, west and central Tasmania;
- To improve protection of the species – assess the possibility of establishing a captive population;
- To improve protection of the species – investigate remedial action based on habitat quality assessments;
- To improve protection of the species – support the Private Land Conservation Program (DPIPWE) for conservation covenanting of private land supporting potential habitat, and ensure that current priorities for the species are incorporated into the program's reservation strategies;
- To improve protection of the species – provide information and extension support to Natural Resource Management committees, local councils, government agencies, the local community and development proponents on the locality, significance and management of potential habitat of the Azure Kingfisher.

BIBLIOGRAPHY

Blackburn, M. (1950). The Tasmanian whitebait, *Lovettia seali* (Johnston), and the whitebait fishery. *Australian Journal of Marine and Freshwater Research* 1(2): 155–198.

Forest Practices Board (2000). *Forest Practices Code 2000*. Forest Practices Board, Hobart, Tasmania.

Garnett, S.T. & Crowley, G.M. (2000). *Action Plan for Australian Birds 2000*. Environment Australia, Canberra.

Garnett, S.T, Szabo J.K. & Dutson, G. (2011). *The Action Plan for Australian Birds 2010*. CSIRO Publishing.

Green, R.H. (1995). *Birds of Tasmania: An Annotated Checklist with Illustrations*. Potoroo Publishing, Launceston.

Higgins, P.J. (ed). (1999). *Handbook of Australian, New Zealand and Antarctic Birds. Vol. 4. Parrots to Dollarbird*. Oxford University Press, Melbourne.

Hollands, D. (1999). *Kingfishers & Kookaburras*. Reed New Holland, Sydney.

Inland Fisheries Service (IFS) (2006). *Whitebait Fishery Management Plan (September 2006)*.

Morcombe, M. (2003). *Field Guide to Australian Birds*. Steve Parish Publishing, Archerfield, Queensland.

Orr, S. & Gerrand, A.M. (1998) Management decision classification: A system for zoning land managed by Forestry Tasmania. *Tasforests* 10: 1–14.

Schodde, R. & Mason, I.J. (1976). Infra-specific variation in *Alcedo azurea* Latham (Alcedinidae). *Emu* 76(4): 161–166.

Shields, J. (1994). *Azure Kingfisher*. In: Cuckoos, *Nightbirds & Kingfishers of Australia*. (Ed. R. Strahan). The National Photographic Index of Australian Wildlife, Angus & Robertson, Sydney.

Thomas, D. (1979). *Tasmanian Bird Atlas*. Fauna of Tasmania Handbook No. 2. University of Tasmania, Hobart.

Wapstra, M., Bryant, S. & Bell, P. (2010). Conservation overview of the azure kingfisher *Ceyx azureus* subsp. *diemenensis* in Tasmania. *Tasmanian Bird Report* 34: 8–23.

Prepared in July 2011 by Mark Wapstra under the provisions of the Tasmanian *Threatened Species Protection Act 1995*. Approved by the Secretary and published in February 2012.

Cite as: Threatened Species Section (2012). *Listing Statement for* Ceyx azureus *subsp.* diemenensis *(Azure Kingfisher)*. Department of Primary Industries, Parks, Water and Environment, Tasmania.

View:
www.dpipwe.tas.gov.au/threatenedspecieslists

Contact details: Threatened Species Section, Department of Primary Industries, Parks, Water and Environment, GPO Box 44, Hobart, Tasmania, Australia, 7001. Phone (03) 6233 6556; fax (03) 6233 3477.

Permit: A permit is required under the *Tasmanian Threatened Species Protection Act 1995* and *Nature Conservation Act 2002* to "take" (which includes kill, injure, catch, damage, destroy and collect), keep, trade in or process any specimen or products of a listed species. Additional permits may also be required under other Acts or regulations to take, disturb or interfere with any form of wildlife or its products, e.g. on reserved land.