

Pardalotus quadragintus

Forty-spotted Pardalote

TASMANIAN THREATENED SPECIES LISTING STATEMENT

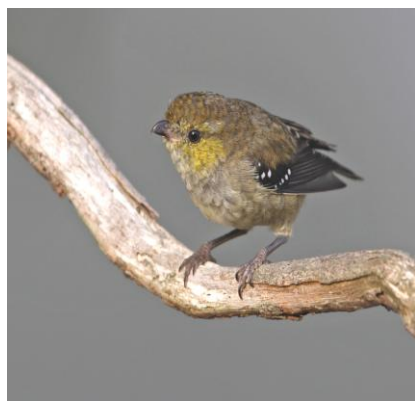


Image by Chris Tzaros

Common name: Forty-spotted Pardalote

Scientific name: *Pardalotus quadragintus* Gould, 1838

Group: Vertebrate, Aves (birds), Passeriformes, Pardalotidae

Status: *Threatened Species Protection Act 1995:* **endangered**
Environment Protection and Biodiversity Conservation Act 1999:
Endangered
IUCN Red List: **Endangered**

Distribution: Endemic status: **Endemic**
Tasmanian NRM Regions: **South, North**

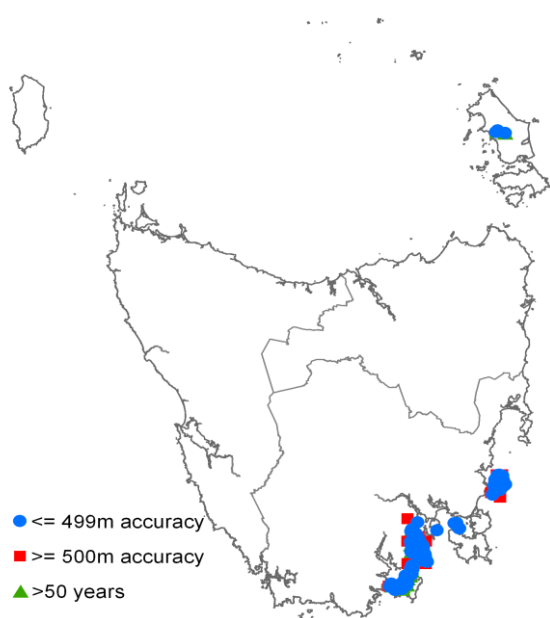


Figure 1. 2011 distribution of the Forty-spotted Pardalote, showing NRM regions



Plate 1. Adult Forty-spotted Pardalote (Image by P. Geard)

SUMMARY

The Forty-spotted Pardalote (*Pardalotus quadragintus*) is a tiny bird found only in Tasmania. It now occurs in only a few small areas of dry forest that contain *Eucalyptus viminalis* (White Gum) trees, on which it is exclusively dependent. Core habitat includes any White Gum forest within 3 km of the east coast from St Helens to Southport. Potential habitat is any White Gum forest 3-5 km from the east coast from St Helens to Southport. Recent surveys found a 60% population decline in 17 years, to around 1500 individuals. The major threat to the species is loss and degradation of habitat through clearing, conversion, drought or dieback. Forty-spotted Pardalote colonies can also disappear with habitat fragmentation and human disturbance such as housing and roading. Substantial efforts are required to protect the species, including reservation and covenanting of habitat, improved community awareness of the issues, as well as regeneration of White Gum. Loss even of single White Gum trees may significantly reduce a colony's survival prospects.

IDENTIFICATION AND ECOLOGY

The Forty-spotted Pardalote (*Pardalotus quadragintus*) is a small passerine (perching bird) and one of four pardalote species in the family Pardalotidae. Pardalotes are typically insectivorous birds which occur in dry sclerophyll forests and woodlands across Australia. All are similar in appearance and have rounded wings, short tails, and plumage characterised by spots or streaks and bright red or yellow markings (Woinarski 1983, Higgins & Peter 2002). The Forty-spotted Pardalote is endemic to Tasmania.

Forty-spotted Pardalotes measure about 10 cm (8.5-11 cm) in length, have a wingspan of 18 cm and weigh about 11 g (Higgins & Peter 2002). Their body colour is mainly olive grey on the back and greyish white on the front with a pale-olive wash to the sides of the breast and flanks. They have yellow cheeks and undertail-coverts which brighten in colour during the breeding season. The feathers on the head and nape are faintly scalloped but have no definite head

markings. The wings are black and each feather terminates with a characteristic large white spot. The bill is short and dark with a small overhang and the legs and feet are fleshy-brown.

Forty-spotted Pardalotes have a low tone contact call 'where..where... where..where...' made infrequently in short bursts and rapid succession. During the breeding season the male makes a distinctive 'koochow...koochow...' call.

The Forty-spotted Pardalote regularly co-occurs with the more widely distributed Striated Pardalote and Spotted Pardalote. All three pardalote species are similar in size and behaviour and at times will forage together.

Forty-spotted Pardalotes feed mainly on invertebrates, lerps and manna, which they take aerially or glean from branches and leaves high in the canopy of eucalypts (Woinarski & Bulman 1985). A lerp is the waxy sugary coating of the larval stage of psyllid insects. Manna is a white sugary substance formed at the damage point of branches.

Forty-spotted Pardalotes breed from August to December and can lay two clutches of 4 to 5 pure white eggs per season (Higgins & Peter 2002). The species uses hollows and crevices in live or dead eucalypts, fallen limbs, fence posts, and occasionally holes in the ground for nest sites (Brown 1986, Bulman et al. 1986). The eggs are incubated for 16 to 20 days, with both adults sharing in the incubation and feeding of chicks. Young are fledged at approximately 25 days of age (Bulman et al. 1986, Higgins & Peter 2002).

Forty-spotted Pardalotes are territorial, relatively sedentary and form permanent breeding colonies around their critical habitat tree, White Gum (*Eucalyptus viminalis*). The species' movements are not well known but there is local post-breeding dispersal by juveniles. Dispersal is unlikely to be extensive as the species' wing shape is unsuitable for long distance travel (Woinarski & Bulman 1985) and they are not strong fliers. Pairs are probably monogamous, and remain together for several seasons.

Survey techniques

To survey for the presence of the Forty-spotted Pardalote, the surveyor needs to be highly familiar with the species (including calls). Walk slowly throughout areas of suitable White Gum habitat listening for calls and actively scanning all White Gum canopies for any sign of pardalote movement. If movement is detected then the species needs to be positively identified using binoculars. New methods using repeated site visits and stationary point counts are currently being trialled (M. Webb, Threatened Species Section); multiple surveys are likely to be required to be confident that the species is absent from an area, particularly where birds occur at low densities.



Plate 2. Nest hole, Dennes Hill (image by S. Bryant)

Confusing species

Juvenile Spotted and Striated Pardalotes are often misidentified as Forty-spotted Pardalotes due to their lack of head markings, duller body plumage and similarity in foraging behaviour (Bulman *et al.* 1986). In the absence of calls, binoculars are essential to confirm the species' markings on the head and colouration of the vent. Confusion can also occur during the breeding season as the Striated Pardalote makes a similar breeding call and the Black-headed Honeyeater (*Melithreptus affinis*) often produces a short vocalisation similar to the contact call of the Forty-spotted Pardalote.

DISTRIBUTION AND HABITAT

Historical records confirm the Forty-spotted Pardalote once occurred on King Island, Flinders Island, along the north-west coast to Wynyard, at sites in the central highlands, and

well down the east coast from Bridport to Southport (Higgins & Peter 2002, TSS 2006). Despite this seemingly wide distribution, the species was considered uncommon and rare (Littler 1910, Milledge 1980, Woinarski & Bulman 1985).

Surveys conducted during the 1980s (Brown 1986, 1989) confirmed the species had declined in range and was confined to small colonies on offshore islands, headlands and peninsulas down the east coast of Tasmania. Colonies were found on Flinders Island, Maria Island, Bruny Island, Tasman Peninsula, the slopes of Tarooma, Tinderbox Peninsula and Coningham Peninsula. Survey work during the 1990s (Bryant 1992, 1997, 1998) re-confirmed most of these sites and reported a new small population at Howden. A re-assessment of the species in 2009 to 2010 found that the species had maintained its previous range, although most of the colonies have undergone a significant decline in number (Bryant 2010).

The Forty-spotted Pardalote is linked exclusively to one tree species, White Gum *Eucalyptus viminalis*. Permanent colonies are formed around stands of White Gum and the species only occurs in forest communities containing this eucalypt species. Core habitat for the Forty-spotted Pardalote includes any White Gum on Flinders Island and within 3 km of the east coast from St Helens to Southport, and potential habitat is any White Gum forest 3 to 5 km from the east coast from St Helens to Southport.

The main forest communities containing White Gum (Brereton *et al.* 1997) are listed below (equivalent vegetation communities in the DPIPWE TASVEG classification in brackets):

- White Gum grassy forest (DVG);
- White Gum coastal shrubby forest on Holocene sand (DVC);
- dry Stringybark (*E. obliqua*) forest (DOB);
- White Peppermint (*E. pulchella*) - blue gum (*E. globulus*) – White Gum grassy shrubby dry sclerophyll forest (DPU);

- Black Gum (*E. ovata*) – White Gum forest (DOV);
- Black Peppermint (*E. amygdalina*) forest on a sandstone substrate (DAS);
- East coast wet viminalis (WVI).

POPULATION PARAMETERS

The first estimate of the total population size of the Forty-spotted Pardalote was of less than 850 birds in 8 discrete geographic locations (Rounsevell & Woinarski 1983). During the mid 1980s, a detailed assessment generated a total population estimate of $3,520 \pm 704$ birds at six locations (Brown 1986, 1989). During the 1990s a similar population size of $3,840 \pm 768$ birds was estimated at four of the previous six locations (Bryant 1995, Bryant & Jackson 1999).

A re-assessment in 2009 to 2010 generated a total population size estimate of $1,500 \pm 300$ birds (Bryant 2010, Bryant pers. comm.; Table 1), equating to an overall 60% decline in bird numbers across the species' entire range.

RESERVATION STATUS

The Forty-spotted Pardalote is well reserved throughout its range. About 77% of known sites occur in either public or private reserves (3,158 ha) including about 64% of the total habitat located in Maria Island National Park (Bryant 2010). Key colonies are formally reserved in Dennes Hill Nature Reserve, South Bruny National Park, Peter Murrell State Reserve and Conservation Area, Coningham State Reserve, Magazine Nature Reserve, Darling Range Conservation Area, Brougham Sugarloaf Conservation Area, and Strezlecki National Park. Previously occupied colonies on the Tasman Peninsula were reserved at Lime Bay State Reserve and Coal Mines Historic Site.

A large number of colonies on private land have been permanently covenant under Commonwealth assisted programs. Over 500 ha of Forty-spotted Pardalote habitat has been protected by private conservation covenant under the *Tasmanian Nature Conservation Act 2000* and/or management agreements.

CONSERVATION STATUS

The Forty-spotted Pardalote is listed as endangered under the Tasmanian *Threatened Species Protection Act 1995*. The species was listed on the initial establishment of the *Act* based on its listing as endangered in 'Native Vertebrates which are rare or threatened in Tasmania' (Vertebrate Advisory Committee 1994). Reasons for listing were 'Loss of White Gum, nest hollows and competition from aggressive bird species that establish as a result of land clearing'.

Based on current knowledge, the species qualifies as endangered under the Tasmanian *Threatened Species Protection Act 1995* under the following criteria: Criterion A1a: an observed reduction of at least 50% over the last 10 years or within the past three generations of the species (A1), based on direct observation (A1a); and Criterion B1, B2b,c,d,e: Extent of occurrence $<5000 \text{ km}^2$, extent of occupancy $<500 \text{ km}^2$ (B); severely fragmented and known to exist at no more than five locations (B1); continuing observed decline (B2) in area of occupancy (B2b), area of habitat (B2c), number of subpopulations (B2d), number of mature individuals (B2e).

THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

The major threat to the Forty-spotted Pardalote is loss of habitat due to clearing and/or deterioration in the health of White Gum habitat. The 2009-2010 survey found the most likely factor causing the population decline was deterioration in the health of White Gum on Bruny Island and Maria Island due to drought and dieback (Bryant 2010).

Other threatening processes include habitat fragmentation caused by urban sprawl, housing, roading, increased human disturbance, predation by domestic and feral species, and pressure from more aggressive bird fauna. These factors acting singly or in combination with dieback reduce the viability of pardalote colonies and lead to displacement and local extinction. These threats are particularly significant on large feeder colonies that are responsible for supplying dispersing birds.

Listing Statement for Pardalotus quadragintus (Forty-spotted Pardalote)

Table 1. Summary of population estimates for the Forty-spotted Pardalote

No	Location	Tenure	NRM region*	1:25 000 mapsheet	1950 - 1980 Pop. Estimate (col – area)	1986 - 1987 Pop. Estimate (col - area)	1993 - 1997 Pop. Estimate (col - area)	2009 - 2010 Pop. Estimate (col - area)
1	Flinders Island	Conservation area (Broughams Sugarloaf Conservation Area, Darling Range Conservation Areas, Strzelecki National Park)	North	Leventhorpe, Fisher	6 birds (1 col - ? ha)	20 birds (1 col - 20 ha)	70 birds (3 col - 300 ha)	14 (5) birds# (4 col – 350 ha)
2	Maria Island	National Park	South	Darlington, Riedle, Peron	500 birds (many - ? ha)	1687 birds (23 col - 2030 ha)	1687 birds (23 col - 2030 ha)	974 birds (23 col – 2030 ha)
3	Bruny Island	National Park, Nature Reserve, Private, Game Reserve, State Forest, Kingborough Council	South	Adventure Bay, Barnes Bay, Blackmans Bay, Great Bay, Dover, Fluted Cape, Partridge	30 birds (incomplete survey)	1716 birds (72 col - 1628 ha)	1920 birds (76 col – 1622 ha)	450 birds (76 col – 1622 ha)
4	Mt Faulkner, Granton	Private	South	New Norfolk, Collinsvale	2 - 26 birds (2 col – 20 ha)	0 birds No data	0 birds 3 general areas	Not assessed
5	Taroona	Private	South	Taroona	Unknown	0 birds (2 col - 3 ha)	6 birds (1 col - 2 ha)	0 birds (1 col – 2 ha)
6	Howden	State Reserve & Conservation Area, Kingborough Council, Private	South	Blackmans Bay	Unknown	unknown site	20 birds (1 col - 10 ha)	10 birds (1 col – 12 ha)
7	Tinderbox	Private, Nature Reserve, Kingborough Council	South	Blackmans Bay	75 – 150 birds (many - ? ha)	75 birds (6 col - 73 ha)	137 birds (12 col - 108 ha)	46 birds (12 col – 111 ha)
8	Coningham	Nature Recreation Area	South	Barnes Bay	30 birds (2 col - ? ha)	10 birds (2 col - 8 ha)	0 birds (2 col - 8 ha)	6 birds (2 col – 8 ha)
9	Lime Bay & Coal Mines	State Reserve & Historic Site	South	Cremorne	20 – 40 birds (4 col - ? ha)	12 birds (4 col - 27 ha)	0 birds (4 col - 27 ha)	0 birds (4 col – 27 ha)
	Total				850 birds (incomplete)	3,520 birds (110 col – 3,789 ha)	3,840 birds (122 col - 4,107 ha)	1,500 birds (123 col – 4,162 ha)

* NRM region = Natural Resource Management region, # extrapolated population size from 2011 survey (5 birds observed); sources: Brown (1986, 1989), Bryant (1997, 2010), Bryant & Jackson (1999), Bulman et al. (1986), Rounsevell & Woinarski (1983), TSS (2006). Note: Colonies include all new and previously known sites which retain intact habitat.

MANAGEMENT STRATEGY

Management objectives

- Maintain and improve total habitat area, especially in and around colonies, and prevent habitat losses;
- Maintain and improve habitat quality by protecting White Gum and encouraging regeneration;
- Assess potential habitat including identification of priority areas for protection;
- Continue to improve reservation status and/or develop management agreements with private landowners;
- Prevent habitat loss or encroachment within or near urban areas;
- Improve understanding of the species' ecology and interaction with other bird species, especially other pardalote species;
- Assess and monitor subpopulations;
- Involve and educate the community.

What has been done?

The first national Recovery Plan (Bryant 1991) was implemented with partial funding from 1992 to 1997. Achievements included:

- Known habitat of the species increased under reservation;
- New colonies were identified on Flinders Island, Howden and Bruny Island;
- Dennes Hill on Bruny Island was donated to the Crown and proclaimed a Nature Reserve;
- Walkers Hill on Flinders Island was acquired by the Crown through a land swap and proclaimed a Nature Reserve;
- 280 ha of Crown Land on Flinders Island was incorporated into the Broughams Sugarloaf Conservation Area during the *Regional Forest Agreement*, increasing the species reservation status to 66% of known colonies by area;

- Management prescriptions were developed and incorporated into commercial forestry practices and local government planning processes;
- The Forty-spotted Pardalote is included in the *Threatened Fauna Adviser*, a decision-support system used by the forest industry to take account of threatened fauna in wood production forests (FPB 2000, 2002). Consultation between the Forest Practices Authority and DPIPWE is required under the protocols for managing threatened species in wood production forests (FPB 2000);
- Several thousand White Gum seedlings were grown and distributed to landowners;
- Listing Statement produced (Threatened Species Unit 1998);
- A major publicity campaign including a case study video increased public awareness on the species' plight;
- Honours project completed on Forty-spotted Pardalote foraging behaviour and habitat selection (Dorr 1999).

The second national Recovery Plan (TSS 2006) was prepared in 2005 and implemented with partial funding from 2006 to 2010. Achievements included:

- Increased protection of colonies on private land through perpetual covenants and management agreements, increasing the species reservation status to 77%;
- Bruny Island Threatened Species Recovery Plan produced (Cochran 2003);
- Post wildfire survey undertaken on Flinders Island (TSS 2005);
- Nest box trial commenced on Bruny Island;
- Trial plantings undertaken on Dennes Hill, Woodlands Estate and other private properties on Bruny Island, and incentive money provided for small scale works (NRM South, Threatened Species Network);

- Increased landholder awareness in threatened species protection through the NRM South Mountain to Marine program;
- A resurvey of the species throughout its entire range (Bryant 2010);
- Masters Thesis at Peter Murrell Reserve, Howden (Iijima 2010).

What is needed?

Implement the actions identified in the national Recovery Plan (2006 – 2010), including:

- Protect and manage known colonies;
- Monitor the population and habitat;
- Identify threats and factors limiting expansion of colonies and colonisation of potential habitat;
- Increase the size of the population and the area of occupancy;
- Maintain community awareness of the species and involvement in recovery actions.

Additional actions now needed include:

1. To avoid further population declines – protect habitat of all Forty-spotted Pardalote colonies, including avoiding damage to single white gums, preferably through reservation or covenant;
2. To support species' recovery through habitat restoration - map all potential habitat containing White Gum 0-3 km from the coast within the species' range and instigate planning mechanisms to protect and restore potential habitat;
3. To support a larger population – regenerate White Gums within or linking key colonies, using seed collected from the planting site;
4. To protect White Gums from damage (they are very prone to dieback) – fence colony habitat to reduce browsing by stock and native animals;
5. To recover populations – research feasibility of relocation and captive breeding;

6. To reduce potential competition with introduced species for tree hollow nest sites – continue coordinated nest box trial (vary designs and placements);

7. To test whether conservation management is effective – continue standardised annual monitoring of all populations;

8. To increase understanding of current distribution and population structure – expand survey effort on Flinders Island including the potential for genetic studies;

9. To improve protection of the species – identify all Forty-spotted Pardalote colonies on property titles to ensure colonies are not lost with land sales. This action can then be used to identify critical habitat for the species for listing under the Tasmanian *Threatened Species Protection Act 1995*;

10. To reduce potential competition with native species – increase the research effort into competitor species (e.g. striated pardalote, black-headed honeyeater) and aggressive birds (e.g. noisy miner, kookaburra, butcherbird and raven);

11. To assist in preserving the species – assemble a Recovery Team and convene a Forty-spotted Pardalote workshop to reinvigorate and expand community involvement in recovery actions;

12. To assist in preserving the species – ensure the species receives priority focus in the National Woodland Birds for Biodiversity Project (2009 CFOC grant);

13. To assist in preserving the species – liaise with Kingborough Council to improve awareness of colony locations and the importance of White Gum protection, and preventing loss of trees in trade-arrangements in development proposals;

14. To assist in preserving the species – expand training of volunteers to identify the species with confidence, especially landholders who can then take on monitoring colonies on a more regular basis.

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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.