



Australian Government  
Department of Agriculture,  
Water and the Environment

# Draft National Recovery Plan for *Turnix melanogaster* (Black-breasted Button-quail)



11/2021

The Species Profile and Threats Database pages linked to this recovery plan is obtainable from:

<http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

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## Acronyms

AOO	Area of occupancy
BBBQ	Black-breasted Button-quail
BOM	Bureau of Meteorology
CSIRO	Commonwealth Scientific and Industrial Research Organisation (Commonwealth)
DAWE	Department of Agriculture, Water and the Environment (Commonwealth)
DES	Department of Environment and Science (Queensland)
DPIE	Department of Planning, Industry and Environment (New South Wales)
EOO	Extent of occurrence
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
NGO	Non-government organisation
NSW	New South Wales
Qld	Queensland
SPRAT	Species Profile and Threats
TSSC	Threatened Species Scientific Committee

# 1. Summary

**Common name:** Black-breasted Button-quail

**Scientific name:** *Turnix melanogaster*

**Family:** Turnicidae

**Current status of taxon:**

1. *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth): Vulnerable
2. *Nature Conservation Act 1992* (Qld): Vulnerable
3. *Biodiversity Conservation Act 2016* (NSW): Critically Endangered
4. IUCN Red List of Threatened Species: Near threatened

## 1.1 Species description, distribution and habitat

The Black-breasted Button-quail is a large, plump, white-eyed button-quail which ranges in size from 16–19 cm in length. It has a grey bill and pale yellow legs. The plumage is of a brown, black, white and grey complexion. The chest is black with half-moon markings in white. The distinguishing feature between the male and female is that the male has a white face and throat while the female has a black face and throat. The juvenile bird resembles the male but is slightly duller in colouration.

The core population of the Black-breasted Button-quails is now considered to be confined to south-eastern Queensland from near Byfield in the north to the Border Ranges in the south, and as far west as Palmgrove National Park and Barakula State Forest. They may now be locally extinct in New South Wales (DPIE 2021a). Many occupied patches of habitat are widely separated, either naturally by open forest, on islands or artificially by cleared agricultural land. However, there are sufficient records of vagrants (e.g. Smyth et al. 2001), including in small islands of habitat, to suggest that mobility is not constrained and that there is a single dispersed population (Webster et al. 2021).

The species' preferred habitats include vine thickets, softwood scrubs, bottle tree scrubs, vine scrub regrowth, Lantana *Lantana camara* and other shrubs under mature plantations of Hoop Pine *Araucaria cunninghamii*, and Acacia and *Austromyrtus* scrubs on sandy coastal soils. Small groups of button-quails are known to search in the leaf litter for invertebrates and seeds (Webster et al. 2019; Webster et al. 2021). A deep, well-developed and extensive leaf-litter layer is preferred for foraging.

## 1.3 Recovery Plan Vision, Objective, and Strategies:

### 1.3.1 Long-term vision

The Black-breasted Button-quail population has increased in size to such an extent that the species no longer qualifies for listing as threatened under any of the *Environment Protection and Biodiversity Conservation Act 1999* listing criteria.

### 1.3.2 Recovery plan objectives

By 2032, maintain and improve the extent, condition and connectivity of habitat of the Black-breasted Button-quail.

By 2032, demonstrably reduce the severity of identified anthropogenic threats across the extent of the species' range.

By 2032, achieve, measure and sustain a positive population trend (assessed by new baseline counts) in the number of mature individuals of the Black-breasted Button-quail.

This will be achieved by implementing the actions set out in this Recovery Plan that minimise threats while protecting and enhancing the species' habitat throughout its range, adequately monitoring the species, generating new knowledge to guide recovery actions and increasing public awareness.

### **1.3.3 Strategies to achieve objectives**

1. Implement management strategies to reduce threats to the Black-breasted Button-quail and its habitat.
2. Enhance protection, improve the quality and increase the extent of suitable habitat for the Black-breasted Button-quail.
3. Improve knowledge of the distribution, biology and ecology of the Black-breasted Button-quail and implement a monitoring strategy to identify and measure population trends.
4. Increase stakeholder participation in Black-breasted Button-quail conservation and management.
5. Coordinate, review and report on recovery progress.

### **1.4 Criteria for success**

This recovery plan will be deemed successful if, within 10 years, all of the following have been achieved:

- The Black-breasted Button-quail population has been adequately monitored and an increase in the population from new baseline counts is recorded, as a result of recovery actions.
- Threats within the range of the Black-breasted Button-quail are managed, and reduced to avoid or mitigate impacts on their habitats.
- There has been an improvement in the quality and extent of Black-breasted Button-quail habitat throughout the species' range and a network of sites is protected and managed for the species.
- Understanding of the species' ecology has increased, in particular knowledge of movement patterns, habitat use and breeding ecology.
- There is increased participation by key stakeholders and the public in recovery efforts and monitoring.

### **1.5 Recovery team**

Recovery teams provide advice and assist in coordinating actions described in recovery plans. They include representatives from organisations with a direct interest in the recovery of the species, including those involved in funding and those participating in actions that support the recovery of the species.

The Black-breasted Button-quail Recovery Team has the responsibility of providing advice, coordinating and directing the implementation of the recovery actions outlined in this recovery plan. The membership of the Recovery Team includes individuals with relevant government agencies, non-government organisations and expertise from independent researchers and community groups.



## 2. Introduction

This document constitutes the ‘*National Recovery Plan for Black-breasted Button-quail Turnix melanogaster*.’ The plan considers the conservation requirements of the species across its range and identifies the actions to be taken to ensure the species’ long-term viability in nature, and the parties that will undertake those actions.

This recovery plan supersedes the previous recovery plan (Mathieson & Smith 2009) that was adopted under the EPBC Act in November 2009.

The previous Black-breasted Button-quail recovery plan (Mathieson & Smith 2009) was reviewed in January 2021 by the Department of Agriculture, Water and the Environment. The review noted that since the adoption of the recovery plan in 2009, a small amount of progress had been made in facilitating the conservation of the species. Most effort was directed towards defining and mapping habitat and developing species specific survey methods. However, most actions were still to be initiated or progress on these actions could not be tracked. Many of the actions identified in the recovery plan were still deemed relevant for recovering the species. The review noted that lack of on-ground investment was the primary limiting factor in achieving the stated objectives. Success of the recovery plan was also limited by the availability of knowledgeable and experienced personnel to undertake recovery actions.

The review determined that the actions required to conserve and promote recovery of the species include short- and long-term activities that need to be coordinated at a landscape/regional level with a range of stakeholder groups. The review concluded a new recovery plan should be developed for Black-breasted Button-quail. The Black-breasted Button-quail recovery plan is available from:

<https://www.environment.gov.au>

Accompanying Species Profile and Threats Database (SPRAT) pages provide background information on the biology, population status and threats to the species. SPRAT pages are available from:

[http://environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon\\_id=923](http://environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=923)

### 2.1 Conservation status

The Black-breasted Button-quail is a listed threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The species is also listed under State Legislation (Table 1).

The species was eligible for listing under the EPBC Act as on 16 July 2000 it was listed as Vulnerable under Schedule 1 of the preceding Act, the *Endangered Species Protection Act 1992* (Cwlth).

**Table 1: National and state conservation status of the Black-breasted Button-quail**

Legislation	Conservation Status
<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwth)	Vulnerable
<i>Nature Conservation Act 1992</i> (Qld)	Vulnerable
<i>Biodiversity Conservation Act 2016</i> (NSW)	Critically Endangered



## 2.2 Taxonomy

Conventionally accepted as *Turnix melanogaster* (Gould 1837).

## 2.3 Species description

The Black-breasted Button-quail is a relatively large, plump, white-eyed button-quail. Males are about 18 cm long, with a wingspan of 32–35 cm, and weigh approximately 65 g. Females are larger, measuring up to 19 cm and weighing up to 150 g (Marchant & Higgins 1993; P Webster unpublished data). The sexes differ in plumage and there is no seasonal variation. Males have finely patterned backs and wings with brown, black, grey and white mottling. The face and throat are whitish, and the breast is black with numerous white half-moon markings. The female is similar in all respects except for having a black face and throat, a larger dark area over the upper and lower breast with heavier white half-moon markings. The bill is grey, and the legs are bright yellow. Juveniles resemble males but are duller (Marchant & Higgins 1993).

Males, juveniles and immature birds may be confused with the Painted Button-quail (*Turnix varius*) which sometimes occur in both the drier and moister parts of the environment occupied by Black-breasted Button quail (Marchant & Higgins 1993), the dark breast and white eye of the Black-breasted Button-quail are features which can be used to separate the two species.

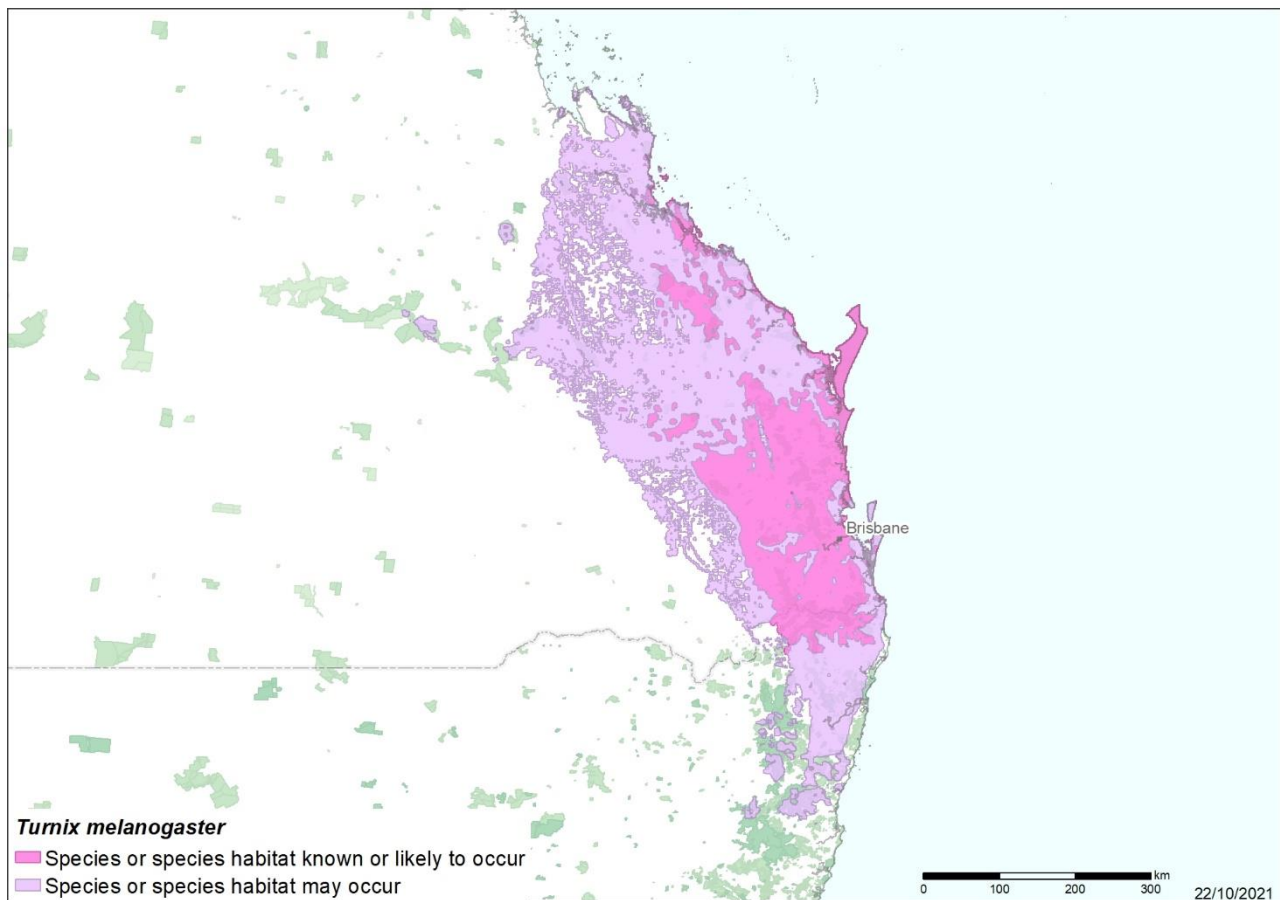
## 2.4 Species distribution in Australia

Black-breasted Button-quail are now thought to be confined to south-eastern Queensland from near Byfield in the north to the Border Ranges in the south and as far west as Palmgrove National Park and Barakula State Forest (Figure 1). While they may now be locally extinct from New South Wales (DPIE 2021; Webster et al. 2021), their range may extend further north as historical records from Queensland's Wet Tropics (Le Souef 1897; Bravery 1970) are not necessarily implausible given that Spotted Quail-thrushes *Cinclosoma punctatum* remained undetected in the region until recently (Webster et al. 2021).

Many occupied patches of suitable habitat are widely separated, either naturally by open forest, on islands or artificially by cleared agricultural land. However, there are sufficient records of vagrants (e.g. Smyth et al. 2001), including on small coastal islands, to suggest that mobility is unconstrained and that there is a single dispersed population (Webster et al. 2021). Their apparent absence from a 40 hectare site at Redwood Park in south-east Queensland from January to March, and well into winter in wetter years, suggests some movements may be regular (RP Jaensch unpublished, cited in Webster et al. 2021). However, further studies are needed to determine if such seasonal movements are common in other Black-breasted Button-quail populations.

Recent targeted camera trapping surveys in the Great Sandy Region collectively; K'gari (Fraser Island), Cooloola and Inskip Peninsula demonstrated species presence in littoral forest along the eastern coast of K'gari (Fraser Island) and Cooloola (Webster et al. 2021a). This suggests Black-breasted Button-quail are widely distributed along the east coast of the Great Sandy Region and in a few isolated inland sites. (Webster et al. 2021a)

**Figure 1: Modelled distribution of Black-breasted Button-quail.**



Source: Base map Geoscience Australia; species distribution data [Species of National Environmental Significance](#) database.

## 2.5 Population trends

Monitoring of Black-breasted Button-quail is very poor and population estimates remain uncertain (Garnett et al. 2011; Webster et al. 2021). The species is too cryptic in both appearance and behaviour for birdwatcher records to be an effective means for determining trends and there is no publicly available trend data for any sites that are monitored regularly (Webster et al. 2021).

There are estimated to be 4,800 (range 3,000–6,500) mature Black-breasted Button-quail in the wild, however the reliability of this estimate is low (Webster et al. 2021). The population was estimated through expert elicitation but with very little baseline information (Garnett et al. 2011; Webster et al. 2021). The extent of occurrence (EOO) and area of occupancy (AOO) for the species is estimated at 64,000 km<sup>2</sup> (58,000–70,400 km<sup>2</sup>) and 760 km<sup>2</sup> (760–1,000 km<sup>2</sup>), respectively. Both EOO and AOO trends are estimated to be stable with medium reliability (Webster et al. 2021). A continuing decline of small populations is likely as a result of ongoing environmental degradation (Webster et al. 2021).

There is now sufficient evidence to suggest the population is not fragmented, contrary to previous assessments, with movements between disjunct populations highly probable (Webster et al. 2021). For example, the ephemeral presence of the species on offshore islands and in atypical habitat is indicative of a high potential for movement between suitable habitat patches (Webster et al. 2021). The degree of movement between isolated populations remains unknown; however, the species may exist as part of one metapopulation (Webster et al. 2021). Though the species may be suffering the effects of fragmentation (historical and ongoing), even if a level of connectivity is maintained. The species is not

subject to extreme fluctuations in EOO, AOO, number of subpopulations, locations or mature individuals (Webster et al. 2021).

In NSW, multiple records in the three decades prior to 1995, from multiple experienced observers, indicated the presence of Black-breasted Button-quails in the State. However, many of those historical observations are questionable (Milledge 2000; NSW Scientific Committee 2009) and targeted surveys in the late 1990s failed to locate the species (Milledge 2000; M. Andren pers. comm. 1997). There have been no confirmed sightings in over two decades, implying a decline across the range of the Black-breasted Button-quail in NSW (DPIE 2021). Queensland populations occur close to the border and birds could reappear in NSW, however, resident breeding populations may be extinct.

## 2.6 Cultural and community significance

Black-breasted Button-quail are known to occur on the lands of at least the following Indigenous Peoples: Bailai, Butchulla, Danggan Balun, Gooreng Gooreng, Gurang, Jagera, Kabi Kabi, Taribelang Bunda, Quandamoka, Ugarapul and Yuggera (Webster et al. 2021). The Butchulla name for the species is 'Mur'rindum'. The cultural and community significance of the species is not known. Further research into the subject area may benefit the conservation of the species by providing insights about traditional culture and land management.

## 2.7 Relevant biology and ecology

### 2.7.1 Habitat requirements

Black-breasted Button-quail are ground dwellers – nesting, roosting (at night) and feeding on the ground. In Queensland, the ecology of the Black-breasted Button-quail in semi-evergreen vine thicket is moderately well understood (Smith et al. 1998; Lees & Smith 2000), however this is not the case in coastal thickets. Recent targeted camera trapping surveys in the Great Sandy Region collectively; K'gari (Fraser Island), Cooloola and Inskip Peninsula demonstrated species presence in littoral forest along the eastern coast of K'gari (Fraser Island) and Cooloola. This suggests Black-breasted Button-quail are widely distributed along the east coast of the Great Sandy Region and in a few isolated inland sites. (Webster et al. 2021a)

In NSW, suitable habitat remains in the western Border Ranges, Richmond Range, Koreelah and Tooloom Ranges and in the Mt Warning caldera area and associated ranges, but the species has not been reliably recorded since 1995 (Milledge 2000; DPIE 2021). The species' occurrence is strongly correlated with nutrient-rich soils, which is also reflected by the occurrence of their preferred vegetation types.

Black-breasted Button-quail are most frequently reported from:

- Vine thickets and rainforest vegetation types that are periodically water-stressed. These include: semi-evergreen vine thicket, low microphyll vine forest, Araucarian microphyll vine forest, Araucarian notophyll vine forest and *Brachychiton* scrubs that may incorporate bottle trees *Brachychiton* spp., brigalow *Acacia harpophylla* and belah *Casuarina cristata* (Flower et al. 1995).
- Low thickets or woodlands with a dense understorey but little ground cover, typically dominated by *Acacia* spp. (Flower et al. 1995).
- In littoral habitats, dry vine scrubs, acacia thickets and areas densely covered in shrubs, particularly midgen berry *Austromyrtus dulcis* (Marchant & Higgins 1993).
- Regrowth of the above vegetation groups, in most cases adjacent to intact remnants.

- Patches of the introduced weed *Lantana camara*, particularly when associated with the above vegetation types.
- Hoop pine *Araucaria cunninghamii* plantations where there is a dense understorey, usually comprised of the introduced weed *Lantana camara* and then, generally adjacent to the above-listed forest types.
- Wetter subtropical rainforest sometimes in association with moist eucalypt forest in NSW (Garnett & Crowley 2000).

Black-breasted Button-quail habitat may also change when populations are put under intense pressure such as Hervey Bay where birds have been found foraging at the edge of mangroves. Possibly this also indicates Black-breasted Button-quail are less specific to habitat and are capable of utilising habitat not normally considered their critical resource.

### **2.7.2 Feeding ecology**

Black-breasted Button-quail appear to be generalist insectivores (Webster et al. 2019), feeding mostly on invertebrates in the orders Coleoptera (beetles), Formicidae (ants) and Dermaptera (earwigs) (Marchant & Higgins 1993; Webster et al. 2018). The vegetation types described above generally possess a well-developed leaf litter layer between 3 to 10 cm deep. It is through this leaf litter that the Black-breasted Button-quail forages using a technique termed “pivot-feeding”. The birds scratch at the leaf litter with one leg while pivoting the body on the other, thus displacing leaves and soil, exposing invertebrate prey. This scratching produces distinctive circular feeding depressions often termed “platelets” that are between 15 and 25 cm in diameter. All other button-quail species in Australia feed in a similar fashion, although Black-breasted Button-quail typically produce the most completely formed platelets that are often much larger and deeper than other species. This is due to the soft substrate in which the species’ forages.

### **2.7.3 Breeding ecology**

There is little known on the breeding habits of the Black-breasted Button-quail, however they are assumed to breed throughout their contemporary range (Marchant & Higgins 1993). The breeding season occurs from September to April-May (Garnett et al. 2011). The breeding strategy of the species is polyandrous, which means that a female breeds with several males during the one breeding season.

Nests consist of a scrape in the ground measuring 10 cm by 6 cm, that is lined with leaves or moss. Nests are well-concealed and placed in the buttressed roots of a tree or sapling, the base of a fern or under a low bush or grass tussock (Marchant & Higgins 1993). Nests are often in areas where the common understorey plants include species such as bracken *Pteridium esculentum*, rasp fern *Blechnum neohollandicum* (syn. *Doodia aspera*) and lantana *Lantana camara* (Marchant & Higgins 1993). It is not known which sex builds the nest.

Between three and five eggs are laid (Marchant & Higgins 1993). The incubation period in the wild is 18–21 days (Smyth & Young 1996). The female can lay two clutches of eggs 8–10 days apart (Smyth & Young 1996). Eggs are shiny grey-white or buff splotched with dark brown-black and lavender. The eggs measure 28 mm x 23 mm. Females usually produce 3 to 4 young per clutch, which are incubated and tended solely by the male (Marchant & Higgins 1993; Smyth & Young 1996). Generational length is estimated at 3.2 years (range 3.0–3.4 years) with high reliability (Bird et al. 2020).

#### **2.7.4 Communication**

All Black-breasted Button-quail have calls that can be grouped into three categories: 1) advertising “oom”, 2) drumming, and 3) contact clucks (Hughes & Hughes 1991). Each note is comprised of a series of rapidly repeated elements giving the note a tremulous quality. This call type is only given by the females and is thought to be related to territorial and breeding activities (Hughes & Hughes 1991). The drum is a series of deep short rapidly repeated notes given in quick succession often referred to as the motorboat or motorbike call. This vocalisation has only been recorded from the female and is likely related to breeding and territorial activities (Hughes & Hughes 1991). Both sexes give a great diversity of soft clucks trills and whistles (del Hoyo et al. 1992). The role of these calls is undetermined but are likely short-range communications.

#### **2.7.5 Movement patterns**

Female Black-breasted Button-quail are territorial, establishing territories between two and 10 hectares. Birds are commonly seen in pairs or occasionally in small groups, though females are occasionally seen singly (Hughes & Hughes 1991; Marchant & Higgins 1993). The dispersal patterns of this species are poorly understood. They are generally considered to be sedentary, although birds can appear intermittently or as transients in habitats not considered core to the species (Marchant & Higgins 1993; Smith et al. 1998; Lees & Smith 2000; Smyth et al. 2001).

Black-breasted Button-quail are elusive, well-camouflaged and rely on stealth to avoid danger. Birds become immobilised to avoid predation (Marchant & Higgins 1993). They are very reluctant to flush preferring to run when pursued, only taking flight as a last resort.

### **2.8 Key Biodiversity Areas**

The Key Biodiversity Area (KBA) programme aims to identify, map, monitor and conserve the critical sites for global biodiversity across the planet. This process is guided by a Global Standard for the Identification of Key Biodiversity Areas, the KBA Standard (IUCN 2016). It establishes a consultative, science-based process for the identification of globally important sites for biodiversity worldwide. Sites qualify as KBAs of global importance if they meet one or more of 11 criteria in five categories: threatened biodiversity; geographically restricted biodiversity; ecological integrity; biological processes; and, irreplaceability. The KBA criteria have quantitative thresholds and can be applied to species and ecosystems in terrestrial, inland water and marine environments. These thresholds ensure that only those sites with significant populations of a species or extent of an ecosystem are identified as global KBAs. Species or ecosystems that are the basis for identifying a KBA are referred to as Trigger species.

The global KBA partnership supports nations to identify KBAs within their country by working with a range of governmental and non-governmental organisations’ scientific species experts and conservation planners. Defining KBAs and their management within protected areas or through Other Effective Area-based Conservation Measures (OECMS) will assist the Australian Government to meet its obligations to international treaties, such as the Convention on Biological Diversity. KBAs are also integrated in industry standards such as those applied by the Forest Stewardship Council or the Equator Principles adopted by financial institutions to determine environmental risk in projects.

The initial identification of a site as a KBA is tenure-blind and unrelated to its legal status as it is determined primarily based on the distribution of one or more Trigger species at the site. However, existing protected areas or other delineations such as military training areas or commercial salt works will often inform the final KBA delineation, because KBAs are defined with site management in mind

(KBA Standards and Appeals Committee 2019). In practice, if an existing protected area or other designation roughly matches a KBA, it will generally be used for delineating the KBA. Many KBAs overlap wholly with existing protected area boundaries, including sites designated under international conventions (e.g. Ramsar and World Heritage) and areas protected at national and local levels (e.g. national parks, indigenous or community conserved areas). However, not all KBAs are protected areas and not all protected areas are KBAs. It is recognised that other management approaches may also be appropriate to safeguard KBAs. In fact, research from Australia and elsewhere demonstrates the value of Other Effective Area-based Conservation measures in conserving KBAs and their Trigger species (Donald et al. 2019) if the site is managed appropriately. The identification of a site as a KBA highlights the sites' exceptional status and critical importance on a global scale for the persistence of the biodiversity values for which it has been declared for (particular Trigger species or habitats) and implies that the site should be managed in ways that ensure the persistence of these elements. For more information on KBAs visit - <http://www.keybiodiversityareas.org/home>.

The global KBA partnership currently recognises five Key Biodiversity Areas as important for Black-breasted Button-quail conservation and to support the long-term persistence of the species. KBAs are also undergoing a regular revision to ensure changes in IUCN red list status, taxonomic changes, local population trends as well as increased knowledge of the species are reflected accurately in the KBA network. As such, over time, additional KBAs may be recognised for their importance for Black-breasted Button-quail or new KBAs may be declared for this and other taxa. Detailed KBA Factsheets, including boundary maps, population estimates of trigger species and scientific references are for these five areas (and other KBAs) available from the World Database of Key Biodiversity Areas (BirdLife International 2021). The five KBAs with Black-breasted Button-quail as one of their Trigger species were also recognised prior to the introduction of the KBA standard as Important Bird Areas for the species in 2009 based on the analysis of BirdLife Australia. They comprise:

1. [Scenic Rim](#): This KBA consists of a series of contiguous protected areas along the Queensland-New South Wales border. It is defined as the following protected areas: Main Range National Park, Glen Rock Regional Park, Mount Barney National Park, Mount Chinghee National Park, Lamington National Park, Springbrook National Park, Border Ranges National Park, Koreelah National Park, Mebbin National Park, Wollumbin National Park, Mount Clunie National Park, Mount Nothofagus National Park, Mount Warning National Park, Limpinwood Nature Reserve and Numinbah Nature Reserve. The KBA also includes private properties.
2. [Palmgrove](#): 185 km north-north-east of Roma in south-central Queensland. This KBA is designated on the basis of >10 pairs of Black-breasted Button-quail comprising the most-western population. The vegetation is moderately diverse, hosting a variety of eucalypt woodland and forest types as well as vine thicket and acacia thicket communities. These thickets, which comprise the habitat of the Black-breasted Button-quail, occur in very small pockets in other nearby protected areas and State Forests, all of which have been logged, and are not known to support populations of the button-quail.
3. [Conondale Range](#): 125 km north-north-east of Brisbane in the Sunshine Coast hinterland. It comprises a series of protected areas and forest reserves that support either Black-breasted Button-quail or Eastern Bristlebird: the following National Parks: Amamoor, Conondale, Glastonbury and Maleny; and King Conservation Park; and Forest Reserves: Conondale, Elgin, Glastonbury, Imbil 1 & 2, Jimna, Kandanga, Kenilworth, Oakview, Wrattens, Yabba 1 & 2; and State Forests: Amamoor, Brooyar 1 & 2, Conondale, Diaper, Elgin Vale, Gallangowan, Glastonbury, Imbil 1 & 2, Jimna, Jimmys Scrub, Kabunga, King, Marys Creek, Mount Stanley 1, Oakview, Schact Creek,

Squirrel Creek, Sunday Creek, Upper Kanganga, Wrattens, Yabba; and Conondale Resources Reserve. These areas are largely but not entirely connected and, as a whole, are surrounded by land cleared for agriculture and farming.

4. [Bunya Mountains and Yarraman](#): This KBA is triggered by the presence of a large population of Black-breasted Button-quail and is defined as the following national parks: Bunya Mountains, Tarong, Mt Binga, Pidna and The Palms, and Bunya Mountains National Park (Recovery) and Conservation Park; and the following state forests: Archookoora, Benarkin, East Nanango, Gibson, Googa, Mt Binga, Pidna, South Nanango, Tarong and Yarraman. The Black-breasted Button-quail population within the KBA is thought to be the largest in the world. The presence of this species at more than 1,000 m above sea level in the adjacent Bunya Mountains is unusual as the species is not generally found over 500 m elsewhere.
5. [Cooloola and Fraser Coast](#): situated approximately 175 km north of Brisbane in coastal south-eastern Queensland. It consists of the K'gari (Fraser Island) and Cooloola sections of Great Sandy National Park and the intervening land of Inskip Point, excluding the township of Rainbow Beach. This area is a huge sand mass, which supports a wide range of coastal vegetation communities including vine thickets, wallum swamps and open forests and woodlands. This KBA is designed to capture a large population of Black-breasted Button-quail, estimated to possibly support 250 breeding females. The climate is subtropical with warm winters, hot summers and mean annual rainfall of more than 1,200 mm.

## 2.9 Habitat critical to the survival

Habitat critical to the survival or important habitats of a species or ecological community refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal;
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators);
- to maintain genetic diversity and long-term evolutionary development; or
- for the reintroduction of populations or recovery of the species or ecological community.

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and/or habitat listed on the Register of Critical Habitat maintained by the Minister under the EPBC Act.

Habitat critical to the survival of the Black-breasted Button-quail includes:

### *Foraging and breeding habitat:*

- Vine thickets and rainforest vegetation types that are periodically water-stressed. These include: semi-evergreen vine thicket, low microphyll vine forest, Araucarian microphyll vine forest, Araucarian notophyll vine forest and *Brachychiton* scrubs that may incorporate bottle trees *Brachychiton* spp., brigalow *Acacia harpophylla* and belah *Casuarina cristata*.
- Low thickets or woodlands with a dense understorey but little ground cover, typically dominated by *Acacia* spp.
- In littoral situations, dry vine scrubs, acacia thickets and areas densely covered in shrubs, particularly midgen berry *Austromyrtus dulcis*.



- Regrowth of the above vegetation groups, in most cases adjacent to intact remnants.
- Wetter subtropical rainforest sometimes in association with moist eucalypt forest in NSW.

*Habitat for the long-term maintenance of the species:*

- All Key Biodiversity Areas with Black-breasted Button-quail as a Trigger species.
- Suitable habitat in future climate niches as information becomes available.

When populations are placed under intense pressure this species will be found in other habitats, such as those displaced populations in Hervey Bay which were found foraging at the edge of mangroves. These adjacent habitats may provide a temporary refugia when more critical habitat is no longer available.

### **2.9.1 Key considerations in environmental impact assessments**

When considering habitat loss, alteration or likely degradation to habitat in any part of the Black-breasted Button-quail range, including in areas where the species 'may occur', surveys for occupancy at the appropriate times of the year and identifying preferred habitat remain an important tool in refining understanding of the area's relative importance for the species. The species' pattern of habitat use means that both recent survey data and historical records need to be considered when assessing the relative importance of a local area or region for Black-breasted Button-quail.

Black-breasted Button-quail also utilise patches of the introduced weed *Lantana camara* (particularly when associated with the above vegetation types), and hoop pine plantations with dense understorey (generally adjacent to the above-listed forest types). For the purposes of this recovery plan, these modified habitats are not considered 'habitat critical to the survival' of Black-breasted Button-quail. However, logging, clearing or weeding of these areas may pose a risk to small populations of button-quail and should be carried out sensitively. Land managers need to ensure that weed control measures include strategic, staged replacement of weed thickets with native plant species that form similarly dense patches of habitat.

Whenever possible, habitat critical to the survival of the species should not be destroyed or modified. Actions that have indirect impacts on habitat critical to the survival should be minimised and adequately mitigated (e.g. noise). Actions that compromise adult and juvenile survival should also be avoided, for example, the transmission and introduction of diseases, and actions that might increase predation threat from both native and introduced predators. Actions should not be assessed in isolation and consideration must be given to existing and future activities that may impact the species to ensure conservation outcomes on a landscape scale are achieved.

Actions that remove, fragment and/or degrade habitat critical to the survival would interfere with the recovery of the Black-breasted Button-quail and reduce the area of occupancy of the species. It is important to retain all of the diversity of habitats utilised by this species described above. If removal of habitat critical to the survival of the species cannot be avoided or mitigated, then an offset should be provided. Suitable offsets may include:

- Restoration of habitat and the improvement in condition and extent of feeding and breeding habitat.
- Restoration of native vegetation adjacent to habitat critical to the survival to reduce edge effects.
- Management of threats (see *Threats*) in and adjacent to habitat critical to the survival.
- Other compensatory measures that will help address knowledge gaps to improve and maximise efficiency of the recovery of the species.

Other actions identified in this document may also form suitable offsets.

## 3. Threats

### 3.1 Historical causes of decline

By the late 1960s, at least 90% of Black-breasted Button-quail habitat (subtropical and dry rainforests) had been cleared for agriculture or plantations of Hoop Pine (Hamley et al. 1997). This caused direct habitat loss, subsequent habitat fragmentation and degradation for the species. Intentional habitat removal of habitat such as bottletree *Brachychiton* spp. scrubs has been much reduced in recent decades, though it is still considered to be an ongoing threat in some parts of the species range, outside protected areas (Webster et al. 2021).

### 3.2 Current threatening processes

Currently, the main threat to the species is weed invasion, particularly cat's claw creeper *Dolichandra unguis-cati* which gradually smothers the leaf litter layer and kills trees and shrubs that form the near-closed cover under which the birds feed, rendering habitat unsuitable (P Webster, RP Jaensch unpublished cited in Webster et al. 2021). However, the effects of lantana *Lantana camara* invasion may not be as detrimental as the species is known to occupy habitats where lantana dominates the understorey layers.

Ongoing habitat clearance and fragmentation caused by housing and development pressure (e.g., Hervey Bay), and habitat degradation caused by domestic stock, feral pigs *Sus scrofa* and overabundant macropods also threaten the species (Smith et al. 1997; Lees & Smith 2000; Webster et al. 2021). Black-breasted Button-quails appear vulnerable to ground predators, particularly nocturnal predators which might predate sleeping birds. Predation by cats *Felis catus*, foxes *Vulpes vulpes* and wild dogs may reduce populations, but their impacts are unknown (Webster et al. 2021).

Droughts severe enough to kill trees also expose and dry out the leaf litter, reducing invertebrate density and making destruction of habitat by fire more likely. Drought severity is likely to increase with climate change (Evans et al. 2017). Additionally, because few females (relative to males in the population) are responsible for the transfer of genetic material from generation to generation, genetic “bottlenecks” are a potential threat should the number of females drastically decline (DPIE 2021).

#### 3.2.1 Weeds altering habitat

Invasive weeds typically change the floristic and structural characteristics of habitat, thereby changing resource availability (French & Zubovic 1997). Some weeds may also increase the flammability of habitat, amplifying bushfire risk (Salvo Aires 2014).

Cat's claw creeper *Dolichandra unguis-cati*, was recently identified as a priority threat to Black-breasted Button-quail in the *Action Plan for Australian Birds 2020* (Webster et al. 2021). Cat's claw creeper is a major weed of native forests and riparian areas in eastern Australia. Its climbing woody stems (lianas) cling to tree trunks, enabling it to grow into the forest canopy. In rainforests it can overtop and kill mature trees, opening up the canopy for light-loving weeds. Cat's claw creeper competes with native plants by forming a dense above-ground mat and numerous underground reproductive tubers, impeding Black-breasted Button-quail's ability to forage and rendering habitat unsuitable.

Dense infestations of cat's claw creeper are very difficult to control due to the numerous lianas, abundant seed and ability to resprout from tubers, sometimes for years. In selecting the most suitable control techniques it is essential to minimise adverse impacts on native vegetation and to encourage its subsequent recovery (Weeds Australia 2011). The methods chosen should be adapted to the type of native vegetation invaded, staged in the restoration program, size and growth stage of the weeds and level of infestation. Weeding should proceed gradually as creation of large gaps can lead to further weed invasion. Follow up is essential. Regrowth should be treated before it reaches the foliage of the host tree, or the hanging ends of previously cut stems of cat's claw creeper. Regrowth may require treatment for five or more years and ongoing monitoring is needed (Webster et al. 2021).

Madeira vine *Anredera cordifolia*, green panic grass *Megathyrsus maximus* and coral berry *Rivina humilis* are other weeds that also degrade the native vegetation that provides core Black-breasted Button-quail habitat (DPIE 2021). Lantana (*Lantana camara*) forms dense thickets, sometimes impenetrable to humans, and is listed as the most significant environmental weed by the South-East Queensland Environmental Weeds Management Group. Lantana dominance appears to adversely affect the species richness of soil fauna assemblages, such as ants, and decreases the diversity of soil fungi (Weeds Australia 2020). It can also affect flora diversity by reducing seedling germination and by increasing the chance and severity of fire in plant communities such as dry rainforest. Lantana has been identified as a potential threat to many threatened and endangered plants and animals and a number of endangered ecological communities (Weeds Australia 2020). While lantana and other weeds adjoining or within dry rainforests can provide suitable habitat for Black-breasted Button-quail by providing dense low cover and good leaf litter for foraging, they are unlikely to represent sustainable habitat and the restoration of native vegetation should be prioritised. Removal of weeds must be completed slowly and in stages so that disturbance to Black-breasted Button-quail habitat is minimised.

### **3.2.2 Ongoing impacts of historical habitat loss caused by clearing for agriculture**

The main threats to bird survival in agricultural areas is habitat loss caused by over-clearing of native vegetation, and subsequent degradation of the remnants (Stevens 2001). Since European settlement, over 43% of forests, 90% of temperate woodlands and mallee, and 75% of rainforests have been cleared nationwide (Bradshaw 2012). The majority of remnants are generally isolated and small, are vulnerable to edge effects, and are often below the critical size needed to sustain healthy populations of many bird species (Olsen et al. 2005).

Additionally, as habitats become increasingly fragmented due to further clearing, native birds become more vulnerable to the other threats, such as predation by feral species and destructive fires, and lose the ability to recolonise previously suitable habitat (Olsen et al. 2005). The ongoing fragmentation and degradation of remnant vegetation can also disrupt essential ecosystem processes such as pollination, seed dispersal and regeneration (Jackson et al. 2016).

Ongoing impacts of historical habitat loss and fragmentation from agriculture is a significant threat affecting Black-breasted Button-quail (Webster et al. 2021). Retention and restoration of native vegetation in agricultural areas are urgently needed to prevent further declines in the Black-breasted Button-quail population, as, as is the cessation of land clearing.

### **3.2.3 Habitat loss caused by forestry plantations**

Loss and modification of habitat in order to maintain timber-harvesting and other forestry-related practices is a serious threat to the viability of Black-breasted Button-quail (Webster et al. 2021). For example, harvesting Hoop Pine plantations with well-developed understory can destroy established Black-breasted Button-quail habitat and may facilitate introduced predator access.

### **3.2.4 Habitat degradation caused by domestic stock grazing**

Native tree and shrub seedlings and groundcover species are highly susceptible to domestic stock grazing. Unlike native herbivores, most domestic stock are hard-hoofed and cause significant damage to soil structure from compaction and damage to native plants by trampling (Willson & Bignall 2009). A reduction or removal of understorey structure (e.g., native shrubs, herbs and grasses) can reduce foraging, nesting sites and shelter sites, and subsequently increase the risk of predation (Olsen et al. 2005). The other major impact of livestock grazing is its association with weed invasion (Martine & Alan 2005). Livestock grazing can exacerbate weed spread through seed dispersal, soil and vegetation disturbance, and nutrient enrichment (Martine & Alan 2005). Degradation caused by intensive grazing pressure may be exacerbated in small patches or along narrow strips of vegetation with little buffering to keep out the effects of prolonged drought.

Additionally, the impact of intense grazing by over-abundant macropods can cause similar impacts to domestic stock

### **3.2.5 Increase in frequency, scale and/or intensity of fire**

Inappropriate fire regimes are the greatest threat to Australia's birds after direct human destruction and alteration of habitats (Olsen et al. 2005). Too frequent fire may contribute to Black-breasted Button-quail decline through: increased weed invasion following fire; loss of woody debris; reduction in leaf litter; and decline in invertebrate abundance (Spencer & Baxter 2006). Several fires in close succession can also prevent plants and animals from returning to an area (particularly in fragmented landscapes), and prevent soil seed set (Wilson & Bignall 2009).

Many of the dry rainforest type habitats of Black-breasted Button-quail do not have a capacity to regenerate after fire and only survive because of a lack of fire. This is not the same for the littoral habitats which are dominated by sclerophyll vegetation which experience regular fire such as in the Great Sandy region.

Fires in vegetation surrounding adjoining habitat could have significant impacts if not managed and wildfire incursions into preferred habitat could damage remnants irretrievably. Frequent fires, coupled with consistent heavy grazing, is also likely to further degrade grass and shrub understorey.

Black-breasted Button-quail within Palmgrove and Scenic Rim KBAs were impacted by the 2019/2020 fires. However, impacts on the area of occupancy have not been analysed because of a scarcity of recent data (Todd & Maurer 2020). Similarly, 87,000 hectares (more than 50%) of K'gari (Fraser Island) was burnt in late 2020 (Queensland Government 2021). Black-breasted Button-quail is distributed along the east coast of K'gari inland to about 1 km. Observations by P Webster in August confirmed that only a small portion of previously occupied habitat was impacted; however this remains unpublished (P Webster pers. comm. October 2021).

### **3.2.6 Increased frequency and/or length of droughts**

Drought also exposes and dries out leaf litter and makes destruction of habitat by fire more likely. Climate change models predict increasingly frequent and more severe drought events in South East Queensland (Evans et al. 2017). This may negatively affect small patches and strips of Black-breasted Button-quail habitat, which may disappear or suffer a decline in quality due to water stress and possible increased frequency and severity of fire events. A history of Black-breasted Button-quail in the Fitzroy basin indicates that long-lasting drought and cattle stocking led to the disappearance of the species from scrubs in the region (Flower et al. 1995).

It is not fully known how these weather events, or their cumulative effects, will affect the Black-breasted Button-quail's survival and reproduction. The precautionary principle should be applied to ensure suitable quality and quantity of habitat needed by the species is conserved across its known and suspected range.

### **3.2.7 Habitat loss caused by urban development and mining**

Habitat loss caused by urban development such as housing estates and infrastructure threaten Black-breasted Button-quail. The continuing trend of residential and resort development along the coast is of particular concern e.g., Hervey Bay. This affects areas of littoral habitat that, while possibly significant, occurs at scales too small to be mapped as remnant or as regrowth.

The abundance of resource extraction operations in southeast Queensland, including large coal mines and coal seam gas fields, overlaps considerably with the distribution of the Black-breasted Button-quail (Commonwealth of Australia 2019). The continued development of these operations threatens Black-breasted Button-quail habitat directly through clearing of potential habitat, as well as via drawdown effects to potentially groundwater-dependent mesic vine thickets and acacia scrublands, particularly those associated with Fassifern scrublands or situated on low-porosity sedimentary rocks.

### **3.2.8 Predation by cats, foxes and wild dogs**

Ground-dwelling birds are particularly vulnerable to predation by cats *Felis catus*, foxes *Vulpes vulpes* and wild dogs. Although the impact of predation by cats, foxes and wild dogs on the Black-breasted Button-quail is not well known, it is likely that predation is a threat (Mathieson & Smith 2009; Centre for Invasive Species Solutions 2011). This may be particularly true if birds are forced to disperse through unsuitable habitat.

The threat of cats and foxes is also amplified by bushfires as they take advantage of recently burnt areas (McGregor et al. 2016; Hradsky et al. 2017), which creates the more open habitat that both cats and foxes prefer (McGregor et al. 2015; Hradsky et al. 2017). Additionally, the continual influx of domestic dogs into the wild means there is a constant feral population that puts pressure on vulnerable wildlife (Centre for Invasive Species Solutions 2011).

"Predation by feral cats" and "Predation by European red fox" are listed as a Key Threatening Processes under the EBPC Act, and detailed threat abatement plans have been prepared (Commonwealth of Australia 2008a, 2008b, 2015a, 2015b). Predation by wild dogs is listed as a Key Threatening Process for threatened species, populations and communities in New South Wales (NSW DECC 2009); and the Queensland Government has developed a five year Wild Dog Management Strategy 2021-2026 (State of Queensland 2021).

### **3.2.9 Predation and degradation of habitat by feral pigs**

Feral pigs may consume eggs and chicks, disturb breeding birds, damage habitat through soil compaction, spread plant diseases, create tracks that provide predator access, and facilitate weed invasion that may bind soil or reduce foraging opportunities.

"Predation, habitat degradation, competition and disease transmission by feral pigs" has been listed as a Key Threatening Process under the EBPC Act, and a threat abatement plan has been prepared (Commonwealth of Australia 2017a, 2017b).

### **3.2.10 Small population size**

Isolation and reductions in remnant vegetation inhibit Black-breasted Button-quail dispersal and increase the species' vulnerability to local extinction via stochastic events e.g., wildfire and disease

(DPIE 2021). Small, isolated populations also lose their long-term genetic viability. Population bottlenecks, where a population's size is reduced for at least one generation, can significantly reduce genetic diversity through genetic drift (random changes in the gene frequencies of a population from generation to generation). A small population size can also lead to inbreeding depression, where the biological fitness (survival and fertility) of the population is reduced due to mating between related individuals.

### 3.211 Threat prioritisation

Each of the threats outlined above has been assessed to determine the risk posed to the Black-breasted Button-quail population using a risk matrix. This in turn determines the priority for actions outlined below. The threats were considered in context of the current management regimes throughout its range. The impact of that threat has been assessed assuming that existing management measures continue to be applied appropriately. If management regimes change then the level of risk associated with threats may also change.

The risk matrix considers the likelihood of an incident occurring and the consequences of that incident. Threats may act differently in different parts of the species' range and at different times of year, but the precautionary principle dictates that the threat category is determined by the subpopulation at highest risk. Population-wide threats are generally considered to present a higher risk.

The risk matrix uses a qualitative assessment drawing on peer reviewed literature and expert opinion. In some cases the consequences of activities are unknown. In these cases, the precautionary principle has been applied. Levels of risk and the associated priorities for action are defined as follows:

Very High - immediate mitigation action required.

High - mitigation action and an adaptive management plan required; the precautionary principle should be applied.

Moderate – obtain additional information and develop mitigation action if required.

Low – monitor the threat occurrence and reassess threat level if likelihood or consequences change.

**Table 3. Risk Prioritisation**

Likelihood of occurrence	Consequences				
	Not significant	Minor	Moderate	Major	Catastrophic
<b>Almost certain</b>	Low	Moderate	Very High	Very High	Very High
<b>Likely</b>	Low	Moderate	High	Very High	Very High
<b>Possible</b>	Low	Moderate	High	Very High	Very High
<b>Unlikely</b>	Low	Low	Moderate	High	Very High
<b>Unknown</b>	Low	Low	Moderate	High	Very High

Categories for likelihood are defined as follows:

Almost certain – expected to occur every year

Likely – expected to occur at least once every five years

Possible – might occur at some time

Unlikely – such events are known to have occurred on a worldwide basis but only a few times

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Rare or Unknown – may occur only in exceptional circumstances; OR it is currently unknown how often the incident will occur

Categories for consequences are defined as follows:

Not significant – no long-term effect on individuals or populations

Minor – individuals are adversely affected but no effect at population level

Moderate – population recovery stalls or reduces

Major – population decreases

Catastrophic – population extinction

**Table 4. Black-breasted Button-quail Residual Risk Matrix**

Likelihood of occurrence	Consequences				
	Not significant	Minor	Moderate	Major	Catastrophic
 <b>Almost certain</b>		<ul style="list-style-type: none"> <li>• Predation by cats and foxes</li> <li>• Feral pig rooting and predation</li> </ul>	<ul style="list-style-type: none"> <li>• Weeds altering habitat</li> <li>• Habitat loss caused by clearing for large-scale agriculture</li> <li>• Habitat loss caused by forestry plantations</li> <li>• Habitat degradation caused by domestic stock grazing</li> <li>• Habitat loss caused by urban development and mining</li> </ul>		
<b>Likely</b>			<ul style="list-style-type: none"> <li>• Increase in frequency, scale and/or intensity of fire</li> <li>• Increased frequency and/or length of droughts</li> </ul>		
<b>Possible</b>		<ul style="list-style-type: none"> <li>• Small population size</li> </ul>			
<b>Unlikely</b>					
<b>Unknown</b>					

Categories for likelihood are defined as follows:

Almost certain – expected to occur every year

Likely – expected to occur at least once every five years

Possible – might occur at some time



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Unlikely – such events are known to have occurred on a worldwide basis but only a few times

Rare or Unknown – may occur only in exceptional circumstances; OR it is currently unknown how often the incident will occur

Categories for consequences are defined as follows:

Not significant – no long-term effect on individuals or populations

Minor – individuals are adversely affected but no effect at population level

Moderate – population recovery stalls or reduces

Major – population decreases

Catastrophic – population extinction

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## 4. Populations under particular pressure

The actions described in this recovery plan are designed to provide ongoing protection for Black-breasted Button-quail throughout their range. As 100% of mature individuals exist in one population, particular attention may be given to the following subpopulations in Protected Area Estate:

- Subpopulations of the Yarraman-Blackbutt-Nanago, Jimna-Conondale Range, Ravensbourne-Deongwar and Great Sandy regions are important due to their size and the land on which they occur being State owned.
- Subpopulations at the Palmgrove National Park and the Barakula State Forest area because they appear to be the last remnant subpopulations within an area where the species was once widespread (Hamley et al. 1997).
- Any NSW subpopulation is important, being at the southern limit of the species' range and they must be maintained if the species is to persist in NSW.

Subpopulations in areas where there is a history of significant vegetation fragmentation such as: Dawson, Fitzroy and Burnett catchments, Hervey Bay, lowlands around Goomeri, Lockyer Valley and Boonah district may not persist because of habitat patch size.

Other subpopulations that may be considered to be under threat are those outside of protected areas.

## 5. Vision, Objectives and Strategies

### 5.1 Long-term Vision

The Black-breasted Button-quail population has increased in size to such an extent that the species no longer qualifies for listing as threatened under any of the *Environment Protection and Biodiversity Conservation Act 1999* listing criteria.

### 5.2 Recovery Plan Objectives

By 2032, maintain and improve the extent, condition and connectivity of habitat of the Black-breasted Button-quail.

By 2032, demonstrably reduce the severity of identified anthropogenic threats across the extent of the species' range.

By 2032, achieve, measure and sustain a positive population trend (assessed by new baseline counts) in the number of mature individuals of the Black-breasted Button-quail.

This will be achieved by implementing the actions set out in this Recovery Plan that minimise threats while protecting and enhancing the species' habitat throughout its range, adequately monitoring the species, generating new knowledge to guide recovery and increasing public awareness.

### 5.3 Strategies to achieve objectives

1. Implement management strategies to reduce threats to the Black-breasted Button-quail and its habitat.

2. Enhance protection, improve the quality and increase the extent of suitable habitat for the Black-breasted Button-quail.
3. Improve knowledge of the distribution, biology and ecology of the Black-breasted Button-quail and implement a monitoring strategy to identify and measure population trends.
4. Increase stakeholder participation in Black-breasted Button-quail conservation and management.
5. Coordinate, review and report on recovery progress.

## 6. Actions to achieve the specific objectives

Actions identified for the recovery of Black-breasted Button-quail are described below. It should be noted that some of the objectives are long-term and may not be achieved prior to the scheduled five-year review of the recovery plan. Priorities assigned to actions should be interpreted as follows:

<b>Priority 1:</b>	Prompt action necessary to mitigate the key threats to Black-breasted Button-quail and provide valuable information to help identify long-term population trends.
<b>Priority 2:</b>	Action to provide a more informed basis for the long-term management and recovery of Black-breasted Button-quail.
<b>Priority 3:</b>	Action desirable, but not critical to the recovery of Black-breasted Button-quail or assessment of trends in that recovery.

### Strategy 1 – Implement land management strategies to reduce threats to Black-breasted Button-quail and their habitat

Action	Description	Priority	Performance Criteria	Responsible Agencies and potential partners	Indicative Cost
1.1	Review and promote land management guidelines to ameliorate impacts from human activities on identified BBBQ habitat	1	<ul style="list-style-type: none"> <li>Up to date management guidelines for BBBQ habitat and protection of populations maintained</li> <li>Management guidelines adopted by government agencies, industry, private landholders and community groups completed</li> </ul>	<b>State governments</b> <b>NRM regional bodies</b> NGOs Academic institutions Private landowners	
1.2	Determine the relationship between invasive weeds and BBBQ abundance	1	<ul style="list-style-type: none"> <li>The impact of invasive weeds on BBBQ abundance and their ability to forage has been determined</li> <li>The impact invasive weeds on the integrity of the BBBQ habitat e.g. suppression of native plant recruitment,</li> </ul>	<b>State governments</b> <b>Traditional Owners</b> <b>Private landowners</b> Academic institutions NGOs NRM regional bodies	

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			<p>increase in fuel loads etc. has been determined</p> <ul style="list-style-type: none"> <li>• The effectiveness of invasive weed removal has been assessed</li> <li>• Knowledge of invasive weeds has improved and is collated</li> <li>• Knowledge of the effectiveness of invasive weed management actions improved</li> <li>• The impact of cat's claw creeper <i>Dolichandra unguis-cati</i>, Madeira vine <i>Anredera cordifolia</i>, green panic grass <i>Megathyrsus maximus</i> and coral berry <i>Rivina humilis</i> on BBBQ habitat assessed</li> <li>• New knowledge incorporated in management plans</li> </ul>		
1.3	Control weeds at high quality sites rapidly and cost-effectively	1	<ul style="list-style-type: none"> <li>• Management strategies for invasive weeds implemented</li> <li>• Site-specific plans developed that incorporate management actions and consider BBBQ use of some weeds as habitat (lantana). For example, staged removal of weeds undertaken to reduce impact of habitat loss</li> <li>• Hygiene protocols to prevent the spread of weeds and pathogens (foot baths, equipment and vehicle cleaning) developed and implemented across all known habitat</li> </ul>	<b>Australian Government</b> <b>State governments</b> <b>Traditional Owners</b> <b>Private landowners</b> Academic institutions NRM regional bodies NGOs	
1.4	Investigate the threat of fire, including interactions with invasive weeds and drought, on all BBBQ subpopulations	1	<ul style="list-style-type: none"> <li>• Risk/impact of fire on dry rainforest habitats determined</li> <li>• New knowledge incorporated in management plans</li> <li>• Mitigation strategies to control fire in sensitive areas implemented</li> </ul>	<b>State governments</b> <b>Academic institutions</b> <b>NRM regional bodies</b> <b>Traditional Owners</b> NGOs Private landowners	
1.5	Assess the impact of introduced predators on BBBQ populations	2	<ul style="list-style-type: none"> <li>• Impact of feral predators determined, and any areas of high impact identified</li> <li>• A standardised (at the site level) monitoring program for feral predators is designed and implemented across all known habitat</li> <li>• Reporting on feral predator monitoring is nationally coordinated and results are</li> </ul>	<b>Australian Government</b> <b>State governments</b> <b>Traditional Owners</b> <b>Private landowners</b> NGOs NRM regional bodies	

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			accessible by responsible agencies and recovery partners		
1.6	Implement feral animal control programs for pigs, foxes and cats in all known habitat	2	<ul style="list-style-type: none"> <li>Knowledge of feral predator control action effectiveness increased, and effectiveness of feral predator management improved</li> <li>Actions to control feral cats, foxes, wild dogs and feral pigs undertaken when and where relevant</li> <li>Control methods for feral cats that are appropriate for different habitat types developed and implemented</li> <li>The use of relevant tools incorporated into local management. For example: Feral Pig Scan in NSW, "Felixer" units, HogGone and Eradicat)</li> <li>Traditional Owners, public and private landowners engaged in feral animal management</li> </ul>	<b>Australian Government</b> <b>State governments</b> <b>Traditional Owners</b> <b>Private landowners</b> NGOs NRM regional bodies	
1.7	Control effects of domestic stock on BBBQ and its habitat	2	<ul style="list-style-type: none"> <li>Domestic stock on BBBQ and its habitat ameliorated through the exclusion from sensitive habitats</li> <li>Incentives provided to landholders to reduce, or eliminate stock from known and likely BBBQ habitat</li> <li>Stocking densities reduced and/or grazing leases have removed from State Forests with BBBQ</li> </ul>	<b>State governments</b> <b>Traditional Owners</b> <b>Private landowners</b> NGOs NRM regional bodies	
1.8	Investigate climate change threats on BBBQ	2	<ul style="list-style-type: none"> <li>Modelling techniques used to investigate the potential impact of climate change on BBBQ and their habitat critical for survival</li> <li>Model outputs incorporated into local management plans to improve BBBQ resilience to climate change</li> <li>The National Reserve Network expanded to incorporate suitable BBBQ habitat under climate change modelling</li> <li>Climate change impacts monitored on an appropriate set of subpopulations</li> </ul>	<b>State governments</b> <b>Academic institutions</b> NRM regional bodies NGOs	
1.9	Ensure minimal impacts on BBBQ and its habitat in all		<ul style="list-style-type: none"> <li>Approval gained from Qld and NSW state governments and affected local governments, for</li> </ul>	<b>State governments</b> <b>Local councils</b>	

	populations from urban developments		<p>the management guidelines developed in Action 1.1</p> <ul style="list-style-type: none"> <li>Regulatory avenues made available to protect and enhance known and probable habitat for BBBQ</li> <li>Actions undertaken to minimise habitat loss in localities already zoned for development</li> </ul>	Private landowners	
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## Strategy 2 – Enhance protection, improve the quality and increase the extent of suitable habitat for the Black-breasted Button-quail

Action	Description	Priority	Performance Criteria	Responsible Agencies and potential partners	Indicative Cost
2.1	Identify areas of habitat critical to the survival of BBBQ	1	<ul style="list-style-type: none"> <li>Existing and new information reviewed and used to identify areas of conservation significance</li> <li>New knowledge used to target increased protection or restoration activities</li> <li>New knowledge used to refine the definition of 'habitat critical to the survival'</li> <li>Key Biodiversity Areas reviewed and updated as new information becomes available</li> </ul>	<b>Recovery Team</b> <b>State governments</b> <b>Research agencies</b> NGOs Academic institutions	
2.2	Restore existing BBBQ habitat within key sites and potential BBBQ habitat in strategic locations close to, and within key sites	1	<ul style="list-style-type: none"> <li>Quality of habitat patches improved</li> <li>Where possible, high priority private lands secured through voluntary cooperative agreements</li> </ul>	<b>Australian Government</b> <b>State governments</b> <b>Local government</b> <b>NRM regional bodies</b> <b>Private landholders</b> Academic institutions NGOs	
2.3	Restore burnt BBBQ sites using appropriate restoration techniques	1	<ul style="list-style-type: none"> <li>Fire frequency reduced or its exclusion achieved in areas of known or potential habitat to maintain well-developed leaf-litter layers and protective cover</li> </ul>	<b>State governments</b> <b>Local government</b> <b>NRM regional bodies</b> Academic institutions	
2.4	Develop agreements with priority local government and government agencies that aim	2	<ul style="list-style-type: none"> <li>At least 20 areas of degraded priority habitat identified and rehabilitated</li> <li>Management agreements developed with local and state government agencies which</li> </ul>	<b>Australian Government</b> <b>State governments</b> <b>Local government</b> <b>NRM regional bodies</b>	

	to rehabilitate, maintain and enhance BBBQ habitat		maintain and enhance BBBQ habitat		
2.5	Investigate and instigate protection of high value habitat on private land through nature refuge system, covenants and/or other instruments of protection	3	<ul style="list-style-type: none"> <li>Key breeding and foraging sites on private land identified and habitat quality assessed</li> <li>Identified sites protected through covenanting and other private land conservation programs</li> </ul>	<b>State government</b> <b>Private landowners</b> NRM regional bodies NGOs	

### Strategy 3 – Improve knowledge of the distribution, biology and ecology of Black-breasted Button-quail and implement a monitoring strategy to identify population trends

Action	Description	Priority	Performance Criteria	Responsible Agencies and potential partners	Indicative Cost
3.1	Develop and implement a long-term monitoring strategy to inform management interventions and population trends	1	<ul style="list-style-type: none"> <li>Knowledge of BBBQ conservation status, current distribution, population trends, movement ecology and life history significantly increased</li> <li>The size/baseline population and security of the K'gari (Fraser Island) determined</li> </ul>	<b>Australian Government</b> <b>State governments</b> <b>Traditional Owners</b> <b>Private landowners</b> <b>Academic institutions</b> NGOs NRM regional bodies	
3.2	Design and implement research projects to enhance understanding of the species	1	<ul style="list-style-type: none"> <li>Gaps in knowledge required to inform species management identified and addressed                             <ul style="list-style-type: none"> <li>Presence/distribution of NSW population determined through rigorous survey effort throughout known and potential range</li> </ul> </li> <li>Understanding of the following parameters improved:                             <ul style="list-style-type: none"> <li>Wild population breeding success factors and trends</li> <li>The sources of nest predation and disturbance and the effects of this disturbance on breeding outcomes</li> </ul> </li> <li>The impacts of climate change on populations ameliorated, including:</li> </ul>	<b>Australian Government</b> <b>State governments</b> <b>Private landowners</b> <b>Academic institutions</b> <b>NGOs</b> NRM regional bodies	



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			<ul style="list-style-type: none"> <li>○ Potential climatic refuges identified</li> <li>○ Subpopulations most at risk of climate change impacts identified</li> <li>○ Impacts of increased frequency and severity of drought and heat waves, changes in rainfall patterns and sea-level rise on habitat is modelled and associated refuge sites identified and protected</li> <li>○ The synergistic impacts of climate change incorporated into threat mitigation planning</li> </ul>		
3.3	Continue to map known/likely habitat of the species (including private land) and conduct formal searches for new populations in mapped habitat	1	<ul style="list-style-type: none"> <li>• Fine scale, accurate vegetation mapping developed and made accessible to land managers and decision makers</li> <li>• Spatial data available that maps BBBQ habitat, presence, territory boundaries and fire histories</li> <li>• Spatial data and maps stored and shared amongst relevant management agencies</li> <li>• Potential habitat surveyed in NSW with the highest likelihood of containing BBBQ (Milledge 2000) using contemporary survey methods</li> </ul>	<b>Australian Government</b> <b>State governments</b> <b>Academic institutions</b> <b>Private landowners</b> NGOs	
3.4	Investigate establishing a captive population to act as an insurance population	3	<ul style="list-style-type: none"> <li>• A feasibility study undertaken to determine whether an insurance population of BBBQ would effectively mitigate against possible extinction</li> <li>• Best-practice captive-breeding and animal husbandry information and knowledge are collated</li> <li>• A reintroduction trial in suitable predator-free habitat undertaken</li> </ul>	<b>State governments</b> <b>NRM regional bodies</b> <b>Academic institutions</b> NGOs Zoos and wildlife sanctuaries	

**Strategy 4 – Increase stakeholder participation in Black-breasted Button-quail conservation and management.**

Action	Description	Priority	Performance Criteria	Responsible Agencies and potential partners	Indicative Cost
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4.1	Develop and implement a broad strategy to raise awareness and educate the general public about BBBQ conservation and their habitats	1	<ul style="list-style-type: none"> <li>Popular articles backed by scientific literature about BBBQ conservation, including important habitats, threats and recovery actions published online and in community newsletters, local bulletins and newspapers</li> <li>Informative displays developed to educate the broader community about BBBQ conservation at key breeding and non-breeding sites</li> <li>Educational resources developed that target key user groups and communities where BBBQ are located.</li> <li>Regular workshops undertaken to inform the public and raise awareness of threatened ground-dwelling birds</li> </ul>	<b>State governments</b> <b>Local government</b> Private landowners NRM regional bodies Traditional Owners NGOs	
4.2	Develop and implement a targeted strategy to promote the use of citizen science in relation to BBBQ	2	<ul style="list-style-type: none"> <li>Popular articles published online and in relevant community newsletters and magazines to recruit citizen scientists for training and involvement in BBBQ and threatened bird conservation</li> </ul>	<b>State governments</b> <b>NRM regional bodies</b> NGOs Academic institutions Traditional Owners	
4.3	Respect and involve Indigenous Traditional Owners in management and recovery actions	1	<ul style="list-style-type: none"> <li>Traditional Owner communities involved in the recovery effort, including conservation management decision-making processes</li> <li>Traditional Owners and their cultural values included in the conservation and management of BBBQ</li> <li>The cultural significance of the BBBQ identified across the species' distribution and relevant management information incorporated into recovery planning</li> </ul>	<b>State governments</b> <b>Traditional Owners</b> NRM regional bodies NGOs Academic institutions	
4.4	Establish extension activities with private landholders to protect BBBQ habitat	2	<ul style="list-style-type: none"> <li>A private landowner network with an interest in BBBQ established</li> <li>The private landowner network facilitates access to survey sites</li> <li>The private landowner network has facilitated improved BBBQ habitat</li> </ul>	<b>State government</b> <b>Local governments</b> <b>Private landowners</b> NGOs NRM regional bodies	

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			management through extension activities		
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**Strategy 5 – Coordinate, review and report on recovery progress**

Action	Description	Priority	Performance Criteria	Responsible Agencies and potential partners	Indicative Cost
5.1	Establish a Recovery Team that effectively organises, implements, reviews and reports on recovery outcomes	1	<ul style="list-style-type: none"> <li>A National BBQ Recovery Team established within the first six months of the making of the Recovery Plan</li> <li>The Recovery Team has coordinated, reviewed and reported on the recovery outcomes for the life of this plan</li> </ul>	All	
5.2	Approve Recovery Team governance arrangements	1	<ul style="list-style-type: none"> <li>Terms of Reference for the Recovery Team approved in accordance with national best practise guidelines</li> <li>The Recovery Team registered nationally</li> </ul>	Recovery Team	Core government business
5.3	Submit annual reports on progress against recovery actions	1	<ul style="list-style-type: none"> <li>Recovery Team annual reports have been submitted each year in accordance with the national reporting framework</li> </ul>	Recovery Team	Core government business
5.4	Review the Recovery Plan five years after making	1	<ul style="list-style-type: none"> <li>In consultation with relevant stakeholders, a five year review of the recovery plan has been endorsed by the Recovery Team</li> <li>The conservation status of BBQ reviewed every 5 years in conjunction with the recovery plan review</li> </ul>	Recovery Team	
5.5	Facilitate knowledge exchange and awareness between relevant threatened species land managers, researchers and decision makers	1	<ul style="list-style-type: none"> <li>A communication network between interested stakeholders established</li> <li>Meetings between land managers and researchers occurred at least biennially to share knowledge and experience of threatened birds and their habitat</li> <li>Traditional Owners consulted and Indigenous knowledge incorporated into specific management actions</li> </ul>	Recovery Team	

## 7. Duration and cost of the recovery process

The cost of implementation of this plan should be incorporated into the core business expenditure of the affected organisations, and through additional funds obtained for the explicit purpose of implementing this recovery plan. It is expected that state and Commonwealth agencies will use this plan to prioritise actions to protect the species and enhance its recovery, and that projects will be undertaken according to agency priorities and available resources. All actions are considered important steps towards ensuring the long-term survival of the species.

**Table 5: Summary of recovery actions and estimated costs for the first five years of implementation (these estimated costs do not take into account inflation over time).**

Action	Cost					
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Strategy 1						
Strategy 2						
Strategy 3						
Strategy 4						
Strategy 5						
TOTAL						

## 8. Effects on other native species and biodiversity benefits

Black-breasted Button-quail inhabit fragments of microphyll and notophyll vine forest, thickets and coastal scrub. Protection and management of the Black-breasted Button-quail will contribute to the conservation of regional ecosystems and communities listed as 'Of concern' or 'Endangered' under the *Queensland Vegetation Management Act 1999* (e.g. semi-evergreen vine thicket, some rainforest communities and some littoral vegetation types such as Regional Ecosystems 12.2.2, 12.2.3, 12.8.13, 12.8.21, 12.8.22, 12.8.23, 12.9-10.6, 12.9-10.15, 12.11.13, 12.12.18, 12.12.26 in Qld and equivalent vegetation communities in NSW) and EPBC Act listed threatened species and ecological communities.

The presence of viable populations of Black-breasted Button-quail may indicate the conservation value of forest remnants as refugia for the survival of other ground-dwelling fauna. The implementation of the plan will contribute to the conservation of other significant fauna and flora using similar habitats, e.g. invertebrates such as regent skipper *Euschemon rafflesia*, *Nurus brevis*; reptiles such as elf skink *Erotoscincus graciloides*, Nangur skink *Nangura spinosa* (CE), banded leaf-tail gecko *Phyllurus caudiannulatus*; birds such as Coxen's fig-parrot *Cyclopsitta diophthalma coxeni* (E), Albert's lyrebird *Menura alberti*; mammals such as spotted-tailed quoll *Dasyurus maculatus maculatus* (E), golden-tipped bat *Phoniscus papuensis*, black-striped wallaby *Notamacropus dorsalis*; and plants including *Alectryon ramiflorus* (E), *Cossinia australiana* (E), *Planchonella eerwah* (E), native jute *Corchorus cunninghamii* (E), *Plectranthus omissus* (E), *Syncarpia hillii*, *Stigmatodactylus amplexicaulis*, *Liparis simmondsii*, *Argophyllum nullumense*, *Cyperus semifertilis*, *veiny fontainea Fontainea venosa* (V), *Callitris baileyi*,

*Cryptocarya floydii*, *Sarcophilus weinthalii* (E), *Sarcophilus dilatatus* and *Bulbophyllum globuliforme* (V). (Bracketed ratings are EPBC listed species).

Threatened Ecological Communities listed under the EPBC Act that are of importance to the Black-breasted Button-quail include: Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (CE), Semi-evergreen vine thickets of the Brigalow Belt (North and South) (E), and Lowland Rainforest of Subtropical Australia (CE). These ecological communities will also benefit from increased efforts to protect and enhance Black-breasted Button-quail habitat.

## 9. Social and economic considerations

The major social and economic impacts of this recovery plan will be on those who require approval to remove or modify Black-breasted Button-quail habitat and are prevented from doing so, or are required to modify their proposal by a consent authority. This may include increased costs due to the assessment processes, requirement to provide offset funding, to secure or rehabilitate habitat, or for other threat mitigation work.

Restrictions on further clearing of Black-breasted Button-quail habitat may impact some landowners, land managers and developers. These restrictions may not significantly impact agricultural industries, however, since many of the more fertile areas have already been cleared and remnant vegetation is generally located on less fertile soils that are relatively less attractive for agriculture.

BirdLife Australia and a network of community volunteers actively but irregularly survey for this species, including monitoring threats in its habitat inside and outside Key Biodiversity Areas and explore conservation actions (G Maurer pers. comm. 2021). Involvement in Black-breasted Button-quail conservation can provide social benefits with community members and engaged groups having a sense of achievement, inclusion, community spirit and pride whilst gaining enjoyment and appreciation of their surrounding natural environment. The community education components of the program also promote community ownership, provide community support and encourage active involvement in protecting local natural resources.

In addition, there is the potential for financial gains through ecotourism ventures and holiday accommodation operators in areas where Black-breasted Button-quail are reliably seen. Such areas are more likely to be in regional areas of Queensland through the breeding season. Additional social benefits include encouraging passive recreation, appreciation of natural aesthetic values and increased awareness and appreciation of Indigenous cultural values.

## 10. Affected interests

Organisations and individuals likely to be affected by the actions proposed in this plan include:

- government agencies (Commonwealth, state, local), particularly those involved with environment and conservation programs;
- private landholders;
- Indigenous land and sea management groups (including ranger programmes);
- researchers;

- bush care groups;
- bird watching groups;
- conservation groups;
- wildlife interest groups;
- 4WD and fishing groups;
- environmental consulting companies;
- tourism operators;
- mining companies;
- industry and commercial bodies; and,
- proponents of agricultural development in the vicinity of important habitat.

However, this list should not be considered exhaustive, as there may be other interest groups that may like to be included in the future or need to be considered when specialised tasks are required.

The following table lists some of the interest groups, how they could contribute to the success of the plan and the potential benefits/impacts that may emerge from the Plan's implementation:

Interest Group	Contribution	Impacts/Benefits
Australian Government	Responsible for development, coordination and evaluation of the plan. Responsible for implementation of the plan in Commonwealth areas. Subject to available resources, providing financial support for implementation of the plan. Responsible for integration of best practice outcomes which support the aims of the recovery plan into related areas of work.	Informed decision making regarding the EPBC Act referral and assessment process. Greater ability to deliver on domestic and international obligations regarding biodiversity conservation. Increased knowledge of the Black-breasted Button-quail and its habitats – increased exchange of information between decision makers and the community.
State and territory government agencies	Contributing to the development of the plan. Potential implementation of the plan within jurisdictional boundaries.	Greater ability to deliver on state obligations regarding biodiversity conservation. Increased knowledge of the Black-breasted Button-quail and its habitats – increased exchange of information.
Local Government	Contributing to the development of the plan and taking the plan into consideration when reviewing planning schemes. Potential implementation of on ground activities within jurisdictions.	Increased knowledge of the Black-breasted Button-quail and its habitats – increased exchange of information. Enhanced ability to deliver obligations regarding biodiversity conservation. Supports local tourism industry.
Natural Resource Management (NRM) regional bodies	Integrating the plan into NRM regional plans. Opportunity to deliver on-ground activities.	Increased awareness of regional importance of important habitat sites. Informing managers of biodiversity values. Opportunity to seek funding for conservation projects under biodiversity conservation programs.

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Interest Group	Contribution	Impacts/Benefits
Land councils and Traditional Owners (including those that have co-management or sole management responsibilities for important habitats).	Contributing to the development of the plan and development and implementation of site management plans – research and monitoring activities – contributing traditional knowledge.	Increased knowledge of the Black-breasted Button-quail and its habitats – increased exchange of information. Opportunity to seek funding for conservation projects and achieve ownership of projects. Develop research partnerships with scientists and the community. Develop traditional burning practices that consider the ecological requirements of Black-breasted Button-quail.
Conservation Groups	Contributing to the implementation and evaluation of the plan, particularly in conducting research and monitoring programs – implementing on ground activities.	Opportunity to seek funding for conservation and awareness projects under biodiversity conservation programs. Greater coordination of targeted conservation projects. Delivering on charitable/not-for-profit goals benefiting the public.
Community and Special Interest groups	Contributing to the plan and volunteering for conservation activities – implementing on ground activities. Adding to the knowledge of the Black-breasted Button-quail via contribution to datasets.	More Black-breasted Button-quail to enjoy. Opportunity to participate in conservation projects.
Researchers	Contributing to the implementation and evaluation of the plan.	Increased exchange of information – opportunity to seek funding for research. Opportunity to establish collaborations within Australia and internationally. Application of research outcomes which deliver improved weed or pest animal control tools and techniques.
Recreational users of sites – camping, 4WD, field and game groups.	Contributing to the development of the plan.	Some leisure activities that affect important habitat sites may need to be managed. These groups will be one of the main recipients for education and awareness activities that focus on how they may continue their activities and contribute to the conservation of threatened birds at the same time.
Landholders	Contributing to the development and implementation of the plan.	These groups will be the target of education and awareness activities. Particularly on how site management plans may be implemented by landholders. Opportunity to build voluntary incentives into the plan for landholders to comply with recommendations. Enhance certainty regarding EPBC referrals.



Interest Group	Contribution	Impacts/Benefits
Commercial users of sites or surrounding area – agriculture, mining, farmers (surrounding land use), forestry, tourism operators	Contributing to the Plan and implementing measures that minimise the impact of their operations on threatened birds.	These groups will also be some of the main recipients for education and awareness activities, although theirs will focus on minimising the impacts of their operations on the threatened woodland birds and the habitats on which they depend. Enhance certainty regarding EPBC referrals.

## 11. Consultation

The *Recovery Plan for the Black-breasted Button-quail* has been developed through extensive consultation with a broad range of stakeholders. The consultation process brought together key species experts and conservation managers, from a range of different organizations, to categorize ongoing threats to the Black-breasted Button-quail and identify knowledge gaps and potential management options.

Consultation included representatives from government agencies, non-government organisations, researchers and local community groups. During the drafting process the Department of Agriculture, Water and the Environment (Cwltb) continued to work closely with key stakeholders.

Notice of the draft plan was made available for public comment for three months between <date> and <date>. Any comments received that were relevant to the survival of the species were considered by the Threatened Species Scientific Committee as part of its assessment process.

## 12. Organisations and persons involved in evaluating the performance of the plan

This plan should be reviewed no later than five years from when it was endorsed and made publicly available. The review will determine the performance of the plan and assess:

- whether the plan continues unchanged, is varied to remove completed actions, or varied to include new conservation priorities; or
- whether a recovery plan is no longer necessary for the species' as either conservation advice will suffice, or the species' are removed from the threatened species list.

As part of this review, the listing status of the species' will be assessed against the EPBC Act species listing criteria.

The review will be coordinated by the Department of Agriculture, Water and the Environment (Cwltb) in association with relevant Australian and state government agencies and key stakeholder groups such as non-governmental organisations, local community groups and scientific research organisations.

Key stakeholders who may be involved in the review of the performance of the *Recovery Plan for the Black-breasted Button-quail* include organisations likely to be affected by the actions proposed in this plan and are expected to include:

**Australian Government**

Department of Agriculture, Water and the Environment (DAWE)

Department of Defence

**Queensland Government**

Queensland Government Department of Environment and Science

Department of Transport and Main Roads

Economic Development Queensland

**New South Wales Government**

Department of Planning, Industry and Environment

Department of Primary Industries – Agriculture, Forestry and Fisheries Divisions

Transport for New South Wales

**Non-government organisations**

BirdLife Australia

NRM groups

DRAFT

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