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## A review of specimens of Buff-breasted Button-quail *Turnix olivii* suggests serious concern for its conservation outlook

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### ABSTRACT

The Buff-breasted Button-quail *Turnix olivii* is arguably the rarest, most threatened bird species in Australia. Despite many reports over the last four decades, the species has never been reliably photographed nor its vocalisations definitively recorded. No records in contemporary literature are supported irrefutably. Consequently, examining historical museum specimens of skins and eggs is critical to ascertain the species' distribution and autecology, understand potential threatening processes, and ultimately determine the species' conservation status. We review all known specimens of Buff-breasted Button-quail and contextual information where available. Current literature suggests the holotype was collected in 1899, while the last collected specimens (six skins, four clutches of eggs) were collected by William Rae McLennan near Coen in 1921 and 1922. We found a total of 15 specimens: seven skins and eight clutches of eggs. Two specimens collected by McLennan previously documented as 'missing' were located in the Natural History Museum, Tring. An additional four clutches of eggs not previously reported were located. Two represented verified specimens while the other two require further analysis to determine identity. All specimens were collected in the Cape York Peninsula bioregion. There are no specimens from the more southern Wet Tropics and Einasleigh Uplands bioregions, where the majority of contemporary observations have been made. As there have been no verified specimens collected for nearly a century, we argue that considerable concern and urgent action are warranted to improve the conservation outlook of this species. The species should be listed as critically endangered in both state and federal legislation.

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Buff-breasted Button-quail;  
Cape York Peninsula  
avifauna

### Introduction

Understanding a species' geographical distribution is a critical conservation requirement (Hortal *et al.* 2015). Poor knowledge of a species' geographical distribution makes it difficult to assess conservation status or extinction risk using an evidence-based approach (Mace *et al.* 2008, Bland *et al.* 2017). A species' distribution may be poorly understood for several reasons. The species may be cryptic and difficult to detect, or it may occur in remote locations that are difficult to survey (see e.g. Bennison *et al.* 2014; Benshemesh 2014). A species may be genuinely rare, meaning encounters are too infrequent to build a good understanding of its distribution (Green and Young 1993). For some species, each of these conditions may prevail, meaning there are few records available and making their distribution particularly challenging to assess.

In situations where there are few records of a species, the records that do exist gain particular importance. These records may be the only data points available to

assess a species' distribution and status. However, all records are not equal in these circumstances. Anecdotal reports, particularly of rare species, are inherently unreliable, and must be scrutinised closely before being accepted as evidence of that species' occurrence (McKelvey *et al.* 2008; Leseberg *et al.* 2020). Conversely, specimens, photographs and audio recordings may represent verifiable evidence of a species' occurrence at a specific place and time. This makes the specimen record an important baseline for assessing the potential distribution and status of poorly known species.

An example of a poorly known species with few verifiable records is the Buff-breasted Button-quail *Turnix olivii*. Probably Australia's least known bird species, the Buff-breasted Button-quail has never been photographed, and its call has never been definitively recorded. It is rare in museum collections and historical accounts, but appears more frequently in contemporary literature via several anecdotal observations (Squire 1990;

eBird 2020) and a body of publications (Macdonald 1971; Squire 1990; Nielsen 2000; Mathieson and Smith 2017; Smith and Mathieson 2019). The species' presumed distribution encompasses Cape York Peninsula from Lockhart Community to approximately Mareeba encompassing the Wet Tropics and Einasleigh Uplands Bioregion (Marchant and Higgins 1993). Within this distribution, its habitat is typically reported as an open grassy savanna on gravelly slopes (Marchant and Higgins 1993; Mathieson and Smith 2009).

The species was described by Robinson (1900) from a specimen collected near Cooktown by naturalist E. A. Olive on 25 June 1899. Twenty-one years later, W. R. McLennan under contract from H. L. White, spent the 1921–22 wet season at Coen on Cape York Peninsula studying the species, collecting six skins and four clutches of eggs. McLennan's observations from this period still represent the only documented accounts of the species' behaviours and breeding biology (McLennan 1922; White 1922a, 1922b). McLennan is thought to have collected his final specimen in March 1922. No further specimens have been reported since that date (Rogers 1995).

Peters (1934) considered the Buff-breasted Button-quail as a subspecies of Chestnut-backed Button-quail *Turnix castanotus* but gave no basis for this, plausible though it is that the two are closely related. Macdonald (1971) argued the validity of *Turnix olivii* as a distinct species on a geographic, plumage and morphometric basis. This distinction has been accepted for at least five decades (Marchant and Higgins 1993). To date, there has not been a genetic analysis of the relatedness of these species. There are no DNA data from Buff-breasted or Chestnut-backed Button-quail (*T. castanotus*) though there are some for Painted Button-quail (*T. varius*) (cf Groth and Barrowclough 1999; Pertoldi *et al.* 2006; Gou *et al.* 2021).

After 50 years without a report, the species was apparently found just west of Cairns, at multiple sites in the 1970s and 1980s in the Wet Tropics and Einasleigh Uplands (WT/EU) bioregions, well south of the Cape York Peninsula bioregion (Squire 1990) where the original records were made (Figure 1). Since then, except for a small number of reports from Cape York Peninsula, all other reports of the species have been from the WT/EU bioregions, and this southern population has become the basis of all recent research on the species (Squire 1990; Nielsen 2000; Mathieson and Smith 2017; Smith and Mathieson 2019). Despite this research, none of the WT/EU bioregion records have been supported by verifiable evidence such as a specimen (skin or eggs), photograph or verified audio recording.

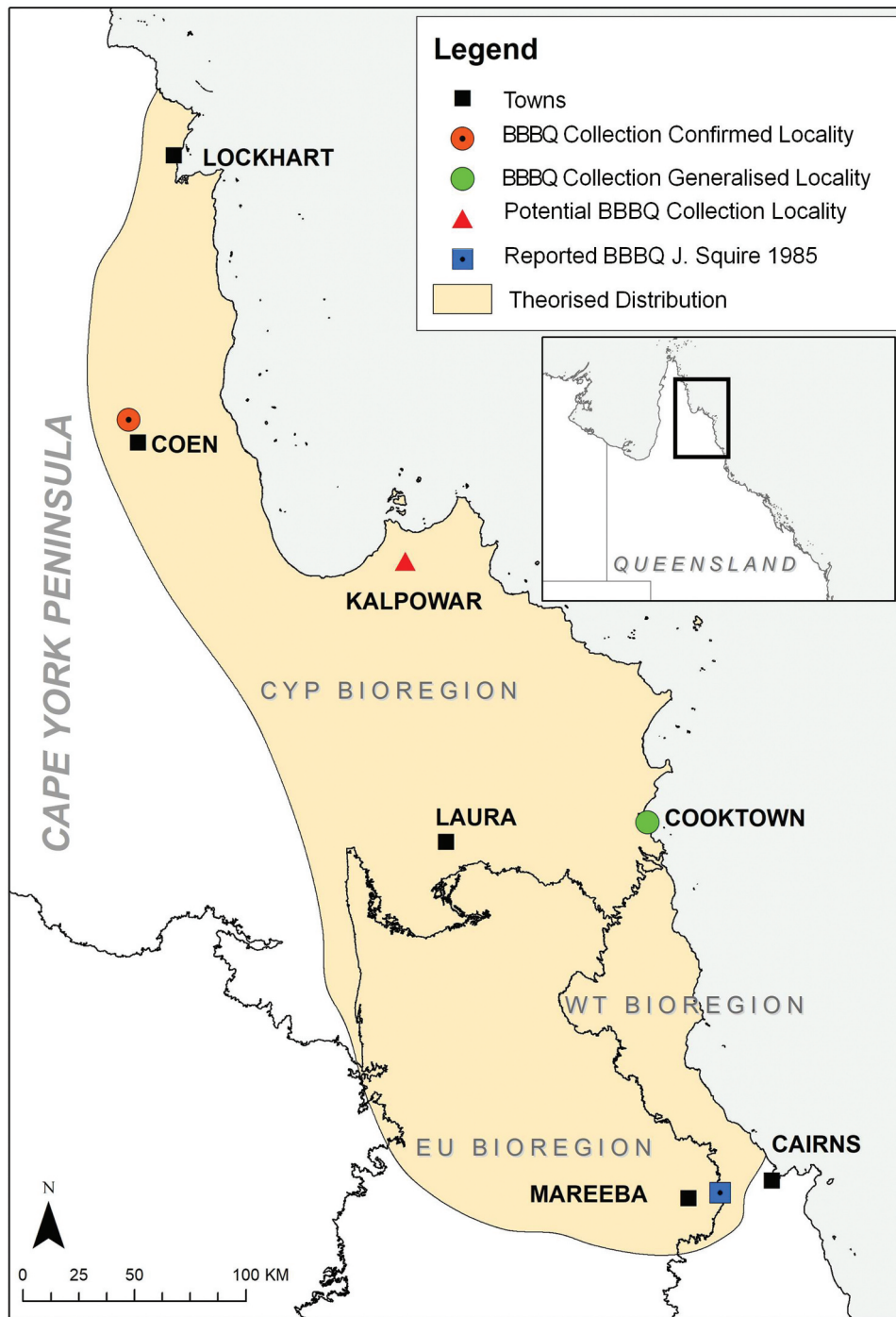
It is almost 100 years since the last verifiable evidence of the Buff-breasted Button-quail was collected. Given this absence of unequivocal recent records for a species that is as poorly known and potentially as highly threatened as Buff-breasted Button-quail, we undertook a review of all specimens in museum collections and a review of any associated metadata. Our aim was to provide a baseline from which to assess (1) the species' historical distribution and biogeography, (2) where search effort should be focussed to find any extant populations, and (3) what threatening processes have likely driven the species' apparent decline.

## Materials and methods

An extensive review of all Buff-breasted Button-quail specimens (skins and eggs) held in museum collections was performed. Specimens were located using the online database Atlas of Living Australia (Atlas of Living Australia 2020), and a review of historical literature. The databases of international collections significant in the ornithological history of Cape York Peninsula were searched for any reference to *Turnix*. All available metadata for each specimen was gathered from associated data cards, museum records, and historical literature or reference texts. The following collections were reviewed: Australian National Wildlife Collection (ANWC), Australian Museum (AM), Museums Victoria (NMV), American Museum of Natural History, New York (USA) (AMNH) and Natural History Museum, Tring (UK) (NHM). As he collected six of the known skins, the diaries of William Rae McLennan (1922) from his collecting trip at Coen from August 1921 to May 1922 were thoroughly examined for any references to *Turnix olivii*.

## Results

We located 13 verifiable specimens of Buff-breasted Button-quail, comprising seven skins and six clutches of eggs collected over 25 years spanning 1899 to 1924 (Table 1). This included the relocation of two skins collected by McLennan which had been reported as missing (Rogers 1995), in the Natural History Museum, Tring. We also located an additional two clutches of eggs collected by J. D. Anderson in 1924 which had not been reported. In addition to the 13 verifiable specimens, two previously unreported clutches of eggs collected in 1902 at Cooktown and 1947 at Kalpowar and tentatively ascribed to this species were located. All specimens were collected in the Cape York Peninsula bioregion, and no specimens came from the presumed southern distribution in the WT/EU bioregions (Figure 1).



**Figure 1.** Map of theorised distribution of Buff-breasted Button-quail (BBBQ) in Queensland, Australia interpreted from Marchant and Higgins (1993); Menkhurst *et al.* (2017), showing collection sites of confirmed and potential specimens and also the location of the apparent rediscovery in 1985. Bioregions: CYP: Cape York Peninsula, WT: Wet Tropics, EU: Einasleigh Uplands.

### Holotype

The holotype was collected by local Cooktown naturalist E. A. Olive, with the date 25 June 1899 noted on the specimen tag. Previous authors had variously reported collection dates for the holotype, AMNH 544708, as 1894 (Rogers 1995) or 1898 (Greenway 1973). The precise location at which Olive collected this specimen

remains uncertain. As argued by Macdonald (1971), it was likely collected from the environs surrounding Cooktown, not the township itself. It is important to note that Olive travelled throughout northern Australia collecting eggs and skins under various contracts (Mason and Pfitzner 2020). At the time of collecting this specimen, Olive is thought to have resided in



**Table 1.** Specimens of Buff-breasted Button-quail *Turnix olivii*, including specimens registered with museums but are currently unaccounted.

Museum and specimen	Locality	Specimen Type	Date	Collector	Comments	Figure
<b>American Natural History Museum – New York</b>						
AMNH 544708	Cooktown, QLD*	Skin – Female	25 June 1899	E. A. Olive	Type specimen, collection locality uncertain; in the vicinity of Cooktown	2A
<b>Australian National Wildlife Collection – Canberra</b>						
ANWC E08659*	‘Tolworth’ Cooktown, QLD*	Eggs	10 April 1902	W.J.T. Fuller	First clutch collected, clutch of 4. Collection locality uncertain; in the vicinity of Cooktown	3A
<b>Australian Museum – Sydney</b>						
O.49037	Coen, QLD*	Eggs	2 March 1924	J. D. Y. Anderson	Clutch of 4 – MISSING	
O.63761	Coen, QLD	Eggs	27 March 1922	W.R. McLennan	Found by Tommy (indigenous assistant), clutch of 4, MISSING	
O.49038	Coen, QLD*	Eggs	28 March 1924	J. D. Y. Anderson	Clutch of 4	3E
<b>Museums Victoria – Melbourne</b>						
BE59	Coen, QLD	Eggs	12 March 1922	W.R. McLennan	Clutch of 4	3B
BE57	Coen, QLD	Eggs	22 March 1922	W.R. McLennan	Clutch of 4	3C
BE58	Coen, QLD	Eggs	24 March 1922	W.R. McLennan	Found by Tommy (indigenous assistant) clutch of 4	3D
BE7706	Kalpowar, QLD*	Egg	14 February 1947	J. P. Dwyer	Specimen likely misplaced with Stubble Quail egg, correct specimen (Figure 3(f))	4C
HLW5045	Coen, QLD	Skin – Female	21 November 1921	W.R. McLennan	The bird which McLennan describes the advertising oom, dissection proved to be a ‘sitting bird’	2 F
HLW5046	Coen, QLD	Skin – Male	1 November 1921	W.R. McLennan		2 G
HLW5047	Coen, QLD	Skin – Female	2 February 1922	W.R. McLennan	‘eggs and oviduct very much enlarged’	2D
HLW5048	Coen, QLD	Skin – Female	2 February 1922	W.R. McLennan	‘eggs and oviduct very much enlarged’	2E
<b>Natural History Museum – Tring</b>						
1923.10.9.2	Coen, QLD	Skin – Female	1 February 1922	W.R. McLennan	‘appears to be a sitting bird’	2B
1923.10.9.1	Coen, QLD	Skin – Male	5 February 1922	W.R. McLennan	Last skin collected	2C

\* denotes specimens with a generalised collection locality.

Cooktown (Robinson and Laverock 1900; Mason and Pfitzner 2020). Olive sent the specimen to H.C. Robinson of the Derby Museum, Liverpool, who described the bird, naming it *olivii* after the collector (Robinson 1900). Robinson sold the specimen to G. M. Mathews and W. Rothschild (LeCroy 2017). Rothschild exhibited the skin, describing it as closely resembling the Chestnut-backed Button-quail but with larger dimensions, a longer and finer bill, and lacking white tips to the frontal feathers (Robinson 1900; Robinson and Laverock 1900). It is now held with most of Rothschild’s collection at the American Museum of Natural History, New York as AMNH 544708 (Figure 2(a)).

### Additional specimens

The first clutch of eggs ascribed to this species was collected by W. J. T Fuller in 1902, and is held in the Australian National Wildlife Collection (ANWC E08659) (Figure 3(a)). This clutch was initially labelled as Black-breasted Button-quail *Turnix melanogaster*, a species which is not known to occur in northern Queensland, and at a later date was relabelled as Buff-breasted Button-quail. Associated metadata includes “‘Tolworth’ Cooktown’, which might imply ‘Tolworth’

as the collection locality. A newspaper from that period suggests ‘Tolworth’ was a locality near the Endeavour River, Cooktown (Greenfields 1901). However, Tolworth is also one of the collector William Fuller’s middle names (Queensland Government 2021), and may have been mistaken for the collection locality. The Fuller family lived on the Endeavour River. Given William’s age (15 years) in 1902, he likely resided in the family home in Cooktown (Townsville Daily Bulletin 1952). As with the holotype, we conclude that the exact locality of this clutch cannot accurately be discerned beyond being likely in or near Cooktown, Queensland.

The remaining six skins (Figure 2(b-g); Table 1) and four of seven clutches in collections (Figure 3(b-d) & Table 1) were collected by W. R. McLennan while employed on a collecting expedition to Coen by H. L. White from August 1921 until May 1922. The skins were collected between 31 October 1921 and 5 February 1922 and the clutches of eggs between 12 and 27 March 1922. One of these clutches (Australian Museum – O.63761) could not be located. Four of the six skins are held in the H. L. White Collection at Museums Victoria and the other two had been reported as missing (Rogers 1995; Mathieson and Smith 2009). We located the two missing skins in the Natural History Museum, Tring (NMH –1923.10.9.1 and 1923.10.9.2)

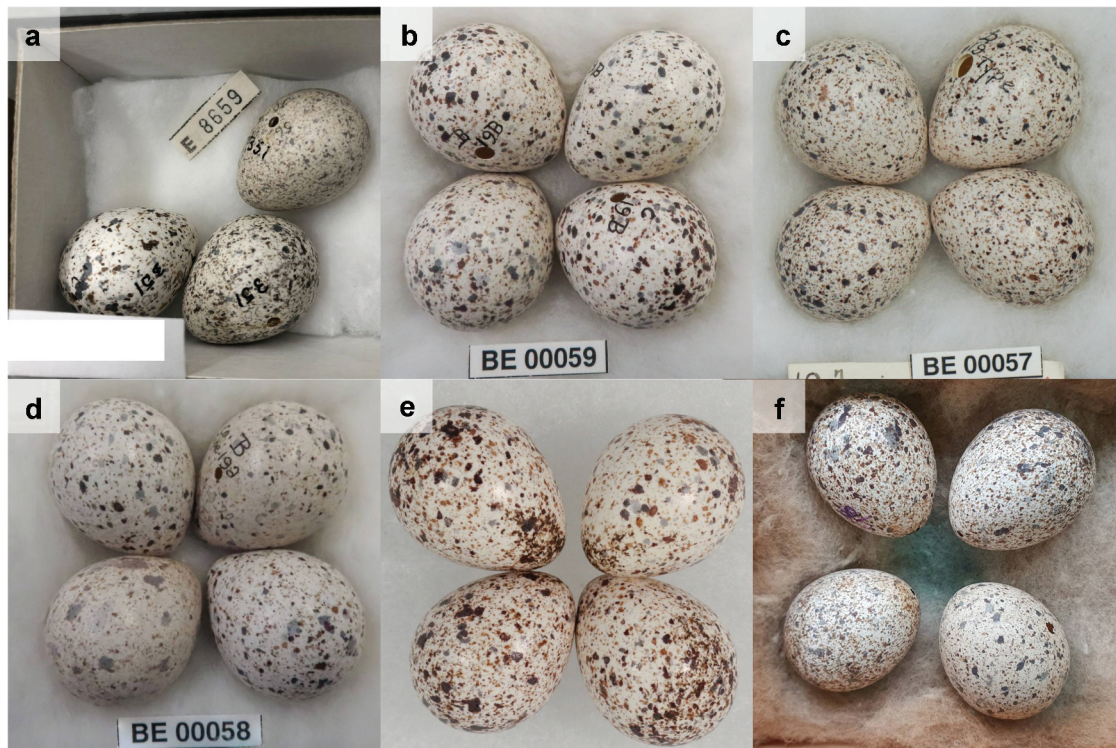


**Figure 2.** Skin specimens of Buff-breasted Button-quail. (a i, ii and iii) Holotype specimen (AMNH 544708) of Buff-breasted Button-quail (female), collected by E. A. Olive 25th June 1899 and described by H.C. Robinson (1900). Likely Olive's original tag (a i, ii) with additional notes likely by Robinson (LeCroy 2017), now held at the American Natural History Museum, New York. (b – g) Specimens of Buff-breasted Buttonquail collected by W.R. McLennan at Coen from 1921 to 1922. B. NHM 1923.10.9.2, C. NHM 1923.10.9.1, D. NMV HLW5047 E. NMV HLW5048, F. NMV HLW5045, G. NMV HLW5046. Photos: a by Leah Tsang; b and c by Mark Adams; d-g by Patrick Webster.

(Figure 2(b,c)). Following an earlier taxonomy, they had been labelled as 'Chestnut-backed Quail *Turnix castanota olivei*' (Peters 1934). McLennan regularly noted encountering the species during his time at Coen, either hearing or flushing them. Before securing a female, he noted a 'deep booming call'; this and his later lengthy diary entry about this vocalisation remain the only first-hand, reliable description of the species' presumed advertising *oom*, a call type common to all Button-quail (Debus and Kirwan 2020). McLennan later located

birds by hearing this advertising vocalisation and eliciting a response by mimicking the call. As ascertained from McLennan's diary, all of his specimens were collected roughly 5–12 km north of Coen in the valley bound by the Geike Range on the west and the lower slopes of the McIlwraith Range on the east. McLennan made note of encountering the species on the Geikie Range and further west of the range, as well as the ranges immediately south of Coen. He noted that the species often resides in timbered country of Messmate





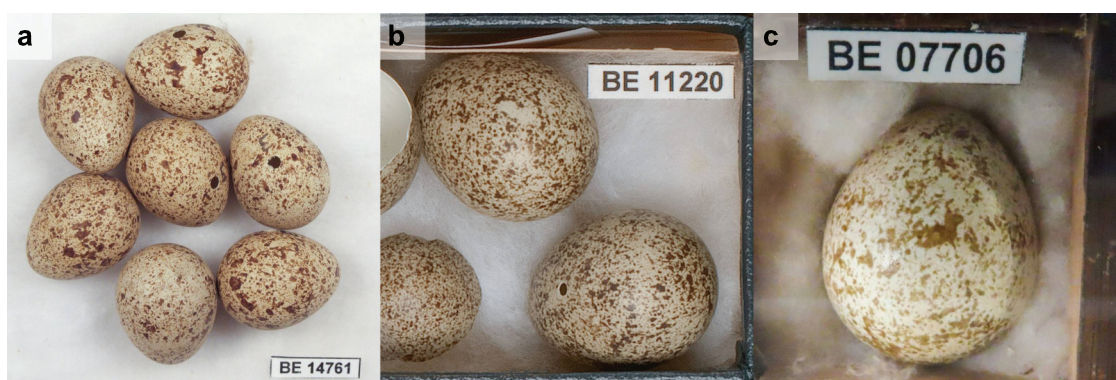
**Figure 3.** Clutches of Buff-breasted Button-quail eggs held in collections. (a) Collected by W. J. T. Fuller 1902, (ANWC E08659). (b-d). Collected by W.R. McLennan 1922 (NMV BE00059, BE00057, BE00058). e. Collected by J. D. Y. Anderson 1924 (AM O.49038). f. Collected by J. P. Dwyer, labeled as Stubble Quail, held at Port Douglas Shire, potentially Buff-breasted Button-quail (but may be Painted Button-quail) mismatched with specimen (NMV BE7706) (Figure 4(c)). Photos: a by Leo Joseph;(b-f) by Patrick Webster.

(Darwin Stringybark) *Eucalyptus tetradonta* and Ironbark (presumably *E. culleni*). On several occasions, he detected the bird amongst the ranges or on ridges. He also makes mention of the diversity of grasses, noting the species is often encountered in areas of long and dense grass, as well as areas of short fine grass.

We located two additional clutches registered in the Australian Museum, Sydney (AM O.49037, O.49038) (Figure 3(e)). They are attributed to J. D. Y. Anderson of Coen, and were reportedly collected on 2 and 28 March 1924, in the vicinity of Coen. Anderson was a natural historian, avid egg collector, and teacher at the Coen School from 1917 to 1928 (Mason and Pfitzner 2020). According to McLennan's (1922) diary, Anderson would regularly join him in the field. No further metadata are associated with these clutches. We consider them verified given a comparison with other confirmed specimens (Figure 3), their location, dates, and connection to McLennan. Both clutches were held at the Australian Museum in Sydney, though one clutch (AM - O.49037) is now missing from their collection.

Finally, we located a clutch of eggs collected on 14 February 1947 by J. P. Dwyer from 'Kalpowar' (Figure 1), which at the time was a pastoral station

north of Cooktown. Dwyer was an ardent egg collector and at the time of collecting this specimen, had just purchased half-shares in Kalpowar (Mason and Pfitzner 2020). Part of Dwyer's collection, which included one egg putatively of a Buff-breasted Button-quail clutch, was acquired by L. Harvey (Ian Mason pers comm). However, that egg (NMV - BE7706) (Figure 4(c)) is completely unlike any other *Turnix* egg, and closely resembles that of a Stubble Quail *Coturnix pectoralis*. The remainder of Dwyer's oological collection was donated to the Mossman Council (now Port Douglas Shire), and is still held there. We examined this collection, and found a clutch of four eggs labelled as Stubble Quail, but which appears to be that of a *Turnix* species (Figure 3(f)), suggesting the two clutches were mislabelled or mismatched. Although the size, shape and colouration of this clutch suggests some similarities with other confirmed Buff-breasted Button-quail clutches, the patterning does bear similarities to Painted Button-quail, a species not known from this region historically. However, to add further uncertainty to this record, Painted Button-quail were discovered at Kalpowar in October 2021 (P. Webster, unpublished data). Without being able to conclusively determine the identity of this clutch through DNA



**Figure 4.** Comparison of Stubble Quail eggs (a, b) with purported Buff-breasted Button-quail egg (c) (NMV BE07706). The egg (c) clearly matches other confirmed Stubble Quail eggs. A clutch of eggs held in the original Dwyer Oological collection labeled as Stubble Quail (Figure 3(f)), is potentially attributable to Buff-breasted Button-quail. The two specimens have likely been unintentionally swapped. Photos: a by Rory O'Brien; b by David Paul (Atlas of Living Australia 2020) and c by Patrick Webster.

analysis, it should be considered as an unconfirmed record. If it can be proven as a clutch of Buff-breasted Button-quail, it would represent the last specimen-based record of the species.

## Discussion

Prior to this review, the last specimen of Buff-breasted Button-quail was believed to have been collected by W. R. McLennan on 27 March 1922 near Coen (Rogers 1995; Mathieson and Smith 2009). Setting aside confirmation of the accuracy of Dwyer's unregistered clutch from Kalpowar in 1947, our analysis leaves this finding largely unchanged, the last verified specimen being collected near Coen in 1924 by Anderson. At the time of writing, this marks 98 years since the last verified record of the species, the longest such period for any presumed extant Australian bird.

Inclusion of the 1947 clutch from Kalpowar would represent a significant spatial and temporal expansion of confirmed records in Cape York Peninsula. This clutch has similarities in size, shape and patterning with other confirmed clutches of Buff-breasted Button-quail (Figure 3), and given the locality in the Cape York Peninsula bioregion, there is potential that this clutch is attributable to the species. Despite this, given the emphasis placed on verified specimens, and coupled with the potential for misidentification with Painted Button-quail and the recent discovery of Painted Button-quail at Kalpowar, this clutch should be treated as possible though not confirmed until such time as the authenticity is tested with DNA analysis. Similarly, given the potential for misidentification of the 1902 Fuller clutch and considering it was previously labelled

as Black-breasted Button-quail, we strongly recommended this clutch be treated cautiously until its identity is confirmed.

We found no specimens from the putative southern end of the distribution in the WT/EU bioregions (Squire 1990; Nielsen 2000; Mathieson and Smith 2017; Smith and Mathieson 2019). All confirmed specimens have originated from two areas within the Cape York Peninsula bioregion: Cooktown and Coen (Figure 1). We have gleaned relatively precise locations of McLennan's records around Coen from his diaries (McLennan 1922). However, all other specimens, such as those of Olive and Fuller, which were labelled as being collected at 'Cooktown', can only be attributed to a generalised area.

The lack of accurate spatial data associated with most skins make accurate conclusions about the Buff-breasted Button-quail's preferred habitat difficult. Only the records of McLennan are accompanied by detail sufficient to determine their locality; however, several general statements can be made. The specimens appear to have been taken in regions broadly defined as tropical savanna in association with ranges or undulating country. Both the Painted Button-quail in eastern Australia and the Chestnut-backed Button-quail of northern Australia occur in similar habitats on ranges and ridge country (Marchant and Higgins 1993; Webster and Stoetzel 2021).

Interestingly, all verified records appear to be north of the Torresian Barrier. There are many interpretations of the location of this barrier (Cracraft 1991; Bryant and Krosch 2016), though all definitions place it within the vicinity of Cooktown. This barrier is a well-recognised feature of the biogeography of Australian flora and



fauna (Cracraft 1991; Edwards *et al.* 2017). Macdonald (1971) proposed Buff-breasted Button-quail was a member of the Cape York Peninsula avifauna and likely has a distribution throughout Cape York Peninsula reaching as far south as Cooktown. Macdonald also suggested that south of Cooktown (i.e. south of the Torresian Barrier) Buff-breasted Button-quail are replaced by Painted Button-quail. The recent discovery of Painted Button-quail at Kalpowar, well north of the Torresian Barrier, suggests the Painted Button-quail at least currently may not conform to this biogeographical boundary. While anecdotal reports from the WT/EU bioregions suggest the Buff-breasted Button-quail may straddle the Torresian Barrier, the lack of specimens, photographs or any other verifiable evidence, and the prevalence of Painted Button-quail records south of this barrier (Squire 1990; Nielsen 2000, 2015; Mathieson and Smith 2009, 2017) generally support Macdonald's theory on the distribution of tropical savanna Button-quail and point to the Cape York Peninsula bioregion being the likely core of the Buff-breasted Button-quail's distribution. A similar situation is likely to exist to the west of Cape York Peninsula, where the Carpentarian Barrier separates the distribution of the Buff-breasted Button-quail from its likely closest congener, the Chestnut-backed Button-quail (Marchant and Higgins 1993; Webster and Stoetzel 2021). No phylogenetic analysis of relationships among all Button-quail has yet been reported.

The now significant corpus of anecdotal reports from the WT/EU bioregions, including several by reputable observers, has no supporting specimens or photographs. Reliance on anecdotal reports to determine a species' status must be done extremely carefully (Leseberg *et al.* 2020) and in the past has resulted in real and significant errors regarding the presence, population dynamics, and range of rare species (McKelvey *et al.* 2008; Scrambler *et al.* 2021). While one is reluctant to dismiss these southern reports of Buff-breasted Button-quail, the onus lies squarely in the need to produce incontrovertible evidence that they refer to Buff-breasted Button-quail. These reports clearly warrant further interrogation.

Regardless of whether there is a WT/EU population, it is now nearing a century since the last verified specimen of the Buff-breasted Button-quail, and over seven decades since a potential specimen was collected. Either way, this raises serious concerns for the conservation outlook for the species. It seems likely the species has undergone a significant decline, as have many bird species from Cape York Peninsula savannas (Garnett and Crowley 1995, 2002). This is often attributed to habitat change associated with

pastoralism, altered fire regimes, and subsequent woody thickening (Crowley and Garnett 1998). As another savanna species, it is possible these same threatening processes have driven the decline of the Buff-breasted Button-quail.

Currently classified as Endangered under both state and federal legislation (Nature Conservation Act 1992, Environment Protection and Biodiversity Conservation Act 1999) (Australian Government Department of Agriculture Water and the Environment 2021), the lack of verified records suggests the evidence for this classification is weak, and we argue the precautionary principle be applied, and a listing of critically endangered be afforded to the species. The findings of this paper have been acknowledged in the 2020 Action Plan of Australian Birds (Webster *et al.* 2021) and subsequently the species will likely be uplisted to Critically Endangered in the IUCN Red List. In addition, a concerted effort is still required to establish the Buff-breasted Button-quail's true conservation status. When trying to establish the true status of such poorly known species, several lines of evidence must be assessed, including but not limited to: the presence of threatening processes leading to declines; attributes that predispose a species to declines; survey effort; the presence of unconfirmed reports; and, the existence of suitable habitat (Butchart *et al.* 2006). Research that aims to inform this assessment should be the priority. This could include autecological research to establish which threatening processes may impact the species, including their influence on the species' likely distribution and historical status. If primary evidence is not available, as is the case here, the Buff-breasted Button-quail's closest congeners may present an avenue for research. Systematic field surveys of both historical and contemporary locations should be a priority, with a focus on identifying and surveying areas that are ecologically intact. This should be coupled with research aimed at understanding how to reliably identify and detect the species in the field. Finally, a review of all reports of the species should be conducted to identify any historical patterns of distribution or decline, which could help clarify the species' current distribution and status.

This research has affirmed both the scarcity of the Buff-breasted Button-quail in museum collections, and the lack of any specimen-based support for records outside of the Cape York Peninsula bioregion. This suggests that the current conservation status of this species rests largely on the presence of relatively recent anecdotal, non-definitive reports from the WT/EU bioregions. As 98 years have passed since the last definitive evidence of the species' existence, there should be significant concern for the



bird's conservation outlook. The Buff-breasted Button-quail should be the subject of urgent searches at locations of both historical and contemporary sightings, and a rigorous assessment of anecdotal records should be undertaken. This will permit a more robust assessment of its present distribution and conservation status than is currently possible. The spectre of extinction, if it has not already occurred, looms large for this species.

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## Disclosure statement

No potential conflict of interest was reported by the author(s).


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