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PREFACE TO QUEENSLAND BIRD REPORT 2018-2019

From 1984 to 1992, between the two national bird atlases, *The Sunbird* featured annual Queensland Ornithological Society (QOS) Bird Reports, which listed interesting records that had been submitted from all parts of the state over the previous calendar year. The 1991 Bird Report, published in 1992, was the largest, comprising 33 pages that summarised records for 289 species submitted by no fewer than 201 observers. Sadly, that report was also the last of its kind - at least for the next 27 years.

In early 2018, a *Sunbird* Development Group was established to revive the ailing journal, and a decision was made to resurrect an annual Bird Report to summarise significant and unusual records of birds across Queensland. The first of these was published in 2019 as part of a freshly re-formatted and online-only *Sunbird*, coinciding with the 50th anniversary of Birds Queensland. To cover the enormous variety of tropical, subtropical and arid environments of Queensland, the state was sub-divided into 15 nationally recognised **bioregions**. Several sources of bird record data were considered for the report, but the one chosen was eBird, primarily due to the editors having more familiarity with the data and its extraction from the database. After the data for each bioregion were assembled, local bird experts were contacted to scrutinise them and report noteworthy records, typically of rare or unusual species.

Though published in 2019 as part of *Sunbird* Volume 48, the Queensland Bird Report reviewed eBird records in 2017, and it was envisaged, perhaps over-optimistically, that the reports would be annual, and that the report for 2018 would appear in the following issue of the journal. Unfortunately, *Sunbird* failed to materialise in 2020, and although the following year saw the publication of four peer-reviewed articles in Volume 49-Part 1, the production of a Queensland Bird Report was inadvertently delayed. This deferral has been rectified with the present issue, which covers two years, 2018 and 2019. Like Volume 49 Part 1, this issue (Part 2) comprises the Bird Report, as well as two specialist reports about banding and Australian cranes. Volume 50, however, will comprise peer-reviewed articles.

The Queensland Bird Report 2018-2019 follows the same format as its predecessor, with a separate chapter for each bioregion written by an expert on birds in that region. To reduce editorial burden in the current report, individual chapter templates were created, based on those in the previous report, with the removal of sections that would change from year to year (e.g. weather), while maintaining those sections that were unlikely to change (e.g. habitat descriptions). This provided each bioregion author with a partially completed and formatted chapter to review, add to and change using pull down template boxes. The central coordinating team member then built each chapter by removing the templates and incorporating the new material into the standardized and formatted chapters.

Although eBird is based on Clements' Checklist, Birds Queensland follows IOC **taxonomy and nomenclature**. Thus, each bioregion author was provided with converted eBird lists for 2018 and 2019 for the region using the IOC 10.2 Nomenclature and Taxonomy. The main task for the bioregional authors was to remove species from the provided list following the prescribed guidelines established in the previous report.

Acknowledgements

The Queensland Bird Report 2018-19 was coordinated by Robert Bush, Allison Roberts and Jon Coleman. The bioregion reports were written by Allan Briggs, Bob Black, Paul Grimshaw, Andrew Humpherys, Andrew Ley, Stacey McLean, Greg Malone, David Niland, David Redhead, Allison Roberts, Emily Rush, Kath Shurcliff, Peter Valentine and Jon Wren. The weather reports in the introduction and individual bioregion chapters were written by David Niland. The maps for each region were generated by Ofalia Ho as per the previous report. Copy editing was undertaken by Judith Anderson. Stephen Prowse and Richard Noske undertook further editing and assembled the report. Production was undertaken by Annette Neill. Photographs were generously provided by Jon Coleman, Judy Leitch, Micha Jackson, Robert Bush, Paul Jensen, James Niland,

Jill and Ian Brown, Paul Turner, Jim Sneddon, David Niland, Jon Norling, Graham Donaldson and Vince Bugeja. The coordinating team also thank Rae Clark for her unerring support.

The Editors of *The Sunbird* thank all the contributors who have generously given their time to this major project and unreservedly thank every single individual who has submitted an eBird checklist in the state of Queensland. Without your data, this report would not have been possible.

Richard Noske

Robert Bush



Beach Stone Curlew (Robert Bush)

QUEENSLAND BIRD REPORT 2018-2019

Introduction

Richard Noske and David Niland

(A) Summary of eBird records for 2018-2019

A total of 52,088 lists containing 924,989 records were submitted to eBird for 2018, representing a 26% and 21% increase from the previous year (2017). In 2019, this rose again but not to the same extent, with 60,112 lists containing 1,074,431 records, representing a 15% and 16% increase from 2018 values. However, this increase was not uniform across all bioregions. The most dramatic fall in survey effort was in the Cape York Peninsula bioregion, where the number of surveys dropped in both 2018 and 2019, the latter year receiving about half (51%) that of 2017 (Fig. 1; Table 1). This contrasts sharply with the neighbouring Wet Tropics, which in both years was the second-best surveyed bioregion in the state, despite being 16% of the size of Cape York Peninsula. The number of surveys submitted for the Desert Uplands was also lower in 2018 and 2019 than in 2017, though it increased slightly in 2019. The New England Tablelands, the smallest bioregion of all, also received fewer bird surveys in 2018 and 2019 than in 2017.

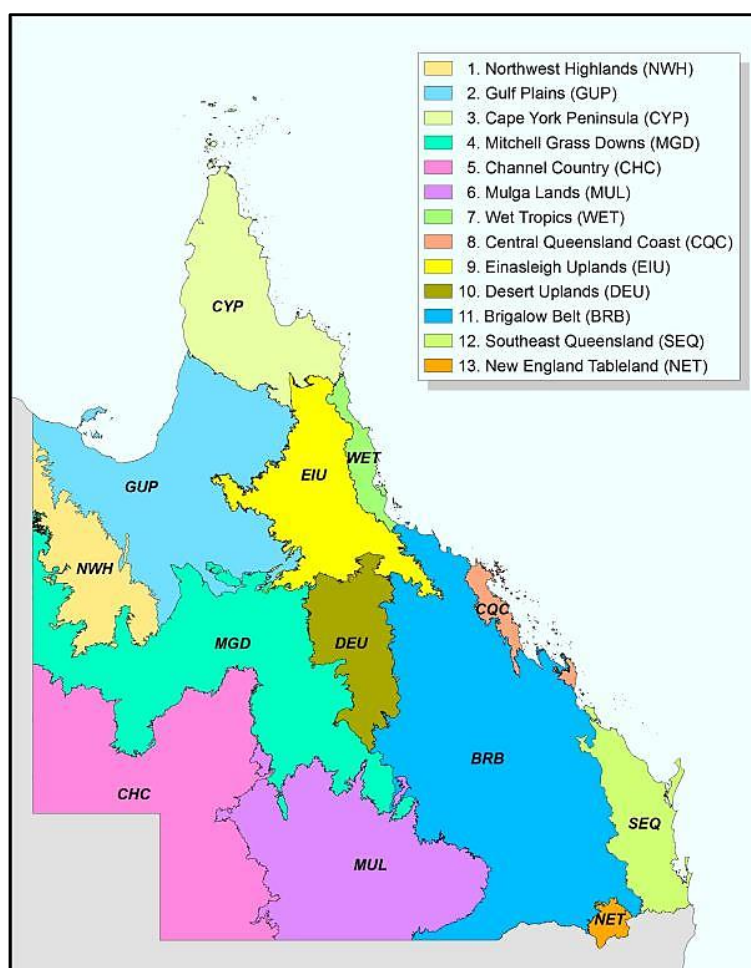


Figure 1. Map of Queensland, showing 13 of the 15 bioregions recognised in this report

Table 1. eBird statistics for 2018 and 2019 across 14 bioregions of Queensland, excluding Torres Strait.

Year		2018			2019		
Name	Acronym	No. obs.	No. surveys	No. records	No. obs.	No. surveys	No. records
Cape York Peninsula	CYP	93	3,029	38,881	104	1,752	24,765
Wet Tropics	WET	456	9,133	133,918	533	11,547	162,200
Gulf Plains	GUP	44	254	5,638	52	351	5,941
Einasleigh Uplands	EIU	206	1,202	16,109	262	1,546	19,599
North West Highlands	NWH	76	497	8,127	96	537	10,014
Central Queensland Coast	CQC	83	683	10,202	111	696	10,116
Brigalow Belt North	BBN	178	3,883	76,847	215	4,037	79,402
Desert Uplands	DEU	29	102	1,811	40	105	1,461
Mitchell Grass Downs	MGD	95	715	9,503	118	900	10,950
Channel Country	CHC	77	522	4,865	89	684	7,224
Mulga Lands	MUL	88	1,002	18,085	122	1,709	40,501
Brigalow Belt South	BBS	268	2,303	37,252	320	2,213	33,008
New England Tablelands	NET	150	728	12,401	139	683	9,814
South East Queensland	SEQ	993	28,035	551,350	1,205	33,352	659,436
Totals			52,088	924,989		60,112	1,074,431

The highest increase in the number of surveys between 2017 and 2018 occurred in the Mitchell Grass Downs and Channel Country, which each rose by about 66%, while in three other bioregions (Brigalow South, Southeast Qld, North West Highlands) it rose by about 40% (Fig. 2). In contrast, the most substantial increases in survey effort between 2018 and 2019 occurred in the Mulga Lands (71%) and Gulf Plains (38%), though it continued to rise in the Channel Country (31%) and Mitchell Grass Downs (26%).

Unlike the number of surveys, the number of observers that submitted eBird surveys progressively rose each year in all bioregions except the New England Tablelands in 2019 (Fig. 3; Table 1). Between 2017 and 2019 Observer numbers more than doubled in the Gulf Plains and North West Highlands, and increased significantly in the Mitchell Grass Downs (90% increase) and Brigalow South (85%) bioregions. The smallest increase occurred in the Central Queensland Coast (35%) and New England Tablelands (30%) bioregions. Not surprisingly, given their relatively small size and large human populations, the Wet Tropics and Southeast Queensland had the highest numbers of observers, while the large, remote inland regions were surveyed by relatively few observers (Table 1).

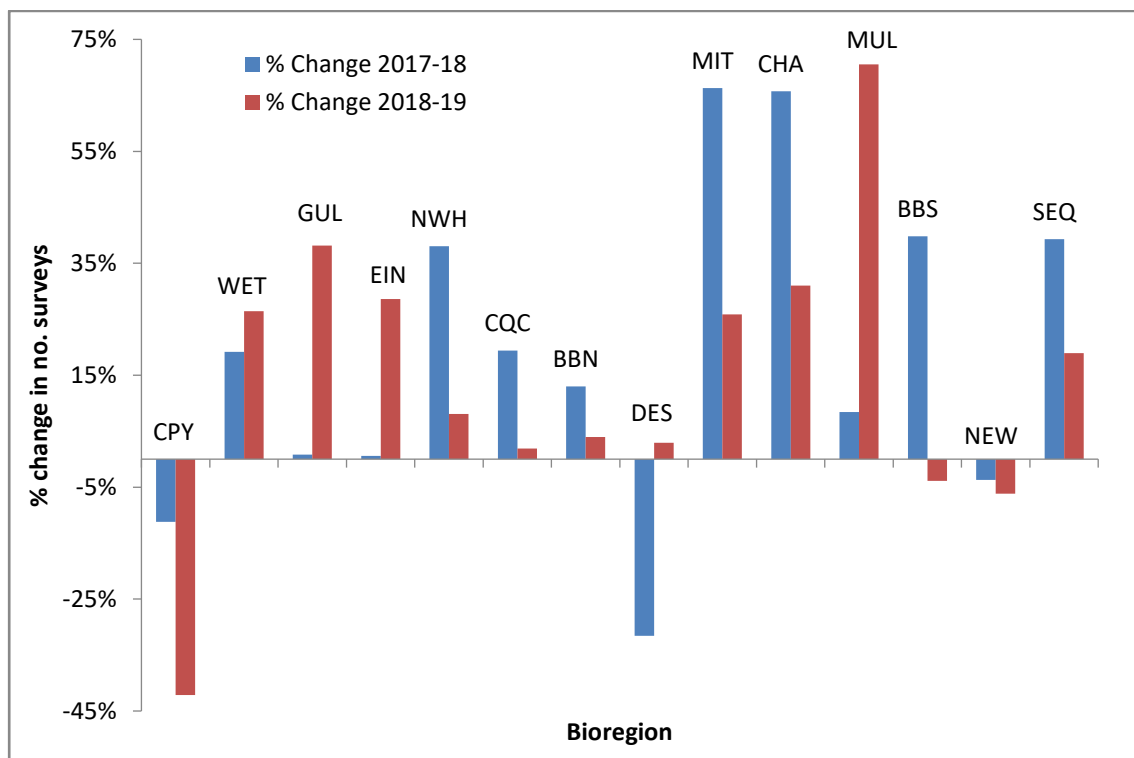


Figure 2. Changes in the percentage of surveys submitted in 2018 and 2019 for each bioregion relative to the previous year. See Table 1 for bioregion abbreviations.

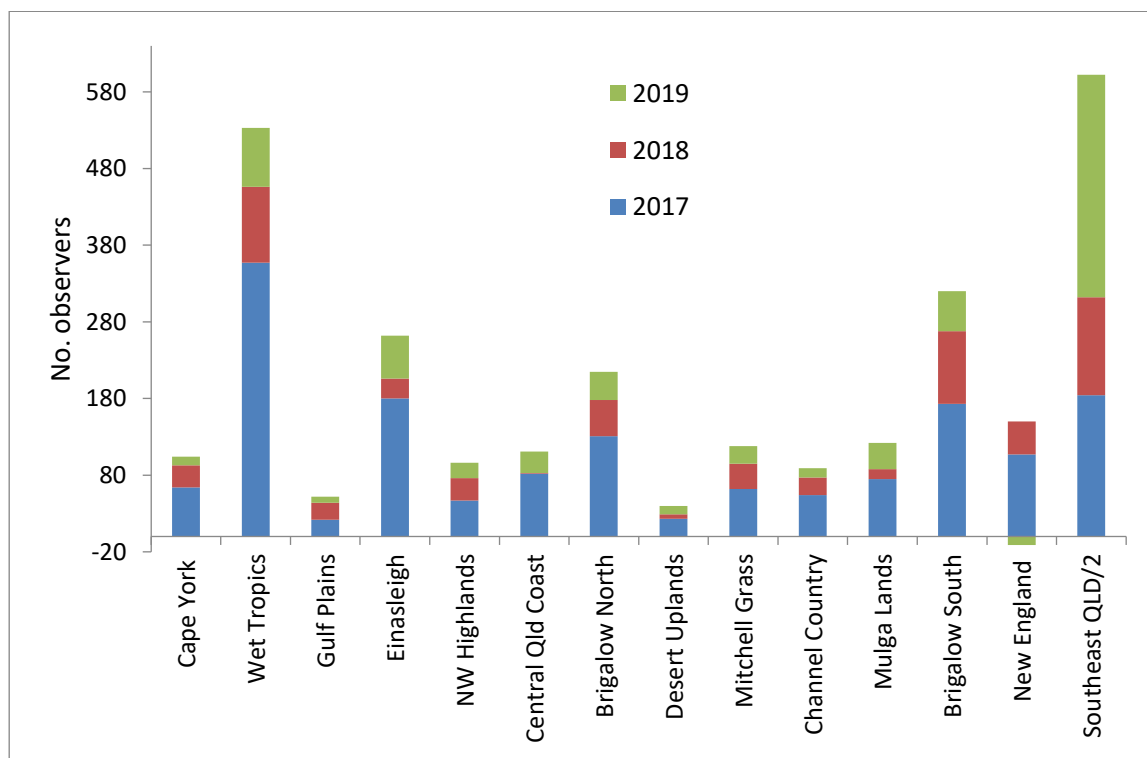


Figure 3. Incremental change in the number of observers in the three years of analysis (2017-2019). SEQ values halved to emphasise changes in other regions.

(B) Queensland's weather in 2018 -2019

2018

Extreme rainfall and flooding, heatwaves, severe thunderstorms and bushfires were a feature of 2018. In terms of mean temperature, 2018 was the fifth-warmest year on record for Queensland at 1.35°C above the long-term average, while in terms of mean maximum temperature it was the fourth-warmest year on record, at 1.58°C above the long-term average. Almost all the state, apart from the northern interior, reported warmer than usual daytime temperatures, with numerous sites reporting their highest mean daily maximum temperature on record. Annual overnight temperatures were the eleventh-warmest on record for the state, and 1.11°C above the long-term average. Much of the western half of Queensland, parts of the Gulf Country and western Cape York Peninsula had warmer than average minima in 2018.

It was an unusually warm start to the year, with a record high state-wide January mean temperature (2.22°C above the long-term average). Extended and widespread heat affected Queensland between 10 and 16 February, with the peak of the heat on 12 February, when Queensland had its hottest February day on record with a mean maximum temperature of 40.46°C. March mean maximum temperatures were much cooler than average in the northern interior, due to persistent showers and rain. In June, there were cooler than usual nights in northern and eastern parts of the State. Cold nights associated with a southerly burst in mid-June resulted in Charters Towers reporting its lowest temperature on record. An extreme heatwave affected the north tropical and central coast of Queensland from 24 to 30 November. Numerous sites reported their highest temperature on record for November, or for any month.

Rainfall was 15% below average for the state and below average across southern Queensland, though parts of the northern interior and Cape York Peninsula received above average falls for the year. Large parts of the southern and central interior reported rainfall in the lowest 10 % of historical records. Some sites had their lowest annual rainfall on record, and for a number of others, it was the lowest in several decades. After a dry start to the year, numerous flood events occurred in March, and major flooding affected the north tropical coast, with the highest daily rainfall on record at some sites. Rainfall was well below average from April to September, with drought affecting much of the State. Severe thunderstorms and showers resulted in above-average falls in October across eastern and northern Queensland.

Heavy rainfall was recorded in the northern interior, parts of the Cape York Peninsula, and the north tropical to central coasts, associated with the passage of ex-tropical cyclone *Owen* in December. Daily rainfall totals exceeding 400 mm were recorded around Lucinda to Ingham on 16 December including 678 mm at Halifax.

Notable weather events affecting Queensland in 2018

There were several significant storms which produced large hail in Southeast and central Queensland during February. Heavy rainfall from late February into early March led to major flooding in Queensland's North Tropical Coast, affecting the Herbert, Tully and Murray, Johnstone, and Mulgrave and Russell catchments. Flooding also affected the Gulf Country and river catchments in the southwest and southern inland Queensland, with major flooding at Winton and moderate flooding at Longreach. Flash flooding affected the region around Cairns, while Ingham was inundated twice during the month. Severe tropical cyclone *Nora* made landfall on 24 March between Pormpuraaw and Kowanyama on the west coast of Cape York Peninsula in Queensland. The remains of *Nora* travelled across the base of Cape York Peninsula and produced heavy rainfall, renewing major flooding in catchments on the north tropical coast.

Eastern Australia saw a very early start to the 2018-19 bushfire season in August, owing to unusually warm and dry conditions. There were several thunderstorms in Queensland during October, including two tornadoes observed at Coolabunia (southeast of Kingaroy) and Tansey (near Murgon), as well as large hail

in the Wide Bay and Burnett region. A prolonged heatwave in late November to early December saw temperatures soar well above 40°C over much of Queensland, with the most exceptional temperatures along the tropical coastline. Many sites broke November or annual temperature records, some by very large margins. Cairns Racecourse reached 43.6°C, more than six degrees above the previous November record for any site in the Cairns area (37.2°C at the Post Office in 1900 and the Airport in 1971). The extreme conditions were also associated with the death of more than 20,000 spectacled flying foxes around Cairns.

High temperatures, low humidity, and strong westerly winds, coupled with antecedent dry conditions, led to elevated fire danger across much of Queensland. Queensland Fire and Emergency Services (QFES) attended to about 130 bushfires by 28 November, with over 716,000 ha burnt between 26 and 30 November. By 6 December over one million ha had been burnt. Fires occurred across the length of the east coast, from just south of Cairns to the Gold Coast. Severe tropical cyclone *Owen* developed over the Coral Sea on 2 December, reaching Category 1 strength before being downgraded while still well offshore of the north Queensland coast two days later. It crossed the coast near Port Douglas, north of Cairns, passed into the Gulf of Carpentaria, and regained cyclone strength before turning back east and making a second landfall near Kowanyama on the western side of the Peninsula at Category 3 strength early on 15 December. *Owen* produced steady heavy rainfall on its second pass, resulting in localised flash flooding. There were daily totals over 300mm near Ingham on the east coast, including 678mm at Halifax (a new December daily rainfall record for Australia).

2019

Queensland's mean temperature for 2019 was 1.27°C above average, and the sixth-warmest on record for the State as a whole. The mean maximum temperature was 1.46°C above average, and the fifth-warmest on record, while the mean minimum temperature was 1.09°C above average, and the twelfth-warmest on record. Many sites, mostly in the southeast, had their highest mean daily maximum temperature on record or their highest mean temperature on record. A delayed onset to the 2018-19 monsoon saw an extended period of hot days in the northwest, with both Cloncurry and Camooweal reporting a record run of days at or above 40 C.

Very hot days were common in western Queensland during January as an extended heatwave affected much of the country. It was Queensland's warmest January on record with the mean temperature 2.46°C above average and the mean minimum temperature also a record high at 2.53°C above average. Very hot days and very warm nights were recorded in the first three weeks of March in southeast Queensland, and it was the first time a site had recorded a day in March at or above 40°C in the South East Coast District. In early September, areas of southeast Queensland had warmer than average daytime temperatures, very low humidity, and gusty winds leading to dangerous fire weather conditions. Very warm mean maximum temperatures continued in spring across most of the State and a very dry landscape led to a continuation of dangerous fire weather conditions right through into December. December was Queensland's warmest month on record with a mean temperature 2.74°C above average, and the mean maximum temperature for Queensland was also the highest on record, at 3.65°C above average.

Cold nights at the end of May saw several sites in the Darling Downs and Granite Belt including Stanthorpe, Applethorpe, Oakey, Warwick and Dalby all report their coldest May temperature on record on 31 May. Stanthorpe dropped to -6.9 C; the lowest temperature ever recorded in Queensland during May. Overnight temperatures were above average in most areas overall in 2019, but cool nights were reported in the northern tropics from September to November.

Annual rainfall was 20% below average for Queensland overall, with above average annual rainfall in the northern tropics and northwest, but well below average in the south-eastern quarter of the State. Large

areas of inland southeast Queensland had their driest year on record. Several tropical systems affected Queensland at the start of the year, including tropical cyclones *Penny* and *Trevor*, and significant flooding occurred in and around Townsville in late January to early February. Extensive and long-lived flooding lasted from February into April in the Gulf Country and western Queensland. TC *Penny* made landfall on 1 January, then an active monsoon trough and low-pressure system produced record high rainfall and widespread flooding in the northern tropics and northwest in late January and early February. TC *Trevor* produced moderate to heavy rainfall that led to flooding from western to central Queensland in March, and flooding continued in western rivers into April, and some sites had their highest daily rainfall on record. In April, areas in the Darling Downs and Granite Belt reported rainfall totals in the lowest 10% of records, with the dry pattern continuing into May, and extending into southern inland Queensland by June. From July to December, much of southern Queensland had below average rainfall, with large areas of the Warrego, Maranoa, Darling Downs and Granite Belt reporting their driest July to December on record. It was the second-driest December on record for Queensland as a whole.

Notable weather events affecting Queensland in 2019

An extended warm period with multiple heatwaves over much of Australia began in early December 2018 and continued into January 2019. A persistence of stable and sunny conditions over much of the country combined with a delayed onset of the Australian monsoon over northern Australia to create ideal conditions for heat build-up. This dome of hot air over the continent brought extreme heat to many areas as weather systems, particularly troughs, introduced hot air into different regions, with little penetration of cooler air from the south to disrupt the hot continental air mass. Numerous sites set records for runs of consecutive days at or above 40°C while many other sites reported their highest daily maximum or minimum temperature on record for January, or for any month.

An active monsoon trough and a slow-moving low-pressure system produced extremely heavy rainfall in tropical Queensland from late January into early February, causing flooding on Queensland's tropical coast between Daintree and Mackay, and parts of the western Peninsula and Gulf coast. Heavy rain began on 26 January in areas of the North Tropical Coast and Tablelands, and the Herbert and Lower Burdekin districts, and continued into early February. Over the following days, heavy falls had spread further south to the Central Coast and Whitsundays and inland across the north-western regions of Queensland. Major flooding occurred in coastal communities between Daintree and Mackay, including flooding in the Burdekin, Ross, Bohle, Haughton, Herbert, and Black rivers, and Bluewater Creek. Flash flooding and swift water rescues occurred around Black River and Bluewater Creek to the northwest of Townsville, with rainfall totals of more than 200mm in three hours. Flooding was extensive and long-lived in the Gulf Country, with major flooding at Walkers Bend on the Flinders River by 2 February. Floodwaters in the Flinders River spilled into neighbouring catchments and spread across an area some 70km wide. Major flooding occurred in a number of Gulf rivers, including the Cloncurry, Leichardt, Flinders, and Norman rivers.

Tropical cyclone *Oma* formed near Vanuatu on 12 February and tracked southwest towards the southern Coral Sea late in February. Although *Oma* remained well offshore, the system caused gale force winds, king tides, coastal erosion, and inundation of low-lying areas in coastal southeast Queensland and contributed to damaging surf which produced coastal erosion in New South Wales. Severe TC *Trevor* was named off the east coast of Queensland's Cape York Peninsula early on 18 March, then intensified rapidly before making landfall just south of Lockhart River at Category 3 strength (severe) on the following day. *Trevor* brought widespread heavy rainfall across Cape York Peninsula and Queensland's north tropical coast, as well as heavy rainfall about the southern coast of the Gulf. Some sites in Queensland had their highest March daily rainfall on record. Major flooding across western Queensland which had started in February, and was extended by heavy rainfall associated with ex-TC *Trevor* at the end of March, continued

into April. Major flood levels were recorded across the Channel Country catchments (Georgina/Eyre, Diamantina, and Thomson/Barcoo/Cooper). Significant flooding was also recorded in the Bulloo, Paroo, and Warrego catchments during early- to mid-April but the most significant flooding was recorded further west.

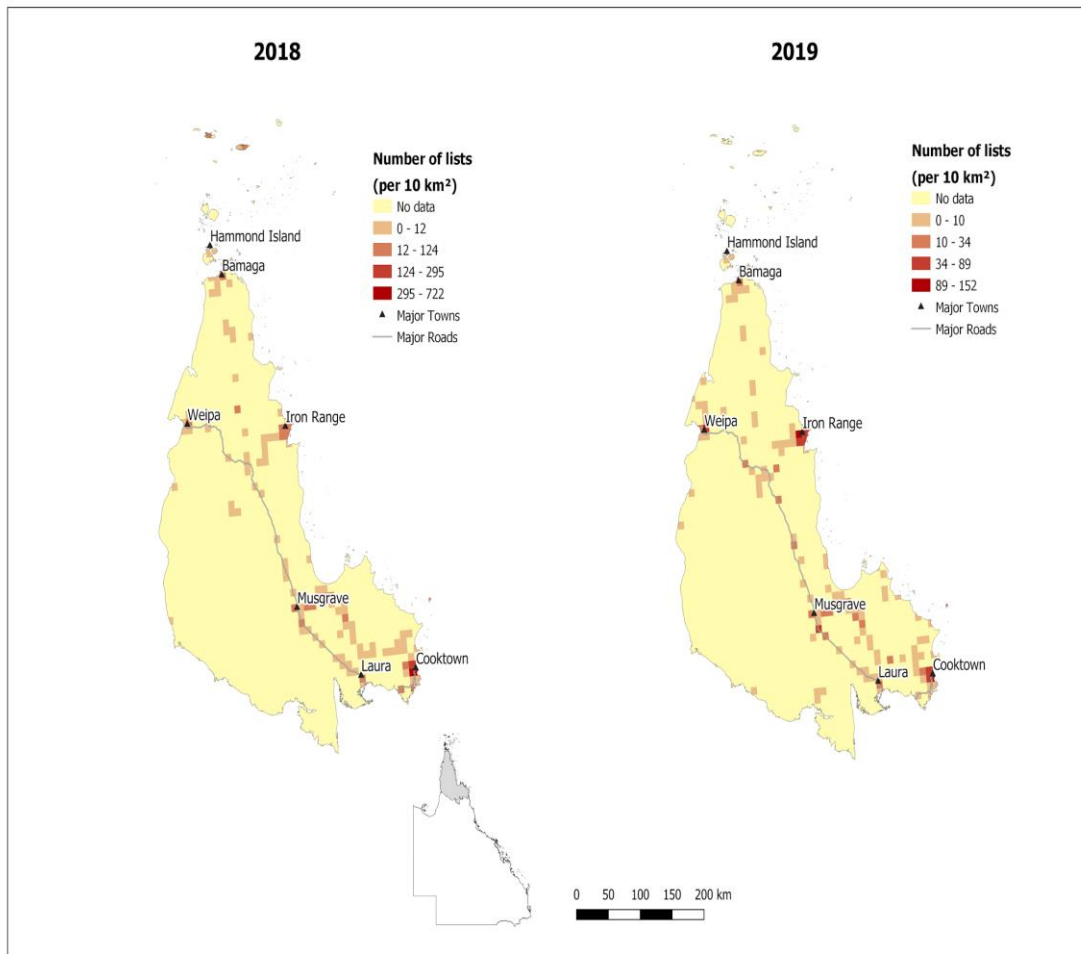
The extremely dry conditions and very much above-average temperatures led to increased fire risk across Queensland and New South Wales during spring. In Queensland, more than 70 fires were burning by 11 September, affecting more than 33,000 ha state-wide. On 17 November, severe thunderstorms developed over southeast Queensland. Large hail was reported around Caloundra, the Glass House Mountains, Mooloolaba, and Buderim. On the Gold Coast large hail was reported around Southport and near Beenleigh, while hail of 2-4 cm in diameter was reported in suburbs to the east and north of Brisbane. Very heavy rainfall led to flash flooding in the metropolitan region, with the Brisbane city gauge reporting 103 mm in one hour, delivering December's average rainfall total in one night. Severe storms also formed over southeast Queensland and the Wide Bay region on 13 December. Very heavy rainfall affected the Gold Coast, while Brisbane experienced high winds, and a storm cell produced giant hail 8-10 cm in diameter at Wolvi and Wilsons Pocket (ENE of Gympie), and hail up to 11.5 cm in diameter at Goomborian.

Significant heat affected large parts of central and southern Australia from 12 December as a slow-moving high over the Great Australian Bight allowed heat to build over the continent. Areas of southern and western Queensland experienced temperatures exceeding 45°C on multiple days. On two consecutive days, 17 and 18 December, records were set for Australia's hottest day on record. The national area-averaged maximum temperature on the latter day was 41.9°C, exceeding the previous record of 40.3°C set on 7 January 2013. The extreme heat during December also led to Australia's warmest week (week ending 24 December) and warmest month on record in terms of national area-averaged maximum temperature.

Fire weather was particularly severe in spring over the eastern half of Australia, and over most of the country in December, when the monthly (accumulated) Forest Fire Danger Index (FFDI) was the highest on record for any month. By the end of December, more than 5 million ha had been burnt across Australia since the start of July, including 250,000 hectares in Queensland. The total area burnt was the largest in a single recorded fire season for eastern Australia.

1. Cape York

Kath Shurcliff



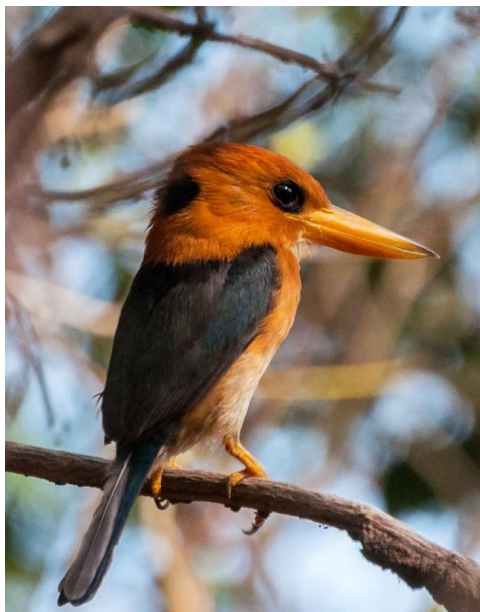
Map of Cape York Bioregion showing eBird survey effort



Palm Cockatoo (Micha Jackson)



White-faced Robin (Jon Coleman)



Yellow-billed Kingfisher (Judy Leitch)

Geography

The Cape York Peninsula Bioregion (CYP) is the seventh largest bioregion in Queensland, covering 121,100 km² (7.1%) of the State. There are ranges surrounded by foothills and broad, flat alluvial plains with extensive areas of eucalypt and melaleuca savanna woodlands dominated by Darwin stringybark, heathlands, grassland plains, wetlands, and lagoons (AWE 2008). The larger rivers include Endeavour, Norman, Kennedy, Edward, Holroyd, Coen, Archer, Pascoe, Wenlock, and Jardine. There are several areas along the east coast with tropical rainforest: Lockerbie Scrub, Kutini-Payamu (Iron Range), KULLA (McIlwraith Range), and small areas around Mt Cook and Mt Webb in the southeast. The latter two are separated from the northern rainforests by the large area of savanna grasslands in Rinyirru (Lakefield) National Park (NP). Most of the Cape has a tropical climate classification where Weipa and the tip are considered equatorial (BoM 2016).

Approximately 40% of the land is used for grazing. The main settlements of the peninsula are, from south to north: Cooktown, Laura, Coen, Lockhart River, Pormpuraaw, Aurukun, Weipa, Bamaga, Seisia. Road access throughout most of Cape York is limited, and severely hampered during the monsoonal wet season. However, an increasing number of birding tours is being organised during the Wet, with fly-in access to both Bamaga and Lockhart River, and vehicle hire available on the ground.

Birds of the bioregion and their conservation

CYP is the home to five endemic species including Buff-breasted Buttonquail, Golden-shouldered Parrot, Lovely Fairy-wren, White-streaked Honeyeater, and Yellow-spotted Honeyeater (BLI 2022a) and 18 other Australian range restricted species including Palm Cockatoo, Red-cheeked Parrot, Red-bellied Pitta, White-streaked Honeyeater, and Tawny-breasted Honeyeater. The Queensland Government lists 481 native species and eight introduced species from historic data, and 27 species are listed as rare or threatened in CYP (DES 2013).

BirdLife International has identified five Important Bird Areas (IBA) in CYP. The Lockerbie Scrub on the northern tip is a critical funnel point for migratory species from Papua New Guinea including Spangled Drongo and Rainbow Bee-eater as well as a good habitat for other range-restricted species (BLI 2022b). Iron and McIlwraith Ranges IBA is one of the only known habitats for the Buff-breasted Buttonquail and

is significant for many of the other Australia range-restricted species (BLI 2022c). Morehead River IBA which includes Artemis Station and Staaten River IBA is identified as critical for Golden-shouldered Parrots, possibly being habitat for Buff-breasted Button-quail, and other range-restricted bird species (BLI 2022de). Pormpuraaw IBA supports populations of a variety of other range-restricted species (BLI 2022f).

Since 1990 bush birds have been monitored and surveyed at Kutini-Payamu NP using standard capturing, measuring, and banding techniques. After a six-year absence, the team returned in November 2018 to continue the study. A Rufous Shrike-thrush originally banded in 1990 was recaptured which significantly extends previous survival data for the species. Overall, the populations of common bush species appear to be stable across the study area, but ongoing monitoring is recommended when considering climate change. This study site was dramatically impacted four months later by Cyclone Trevor.

Efforts to manage the habitat of the endangered Golden-shouldered Parrot have increased through a partnership between the Olkola rangers and Bush Heritage (BHA 2022). Even more efforts are being made at Artemis Station through the recently formed Artemis Nature Fund (ANF 2022). Research on the Buff-breasted Buttonquail, which has not reliably been recorded on Cape York for years, is being undertaken by The University of Queensland. Additional information on other species of buttonquails on Cape York is also being collected in this research.

Unfortunately, there is now an established population of Common Myna at Cooktown, but efforts are being made by local community groups to capture and remove the birds.

Major events in 2018-2019

There was increased birding effort from 2018 to 2019, with wet season records now including Kutini-Payamu NP and Bamaga areas. Wet season storms, including monsoon lows, bring strong winds with several records of large numbers of terns blown to coastal areas. However, there are still limited observations made throughout the year, except at a few towns such as Cooktown and Weipa. Inconsistency in records between years among uncommon species indicates how poorly the area is covered by birders. There continue to be only a few well visited locations: Rinyirru NP, Kutini-Payamu NP, and Bamaga area. These limited observations make it difficult to establish a baseline of “normal” numbers to assess “unusual” years, especially for wetland and grassland species. There are still unknown populations of restricted species to be discovered, as evidenced by Magnificent Riflebirds being found nearly 200 km southeast of previously recorded locations. Current research into buttonquails on Cape York should provide interesting discoveries about their populations and distributions in this region.

In March 2019 tropical Cyclone Trevor ripped through Lockhart River and Kutini-Payamu NP. There was extensive flooding and tree canopy damage including known nesting trees for several parrot species. It is unknown what the long-term impacts on these and other rainforest species may be, and increased birding and especially systematic monitoring efforts should be made in this area.

An innovative exploration into the Cape Melville NP rainforest plateau, accessed via helicopter, discovered a previously unknown population of Magnificent Riflebird. Two species of white-eye (Ashy-bellied and Canary) were found on the small islands off Seisia during the same visits, indicating these two species co-exist. There were no records of either Gouldian Finch or Buff-breasted Buttonquail in either 2018 or 2019.

eBird recorded 316 species from 38,881 records in 2018 and 321 species from 24,766 records in 2019 for CYP including the Torres Straits Islands. The following list highlights selected bird species and occurrences of interest for 2018 and 2019 from eBird.

2018 Notable bird records

Apostlebird. One observation recorded at Artemis station in central Cape York.

Ashy-bellied White-eye. Observations recorded at Little Woody Island, Little Tuesday Island, and Lizard Island

Australasian Shoveler. One unconfirmed observation recorded at Lake Patricia, Weipa in November.

Australasian Swamphen. Sightings only recorded at Kutini-Payamu NP and the Cooktown area.

Australian Bustard. Most observations recorded in southern Cape York near Rinyirru NP and Cooktown area.

Australian Masked Owl. One observation recorded of the distinctive subspecies *kimberli* in Kutini-Payamu NP in October.

Australian Pied Cormorant. Species observed in only a few permanent lakes at Weipa and Rinyirru NP.

Australian Reed Warbler. Most observations recorded in the Cooktown area in March through April, and one observation recorded at Weipa in November.

Barred Cuckooshrike. Only one observation recorded only at Kutini-Payamu NP in August.

Black Falcon. One recorded at Rinyirru NP in November.

Black Noddy. Observations recorded of single birds in Cooktown during periods of strong winds. 300 observed on an island off Lizard Island, and 100 observed at a known breeding location off the northern tip of Cape York.

Black-naped Tern. A few observations recorded on islands off both the east and west coasts of Cape York.

Black-tailed Godwit. Near-threatened. One observation of 100 birds recorded near Weipa.

Black-winged Monarch. Most observations recorded in Kutini-Payamu NP and Cooktown area where they are known to breed from October through April. Records in Rinyirru NP may be from migration.

Broad-billed Sandpiper. One observation recorded at Elim Beach, north of Cooktown.

Brown Cuckoo-dove. Most records restricted to rainforest habitats in northern Cape York. There were two records in southern Cape York.

Brown Noddy. A large number (102) observed on an island off Lizard Island.

Buff-breasted Paradise Kingfisher. One unconfirmed call without visual observation recorded in August which is significantly outside normal migratory residence from November through April.

Canary White-eye. Observations recorded only at Little Woody Island.

Cockatiel. One observation recorded only in Rinyirru NP.

Common Myna. Introduced. Small group is established in the Cooktown area.

- Crimson Finch.** A few observations of the white-bellied form recorded at Rinyirru NP and Kowanyama.
- Curlew Sandpiper.** Near-threatened. One observation recorded at Elim Beach, north of Cooktown.
- Diamond Dove.** Most records were in Rinyirru NP area, but there was one record near Weipa.
- Dusky Moorhen.** A few observations recorded at Umagico, Rinyirru NP, and the Cooktown area.
- Eastern Cattle Egret.** Records indicate the species is widespread throughout Cape York.
- Eastern Grass Owl.** One observation recorded of four birds at Rinyirru NP in July.
- Eurasian Coot.** Only sightings recorded at Rinyirru NP, Umagico, and Bamaga.
- Eurasian Tree Sparrow.** Introduced. There is an established population on Thursday Island, and one observation recorded at Portland Roads.
- Golden-shouldered Parrot.** Endangered. All observations recorded within the Artemis/Musgrave area.
- Great Cormorant.** Species only observed in the same permanent lakes as the Australian Pied Cormorant at Weipa and Rinyirru NP.
- Great Knot.** Endangered. A few observations recorded at the tip of Cape York and Weipa area.
- Great-billed Heron.** Only two observations recorded inland in Rinyirru NP and one observation at Weipa.
- Helmeted Guineafowl.** Introduced. Only one observation recorded from a rural residential area near Cooktown. This is inconclusive as to whether the species has established a breeding feral population in the area.
- Horsfield's Bush Lark.** In April and May three observations recorded in Rinyirru NP and two in Cooktown.
- House Sparrow.** Introduced. Only one observation recorded outside the known, established town populations in Lakeland, Cooktown and Thursday/Horn Islands.
- Jacky Winter.** Only recorded in Rinyirru NP.
- King Quail.** One observation recorded from Cooktown in December.
- Latham's Snipe.** Observations recorded along the eastern coast in August through November and again in March during passage migration.
- Little Curlew.** Only two observations recorded from northern Cape York in November.
- Little Eagle.** This is a rare raptor for Cape York with only three observations recorded for the year.
- Mangrove Gerygone.** Only one observation recorded on Horn Island.
- Mangrove Golden Whistler.** Observations limited to two small islands off tip of Cape York.
- Mangrove Robin.** All observations recorded on small island off Seisia, Little Woody Island, and Weipa.
- Masked Woodswallow.** One observation recorded in Rinyirru NP in September.

Northern Scrub Robin. Observations recorded at both Kutini-Payamu NP and Bamaga area throughout year.

Oriental Plover. One observation recorded at Lockhart River airport in October.

Red Goshawk. Near-threatened. Only observation recorded from the known nesting site in Rinyirru NP, but observations are under-reported due to conservation status.

Red-chested Buttonquail. Two observations including one with photo recorded at Rinyirru NP in August and November.

Red-necked Crake. Sightings only recorded in the Cooktown area, Bamaga area, and Kutini-Payamu NP.

Ruddy Turnstone. One observation recorded on an offshore island near Lizard Island.

Rufous Owl. Only three observations recorded. All were in in rainforest habitats dispersed throughout Cape York.

Rufous Songlark. Two observations recorded in Rinyirru NP in June and August.

Sanderling. One observation of 19 birds, including a flagged bird from Malaysia recorded on the northern Cape York tip in May.

Sarus Crane. Most observations recorded in Rinyirru NP from July through November with a maximum of 24 birds seen at one time.

Satin Flycatcher. Only one observation recorded at Cooktown in November on migration.

Scaly-breasted Lorikeet. Two observations recorded in northern CY: Moreton Telegraph Station and Kutini-Payamu NP.

Scaly-breasted Munia. Introduced. Only one observation recorded from the Cooktown area.

Shining Bronze Cuckoo. A few observations, mostly from the Cooktown area, recorded from August through to February.

Sooty Tern. Observation recorded in Cooktown coinciding with strong winds in late December.

Southern Cassowary. One observation recorded of this rarely observed species at Kutini-Payamu NP.

Spotted Dove. Introduced. Observations limited to the Cooktown environs where there is an established population.

Spotted Nightjar. One recorded in Rinyirru NP in August.

Square-tailed Kite. Most observations recorded in Cooktown area during dry season from May through August.

Star Finch. All observations recorded in the Rinyirru NP area.

Superb Fruit Dove. Records restricted to rainforest and closed forest habitats throughout Cape York. One unconfirmed observation with no details to confirm identification recorded for Rinyirru NP.

Swinhoe's Snipe. Multiple observations of one bird with identification confirmed by photographs recorded at Cooktown over several days in early December.

Tawny Grassbird. One observation recorded in Rinyirru NP in May

Topknot Pigeon. A few observations recorded in the Cooktown area in March and August. One sighting recorded at Bamaga in December.

Wandering Tattler. Two observations recorded in the Cooktown area.

Whiskered Tern. Observations recorded at Rinyirru NP and Weipa.

White-gaped Honeyeater. A few scattered observations recorded throughout Cape York including one unusual record for Cooktown.

White-throated Nightjar. A few observations scattered throughout Cape York recorded in September and October.

Willie Wagtail. Only one observation recorded north of Rinyirru NP at Weipa.

Wood Sandpiper. A few observations recorded on northern tip of Cape York.

Yellow-throated Miner. One undocumented observation recorded in Rinyirru NP. May have possibly been a misidentified Noisy Miner, but they are also an uncommon species in that area.

Zitting Cisticola. One observation recorded in Rinyirru NP in October.

2019 Notable bird records

Ashy-bellied White-eye. Six observations recorded on islands off Seisia, and one observation recorded on small island off Lizard Island in January and December.

Australasian Swamphen. Three observations recorded on Thursday Island in January, and two at Rinyirru NP in September and November.

Australian Bustard. Most observations recorded in southern area, but a few sightings further north.

Australian Pied Cormorant. Four observations recorded scattered around Cape York.

Black Noddy. Large numbers of around 200 observed on an island off Lizard Island in January.

Black Swan. One observation recorded at Rinyirru NP in November.

Black-tailed Godwit. Near-threatened. Three large groups of 50 to 100 observed around the Weipa area in October.

Broad-billed Flycatcher. Only two observations recorded: in Rinyirru NP in October and at Portland Roads in January.

Brown Songlark. A rarely recorded species on Cape York with one observation recorded in Rinyirru NP.

Brown Treecreeper. Although no records in 2018, in 2019 three observations were recorded near Weipa and one in Rinyirru NP.

Buff-banded Rail. One recorded on Thursday Island.

Canary White-eye. Observations recorded at Great and Little Woody Island in January and December.

Common Myna. Introduced. All records were from around Cooktown where a small population has established.

Crested Pigeon. One observation recorded on Morehead River in July.

Crimson Finch. Only recorded in Rinyirru NP.

Curlew Sandpiper. Near-threatened. One recorded in Weipa in October, and five birds observed in Kutini-Payamu NP in September.

Diamond Dove. Most observations recorded in Rinyirru NP area with two records near Weipa.

Eastern Cattle Egret. A large flock of 150 birds was observed north of Cooktown which indicates how well established this species has become, especially in southern Cape York.

Eastern Grass Owl. Two observations recorded with up to four birds at Rinyirru NP in July and November.

Eurasian Coot. Only three observations recorded at Rinyirru NP in November and December.

Eurasian Tree Sparrow. Introduced. Records limited to Thursday and Horn Islands.

Fan-tailed Cuckoo. Usually only found on Cape York from June through September. A few records scattered in Cape York with one unusual record in Cooktown area in December.

Golden-shouldered Parrot. Endangered. All observations recorded within Artemis/Musgrave area.

Great Cormorant. One observation recorded in Weipa.

Great Knot. Endangered. A single bird was observed around the Cooktown area in November, and four observed in Weipa in October.

Great-billed Heron. Three observations recorded in Weipa, Rinyirru NP, and Cooktown.

Helmeted Guineafowl. Introduced. Two observations recorded in Laura.

Hoary-headed Grebe. One recorded at Lockhart River in August.

Horsfield's Bush Lark. Five observations recorded in Rinyirru NP from September through December.

House Sparrow. Introduced. Observations recorded at Lakeland, Cooktown, Lockhart River, and Thursday and Horn Islands.

Jacky Winter. Three observations recorded only in Rinyirru NP.

Latham's Snipe. Recorded during the months of August through November, and again in March during migration.

Little Curlew. One bird observed at Lockhart River airstrip in October.

Little Eagle. Two observations recorded October and November in Rinyirru NP.

Magnificent Riflebird. Two reliable and experienced birders observed a male and female approximately 200 km southeast of known range which is a significant range extension for this species.

Maned Duck. Two observations recorded around the Cooktown area in June and November.

Mangrove Gerygone. Only one record in Weipa of this uncommonly recorded species.

Mangrove Golden Whistler. All records on the small islands off Seisia, and all made within a few days of each other

Mangrove Robin. Two observations recorded at Portland Roads, and observations at the usual location on islands off Seisia.

Masked Woodswallow. Two records in Artemis and Rinyirru NP in June and September.

Noisy Miner. Only two observations recorded from Laura and Rinyirru NP.

Oriental Pratincole. Four birds were observed on Lizard Island in January, and three observed near Cape Melville NP in December.

Pallid Cuckoo. One unusual observation recorded at Kutini-Payamu NP in January.

Paperbark Flycatcher. One observation recorded in Aurukun.

Pink-eared Duck. A single bird was observed around the Weipa area in January.

Red Goshawk. Near-threatened. Observations recorded near Rinyirru NP, northern Cape York, and the Cooktown area.

Red-backed Buttonquail. One recorded in Rinyirru NP in July and one in Cooktown area in November.

Red-cheeked Parrot. Records included and observation of three birds in Coen area where they are now rarely seen.

Red-chested Buttonquail. Few observations recorded in Rinyirru NP and Coen area from July through December.

Red-necked Avocet. One observation of six recorded at Weipa in September.

Red-necked Crake. Only six observations recorded. All observations in Cooktown area with none in rainforest habitats in northern Cape York in 2019.

Rock Dove. Introduced. One recorded in Cooktown where this species does not have established breeding population.

Roseate Tern. One observation recorded from Lizard Island in January, and one recorded near Kutini-Payamu NP at Chilli Beach in November.

Ruddy Turnstone. Several observations of single birds recorded around the Lockhart River area in September and November, and one recorded at the northern tip of Cape York in February.

Rufous Owl. One observation recorded in Weipa, and one recorded in Kutini-Payamu NP.

Sarus Crane. Two birds observed at Weipa in October.

Satin Flycatcher. Only two observations recorded in Kutini-Payamu NP and Cooktown area in October during migration.

Scaly-breasted Lorikeet. An unusual two observations recorded from northern Cape York: Kutini-Payamu NP and Weipa.

Scaly-breasted Munia. Introduced. Four observations recorded in the Cooktown area.

Shining Bronze Cuckoo. Observations restricted to the eastern side of Cape York.

Southern Cassowary. Two observations recorded from Kutini-Payamu NP and Portland Roads.

Spotted Dove. Introduced. Only established breeding population on Cape York is in Cooktown, but one recorded in Weipa where the species has not previously been recorded.

Spotted Nightjar. In June and July four observations recorded in Rinyirru NP area and one record further north.

Square-tailed Kite. Three observations recorded in Kutini-Payamu NP, Rinyirru NP, and Cooktown during July through September.

Star Finch. Observations recorded in Rinyirru NP during June through December.

Stubble Quail. One observation recorded in Rinyirru NP in November.

Tawny Grassbird. One observation recorded in Rinyirru NP, and another observation recorded in Cooktown in November through December

Topknot Pigeon. Two observations recorded in Cooktown area in April and October, and one observation at Rinyirru NP in November.

Wandering Tattler. One bird observed at Kutini-Payamu NP in August.

Wedge-tailed Shearwater. Three birds observed off the east coast in January, and one observed off the northwest coast in July.

White-browed Woodswallow. Three records in Kutini-Payamu NP in August and December.

White-throated Nightjar. Two observations recorded in Kutini-Payamu NP in August and one observation in Rinyirru NP in November.

White-winged Tern. A single bird was observed at Weipa in July, and another observed at Lockhart River in December.

Willie Wagtail. Only three observations recorded north of Rinyirru NP in June, September, and December.

Wood Sandpiper. A few observations recorded at Weipa, on the northwest coast of Cape York, and two from Rinyirru NP.

Yellow-billed Spoonbill. Only one observation recorded in Rinyirru NP.

Zitting Cisticola. Two observations recorded in Rinyirru NP in October and December.

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2. Torres Strait Islands

David Niland, Jon Wren, Greg Malone



Red-capped Flowerpecker (Richard Noske)



Red-headed Honeyeater (Paul Jensen)

Geography

The Torres Strait Islands (TSI) lie within the Cape York Bioregion but are sufficiently distinct in their avifauna to be treated separately in this report. They represent the northernmost part of Australian territory. The most northerly inhabited island of Boigu is only 6 km from the mainland of Western Province of Papua New Guinea (PNG). The region is very similar to that defined as the Torres Shire, but the latter includes some areas of the adjoining mainland and excludes many occupied islands which have their own specific Islander Councils. The Shire is located north of latitude 11°S and extends over 160 km from north to south between the PNG mainland and the northern tip of Cape York. It extends approximately 250 km from east to west.

The islands can be grouped into four major clusters: (1) the Western Group of continental high islands, composed of granitic and basalt rocks (Mabuiag, Badu, Moa, Thursday, Horn, Hammond, Prince of Wales and Friday); (2) the Northern Group of low islands, composed of sedimentary deposits, mangrove muds and peats (Boigu, Dauan and Saibai); (3) the Central Group of low sandy islands (Yam, Warraber, Coconut and Masig); and (4) the Eastern Group of high volcanic islands (Murray, Darnley and Stephen). The human population of the islands at the 2016 census was 4500, most of whom live on the administrative centre of Thursday Island.

The Equatorial climate (BoM 2016) is monsoon-tropical, with a wet season from December to April (Kuki season), due to the influence of the rain-bearing monsoon winds from the northwest. On Thursday Island, 94% of the rain falls during this wet season (Gab Titui 2019). During the dry season, from June to October, the winds are reversed, blowing from the southeast (Sager season). This wind shift possibly assists migrating birds.

Birds of the bioregion and their conservation

Draffan et al. (1983) identified records for 243 species from TSI and divided them into 87 residents, 26 consistent partial-year residents, 73 regular erratic visitors, and 57 vagrants. Most bird species of TSI are migratory, and for some, the islands are an important resting and replenishing habitat for their migration. Some non-migratory species appear to have arrived when there were land bridges connecting some of the islands to Australia or Papua New Guinea, and now seem to be isolated island populations (Draffan et al. 1983).

The islands are either heavily developed or relatively pristine. Urban development on Thursday and Horn Islands continues to increase, but many of the other islands are low-lying and subject to inundation from rising sea levels. The Cane Toad *Rhinella marina* has recently been introduced to Thursday and Horn Islands, as well as some outer islands, after an established colony on Cape York spread to Possession Island in the mid-1980s (TSRA 2019a). Local authorities have initiated a Cane Toad Buster Program but whether it has reduced the impact on wildlife remains unclear.

The Land and Sea Management Unit (LSMU) of the Torres Strait Regional Authority (TSRA) was established to coordinate delivery of the Environmental Management Programme under the Commonwealth's *Torres Strait Development Plan 2016-2036* (TSRA 2019b). This includes a Traditional Ecological Knowledge Project in which nine communities on eight islands maintain separate databases for cultural and natural resource information. The Warraberalgal and Porumalgal Indigenous Protected Areas, in the Central Group of islands, include an important seabird rookery on Maza Gulya, where the dua (Common Noddy) and sara (Bridled and Roseate Terns) nest in significant numbers. Management of these areas is carried out by rangers under the LMSU.



Map of Torres Strait Islands, with locations mentioned in text

Major events in 2018-2019

No significant unusual weather patterns were recorded in 2018 which would affect the birds of the region. The monsoon weather regime had settled into the Strait before the beginning of the year. Some tropical cyclones moved across to the south and brought above average rainfall until the middle of April (BoM 2019). 2019 was a wetter summer despite a late start to the monsoon. This was primarily due to Tropical Cyclone Trevor which crossed to the south in March, and Tropical Cyclone Ann in May. The rest of the year was generally drier and warmer than average (BoM 2020).

During these two years there were a couple of instances of 'fish kill' in waters near Warraber and Lama Islands. Representatives from TSRA have suggested it is likely due to an increase in the surface water temperature. These events should be monitored as they could impact the local seabird species that rely on local fish. There was a large bushfire on Ngurupai (Horn) Island that burnt out two thirds of the island in late 2019 (TSRA 2019c).

The records for the Pallid Cuckoo, Red-kneed Dotterel, and Wood Sandpiper are noteworthy as these are all uncommon species in the Torres Strait region. There were less observations during 2019 as there was not a guided trip to Boigu and Saibai Islands as there was in 2018. The following list highlights selected bird species and occurrences of interest for 2018 and 2019 from eBird.

2018 Notable bird records

Australasian Grebe. Seven birds recorded at Thursday Island on 13 October.

Black Noddy. A flock of about 100 birds observed 10 km east of Mt Adolphus Island on 22 February.

Blue-faced Honeyeater. Two birds observed on Horn Island on 10 December.

Canary White-eye. A count of five birds recorded on Little Woody Island on 10 December.

Channel-billed Cuckoo. Over 30 observed crossing Boigu Island, heading north on 13 March.

Coconut Lorikeet. Two birds flying across the channel recorded at Saibai Island on 30 March.

Collared Imperial Pigeon. Five birds recorded at Boigu Island on 13 March.

Common Tern. Three observations recorded of single birds in March at Saibai and Thursday Islands.

Eastern Osprey. Nesting recorded at Saibai Island in March and Horn Island in May.

Eclectus Parrot. Several observations of a male bird recorded at Boigu and Saibai Islands in March.

Eurasian Tree Sparrow. Introduced. A healthy population recorded on Thursday Island, and 30 counted on Saibai Island.

Glossy Ibis. A count of seven birds recorded on Thursday Island on 28 December.

Grey Teal. 47 recorded at Horn Island STW ponds on 26 March, and 2 recorded on Thursday Island in October.

Gurney's Eagle. One observed over passage beside Saibai Island with Whistling Kites on 15 March.

Large-tailed Nightjar. One bird recorded when flushed from roadside on Boigu Island on 13 March.

Little Tern. About 150 birds observed on Boigu Island on 29 March.

Mangrove Gerygone. Observations recorded at Saibai, Boigu, and Horn Islands in March.

Mangrove Robin. Five birds observed on Little Woody Island in December.

Masked Lapwing. Over 50 recorded on Horn Island in March.

Nankeen Kestrel. Two birds recorded on Thursday Island on 24 August.

Northern Fantail. Three birds recorded on Saibai Island on 30 March.

Oriental Dollarbird. Counts of up to 80 birds recorded passing north over Boigu and Saibai in March with many immatures in the flock.

Pacific Swift. Up to 15 birds observed at Boigu and Saibai in March.

Pallid Cuckoo. One bird recorded at Saibai Island on 30 March.

Peregrine Falcon. One bird recorded at Horn Island on 25 March.

Pied Stilt. Up to ten birds recorded at Boigu Island in March.

Red-capped Flowerpecker. One bird at Boigu Island recorded on 14 March.

Red-kneed Dotterel. A pair observed on Boigu Island in March.

Royal Spoonbill. A count of 30 birds recorded roosting in mangroves near Saibai Island in March.

Rufous-throated Honeyeater. One bird recorded on Saibai Island on 16 March.

Shining Bronze Cuckoo. Two observations recorded from Horn Island in March and April.

Silver Gull. Greater numbers recorded on Thursday Island in October with counts of 100+.

Superb Fruit Dove. Single birds recorded at Boigu and Saibai in March.

Terek Sandpiper. 50 recorded on Horn Island on 18 March.

Torresian Imperial-Pigeon. Numerous records around Boigu and Saibai Islands in March. More than 200 observed flying south over Thursday Island in October, and up to 500 recorded at Little Woody Island in December.

Wandering Whistling Duck. A small flock recorded at Saibai in March

White-browed Woodswallow. A count of 20 birds recorded at Thursday Island on 23 March.

White-throated Needletail. Flocks of up to 100 birds observed at Boigu and Saibai in March.

Wood Sandpiper. A pair observed on Boigu Island on 12 March.

2019 Notable bird records

Ashy-bellied White-eye. Up to six birds recorded at the Woody Island group on 18/19 December.

Australasian Swamphen. Two found as roadkill in January on Thursday Island.

Australian Hobby. One bird recorded on Thursday Island on 21 April.

Barking Owl. Remnants of lorikeet and rail at roost observed on Thursday Island in May.

Black-naped Tern. Two birds observed at Little Woody Island on 19 December.

Bridled Tern. Observation recorded from the Woody Island group on 19 December.

Brown Goshawk. Records of single birds recorded on Thursday and Horn Islands in January and May.

Brown Honeyeater. Observation recorded from Little and Great Woody Islands in December.

Brown-backed Honeyeater. Five counted on Thursday Island on 9 May.

Buff-banded Rail. One bird recorded on Thursday Island on 19 April.

Canary White-eye. Up to four birds recorded at the Woody Island group on 18/19 December.

Chestnut-breasted Mannikin. Commonly observed all year with counts of up to 200 birds and nest building on Thursday Island in January.

Eastern Osprey. A nest with two young recorded on Thursday Island on 9 May.

Eurasian Tree Sparrow. Introduced. Up to 13 birds recorded on Thursday Island, and one recorded on Horn Island.

Far Eastern Curlew. Endangered. Fourteen birds counted at Horn Island on 31 May.

Grey Shrikethrush. One bird recorded on Thursday Island on 19 January.

Grey-tailed Tattler. Fourteen birds recorded at Woody and Great Woody Islands on 19 December.

Horsfield's Bronze Cuckoo. Observation recorded at the three Woody Islands in December.

Lesser Crested Tern. Two birds recorded in Albany Passage on 28 March.

Little Kingfisher. Observation recorded at Great Woody Island on 18 December.

Magpie Goose. Several groups recorded flying over Thursday Island on 5 January.

Mangrove Robin. Up to four birds recorded at Woody and Great Woody Islands in December.

Pacific Black Duck. Four birds recorded at Horn Island STW ponds on 29 May.

Sooty Tern. Observation recorded from the Woody Island group on 19 December.

Superb Fruit Dove. One found dead on Thursday Island on 6 January.

Torresian Imperial-Pigeon. One count of 1000 birds recorded at Little Woody Island on 19 December.

Tree Martin. Two birds observed south of Horn Island on 28 March.

Varied Honeyeater. One observed on a nest at Horn Island in May.

White-bellied Cuckooshrike. Two birds observed on a circuit of Thursday Island on 9 May.

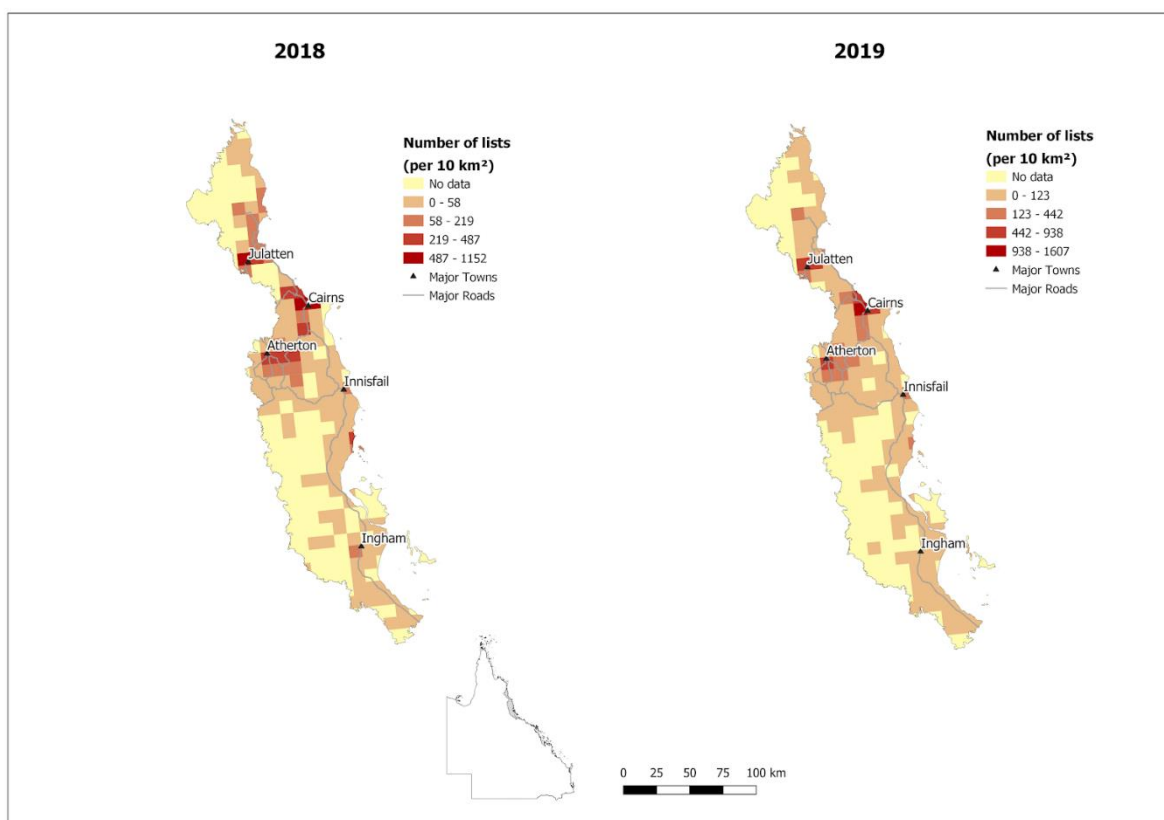
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3. Wet Tropics

Peter Valentine, Emily Rush



Map of Wet Tropics Bioregion, showing eBird survey effort



Double-eyed Fig Parrot (James Niland)



Bridled Honeyeater (Ian and Jill Brown)

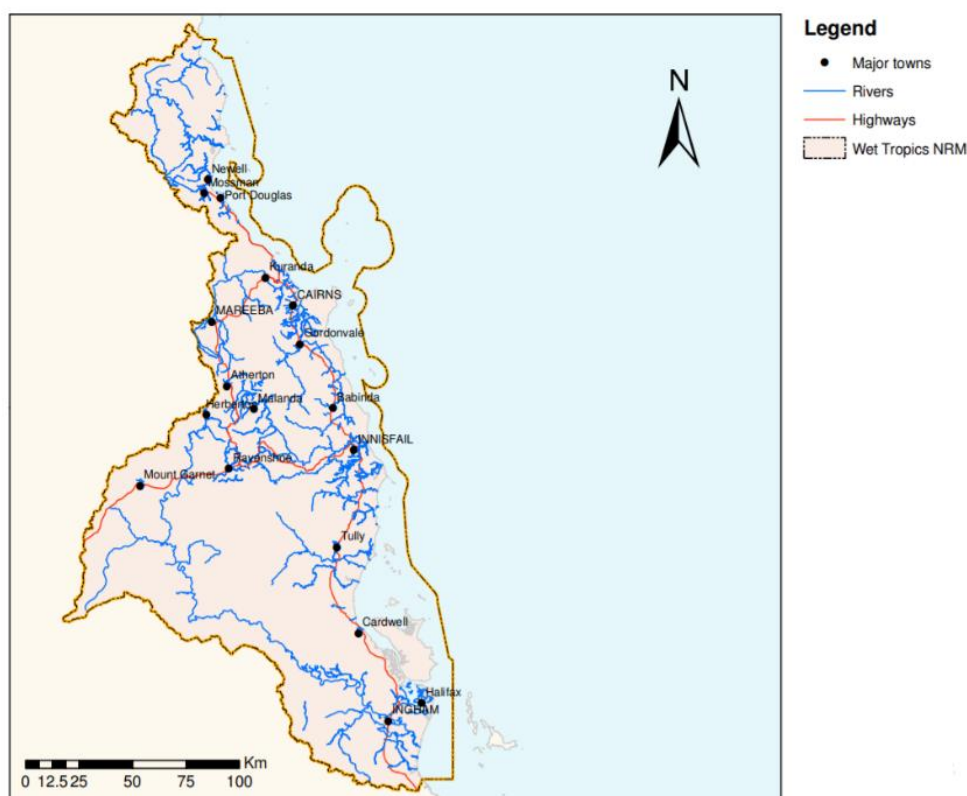
Geography

The Wet Tropics Bioregion (WET) covers only 1.16% (19,890 km²) of the State but is high in biodiversity and endemic species. The region stretches along the northeast coast of Queensland for some 450 km from Cooktown in the north to Townsville in the south. Forming the core of this bioregion is the Wet Tropics World Heritage Area which encompasses approximately 894,420 ha of mostly tropical rainforest (DEE 2019). The WET bioregion includes relicts of the Gondwanan forests that covered Australia and Antarctica some 50 to 100 million years ago (UNESCO 2019) making it the oldest surviving rainforest in the world (WTMA 2016). The vegetation is predominantly rainforest but includes a mixture of sclerophyll tree

species that can occur as emergents or co-dominants within the canopy. Fringing the rainforest are tall, open forests as well as tall, medium and low woodlands (DEE 2019). These environments provide habitat for numerous species of plants and animals, including 40% of Australia's bird species (WTMA 2016).

The bioregion lies within the Tropical zone of Australia (BoM 2016), featuring a marked wet summer with high annual rainfall totals of 1200–8000 mm per year and a dryer winter (WTMA 2016). Average mean temperatures in Cairns are 23–31°C in the wet season from November through April and 19–27°C in the dry season. This is an area of high humidity; Cairns ranges between 50% at 15:00 hours in the dry season to 100% at 09:00 hours in the wet season.

The major towns in WET include Townsville, Ingham, Innisfail, Cairns, Atherton and Mossman (Fig. 1). Some of the principal river catchments are the Barron, Burdekin, Daintree, Johnstone, and Tully Rivers (DES 2019). The distinct features of the Wet Tropics can be attributed to its seasonal monsoonal rainfall, diverse terrain, and steep environmental gradients (UNESCO 2019). The terrain is dominated by rugged mountain ranges, tablelands and lowland coastal plains, with elevations ranging from sea level to 1620m asl.



Major towns and rivers of the Wet Tropics Bioregion (DEE 2010)

Birds of the bioregion and their conservation

The WET bioregion harbours more than 370 species of birds of which 23 are largely confined to the bioregion and 13 are strictly endemic (WTMA 2016). Nine of these endemics are mainly upland species: Tooth-billed Bowerbird, Golden Bowerbird, Bridled Honeyeater, Fernwren, Atherton Scrubwren, Mountain Thornbill, Grey-headed Robin, Chowchilla and Bower's Shrike-thrush. The four remaining endemic species extend to lower altitudes: Lesser Sooty Owl, Macleay's Honeyeater, Victoria's Riflebird and Pied Monarch (WTMA 2016). All the upland species are at significant risk from climate change (Garnett et al. 2014; WTMA 2016).



Rose-crowned Fruit Dove (Paul Turner)

The bioregion incorporates over 30 National Parks (NP) including Wooroonooran which encompasses Queensland's two highest mountains: Bartle Frere and Bellenden Ker, as well as Mt Lewis, Daintree, Paluma Range, and Tully Gorge. Additionally, the Great Barrier Reef Marine Park includes marine habitats and offshore islands (DES 2019). Birdlife Australia also recognises six Key Biodiversity Areas (KBAs) within the Wet Tropics region.

Paluma NP: Encompassing the southernmost portion of rainforest in the Wet Tropics, Paluma NP supports most of the high-altitude rainforest species endemic to the Wet Tropics including Tooth-billed and Golden Bowerbird. Long-studied populations make it an important reference site (Key Biodiversity Areas Partnership. 2022).

Daintree NP: This NP encompasses the most intact remaining area of rainforest vegetation from coast to mountain top in the Wet Tropics (Key Biodiversity Areas Partnership. 2022).

Coastal Wet Tropics: This area contains important summer feeding areas for international migratory waders of conservation significance and several restricted-range lowland rainforest forms, including the Queensland race of the Rufous Owl (*Ninox rufa queenslandica*) and Beach Stone Curlew (Key Biodiversity Areas Partnership. 2022).

Atherton Tablelands: The Tablelands supports a suite of tropical grassland and wetland birds including large flocks of Plumed Whistling-duck and Magpie Goose during the winter. There are also significant numbers of Sarus Crane, small numbers of Grass Owl, as well as the last remaining remnants of Mabi Forest (Key Biodiversity Areas Partnership. 2022).

Wooroonooran NP: This NP encompasses the largest tract of tropical rainforest in Australia, covering 514,491 ha. Populations of most of the Wet Tropics endemics are maintained in this large, protected rainforest (Key Biodiversity Areas Partnership. 2022).

Barron River Tributaries including Kuranda: This is an important area for mid-to lower-elevation rainforest and adjacent habitat, including critical habitat for the Kuranda Tree Frog. The area is not specifically maintained for bird conservation but includes good habitat.

Despite the many protections put in place for the Wet Tropics, long-term monitoring indicates that the biodiversity of the region is declining (WTMA 2016). Major threats to the area include habitat

fragmentation, invasive weeds, and introduced mammals including feral pigs, cattle, and cats. The presence of Yellow Crazy Ants is potentially a very serious threat for many species, and attempts to eradicate it are proving to be a challenge. However, the most significant threat is climate change which is already impacting high altitude species. The local abundance of most mid and high elevation species has declined at the lower edges of their distribution by >40% while lowland species increased by up to 190% into higher elevation areas. Upland-specialised species and regional endemics have undergone dramatic population declines of almost 50%. (Williams and Fuente, 2021). This decline in primary rainforest species also has been observed in a recent study at the School for Field Studies site (Kowalski et al., 2022).

There are several local initiatives that help monitor the status of WET bird species including long-running annual counts of Sarus Crane and Brolga on the Tablelands (Scambler et al. 2020) and of Torresian Imperial-Pigeons (Winter et al. 2016) which now incorporate mainland nests in Cairns. Recently, Bird Life Northern Queensland (BLNQ) has initiated regular monitoring of Tooth-billed Bowerbirds and Golden Bowerbirds, monthly bird surveys at Hasties Swamp NP, annual surveys of Beach Stone-curlew and other beach-nesting birds, regular monitoring of waders on the Cairns Esplanade, and working with the Cairns Regional Council to better protect the important habitat (BLNQ). Population estimates have confirmed that the Southern Cassowary is stable, and the threat status has been reduced to Least Concern (Garnett and Baker 2021).

Major events in 2018-2019

Significant developments in Web-based content, including the BLNQ Facebook page and the Cairns Birders Facebook page, mean that any interesting observations are rapidly communicated through the active birding community. Even if unusual birds do not stay for long, there are often many records. Rapid information flow increased awareness considerably and supported much better documentation of birds in the region. The large increase in records and the growing numbers of birders probably reflect these changes. Otherwise, there were no significant events that might have affected observations in 2018 and 2019.

During 2018 there were 370 species (including seven introduced species) recorded on eBird in WET. These came from 133,918 records. Rainfall was slightly higher in WET than the mean while temperatures were also slightly higher across northern Australia. In 2019 a total of 367 species recorded in WET during eBird surveys. These came from 162,200 eBird records, substantially up on the previous year. Rainfall in WET was slightly lower than average and temperature slightly up. The following annotated lists for both years identify notable species and records, particularly for endemic species or birds of conservation concern.

2018 Notable bird records

Apostlebird. Only four observations recorded at the western edge of WET including Mt Molloy, Ravenshoe.

Ashy-bellied White-eye. One observation recorded on Green Island, but discussions about genetic identity of Green Island white-eyes ongoing and more research is needed.

Asian Dowitcher. Near-threatened. Only one observation recorded at the Cairns Esplanade.

Atherton Scrubwren. Most observations recorded at Mt Lewis and Mt Hypipamee.

Australasian Shoveler. Although considered rare in WET, single birds recorded in July and September at Hasties Swamp.

Australian Boobook. Most observations recorded on the Tablelands in rainforest habitat.

Australian Bustard. Although species uncommonly observed in WET, a small number of observations recorded primarily from the Tablelands and Ingham.

Australian Pratincole. Only nine observations recorded including at France Road Turf Farm in Cairns and Orient Station in Ingham.

Australian Raven. Seven observations recorded at Mt Zero. This species is unlikely elsewhere in WET.

Banded Honeyeater. Only five observations recorded for this regular wet season visitor including at Wondecla and Lake Tinaroo.

Barking Owl. Surprisingly, only 15 observations recorded mainly on the Tablelands.

Barn Swallow. 15 observations of this accidental migrant recorded mainly on the coast and Tinaburra.

Bar-tailed Godwit. Near-threatened. Observations commonly recorded with the majority at the Cairns Esplanade.

Bassian Thrush. A small number of observations recorded from Mt Lewis, Mt Hypipamee, and Paluma.

Beach Stone-curlew. Near-threatened. Widespread coastal observations recorded across the region.

Black Falcon. One observation recorded of this rare falcon from the Upper Barron.

Black-backed Bittern. Only two observations recorded from the Daintree River and Tyto Wetlands.

Black-breasted Buzzard. Two observations recorded on the Tablelands of this species which is uncommon in the region.

Black-chinned Honeyeater. Only five observations recorded including at Mungalla Station and Abattoir Swamp.

Black-necked Stork. Near-threatened. Observations widespread across the region.

Black-tailed Godwit. Near-threatened. Observations reliably recorded at the Cairns Esplanade.

Bower's Shrikethrush. Frequent observations recorded mainly in upland areas.

Bridled Honeyeater. Most observations recorded on the Tablelands but some birds observed wintering near the coast along the Daintree River.

Broad-billed Sandpiper. 16 observations of this uncommon species recorded at the Cairns Esplanade.

Brown Gerygone. Observations recorded on the Tablelands and other upland areas.

Buff-breasted Paradise Kingfisher. Most observations of this summer migrant recorded in the northern area of the Tablelands.

Buff-rumped Thornbill. Only two observations recorded at Mt Zero which is the southwest edge of WET.

Chestnut Teal. Although rarely recorded in WET, one bird recorded at Cattana Wetlands in October and three at Port Douglas.

Chestnut-breasted Cuckoo. Observations limited to the Julatten area.

Chowchilla. Most observations recorded at Mt Lewis, Mt Hypipamee, and Lake Barrine.

Common Bronzewing. Only seven observations recorded in WET with two observed at Taravale.

Crested Shrike-tit. Small number of observations recorded mainly from Hasties Swamp and Wondecla.

Crimson Rosella. Observations indicated the species may be becoming less common, but observations recorded on the Tablelands and at Paluma.

Curlew Sandpiper. Near-threatened. Observations recorded at the Cairns Esplanade.

Double-banded Plover. Only ten observations recorded with a peak in July at the Barron River mouth.

Double-eyed Fig-parrot. Many observations recorded across the bioregion.

Dusky Woodswallow. Observations regularly recorded at Wondecla; uncommon elsewhere.

Eastern Grass Owl. A small number of observations mainly from the Tablelands and Tyto Wetlands.

Eastern Whipbird. Observations of this common rainforest species recorded mainly from the uplands.

Eastern Yellow Wagtail. Accidental. Four observations recorded at France Road in Cairns.

Eclectus Parrot. A small number of observations recorded mainly around Port Douglas of an established, escapee breeding population.

Eurasian Tree Sparrow. Introduced. A single bird observed and photographed at Cairns Esplanade.

Far Eastern Curlew. Endangered. Most observations recorded at the Cairns Esplanade.

Fernwren. Mt Lewis dominates all observation records.

Freckled Duck. Multiple observations of small groups recorded with almost all records occurring at Hasties Swamp.

Fuscous Honeyeater. A small number of observations recorded at Wondecla, but identification can be tricky and may be confused with Yellow-tinted Honeyeater. Records of both honeyeater species are likely the undescribed Herberton honeyeater which is common at this location. More ornithological research needed to determine genetics.

Golden Bowerbird. Observations recorded on the Tablelands and other upland areas, concern expressed about possible impact of climate change on this montane species.

Great Knot. Endangered. Observations reported frequently at the Cairns Esplanade.

Grey-headed Robin. Many observations recorded mainly on the Tablelands.

Helmeted Friarbird. Most common honeyeater; observations recorded mostly in the lowlands.

Jacky Winter. Six observations recorded at Wondecla.

King Quail. Only a single observation recorded of this elusive species that occurs on the Tablelands.

Little Curlew. Only seven observations recorded from Newell Beach.

Little Eagle. Two observations recorded on the Tablelands of this rare species.

Little Grassbird. Two observations recorded at Tyto wetlands.

Little Kingfisher. Most observations recorded from coastal sites, but a single, well-known bird was present at Hasties Swamp from March to October.

Mountain Thornbill. Most observations recorded at Mt Hypipamee, Mt Lewis, and the Tablelands.

Oriental Plover. Only 10 observations recorded from Newell Beach in October and November.

Oriental Pratincole. Nine observations recorded at France Road Turf Farm in Cairns. This is now a reliable site for the species.

Pacific Golden Plover. Observations indicate that the Cairns Airport Mangrove Boardwalk and France Road Turf Farm are key locations for this migratory species.

Painted Buttonquail. Only 12 observations recorded from the western edge of WET including at Wondecla and Mt Zero.

Pale Yellow Robin. Many observations recorded mainly on the Tablelands.

Pied Heron. Observations mostly recorded around Port Douglas.

Pink-eared Duck. Many observations recorded at Hasties Swamp, but observations were rare elsewhere on the Tablelands and even more rare on the coast.

Plum-headed Finch. Two observations recorded at Mungalla Station in Ingham.

Rainbow Lorikeet. This widespread and abundant species had the most eBird observations for the bioregion.

Red Knot. Near-threatened. Small number of observations recorded at the Cairns Esplanade.

Red-backed Kingfisher. Two unusual observations of this species recorded at Orient Station in Ingham.

Red-kneed Dotterel. Observations indicate Hasties Swamp is a key location for this species.

Red-necked Avocet. A single observation of a flock of 12 recorded at Cairns Esplanade with a photo record on eBird.

Red-necked Stint. Near-threatened. Most observations recorded at the Cairns Esplanade.

Red-rumped Swallow. Accidental. A small number of observations recorded with most at Tinaburra and the Daintree ferry.

Rufous Fantail. Although an anecdotal comment suggests reducing frequency, species commonly recorded across the bioregion.

Rufous Owl. A small number of observations at Cairns and the Tablelands.

Russet-tailed Thrush. Two observations recorded from Paluma and Wallaman Falls.

Sanderling. Two observations of this extremely uncommon species recorded at Michaelmas Cay and Newell Beach.

Sarus Crane. Annual counts conducted on the Tablelands.

Satin Flycatcher. 16 observations recorded for this uncommonly seen, passage migrant.

Silver-crowned Friarbird. Two observations recorded in the far northern part of the bioregion: Bloomfield and Black Mountain NP.

Southern Cassowary. Observations over all months with peaks in July and October recorded from both the coast and uplands. Records were 45% of single birds, 26% of two, and 29% of three to six birds.

Spotted Whistling Duck. Observations of this recent arrival are increasing, with flocks of up to 78 birds recorded and present most months and peak observations from October through December. They are regularly recorded in the Daintree region, Cairns, Wongaling Beach, and on the Daintree River. The most southern record was one at Mungalla Station in Ingham.

Square-tailed Kite. Small number of observations recorded mostly from the Tablelands.

Stubble Quail. Only four observations recorded at two locations: Mungalla Station in Ingham and France Road Turf Farm.

Tooth-billed Bowerbird. Regular observations mainly recorded on the Tablelands, but concern expressed about a possible decline in numbers.

Torresian Imperial-Pigeon. Many coastal observations recorded with occasional sightings at Julatten.

Varied Sittella. Small number of observations mainly recorded on the Tablelands.

Victoria's Riflebird. Many observations of this target species recorded mainly on the Tablelands.

Wedge-tailed Eagle. Species regularly observed at Hasties Swamp and recorded on other Tableland sites and Mt Zero.

White-browed Robin. Observations recorded mainly in the southern coastal region.

White-streaked Honeyeater. The three observations recorded: Shiptons Flat, Bloomfield River, and Mt Poverty.

White-throated Nightjar. Although species uncommonly observed in WET, a small number of observations recorded on the Tablelands.

White-winged Triller. A small number of observations of this unusual species scattered across WET.

Wilson's Storm Petrel. A single observation recorded at Michaelmas Cay in September.

Wood Sandpiper. One observation of this uncommon species recorded at Mungalla Station.

Yellow Thornbill. A rarely-observed species in WET recorded four times, but some recorded locations are unlikely habitat, so more documentation is needed. Record sites were: Kaban (likely), Henrietta Ck, Eubenangee, Lake Eacham (unlikely).

Yellow-tinted Honeyeater. A small number of observations recorded at Wondecla, but identification can be tricky and may be confused with Fuscous Honeyeater. Records of both honeyeater species are likely the undescribed Herberton honeyeater which is common at this location. More ornithological research needed to determine genetics.

Zitting Cisticola. Two observations recorded from Orient Station and Mungalla Station in Ingham.

2019 Notable bird records

Asian Dowitcher. Near-threatened. Accidental. A total of 32 observations recorded mostly at the Cairns Esplanade, but these rarities often become well known with many birdwatchers recording a single bird.

Atherton Scrubwren. Mt Lewis and Mt Hypipamee dominate the observations recorded along with other upland sites. It can be difficult to separate from Large-billed Scrubwren.

Australasian Figbird. The second most reported species in WET which is widespread and generally observed in small parties but occasionally in flocks of up to 20 with a high count of 60.

Australian Boobook. Only 23 observations recorded of this uncommon species; by habitat most would be subspecies *lurida* which is the rainforest-restricted population.

Australian Masked Owl. One observation of this uncommon species recorded at Rifle Creek at Mt Molloy in December.

Australian Pratincole. Most of the 23 observations recorded at the France Road Turf Farm near Cairns in October and November; additional observations included two records from the Tablelands near Atherton in July and one in Lucinda in May.

Banded Honeyeater. Significant increase to 32 observations recorded this year with most at the Tinaroo and Wondecla area.

Barn Swallow. Only one observation recorded at Cape Tribulation. This migrant is irregular but turns up most years in summer at a variety of sites.

Barred Cuckooshrike. Widespread observations recorded in Tablelands rainforest, and less frequent sightings recorded in the lowlands.

Bar-tailed Godwit. Near-threatened. A slight increase in observations with the vast majority at the Cairns Esplanade, but a few observations recorded on other beaches from Mossman to Toolakea.

Beach Stone-curlew. Near-threatened. Annual counts conducted on this species; eBird records increased from previous year.

Black-backed Bittern. Only two observations recorded including the Daintree in June and Eubenagee Swamp in November. Rare sightings needing more information to verify.

Black-breasted Buzzard. The two observations of this unusual species for WET included Julatten in October and Cairns in August.

Black-necked Stork. Near-threatened. Species widespread across the WET.

Black-tailed Godwit. Near-threatened. Majority of observations recorded at the Cairns Esplanade, but some recorded from northern beaches and south to Lucinda.

Blue-faced Parrotfinch. An increase of observations recorded with most from Mt Lewis, but one recorded at the Topaz area.

Bower's Shrikethrush. Reliable observations from higher elevation Tablelands locations; the couple of coastal records of this rainforest endemic are likely erroneous.

Bridled Honeyeater. Most observations of this endemic species recorded on the Tablelands, but some winter observations recorded from lowlands.

Broad-billed Sandpiper. Observations decreased from 16 to only nine compared to last year with most observations at the Barron River mouth.

Brown Gerygone. Observations recorded at many sites on the Tablelands and upland areas.

Buff-breasted Paradise Kingfisher. Reliable breeding migrant recorded mostly on the Tablelands with a few lowland records and south to Paluma.

Chestnut Teal. One observation of two females recorded at Hasties Swamp which is unusual in WET.

Chestnut-breasted Cuckoo. Observations declined from previous year to only 43 records on the northern Tableland, mainly around Julatten.

Chowchilla. Observations increased from previous year with most from uplands including Mt Lewis, Mt Hypipamee, and higher Tableland rainforests like Lake Barrine.

Common Greenshank. Most observations recorded at the Cairns Esplanade.

Common Myna. Introduced. A big increase in observations recorded compared to 2018. Most observations are from coastal areas, but also many from the Tablelands.

Crested Shrike-tit. A decrease to only 18 observations this year recorded mainly at Hasties Swamp, Wondecla, and the southern Tablelands.

Crimson Rosella. Over two times more observations recorded of this subspecies in upland areas including Tablelands and Paluma from previous year.

Curlew Sandpiper. Near-threatened. Observations increased from previous year with most records at the Cairns Esplanade.

Double-banded Plover. Observations decreased from last year with only two records at Cairns in May.

Double-eyed Fig-parrot. Widespread observations increased from previous year. This WET subspecies is currently listed as Vulnerable under the Queensland NCA, but this may be an administrative error as this population seems stable.

Dusky Woodswallow. A regular population observed in the State Forest on Springvale Road in Wondecla.

Eastern Grass Owl. Only eight records of this uncommon species, mostly on the Tablelands but also at Tyto Wetlands.

Eastern Whipbird. Observations had a large increase over the previous year with records widespread on the Tablelands and uplands areas.

Eastern Yellow Wagtail. Accidental. Species is now a regular summer visitor at the France Road Turf Farm with six observations recorded.

Eclectus Parrot. Over twice as many observations recorded compared to the previous year of this established breeding population.

Eurasian Whimbrel. Observations increased from 2018 with most recorded at the Cairns Esplanade, but records indicate a widespread distribution of usually small groups along the coast.

Far Eastern Curlew. Endangered. Species very reliably observed at the Cairns Esplanade during summer.

Fernwren. Observations of this endemic, upland species recorded mostly at Mt Lewis, but also Mt Hypipamee.

Freckled Duck. 19 observations recorded, mostly from Hasties Swamp, which is a decline from the previous year.

Fuscous Honeyeater. Multiple observations recorded at Wondecla, but identification can be tricky and may be confused with Fuscous Honeyeater. Records of both honeyeater species are likely the undescribed Herberton honeyeater which is common at this location. More ornithological research needed to determine genetics.

Glossy Black Cockatoo. Only a single record of eight birds recorded at Taravale/Mt Zero in July; this is a known, remote outlier population in the Casuarina Forest west of the Paluma rainforest.

Golden Bowerbird. Observations increased from previous year. Regular monitoring of known bowers as species is restricted to upland areas so there is concern about climate change impacts.

Great Crested Grebe. Species reliably observed at Lake Barrine with other records mainly in upland and some coastal areas.

Great Egret. Records significantly declined from the previous year, but it is difficult to know if this documents an actual decline or identification issues between egret species.

Great Knot. Endangered. Species reliably observed at the Cairns Esplanade during summer.

Greater Sand Plover. Slightly fewer observations recorded compared to previous year; a wide distribution recorded but most observations in Cairns.

Greater Sooty Owl. Most observations recorded on the Tablelands, but two observations recorded from the Cape Tribulation area.

Grey Plover. Records increased to 26 this year with most observations at Cairns Esplanade and adjacent beaches, but observations also recorded in southern areas: Balgal, Toolakea, and Toomulla.

Grey Whistler. Observations recorded mostly at coastal sites and at lower elevations with records rare above 500 metres.

Grey-headed Robin. Most observations of this endemic species recorded on the Tablelands or at higher elevation.

Helmeted Friarbird. The most frequently recorded honeyeater in the region; most observations recorded from coastal areas but some records on the Tablelands.

Hoary-headed Grebe. Six observations for this species, which is uncommon WET, with most observations being at Hasties Swamp from November to January.

House Sparrow. Introduced. Observations of this widespread species is increasing with most in urban areas.

Intermediate Egret. Records increased from the previous year, but it is difficult to know if this documents an actual increase or identification issues between egret species.

Kelp Gull. Accidental. Although there were 52 records of this species, they represent a single bird present mainly at the Cairns Esplanade, but occasionally on nearby beaches including Barron River mouth, throughout July and August.

Large-billed Scrubwren. Mostly observations recorded on the Tablelands and upland areas. It can be challenging to separate from Atherton Scrubwren.

Lesser Sand Plover. Observations increased from previous year with most recorded at the Cairns Esplanade, but some records both north and south.

Little Curlew. 22 observations at France Road Turf Farm recorded from late September to December.

Little Eagle. A single observation recorded at Mt Molloy in August.

Little Kingfisher. Only two observations recorded at Hasties Swamp compared to 46 the previous year.

Mangrove Gerygone. Only one observation recorded at Balgal Beach, just north of Townsville. This species is not normally found in the WET, but observations occasionally recorded from mangroves south of Cardwell.

Mountain Thornbill. Observations recorded mostly from upland areas including Mt Hypipamee and Mt Lewis, but observations seemed scarce on the Tablelands.

Northern Fantail. Records indicate the species is widespread along coastal sites, at lower elevations, and at Julatten but is not common in the rainforest or Tablelands.

Oriental Cuckoo. Although uncommon in WET, recorded observations increased considerably from the previous year to 93.

Oriental Plover. Only one observation recorded at France Road Turf Farm in November.

Oriental Pratincole. Ten observations recorded of up to two birds at France Road in early January; location becoming a hot spot for this uncommon wader.

Pacific Golden Plover. Most observations around Cairns including the Jack Barnes Mangrove Boardwalk, Barron River mouth, Cairns Esplanade, and France Road Turf Farm which is now a regular site for this species.

Painted Buttonquail. Nine observations recorded at Wondecla and Mt Zero.

Pink-eared Duck. Most observations recorded on the Tablelands with regular observations at Hasties Swamp, but fewer observations than last year.

Plum-headed Finch. One observation recorded in Cairns which was most likely an aviary escapee.

Rainbow Lorikeet. Species was still the most recorded and widespread species in WET.

Red Knot. Near-threatened. Unlike most other international waders, the number of records declined this year to only 18, mainly at the Cairns Esplanade.

Red-backed Buttonquail. Only one observation recorded of this elusive species at China Camp/Roaring Meg Falls in December.

Red-chested Buttonquail. Only one observation recorded at Bluewater SF in January.

Red-footed Booby. Most of 13 observations recorded of single birds at Michaelmas Cay from August to March.

Red-kneed Dotterel. Number of records decreased this year with most observations at Hasties Swamp.

Red-necked Stint. Near-threatened. An increase in observations recorded from previous year with the majority at the Cairns Esplanade.

Red-rumped Swallow. Accidental. Six observations recorded this year; all at Tinnaburra.

Roseate Tern. 10 observations of up to three birds recorded offshore from August through January.

Rufous Fantail. Observations decreased slightly from previous year, and declining frequency of sightings reported anecdotally.

Rufous Shrikethrush. Records indicate the species is widespread across all areas, but as it is an edge species, it is also easily observed.

Sarus Crane. Species subject to an annual count on the Tablelands; eBird records this year increased.

Silver-crowned Friarbird. Mainly found outside the WET, but two observations recorded in the far north border area, as with the White-streaked Honeyeater.

Sooty Tern. High numbers at Michaelmas Cay were observed with peaks in spring and summer with estimates of 5,000 or more birds.

Southern Cassowary. Widespread distribution across WET, but mainly coastal observations recorded.

Spotted Dove. Introduced. Species widespread on coast. Increased observations from previous year.

Spotted Whistling Duck. 56 observations recorded; species becoming widespread and commonly encountered and breeding along coastal areas. Southernmost record was of 11 birds observed near Clemant SF just north of Townsville in January.

Square-tailed Kite. Observations recorded Infrequently but widespread locations, mainly on the Tablelands.

Tahiti Petrel. Near-threatened. One observation of two birds recorded off Cairns in November, but no eBird comments provided to help verify observation.

Tooth-billed Bowerbird. Observations, mainly on the Tablelands, increased from previous year; species now subject to annual active breeding counts as there is concern about climate change impacts.

Torresian Imperial-Pigeon. Species subject to annual count; numbers increased this year over last with most observations at coastal locations.

Victoria's Riflebird. Records of this iconic, endemic species indicate it is widespread across the Tablelands.

Wandering Tattler. Not common in the region with only five observations recorded on Green Island and at Toolakea.

Wedge-tailed Eagle. Widespread observations recorded inland including frequently at Hasties Swamp and Wondecla.

White-eared Monarch. Records decreased from the previous year, but this species is a difficult-to-see canopy resident.

White-gaped Honeyeater. Most observations recorded in the southern coastal part of the region, but occasionally elsewhere.

White-tailed Tropicbird. A single bird recorded at Michaelmas Cay in January.

White-throated Treecreeper. Observations throughout upland areas increased from previous year for this smaller rainforest restricted population.

White-winged Tern. A total of nine observations recorded including two birds at Portsmouth in south Cairns in February and a flock of 25 at Orient Station in March.

White-winged Triller. Records decreased from the previous year but observations of mostly single birds widespread across WET although this is an uncommon bird in the bioregion.

Wood Sandpiper. Records increased to 51 observations mostly at Hasties Swamp but also Newell Beach.

Wompoo Fruit Dove. Records, mainly on the Tablelands, increased over last year.

Yellow Thornbill. One observation recorded, but this species is rarely accurately recorded on the Tablelands so the record at Hallorans Hill in Atherton is perhaps unlikely.

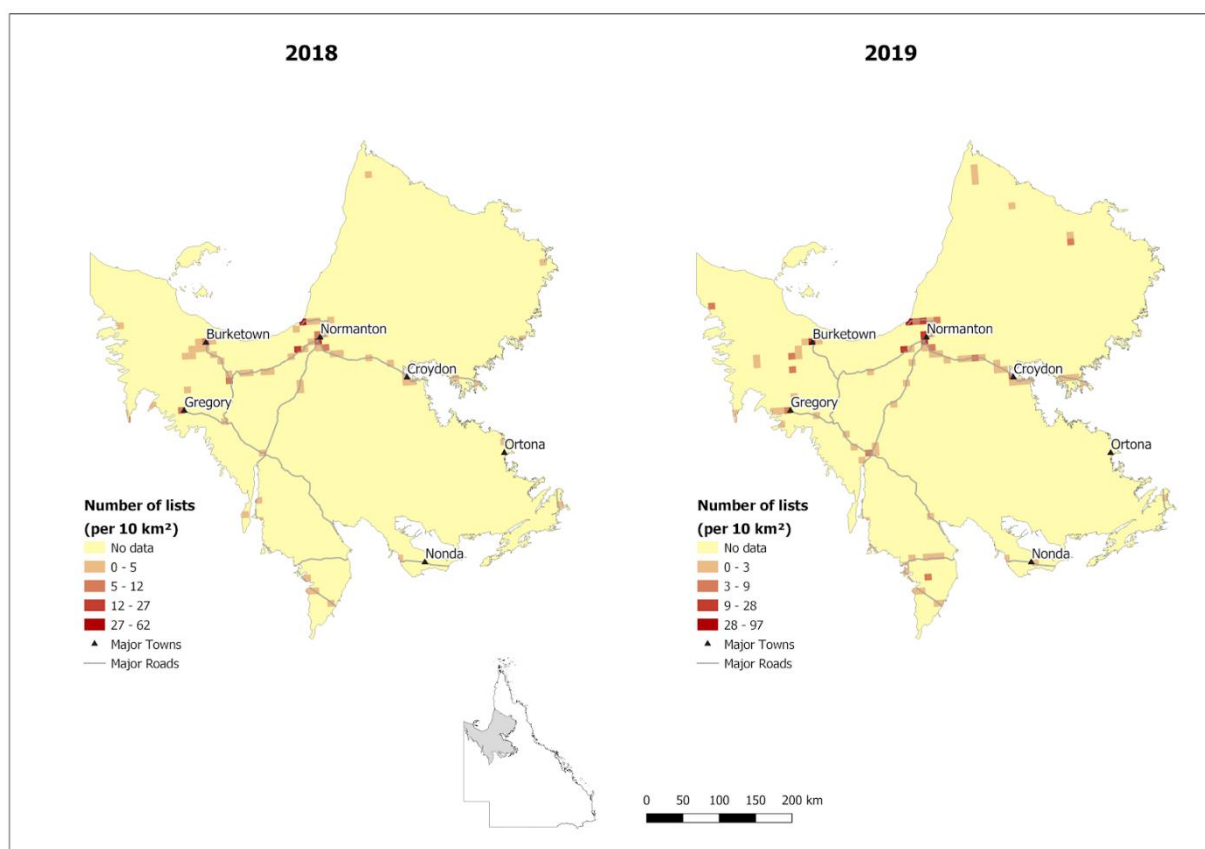
Yellow-tinted Honeyeater. Small number of observations recorded at Wondecla, but identification can be tricky and may be confused with Fuscous Honeyeater. Records of both honeyeater species are likely the undescribed Herberton honeyeater which is common at this location. More ornithological research needed to determine genetics.

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4. Gulf Plains

Kath Shurcliff



Map of Gulf Plains Bioregion, showing eBird survey effort

Geography

The Gulf Plains Bioregion (GUP) is the third largest of Queensland's bioregions, covering 12.7% (219,109 km²) of the State and extends slightly into the Northern Territory (DES 2013). The bioregion supports extensive mangroves, wetlands, mudflats, grasslands, and savanna woodlands. GUP extends from the western border of Queensland with the Northern Territory around the coast of the Gulf of Carpentaria to the western side of Cape York Peninsula. The plains are crossed by several large rivers including the Mitchell, Staaten, Gilbert, Norman, Flinders, Leichardt, Barkly, Albert, and Nicholson Rivers. The Plains are generally low-lying but the region does extend south into the higher-elevation headwaters of these rivers. The main settlements in this region are Croydon, Normanton, Karumba, Burketown, Doomadgee, and Georgetown with Kowanyama in the northeastern section.

The GUP bioregion lies mostly within the Tropical and Grassland climate zones (BoM 2016), experiencing hot, wet summers along the coastal parts and drier, mild winters inland. The variation from north to south can be seen by comparing the mean annual rainfall and mean temperatures during the wet season at Normanton with those at Julia Creek, which is just outside the southern boundary of the bioregion. Normanton is much wetter than Julia Creek during both the wet season (March: 620 mm and 416 mm, respectively) and dry season (49 mm and 26 mm). Mean minimum temperatures are higher in Normanton than Julia Creek in the dry season (19 ° vs. 12 °C) but are similar in the wet season (BoM 2018).



Canary White-eye (Jim Sneddon)



Magpie Goose (Jim Sneddon)

Birds of the bioregion and their conservation

The bioregion hosts most of the mangrove-specialised bird species of Australia, including White-breasted Whistler, Mangrove Golden (Black-tailed) Whistler, Broad-billed Flycatcher, Arafura Fantail and Mangrove Fantail. Rare and cryptic birds including Chestnut Rail, Beach Stone-curlew (near-threatened), and Gouldian Finch (near-threatened) are known to occur in GUP but are not recorded every year. The Queensland government historic records include 412 native species and five introduced species with 23 species listed as rare or threatened in CYP (DES 2013).

The two Key Biodiversity Areas (KBA) in GUP are the entire coastline and Staaten River KBA, which supports a population of Golden-shouldered Parrots (BirdLife Australia 2019). There are three other national parks (NP): Finucane NP, north of Burketown with boat access only; Errk Oygangand NP, northeast of Kowanyama with vehicle access in the dry season only; and Rungulla NP in the southeastern section along the upper reaches of the Gilbert River with an all-weather access road, but no internal roads or tracks. In addition, there are the Mutton Hole Wetlands Conservation Park at Normanton and several Nature Refuges in the eastern part of the Gulf Region.

Popular birding localities include Delta Downs wetlands along Karumba Road, Normanton wetlands, Karumba mangroves, the Burketown mangroves and wetlands, as well as numerous river and creek crossings along the main development roads. During the wet season, from December to April, the low-lying areas are often flooded, restricting road access, so few birders visit GUP at this time.

Management issues in the region include the large-scale Gilbert and Flinders River irrigation proposals, where substantial amounts of water have been allocated. It remains to be seen what impacts these water allocations may have on the important wetland areas further downstream. During the period from late 2015 through 2016 there was extensive and unprecedented die-off of mangroves along the coast of the Gulf of Carpentaria.

James Cook University, along with Indigenous ranger groups, is continuing to monitor the recovery of the mangroves in Karumba area. Recovery is hampered by large rafts of dead wood, reducing seedling survival, and further shoreline retreat has been documented (JCU 2019).

Major events in 2018-2019

Cyclone Nora in March 2018 crossed the northern section of GUP near Kowanyama. Late in December 2018, Cyclone Owen crossed in the same area. Extensive flooding occurred along the Norman and Flinders Rivers with record-breaking rainfalls in upper reaches of the Gulf Plains during February 2019 (BoM 2020).

Annual wet season flooding continues to be crucial for the thousands of water birds, waders, and grassland specialists (e.g., cisticolas) which were recorded in January through April in the Karumba-Normanton areas. Fortunately, there was an experienced birder, R. Reed, resident in 2018–2019 throughout those critical wet season months to record observations. He also documented large numbers of migratory raptors, especially Brown Falcons and Nankeen Kestrels during June 2018.

eBird recorded 259 species from 5,638 records in 2018 and 253 species from 5,942 records in 2019 for GUP. The following list highlights selected bird species and occurrences of interest for 2018 and 2019 from eBird.

2018 Notable bird records

Arafura Fantail. All records limited to Karumba throughout the year.

Australasian Shoveler. Three records of up to seven birds recorded over four days in May.

Australasian Swamphen. Several flocks reported on Karumba wetlands including a large flock of 150 observed in April.

Australian Brush-turkey. Only one observation reported at Karumba.

Australian Pratincole. Flock of 500 birds recorded at Karumba in June.

Australian Swiftlet. A single record of 12 birds recorded at Karumba in April.

Barking Owl. Two observations recorded at Karumba in May, and one around the Burketown area in July.

Beach Stone-curlew. Near-threatened. Only one observation recorded at Karumba in October.

Black Kite. Flocks of up to 200 birds observed at Karumba in June.

Black-fronted Dotterel. Flocks of up to 35 birds observed at Karumba in April.

Black-tailed Godwit. Near-threatened. Numerous sightings recorded at Karumba and Normanton with flocks of 250 and 150 birds observed at Karumba in September and November respectively.

Black-tailed Native-hen. Six observations recorded from the Normanton and Burketown areas from May through November.

Black-throated Finch. Numerous observations recorded at the Cumberland Dam and Georgetown area, and one observation further west of three birds at Croydon in October.

Broad-billed Flycatcher. Only two observations recorded at Karumba in April and May.

Broad-billed Sandpiper. Two birds observed at Karumba in October.

Brolga. Flocks of up to 350 birds recorded at Normanton in June, and 500 observed at Karumba in November.

Brown Falcon. Up to 85 birds observed at Normanton in June.

Brown Quail. Observations recorded at Karumba in April and June, and Normanton in June and November.

Brown Songlark. Three observations recorded in the Karumba-Normanton area, and one recorded at Georgetown in July through November.

Buff-sided Robin. All observations recorded along the Gregory River.

Bush Stone-curlew. One recorded at Croydon in April, and one at Karumba in June.

Chestnut Teal. 10 birds recorded at Karumba in July.

Crimson Chat. One observation recorded at the Burke and Wills Roadhouse in Normanton in July.

Dusky Moorhen. A single observation was recorded near Burketown on the Gregory River in July.

Dusky Woodswallow. Four birds observed around the Normanton area in April.

Eastern Barn Owl. Only one recorded at Normanton in April.

Emu. Only two records reported from July and August.

Eurasian Coot. Flocks of up to 1,200 were observed at Karumba in April.

Flock Bronzewing. Observations from June through November in the Normanton area with the largest flock of 150 birds observed in November.

Freckled Duck. Several observations of 200+ birds were recorded at Karumba in April, and 150 birds observed at Burke and Wills Roadhouse in Normanton in July.

Galah. Up to 600 birds were observed at Normanton in June.

Glossy Ibis. Large flocks with a maximum of 1,750 birds observed at Karumba in April.

Golden-headed Cisticola. Large flocks of a maximum of 250 birds observed in January in the Karumba area.

Gouldian Finch. Near-threatened. Only three observations recorded of single birds in creeks within the Gregory and Nicholson River catchments.

Great Crested Grebe. Several observations were recorded at Karumba wetlands during April with one flock of 150 birds. Two birds also observed in July at Burke and Wills Roadhouse in Normanton.

Great Egret. Up to 60 birds observed at Karumba in January, and 45 recorded in April.

Great Knot. Endangered. A flock of 1,500 birds observed at Karumba in September.

Great-billed Heron. Only one recorded at Karumba in July.

Grey Butcherbird. One recorded around the Normanton area in August.

Grey Teal. Numerous records of large flocks with a maximum of 7,500 observed at Karumba from April through June.

Ground Cuckooshrike. Two observations recorded around the Normanton area in April and November.

Hardhead. Maximum flock size of 2,500 birds recorded at Karumba in April.

Hoary-headed Grebe. Four observations recorded throughout the region during May, June, and October.

Horsfield's Bushlark. Flocks with a maximum of 1,000 birds observed at Karumba in January.

Latham's Snipe. A single observation recorded at Karumba in April.

Laughing Kookaburra. Two observations recorded at Karumba in January and March, and one recorded near Gregory Downs in May.

Leaden Flycatcher. Only three observations recorded around the Karumba area in April, May, and November.

Lemon-bellied Flyrobin. Only one observation recorded near Burketown.

Little Corella. Up to 1,000 birds observed at Normanton in April.

Little Curlew. Only one observation of seven birds recorded at Karumba in September.

Little Egret. Up to 500 birds recorded at Karumba in April.

Little Woodswallow. Records include nine birds observed at the Nicholson catchment in June, six observed south of Georgetown in May, and observations recorded on Burke Developmental Road in May.

Mangrove Fantail. All records restricted to Karumba from May through September.

Mangrove Golden Whistler. Only four observations recorded at Karumba and Burketown in May, July, and September.

Mangrove Robin. Five observations recorded in Normanton and Karumba throughout the year.

Masked Lapwing. Maximum group size recorded was 150 birds at Karumba in April.

Nankeen Kestrel. A flock of 75 birds recorded in Normanton in June with the observer noting "northern winter migration" (R. Reed personal communication).

Noisy Miner. A single record of six birds recorded at the Cumberland Dam in September.

Pacific Black Duck. Maximum flock of 750 birds observed at Karumba in April.

Peregrine Falcon. Only two observations recorded from Normanton in May and November.

Pied Heron. Maximum numbers of 800 birds recorded at Karumba in April, and 750 birds recorded in January.

Pied Oystercatcher. Three observations recorded at Karumba in July, September, and October.

Pied Stilt. Large groups with a maximum of 1,500 birds recorded at Karumba in April.

Pink-eared Duck. Large flocks of up to 2,000 birds observed at Karumba from April through June.

Plumed Whistling Duck. A maximum flock size of 3,500 birds was recorded at Karumba in April.

Purple-crowned Fairywren. Three observations recorded near Burketown.

Red Knot. Near-threatened. A flock of 450 birds recorded at Karumba in September.

Red-chested Buttonquail. One observation recorded at Normanton in April, and one at Burketown in July.

Red-collared Lorikeet. Only two records near Burketown in July and October, and one on Nicholson River catchment in June.

- Red-kneed Dotterel.** Up to 50 birds observed in the Normanton area in April.
- Red-necked Avocet.** Four observations recorded of up to 27 birds at Karumba, Normanton, and Burketown in September through November.
- Red-necked Stint.** Near-threatened. A flock of 750 birds recorded at Karumba in September.
- Red-tailed Black Cockatoo.** Flocks of up to 125 birds observed at Normanton in April.
- Rock Dove.** Introduced. Only six observations recorded from Normanton where they were seen throughout year, indicating they are resident and established there.
- Royal Spoonbill.** Maximum flock of 175 recorded at Karumba in April.
- Ruddy Turnstone.** A single observation recorded at Karumba in September.
- Rufous Shrikethrush.** Only two observations of this under-recorded species, both south of Burketown along the Gregory River catchment.
- Rufous Songlark.** A maximum of 100 birds observed at Normanton in April.
- Sarus Crane.** Flocks of up to 75 birds recorded at Karumba from September through November.
- Shining Bronze Cuckoo.** Observations recorded at Karumba in April and Normanton in June and November.
- Spotless Crane.** A single observation recorded from Burketown in October.
- Square-tailed Kite.** Only one recorded at Normanton in October.
- Star Finch.** Observations of up to of 250 birds recorded at Karumba in September.
- Torresian Imperial Pigeon.** Only two observations recorded from Karumba in November.
- Welcome Swallow.** Only one observation recorded near Normanton in June.
- Western Gerygone.** One observation recorded south of Normanton in September.
- Whiskered Tern.** Numerous large flocks recorded with a maximum of 500 birds at Karumba during April.
- Whistling Kite.** Flocks of up to 50 birds recorded at Karumba and Normanton in April and June.
- White-breasted Whistler.** All records restricted to Karumba in January, April, May, July, and September.
- White-necked Heron.** Up to 50 birds observed at Karumba in June.
- White-winged Tern.** Numerous flocks recorded at Karumba including one estimated at 4,000 birds during April.
- Yellow Chat.** Three birds recorded at Normanton in April.
- Zitting Cisticola.** Large flocks with a maximum of 350 birds recorded in January in Karumba.

2019 Notable bird records

Apostlebird. Flocks of up to 150 birds observed at Normanton in June.

Arafura Fantail. Three observations recorded at Karumba in January and May, and one on Gregory River in July.

Australasian Swamphen. Four observations recorded with a maximum of 21 birds at Karumba and Normanton in January and March.

Australian Brush-turkey. Only three observations recorded in Karumba.

Australian Bustard. Groups of up to 47 birds observed around the Normanton area in April.

Australian Pelican. Flock of up to 150 birds recorded at Karumba in March.

Bar-breasted Honeyeater. Observations recorded at Normanton in March and Burke in July.

Black Bittern. Only one bird recorded at Burketown in August.

Black Falcon. One recorded near Karumba in April, one south of Julia Creek in May, and one near Burketown in July.

Black-eared Cuckoo. One bird recorded at Normanton in October.

Black-tailed Godwit. Near-threatened. Several large flocks with a maximum of 350 birds recorded at Karumba in January with other flocks throughout the year.

Black-tailed Native-hen. Three observations recorded of one or two birds recorded at Normanton in January, November, and December.

Black-throated Finch. Three observations recorded in Croydon in May and June.

Broad-billed Flycatcher. Only three observations recorded at Karumba from April through June.

Brolga. A maximum of 350 birds recorded at Karumba in January with records of smaller numbers throughout year.

Brown Booby. One bird recorded at Normanton in March.

Brown Quail. Only three observations recorded scattered throughout the region in February and July.

Buff-sided Robin. The first record of this species this far east included two adults and an immature bird which suggests a successful breeding in area

Bush Stone-curlew. Only one observation recorded at Croydon in August.

Common Myna. Introduced. First and only observation recorded in Karumba in January, but no further observations.

Common Tern. Two observations recorded at Normanton in January and May.

Curlew Sandpiper. Near-threatened. One observation recorded of four birds at Karumba in October.

Dusky Moorhen. Observations recorded were one near Burketown, one at Cumberland Dam, and one at Georgetown in July.

Dusky Myzomela. Only one observation recorded at Kowanyama in January.

Emu. Only three observations recorded in January and August.

Eurasian Coot. A maximum of 125 birds observed at Karumba in March.

Flock Bronzewing. Several flocks of up to 60 birds recorded in the southern extremity of Gulf Plains near Julia Creek between February and June.

Galah. Flock estimate of 1,500 birds recorded at Normanton in May.

Glossy Ibis. Large flocks of up to 2,500 birds recorded at Karumba in March.

Gouldian Finch. Near-threatened. One record of a flock of 30 birds in the far western area of the region in the Nicholson catchment.

Great Cormorant. One observation of six birds recorded near Normanton in August.

Great Crested Grebe. Up to 20 birds observed at Burke and Wills Roadhouse in Normanton in May through July.

Great Egret. A flock of 125 birds recorded at Karumba in March.

Great Knot. Endangered. Flock of 500 birds observed at Karumba in September.

Great-billed Heron. Three observations of single birds recorded at Karumba in January, March, and August.

Grey Teal. Maximum flock number of 125 birds recorded at Karumba in March.

Grey-tailed Tattler One bird observed at Karumba in October.

Ground Cuckooshrike. Two observations recorded along the Gregory River in May and July.

Hardhead. Maximum number of 175 birds recorded at Karumba in March.

Hoary-headed Grebe. Two observations recorded at Burke and Wills Roadhouse in Normanton in May and June.

Intermediate Egret. A flock of 80 birds recorded at Karumba in March.

Large-billed Gerygone. One observation recorded at Kowanyama in January.

Leaden Flycatcher. Five records scattered from Croydon to Burketown throughout the year.

Lemon-bellied Flyrobin. Three observations recorded near Normanton in September and November, and one observation on Gregory River in July.

Lesser Frigatebird. Eight birds observed at Karumba in May.

Little Curlew. Four observations recorded of flocks with a maximum of 6,000 birds in the Karumba area in January.

Little Eagle. Only one observation recorded along the lower reaches of the Leichhardt River in April.

Little Egret. A flock of up to 1,500 birds recorded at Karumba in March.

Little Tern. Two observations recorded at Karumba in May and August.

Little Woodswallow. One observation recorded at the Gregory River in June.

Mangrove Fantail. Four observations recorded at Karumba in May and August.

Marsh Sandpiper. Up to 80 birds observed at Karumba in May with smaller groups observed throughout the year.

Masked Woodswallow. A flock of 400 birds observed at the Gregory River in April.

Noisy Friarbird. Only one observation recorded near Normanton in May.

Oriental Cuckoo. One observation recorded of two birds in Normanton in January.

Oriental Pratincole. A flock of up to 4,000 birds recorded at Karumba in January.

Pacific Black Duck. Maximum flock number of 100 birds recorded at Normanton in July.

Peregrine Falcon. Only one observation recorded near Croydon in June.

Pied Heron. A flock of up to 5,000 birds recorded at Karumba in March.

Pied Stilt. Large flocks of up to 500 birds recorded in Karumba in May with smaller numbers observed throughout the year.

Plumed Whistling Duck. Maximum flock number of 650 birds observed at Normanton in January.

Radjah Shelduck. Large flock of 152 birds recorded at Normanton in July.

Red-browed Finch. One observation recorded at Kowanyama in January. This species was not previously recorded at this locality.

Red-collared Lorikeet. Four observations recorded around the Burketown area in July, and one near Normanton in September.

Red-necked Avocet. Two observations recorded in Normanton and Karumba in January, and two in Normanton in November.

Rock Dove. Introduced. All records limited to Normanton with a maximum of 27 birds observed.

Royal Spoonbill. Large flock of 400 birds observed at Karumba in March.

Rufous-banded Honeyeater. Two observations recorded of single birds at Kowanyama in January and Karumba in December.

Sarus Crane. A maximum of 122 birds observed around the Karumba area throughout the year.

Shining Bronze Cuckoo. Two observations recorded at Karumba and Normanton in April and November.

Spotted Nightjar. Only one observation recorded in May near Normanton.

Star Finch. Only one observation recorded of four birds at Karumba in June.

Straw-necked Ibis. One flock of 550 birds observed at Karumba in March.

Swamp Harrier. Only two observations recorded at Normanton in March and April.

Terek Sandpiper. Flock of 40 birds recorded at Karumba in May.

Torresian Imperial Pigeon. Three observations recorded in Karumba from January through April.

Varied Lorikeet. Flock estimate of 250 birds recorded at Normanton in November.

Welcome Swallow. Two observations recorded in Karumba and Normanton in July.

Western Gerygone. One observation recorded near Normanton in July, and two at Karumba in July and August.

White-throated Needle-tail. Only one observation of two birds recorded at Karumba in January.

White-winged Tern. Only one observation of three birds recorded at Karumba in March.

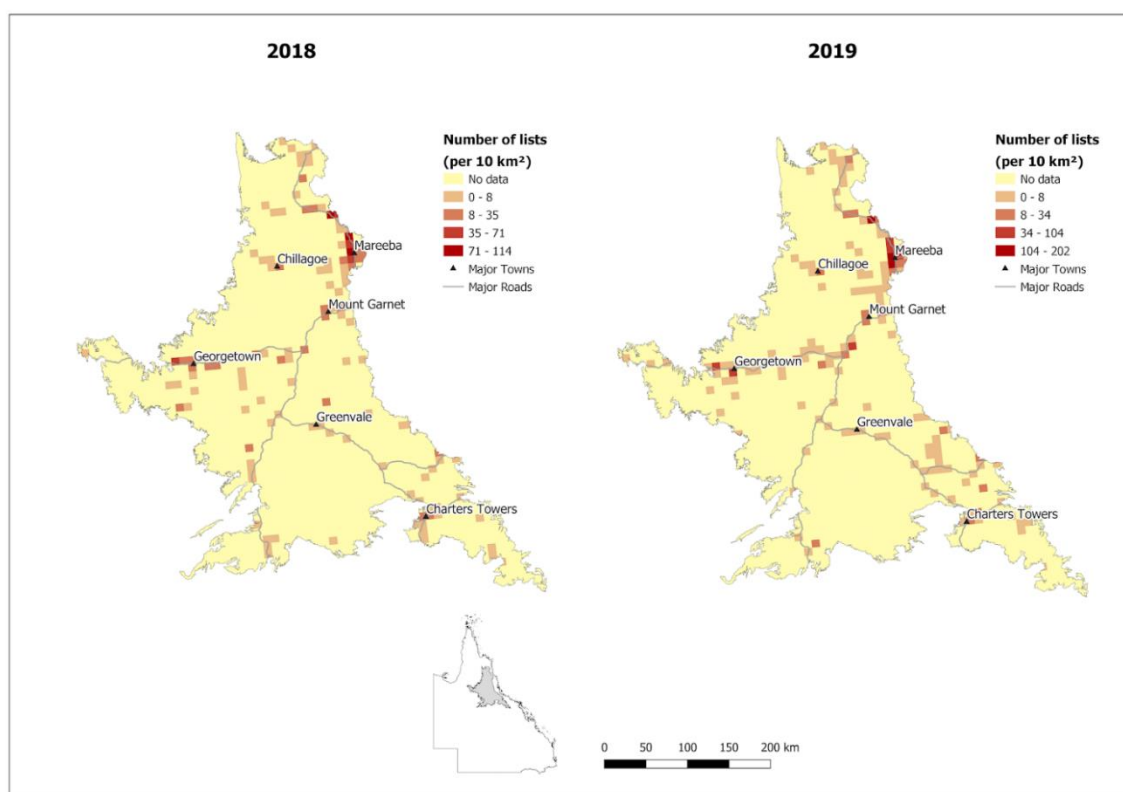
Wood Sandpiper. Several observations recorded in Normanton in January, October, and November, and one recorded around the Georgetown area in October.

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5. Einasleigh Uplands

David Niland



Map of Einasleigh Uplands Bioregion showing eBird survey effort



Brown Treecreeper (David Niland)



Black-throated Finch (Vince Bugeja)

Geography

The Einasleigh Uplands Bioregion (EIU) covers an area of over 116,260 km², constituting 6.8% of the area of Queensland, and stretches across three climate zones: Grassland, Tropical, and Subtropical (BoM 2016). It forms the 'roof' of northern Queensland, with altitudes ranging from 200 m to over 1,000 m with bedrock geologies that include granites, acid volcanics, metamorphosed sediments, and basalts. The

bioregion straddles the Great Dividing Range from about Cooktown south to Proserpine, and the area encompasses the headwaters of several rivers including the Normanby, Flinders, Burdekin, and Barron (Low 2011).

Regional population centres include Charters Towers, Mareeba, Einasleigh, and Chillagoe (DES 2013). Transport corridors traversing the bioregion include the Kennedy Highway, Gregory Development Road, and Flinders Highway.

Birds of the bioregion and their conservation

The Queensland Government lists 449 native species and eight introduced bird species from historic data, and 23 species are listed as rare or threatened in EIU (DES 2013). The bioregion is a recognised biodiversity hotspot area that supports several endemic or threatened species and unique habitats. It embraces over 140 regional ecosystems including a number that are threatened: Gidgee (*Acacia cambagei*) woodland, Brigalow (*Acacia harpophylla*), Bauhinia (*Lysiphyllum carronii*) open woodland, and semi-evergreen vine thicket (DES 2019). Several nationally significant wetlands occur in the bioregion including the Herbert River Gorge, Lake Lucy Wetlands, Spring Tower Complex, and Walters Plains Lake. The most important protected areas in the bioregion comprise the Chillagoe-Mungana Caves, Bulleringa, Undara Volcanic, Giringun, Great Basalt Wall, and Blackbraes National Park (NP). There are an additional 16 NPs, four Conservation Parks, and 27 private Nature Refuges that are entirely or partially in EIU (DES 2013).

Major events in 2018-2019

The mean temperatures were above average in both 2018 and 2019 particularly from September through November each year. Rainfall was generally below average except for periods in March and December 2018 and the effects of Cyclone Penny in January and Cyclone Trevor in March of 2019 (BoM 2019, 2020). Only the southern section of the Charters Towers Council area was drought-declared during 2018 and 2019 (QG 2022).

During 2018 a total of 283 native and three domestics species were recorded in eBird by 178 observers providing 954 lists with a total of 16,109 records, and during 2019 a total of 285 native and six domestic species were recorded from 217 observers providing 1,166 lists with a total of 19,599 records. Observer effort was strongly seasonal as in both years 73% of the lists were recorded during the dry season from May to November.

2018 Notable bird records

Apostlebird. Many observed at Cumberland Dam including one count of 100 in December.

Australasian Grebe. Observations regularly recorded with a high count of 100 at Blackbraes NP in July.

Australian Painted-snipe. Endangered. One bird recorded in the Mt Carbine area on 15 August.

Banded Honeyeater. The species was more numerous in October and November with 12 observed at Maryfarms.

Bar-breasted Honeyeater. Single birds observed north of Mt Carbine in October and November.

Bassian Thrush. One bird observed at Emerald Creek Falls in August.

Black Bittern. Single birds observed at Cumberland Dam in April and December.

Black Falcon. One bird recorded at Cumberland Dam in January.

Black Kite. One observation of 275 birds recorded at Walkamin in January.

Black Swan. Almost 250 recorded at Lake Mitchell in January.

Black-faced Woodswallow. White-vented subspecies observed at Cumberland Dam in January and Brooklyn Sanctuary in October.

Black-necked Stork. Near-threatened. Most observations recorded in second half of the year with five counted at Pickford Road in October.

Black-throated Finch. Eight birds, including a nest-building pair, observed at Cumberland Dam in January.

Brown Treecreeper. A couple of observations of *Climacteris picumnus melanotus* recorded around the Mt Carbine area in August and October.

Budgerigar. Many small flocks recorded in western areas of the bioregion between April and September.

Buff-rumped Thornbill. A couple of observations recorded including Undara in June and Collins Weir, about 20 km west of Atherton, in July.

Comb-crested Jacana. A maximum count of 40 recorded at Big Mitchell Creek in November.

Crimson Finch. An observation of six birds recorded at Emerald Creek Road in June.

Diamond Dove. An exceptional high count of 100 recorded at Cumberland Dam in December.

Double-eyed Fig-parrot. Two birds observed at the Mareeba Wetlands Centre in April.

Eastern Osprey. A few nests recorded around the Lake Mitchell area in April and July.

Eastern Spinebill. A couple of observations recorded from areas near Mareeba in May and October.

Fairy Martin. A large flock estimated at 120 observed at Maryfarms in June.

Freckled Duck. Observations recorded at three locations from July through November with 12 near Mareeba in October.

Fuscous Honeyeater. A couple of observations of the distinctive 'Herberton Honeyeater' variety recorded from the north end of Lake Mitchell in July and Innot Hot Springs in September.

Galah. One observation of 160 birds recorded at Forsayth in July.

Glossy Ibis. Most observations recorded in the wet season with a maximum of 60 at Pickford Road in December.

Great Egret. A large count of 30 birds recorded at Big Mitchell Creek in September.

Green Oriole. Two birds observed at Mt Carbine in October.

Green Pygmy Goose. A good year for sightings with 150 recorded at Lake Mitchell in November.

Grey Fantail. Birds at Undara in August reported to be *keasti* subspecies.

Little Buttonquail. A few observations recorded around Georgetown in May including three at the Racecourse.

Little Crow. A flock of 20 observed at Georgetown, and 12 recorded at Greenvale on the same day in September.

Little Curlew. Two observations of one bird recorded at Georgetown in January.

Little Friarbird. Numerous recorded at Cobbold Gorge in September with counts of up to 35.

Little Grassbird. Two birds observed near Innot Hot Springs in February.

Long-billed Corella. Introduced. One bird noted here 'over many years' observed in a flock of Little Corellas at Mareeba in May and November.

Magpie Goose. Observations throughout the year recorded with a high count of 500 at Pickford Road in November.

Masked Woodswallow. Species predominantly observed in mixed flocks of one to 200 with White-browed Woodswallows at Cumberland Dam in July and September.

Metallic Starling. One observation of ten birds recorded in Mareeba during January.

Noisy Friarbird. Numerous observations in the west of the bioregion recorded from July to September with 50 at Undara in July.

Oriental Plover. Up to five birds recorded in the Maryfarms–Mt Carbine area in October and November.

Pictorella Mannikin. Observations of two and four birds recorded in the Georgetown area in April and May.

Pied Currawong. Three *robinsoni* subspecies recorded at Undara in May.

Pink-eared Duck. Regular observations recorded with 29 at Cumberland Dam in October.

Plum-headed Finch. A large flock estimated at 70 birds recorded at Porcupine Gorge in July.

Purple-backed Fairywren. Single birds observed at Forty Mile Scrub in July and Durham Dam in November.

Rainbow Bee-eater. Hundreds observed coming to roost in Charters Towers in April.

Red-tailed Black Cockatoo. Over 300 observed coming in to drink at a small dam at Maryfarms in September.

Rufous Owl. One recorded at Emerald Creek Falls between August and November.

Sarus Crane. Not as many observations recorded as expected with a high count of only eight at a dam near Walkamin in November.

Scaly-breasted Lorikeet. Hundreds observed feeding in eucalypts at Emerald Creek Falls in August.

Silver-crowned Friarbird. A few observations recorded around Lake Mitchell between May and November.

Spinifex Pigeon. A few observations recorded with a maximum count of 12 at Flat Creek Station to the south of Georgetown.

Spotless Crake. One observed on Pickford Road in Mareeba during December.

Squatter Pigeon. The largest count was of 80 birds observed at Cumberland Dam in December.

Tree Martin. A large flock estimated at 100 observed at Pickford Road in Mareeba during July.

Wandering Whistling Duck. The more common Whistling Duck observed, with a high count of 500 at Lake Mitchell in January.

Whiskered Tern. A few observations recorded between September and December with a maximum of 40 at Lake Mitchell in December.

White-eared Monarch. One recorded at Mareeba in October.

White-naped Honeyeater. Two observations of small flocks of four and six recorded at Emerald Creek Falls in October.

White-winged Tern. A single bird observed at Croydon in April.

Yellow-breasted Boatbill. One seen at the western limit of species range at Tinaroo Creek Crossing in November.

Yellow-faced Honeyeater. Many observations recorded between Mareeba and Mt Carbine throughout the year.

2019 Notable bird records

Australian Hobby. One observed taking dragonflies at Talaroo Airport Dam in April.

Australian Masked Owl. One heard at Emerald Creek campground in April.

Australian Swiftlet. Larger counts of over 50 observed around Mareeba in September.

Banded Lapwing. A pair recorded at Pickford Road in Bibbohra during November and December.

Bar-breasted Honeyeater. Single birds recorded at Maryfarms in June and Cumberland Dam in August.

Black Kite. An estimated 1,000 birds recorded at the Mareeba Rubbish Tip in August, and 900 observed at Big Mitchell Creek in November.

Black Swan. Large numbers observed at Mareeba Wetlands from October to December with a maximum of 200 observed.

Black-necked Stork. Near-threatened. Eight birds recorded just south of Mareeba in October.

Bower's Shrikethrush. Two birds recorded near Walkamin in March.

Brolga. An estimate of 600 recorded in the same field at Walkamin.

Brown Songlark. Single birds observed at Cumberland Dam in April and at Mareeba in December.

Buff-breasted Paradise Kingfisher. A single bird observed in Mareeba on 25 March.

Bush Stone-curlew. A very large population regularly observed at the Mareeba Golf Course with 48 counted in June.

Channel-billed Cuckoo. Unusual count of 35 recorded feeding in fig trees at Mareeba in February.

Common Sandpiper. One bird recorded at Pickford Road in January.

Crimson Finch. A single bird recorded at Charters Towers in July.

Emu. Many observations of adults with young especially from October to January.

Eurasian Coot. Very large counts recorded at West Barron Dam with 1,000 noted in December.

Galah. At least 1,000 counted at Georgetown in July.

Gull-billed Tern. Four birds observed at the Burdekin Weir on the same day as the Silver Gull.

Hardhead. Especially high count of 120 observed at Nardellos Lagoon (Walkamin) in November.

Long-billed Corella. Introduced. Five in a feral population recorded at Mareeba in October.

Lovely Fairywren. Four observations recorded from Granite Vale Station north to Bustard Downs.

Magpie Goose. Numbers increased from October to December with 1,250 at Pickford Road in October.

Orange-footed Scrubfowl. A couple recorded at Georgetown in October which is unusually far west.

Oriental Dollarbird. A late observation recorded of one north of Mt Carbine on 5 May.

Pacific Golden Plover. 24 birds recorded at Pickford Road in October.

Plum-headed Finch. Three birds observed at Porcupine Gorge north of Hughenden in June.

Purple-backed Fairywren. Four birds observed near Croydon in May.

Rainbow Bee-eater. One count recorded 50 birds at Bustard Downs in August.

Red-chested Buttonquail. Five birds observed at Cumberland Dam in August.

Red-tailed Black Cockatoo. Estimated 800 birds observed in harvested sorghum field 23 km north of Lakeland on the Peninsula Development Road.

Sarus Crane. An estimate of 2,000 recorded in a harvested cornfield at Walkamin in October.

Silver Gull. A single bird observed at Burdekin Weir in January.

Spotted Bowerbird. Individuals recorded at Greenvale in April and Undara in October.

Spotted Quail-thrush. A few sightings recorded around Watsonville to the west of Herberton in July and October.

Squatter Pigeon. Regularly observed and especially common at Granite Gorge with 35 counted in October.

Striated Heron. Single birds observed at Carpentaria Downs in the southeast section of the bioregion in May and at Mareeba Wetlands in September.

Sulphur-crested Cockatoo. About 300 observed feeding on maize along road to Emerald Creek in April.

Tooth-billed Bowerbird. One bird recorded at Mt Carbine caravan park in November which is unexpected habitat for this species.

White-headed Pigeon. Two birds recorded at Mareeba in February which is further west than normal range for this species.

White-plumed Honeyeater. Two birds observed near Mt Surprise in December which is a possible range extension for the species.

White-throated Treecreeper. One recorded in Danbulla Forest Reserve about 8 km east of Mareeba Airport.

White-winged Chough. A sighting of seven birds recorded at Lake Belmore Reserve in July, well north of the species' usual range.

White-winged Fairywren. Three birds recorded at Belmore Reserve near Croydon in October; this may be a range extension for the species.

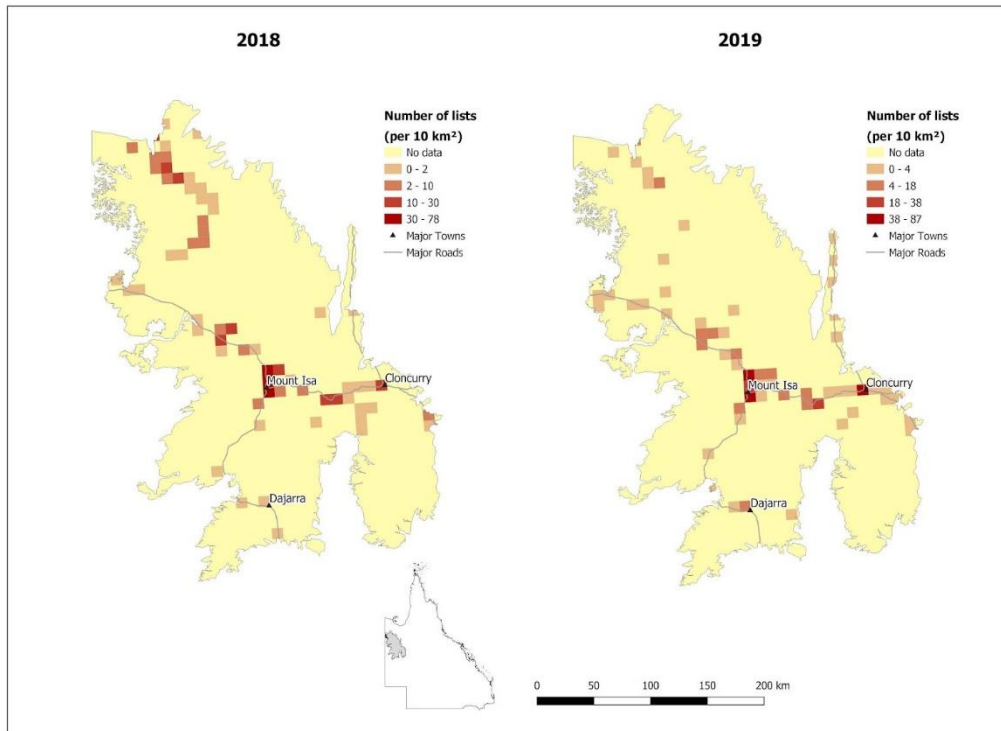
White-winged Tern. Seven birds in a flock observed at the Burdekin Weir in late December.

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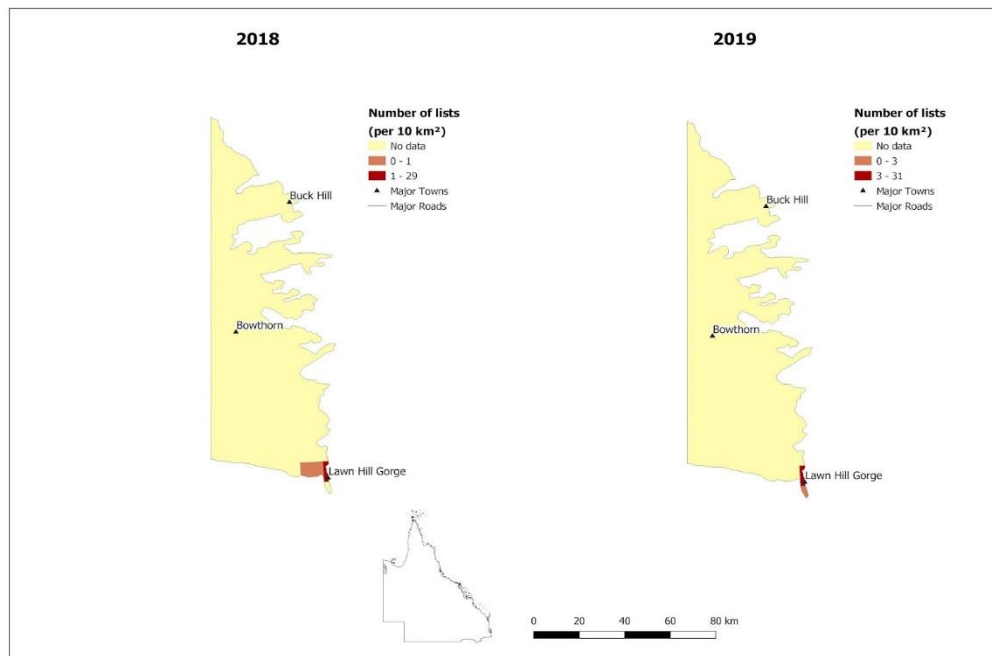
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6. Northwest Highlands including Gulf Fall Uplands

Andrew Humpherys



Map of Mount Isa Inlier Bioregion showing eBird survey effort



Map of Gulf Fall Uplands Bioregion, showing eBird survey effort



Spinifex Pigeon (Jon Norling)



Varied Lorikeet (Graham Donaldson)



Kalkadoon Grasswren (Jon Norling)

Geography

The Northwest Highlands Bioregion (NWH) covers some 67,540 km², or 3.9 % of Queensland, and stretches predominantly across two climate zones: Desert and Grassland (BoM 2022). It is an elevated, topographically diverse region that incorporates two of the Commonwealth Government's IBRA (version 7) bioregions: Mount Isa Inlier and the eastern part of Gulf Fall and Uplands that crosses into northwest Queensland from the Northern Territory (AG 2012).

NWH encompasses over 80 Regional Ecosystems including a number which are threatened: Red Gum (*Eucalyptus camaldulensis*) woodlands, riverine wetland, and Gidgee (*Acacia cambagei*) low open woodland. It also supports nationally significant wetlands including Lawn Hill Gorge, Lake Julius on the Leichhardt River, Lake Moondarra, and the Thornton complex of wetlands in the upper reaches of the Gregory River (DES 2019a). Major population centres of NWH are Mount Isa and Cloncurry. Transport corridors traversing the bioregion are the Barkly and Boulia–Mt Isa Highways and Gregory Downs–Camooweal Road. The NWH bioregion experiences hot summers and mild winters with most rain falling over the summer months.

Birds of the bioregion and their conservation

The Queensland Government lists 317 native and six introduced bird species in NWH from historic data, and there are 18 species that are considered threatened or rare including Gouldian Finch and Carpentarian Grasswren (DES 2013). The major Protected Areas are Boodjamulla (Lawn Hill) National Park (NP) (2,820 km²) and Camooweal Caves NP (13,800 ha). Three Nature Refuges support habitat for threatened species, including the Gouldian Finch (DES 2013) in the NWH bioregion: Ballara (174,916 ha) is located southwest of Cloncurry and protects Grey Falcon habitat; Chidna (8,307 ha) is northwest of Cloncurry and protect Gouldian Finch and Carpentarian Grasswren habitat; and Bullen Bullen (10,239 ha) is north of Cloncurry and protects eight wetland health indicator bird species (DES 2013). This bioregion encompasses two Key Biodiversity Areas (KBA): Boodjamulla (37,000 ha) and Buckley River (47,900 ha) (BirdLife Australia 2019).

Southern Gulf National Resource Management (NRM), formerly Southern Gulf Catchments Inc., have continued work in partnership with James Cook University on the optimal fire regimes for maintaining populations of the Carpentaria Grasswren. Since 2016, Southern Gulf NRM has been working with local and regional partners to expand proactive fire management practices across grasswren habitat to reduce the risk of widespread wildfire in the future. In the current project, Biodiversity Bright Spots – Carpentarian Grasswren Corridor, collaborative regional fire management will establish a fire management corridor (the Carpentarian Corridor) from the Buckley River Key Biodiversity Area to Boodjamulla National Park (Crowley 2016). In the 2018 KBA Summary Boodjamulla KBA was listed as "Out of Danger " due to changes in fire management (Leaney et al. 2019).

Major events in 2018-2019

In 2018, temperatures were above to well above average for maximum, minimum, and annual mean. The rainfall was below to well below average for areas south of Mount Isa, and there was only minor flooding in January (BoM 2019). All Local Government Areas (Boulia, Burke, Cloncurry, Mckinlay, and Mount Isa) were drought declared from January to March and again September to December (QG 2019). There was a significant monsoonal weather event in early 2019 that caused major flooding in the catchments of the many river systems in the region (BoM 2020). This relieved previous drought conditions and provided impetus for new vegetation growth. Major rivers remained full until later in the dry season than usual.

The 2018/2019 sighting list was compiled in a period that saw some major flooding in the region. This impacted both birds and birdwatchers. The better season that followed is likely to have been favourable for most bird species in the region but would have impacted access to some sites for birdwatching purposes. Birdwatching effort in the region continues to be concentrated at a very few "honeypot" sites such as Boodjamulla NP which does not accurately represent the state of birds across the bioregion. There are relatively few designated conservation areas in the bioregion with ready access and facilities for birdwatchers. Easy access for birdwatchers to important sites in this remote region remains a major impediment. In addition, most birdwatching seems to be focussed on certain key, charismatic species at the available sites which also influences available records.

Species observed in 2018 were 217 in the Mount Isa Inlier and 106 in the Gulf Fall region; species observed in 2019 were 219 species and 95 species respectively. Most of the species recorded are relatively common or widespread in the region. There were relatively few records of unusual vagrants or notable species. There were multiple records of charismatic species or species with restricted distributions in Queensland at a few, well known sites. This reflects the popularity of these sites (e.g., Boodjamulla NP and Adels Grove) with birdwatchers targeting these species and possibly the paucity of other readily accessible conservation sites in the region. Notably, pairs of Grey Falcon were observed in the bioregion in both 2018 and 2019.

2018 Notable bird records

Arafura Fantail. Several birds observed including one in April and four in September at Boodjamulla NP.

Azure Kingfisher. Only two observations recorded, both from the Gregory River Crossing in April and May.

Barking Owl. Six observations recorded between May and September in Boodjamulla NP.

Black-shouldered Kite. Small number of observations recorded at Lake Moondarra and Riversleigh Road.

Black-tailed Treecreeper. Many observations recorded at a wide variety of sites in Mount Isa and Cloncurry Shires, and three observed in Boodjamulla NP between July and September.

Blue-billed Duck. Near-threatened. Observations of small numbers recorded at the Mount Isa Wastewater treatment plant and Lake Corella in Cloncurry Shire.

Brahminy Kite. One recorded at Boodjamulla NP in September.

Brown Quail. A single observation of an individual in Cloncurry Shire, and a group of three recorded at Boodjamulla NP in September.

Buff-sided Robin. Numerous records from several months mostly from the Adels Grove and O'Shannessy River area in Mount Isa Shire. More observations recorded between May and September in Boodjamulla NP.

Carpentarian Grasswren. Vulnerable. Numerous observations recorded from McNamara's Road near Mount Isa.

Crimson Chat. Numerous observations recorded from Mount Isa and Cloncurry Shires.

Emu. Numerous observations recorded at different locations across the bioregion.

Forest Kingfisher. Single observation recorded from Clem Walton Park in Cloncurry Shire during June.

Freckled Duck. Multiple observations recorded with most from Lake Moondarra, but some also from Cloncurry Shire.

Gouldian Finch. Near-threatened. A single observation recorded at New Century Mine.

Great Crested Grebe. Numerous observations recorded from a variety of sites across Mount Isa and Cloncurry Shires.

Green Pygmy Goose. Three observed in Boodjamulla NP in September.

Grey Falcon. Vulnerable. Two recorded in Boodjamulla NP in September 2018, and two separate observations recorded from Riversleigh Road in April.

Hardhead. Many observations recorded from across Mount Isa and Cloncurry Shires, and four observed at Boodjamulla NP in September.

Helmeted Guineafowl. Introduced. Multiple observations of flocks with up to nine individuals recorded at the Horse Paddocks in Mount Isa.

Hooded Robin. Several observations recorded predominantly from McNamara's Road in Mount Isa Shire.

Jacky Winter. Numerous observations recorded from many sites in northwest Queensland including seven birds recorded in Boodjamulla NP in August and September.

Kalkadoon Grasswren. Numerous observations recorded at the Pamela Street Water Tank and the Warrigal Waterhole in Mount Isa Shire.

Little Buttonquail. Several observations of single birds recorded from Riversleigh Road and McNamara Roads in the northwestern part of Mount Isa Shire in April.

Long-tailed Finch. Flocks of up to 13 birds recorded in Boodjamulla NP in September.

Northern Rosella. Eight recorded at Boodjamulla NP in September 2018.

Orange Chat. Numerous observations recorded from Mount Isa and Cloncurry Shires.

Pacific Koel. One recorded in Boodjamulla NP in April.

Pale-headed Rosella. Two observations recorded from Clem Walton Park/Lake Corella in Cloncurry Shire in June and September.

Peregrine Falcon. Several observations recorded from Chinaman Creek Dam, Lake Moondarra, and Fountain Springs.

Pink-eared Duck. Many observations recorded from a wide variety of sites around Mount Isa and Cloncurry Shires. 17 recorded in Boodjamulla NP in September.

Plumed Whistling Duck. Multiple observations recorded at Cloncurry and Mount Isa with up to 100 individuals recorded at Lake Moondarra. Seven observed at Boodjamulla NP in September.

Purple-backed Fairywren. Many observations recorded at a wide variety of sites in Mount Isa and Cloncurry Shires, and numerous observations recorded at Boodjamulla NP between April and September.

Purple-crowned Fairywren. Numerous records including many from Adels Grove and Boodjamulla NP.

Red-backed Fairywren. Several observations recorded with most from Lake Moondarra, and one record from Boodjamulla NP in April.

Red-capped Robin. Several observations recorded from near Mount Isa including Lake Moondarra.

Red-chested Buttonquail. Nine recorded at Riversleigh Road in Mount Isa Shire, but some concern by author that the species can be easily confused with Little Buttonquail.

Red-collared Lorikeet. Numerous records including two from Mount Isa, many from Adels Grove, and many at Boodjamulla NP with flocks of up to 10 between May and September.

Red-necked Avocet. One observation of three birds recorded at Lake Moondarra in Mount Isa Shire during March.

Sandstone Shrikethrush. Several birds recorded in Boodjamulla NP between June and September.

Square-tailed Kite. Single observation recorded from Gregory Downs–Camooweal Road.

Wandering Whistling Duck. Several observations recorded from Lake Moondarra.

White-winged Fairywren. A single observation recorded at Lake Moondarra.

2019 Notable bird records

Azure Kingfisher. Two individuals recorded at the O'Shannessy River in April.

Black-shouldered Kite. Small number of observations recorded at Lake Moondarra and several roadside sites in Cloncurry Shire.

Black-tailed Godwit. Near-threatened. A single observation recorded at Lake Moondarra in October.

Black-tailed Treecreeper. Many observations at a wide variety of sites recorded in Mount Isa and Cloncurry Shires.

Brown Quail. Several observations of small numbers recorded in Mount Isa Shire including at Warrigal Waterhole and Lake Moondarra.

Buff-sided Robin. Numerous observations recorded with most from the Adels Grove area and Boodjamulla NP.

Bush Stone-curlew. Only a single observation recorded from Cloncurry Shire.

Carpentarian Grasswren. Vulnerable. Observations included a single record from Dajarra in Cloncurry Shire and numerous records from Mount Isa Shire including the Lady Lorretta Mine and McNamara Road at Gunpowder.

Crimson Chat. A single observation of two individuals recorded at Boodjamulla NP in September, and several observations from the Lake Moondarra area in Mount Isa Shire.

Emu. Numerous observations recorded at different locations in the region.

Great Crested Grebe. Numerous observations recorded from a variety of sites in Mount Isa and Cloncurry Shires.

Grey Falcon. Vulnerable. Two birds recorded at Boodjamulla NP.

Grey Goshawk. A single observation recorded at the Pamela Street Water Treatment Plant in Mount Isa.

Hardhead. Many observations recorded from across Mount Isa and Cloncurry Shires.

Helmeted Guineafowl. Introduced. A single observation recorded of a group of 45 individuals at Lake Moondarra in Mount Isa Shire.

Hooded Robin. Several observations recorded predominantly from Carlton Hills Station and Mica Creek Crossing in Mount Isa Shire.

Jacky Winter. Two observations recorded from Boodjamulla NP including a group of eight individuals, and numerous observations recorded from many other sites in north-west Queensland.

Kalkadoon Grasswren. Observations included one record from Mary Kathleen mine site in Cloncurry Shire and numerous records from Mount Isa Shire including Carlton Hills Station and Pamela Street Water Tank.

Latham's Snipe. Several observations recorded at Clearwater Lagoon and Lake Moondarra.

Leaden Flycatcher. Observations included a single record from Boodjamulla NP in June and two observations in August and February from Lake Mary Kathleen in Cloncurry Shire.

Little Curlew. Several observations recorded at Lake Moondarra in November.

Little Stint. Accidental. Three observations recorded at Lake Moondarra in November.

Long-toed Stint. Three observations recorded at Lake Moondarra in November.

Mallard. Introduced. Several observations recorded from the vicinity of Cloncurry township including Chinaman Creek Dam.

Noisy Friarbird. Observation of seven birds recorded at Mary Kathleen mine site in Cloncurry Shire during April.

Northern Rosella. A small number of individuals recorded at Boodjamulla NP in May and August.

Pacific Baza. A single observation of two birds recorded at Boodjamulla NP in September.

Pectoral Sandpiper. Accidental. A single observation recorded at Lake Moondarra.

Peregrine Falcon. Several observations recorded from Chinaman Creek Dam, Lake Moondarra, and Fountain Springs.

Pink-eared Duck. Many observations of small numbers of birds recorded from a wide variety of sites in Mount Isa and Cloncurry Shires.

Plumed Whistling Duck. A number of observations recorded from Cloncurry and Mount Isa with up to 220 individuals recorded at Lake Moondarra.

Purple-backed Fairywren. Many observations at a wide variety of sites recorded in Mount Isa and Cloncurry Shires.

Purple-crowned Fairywren. Numerous observations recorded over various months with many from Adels Grove and Lawn Hill NP.

Red-backed Fairywren. Several observations recorded mostly from Lake Moondarra and two birds from Boodjamulla NP in August.

Red-chested Buttonquail. Observations of single birds recorded at the Lake Moondarra area of Mount Isa Shire.

Red-collared Lorikeet. Numerous observations of small groups included many from Mount Isa, Adels Grove, Clem Walton Park at Corella Dam, and Boodjamulla NP.

Red-necked Stint. Near-threatened. Several observations recorded at Lake Moondarra in various months.

Rufous-crowned Emu-wren. Two birds recorded at Dajarra in Cloncurry Shire in August.

Sandstone Shrikethrush. Numerous records over various months from Boodjamulla NP, and a single observation recorded from Adels Grove in February.

Square-tailed Kite. Observations included one at Gregory Downs-Camooweal Road and a single record of two at Boodjamulla NP in September.

Stubble Quail. A single observation recorded of a bird at Lake Moondarra in Mount Isa Shire.

Swinhoe's Snipe. A single observation recorded at Lake Moondarra.

Wandering Whistling Duck. Multiple observations recorded from Cloncurry and Mount Isa Shire of up to 150 birds.

White-winged Fairywren. A single observation recorded from Lake Moondarra.

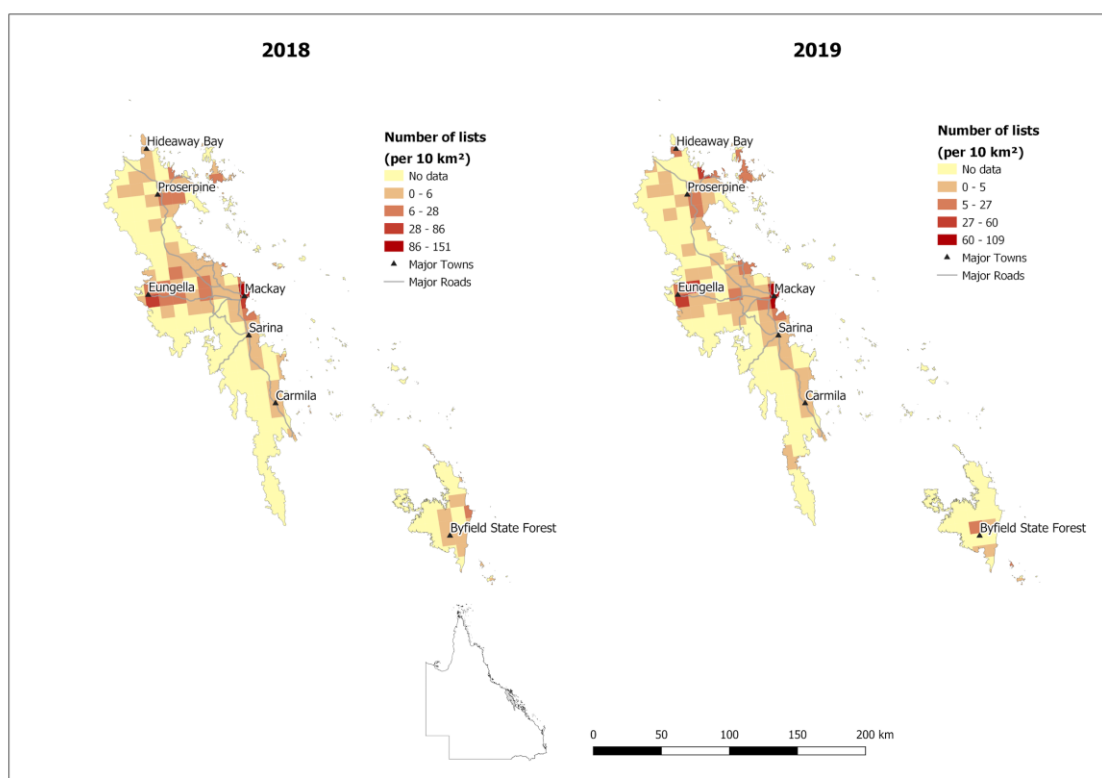
Yellow Chat. Several observations recorded from the Lake Moondarra area in Mount Isa Shire.

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7. Central Queensland Coast

Bob Black and Allison Roberts



Map of CQC Bioregion showing eBird survey effort

Geography

The Central Queensland Coast Bioregion (CQC), covering merely 0.9% of the State (14,843 km²), is surrounded by the large, drier Brigalow Belt bioregion. CQC is divided into two discrete sections: the larger, northern portion which extends north of Proserpine to Clairview, and the smaller, southern portion between Shoalwater Bay and Yeppoon (DES 2013). The northern section is bordered to the west by the Clarke and Connors Ranges which receive a high rainfall and drain into the Proserpine River, Pioneer River, and other coastal streams. The southern section includes the Byfield or Coastal Range, which is drained by Waterpark Creek. The bioregion also includes many offshore islands, including the Whitsunday, Percy, and Keppel Groups. The major towns in the Bioregion are Proserpine, Mackay, Sarina and the northern part of Yeppoon (DES 2013).

The Clarke Range supports large tracts of broad-leaved evergreen rainforest and tall eucalypt forest. The flora of these high-altitude rainforests has a close affinity with that of North Queensland's Wet Tropics but contains several endemic rainforest species. The Connors and Byfield Ranges also have substantial areas of broad-leaved evergreen rainforest, but these are simpler, showing the effect of species loss over the cold and dry Ice Age periods. These forests have been re-enriched with tree species carried by birds (mostly fruit-pigeons) mainly from the rainforests to the north. They are rich in species of *Lauraceae* and are sometimes called Pigeon Forests (Bill McDonald, personal communication). Savannah woodlands and semi-deciduous rainforests extend across lower and less fertile parts of the bioregion.

The climate is tropical, with a hot wet season and a warm dry season (BoM 2016). About 60% of the rain falls from January to March. This is the wettest part of Central Queensland with mean annual rainfall varying across the bioregion from 1,300 mm to 2,000 mm (BoM 2018). Large areas of the coastal lowlands

of CQC have been cleared for sugar cane and pasture, leaving only small remnant 'islands' of native vegetation.



Eungella Honeyeater (Barry Deacon)



Buff-breasted Paradise Kingfisher
(Peter Valentine)

Birds of the bioregion and their conservation

The Queensland Government lists 427 native and 12 introduced bird species in CQC from historic data, of which 28 are considered threatened or rare and may be locally extinct. The Red-whiskered Bulbul is a declared pest in Queensland but seems to have a limited distribution in the Mackay urban area (DES 2022). More recently in 2013 and 2014 surveys, Griffith University and Queensland Museum recorded 236 species in the Eungella region alone (Leach et al. 2020). The region includes important resting habitat for migratory shorebirds and the entire range for the endemic Eungella Honeyeater.

Larger National Parks (NP) in the bioregion include Conway, Whitsunday Islands, Eungella, Cape Palmerston, and Byfield. There are also several smaller National Parks including Bluff Hill, Cape Hillsborough, Mount O'Connell, and most of the smaller Whitsunday Islands. Many State Forests have been established for native timber or both native and exotic pine plantations. The southern area also includes part of the Shoalwater Bay Military Training Area which is closed to public access. There are also many smaller conservation parks and nature refuges in CQC (DES 2013).

The CQC has 1,097 km² of listed wetlands, including coastal and estuarine mangrove communities. Nationally important wetlands include Goorganga Plain, Sand Bay, Edgumbe Bay, and Sarina/Ince Bays in the northern section. Broad Sound, Shoalwater Bay, Port Clinton and Corio Bay occur in the southern section (DES 2013). Three internationally significant shorebird sites occur in CQC: Pioneer River–Mcewens Beach for Lesser Sandplover, Great Knot and Far Eastern Curlew; Notch Point for Far Eastern Curlew; and Shoalwater Bay/Broad Sound for Bar-tailed Godwit, Whimbrel, Far Eastern Curlew, Great Knot, Terek Sandpiper, and Grey-tailed Tattler (Geering et al. 2007). The CQC bioregion encompasses four Key Biodiversity Areas (KBA): Clarke Range, Repulse Bay–Ince Bay, Shoalwater Bay, and parts of Broad Sound (BLA 2019).

Birdlife Mackay has an active group that does regular shorebird surveys which are reported to the Queensland Wader Study Group, and surveys at the Mackay Regional Botanical Gardens (BLA 2022). Since 2015 a research banding project led by the Queensland Bird Research and Banding Group has been visiting and monitoring birds at a site in Finch Hatton Gorge and in January 2019, five additional sites were added around Eungella NP and Dalrymple Heights with a focus on learning more about the movements and behaviour of the endemic and limited-range Eungella Honeyeater (Coleman et al. 2020).

Major events in 2018-2019

Mean maximum temperatures at Mackay were 0.8 to 2.1°C above average in the summer months in 2018 (BoM 2019), and 0.1 to 1.8°C above average in 2019 (BoM 2020). In late November and early December 2018, record high temperatures across much of Queensland with extremely low humidity led to a series of severe bushfires. A fire starting on the plains west of Mackay burnt up the Eungella Range and destroyed large areas of habitat, including areas of normally fire-resistant rainforest (Hines et al. 2020).

Proserpine in the north had roughly average rainfall in 2018 and 2019, but very low dry season rainfall in 2018 with only 46 mm between May and November compared to a mean of 290 mm. In 2019, May through November rainfall was still well below average at 125 mm. Further south, in Mackay, both 2018 and 2019 rainfalls were below average with 1,005 mm and 1300 mm respectively compared to a mean of 1,595. May to November rainfall was about half the average for the period. At Byfield in the south of the bioregion, 2018 rainfall was 1,366 mm and 2019 had record low rainfall of only 722 mm or about 40% of the long term mean of 1,670 mm (BoM 2019 and 2020).

A total of 282 bird species was recorded in the CQC Bioregion in 2018 and 271 in 2019.

2018 Notable bird records

Australasian Gannet. Observations included one recorded at Bogie in October and one at Byfield NP in July and August.

Australasian Shoveler. Only one observation of a single bird recorded at Mackay Goose Ponds in July, but this may be an under-reported species.

Australian Pratincole. One recorded at Marian in November.

Baillon's Crake. Single record of one bird at Beaconsfield in February.

Barn Owl. A single bird recorded on the Benholme–Mackay Eungella Road in November.

Bar-tailed Godwit. Near-threatened. Recorded at six sites in the Mackay and Whitsunday areas from September to April with a maximum count of 43 recorded at McCreadys Creek estuary in October. From the south of the bioregion 12 observed at Corio Bay in March.

Black Noddy. Eight observed off the coast of Port Clinton in November.

Black-naped Tern. 27 recorded at Langford Bird Reef in October.

Black-tailed Godwit. Observations included one at Bucasia boat ramp in February and five at McCreadys Creek in October.

Bridled Tern. Three recorded off the coast of Port Clinton in November.

Brown-backed Honeyeater. Seven recorded at Conway Beach “in the Melaleuca lined swamp behind the caravan park” being vocal and easily observed in July. This is the very southern limit of the species’ recorded range.

Buff-breasted Paradise Kingfisher. Up to three recorded at Kuttabul in January and February, and three recorded at Pioneer Parks NP in January.

Common Greenshank. Observations recorded at five sites around the Mackay area from October through February with a maximum count of nine at McCreadys Creek estuary in October.

Common Sandpiper. Observations of one or two birds recorded at four sites from October to February around the Mackay and Whitsunday regions.

Common Tern. 67 observed at McCreadys Creek estuary in October.

Curlew Sandpiper. Near-threatened. Two observed at Corio Bay in March.

Double-banded Plover. Species is an uncommon winter migrant with observations including two at Tedlands Boat Ramp at Koumala in May and one at Conway Beach in July.

Eastern Grass Owl. One recorded at Sandringham Reserve in July.

Eungella Honeyeater. Observations of small numbers recorded through the year in Eungella district with a maximum count of 13 at Broken River in December.

Eurasian Whimbrel. Species is a summer migrant with some over-wintering and recorded at many sites throughout the year with a maximum count of 120 at Illawonga Beach Resort in January.

Far Eastern Curlew. Endangered. Most observations recorded at various sites from October to April with a few in winter months. Maximum count of 75 observed at Illawonga Beach Resort in January.

Fuscous Honeyeater. Up to three recorded at Mt Ossa in January and April, and an unspecified number recorded at Byfield NP in August.

Great Knot. Endangered. Observations included two at Corio Bay in March and single birds at Illawonga Beach and McCreadys Creek in October. Small numbers occasionally remain through the winter.

Greater Sand Plover. Observations recorded at five sites from October to April with a maximum count of 25 at Illawonga Beach Resort in October.

Greater Sooty Owl. Three observations of one or two birds recorded at Eungella in July, and one at Crediton in September.

Green Pygmy Goose. Although uncommon in the bioregion, two observations of two and three birds recorded at Kinchant Dam in September and December.

Grey-tailed Tattler. Near-threatened. Recorded at many sites around the Mackay and Whitsunday regions from July to April with a high count of 85 at Shell Grit Creek in February.

Horsfield’s Bush Lark. One recorded at Teemburra Creek Dam in July, and six at McCreadys Creek estuary in September. This species may be under-reported in the bioregion.

Large-tailed Nightjar. Species considered a common breeding resident with eight records across the region including four observed at Sandringham Reserve in July.

Latham’s Snipe. Observations of one or two recorded at four sites from August through January.

Lesser Sand Plover. Observations recorded at five sites from October to February with a maximum count of 120 at Shell Grit Creek in Mackay during February.

Long-billed Corella. Introduced. Observation recorded at Great Keppel Island in July.

Maggie Goose. Large numbers recorded at small dams in the Yeppoon area (personal observation).

Marsh Sandpiper. Observations included unspecified number at Mcewens Beach Road in January and 10 at Illawonga Beach in November.

Orange-footed Scrubfowl. For the last six years one has been recorded at Byfield and appears to have re-established at the southern range limit (personal observation).

Pacific Golden Plover. Observations with a maximum count of 40 recorded at six sites from October to February within the Mackay Regional Council district.

Pacific Swift. Species is a summer migrant with observations recorded November to January. Maximum count of 1,186 at Freshwater Beach in November.

Pale-vented Bush-hen. Furtive species with 13 observations of one or two recorded at five sites from October to February. Observations recorded during breeding season when calls are distinctive.

Peregrine Falcon. One recorded at Shoalwater Bay in October.

Red-backed Buttonquail. One recorded at Eungella Village in December.

Red-kneed Dotterel. Six records through the year at various sites in the Mackay Regional Council district with a maximum of twenty observed at Bakers Creek Conservation Area in June. Numbers increase during dry conditions inland.

Red-necked Stint. Near-threatened. Four observations with a high count of 220 recorded at Illawonga Beach Resort in January, and one count of 80 recorded at Shell Grit Creek in February. Only recorded from October to February.

Red-tailed Tropicbird. Seven recorded off a cruise ship in the Whitsunday Islands in December.

Roseate Tern. One recorded at McCreadys Creek estuary in October, and two recorded off a cruise ship in the Whitsunday Islands in November.

Ruddy Turnstone. Observations recorded at five sites from October to February with a maximum count of 11 at McCreadys Creek estuary in October.

Rufous Owl. One recorded at the Whitsunday Passage in July.

Sanderling. One recorded at Bucasia boat ramp in February, and 11 recorded at Sandy Point in Byfield NP during December (personal observation).

Sharp-tailed Sandpiper. Only three observations recorded, all from the Mackay area with a high count of 47 at Lake Barfield in January. A common wetland bird in the region with moderate numbers over-wintering.

Sooty Tern. 236 recorded off the coast of Port Clinton, and 13 recorded at Bogie, both in November.

Spotless Crake. Single record of one bird at Sandringham Reserve in February.

Spotted Catbird. One observation recorded at Eungella NP in July, but this species is normally restricted to Wet Tropics so confirmation or field notes would be helpful to confirm.

Spotted Nightjar. Species considered a rare resident in the drier areas of the bioregion. A single observation recorded at Sandringham Reserve in July noted that observer needed to check calls so may not be a reliable record.

Square-tailed Kite. Observations included one at Conway State Forest in October and one at Villa Mar Colina in Yeppoon during January.

Squatter Pigeon. Three observations recorded: eight at Pinevale Road in November, one at Kinchant Dam in December, and three at Hideaway Bay in September.

Terek Sandpiper. Recorded at four sites in the Mackay region from October through April with a maximum count of 18 at McCreedy's Creek estuary in November.

Torresian Imperial Pigeon. Species is a summer migrant with mostly small numbers recorded from September to March, but the JCU Pied Imperial Pigeon Count recorded 1,308 at Salonika Beach at the end of January, mostly traveling from the mainland to Victor Island.

White-browed Crake. Five observations of one or two birds recorded at various sites from October to February.

White-gaped Honeyeater. Observations included three at Cape Palmerston NP in August, one at Peter Faust Dam in August, and one at Eungella in December.

White-throated Needle-tail. Species is a summer migrant with observations recorded November to January. High counts included 120 recorded at Freshwater Beach and 100 in Mackay in November.

Wonga Pigeon. Only two observations recorded: Carmila Beach in May and Greenhill in July.

2019 Notable bird records

Australian Painted-snipe. Endangered. A single bird recorded at Lake Barfield in November.

Baillon's Crake. One or two recorded three times at the Mackay Botanical Gardens from October to December

Barred Cuckooshrike. Four recorded at Boulder Creek in October, and one at Finch Hatton Gorge in December.

Bar-tailed Godwit. Near-threatened. Observations recorded in low numbers at many sites from July to April with a high count of 388 on the Whitsunday Coast in October.

Black-chinned Honeyeater. One recorded at Seaforth in March.

Black-naped Tern. 10 recorded at Hardy Reef and one at Shute Harbour in December.

Black-necked Stork. Near-threatened. Five observations of one or two recorded throughout the year.

Black-tailed Godwit. Near-threatened. Up to eight recorded on the Whitsunday Coast over two days in October.

Buff-breasted Paradise Kingfisher. Ten recorded at Byfield from November to April (Personal Observation). This is the southern limit of the species' regular migration from New Guinea.

Common Greenshank. Observations recorded at seven sites from October to February with a maximum count of 29 at Mcewens Beach in October

Common Sandpiper. Six observations of single birds recorded at Sandfly Creek, Arlie Beach, and Koumala from September through December.

Common Starling. Introduced. Four records of four or five birds recorded by one observer at Paget from April to August.

Common Tern. 1,472 recorded at Paget in October, and two at Sandy Point on Corio Bay in December.

Curlew Sandpiper. Near-threatened. Observations included 43 at Corio Bay in April, one at Sandy Point in Byfield NP during December, one at Shell Grit Creek in August, and eight at Paget in August.

Double-banded Plover. Observations included 12 at Illawonga Beach in July, up to 10 at Shellgrit Creek in July and August, and one at Sandy Point in Byfield NP in late October which is an unusually late record for this winter migrant from New Zealand.

Eurasian Whimbrel. Observations recorded at many sites throughout the year with a high count of 194 at Paget in October.

Far Eastern Curlew. Endangered. Observations recorded throughout the year with a high count of only 60 at Sandy Point in Byfield NP during December.

Glossy Black Cockatoo. One recorded at Eungella Village in October which is near the species' northern limit, and eight recorded at Byfield SF in December.

Great Cormorant. An uncommon species for CQC, but one recorded at Andergrove in April.

Great Frigatebird. One recorded at McCreadys Creek estuary in March.

Great Knot. Endangered. Eight observations from August through April with a high count of 2,350 on the Whitsunday Coast in October.

Greater Sand Plover. Observations recorded at five locations from July through April with a maximum count of 400.

Greater Sooty Owl. At Eungella NP on a single night in May, one recorded at Broken River and one at Crediton Loop by one observer.

Grey Plover. Four records of up to 70 birds recorded at Paget and on the Whitsunday Coast over three days in October.

Grey-tailed Tattler. Observations recorded throughout the year with a high count of 175 at Paget in October.

Latham's Snipe. Recorded at six sites from August to November with a maximum count of eight.

Lesser Sand Plover. Observations recorded at four locations from August to December with a maximum count of 468.

Little Eagle. One recorded at Andergrove in May.

Little Grassbird. One recorded at Beaconsfield in June and one at Seaforth in September. Probably an under-reported species due to very furtive behavior and is mostly detected from calls.

Little Tern. Observations recorded at various sites in March, April, October, and December with a high count of 300 at Paget in October.

Magpie Goose. Max count of 4,200 at Nursery Dam, Farnborough, in March. (Personal Observation)

Marsh Sandpiper. Eight at Slade Point and one at Bluewater Trail in Mackay recorded during October.

Masked Booby. One recorded at Hardy Reef in December.

Metallic Starling. Four observations of up to 15 birds recorded at three locations for this summer migrant from November to January.

Oriental Cuckoo. One of these rare non-breeding summer migrants recorded at Paul Burger Road in December.

Pacific Golden Plover. 13 observations from August through April recorded with high counts including 62 at Byfield NP in December and 144 at Paget in October.

Pacific Swift. Summer migrant with only three observations of up to 15 birds recorded from November and December at Cape Hillsborough and Collaroy.

Pale-vented Bush-hen. Most observations throughout the year of one or two birds at Mackay Botanical Gardens, but also single birds recorded at Yakapari Seaforth Road in March and De Moleyns Lagoon in July.

Pallid Cuckoo. Only one observation at Gunyarra Road in October.

Peregrine Falcon. One recorded near Shute Harbour in October.

Plum-headed Finch. 21 recorded at Sandfly Creek in Mackay during June, and six recorded at Gargett in December.

Red Knot. Near-threatened. Three observations of up to 12 recorded over three days in October in the Mackay and Whitsunday region.

Red-kneed Dotterel. Five records of one or two birds through the year at various sites in the Mackay region. Numbers increase during dry conditions inland.

Red-necked Stint. Near-threatened. 14 observations from April through December around the region with a high count of 400 at Shell Grit Creek in October.

Ruddy Turnstone. Observations recorded at six sites throughout the year with a high count of 20 on the Whitsunday Coast in October.

Rufous Owl. One recorded at Finch Hatton in December.

Sanderling. 12 recorded at Sandy Point in Byfield NP during October, and six recorded in December.

Satin Flycatcher. One recorded at Sandringham Reserve in June and one at Airlie Beach in July. A rare species in Central Queensland. mostly recorded as a Spring or Autumn passage migrant.

Sharp-tailed Sandpiper. Recorded in small numbers at many sites from October to December and in July, with a high count of 81 at Mcewens Beach in October. Moderate numbers are known to over-winter. Only southern records include one recorded at Corio Bay, Byfield NP, in December and two in April. The small number of southern records for this common wetland bird reflects the lack of shorebird surveys in the southern CQC.

Spotless Crake. One recorded at Seaforth in September and Plantation Palms Wetland in November.

Striped Honeyeater. One recorded at Collaroy in November.

Terek Sandpiper. Seven observations at five locations recorded with one in April and December and five in October. Maximum count of 25 recorded at Slade Point in October.

Torresian Imperial Pigeon. Summer migrant recorded in small groups of up to 14 from August to March.

Wandering Tattler. One recorded at Airlie Beach in December.

White-browed Crane. Five observations of single birds recorded at Kerrisdale in Beaconsfield, Mackay Regional Botanic Gardens, and Plantation Palms Wetland Trail from May through November.

White-gaped Honeyeater. Up to five recorded at Calen in July, and two recorded at Bloomsbury in October.

White-throated Needletail. Summer migrant with seven observations recorded October to December with a maximum count of 20 at Up River Road in Crediton during October.

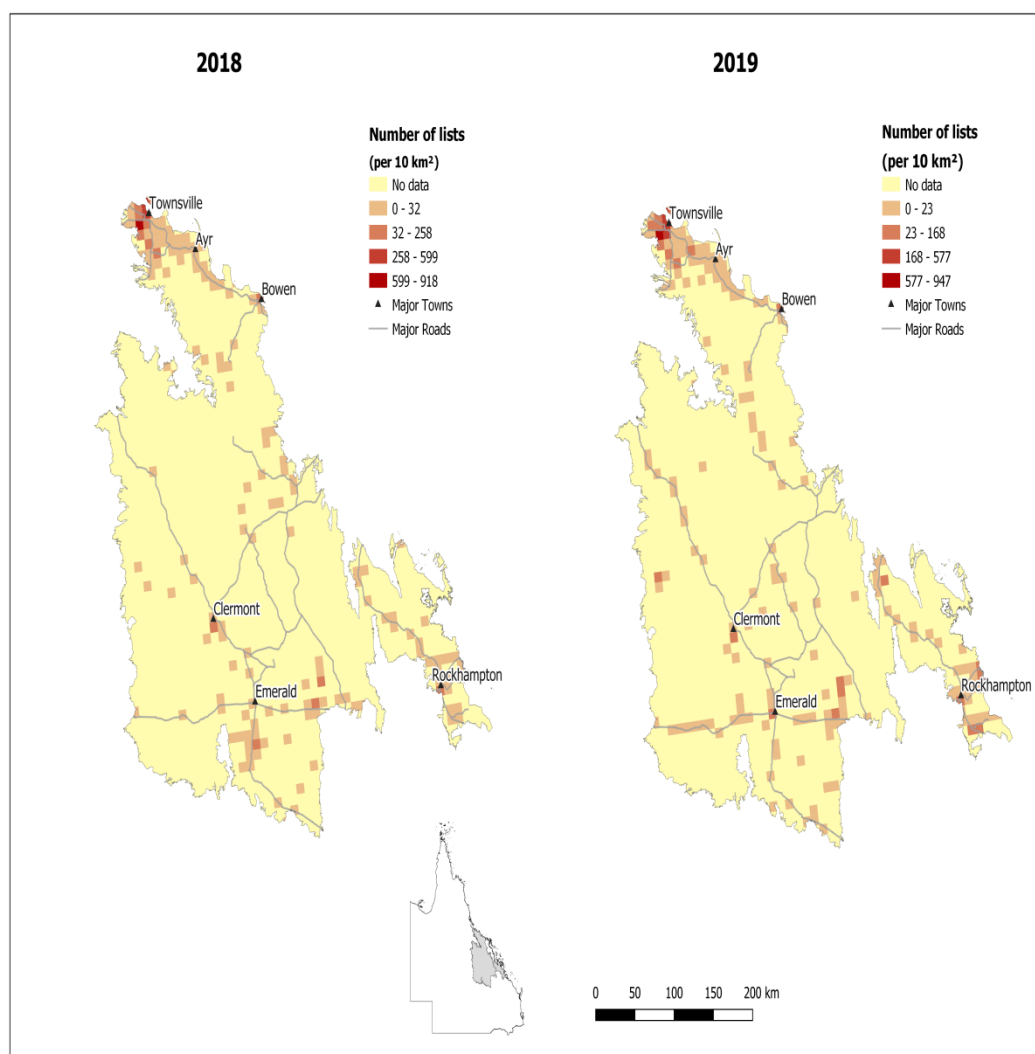
Wonga Pigeon. One recorded at Cape Palmerston in September, and two at Carmila Beach in December.

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8. Brigalow Belt North

Allan Briggs



Map of BBN Bioregion showing eBird survey effort

Geography

Covering 8% of the State with a total area of 136,740 km², the Brigalow Belt North (BBN) lies largely north of the Tropic of Capricorn. The region stretches from Townsville to Natal Downs near Belyando Crossing in the north and then south to Alpha and just north of Gladstone. There are five catchment areas: Bohle, Lower Burdekin, Lower Fitzroy, Proserpine, and Ross (QG 2018). Rundle Range to the north of Gladstone is a range of hills around 280 m above sea level (asl) and is dominated by woodland and dry rainforest (Sattler & Williams 1999). The Berserker Range just east of Rockhampton is mainly open forest and woodland communities dominated by eucalypts. There is a large pocket of dry rainforest along Moores Creek and Mt Archer reaching 604 m asl. The Peak Range is a chain of prominent mountains between Moranbah, Clermont, and Dysart with Wolfgang Peak reaching 572 m asl.

Northwest of Mackay at Homevale there is a dramatic line of cliffs at the base of which there are open grassy woodlands, notophyll vine forests, dry softwood scrub, open eucalypt forests, and brigalow-belah communities (Sattler & Williams, 1999). Mt Abbot, southwest of Bowen, reaches 966 m asl and is home to a significant range of regional ecosystems. Mt Elliot, southwest of Townsville, reaches a height of 1,210

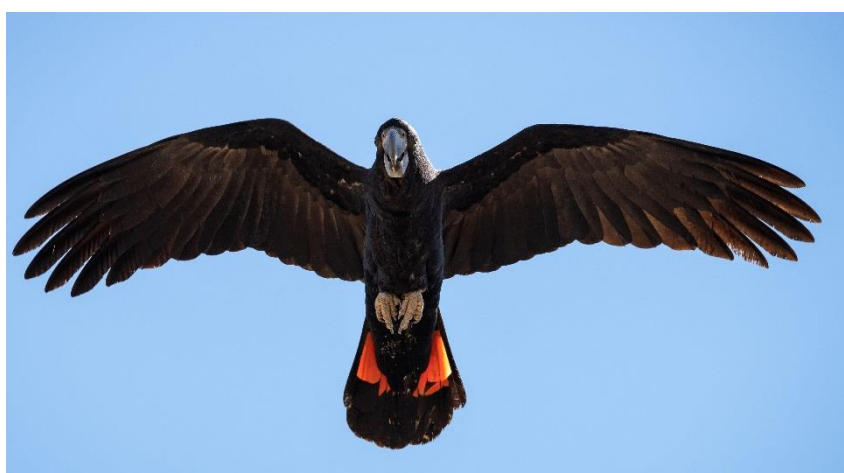
m asl, and nearby Saddle Mountain (1,183 m) supports rainforest above 600 m, semi-evergreen vine thickets, eucalypt forest, and grassy slopes interspersed with cycads and grass trees. Coastal areas have rich tidal mudflats, estuaries, beaches, mangroves, and patches of the beach scrub ecosystem. Much of the remainder of the BBN region is primarily acacia open forests and eucalypt woodlands with the main rural land use being beef cattle grazing on pastoral leases.

From north to south the major coastal population centres in BBN are Townsville, Ayr, Bowen, Rockhampton, and Yeppoon. Inland population centres include Clermont and Emerald. Major roads are the Bruce, Capricorn, Gregory, Peak Downs, and Flinders Highways.

The mean annual rainfall from 1890 to 2005 was 590 mm with most rain falling during the summer months, but annual rainfall is very variable. Temperatures are also highly variable with mean minima ranging from 9° to 22°C and mean maxima from 24° to 32°C. Humidity levels during the summer months can be very high.



Squatter Pigeon (Graham Donaldson)



Red-tailed Black Cockatoo (Jon Norling)

Birds of the bioregion and their conservation

The Queensland Government lists 526 native and nine introduced bird species in BBN from historic data, and 39 of those are currently listed as threatened or rare (DES 2013). Only two threatened species, Black-throated Finch (BFRT 2008) and Capricorn Yellow Chat (Houston et al., 2008), are currently subject to recovery plan actions. Protected lands in BBN include National Parks, Conservation Parks, and private Nature Refuges. National Parks (NP) wholly or partly in the region are Curtis Island, Rundle Range, Capricorn Coast, Mount Archer, Mt Etna Caves, Junee, Mazeppa, Nairana, Dipperu, Homevale, Mt Aberdeen, Mt Abbot, and Bowling Green Bay (DES 2013). There are also two internationally important Ramsar wetlands in Bowling Green Bay: Shoalwater and Corio Bay. There are 38 nationally important wetlands (QG 2018), and BirdLife Australia (2019) has identified three Key Biodiversity Areas in this bioregion: Fitzroy Floodplain and Delta, Shoalwater Bay, and Broadsound.

The Torresian Imperial Pigeon Watch and Count, organised by BirdLife Townsville, was held in 2018 and 2019. The annual Black-throated Finch Waterhole Count, organised by the Black-throated Finch Recovery Team, was held in October 2018 and 2019. Capricorn Yellow Chat population monitoring, organised by BirdLife Capricornia, was conducted at the Fitzroy Delta and Broadsound during the summer months of 2018 and 2019.

BirdLife Capricornia has been conducting a citizen science project through 2018 and 2019 with 40 participants in the southern part of the bioregion. Each participant records bird species on their property each month and enters the data into a spreadsheet. At the end of the year the spreadsheet data is entered into a database and analysed to determine the distribution of birds across the landscape. Over time this data will enable trends of population dynamics to be detected as well as many other factors that may change over time.

A study documenting the decline of bird species, including the loss of 11 species around the Rockhampton region over the past 130 years, was published (Noske & Briggs 2021).

Major events in 2018-2019

2018 was the fifth warmest year on record with the northern part of the region having floods early in the year followed by a prolonged period of drought with rainfall 15 per cent below the long-term average (BoM 2019). 2019 was the warmest and driest year on record which resulted in bushfires towards the end of the year (BoM 2020). In February 2019, Townsville had a major flood event that was one of the worst natural disasters to ever impact the region. The weather system went on to produce major flooding in the northern Central Queensland area of the bioregion. As many as 500,000 cattle were estimated to have perished in the floodwaters (White 2020). In November 2019, 6,000 ha of bush were lost to a severe fire at Cobraball west of Yeppoon (Livingston Shire Council 2019). The fire was deliberately lit but the extremely dry conditions meant that it spread quickly (myPolice 2019).

A total of 316 species were recorded during 2018/19. Some cause for concern was identified with respect to the Beach Stone-curlew, the Australian Painted Snipe, and the King Quail. Several species had fewer than 10 records including White-headed Pigeon (2), Brown Cuckoo-dove (5), Pacific Emerald Dove (7), Baillon's Crake (1), Pale-vented Bush-hen (5), Red-backed Button-quail (3), Australian King Parrot (2), Varied Lorikeet (7), Eastern Yellow Robin (2), and Little Grassbird (9). The following annotated list compiled from eBird data records provides details of notable species or records.

2018 Notable bird records

Australasian Grebe. Up to 1,200 reported at Duck World near Brandon through the year.

Australasian Swamphen. Up to 60 birds reported at Rockhampton Botanic Gardens through the year.

Australian Brushturkey. Up to 23 birds reported regularly through the year at Cape Pallarenda Conservation Park.

Australian King Parrot. Only two observations recorded including one in Townsville and one in Emerald. Very few recent records north of Gladstone may indicate a reduction of range.

Australian Pelican. A group of 230 recorded at the Rockhampton Botanic Gardens in September.

Australian White Ibis. A group of 200 recorded at Rockhampton Botanic Gardens in January.

Baillon's Crake. A single observation recorded at Bajool Weir in September.

Beach Stone-curlew. Near-threatened. Only 30 observations recorded with most records concentrated around Townsville and two at Bowen. This species is sensitive to human disturbance, and coastal development is impacting on required habitat. It is Critically Endangered in NSW with an estimated 13 adult birds left (NSW Government 2022). It is listed as Vulnerable in Queensland (Queensland Government 2022).

Black Swan. A flock of 2,500 reported at Wongaloo Conservation Park in June.

Black-fronted Dotterel. Up to 42 recorded at TTCCP through the year.

Brolga. A flock of 320 reported at Clermont in May where they are known to feed in cropping paddocks.

Brown Cuckoo-dove. Only five observations recorded for this rainforest species: four at Bowling Green Bay NP in July and one at Cape Pallarenda Conservation Park in August.

Brown Quail. Up to 12 birds reported regularly through the year at Goonderoo Reserve.

Budgerigar. A flock of 250 recorded near Ross River Dam in June.

Buff-breasted Paradise Kingfisher. Recorded in December at the Ross River Bush Gardens in Townsville. Also observed at Byfield which is the southernmost recorded breeding location.

Chestnut-breasted Mannikin. A flock of 250 recorded at Bushland Beach in November.

Cotton Pygmy Goose. A flock of 80 observed at Lake Elphinstone in October.

Dusky Moorhen. A group of 300 observed at Lake Elphinstone in October.

Eastern Yellow Robin. A single record from Taunton NP in May. Very few records north of Bundaberg may indicate a retraction of range to the south.

Emu. A group of 26 recorded near Homevale NP in July and a group of 21 observed at Reid River in August.

Eurasian Coot. A group of 4,500 reported at Lake Elphinstone in October.

Fairy Martin. A large flock of 1,000 recorded at the TTCCP in June.

Freckled Duck. A flock of 28 reported near Blackwater in October.

Great Cormorant. A group of 45 recorded at Ross River Dam in July.

Great Crested Grebe. A group of 200 reported at Ross River Dam in November.

Great Egret. A group of 150 recorded at the TTCCP in October.

Great Knot. Endangered. Flocks of up to 2,500 recorded between January and March as well as up to 800 between October and December at Bushland Beach which is an important roost location for this species.

Greater Crested Tern. A flock of 700 recorded at Bushland Beach in August.

Green Pygmy Goose. Most records of small numbers observed around the Townsville area which suggests this area is a stronghold for a small population of this species.

Grey Teal. Large flock observations include a flock of 4,500 at Wongaloo Conservation Park in June and 2,000 at Duck World near Brandon in October.

Hardhead. A flock of 2,100 reported at Lake Elphinstone in October.

Little Black Cormorant. A group of 500 recorded at Lake Elphinstone in September.

Little Egret. A group of 71 observed at the TTCCP in April.

Little Pied Cormorant. A group of 95 recorded at Lake Elphinstone in September 2018 and 80 near Ross River Dam in March.

Long-billed Corella. Introduced. This species has established feral populations from cage escapees and has expanded its range along the coast.

Magpie Goose. Multiple records of large flocks throughout the year including a flock of 4,000 at Wongaloo Conservation Park in June, 2,000 at Duck World near Brandon in January, and 2,000 at Reid River in October.

Maned Duck. A flock of up to 60 reported regularly at Rockhampton Botanic Gardens through the year.

Oriental Cuckoo. 27 of the 28 records for BBN region were concentrated around Townsville with one record at Blackwater. Although there were some records further south, this could be a migratory species that is having a range reduction and observations should be monitored in future years.

Pacific Black Duck. Large flock observations in January include a flock of 400 at Bushland Beach, 400 at Duck World near Brandon, and 400 at Wunjunga Wetlands.

Pacific Emerald Dove. Only seven observations concentrated around Townsville recorded for this species which uses rainforest as one of its habitats.

Pacific Swift. Although this migratory species is known to form large flocks ahead of storm fronts, the record of 1,500 at Mt Louisa in February is larger than generally observed.

Pale-vented Bush-hen. Only five observations recorded for this species, all from Ross River Bush Gardens near Townsville.

Pectoral Sandpiper. Accidental. Several records of the same bird at TTCCP in November.

Pied Stilt. A flock of 300 recorded at Wunjunga Wetlands in December.

Pink-eared Duck. A flock of 5,000 observed at Duck World near Brandon in October.

Plum-headed Finch. A flock of 500 recorded near Homevale NP in July.

Radjah Shelduck. A flock of 35 reported at St Lawrence Wetlands in August.

Rainbow Bee-eater. An unusually large assembly of 725 reported at the mouth of Ross River in Townsville by Nicholas Murray who made the following comment with the report: "They came in low in

flocks up to 30–40 individuals and end up around the mangroves and roadside up on Benwell Road, about 150 metres past the mudflat. We did a fly-in count while standing on the mudflat looking east and south. All birds were flying in over our heads, and we are confident of the count as they must cross the Ross River while flying in – we had a good view. An initial count the day before by one of us revealed at least 450 individuals flying into the roost, before deciding to do a better count together this afternoon”.

Red Knot. Near-threatened. 19 observations recorded with 16 being at Bushland Beach where up to 150 birds were reported.

Red-backed Buttonquail. Only three observations recorded around Townsville in January and October.

Red-capped Plover. Up to 220 recorded at Bushland Beach through the year.

Red-chested Buttonquail. Only three observations recorded comprising two at Townsville in January and November and one at Taunton NP in January.

Red-necked Avocet. A large flock of 1,200 recorded at Duck World near Brandon in November.

Red-necked Stint. Near-threatened. 600 observed at Ross River Spit in April.

Red-winged Parrot. A flock of 83 recorded at Clermont in July.

Royal Spoonbill. A group of 200 recorded at TTCCP in October.

Scaly-breasted Munia. Introduced. A flock of 200 recorded at the Ross River Dam in April.

Squatter Pigeon. 90 records across the bioregion with flocks of up to 20 birds observed. This is good news as the local southern sub-species (*Geophaps scripta scripta*) is listed as vulnerable under the Environmental Protection & Biodiversity Protection Act 1999.

Sulphur-crested Cockatoo. Severe cases of Psittacine Beak and Feather Disease have been recorded in Rockhampton.

Topknot Pigeon. A flock of 150 reported at Townsville Town Common Conservation Park (TTCCP) in May.

Torresian Imperial Pigeon. A flock of 100 reported at Bushland Beach in February.

Varied Lorikeet. Seven records of one to three birds in the Belgian Gardens area of Townsville. These records are well outside the documented range for this species so they may be cage escapees.

Wandering Whistling Duck. A flock of 294 reported at the Ross River Spit in October.

Whiskered Tern. A flock of 2,000 recorded at Duck World near Brandon in January.

White-breasted Woodswallow. A flock of 200 recorded at Greta Creek south of Bowen in August.

White-browed Woodswallow. A flock of 150 recorded at Burdekin Falls Dam in March.

White-headed Pigeon. Only two observations recorded for this rainforest species: one at Magnetic Island in January and one at Byfield in October.

2019 Notable bird records

Australasian Grebe. A group of 2,000 recorded at Duck World near Brandon in November.

Australasian Shoveler. A flock of 80 recorded at Rockhampton Botanic Gardens in July.

Australasian Swamphen. A group of 125 recorded at Rockhampton Botanic Gardens in July.

Australian Bustard. A flock of 26 recorded at Ross River Dam in March 2019. Photo captured males displaying which may indicate local breeding.

Australian King Parrot. No observations recorded of this species in the bioregion in 2019.

Australian Painted-snipe. Endangered. Ten records from Black River Road near Townsville of a single bird in December 2019, presumably a single individual. One recorded at Nome south of Townsville, and one recorded at Hay Point. These are the only three records north of Lake Samsonvale near Brisbane. There are only two other records in NSW for 2019 which makes the total recorded population of Australia only around 10 birds.

Australian Pelican. Large flock observations of note include a flock of 400 at the TTCCP in October, 260 at Wongaloo Conservation Park in September, and 275 at Woolwash Lagoon at Rockhampton in September.

Australian White Ibis. A flock of 498 recorded at Dump Lagoon in Rockhampton during November.

Baillon's Crake. Only one record of two birds observed at Wunjunga Wetlands in February.

Bar-tailed Godwit. Near-threatened. A flock of 350 recorded at the Burdekin River Delta

Beach Stone-curlew. Near-threatened. Of the 33 records for 2019, 23 were from Bushland Beach and presumably the same three birds reported on each occasion. At the other locations a total of 14 birds was reported giving a population of around 17 birds for the whole bioregion.

Brolga. A group of 121 recorded near Eungella Dam in May.

Brown Booby. A flock of 60 recorded at Bushland Beach in June.

Budgerigar. A flock of 45 observed at the Ross River Dam in January.

Bush Stone-curlew. A group of 45 recorded at Townsville in January.

Chestnut-breasted Mannikin. A flock of 140 recorded at Reid River in April.

Common Starling. Introduced. Although prior to 2,000 there were no records of this species north of the Hervey Bay region, there was a report in 2010 from the Biloela region, and in 2019 there was both a report from the Rockhampton area and five birds observed in the Mackay area. This invasive species appears to be expanding its range north.

Cotton Pygmy Goose. A flock of 50 recorded at St Lawrence Wetlands in June.

Dusky Moorhen. A group of 100 recorded at Lake Theresa near Clermont in March, and a group of 85 recorded at Woolwash Lagoon in Rockhampton during November.

Eastern Cattle Egret. A flock of 554 recorded at the Rockhampton Botanic Gardens in January.

Eurasian Coot. A group of 401 observed at Ross River Dam in July.

Eurasian Whimbrel. A flock of 350 recorded at Burdekin River Delta in November.

Galah. A flock of 250 observed at Townsville in April.

Glossy Ibis. A flock of 400 recorded at the Wunjunga Wetlands in January.

Great Cormorant. A flock of 100 recorded at Duck World near Brandon in November.

Great Crested Grebe. A group of 560 recorded at the Ross River Dam in January.

Great Egret. A flock of 300 recorded at the Townsville Town Common Conservation Park in October.

Great Knot. Endangered. A flock of 3,500 recorded at Bushland Beach in March, and 2,750 recorded at the Burdekin River Delta in November. The Bushland Beach record is close to the 1% population threshold.

Greater Crested Tern. A flock of 345 recorded at Bushland Beach in March.

Grey Plover. A flock of 130 recorded at Burdekin River Delta in November.

Grey Teal. A flock of 800 recorded at Wongaloo Conservation Park in September.

Hardhead. A flock of 600 recorded at Duck World near Brandon in January.

Intermediate Egret. A flock of 200 recorded at Reed Beds Road in September, and 200 recorded at Townsville Town Common Conservation Park in November.

King Quail. Only four records north of Cooloola including one at Townsville in 2019 and only five north of Cooloola with no observations in the bioregion in 2018 may be cause for concern. King Quail have declined in NSW and Victoria due to the draining or burning of habitat (O'Brien 2006) so more monitoring in Queensland may be necessary.

Lesser Sand Plover. A flock of 450 observed at Burdekin River Delta in November.

Little Corella. A flock of 577 recorded at the Rockhampton Botanic Gardens in April 2019, and 500 recorded at the Carlyle Gardens at Townsville in April.

Little Egret. A flock of 100 recorded at the TTCCP in October 2019.

Little Grassbird. No observations recorded of this species in 2019. Very few observations recorded north of the Sunshine Coast, and mostly concentrated around sewage ponds at Winton and Longreach. Future records should be monitored for a retraction of range for this species.

Little Ringed Plover. Five records of a single bird observed at Wunjunga Wetlands in January which was likely a single vagrant. This is the only record for Queensland and there are only three records for the whole of Australia.

Magpie Goose. A flock of 2,300 recorded at Wongaloo Conservation Park in September, and 2,000 recorded at Reid River in August.

Marsh Sandpiper. A flock of 350 recorded at Duck World near Brandon in November.

Oriental Cuckoo. As in 2018 all 18 observations from 2019 were recorded only from the Townsville area.

Pacific Black Duck. A flock of 250 recorded on Reed Beds Road near Bowling Green Bay Conservation Park in September, and a flock of 200 recorded at Duck World near Brandon in September.

Painted Buttonquail. Only three observations recorded: two near Dysart in February and one near Glenden in March.

Pied Oystercatcher. Up to 40 birds recorded at Bushland Beach throughout the year.

Pied Stilt. A group of 310 recorded at Wunjunga Wetlands in January and 400 at Duck World near Brandon in November.

Plumed Whistling Duck. A flock of 3,000 recorded at Mullers Lagoon in Bowen in July.

Plum-headed Finch. A flock of 150 recorded near Clermont in March.

- Radjah Shelduck.** A flock of 60 recorded at St Lawrence Wetlands in October
- Red-necked Avocet.** A group of 2,250 recorded at Duck World near Brandon in November.
- Red-necked Stint.** Near-threatened. A flock of 1,250 recorded at the Burdekin River Delta in November.
- Red-tailed Black Cockatoo.** A flock of 300 recorded at Majors Creek to the south of Townsville in January.
- Scaly-breasted Lorikeet.** A flock of 99 recorded at the Rockhampton Botanic Gardens in October.
- Sharp-tailed Sandpiper.** A flock of 1,500 recorded at the Burdekin River Delta in November.
- Spotless Crake.** Single record of two birds observed at St Lawrence Wetlands in May.
- Straw-necked Ibis.** A flock of 250 recorded at Reid River in July.
- Terek Sandpiper.** A flock of 600 recorded at the Burdekin River Delta in November.
- Torresian Imperial Pigeon.** A flock of 50 recorded at Rowes Bay near Townsville in February.
- Tree Martin.** A flock of 1,500 recorded at Ross River Dam in April, and 800 recorded at Reid River in July.
- Whiskered Tern.** A flock of 550 recorded at Duck-World near Brandon in January.
- White-throated Nightjar.** Very few observations recorded north of Cooloola and only one observation in the bioregion. Monitoring should continue to see if there is a range reduction.
- White-winged Tern.** A flock of 500 recorded at Duck World near Brandon in January.
- Yellow Chat (Capricorn sub-species).** Critically endangered. There were 25 records of this sub-species and all were from the known feeding and breeding location at the Cheetham Salt area south of Rockhampton.

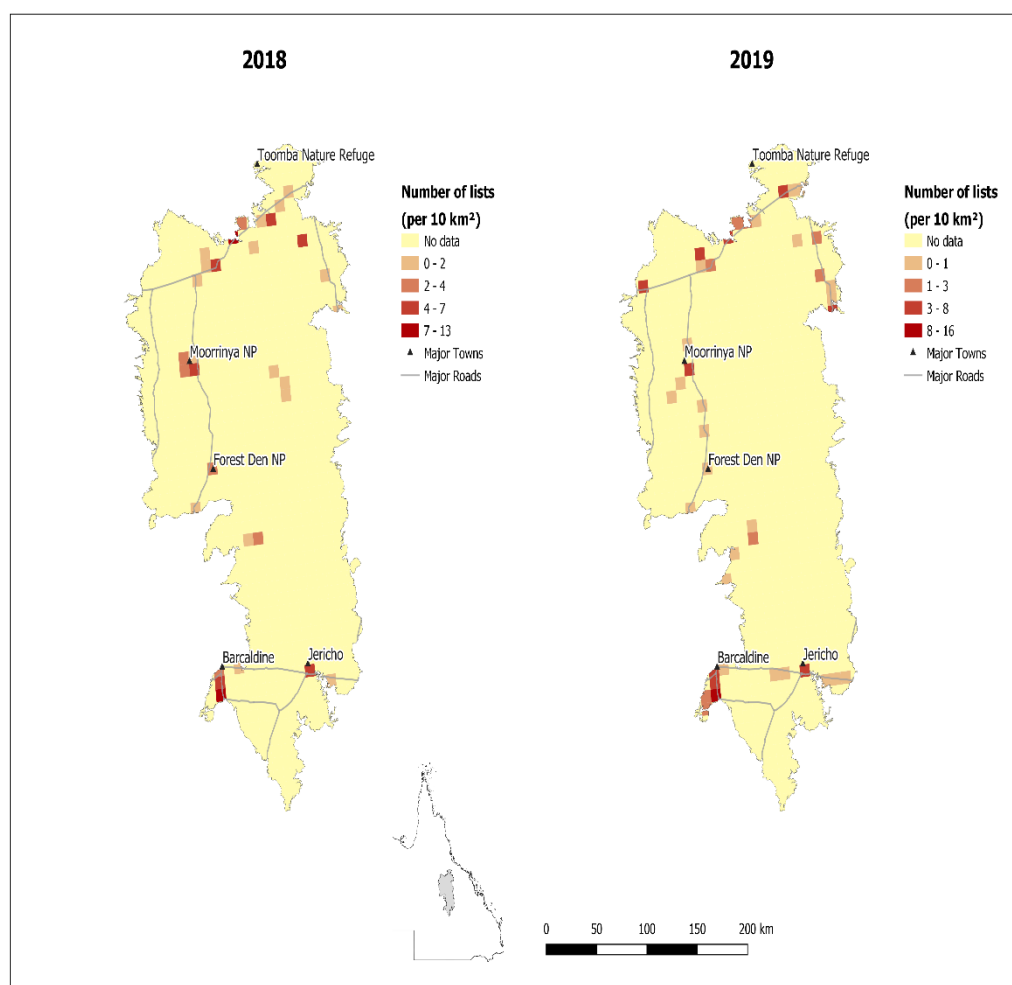
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9. Desert Uplands

David Niland



Map of Desert Uplands Bioregion showing eBird survey effort

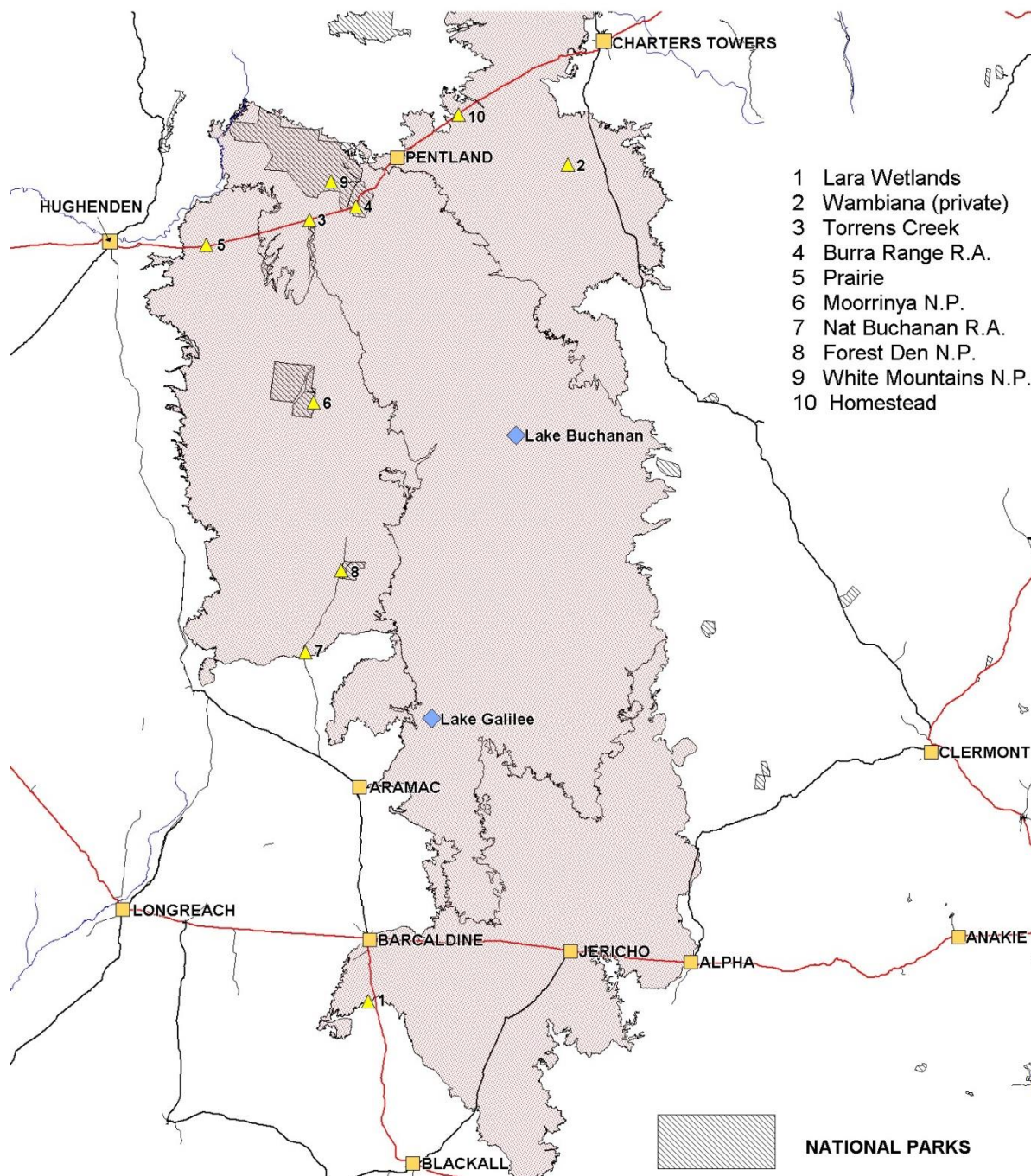
Geography

The Desert Uplands Bioregion (DEU) covers 4.04% (69,410 km²) of the area of Queensland. The region stretches along the Great Dividing Range from Barcaldine and Alpha in the south to Pentland and Prairie in the north. It is mainly geologically comprised of sandstone ranges with associated sand plains to the west. There are two internal drainage basins (Buchanan and Galilee Lakes) and some catchments flowing to the east and west. The Belyando and Cape Rivers drain to the east into the Burdekin catchment, but all western watercourses drain into the Thomson River which continues to Cooper Creek.

The major towns in the bioregion are Alpha, Jericho and Barcaldine along the Capricorn Highway, and Pentland to Prairie on the Flinders Highway (Fig. 1). There are no north-south road connections, except for the road from Torrens Creek to Aramac. Most of the area is within Charters Towers and Barcaldine Regional Councils with a small portion of Flinders Regional Council in the north-west.

DEU falls in the Grasslands and Subtropical climate zones (BoM 2016). The weather of DEU is strongly seasonal, with a distinct wet season from December to March and a dry season from May to October. Mean annual rainfall is c.500 mm in the west and c.600 mm in the east. Mean maximum temperatures

range from 25° to 33°C in the dry season (winter) and mean minima from 11° to 25°C in the wet season (summer) (BoM 2019).



Map of Desert Uplands bioregion, showing main locations mentioned in the text.



Zebra Finch (Graham Donaldson)



Inland Thornbill (Ross Monks)



Yellow-billed Spoonbill (Vince Bugeja)

Birds of the bioregion and their conservation

The Queensland Government lists 356 native and four introduced bird species in DEU from historic data. 14 species are listed as rare or threatened. Protected areas in DEU include five National Parks (NP) and eight private nature refuges including Bimblebox Nature Refuge (DES 2013). This refuge is protecting critical habitat for the white-rumped subspecies of the Black-throated Finch and southern subspecies of the Squatter Pigeon and is currently threatened by a proposed mine (Bimblebox 2022). National Parks partially or wholly in DEU include White Mountains, Moorrinya, Forest Den, Cudmore, and Great Basalt Wall (DES 2013). The semi-arid climate and poor soils dictate that the only land use is pastoralism. The major threats to natural habitats are the continued clearing of land for livestock grazing and mines, severe bushfires associated with the planting and spread of buffel grass, and the increase in salinity in some soil types.

The Centre for Ecosystem Science at University of NSW conducted aerial surveys in October of both years which found the general decline in wetlands and waterbird abundance had continued. However, there

was a slight increase in total abundance in 2019. Most of the wetlands across Queensland were dry in 2018 with Lake Dunn the exception. In 2019 there was shallow water in Lake Galilee with a moderate number of waterbirds present. There were no signs of breeding waterbirds in this bioregion.

Major events in 2018-2019

The temperatures in 2018 were above the long-term averages in this bioregion during summer and later in spring, but autumn and winter were close to average. Rainfall was below to very much below the long-term average for all seasons in 2018. The temperatures in 2019 were close to or slightly above average. The rainfall was above average for all seasons except spring, when it was just below average. Tropical cyclones in the 2018–2019 summer had a significant effect on the rainfall averages for 2019. The bulk of the bioregion was drought declared until March 2018, and then partly drought declared in Charters Towers and Isaac Regional Council areas and fully drought declared in Barcaldine Regional Council area until December 2019.

There was an influx of flocking species noted at Moorrinya NP and waterbirds at Pentland in April 2018. Another influx of waterbirds at Pentland was observed in May 2019, and flocks of woodswallows and Budgerigars were present at Barcaldine in July 2019. Significant sightings for 2018 include an Australasian Shoveler at Lake Dunn located 60km north-east of Aramac, a Brush Cuckoo at Forest Den NP, and a small flock of Little Crow at Pentland. Significant sightings for 2019 include a pair of Mulga Parrots north of Blackall, Red-backed Fairywren at Prairie, Inland Thornbills at White Mountains NP, and a White-backed Swallow at Jericho. In 2018 eBird recorded 174 species through 1,811 observation records, and in 2019 eBird recorded 161 species through 1,461 observation records in DEU.

2018 Notable bird records

Wandering Whistling Duck. Fifteen counted at Wambiana Station on 18 April.

Grey Teal. Large numbers recorded at Pentland in April with up to 120 counted.

Spotted Nightjar. Two birds recorded at Wambiana Station on 18 April.

Horsfield's Bronze Cuckoo. Single birds recorded at Moorrinya NP in April and White Mountains NP in July.

Diamond Dove. Birds plentiful at Moorrinya NP with 40 counted in April.

Black-tailed Nativehen. Birds plentiful at Lara Wetlands in April–June with over 60 counted.

Little Buttonquail. A few observed at Wambiana Station and Moorrinya NP in April and August.

Pied Stilt. Birds plentiful at Lake Dunn in August with over 80 birds counted.

Red-necked Avocet. Two birds observed about 5 km east of Homestead on 2 January.

Sharp-tailed Sandpiper. One count of 30 recorded at Pentland on 6 April.

Marsh Sandpiper. One bird observed at Pentland in early April.

Silver Gull. Three birds recorded at Lake Dunn in August.

Gull-billed Tern. Two birds recorded at Lake Dunn in August.

Straw-necked Ibis. Large gathering of 100 birds recorded at Pentland in April.

Oriental Dollarbird. One bird observed at Pentland in early April.

- Cockatiel.** One count of 120 birds recorded at Lara Wetlands in April.
- Galah.** Large numbers observed at Pentland in July with one count of 150 birds.
- Rainbow Lorikeet.** Exceptional count of 80 birds recorded at Pentland in July.
- Scaly-breasted Lorikeet.** Three birds observed at Wambiana Station on 11 July.
- Budgerigar.** Exceptional numbers recorded at Moorrinya NP in April with one count of 300.
- Great Bowerbird.** Sightings only recorded at Pentland and east along the Flinders Highway.
- Red-backed Fairywren.** All records near the Flinders Highway.
- Brown Honeyeater.** Birds very commonly observed at Burra Range with one count of 60 in June.
- Banded Honeyeater.** One count of six birds recorded at Burra Range in June
- White-eared Honeyeater.** Birds also noted at Burra Range with five on 6 April.
- Grey-fronted Honeyeater.** Two birds observed at Moorrinya NP on 8 April.
- Red-browed Pardalote.** Single birds recorded at Barcaldine in July and Lake Dunn in August.
- Western Gerygone.** Species recorded at Lara Wetlands in June.
- Chestnut-rumped Thornbill.** One record of four birds at Lara Wetlands on 22 June.
- Masked Woodswallow.** About 100 birds observed at Moorrinya NP on 9 April.
- White-browed Woodswallow.** A big flight of 300 birds recorded at Moorrinya NP on 9 April.
- Little Crow.** One record of twelve birds at Pentland on 27 June which would be near the limit of its range.
- Brown Songlark.** Single birds recorded at Lara Wetlands and Moorrinya NP in April.
- Plum-headed Finch.** A count of 60 birds at Pentland recorded in July, a bit higher than usual.
- Latham's Snipe.** One observed at Pentland on 6 April.
- Inland Thornbill.** Two birds observed at Moorrinya NP on 10 April.
- Brush Cuckoo.** One bird observed at Forest Den NP on 17 April.
- Red-chested Buttonquail.** Two observed at Moorrinya NP on 11 May.
- Australasian Shoveler.** Seven birds observed at Lake Dunn on 8 August.
- Dusky Woodswallow.** Two birds recorded at Lake Dunn on 26 August.
- Square-tailed Kite.** Pair noted in Barcaldine on 29 October.
- Little Corella.** Two birds observed in Barcaldine on 29 October.

2019 Notable bird records

Australasian Grebe. Unusually high count of 69 birds recorded at Pentland in early May.

Banded Lapwing. Five birds observed at Moorrinya NP on 4 June.

Black-fronted Dotterel. Exceptional count of thirty birds recorded at Pentland in May.

Brown Songlark. One bird recorded at Pentland on 9 June.

Budgerigar. Large numbers recorded around Barcaldine in May through July with an estimate of 500 at Lara Wetlands on 25 May.

Buff-banded Rail. One observed at Lake Dunn on 25 August.

Caspian Tern. 13 birds counted at Lake Dunn on 24 June.

Cockatiel. Birds abundant and breeding at Lara Wetlands in April through August.

Eastern Barn Owl. One heard at Moorrinya NP on 3 June.

Eastern Cattle Egret. Record of observation at a dam 50 km south of Charters Towers on 2 August.

Grey-headed Honeyeater. One recorded near Uanda, north of Muttaborra, on 4 June.

Hooded Robin. Single birds observed around the Barcaldine area in May and July.

House Sparrow. Introduced. Populations established at Pentland, Prairie, Barcaldine, and Jericho.

Inland Thornbill. Two birds observed at White Mountains NP in early May, near limit of species range.

Little Egret. Three observed at Campaspe River crossing on Flinders Highway on 3 January.

Maned Duck. Unusually large gathering of 80 recorded at Pentland in July.

Marsh Sandpiper. One bird observed at Pentland in early May.

Masked Woodswallow. Large gathering of at least 250 birds recorded about 25 km south of Barcaldine on 5 July.

Mulga Parrot. Two birds observed along highway between Barcaldine and Blackall on 18 April.

Rainbow Lorikeet. At least 40 observed at the Campaspe River Crossing, Flinders Highway on 11 June.

Red-backed Fairywren. One recorded at Prairie on 3 January near western limit of range.

Red-browed Pardalote. One observed at Barcaldine on 27 December.

Spotted Nightjar. One bird observed near Moorrinya NP on 27 October.

White-backed Swallow. One bird recorded at Jericho on 18 May.

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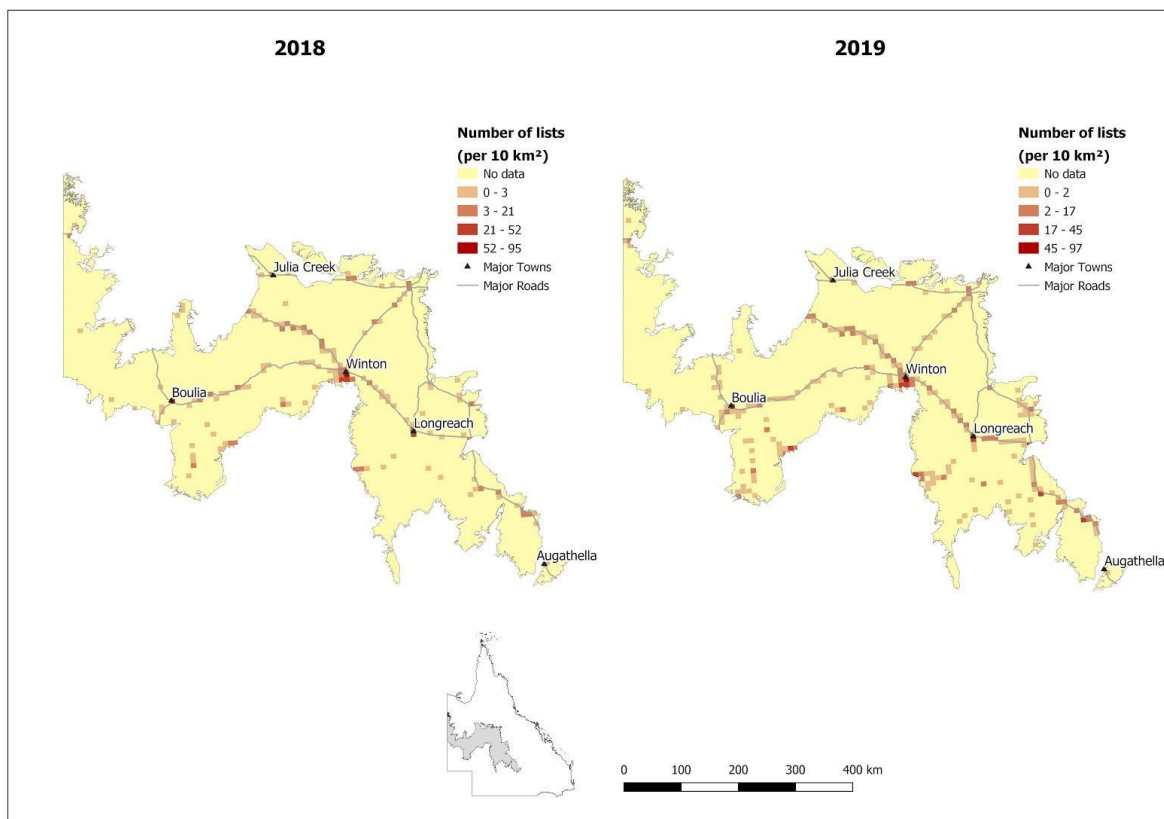
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10. Mitchell Grass Downs

Andrew Ley and Allison Roberts



Map of Mitchell Grass Downs Bioregion showing eBird survey effort



Flock Bronzewing (Graham Donaldson)



Australian Pratincole (Graham Donaldson)



Rufous-crowned Emu-wren (Graham Donaldson)

Geography

The Mitchell Grass Downs Bioregion (MGD) is the largest bioregion in the State and covers 14.1% (241,620 km²) of Queensland, extending further west into the Northern Territory. The bioregion encompasses primarily open plains of Mitchell tussock grasslands with few trees. There are a few rivers, gorges, jump ups, and ridges. Cattle and sheep grazing are the primary land use (AWE 2008). The major towns in MGD are Longreach, Blackall, Hughenden, and Winton. The major roads in the region are the Landsborough Highway, Kennedy Development Road, Hughenden–Muttaborra Road, and the Flinders Highway.

The climate of the bioregion lies in the Desert and Grassland Zones but varies significantly with the south having a dry monsoonal climate and the north experiencing a more humid tropical climate (BoM 2016). The large geographic extent of this bioregion is reflected in variation in rainfall patterns. Although the average for MGD is 332 mm, the arid western areas receive very low annual rainfall while some eastern areas receive over 500 mm (AWE 2008).

Birds of the bioregion and their conservation

The Queensland Government historically lists 334 native and four introduced bird species in MGD. The 15 species of concern are: Black-throated Finch, Yellow Chat (two subspecies), Painted Honeyeater, Carpentarian Grasswren, Rusty Grasswren, Powerful Owl, Night Parrot, Paradise Parrot (presumed extinct), Major Mitchell's Cockatoo, Curlew Sandpiper, Australian Painted Snipe, Plains-wanderer, Grey Falcon, White-throated Needle-tail, and Squatter Pigeon (southern subspecies). The four introduced species are: House Sparrow, Common Starling, Rock Dove, and Northern Mallard (DES 2013).

National Parks (NP) wholly or partially in MGD are Astrebla Downs, Bladensburg, Boodjamulla (formerly Lawn Hill), Diamantina, Idalia, Lochern, Welford, and Wiliyan-ngurru. In addition, small Queensland-owned conservation parks are Waltzing Matilda Billabong, Lark Quarry, and Elizabeth Springs. Privately-held and often difficult-to-access nature refuges partially or wholly in MGD are: Ballara protecting

Kalkadoon Grasswren habitat, Castlevale protecting Squatter Pigeon habitat, Edgbaston protecting wetland indicator species, Mount Windsor protecting Night Parrot habitat (QG 2018), Mulligan River protecting Curlew Sandpiper and Grey Falcon habitat, The 1959, and Toko Range (DES 2013).

Many conservation sites in MGD are either in remote, difficult-to-access areas or on inaccessible private or public lands, so sites most visited by birders and documented through eBird are the Sewage Treatment Plants (STP) at Winton and Longreach. It would be beneficial to get more records for the more remote areas of the bioregion.

In 2013 photos and other evidence of a Night Parrot population was discovered in MGD by naturalist John Young, and in 2016 Bush Heritage established the 56,000-ha inaccessible Pullen Pullen Reserve for the conservation and study of the species (BHA 2022b). Bush Heritage also protects natural springs and wetlands at Edgbaston which lies in both the MGD and Desert Uplands Bioregion. This reserve is critical habitat for several non-avian endemic species, as well as Australian Bustard, Brolga, and Squatter Pigeon (BHA 2022a).

Major events in 2018-2019

MGD was drought declared for all of 2018 and 2019 (QG 2022), but rainfall was highly variable. In 2018 Blackall received only 51% of average rain while Winton received 97%. Most of the area exceeded average rain in March of both years. Both years were also hot, and mean maximum temperatures exceeded average at towns across the region. Longreach recorded its highest daily minimum temperature of 31.8° C, compared to 15.9° C average, on January 13, 2018 (BoM 2019, 2020).

Birds Queensland conducted two expedition surveys that included small parts of MGD: Bladensburg NP in 2018 and Welford NP in 2019. A brief summary of these trips is included in the Channel Country Bioregion Chapter.

eBird recorded 214 species from 9,503 records in 2018 and 235 species from 10,950 records in 2019 for MGD. The following list highlights selected bird species and occurrences of interest for 2018 and 2019 from eBird.

2018 Notable bird records

Australasian Shoveler. Two observations recorded from the STPs at Longreach and Winton respectively.

Australian Crake. 16 observations recorded at the Winton STP.

Baillon's Crake. 13 observations recorded at the Winton STP.

Barking Owl. One observation recorded at Blackall in June.

Buff-banded Rail. One observation recorded from Barcaldine in October. The small rails are generally scarce in western Queensland.

Chestnut Teal. Only one observation recorded of three birds at Tambo, which is north of the usual range.

Common Myna. Introduced. Four observations recorded, all from the Winton Cooling Ponds.

Common Starling. Introduced. One observation recorded at the Winton Cooling Ponds in August.

Diamond Dove. 228 observations recorded which represents a good year for this boom-bust species.

Dusky Woodswallow. The occasional record keeps cropping up in the region, but the species is easily confused with Little Woodswallow.

Fan-tailed Cuckoo. Only one observation recorded from Longreach in April. Historically, there are only scattered records from the Queensland interior for this species.

Great Bowerbird. The only record, at Blackall in September, is well outside the usual range of what is considered a sedentary species.

Latham's Snipe. Two observations from Barcaldine recorded in October and November respectively for this uncommonly observed species in the interior of Queensland.

Opalton Grasswren. The only record was at Bladensburg NP in September. Additional and more detailed information on this sighting would be useful for confirmation.

Pale-headed Rosella. 24 observations recorded including two outlying records at Bladensburg NP in June.

Paperbark Flycatcher. Four observations recorded for the year.

Plum-headed Finch. A high count of 800 recorded at the Winton STP in July.

Red-backed Fairywren. The two records for the year included one from Tambo in May and one from the unusual location of the Winton STP in September.

Red-chested Buttonquail. Only one observation of this elusive species recorded at Boulia in June.

Spinifexbird. Most observations recorded at Bladensburg NP.

Spotless Crake. Three observations recorded: one from Bladensburg NP and two from the Winton STP.

Superb Fairywren. The single record for the year, at Tambo in July, is at the western limit of the species' range in Queensland.

Varied Lorikeet. The only record, from Boulia in June, is near the species' southern limit.

Varied Triller. The two records for the region, at Glenagra Station and on the Landsborough Highway respectively, are well out of the usual range for the species.

Wood Sandpiper. One observation recorded of this uncommon species at the Winton STP in October.

Yellow Chat. The only record, at Gum Hole in Diamantina NP in August, contains insufficient information for it to be considered confirmed.

2019 Notable bird records

Australian Bustard. A prolific year with 98 observations recorded including 43 birds observed at Tambo in April.

Baillon's Crake. Twelve observations recorded throughout the year with all at Winton STP.

Black-eared Cuckoo. Three observations recorded.

Black-shouldered Kite. 44 observations recorded for the year which is an unusually large number for the species in MGD.

Buff-banded Rail. Three observations recorded at two locations: Winton STP in June and at Gum Hole in Diamantina NP in August.

Chestnut Teal. One observation of a single bird recorded at Winton STP in October.

Common Myna. Introduced. Records at Winton and at Noonbah Station are at now well-established locations.

Common Sandpiper. One observation recorded at Camooweal in August.

Great Bowerbird. The one record at Tambo in May is well beyond the species' usual range.

Latham's Snipe. Three observations recorded in November: two at Tambo and one at Winton.

Pectoral Sandpiper. Accidental. One observation with description provided by experienced observers recorded near Boulia in October.

Pied Currawong. One observation recorded at Bladensburg NP in July.

Red-backed Fairywren. The records at Tambo in July and at Barcaldine in October are at the species' western limit at this latitude.

Red-chested Buttonquail. One recorded at Noonbah Station in September.

Redthroat. One observation recorded at Bladensburg NP in August.

Spotless Crake. Two observations recorded, both at Winton STP in August.

Superb Fairywren. The single record from Tambo in April is at the species' western limit at this latitude.

Varied Lorikeet. Three records at Boulia in May were near the species' southern limit.

Wandering Whistling Duck. One observation of three recorded at Noonbah Station in September.

White-browed Babbler. The only record, at Noonbah Station in July, is out of range for the species and requires corroboration.

White-throated Honeyeater. One record at Longreach in July is out of range, and its vetting status is not known.

Wood Sandpiper. Three observations recorded: Boulia in October, Winton in November, and Camooweal in December.

Yellow-tinted Honeyeater. One observation recorded at Longreach in June, but this is an unusual record for the area with unclear vetting status.

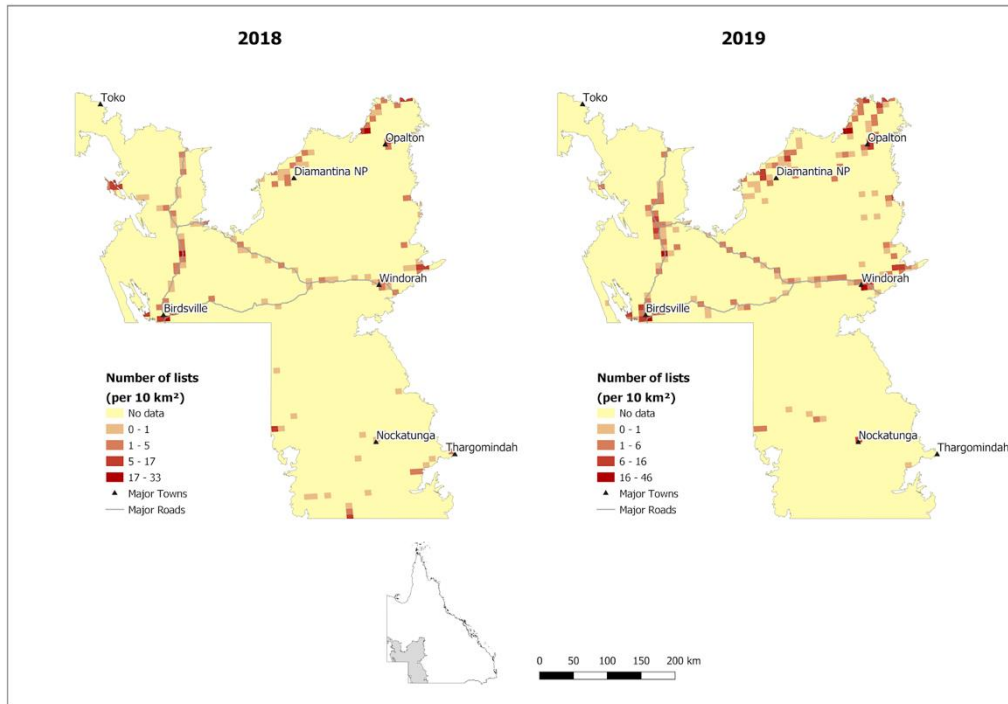
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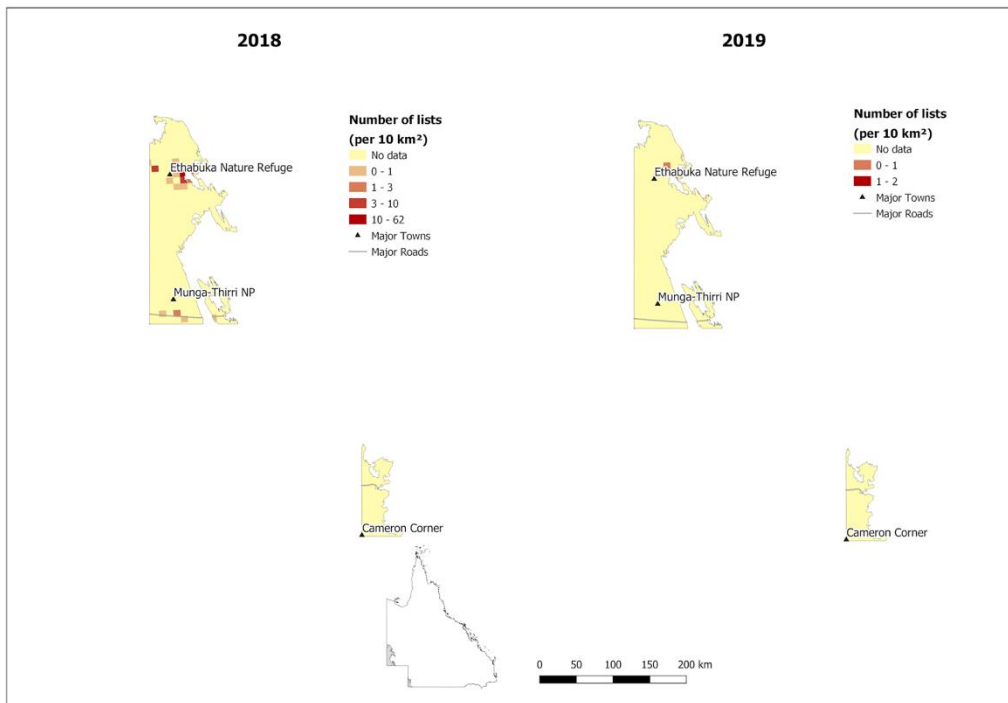
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11. Channel Country including Simpson Strzelecki Dunefields

Andrew Ley, Allison Roberts, and David Niland



Map of Channel Country Bioregion, showing eBird survey effort



Map of Simpson Strzelecki Dunefields, showing eBird survey effort



Opalton Grasswren (Maggie Overend)



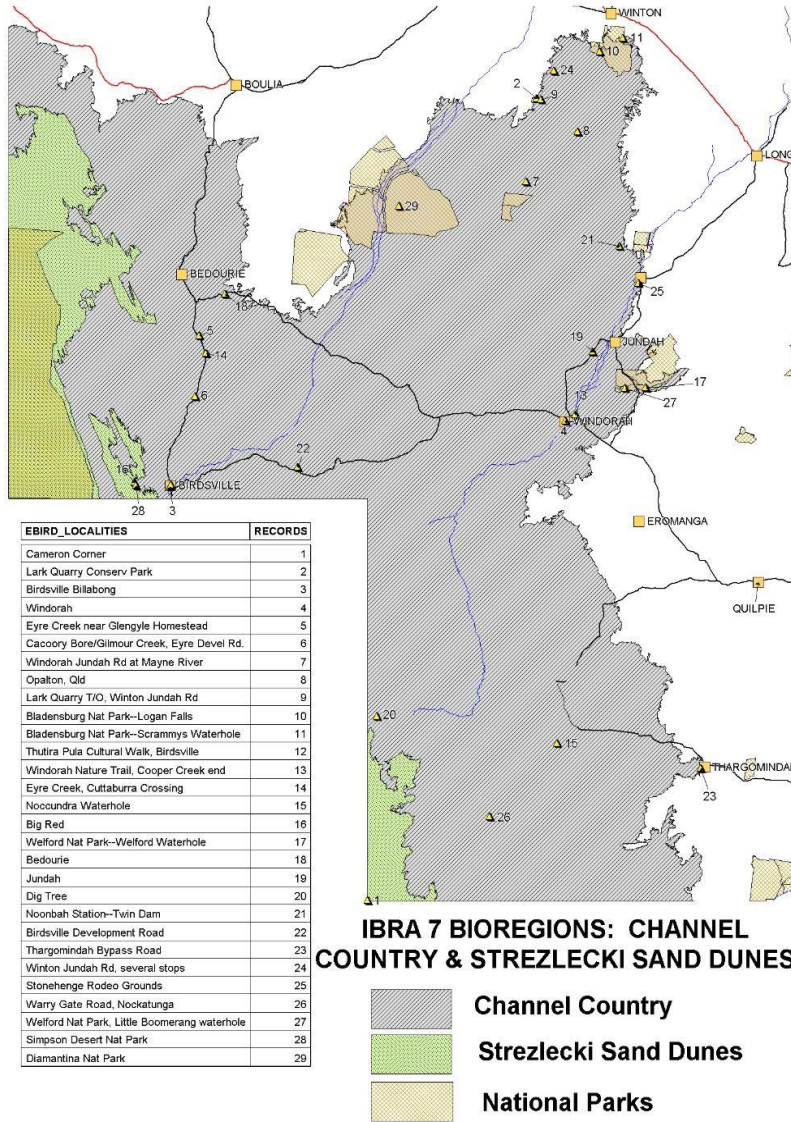
Budgerigar (Graham Donaldson)

Geography

Occupying most of the southwest corner of the State, the Channel Country Bioregion is the second largest bioregion in Queensland and covers 13.5% (232,080 km²) of Queensland, and small portions extend into the Northern Territory, South Australia, and New South Wales. The bioregion includes the vast flat alluvial and flood plains featuring Cooper Creek and the Georgina, Eyre, and Diamantina Rivers. The waterways all flow south into the Lake Eyre Basin in South Australia. Gibber plains, low ranges, and dunefields surround the alluvial plains. Mitchell grass, gidgee, and spinifex are the dominant vegetation with slightly taller vegetation found on the low ranges (AWA 2008a).

The greater part of the Simpson Strzelecki Dunefields Bioregion occurs in the Northern Territory and South Australia with a small southern portion in New South Wales, and the eastern edge running across the western Queensland border. The bioregion is arid desert with long parallel sand dunes, sand plains, dry watercourses that are not part of the Lake Eyre drainage system, and salt pans. Spinifex hummock grasslands and sparse acacia shrublands make up most of the vegetation. Pastoral grazing occurs in interdunal corridors and drainage areas. Wind erosion, drought-related tree, shrub, and grass death, and increasing rabbit numbers are all environmental concerns in the Queensland section of the bioregion (AWE 2008b). For simplicity, this chapter combines data and discussion of the Channel Country Bioregion and the western edge of the Simpson Dunefields Bioregion that occurs in Queensland; the combined bioregions will be abbreviated to CHC.

This is the most arid part of Queensland, where annual rainfall is extremely variable, but averages less than 300 mm. Temperatures are also highly variable with mean maxima varying from 24° to 35°C, and mean minima from 9° to 20°C (BoM 2018). The extreme heat during summer months discourages visitors so there are fewer bird records. The major towns in CHC are Birdsville, Bedourie, Innamincka, Windorah, and Thargomindah, while the main access routes are the Diamantina, Eyre, Birdsville, Cooper and Bulloo Development Roads and the Silver City Highway.



Detailed map of Channel Country bioregion showing localities mentioned in the text



Spotted Harriers (Jon Norling)

Birds of the bioregion and their conservation

The Queensland Government lists 286 native and five introduced bird species in CHC. The 10 species of concern are: Yellow Chat (both subspecies), Painted Honeyeater, Grey Grasswren, Rusty Grasswren, Night Parrot, Major Mitchell's Cockatoo, Curlew Sandpiper, Australian Painted Snipe, Plainswanderer, and Grey Falcon. The five introduced species are: House Sparrow, Common Starling, Rock Dove, Northern Mallard, and Indian Peafowl (DES 2013).

National Parks (NP) wholly or partially in CHC are: Astrebla Downs (inaccessible), Bladensburg, Diamantina, Goneaway, Lochern, Munga-Thirri (formerly Simson Desert), and Welford (DES 2013). Bush Heritage owns and manages Pilungah (formerly Cravens Peak) Reserve which protects Grey Falcon, Painted Finch, Australasian Bustard, and Spinifex Pigeon, and Ethabuka Reserve which protects Australian Bustard, Eyrean Grasswren, Freckled Duck, Grey Falcon, and Painted Honeyeater (BHA 2022). Mulligan River Nature Refuge has been recognised as a nationally important wetland, and Toko Range Nature Refuge protects Grey Falcon habitat. BirdLife Australia (2019) has identified eight Key Biodiversity Areas (KBAs) in this bioregion: Simpson Desert, Diamantina Floodplain, Lake Yamma Yamma, Cooper Floodplain below Windorah, Diamantina NP, Lakes Muncoonie/ Mumbleberry/ Torquinie, Lake Machattie, and Bulloo Floodplain.

BirdLife Australia (2015) produced a major review of birds in the arid lands of Australia looking at trends between 1999 and 2013. This considered six different ecological categories of birds: aerial insectivores, carnivores, common species, ground nesters, hollow nesters, and those associated with woodland/shrublands. All but common species and aerial insectivores showed a strong downward trend, and some had very large variations in populations. This was especially recognised for the species prone to irruptions such as the Rufous Songlark, Budgerigar, and Brown Quail.

Ley et al. (2011) documented and mapped the distribution of birds in Diamantina NP, based on 15 surveys from 1994 to 2009. Of the 180 species they recorded in the park, 11 are classified as threatened under the Queensland NCA Act 1992 or by Garnett & Crowley (2000). Birds Queensland had continued periodic surveys of Diamantina NP using Ley's survey methods.

Major events in 2018-2019

2018 and 2019 were mostly hot and dry years for CHC. The entire bioregion was drought-declared for all months during both years with some areas further west getting very little annual rainfall although much of the region got above average rainfall in March and November of 2018 and again in March 2019. In 2018 Birdsville recorded only 89.6 mm which is 65% of their average annual rainfall. Ballera Gas Field in the far west experienced an average maximum temperature of 31.5° C, 1.1 degree above average, and recorded only 80 mm of annual rainfall, 44 per cent of the average. In 2019 Bedourie recorded their highest ever temperature of 47.6° C on 24 December.

In June of 2018 Birds Queensland led a 12-day expedition with 17 participants to Bladensburg NP. The group conducted surveys using the same methodology used on Ley's Diamantina NP surveys: surveying birds based on species presence by one minute of latitude/longitude. Although the expedition was forced to end a day and a half early due to rain, 100 species were recorded in the park including Flock Bronzewing, Grey Falcon, Rufous-crowned Emu-wren, Red-browed Pardalote, Chestnut-breasted Quail-thrush, Hall's Babbler, the unusually abundant Red-capped Robin, Spinifexbird and White-backed Swallow (Ley 2018).

In July of 2019 Birds Queensland led a 10-day expedition with 16 participants to Welford NP. Once again surveys were conducted based on species presence by one minute of latitude/longitude. Although the region was drought-declared, the park had received 300 ml of rain in March and birds were abundant. A total of 113 species was recorded with Diamond Dove, Budgerigar, Pallid Cuckoo, White-winged Triller,

Rufous Songlark, and Black Honeyeater seen in exceptionally large numbers throughout the park. Spotted Harriers and Little Buttonquail were also noted in higher-than-expected numbers (Ley & Overend, 2019).

EBird records for 2018 included 190 species from 4,240 records in the Channel Country Bioregion and 73 species from 625 records in the Simpson Strzelecki Dunefields Bioregion; eBird records for 2019 included 196 species from 7,211 records in the Channel Country Bioregion and 10 species from 13 records in the Simpson Strzelecki Dunefields Bioregion. The small number of species recorded in Simpson Strzelecki Dunefields reflects the harsh environmental conditions of the deserts which reduce bird numbers and birdwatcher numbers.

2018 Notable bird records

Australasian Shoveler. Two birds recorded at Welford NP in August.

Australian Bustard. High count of 30 recorded at Diamantina NP in May.

Australian Shelduck. Two records, possibly of the same two birds, observed at Cuttaburra Crossing on Eyre Creek in April.

Baillon's Crake. Two observations recorded from each of Thargomindah and Birdsville.

Banded Stilt. Accidental. One observation recorded from the far west of the region in December.

Black-breasted Buzzard. Four observations recorded.

Black-necked Stork. Near-threatened. Two observations recorded at Diamantina National Park in May.

Caspian Tern. Many observations recorded during the year, especially from the southwest of the region including Cuttaburra Crossing.

Chestnut Teal. One observation recorded from the Simpson Strzelecki Dunefields in October.

Common Starling. Introduced. Two observations recorded at the Burke and Wills Dig Tree and from Windorah in May and September respectively.

Diamond Dove. 87 observations recorded for the year.

Ground Cuckooshrike. Observations recorded at the Winton–Jundah Road, Diamantina NP, and the Lark Quarry Conservation Park vicinity in June and July.

Inland Dotterel. An easterly record of three birds observed near Stonehenge in May.

Intermediate Egret. One observation recorded from Birdsville in May.

Laughing Kookaburra. One record, at Windorah in October, is at the western limit for the species at this latitude.

Little Eagle. One bird observed at Ethabuka Reserve in May.

Masked Lapwing. One observation recorded from the Simpson Strzelecki Dunefields in October.

Masked Woodswallow. A flock of 1,000 observed at Opalton in July.

Mulga Parrot. Only two observations recorded, both at Welford NP in August.

Opalton Grasswren. All records were from the well-established locations of the Opalton and Lark Quarry Conservation Park vicinities.

Painted Honeyeater. Vulnerable. One observation recorded at Cuttaburra Crossing in July.

Pectoral Sandpiper. Accidental. The identification and exact location of the one record for the region for the year requires clarification before the record is accepted.

Pied Heron. One observation recorded from Cuttaburra Crossing in August.

Rufous-crowned Emu-wren. Many observations recorded with most from the Lark Quarry Conservation Park vicinity which is a well-established location for this species.

Slaty-backed Thornbill. One observation recorded from near Welford NP in August.

Spotless Crake. One observation recorded from Thargomindah in June.

Torresian Crow. This species continues to be reported from the Channel Country but can be confused with Australian Raven.

White-bellied Cuckooshrike. Three observations recorded in the southwest of the region: Cuttaburra Crossing and Bulloo Downs.

White-browed Treecreeper. Two observations recorded, one in August at Jundah which is at the species' western limit at this latitude in Queensland.

White-browed Woodswallow. A flock of 1,000 recorded at Opalton in July.

Yellow Chat. One observation recorded at Diamantina National Park, but the imprecise location and absence of any descriptive information make the record questionable in its present form.

2019 Notable bird records

Bar-shouldered Dove. A single observation recorded from Thargomindah, but the species occurs only erratically this far west.

Black-necked Stork. Near-threatened. One observation recorded from the Birdsville vicinity in August which is unusually far south for this species in the west.

Blue-faced Honeyeater. One observation recorded at Brighton Downs Station in November; observations that far west at that latitude are unusual.

Chestnut Teal. 10 birds observed south of Winton in June; unusual for the Channel Country.

Common Myna. Introduced. Observations recorded at Windorah and Brighton Downs, which is possibly a new, westerly location for this species.

Common Starling. Introduced. Observations recorded from Birdsville and Windorah.

Diamond Dove. Observations abundant across the region with 244 recorded.

Dusky Woodswallow. Total of five observations recorded from the region during the year, but the vetting status of the records is unclear as this species can be easily confused with Little Woodswallow.

Freckled Duck. A count of 20 recorded at Welford NP in December.

Grey Falcon. Vulnerable. Many observations recorded from the vicinity of the Lark Quarry Conservation Park where a pair is known to breed.

Ground Cuckooshrike. One observation recorded from south of Winton in May.

House Sparrow. Introduced. Two observations recorded at Cameron Corner in July and September respectively.

Major Mitchell's Cockatoo. Two observations from the south of the region recorded in July.

Pacific Swift. A single observation of 25 recorded at Brighton Downs in October.

Pallid Cuckoo. A good year with 35 observations recorded from across the region.

Pied Heron. The one record, from Welford NP in July, represents an error in the data.

Plumed Whistling Duck. Several high counts recorded at Cuttaburra Crossing during the year.

Red-chested Buttonquail. One observation recorded from Diamantina NP in November.

Rufous-throated Honeyeater. The one record from Lark Quarry Conservation Park in October is at the southern edge of the species' range.

Slaty-backed Thornbill. Observations recorded once in July and twice in December at Welford NP.

Square-tailed Kite. Two observations of this unusual Channel Country visitor recorded around the Lark Quarry Conservation Park vicinity in April and May respectively.

Torresian Crow. Total of thirteen observations recorded from the region, but vetting status of the records is unclear as species may be confused with Australian Raven.

Western Gerygone. An observation recorded at Lark Quarry Conservation Park is unusual for the Channel Country.

White-backed Swallow. One observation of only 13 records for the year; all species recorded at Cameron Corner in September.

Yellow Chat. One observation recorded from the vicinity of Bedourie in August.

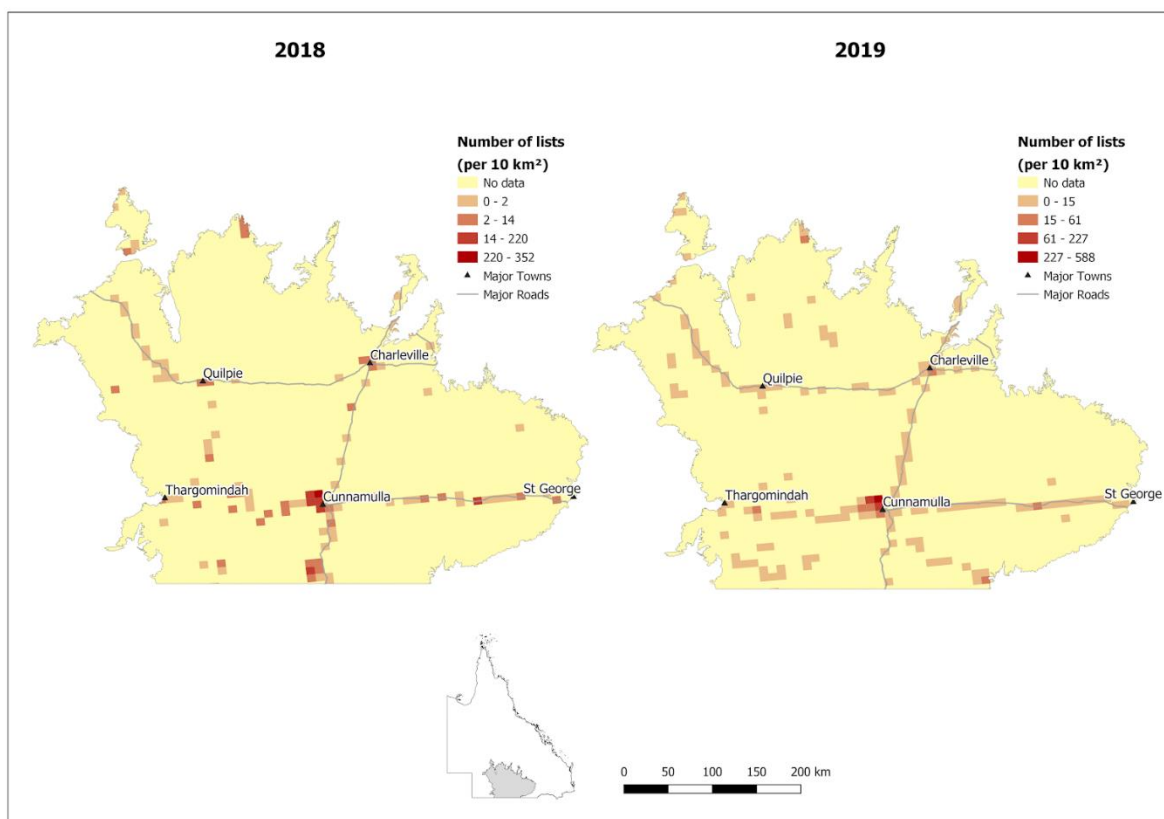
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12. Mulga Lands

David Niland



Map of Mulga Country Bioregion, showing eBird survey effort

Geography

The Mulga Lands Bioregion (MUL) constitutes the fifth largest bioregion in the State. It covers 12.6% (186,000 km²) of Queensland and extends south into adjacent New South Wales. The dominant topography is flat to undulating plains and low ranges, and the soils are generally infertile, sandy earths. Mulga is the main vegetation community in shrubland and woodland, while Poplar Box is dominant in the tall woodlands of the wetter, eastern half (Sattler & Williams 1999). MUL includes desert, grasslands, and subtropical climate zones (BOM 2016), and the climate is semi-arid with mean annual rainfall varying from 300 to 450mm across the bioregion and has high variability of rain events. Mean temperatures ranges are 8°– 22°C in winter and 18° to 32°C in summer (BoM 2018).

The major towns in MUL are St George, Cunnamulla, Thargomindah, Charleville, and Quilpie. Major drainage catchments comprise the Bulloo, Paroo, Warrego, and Balonne Rivers with the last forming the eastern boundary of the bioregion. The main access routes through the area include the Balonne Highway from St George to Cunnamulla that continues west as the Bulloo Development Road to Thargomindah, the Mitchell Highway radiating from Charleville and running south through Cunnamulla to the border, and the Diamantina Development Road running west through Quilpie.



Banded Lapwing (Mike Gilpin)



Crimson Chat (Ross Monks)



White-winged Fairywren (Ross Monks)



Splendid Fairywren (Vince Bugeja)

Birds of the bioregion and their conservation

The Queensland Government lists 301 native species and six introduced species from historic data. This includes 14 species that are considered threatened or rare including the Major Mitchell's Cockatoo, Painted Honeyeater, and Grey Falcon (DES 2013).

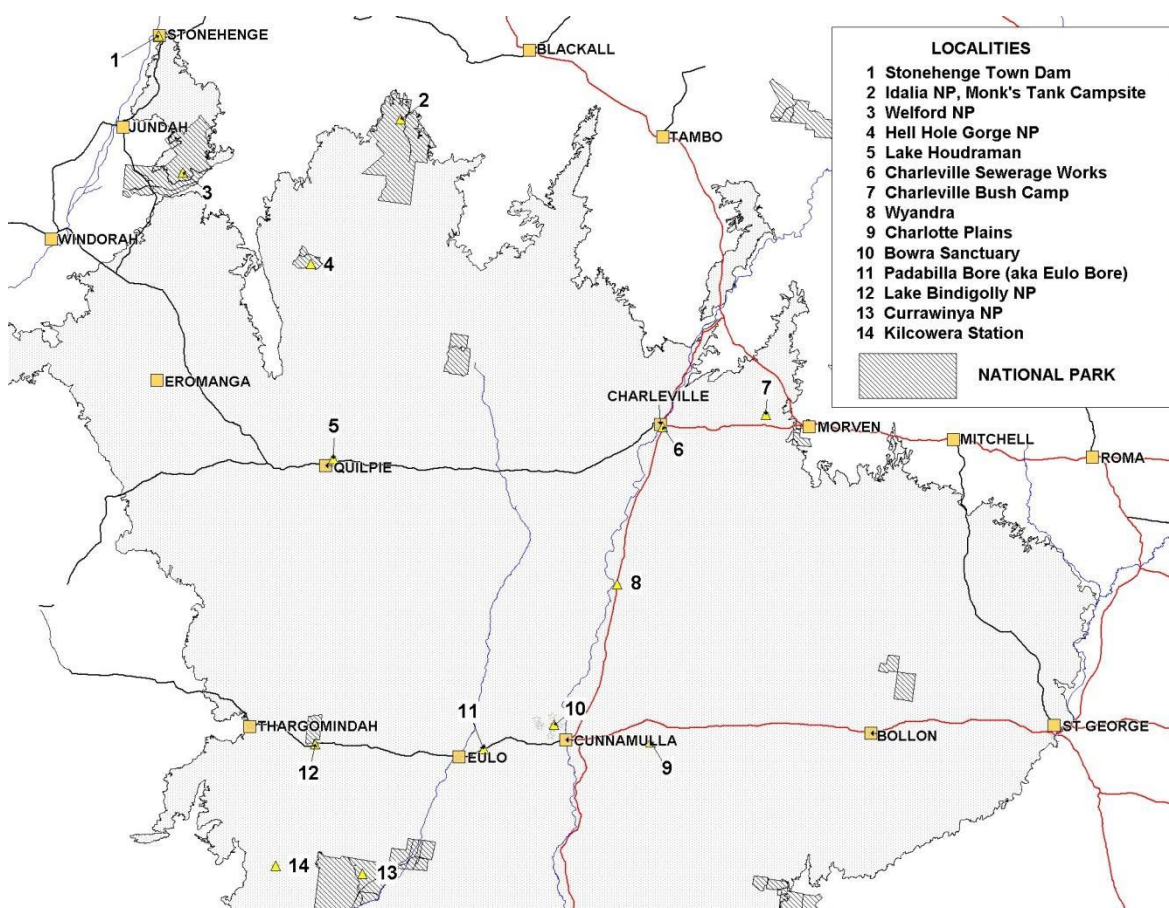
National parks (NP) in the bioregion are Currawinya, Hell Hole Gorge, Lake Bindegolly, Mariala, Thrushton and portions of Welford, Idalia, Culgoa Floodplain, and Tregole. Currawinya Lakes are an internationally important RAMSAR wetland. The Australian Wildlife Conservancy (AWC) owns and manages Bowra Sanctuary (Bowra), just northwest of Cunnamulla, and 11 other Nature Refuges are partially or wholly in MUL (DES 2013).

Birds Queensland is responsible for maintaining a roster of volunteers and bird monitoring activities at Bowra Sanctuary. Volunteers from Birds Queensland conduct nearly daily monitoring of the diversity and relative abundance of birds at Bowra through the nightly "Bird Call" where the greatest number of birds seen at one time by a guest or volunteer observer(s) is recorded. This simple measure of abundance has been recorded almost every month since 2010.

The annual banding program, started in 2013, was held at Bowra over 27 March to 7 April in 2018. There was a reduced number of captures with honeyeater and finch numbers being particularly low compared to previous years. Mulga banding sites had the fewest captures, and waterhole adjacent sites had the

most. There was a lower proportion of juveniles in the population compared to the previous five years (Coleman et al., 2018).

In 2019 another banding expedition to Bowra was undertaken from 19 to 28 April, but a severe rain event limited access to some of the sites. Most of the waterholes were dry at the start of the trip but were all full by the end of the visit. Again, honeyeater captures and observations were much lower than expected, and finches were totally absent. The proportion of juveniles fell to only%, which was the lowest percentage recorded so far (Coleman et al., 2019).



Detailed map of Mulga Lands bioregion, showing localities mentioned in the text

Major events in 2018-2019

The whole of the bioregion was drought-declared for all of 2018 and 2019 (QG 2022). Both years were mostly very much above average for the mean temperatures, and the rainfall was below to very much below the seasonal means (BoM 2019, 2020). The exception was autumn 2019 which had above average rainfall that did have some effect in reviving the vegetation for a few months. The annual total rainfall at Bowra for each year was around half of the normal average. There were only two years (2012 and 2016) in the last nine which had above average rainfall indicating the region has been experiencing a significant drought.

The daily "bird call" at Bowra saw the monthly total of species decline until March 2019, after which species numbers immediately rose to the general average figures for the rest of the year. Most of the dams on the sanctuary were initially dry but filled again. There was some extra rain in May.

Totals of 210 species in 2018 and 225 species in 2019 were recorded in this bioregion. The Blue-billed Duck, Flock Bronzewing, Spotless Crake, Orange Chat, Slaty-backed Thornbill, Horsfield's Bushlark were of special interest in 2018. The Freckled Duck, Inland Dotterel, Australian Pratincole, Grey Falcon, Blue-winged Parrot, Musk Lorikeet, Red-backed Fairywren, White-fronted Chat, Yellow-faced Honeyeater, White-browed Scrubwren, and Australian Golden Whistler were observations of special interest in 2019.

2018 Notable bird records

Australasian Shoveler. A count of 10 recorded at Cunnamulla STW (Sewage Treatment Works) ponds in September.

Australian Crake. One observed at the Thargomindah STW on 9 September.

Australian Golden Whistler. Observations include one record at Bollon, one 40 km west at Narkoola NP, and one at Idalia NP.

Baillon's Crake. Three observations recorded including one of three birds at Thargomindah in September.

Black-breasted Buzzard. An occupied nest observed at Binya NP in September.

Black-shouldered Kite. Single birds recorded at Bollon in April and Bowra in July.

Blue-billed Duck. Near-threatened. One bird observed at Nebine, west of Bollon, in April.

Brolga. Over 350 birds recorded on field beside Humeburn Road outside Cunnamulla on 7 November.

Brush Cuckoo. One observation recorded at Cunnamulla in January.

Chestnut Teal. Two observations recorded near Bollon in March and April.

Cockatiel. Large flocks totalling 300 recorded at area 70 km south of Mitchell on 20 July.

Common Myna. Introduced. Five observed at Bollon in March and 15 near Morven in September.

Common Starling. Introduced. A few observed at Quilpie, Cunnamulla, Eulo and outside of towns at Picarilli and near Morven.

Dusky Woodswallow. 10 birds observed in June and three in August at Idalia NP. One bird recorded at Bowra in November.

Eastern Cattle Egret. Four birds observed at Bowra on 30 July.

Eastern Yellow Robin. Observations recorded from Idalia NP and the Highway 30 km northwest of Morven.

Emu. A large group of 64 birds observed at Cudnapper Creek Stockroute facility on 9 September, trapped beside new road fence.

Fan-tailed Cuckoo. A single bird recorded at Bowra in late August through early September.

Flock Bronzewing. One observation of seven birds recorded at Stonehenge on 12 April.

Grey Falcon. Vulnerable. One observation recorded about 50 km north of Cunnamulla in August.

Ground Cuckooshrike. Two birds recorded in August at Clara Creek between Morven and Augathella.

Hoary-headed Grebe. One observed on lagoon at Bowra from 17 through 28 May.

Horsfield's Bush Lark. One bird observed at Bowra in May.

Intermediate Egret. One bird recorded at Bollon in April and September.

Leaden Flycatcher. One bird observed at Idalia NP on 30 September.

Little Egret. One bird recorded at Bollon on 6 October.

Little Grassbird. Odd birds observed mostly at Cunnamulla STW from August to November.

Major Mitchell's Cockatoo. Records of over 70 counted including 43 in one flock at Bowra.

Mallard. Introduced. Six observed at Bollon in November.

Orange Chat. Up to seven birds recorded at Bowra from May to July.

Painted Honeyeater. Vulnerable. Observations included a pair at Eulo in May, Bowra in July, and one at Cunnamulla in September.

Peregrine Falcon. One observed at Bowra on 8 October.

Pied Currawong. Single observations recorded from Bowra and Idalia NP, at the western edge of the species range.

Plum-headed Finch. Small numbers recorded at Idalia NP and Bollon, but a flock of about 200 observed at Cunnamulla on 1 September.

Rainbow Lorikeet. Six observations recorded at Charleville with one count of 55 birds.

Red-capped Plover. Four birds observed at Bowra on 17 May.

Red-necked Avocet. Up to eight recorded at Bowra during August-September.

Sacred Kingfisher. No observations recorded from mid-April until late September indicating the species migrates out of the bioregion during this time period.

Sharp-tailed Sandpiper. Three observations recorded at Bowra between 15 October and 11 November.

Silvereye. A few recorded at Cunnamulla STW on 30 August.

Slaty-backed Thornbill. Records include two observations at Paddabilla Bore: one bird in June and four in August.

Speckled Warbler. Three birds recorded at Idalia NP in June, and one observed in a mixed flock about 30km northwest of Morven.

Spinifex Pigeon. A pair recorded at Quilpie on 24 October.

Spiny-cheeked Honeyeater. A flock of 20 birds recorded flying over at Bowra in April.

Spotless Crane. Two birds observed at Charleville STW in June, and three recorded at Thargomindah in September.

Spotted Harrier. Two observations recorded in March: one at Bowra and one east of Bollon.

Stubble Quail. One recorded at Bowra in December.

Superb Fairywren. Observations recorded 20 km north of Augathella in April and at Bollon in August.

Torresian Crow. Observations recorded from throughout the area in most months, but difficulty in identification may put doubt on the validity of some of these.

Weebill. An observation of birds feeding young recorded at Binya NP in September.

Whiskered Tern. Two birds observed at Bowra on 31 August.

White-backed Swallow. Pairs recorded at Yowah, Paddabilla Bore, and Bowra.

White-browed Babbler. In May, 14 birds observed at Bowra and three at Paddabilla Bore.

White-eared Honeyeater. Four birds recorded at Idalia NP in August.

White-throated Needle-tail. A single bird recorded at Bollon in March.

Wood Sandpiper. A single bird recorded at Bowra between 19 and 27 August.

Zebra Finch. Very few observed at Bowra or Cunnamulla which is unusual, but flocks of up to 30 observed elsewhere in the bioregion.

2019 Notable bird records

Australasian Shoveler. One bird observed at Lake Houdraman near Quilpie on 2 August.

Australian Bustard. Some breeding activity observed near Cunnamulla in August and September.

Australian Crake. One recorded at Bowra in late March, and one observed at Cunnamulla STW in late October.

Australian Golden Whistler. One recorded on the Highway about 80 km east of Cunnamulla on 3 October.

Australian Pipit. A large concentration of 30 birds recorded at Bowra in October.

Australian Pratincole. A group of 15 recorded about 15 km south of Quilpie on 2 September, and birds seen regularly on Diamantina Development Road west of Quilpie.

Australian Raven. Breeding activity noted in August and October at Bowra.

Australian Ringneck. Observations included five records of nesting activity in July through August.

Baillon's Crake. One recorded at Cunnamulla STW on 3 November.

Banded Lapwing. Nesting recorded during June through August, and 20 birds counted around Bowra in June.

Barking Owl. Observations recorded at Bowra in May, Welford NP in July, and Quilpie in August.

Black Honeyeater. Parents observed feeding two young at Eulo in July.

Black Swan. Observations included thirty at Lake Bindegolly in June, about five near Quilpie in July through August, and one at Bowra in December.

Black-chinned Honeyeater. Observations included one in Charleville and three in Cunnamulla both recorded in March.

Black-faced Cuckoo-shrike. An increase in numbers observed with up to 50 recorded at Bowra in July.

Blue-winged Parrot. Observations recorded in June through August at Bowra and Lake Bindegolly NP.

Brown Songlark. Up to 10 birds counted at Bowra in August.

Budgerigar. Greater numbers observed during May to October, and breeding activity recorded in July and August.

Buff-rumped Thornbill. One bird observed at Paddabilla Bore on 19 April.

Caspian Tern. Species recorded singly at Lake Bindegolly in June, Currawinya NP in September, and Cunnamulla in October.

Channel-billed Cuckoo. One bird heard at Bowra on 31 October.

Chestnut Teal. Three recorded at the weir at Cunnamulla on 4 September.

Chestnut-breasted Quail-thrush. As many as 10 counted at Bowra in one day during August.

Chirruping Wedgebill. Regularly found 20 km west of Cunnamulla on the Diamantina Development Road which is close to the eastern limit of the species' range.

Common Myna. Introduced. Some observations recorded in June as far west as the Cunnamulla area.

Common Sandpiper. One recorded at Cunnamulla STW on 3 November.

Common Starling. Introduced. Observations noted around Cunnamulla in June, and one recorded at Quilpie in July.

Eastern Barn Owl. A single bird regularly observed at Bowra in May and August, and a bird recorded at Eulo in July.

Eastern Cattle Egret. One recorded at Eulo on 10 June.

Eastern Yellow Robin. Up to four birds observed at Idalia NP.

Freckled Duck. Four recorded at Lake Bindegolly in June.

Great Crested Grebe. Two recorded at Cunnamulla STW on 31 October.

Grey Falcon. Vulnerable. Only 13 observations of single birds recorded at Bowra between June and October.

Horsfield's Bush Lark. Up to three birds recorded at Bowra from May to October.

Inland Dotterel. One observed at Bowra on 12 and 13 August and one at Adavale in October.

Inland Thornbill. An occupied nest found at Bowra in August.

Leaden Flycatcher. One observed at Bowra on 21 September.

Major Mitchell's Cockatoo. Observations recorded of large flocks of 50 to 100 around the Culgoa Floodplain NP area in June.

Marsh Sandpiper. One observed at Currawinya NP on 12 August.

Masked Woodswallow. An estimated flock of 1,800 observed 14 km east of Cunnamulla in August.

Musk Lorikeet. A pair observed in Charleville on 16 August.

Nankeen Night Heron. Two observed at Nebine Creek in Culgoa Floodplain NP on 30 June.

Noisy Miner. One observed in September at Eromanga which is at the western limit of its range.

Orange Chat. Birds recorded at Bowra, Lake Bindegolly NP, and Currawinya NP from January through September. A high total count of 20 birds observed at Lake Bindegolly on 27 June.

Painted Buttonquail. One recorded at Idalia NP on 13 and 14 September.

Pied Currawong. Observations recorded from Bollon, Charleville, and Idalia NP.

Pied Honeyeater. Species recorded from May through September at Bowra and Lake Bindegolly NP, and 10 counted at flowering bloodwood about 10 km north of Adavale in August.

Plum-headed Finch. Up to 20 birds recorded at Idalia NP in June, and nesting activity observed in Charleville in July.

Rainbow Lorikeet. Observations recorded at Charleville in four different months.

Red-backed Fairywren. Two observations recorded from Bowra including an observation in July for male and two females.

Red-capped Plover. Up to 25 recorded at Currawinya NP in August, and 15 observed at Lake Bindegolly in June.

Red-capped Robin. Breeding activity observed from July through October, including feeding a young Horsfield's Bronze-cuckoo in August.

Red-chested Buttonquail. One observed just south of Barringun on 30 June.

Sharp-tailed Sandpiper. Single birds observed at Bowra in September and October, and 11 recorded at Currawinya NP in early September.

Shining Bronze Cuckoo. Single birds observed at Bowra and Idalia NP in June through September.

Silver Gull. 60 to 70 birds recorded at Lake Bindegolly NP in June and July.

Silvereye. One bird observed at Bollon on 4 September.

Slaty-backed Thornbill. Three birds recorded at Kilcowera Station in July and August.

Spinifex Pigeon. Up to six birds observed at Welford NP, and observations recorded from Adavale and Quilpie–Eromanga.

Spotless Crane. Observations included one at Charleville STW on 19 June and two at Cunnamulla STW on 25 October.

Squatter Pigeon. One observed near Cooladdi on 26 June.

Straw-necked Ibis. Flocks totalling up to 350 recorded around Cunnamulla in July and August.

Superb Fairywren. Five birds including a full colour male observed in Bollon on 26 September.

Whiskered Tern. Four observed at Cunnamulla STW in November, and one recorded near Quilpie in June.

Whistling Kite. Nesting activity observed between July and September at Bowra and near Quilpie.

White-bellied Sea Eagle. A single bird regularly observed at Bowra between September and November.

White-browed Babbler. One observation recorded of 23 about 35 km west of St George on 22 April, and six recorded at Bowra on 21 April.

White-browed Scrubwren. One bird recorded at Thrushton NP on 5 June.

White-browed Woodswallow. Flocks up to 500 observed at Bowra in June and August, and breeding activity recorded in August and September.

White-eared Honeyeater. One bird recorded at Idalia NP on 13 September.

White-fronted Chat. Species recorded from May until August, and the largest observation of 25 counted at Lake Bindegolly NP. Breeding activity noted at various places over this period.

White-winged Triller. Breeding activity observed in July and August at Bowra with counts of up to 100 observed at this time.

Wood Sandpiper. One recorded at Bowra on 26 and 27 October.

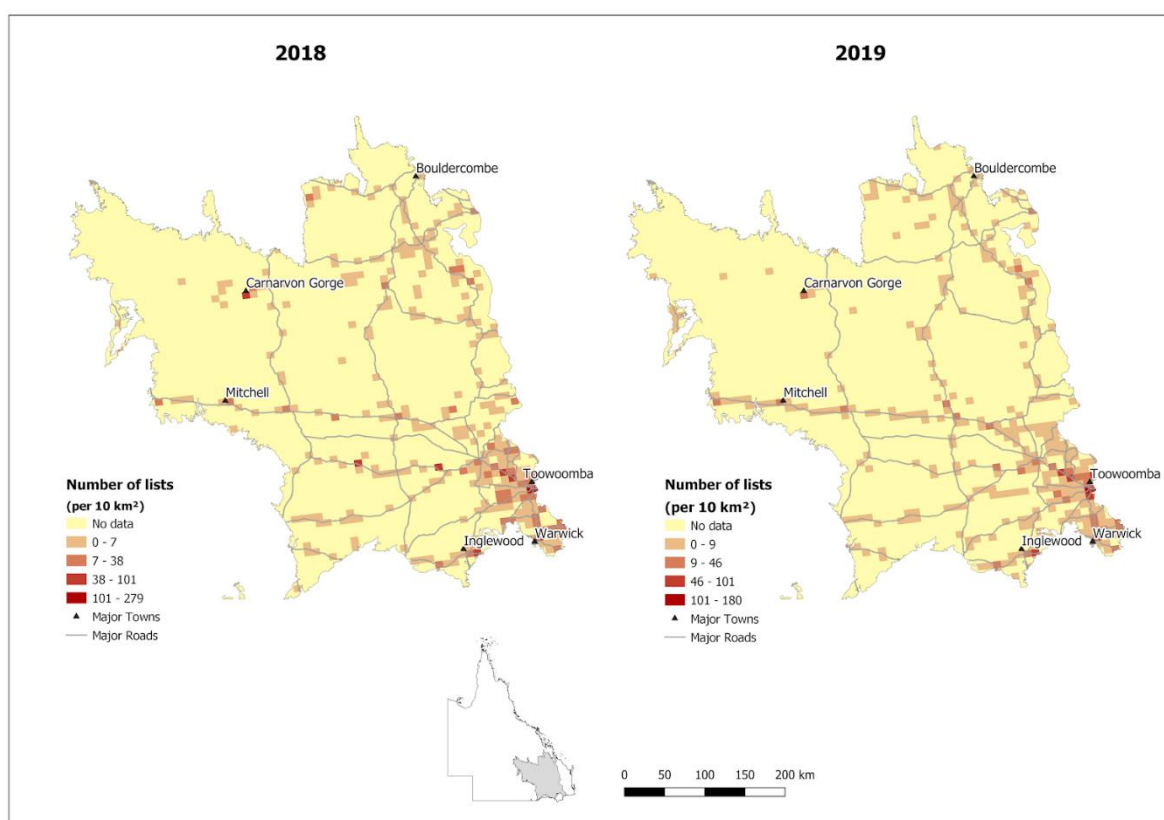
Yellow-faced Honeyeater. An unusual record of one bird observed at Quilpie on 16 July.

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13. Brigalow Belt South, including Darling Riverine Plains

Allison Roberts and Stacey McLean



Map of Brigalow Belt South bioregion, showing eBird survey effort



Diamond Firetail (Phil Venables)



Black-breasted Buttonquail (Patrick Webster)

Geography

The Brigalow Belt South Bioregion covers 215,967 km², or 12.6% of the area of Queensland. The Darling Riverine Plains Bioregion is primarily in New South Wales, but the northernmost portion extends into Queensland (AG 2012) and encompasses the population centres of Goondiwindi and St George. For simplicity, this chapter combines data and discussion of the Brigalow Belt South Bioregion and the portion of the Darling Riverine Plains Bioregion that occurs in Queensland; the combined bioregions will be abbreviated to BBS.

BBS is one of the most biogeographically diverse Queensland bioregions. It encompasses the elevated Carnarvon and Expedition Ranges sections of the Great Dividing Range and the extensive riverine and floodplain ecosystems of the Balonne–Condamine, Moonie, and Border Rivers in the south (Low 2011). BBS spans three climatic zones: Subtropical, Grassland and Temperate (BoM 2016). This biogeographic and climatic diversity is reflected in the BBS (and the BBN) bioregions supporting over 160 Regional Ecosystems (DES 2018a).

The main regional population centres are Toowoomba, Dalby, Roma, Mitchell, St George, and Goondiwindi. Transport corridors traversing the bioregion include the Leichhardt, Carnarvon, Warrego, and Moonie Highways. The BBS bioregion supports several wetlands, waterbodies, and floodplains that are especially important habitats for waterbird foraging and breeding. Important sites include the floodplain woodlands and swamps of the Monto area; Lakes Broadwater and Nuga Nuga; red gum and coolabah woodlands around Lake Murphy; and some artificial waterbodies such as Coolmunda and Gordonbrook dams.

The fertile, cracking clay soils of BBS support extensive pastoralism for beef production. This has resulted in the clearing of over 90% of the native vegetation cover. In 2017–18, the reported state-wide woodland vegetation clearing rate was 392,000 ha per year. The highest clearing rate (204,000 ha per year) during this time occurred in the Brigalow Belt bioregions (DES 2018b). Many regional ecosystems in this bioregion are consequently threatened. These include Semi-evergreen vine thickets, Brigalow open forests, *Themeda* (Kangaroo Grass) and *Triodia* (spinifex) grasslands, Forest red gum woodlands, and Montane shrublands (DES 2018a).

Birds of the bioregion and their conservation

The Queensland Government lists 466 native and 11 introduced bird species in BBS from historic data. Introduced species include European Goldfinch, House Sparrow, Nutmeg Mannikin, Common Myna, Common Starling, Common Blackbird, Long-billed Corella, Rock Dove, Spotted Dove, Northern Mallard, and Indian Peafowl (DES 2013). The Common Blackbird is a recent arrival and is a Declared Pest in Queensland (DoAFF 2022). Observations are slowly increasing each year with observations in Goondiwindi, Lake Coolmunda, Toowoomba, and St George during 2018 and 2019.

There are also 39 species of concern (DES 2013) including 26 species or subspecies that are currently classified Vulnerable through Critically Endangered on the Queensland Threatened Species Listing Report (QG 2020a). Many of those threatened species were not reported in eBird data for BBS in 2017, 2018, or 2019.

In addition, the Biodiversity Planning Assessment for the Brigalow Belt Bioregion identified four priority fauna species which are of conservation significance while not being classified as currently threatened. These included: Speckled Warbler, Brown Treecreeper, Hooded Robin, and Barking Owl (DES 2018a). Speckled Warbler was well represented in the observation data, but the other three species seem to be relatively uncommonly observed in BBS with fewer than twenty records per year. Some coastal rainforest species are only occasionally observed in isolated pockets of rainforest around Toowoomba.

The major Protected Areas in BBS are Carnarvon and Expedition National Parks (NP), encompassing over 3,000 km² and 1,000 km² respectively. Other important national parks and public forests include Culgoa Floodplain and Thrushton NP in the south, and Barakula State Forest in the east. Abutting Carnarvon NP, Bush Heritage Australia's Carnarvon Station Reserve covers 59,000 ha, massively extending the protection of lower elevation ecosystems in this region (BHA 2018). The diversity of ecosystems is also represented in smaller scale private nature refuges including the 30-ha remnant of unusually varied Western Downs woodland owned by Wildlife Land Fund Limited and under management near Dalby (WFLF 2019). Birdlife Australia has identified one Key Biodiversity Area (KBA) in the BBS Bioregion: Palmgrove. This KBA

recognises some 24,600 ha of land, centred on the Palmgrove NP, as important habitat for the Black-breasted Button-quail (BLA 2019).

Since 2002, the Toowoomba Bird Observers have undertaken annual bird surveys of the Toowoomba region, extending west to Dalby, north to Goombungee, south to Pilton and Felton, and east into the Lockyer Valley (TBO 2022).

The birds of Myall Park Botanic Gardens, 7 km north of Glenmorgan, and the surrounding Western Darling Downs region are described in a lavishly illustrated spiral-bound book published by the Brigalow Birds Educational Project. The book features 250 bird species and provides details of 13 local birding sites. The Project also conducts research surveys on locally rare birds including Australian Painted Snipe, Australasian Bittern, Australian Little Bittern, Red-tailed Black-Cockatoo, Glossy Black-Cockatoo, Swift Parrot, and Turquoise Parrot (MPBG 2022).

Major events in 2018-2019

In 2018 temperatures were above average across BBS with Warwick recorded a new highest mean daily maximum temperature and most other population centres having a mean daily maximum temperature around one degree higher than normal. Most months had below average rainfall except February and October where some areas experienced higher than average for those months only. Toowoomba received only 76% of its annual rainfall and Dalby only 69% of annual rainfall for the year (BoM 2019). The entire bioregion was drought-declared January through March with the Western Downs being not declared from May through August and then only 35.6% drought-declared from September through October (QG 2022).

In 2019 temperatures continued to be above average across BBS. Mitchell, Dalby, Roma, and Toowoomba all recorded their lowest annual rainfall, although most areas got some above average rain for March (BoM 2020). All areas of the BBS were drought-declared by April 2019 (QG 2022). Parts of the Toowoomba region, including Pechey, Crows Nest, Cressbrook, Cypress Gardens, and Forest Ridge, suffered from bushfires in November 2019 (QG 2020b).

The following lists provide details of significant and interesting records in 2018 and 2019. The majority of eBird surveys took place near major regional centres (e.g., Toowoomba), along major transport routes, and readily accessible Protected Areas, such as Carnarvon NP. In 2018 eBird recorded 293 species through 34,473 observation records in the Brigalow Belt South Bioregion and 162 species through 2,779 observation records in the Darling Riverine Plains Bioregion. In 2019 eBird recorded 302 species through 30,163 observation records in the Brigalow Belt South Bioregion and 174 species through 2,845 observation records in the Darling Riverine Plains Bioregion.

2018 Notable bird records

Australian Crake. One observation of one bird at the Nindigully Hotel in September.

Baillon's Crake. Single birds recorded at Kearney Springs Historical Park in October, West Creek Reserve in October, and Arcadia Valley in April.

Banded Lapwing. Six observations of between three and 35 birds recorded near Toowoomba and two observations of two and 16 respectively near Goondiwindi.

Bar-breasted Honeyeater. A single bird recorded at Lake Victoria in May.

Barking Owl. Observations of a single bird recorded from Wallumbilla, Calliope, and Mungindi; and two birds observed at the Takarakka Bush Resort in the Central Highlands in July and Thallon in May.

Barred Cuckooshrike. One recorded at Rifle Range in December, and up to five observed at Prince Henry Park in Toowoomba in November.

Bell Miner. Only four observations recorded including 30 birds observed at Main Range NP.

Black Honeyeater. Nine observations recorded from September through November and one in March of mostly one or two birds but up to eight recorded at the Goondiwindi Botanic Gardens in September.

Black-backed Bittern. One bird observed at West Creek Reserve in Toowoomba in mid-October.

Black-chinned Honeyeater. 11 observations recorded from June through January with a flock of 16 recorded at the Rolleston Caravan Park in July.

Black-eared Cuckoo. 10 observations of single birds across the region from September through January.

Black-faced Monarch. Five observations of single birds recorded from October through April with four observations from the Toowoomba area and one from Lake Broadwater Conservation Park.

Black-faced Woodswallow. 14 observations of up to six birds recorded across the region.

Black-necked Stork. Near-threatened. Two birds recorded in Toobeah in July, and single bird records scattered across the region, most commonly at Loveday Cove on Lake Cooby.

Black-tailed Nativehen. Five records of single birds recorded from across the region and year, and a flock of 30 observed at the E. J. Beardmore Dam in October.

Blue-billed Duck. Near-threatened. A single bird observed three times at Keongs Lagoon in March and May, and one recorded at the Balonne River Walk in July.

Blue-winged Kookaburra. 13 observations of one to three birds recorded across the Banana, North Burnett, Rockhampton, and Gladstone areas.

Brahminy Kite. Six observations of one to three birds recorded throughout the year at Calliope.

Brown Cuckoo-dove. Three observations of up to two birds recorded around Toowoomba.

Brown Gerygone. A single observation of two birds at Cania Gorge NP in October.

Brown Treecreeper. Five observations of two birds and seven observations of single bird recorded across BBS.

Bush Stone-curlew. Three observations of one to two birds recorded across the region.

Comb-crested Jacana. Five observations recorded of up to 12 birds at Gordonbrook Dam from January through April, and four recorded at Bancroft in August.

Common Blackbird. Introduced. Observations included up to three birds from St George, two birds at Goondiwindi, and a single bird at Prince Henry Heights Park in Toowoomba.

Cotton Pygmy Goose. One bird recorded at North Burnett in July.

Crested Bellbird. A single bird recorded at the Aboriginal Rock Well in Balonne.

Crested Shrike-tit. Two birds recorded multiple times at Mosquito Creek Road near Goondiwindi on a single day in April.

Crimson Rosella. Records included: six observations of up to 10 birds recorded in the Southern Downs, two birds recorded at Mosquito Creek Road, and nine recorded at Berrima.

Curlew Sandpiper. Near-threatened. A single bird recorded at Loveday Cove on Lake Cooby on two days in mid-September.

Diamond Dove. Seven observations of up to four birds recorded from March through July across the region.

Diamond Firetail. Four birds observed at Mosquito Creek Road in April, and one bird was observed at Lake Coolmunda on the same day. Six birds recorded at Mosquito Creek and one at Goondiwindi Botanical Gardens in September.

Dusky Myzomela. Only a single bird recorded in the South Burnett in November.

Freckled Duck. Most observations of up to 10 birds recorded at Loveday Cove from September through December. Two observations of up to four birds recorded at Gordonbrook Dam in March and October, and one observation of two birds at North Burnett in July.

Glossy Black Cockatoo. Seven observations of up to five birds recorded in the region.

Glossy Ibis. Common in wetlands throughout the region with a large flock of 120 birds recorded at Gracemere in February.

Green Catbird. A single observation of one bird recorded in May from the Gladstone area.

Grey Goshawk. A single bird recorded at Prince Henry Heights Park in Toowoomba during October and November, and one observation of a single bird recorded at Kingsthorpe in July.

Gull-billed Tern. Seven observations recorded of up to 10 birds at waterbodies across BBS.

Hoary-headed Grebe. Observations recorded across the region including 50 birds recorded at Keongs Lagoon in Oakey during October.

Hooded Robin. Observations included two observations of single birds at Mosquito Creek Road in October and December, one from Carnarvon Gorge NP in May, and one at Hebel in April.

Large-billed Scrubwren. Between July and October two observations of up to two birds recorded at Cania Gorge NP and two at Prince Henry Heights Park in Toowoomba.

Little Bronze Cuckoo. Single birds observed at Weranga and Lake Broadwater Conservation Park in January; a pair recorded at Carnarvon Gorge NP in October.

Little Buttonquail. Three observations of up to two birds recorded at Carnarvon Gorge NP and Myall Park Botanic Gardens.

Little Crow. One observation recorded at Erringibba NP in May and one at Carnarvon NP in July.

Little Woodswallow. One bird observed between Westmar and St George, and eight birds observed in Banana.

Marsh Sandpiper. Groups of up to seven observed along waterways in the Toowoomba area from November through February

Mulga Parrot. A single observation of two birds recorded at Thallon in May.

Musk Duck. Four observations of one or two ducks recorded on Loveday Cove in October and November, and one recorded at the Balonne River Walk in July.

Pacific Emerald Dove. One observation recorded of a single bird at Cania Gorge NP in July.

Pacific Golden Plover. Two birds observed at Loveday Cove at Lake Cooby on two days in November.

Painted Buttonquail. Nine observations across the region recorded including five observed at Yuleba in July.

Painted Honeyeater. Vulnerable. A total of 47 observations of up to six birds recorded with the majority being from Doctors Creek Reserve near Toowoomba throughout the year.

Pale Yellow Robin. One observation recorded of a single bird at Carnarvon Gorge in October.

Peregrine Falcon. Three observations of a single bird and one observation of two birds recorded from Toowoomba, and single bird observations recorded from Southern Downs, Central Highlands, and Goondiwindi.

Pied Honeyeater. One bird recorded at St George in August.

Powerful Owl. Two birds recorded at Mandela in the Southern Downs in June.

Red-backed Kingfisher. Only one observation recorded from Oakey in May.

Red-browed Pardalote. Only two records of one and two birds recorded from Carnarvon Gorge NP.

Red-capped Plover. One observation recorded of four birds from Gracemere in August.

Red-chested Buttonquail. Two observations of two to four birds recorded in July at Yuleba and Lake Broadwater Conservation Park.

Regent Bowerbird. Four observations of one or two birds recorded from near Toowoomba, and a single bird recorded in the Lockyer Valley.

Rufous Shrike-thrush. Four observations of up to five birds recorded in BBS with three at Cania Gorge NP between July and November.

Satin Flycatcher. Five observations recorded of single birds mostly in October with three being from the Toowoomba region, one from Injune Lagoon, and one from Carnarvon NP.

Scaly-breasted Munia. Introduced. Four observations of seven to 15 birds from July through October recorded at Calliope and one of 20 birds from Gracemere in August.

Southern Whiteface. 14 observations of up to four birds recorded mostly in April from the Goondiwindi area with Mosquito Creek Road being the most common location.

Spectacled Monarch. One bird recorded at Mount Rascal near in October.

Splendid Fairywren. Four observations of up to six recorded in Balonne Shire from July through November, and a single bird observed on the Tregole NP Circuit in September.

Spotless Crake. One observation of two birds at Gordonbrook Dam in August.

Spotted Nightjar. Five observations of single birds recorded across the region over the year.

Spotted Quail-thrush. Five observations recorded of up to three birds with three observations in Blackdown Tableland NP.

Square-tailed Kite. Seven observations of single birds recorded across the region throughout the year with one observation of two birds recorded at Calliope in October.

Squatter Pigeon. A total of 11 observations of up to 15 birds, but generally fewer than five, recorded across the region throughout the year.

Stubble Quail. One observation recorded of two birds at Kelvinhaugh in September.

Topknot Pigeon. Five records of up to 28 birds observed at Kearney Springs or West Creek Reserve in Toowoomba in October and one record of one bird at Proston in January.

Turquoise Parrot. Two birds observed at Mosquito Creek Road on a single day in April.

Wandering Whistling Duck. Three observations recorded including one observation of five birds recorded at Gordonbrook Dam in March and two records of a single bird observed at Ballara Park in the Western Downs in April.

White-backed Swallow. Observations included four observed at Injune in March, two to three observed over two days at Loveday Cove at Lake Cooby in November, and a pair observed at a dam along the Castlereagh Hwy in March.

White-browed Babbler. Five observations recorded of up to six birds at Yelarbon Common or Lagoon near Goondiwindi in March and July.

White-browed Treecreeper. Three observations of two to three birds at Tregole NP, and three observations of a bird from the Balonne area.

White-cheeked Honeyeater. Eight observations recorded throughout the year from the Central Highlands area, mainly Blackdown Tablelands NP.

White-eared Monarch. Two observations of one and two birds from Toowoomba in October and November.

White-fronted Honeyeater. One bird recorded at St George in September.

White-headed Pigeon. Four observations of up to three birds recorded around Toowoomba in September and one in April.

White-throated Nightjar. Five observations of up to six birds recorded at Myall Park Botanic Gardens in October. A single bird recorded Blackdown Tableland NP in January, and one recorded at Carnarvon Gorge NP in October.

Yellow-tufted Honeyeater. Six observations, mostly at Blackdown Tableland NP, recorded throughout the year with a flock of 25 observed in July.

2019 Notable bird records

Banded Lapwing. Most observations recorded in the Toowoomba area with a high count of 61 observed in January.

Bar-breasted Honeyeater. One bird observed at Springers Lagoon in Gracemere during August.

Barred Cuckooshrike. Observations limited to Toowoomba with most being at Prince Henry Heights Park from November through March.

Black Bittern. One observed on two days at Carnarvon NP in December.

Black Honeyeater. Observations of up to 12 recorded from Goondiwindi Botanical Gardens and Lake Coolmunda in September and October

Black-breasted Buzzard. Observations included one in St George in July and one in Toowoomba in August.

Black-chinned Honeyeater. Observations of up to two recorded at Lake Broadwater Conservation Park, Selene SF, Myall Park Botanical Gardens, and Mundubbera–Durong Road from July through October.

Black-eared Cuckoo. Two observations recorded at Goondiwindi and one at Banana of single birds.

Black-necked Stork. Near-threatened. One observation recorded at Miles in April.

Blue-billed Duck. Near-threatened. A single observation of two birds recorded at Dogwood Creek Habitat Park at Miles in September.

Brahminy Kite. Five mostly coastal observations recorded, but inland observations included two at Carrisbrooke Fishing near Inglewood in June and one at Clintonvale in September.

Brown Gerygone. Observations included two at J.E. Duggan Park in Toowoomba in April and eight at Cania Gorge Tourist Retreat in May.

Budgerigar. Seven observations recorded from St George, Murweh, and Southern Downs areas with a high count of 73 along the Landsborough Highway.

Bush Stone-curlew. A single observation of one bird at Lake Broadwater in October.

Chestnut Teal. Nine observations recorded with a high-count estimate of 250 at Goondiwindi in April.

Comb-crested Jacana. Six observations recorded: Biloela in June, Boynedale Bush Camp in January, Springers Lagoon in January, Gordonbrook Dam in March, and Wilmott Road at East End in September.

Common Blackbird. Introduced. Eight observations of up to three birds recorded from Goondiwindi, Lake Coolmunda, Henry Joppich Park, and St George. Observations of this introduced species continue to grow in Queensland.

Common Greenshank. One observed at Lake Coolmunda in February.

Cotton Pygmy Goose. Five observations recorded across the northern section of BBS with a high count of six.

Crested Bellbird. Single birds observed at Tregole NP, Dirranbandi, and Culgoa Floodplain NP in June and July.

Crested Shrike-tit. Six observations of up to three birds recorded from June through November with most seen in Balonne Shire.

Diamond Firetail. Eight observations of up to four birds recorded across the southern part of BBS from January through July.

Double-banded Plover. Up to three recorded at Lake Coolmunda in May.

Dusky Myzomela. One recorded at North Ridge Drive in Calliope in February, and one observed at Leixip Creek in June.

Fairy Gerygone. Two observations of up to six at Cania Gorge Tourist Retreat in May.

Glossy Black Cockatoo. Six observations recorded including flocks of up to 15 at Blackdown Tableland NP in May, 10 at Gordon Country Retreat in March, four at the Moonie Highway Waterhole in October, and two at Moonie in April.

Greater Crested Tern. 12 observed at Cania Dam in August.

Greater Sand Plover. One observed at Loveday Cove on Lake Cooby in November and December.

Grey Goshawk. Observations included J.E. Duggan Park and Prince Henry Heights Park in Toowoomba and Monto.

Hooded Robin. The three observations of this species were Possum Park (Kowguran) in April, Killarney in May, and Culgoa Floodplain NP in July.

Large-billed Scrubwren. Only two observations recorded from Toowoomba.

Lesser Sand Plover. A single observation of one recorded at Loveday Cove on Lake Cooby in September

Little Buttonquail. A single observation of one bird at Darling Heights in January.

Noisy Pitta. One recorded at Toowoomba in April.

Olive-backed Sunbird. A single observation of one bird on North Ridge Drive in Calliope which is at the southern end of the species' range.

Oriental Cuckoo. Two observations of single birds observed in December at Cania Gorge and Carnarvon NP.

Pacific Emerald Dove. Three observations recorded of single birds from Cania Gorge NP in May and October.

Painted Buttonquail. A single observation of one bird at Lake Broadwater in October.

Painted Honeyeater. Vulnerable. Observations of up to three recorded from September through February around Toowoomba with most observations at Doctors Creek Reserve.

Radjah Shelduck. A single observation of one bird recorded at Boynedale Bush Camp near Gladstone in January.

Red-backed Kingfisher. One observed on the Leichhardt Highway in Banana in May.

Red-browed Pardalote. One recorded at Possum Park in April, and one observed at Fagans Road in Weranga in August.

Red-browed Treecreeper. Four recorded at Gordon Country Retreat in March.

Red-necked Stint. Near-threatened. Five recorded at Lake Coolmunda in February, and one recorded in May.

Rufous Shrikethrush. Four observations of up to two birds recorded at Cania Gorge NP, and one recorded at Leixlip Creek near Gladstone.

Satin Flycatcher. A single bird recorded three times at J.E. Duggan Park on one day in February.

Southern Whiteface. Two observations of two birds recorded at Yelarbon in July and November.

Spotless Crake. One recorded at West Creek Reserve in October which is the first record for the Toowoomba area.

Spotted Quail-thrush. Three observed on two dates at Isla Gorge in July.

Squatter Pigeon. 15 observations scattered across BBS with a high count of seven near Carnarvon.

Stubble Quail. Three observations recorded of up to four: Bowenville Norwin Road at Toowoomba in January, Lake Broadwater Conservation Park in August, and Gordonbrook Dam – Recreation Drive access in September.

Topknot Pigeon. Four observations of mostly single birds recorded in Toowoomba, and a high count of six recorded at the Main Range Picnic Area in the Southern Downs.

Turquoise Parrot. Two observed at Lake Coolmunda in February.

Wandering Whistling Duck. Four observations recorded across the BBS of up to 11 birds from January through April.

White-backed Swallow. The three observations of this elusive arid species were Gurulmundi Road in the Western Downs in April, Gordonbrook Dam in September, and five birds at Gilliam Park in the Southern Downs.

White-browed Babbler. Five observations of up to six birds recorded in Yelarbon.

White-cheeked Honeyeater. One observation of six birds recorded at Myall Park Botanical Gardens in October.

White-eared Monarch. Five observations of one or two birds at Prince Henry Heights Park in Toowoomba from October through December.

White-throated Nightjar. Two observations recorded in March: one heard calling in Toowoomba and two flushed on Mosquito Creek Rd near Goondiwindi.

Wood Sandpiper. One observed at West Theodore in April.

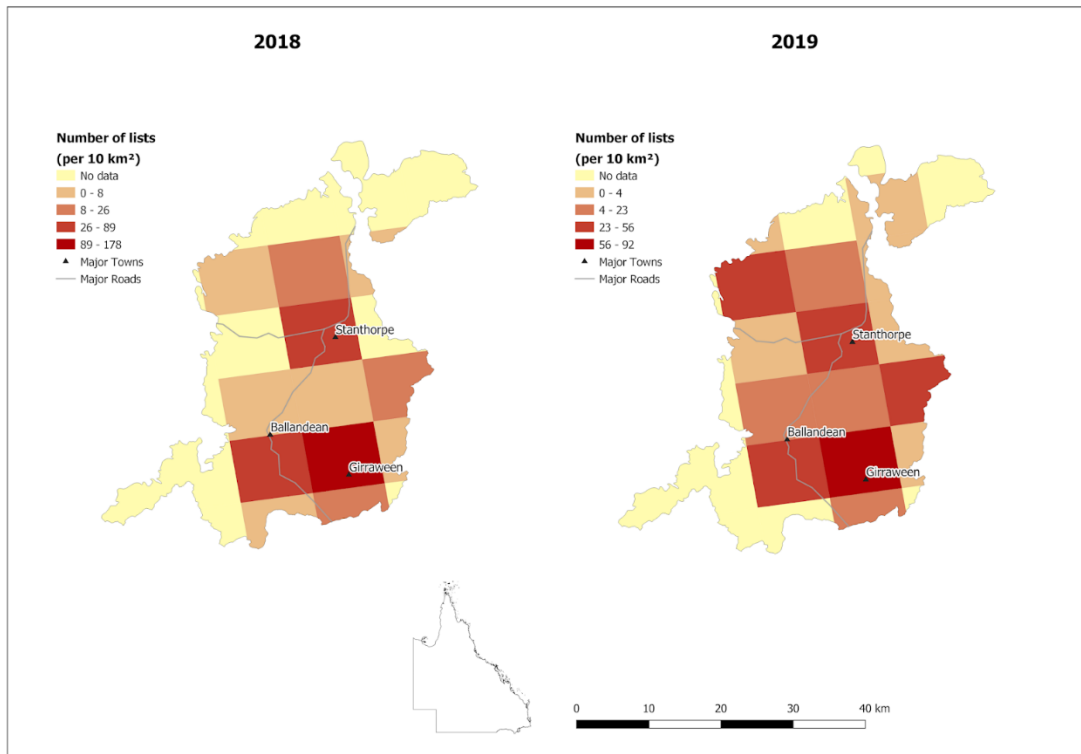
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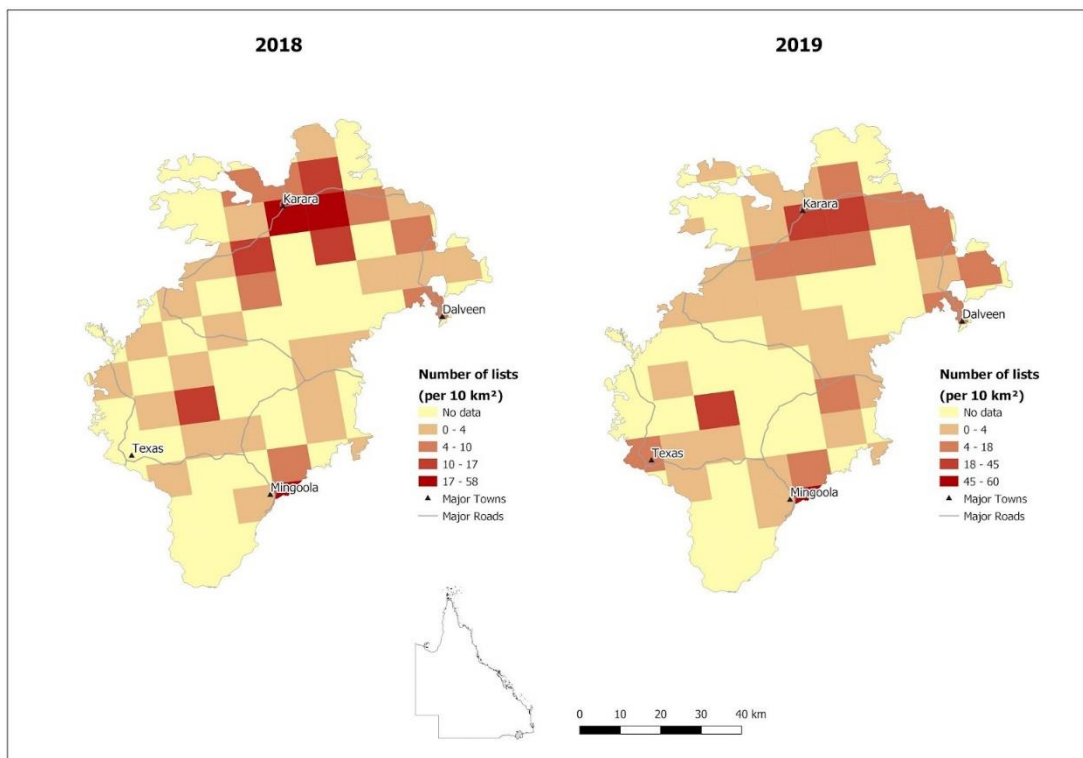
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14. New England Tablelands, including Nandewar

David Niland & Paul Grimshaw



Map of New England Tablelands Bioregion, showing eBird survey effort



Map of Nandewar Bioregion, showing eBird survey effort



Swift Parrot (Jim Sneddon)



Turquoise Parrot (Vince Bugeja)

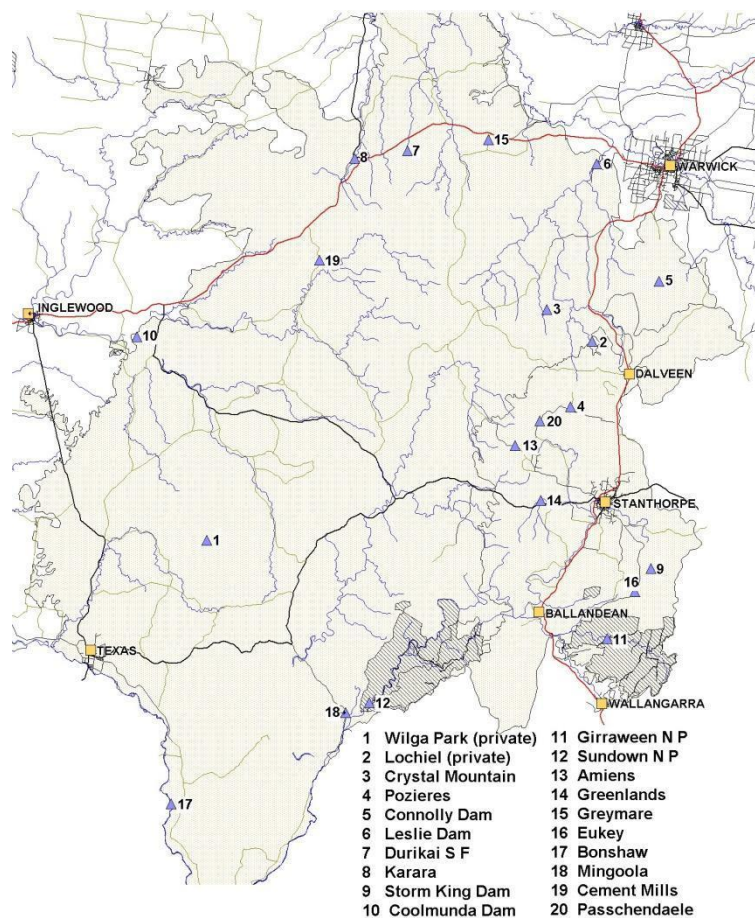
Geography

The New England Tablelands and Nandewar Bioregions (NET) lie largely in northeastern New South Wales, but small sections of each extend into southeast Queensland. The combined area of these two bioregions is 7,748 km², which accounts for merely 0.45% of the state, yet most of its ecosystems are unique within Queensland (DES 2013). As part of the Great Dividing Range, NET is mainly elevated land, composed of a granite batholith with underlying sedimentary rocks which are exposed on the land sloping down to the west. These geological landforms are known as the Granite Belt and Traprock Country regions, occupying roughly the eastern third and western two-thirds of NET, respectively.

The mean annual rainfall is 700–770 mm, with most rain falling from November to February. Average temperatures range from 1° to 16°C in winter and 14° to 27°C in summer at Stanthorpe (BoM 2018).

The major towns in these bioregions are Stanthorpe, Wallangarra, and Texas, and the Traprock extends north to the village of Leyburn. Most of the region lies within the Southern Downs Local Government Area (LGA) and some western parts within the Goondiwindi LGA. The state boundary with New South Wales forms much of the eastern and southern boundaries of the bioregions. The Cunningham Highway crosses the northern section, and the New England Highway runs down the eastern side, mainly through the Granite Belt. Major drainage catchments include a small part of the Condamine River and the headwaters of the Severn–Dumaresq River, which drains to the west as part of the Darling River Basin (DES 2013).

Fruit and vegetable crops dominate the farmland west of Stanthorpe, but most of the remainder has sheep and cattle grazing. Many of the farms have small dams, but the amount of water they contain is variable. A series of ornamental ponds along Quart Pot Creek in Stanthorpe is attractive to many birds. Most of the natural vegetation is grassy, shrubby woodland, or open forest with large granite outcrops and peaks in places (Sattler & Williams 1999).



Map of New England and Nandewar bioregions combined, showing eBird survey localities

Birds of the bioregion and their conservation

The Queensland Government lists 326 native and nine introduced bird species in BBS from historic data. This includes 16 threatened or rare species although some of those may now be locally extinct. Introduced species include the recent arrival of Common Blackbird which is a Declared Pest in Queensland (DoAFF 2022).

BirdLife Australia (2019a) have identified the Traprock region as a Key Biodiversity Area (KBA), particularly for the Regent Honeyeater and Diamond Firetail. Areas providing environmental protection comprise the Girraween and Sundown National Parks (NP); Horan's Gorge Environmental Park and Arcot; Broadwater, Durikai, Greenup, Gunyan, Leyburn, Passchendaele, Talgai, and Texas State Forests (SF); and 22 Nature Refuges. Artificial waterbodies include Storm King Dam in the east, Glenlyon and Coolmunda Dams in the west, and the Leslie and Connolly Dams near Warwick to the north-east (DES 2013).

Since 2005 BirdLife Southern Queensland volunteers have been conducting seasonal surveys on farms at Braeside, Dalveen, and Pozieres as part of their Adopt-a-farm Project; and on properties north of Texas for the 20 Million Trees Program (BLA 2019b). Birds Queensland volunteers continued a series of regular route surveys around the southwestern end of Sundown National Park to map birds in the different ecosystems.

Major events in 2018-2019

There was a steady decline in the amount of rainfall during 2018 and 2019. The second year suffered severely with 70% less than the average annual rainfall (BoM 2020). This reduced the main water supply for Stanthorpe at Storm King Dam to such an extent that in September 2019 the water ran out.

The hot, dry conditions and strong winds in early September fanned a large bushfire around Stanthorpe, Applethorpe, and Amiens which resulted in significant property loss and a 2,000-ha burnt (Bom 2019b). The previous large fire in the area was in 2002. The Goondiwindi Regional Council area was drought-declared throughout this period and the Southern Downs was from May 2018 onwards (QG 2022).

Significant sightings in 2018 included a pair of Musk Duck at Pozieres, a Brolga at Wilga Park, a Powerful Owl at Girraween Lodge, a Barking Owl at Glen Aplin, three Long-billed Corella near Cement Mills, Swift Parrots at Durikai, Black Honeyeaters around Karara, Painted Honeyeaters at various locations, a Satin Flycatcher at Girraween NP, White-backed Swallow at Sundown NP, and a Goldfinch at Pozieres. In 2019 there was a single Black-tailed Nativehen at the Leslie Dam, a Baillon's Crake at Stanthorpe, a Comb-crested Jacana at the Connolly Dam, White-winged Fairywrens near Sundown NP, and a single Bell Miner at Durikai SF.

2018 Notable bird records

Emu. The most eastern observation in the bioregion was six recorded at Pikedale in June.

Pink-eared Duck. Few birds recorded, but a high count of 30 observed at the dam at Pozieres on 1 September.

Australasian Shoveler. Over 20 recorded at Wallangarra STW during June and July.

Hardhead. An exceptional count of 74 recorded at Leslie Dam on 12 September.

Blue-billed Duck. Near-threatened. Up to seven recorded at the dam at Pozieres from April to December.

Musk Duck. Two observed at the dam at Pozieres on 13 January.

Pacific Koel. Last observation recorded on 4 February, and the first returning observed on 19 October.

Little Bronze Cuckoo. One bird recorded at Stanthorpe on 2 March.

Brolga. One bird observed at Wilga Park on 3 February.

Banded Lapwing. A couple of sightings recorded east and south of Karara in August through October.

Red-kneed Dotterel. One recorded at the Pozieres dam on 28 July.

Latham's Snipe. Five birds observed around Storm King Dam on 12 September.

Gull-billed Tern. One bird observed at Leslie Dam on 12 September.

Little Pied Cormorant. A large count of 60 recorded at Lake Coolmunda on 4 August.

Australian White Ibis. Virtually all observations recorded in the vicinity of Stanthorpe.

Pacific Baza. Observations recorded at Stanthorpe in March and Durikai SF in September.

Swamp Harrier. One observed at the dam at Pozieres on 1 September.

Powerful Owl. One recorded at Girraween Lodge on 14 January.

Barking Owl. One recorded at Glen Aplin on 13 November.

Oriental Dollarbird. Last observation recorded on 13 March, and the first returning on 1 October.

Sacred Kingfisher. Last observation recorded on 9 February, and the first returning on 6 October.

Red-backed Kingfisher. Three separate birds recorded in Karara-Greymare area on 23 September.

Rainbow Bee-eater. Last observation recorded on 15 March, and first returning observed on 9 September.

Black Falcon. Single birds observed at Girraween NP in March and May, and at Wilga Park in August.

Long-billed Corella. Introduced. Three birds observed in the Cement Mills area on 19 November.

Eastern Rosella. Hybrids with Pale-headed recorded at Durikai SF and Sundown NP.

Australian Ringneck. One bird recorded at Wilga Park on 4 February.

Swift Parrot. Critically Endangered. Up to seven birds observed at Durikai SF in May and August through September.

Turquoise Parrot. One count of 30 birds recorded at Sundown NP on 30 June.

Rainbow Lorikeet. One count of 400 birds recorded at Goondiwindi on 24 October.

Spotted Bowerbird. Two birds observed at Wilga Park on 19 May.

Red-backed Fairywren. One bird recorded at Girraween NP on 19 October.

Black Honeyeater. Observations common around Durikai SF and Karara from September to November.

Painted Honeyeater. Vulnerable. Single birds or pairs recorded in February, September, and October.

White-cheeked Honeyeater. Single birds observed at Girraween NP in January and Ballandean in August.

Black-chinned Honeyeater. All records from Durikai SF and further west.

White-naped Honeyeater. About 50 observed in small groups flying over Wallangarra on 31 May.

Yellow-faced Honeyeater. About 50 observed in small groups flying over Wallangarra on 31 May.

Yellow-throated Miner. Observations recorded at Lake Coolmunda in August and Karara in October.

Western Gerygone. Most observations recorded from September to December.

Striated Thornbill. All observations recorded east of Wyberba and Ballandean.

Southern Whiteface. All observations recorded from Sundown NP and further west.

White-browed Babbler. All observations recorded to the west of Wallangarra and Amiens.

Masked Woodswallow. Most observations recorded from September to November with a high count of 2,500 at Karara on 27 October.

White-browed Woodswallow. Observations mainly recorded from September to November with a high count of 2,500 in a mixed flock with Masked Woodswallows at Karara on 27 October.

Little Woodswallow. Observations recorded at Karara and Sundown NP in September and October.

Rufous Shrike-thrush. One bird recorded at Girraween NP on 19 October.

Satin Flycatcher. One observation recorded at Girraween NP on 17 October.

Hooded Robin. Observations recorded east as far as Wallangarra.

Rose Robin. Observations recorded from April to August in Nandewar section.

White-backed Swallow. Observations recorded at Sundown NP in October and December.

Brown Songlark. Observations recorded once at Sundown NP, around the Karara area, and at Wilga Park.

Common Blackbird. Introduced. Observations recorded in Ballandean, Stanthorpe, and Pozieres.

House Sparrow. Introduced. Observations recorded at Wallangarra, Ballandean, Stanthorpe, and Thulimbah.

Diamond Firetail. Scattered observations recorded with 20 observed at Wallangarra in May.

Plum-headed Finch. Counts of 60 birds recorded at Wallangarra in May and July.

European Goldfinch. Introduced. One bird observed at Pozieres on 30 October.

Stubble Quail. One heard at Leslie Dam on 7 October.

2019 Notable bird records

Australasian Shoveler. Up to 40 observed at the Wallangarra STW in March.

Australian Ringneck. Three birds observed at Wilga Park on 17 August.

Azure Kingfisher. One flew into a window and found dead at Stanthorpe.

Baillon's Crake. One recorded at Stanthorpe on 29 October.

Banded Lapwing. Five birds observed at Cement Mills on 5 May, and another single bird observed in September.

Bell Miner. A single bird observed at Durikai SF in April and May.

Black-eared Cuckoo. Single birds recorded at Amiens in January, Greenup in February, and Terrica in November.

Black-faced Monarch. A single bird observed east of Cement Mills on 6 October.

Black-tailed Nativehen. One bird recorded at Leslie Dam on 1 November.

Brown Songlark. Four birds recorded at Leslie Dam on the 6 September.

Caspian Tern. An exceptional count of 18 birds recorded at Leslie Dam on 4 August.

Chestnut Teal. Twelve observed at Wallangarra STW on 29 March.

Comb-crested Jacana. One bird observed at Connolly Dam on 6 May.

Common Bronzewing. A nest with young observed at Stanthorpe on 31 October.

Common Myna. Introduced. Species observations were quite numerous at Pozieres with a count of 37 in an hour on 27 June.

Common Starling. Introduced. An exceptional count of over 100 observed at Ballandean on 6 May.

Crested Bellbird. One recorded at Coolmunda Conservation Park on 26 July.

Double-barred Finch. An exceptional count of 45 recorded near Ballandean on 6 December.

Dusky Moorhen. A significant increase in numbers observed in August with 27 recorded at Storm King Dam, which would have been almost dry.

European Goldfinch. Introduced. Observations recorded at Pozieres in April and Amiens in May.

Glossy Black Cockatoo. Observations recorded at Girraween NP in June and Sundown NP in December.

Glossy Ibis. One observed at Storm King Dam on 19 January.

Gull-billed Tern. Observations recorded at Leslie Dam in May and June.

Hardhead. Up to 70 recorded at Connolly Dam in August.

Hoary-headed Grebe. A peak of 22 birds recorded at the dam at Pozieres on 23 June.

Horsfield's Bush Lark. One bird observed at Leslie Dam on 13 December.

House Sparrow. Introduced. Three observed in Girraween NP in October, and 15 at Texas in November.

Little Black Cormorant. A large group of 300 birds with other cormorants recorded at Leslie dam on 6 May.

Little Corella. One flock estimated at 1,000 birds recorded in Stanthorpe during March.

Little Grassbird. A single bird recorded at Amiens in April and June, and three recorded at Wallangarra STW in August and September.

Little Pied Cormorant. An exceptional count of 23 birds observed at Leslie Dam on 4 August.

Little Wattlebird. Odd birds recorded at Girraween Lodge, Sundown NP, and Durikai SF.

Little Woodswallow. One observation of four birds recorded at Durikai SF on 18 October.

Painted Buttonquail. Two birds observed near Sugarloaf, southeast of Stanthorpe on 9 February.

Pied Stilt. Observations recorded mostly from June until December.

Pink-eared Duck. Up to 45 recorded at the Wallangarra STW in September.

Red-backed Fairywren. Observations included two birds at Girraween NP and six at Durikai SF, both in April.

Red-capped Plover. Two birds recorded at Leslie Dam on 8 December.

Rufous Fantail. Single birds recorded at Girraween NP in January and November.

Scaly-breasted Lorikeet. A count of 23 recorded feeding on rotten apples at The Summit in April.

Sharp-tailed Sandpiper. Six birds observed at Leslie dam on 1 November.

Singing Honeyeater. Three observed at Durikai SF in August, and one observed at Freestone in September.

Spotted Bowerbird. One bird observed at Wilga Park on 17 August.

Spotted Pardalote. An exceptional count of 22 recorded in an hour at Wilga Park on 2 June.

Squatter Pigeon. A group of eight birds recorded at Durikai SF on 5 May.

Superb Lyrebird. Up to six birds observed at Girraween NP with more observations in June and July.

Swamp Harrier. One bird recorded at Leslie Dam on 28 June.

Tawny Grassbird. Single birds observed at Pozieres in January and Amiens in May.

Turquoise Parrot. Over 30 recorded in small groups at Pikedale in June, and over 20 recorded at Wilga Park in August.

Western Gerygone. Up to three birds recorded at Sundown NP, and other observations recorded in the Cement Mills area.

White-browed Woodswallow. Greater numbers observed with up to 60 counted at Durikai SF in February.

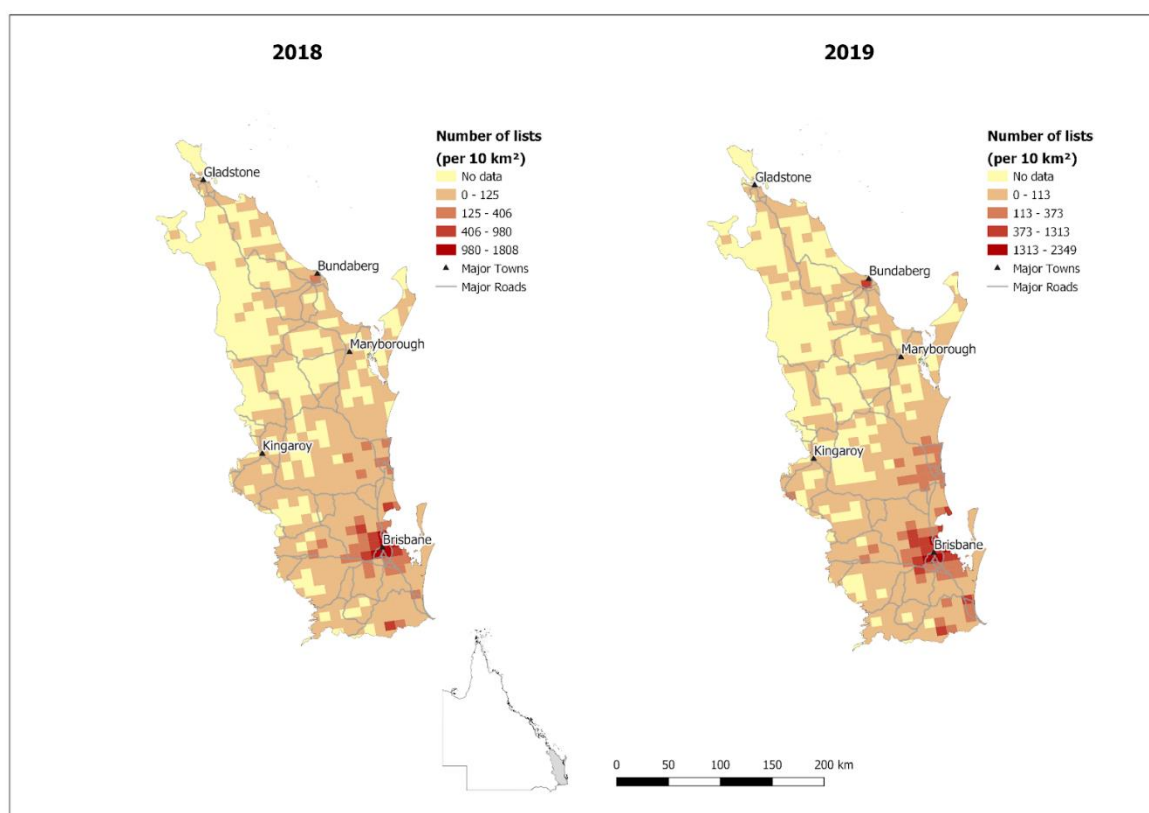
White-winged Fairywren. Groups of three and five birds recorded near Sundown NP on 23 June.

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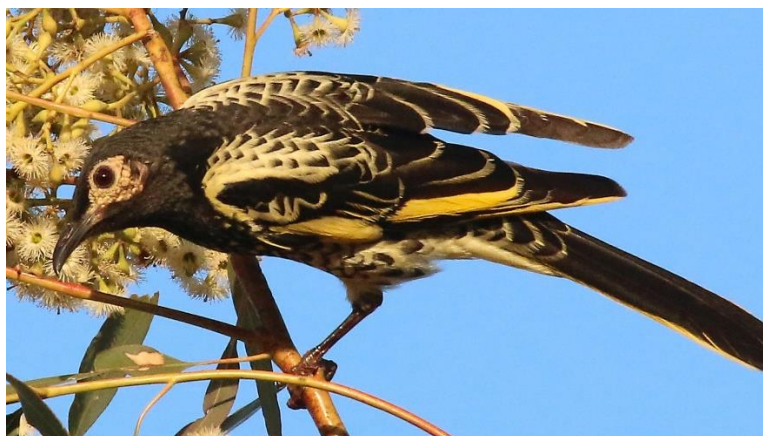
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15. Southeast Queensland

David Redhead



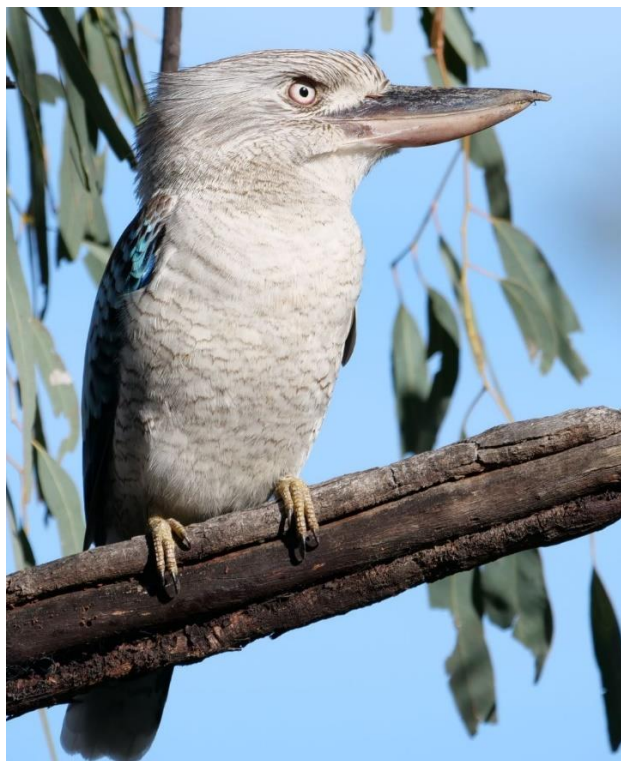
Map of South East Queensland bioregion, showing eBird survey effort



Regent Honeyeater (Jill & Ian Brown)



Golden-headed Cisticola
(John Walton)



Blue-winged Kookaburra (Ian Gibson)



Cockatiel (David Niland)

Geography

The Southeast Queensland Bioregion (SEQ) covers some 62,484 km² or 3.6 per cent of the state. The bioregion extends from Gladstone in the north to the New South Wales border in the south. SEQ extends west to Kingaroy and almost to Toowoomba and Warwick. SEQ shares its western and northern boundaries with the Brigalow Belt South and North bioregions (DES 2013).

SEQ is Queensland's most developed and densely populated bioregion with 70% of the State's population living in only 1.3% of the State's total area. The region has a total population of 3.3 million concentrated in the urban centres of Brisbane, Logan, Ipswich, Gold Coast, and Sunshine Coast which are all in the greater Brisbane area, plus Bundaberg and Gladstone which are further north. The region has been and continues to be one of Australia's fastest growing urban centres (QG 2019).

SEQ is topographically diverse. The McPherson Range forms part of its southern boundary, and the Great Dividing Range lies to the west. The mountain ranges of D'Aguilar, Conondale, and Main Ranges bisect its centre from north to south creating a distinct altitudinal gradient towards the coast except along river valleys. Landforms also include several large sand islands including Stradbroke, Moreton, and Fraser; the Glasshouse Mountains volcanic plugs; and montane isolates like the Bunya Mountains.

Together with the most northern parts of New South Wales, SEQ straddles the Macpherson–Macleay Overlap. This is an area where the distributions of many Torresian (Tropical) and Bassian (Temperate) species of plants and animals meet. These climatic, geological, and biological attributes make SEQ a major centre of biological diversity in Australia, especially for birds (QM 2007).

The bioregion experiences a sub-tropical climate with warm to hot, humid summers and mild, dry winters with typically 75% of rain falling between October and April (BoM 2016). Local weather is influenced by northern tropical systems, the high-pressure ridge to the south, and the broader El Niño–Southern Oscillation (QG 2019). Annual rainfall varies significantly by year, and mean annual rainfall varies markedly

across the bioregion by location: 630.8 mm at Kingaroy, 1016.2 mm at Brisbane Airport, and 1455.5 mm in Sunshine Coast Airport (BoM 2020).

Birds of the bioregion and their conservation

The Queensland Government lists 608 native and 14 introduced bird species in SEQ from historic data, and 54 species that are considered threatened or rare although some species have not been recorded recently and likely no longer occur in the region. Wholly or partially in SEQ are 99 National Parks (NP), 128 Conservation Parks, and 235 private Nature Refuges (DES 2013). Despite this large biodiversity and great number of protected lands, the greatest threat to birds in the bioregion is continued habitat destruction and degradation from ongoing rapid urban expansion.

The importance of SEQ ecosystems to the persistence of Australia's native flora and fauna, including birds, is recognised nationally and internationally. These include the iconic Gondwana Rainforests, Fraser Island World Heritage Areas, North Stradbroke Island, Moreton Bay, and the Great Sandy Strait. BirdLife Australia (BLA 2019) has identified six Key Biodiversity Areas in this bioregion: Great Sandy Strait, Cooloola and Fraser Coast, Conondale Range, Bunya Mountains and Yarraman, Moreton Bay and Pumicestone Passage, and Scenic Rim.

The mountains of SEQ are an important refuge for several ancient rainforest-dependant avian lineages including lyrebirds (*Menura*) and scrub-birds (*Atrichornis*). The Queensland Government's 2005 *Back on Track* program documented several priority bird species for specific assessment including the Rufous Scrub-bird, Eastern Bristlebird, and Black-breasted Button-quail, but the program has not been maintained due to lack of coordination and funding from the state government (QAO 2018).

The large SEQ population means there are many active environmental conservation groups based in the bioregion from local land care groups (LCA 2022) and politically active conservation groups like Queensland Conservation Council (QCC 2022), to environmental monitoring, research, and education groups like the Wildlife Preservation Society of QLD (WPSQ 2022). Bird specific conservation groups include Birds Queensland (BQ 2022) including the Wader Study Group and Queensland Bird Research and Banding Group, Birdlife Australia Southern Queensland branch (BLA 2018), the Glossy Black Conservancy (GB 2022), and the Eastern Bristlebird Northern Population Project (EBBP 2022).

Major events in 2018-2019

Queensland experienced its fifth warmest year on record in 2018 and rainfall was below average across all southern Queensland. Large hail occurred in some areas in February and October. Two tornadoes occurred in rural areas of the region in February, and some bushfires occurred in November (BoM 2019). 2019 SEQ temperatures were the highest on record. The region was drier than average and had well below average rainfall (BoM 2020). Some areas were drought declared (QG 2022), and the Scenic Rim, including parts of Lamington NP, was affected by bushfires from 6 through 12 September and from 8 November through 19 December, threatening fauna and flora in the region. (QG 2020).

In 2018 research headed by Dr. Martine Maron and Dr. Zoe Stone at The University of Queensland began to create a reintroduction plan for Eastern Bristlebirds being bred in captivity at Currumbin Wildlife Sanctuary which was published in 2021 (TSRH 2022; Stone et al., 2021).

402 bird species were reported in SEQ in 2018 and 405 species in 2019. These are the largest numbers of species for any bioregion in the state. As in 2017, bird survey effort shows a marked bias towards the major population centres of Greater Brisbane, Ipswich, and the Gold Coast along with the well-known, readily accessible protected areas.

The following lists provide details of significant and interesting records in 2018 and 2019. The Buff-breasted Sandpiper first observed at Tinchi Tamba Wetland on 27 October 2018 was later reported at the Port of Brisbane from December through to April 2019 and was accepted by Birdlife Australian Rarities Committee (BARC) as the 13th Australian record. The highlight of 2019 was a well photographed New Caledonian Storm petrel. This undescribed form was seen from a Southport Pelagic Trip on 19 October. A Cox's Sandpiper at Kianawah Wetlands, Brisbane from 12 February to 15 April 2019 was a great opportunity for many to see this interesting Pectoral/Curlew Sandpiper hybrid. The Cook's Petrels seen on a Southport Pelagic trip on 6 October 2019 were another very rare species which was accepted by BARC as the 10th Australian record. The Matsudaira's Storm Petrel off Southport on 19 October 2019 is under review by BARC at the time of writing.

2018 Notable bird records

Antarctic Prion. Accidental. Observations included four on the Mooloolaba pelagic in May and three on the Southport pelagics in May and June.

Asian Dowitcher. Near-threatened. Observations included one at the Toorbul Wader Roost and one at Port of Brisbane.

Australasian Bittern. Endangered. Observations of a single bird recorded at Garnet's Lagoon.

Australian Bustard. Observations include one at Coombabah Lake in April, one at Harrisville during July, one to four in the North Burnett in December, and two at Agnes Waters in December.

Australian Crake. Most observations recorded were of one or two birds in the Brisbane area.

Australian Masked Owl. Observations of one or two birds recorded at D'Aguiar NP/ Mount Glorious Area in January, June, and November; Pullenvale from May through December; Conondale NP in May and December; Lamington NP in December; and Maleny in November.

Australian Painted-snipe. Endangered. One or two observed at Tea Trees Wetland at Arundel in January and February.

Australian Pratincole. Observations included one to two in the Lockyer Valley in September.

Australian Raven. One observed at Main Range NP in March, April, and September and one at Bunya Mountains in March, September, and October.

Australian Shelduck. One observed at Lawnton Reserve in July.

Australian Swiftlet. A flock of 30 observed at Kingaroy during February.

Banded Lapwing. All observations from the Banool Road area near the Atkinson Dam from June through September with a high count of 13 present in July.

Barking Owl. Observations from scattered locations of single birds at Brooloo, Sheepstation Creek Conservation Park, Bundaberg Botanic Gardens, and Schuster Park.

Barred Cuckoo-shrike. Most observations recorded south of Noosa. Highest counts included 14 at Brooloo in December and six at Gold Creek Reservoir in March.

Bassian Thrush. 88% of observations recorded from Lamington NP in the Scenic Rim.

Beach Stone-curlew. Near-threatened. A high count of seven recorded at Moreton Island in June with most of the 173 records being only one or two birds.

Black Bittern. Observations included four records of single birds at Sandy Camp Wetlands, one at Mookin-Bah Reserve in January, one at Noosa North Shore in November, and one at Tin Can Bay.

Black Falcon. Most observations of one or two birds recorded from the southern part of the bioregion with almost half from the Lockyer Valley.

Black Honeyeater. Groups of one to six recorded at Highfields Falls in August and September, and one observed at Kingaroy in September.

Black Noddy. Observations included 10,000 at Lady Elliot in February, 1,000 at Heron Island in April, 150 at Wilson Island in April, and 150 at Lady Musgrave Island in September. The largest groups in coastal areas were 200 at Elliot Heads in November, 50 at Burnett Heads in September, and 30 at Seventeen Seventy in January.

Black Petrel. Vulnerable. Accidental. One observed on the Southport Pelagic in November.

Black-backed Bittern. Multiple observations of usually single birds recorded at Sandy Camp Wetlands, and one observed at Coolum Industrial Estate in December.

Black-bellied Storm Petrel. Accidental. Observations of usually one to three birds recorded on seven Southport pelagics from June through October with a high count of 19 in September.

Black-breasted Buttonquail. A total of 37 observations throughout the year of up to five birds recorded at locations including Noosa NP, Conondale, NP, Jimna State Forest, Pine Mountain, Kholo Environmental Reserve, Yarraman State Forest, Bullock Point Road in Gympie, Jack Smith Conservation Park, and Mount Wooroolin.

Black-browed Albatross. One observed on the Southport pelagic in May.

Black-chinned Honeyeater. Observations scattered across the bioregion with a high count of nine at Sheepstation Creek Conservation Park in June.

Black-faced Woodswallow. An influx observed between 12 and 22 September with three at Jimna State Forest, five at Cherry Tree Creek, 40 at Kingaroy, and 250 at Gap Creek on the Kilcoy–Murgon Road in Gympie.

Black-naped Tern. Observations included 40 at Lady Elliot in October, 12 at Heron Island in March, two at Point Lookout on North Stradbroke Island in February.

Black-necked Stork. Near-threatened. Observations recorded across the region.

Black-tailed Nativehen. Two observed at Winya Road in Kilcoy during April, and multiple reports of single birds observed at Nathan Road Wetlands from September through December.

Black-winged Petrel. One observed on the Southport pelagic in November.

Blue-billed Duck. Near-threatened. One to three birds observed at Lake Clarendon in January. One recorded at Daly's Lagoon during February, and six recorded in July.

Blue-winged Kookaburra. Observations included four records of one or two at Lake Clarendon in February, March, and September; one at Kroombit Tops Forest Reserve in January; one at Urangan in September; and one at Canoe Point near Tannum Sands in November.

Bridled Tern. Significant counts included 300 at Lady Elliot Island in February, 40 at Lady Musgrave Island in September, and 10 at Heron Island in March.

Broad-billed Sandpiper. A total of 130 records of mostly one to four birds from Moreton Bay sites.

Brolga. One or two observed at various sites in the Brisbane area across the year. Other observations of note include seven recorded at Stegeman's Road near Agnes Waters in March, two at Garnet's Lagoon from June to August, one at Baffle Creek in July, one at Agnes Water in December, two at Tandora in August, and two at Eurimbula NP during September.

Brown Booby. Observations included: 80 at Lady Musgrave Island in October; 25 at Lady Elliot Island in December; one or two on seven Southport pelagics from April through September; one or two on Mooloolaba pelagics in May, August, November and December; 11 at Burnett Heads in July; and 12 at Urangan in September.

Brown Noddy. Observations included 4,000 at Lady Elliot Island in February, 100 at Point Lookout on Stradbroke Island in February, six at Lady Musgrave Island in October, and others on Southport pelagics between March and November with a maximum count of seven in May.

Brown Skua. One recorded on the Southport pelagic in June.

Brown Songlark. Most observations recorded in the Lockyer Valley.

Brown Treecreeper. Observations included up to seven birds at the Jimna-Yabba Road Dam; observations from the Bundaberg- Ringwood Road in June and December; and up to two at Gap Creek on the Kilcoy-Murgon Road in January, July, and September.

Brown-headed Honeyeater. Observations included one to six in Toowoomba on various dates, two to six in the Adare area of the Lockyer Valley in February through April, 12 at Childers in October, and one to four observed at Somerset and the Sunshine Coast.

Brush Bronzewing. 12 observations of one or two birds recorded at Cooloola Way in Great Sandy NP.

Budgerigar. Observations included one at Traveston in February, one at Amamoor in June, and one at Mount Tarampa in October.

Buff-breasted Sandpiper. Near-threatened. Accidental. One recorded at Tinchi Tamba in October, and presumably the same bird observed at the Port of Brisbane throughout December.

Buff-rumped Thornbill. Double the observations recorded in 2017. Highest counts included 10 at Brisbane Forest Park in April and nine at Ringwood in July.

Buller's Shearwater. Vulnerable. Observations included four at Point Lookout on Stradbroke Island in February and one at Southport pelagic in February.

Common Sandpiper. Almost all observations recorded of single birds in the Brisbane and Moreton Bay area with more than half the reports from Kedron Brook Wetlands.

Diamond Dove. One at Tinana in March, one at Oxley Creek Common during April, and two at Priors Pocket in June.

Double-banded Plover. Most observations recorded from the Moreton Bay area with large counts including 140 at Amity Banks in July, 73 at Moreton Island in April, 50 at Manly Wader Roost in June, and 12 at Elliott Heads near Bundaberg in June.

Dusky Woodswallow. A large influx with multiple observations of over 20 birds recorded in May with flocks lingering until September. High counts included 100 at Kobble Creek in May and Highvale in July and 60 at Cooloola in Great Sandy NP in May.

Eastern Barn Owl. Over nine times more observations than recorded in 2017, scattered across the region with only four records north of Noosa. Three observed at Oxley Creek Common in August.

Eastern Grass Owl. Almost all observations of one or two recorded at Kedron Brook Wetland mainly between June and December. Additional observations included three at Maroochy River in January, one at Cooloola in Great Sandy NP in October and December, and one at Paradise Waters in November.

Eastern Ground Parrot. All reports of usually one to six birds recorded from Cooloola at Great Sandy NP with a high count of 10 in July.

Eastern Rosella. Most observations recorded in the Southern part of the region between the Gold Coast and Toowoomba with high counts of 10 at Top Swanfels in January and eight at Queen Mary Falls in May. The observations furthest north included two in Gympie in September and six at Hervey Bay in August.

Fairy Gerygone. No observations recorded south of Point Cartwright on the Sunshine Coast.

Fairy Prion. Observations recorded from Southport pelagics between May and July with the highest count of 12 in July. Other observations included 50 at Point Lookout Stradbroke Island in July and 30 at Cape Moreton in June.

Flesh-footed Shearwater. Near-threatened. Observations recorded on seven pelagics.

Fluttering Shearwater. Single birds recorded on Southport pelagics in February, March, May, and June and on Mooloolaba pelagics in March, May, and June. Other significant observations included 1,000 at Woorim on Bribie Island in June.

Glossy Black Cockatoo. Observations recorded across the region with most in the southeast and only three north of Noosa.

Gould's Petrel. Vulnerable. Accidental. Observations included one on the Southport pelagic in February, three in March and two in November.

Great Frigatebird. Multiple observations recorded from Lady Elliot Island with a high count of 50 in December. One observed at the Port of Bundaberg in March, and ten recorded at Agnes Waters in December.

Greater Sand Plover. Most observations of one to 10 birds from Moreton Bay area with a high count of 50 recorded at the Port of Brisbane and Manly Wader Roost in January.

Greater Sooty Owl. Most observations recorded from D'Aguilar NP with other records from Lamington NP, Mount Coot-tha, Conondale NP, Tamborine, Bunya Mountains, and Ballard.

Green Pygmy Goose. One observed at Lake MacDonald from July to September.

Grey Plover. Few observations between April and October with an unusual 11 observed at Morten Banks in July. Most observations recorded of one to three birds, but high counts in January included 76 at Boonooroo, 30 at the Port of Brisbane, and 19 at Inskip Point.

Grey-faced Petrel. Accidental. Observations recorded on four Southport pelagics with a high count of 20 in March.

Ground Cuckoo-shrike. Two-thirds of observations recorded two to four birds in the Atkinson Dam–Lake Clarendon area of the Lockyer Valley.

Hoary-headed Grebe. Most observations recorded from the Lockyer Valley with high counts including 52 at Seven Mile Lagoon in May and 45 at Lake Clarendon in January.

Horsfield's Bush Lark. 16 observations recorded from scattered sites across the region throughout the year with high counts of up to eight at Corcoran's Road in Bryden in January through February and seven at Stegeman's Road in Gladstone in March.

Hutton's Shearwater. Endangered. Most observations recorded on Southport and Mooloolaba pelagics.

Indian Yellow-nosed Albatross. One observed on the Southport pelagic in May.

Kelp Gull. Accidental. Observations included one at Wynnum in December and one at Urangan in October.

Kermadec Petrel. Observations of usually one or two birds recorded on 11 Southport pelagics with a high count of 20 in March.

King Quail. Over half of observations recorded at Lake Samsonvale area with a high count of eight in December. Birds recorded from 12 other locations including The Dip at Armstrong Creek and Lake Manchester.

Large-tailed Nightjar. Observations include one to two at Bundaberg in September and November, Carlo Point at Rainbow Beach in August through to December, Yandina Creek in April, and the Maroochydoore wetlands in November and December.

Lesser Crested Tern. Most observations recorded only one or two, but high counts included 20 at Heron Island in February and 18 at Moreton Island in June.

Lesser Frigatebird. Observations included 20 at Lady Elliot Island in February and December, four at Heron Island in January, 10 observations of one to four birds from scattered coastal sites.

Little Curlew. One observed at Lady Elliot Island in January and February, and one or two observed in November and December.

Little Eagle. Over half the observations were from the Brisbane and Moreton areas with two thirds being from April through August.

Little Woodswallow. One recorded from Cooloola in Great Sandy NP in January.

Long-tailed Jaeger. Accidental. Single birds observed on the Southport pelagic in March and November and Mooloolaba pelagic in March.

Long-toed Stint. Observations included one to three at Kedron Brook Wetlands in January, one at Nathan Road Wetlands in February, one at Tinchy Tamba Wetland Reserve in January and October, one at G. J. Fuller Lagoons in December, and one or two at the Port of Brisbane in December.

Major Mitchell's Cockatoo. Observations included one at Pine Mountain in January, one at Gold Creek Reservoir in March, and one at Brookfield in October.

Marbled Frogmouth. Most observations recorded from D'Aguilar NP and Lamington NP with other observations from Bellthorpe NP, Conondale NP, Beerwah SF, Barron Pocket Dam, and Mary Cairncross Scenic Reserve.

Masked Booby. In February, two observed on the Mooloolaba pelagic and one on the Southport pelagic, and two observations of single birds recorded at Point Lookout on Stradbroke Island.

Masked Woodswallow. Almost all observations recorded in September or October across the southern part of the bioregion. From 13 to 23 September, large flocks were observed including 300 in the Lockyer Valley.

Musk Duck. Observations included five at Lake Lenthall, one at Lake Clarendon in January, two at Meandu Creek Dam in February, one at Dowse Lagoon in January and February, and one at Lake McKenzie on Fraser Island in March and August, with two observed in July.

Musk Lorikeet. A dramatic increase in observations recorded from 18 in 2017 to 298 with most in May and June.

Northern Giant Petrel. Accidental. One observed at Point Lookout on Stradbroke Island in June.

Olive Whistler. Small number of observations recorded of one to three birds at Lamington NP in July through November.

Olive-backed Sunbird. Eight observations of one or two birds recorded from Gladstone and Agnes Water.

Oriental Cuckoo. 50 observations of generally one to two birds with most recorded east of Lake Wivenhoe and south of Dayboro.

Painted Buttonquail. Observations increased by over 2.5 times compared to 2017. Observations of two to five birds recorded scattered across the region south of Gympie.

Pallid Cuckoo. Over 100 observations recorded across the region, but only two north of Noosa, both of single birds reported at Bundaberg in June and October.

Parasitic Jaeger. Multiple observations, including inshore locations, recorded of usually one to two with most observations in February, March, October, and November and a high count of 10 at Noosa in March.

Pectoral Sandpiper. Accidental. Observations included one at Lake Clarendon in January, February, September, and November; one at Atkinson Dam in November; one to three at Kedron Brook Wetlands in January and one in November; one at Dholes Rocks in April and two in December; one at Tinchy Tamba in January and October; one at Bishops Marsh in March; and one at Nathan Road at Redcliffe in November.

Plum-headed Finch. 81 observations recorded with only a few north of Gympie. High counts included 70 at Mount Tarampa in Somerset during September, 50 at Warrill View in Scenic Rim during October, 38 at Woodhill Logan in August, and 21 at Pecheys Lagoon in Lockyer Valley during June.

Pomarine Jaeger. Most observations of one to five birds recorded offshore in February, March, and November with 10 observed on the Southport pelagic in March.

Providence Petrel. Vulnerable. Observations of usually one to eight birds recorded throughout the year on Southport pelagics with a high count of 103 in May. Observations recorded on four Mooloolaba pelagics with 30 birds in May and 12 in August.

Purple-backed Fairywren. Up to eight observed at Kingaroy from January through August, and three observed at Burrell Outlook in August.

Radjah Shelduck. 16 observations of generally one to two birds recorded from Gladstone south to Gympie. Up to six observed at Tin Can Bay from July through December.

Red Wattlebird. Observations of one to three birds recorded at the Noosa area in March; Main Range NP in April, September, and November; Highfields in June and August; Ravensbourne NP in January and May; Redwood Park in April; Tamborine NP in May; Lamington NP in July; Moggill in July through August; Flinders Conservation Estate in July; Logan in August and October; and Ormeau in September.

Red-backed Buttonquail. Most observations of one to three birds recorded from the Lake Samsonvale area from October through December. Other observations of note include one at Gheerulla in March and multiple records from Cooloola in Great Sandy NP between October and December.

Red-backed Kingfisher. Observations of single birds included Shelley Road Park in Brisbane during April, Glastonbury in July, Maryborough in August, Peak Crossing in August, and Murphys Creek in September.

Red-browed Treecreeper. Half of observations recorded in D'Aguilar NP, and one quarter from Lamington NP. All observations recorded south of Wivenhoe Outlook in D'Aguilar NP except one at the southern end of Conondale NP in April.

Red-capped Robin. One observed at Abberton in June, and one recorded at Lake Galletly in July.

Red-chested Buttonquail. Single birds observed seven times from Lake Samsonvale in January, September, November, and December, once at Maaroom Conservation Park in August, once at Woolloowin in Brisbane during November, and once at Mt Coot-tha Botanic Gardens during December.

Red-footed Booby. Single birds observed on the Southport pelagic in February and May, and Mooloolaba pelagic in May.

Red-rumped Parrot. 75% of observations reported from The University of Queensland at Gatton and the surrounding Lockyer Valley.

Red-tailed Black Cockatoo. Scattered observations recorded but none in the Brisbane area, with the highest count of 39 at Kingaroy in February.

Red-tailed Tropicbird. Up to seven recorded at Lady Elliot Island.

Red-winged Parrot. Most observations of usually up to four birds recorded in the South Burnett with a maximum of 12 at Wondai in September.

Regent Honeyeater. Critically endangered. Observations included one at Araucaria Circuit in D'Aguilar NP in July, one at Tin Can Bay in July, and one at Carlo Point on Rainbow Beach in August.

Roseate Tern. High counts included 100 at Wilson Island in April and 70 at Lady Elliot Island in October and November.

Ruff. Accidental. One recorded at Atkinsons Dam during November and December.

Rufous Scrubbird. 16 observations of one or two recorded at Lamington NP.

Sanderling. Observations included eight at Moreton Island in April, one to three at Inskip Point in January and November, one to three at Noosa Estuary in November and December, one at Maaroom in January, and one at Amity Banks in July.

Satin Flycatcher. Observations included one at Brisbane Forest Park in February, one at Lamington NP in March, one at Raven Street Reserve in October, and one at Banks Street Reserve in November.

Shining Flycatcher. Observations of generally one or two birds recorded from coastal sites between Brisbane and Bundaberg mostly in January through April and November through December with a high count of six at Tin Can Bay in November.

Short-tailed Shearwater. Observations recorded from coastal sites and pelagic trips with 500 observed from Cape Moreton and 100 from Point Danger, Gold Coast.

Shy Albatross. One recorded off the Sunshine Coast in June.

Sooty Oystercatcher. A high count of eight recorded at Wickham Point.

Sooty Shearwater. Near-threatened. One recorded in the Coral Sea off Gladstone in December.

Sooty Tern. Multiple observations recorded from Southport and Mooloolaba pelagics of usually one to five birds with 50 recorded on the Southport pelagic in November. Other observations included 57 at Lady Elliot Island in September and one at Nudgee Beach in December.

South Polar Skua. Accidental. One recorded at Point Lookout on North Stradbroke Island in December.

Southern Emu-wren. Only five observations of up to four birds recorded in the Cooloola area of Great Sandy NP.

Spiny-cheeked Honeyeater. Observations included one to six at Kingaroy throughout the year, two at Wooroolin Wetlands in April, one at Flinders Conservation Estate in June, one at Murgon in July, one at Lockyer Waters in September, and one at North Tamborine in November.

Spotted Harrier. Almost all observations of single birds with few north of the Sunshine Coast recorded. Peak times April through May and September through November.

Spotted Nightjar. One observed at Kingaroy Airport in November.

Spotted Quail-thrush. Observations from scattered locations mostly northwest of Brisbane recorded with none north of Dayboro.

Stubble Quail. 75% of observations recorded from the Lockyer Valley.

Superb Fruit Dove. Four records of one or two from the Maleny area from January to March and one at Springbrook NP in January.

Superb Parrot. Accidental. One observation recorded at Mount Crosby in December.

Swift Parrot. Critically Endangered. Observations included one to five at Sheep Station Creek Conservation Area in June through August and one to four at Lake Samsonvale in August.

Tahiti Petrel. Near-threatened. Observations recorded on both Southport and Mooloolaba pelagics in January through March and October through December with high counts of 41 off Southport in January and 10 off Mooloolaba in December.

Turquoise Parrot. Observations included one at Taromeo Creek in South Burnett during May; one at Monsildale in June; one to three at Redwood Park in Toowoomba during June, July and September; one to three at Highfields Falls in July through September.

Wandering Albatross. Vulnerable. One observed on the Southport pelagic in June.

Wandering Tattler. Most observations of one or two birds at Scarborough and the Sunshine Coast with a high count of 15 at Lady Elliot Island in November.

Wedge-tailed Shearwater. Observations included up to 50 at Heron Island in March, 200 at Lady Elliot Island in December, and 750 in February and 1,000 in December at Point Lookout on Stradbroke Island.

Western Gerygone. One recorded at Whites Hill Reserve in July.

White Tern. Observations included four on a Southport pelagic in March and one or two at Lady Elliot Island in February and November.

White-browed Woodswallow. A large influx with multiple flocks over 100 birds observed in September in the south of the region with few reports North of Noosa. High counts included 700 in the Lockyer

Valley, 500 at Gap Creek on the Kilcoy-Murgon Road in Gympie, 500 at Eagle's Nest Retreat, and 350 at Shelley Road Park in Brisbane.

White-eared Honeyeater. A single bird observed at Kingaroy from January through August.

White-faced Storm Petrel. One observed on the Southport pelagic in May.

White-necked Petrel. Observations included one on a Southport pelagic in January and five in March, plus one recorded at Point Lookout at Stradbroke Island in February.

White-throated Nightjar. Multiple observations of one or two birds recorded from the southeast with few reports north of Noosa.

White-winged Chough. Observations scattered across the bioregion with a high count of 16 at Tarong in December.

White-winged Tern. Most observations were from the Lockyer Valley with a maximum count of 14 at Lake Clarendon in January.

Wilson's Storm Petrel. Observations recorded throughout the year with most being on the Southport and Mooloolaba pelagics.

Wood Sandpiper. Observations included one at Lake Clarendon in January, one at Garnets Lagoon in August, and one at Atkinsons Dam in December.

Yellow Thornbill. Observations of mostly one or two birds recorded across the region but few north of Noosa. High counts included eight at Abberton in June and at Lamington NP in November.

Yellow-tufted Honeyeater. Most observations recorded in the Brisbane and Somerset areas with multiple observations from Lake Samsonvale with a high count of eight observed in July and September and six recorded at Bunyaville in June. The highest count for the region was 22 at Cordalba in June.

Zebra Finch. All except one observation recorded from the Bundaberg area with a high count of 24 in the Botanic Gardens in May. 20 observed at the Prenzlau District of Somerset in July.

2019 Notable bird records

Asian Dowitcher. Near-threatened. Accidental. Records included multiple observations of one at the Port of Brisbane and Manly Wader Roost in January, one at Tinchi Tamba in March, one at Inskip Point in October, and up to three at Cooloola Cove in November and December.

Australasian Bittern. Endangered. One recorded at Coolum Industrial Estate in September.

Australian Bustard. Small number of observations of usually one or two birds from North Burnett, South Burnett, Fraser Coast, and Gympie with high counts of seven at Gin Gin and six at Takilberan, both in June.

Australian Crake. Observations included two at Back Flagstone Road in February and March, one or two at Kinawah Road Wetlands in March, one at Kedron Brook Wetlands in July, and one to two at Nathan Road Wetland in August, September, and November.

Australian Masked Owl. A total of 21 records at 14 locations of usually one or two birds with a high count of 4 at Imbil in June.

Australian Painted-snipe. Endangered. One to three birds recorded at Lake Samsonvale in December and one in October and November. One bird observed at Dowse Lagoon in September.

Australian Pratincole. One to 17 birds observed at Banool Road in October through December.

Australian Raven. Over half of observations recorded from the Bunya Mountains of one to two birds with a high count of six at the national park in September.

Banded Lapwing. Most observations recorded at Banool Road in the Lockyer Valley from September through December with a high count of 151 in October.

Bar-breasted Honeyeater. Observations included one at Lake Macdonald in January and two records of single birds in Miriam Vale in November.

Barking Owl. Observations recorded from across the region with multiple observations from Brooloo and Tandoon Botanic Gardens.

Barred Cuckoo-shrike. Most observations of one to two birds recorded from eastern areas and only one north of Bundaberg. High counts included eight at Bundaberg Botanic Gardens in October and 11 at Dayboro in November. No observations recorded from May through September.

Bassian Thrush. 75% of observations recorded from the Lamington NP area. Other observation locations include Bunya NP; Ravensbourne NP in January and August; Main Range NP in January, March and August; and Apple Tree Park on the Gold Coast in May.

Black Bittern. Multiple observations recorded at Sandy Camp Road Wetlands in January through March and November, one at Arkarra Lagoons from January through April, one at Tea Trees Wetland in April and November. Observations on the Sunshine Coast included the Maroochy River Conservation Park in July, Ninderry in September, and Harry's Hut at Great Sandy NP in December. Observations around Brisbane included Fitzgibbon Bushland in May, Cabbage Tree Creek in January, and Canon Hill Bushland Reserve in September.

Black Falcon. Half of the observations of generally one or two birds recorded in the Lockyer Valley and Somerset. Other observations recorded across the bioregion, but few were north of Bundaberg.

Black Noddy. Observations included 13,000 at Heron Island in January, 10,000 at Lady Elliot Island in August and November, 1,000 at Lady Musgrave Island in October, two on the Mooloolaba pelagic in March, 25 at Burrum Coast NP in September, and one at Point Vernon in December.

Black Petrel. Vulnerable. Accidental. One recorded on the Southport pelagic in November.

Black-backed Bittern. Observations included multiple reports from Sandy Camp Road Wetlands in February, March, and October through December; single birds at Tea Tree Wetlands at Arundel in January and November, one at Port of Brisbane in October, single birds at Emerald Lakes Wetland in October and December, one at Archerfield Wetlands in November, one at Maleny in November, and one at Parklakes Wetland at Bli Bli in December.

Black-bellied Storm Petrel. Accidental. Observations recorded on multiple Southport pelagics, generally of a single bird, but with a high count of 40 in October.

Black-breasted Buttonquail. Observations included multiple records of up to four at Noosa NP; up to six at Kholo Crossing in June and July; up to three at Pine Mountain in May, November, and December; up to four at Cooloola at Great Sandy NP in July; one at Imbil SF in August and October; one or two at Inskip Point in September and October; seven at Jack Smith Conservation Park in January, two at Boat Mountain in July and October; one at Burtons Well in November; one or two at Yarraman in March and November; two at Kenilworth in January; four at Conondale NP in November; four at Deer Park SF in April and August; and two at Kalpower SF in September.

Black-browed Albatross. One observed at Point Lookout on Stradbroke Island in July.

Black-chinned Honeyeater. Observations recorded across the region with high counts of eight at Toondoon Botanic Gardens in October and six at Adare in May.

Black-eared Cuckoo. Observations included one at Kingaroy in January, one at Kianawah Road Wetland, in October and November, and one at Oxley Creek Common in December.

Black-faced Woodswallow. Observations included three at Nagoorin in January, four at Ban Ban Springs in March, seven at Gin Gin in June, three at Cooloola in the Great Sandy NP in December.

Black-naped Tern. Observations included 30 at Lady Elliot Island in February, 20 at Burrum Coast NP in September, 12 at Lady Musgrave Island in November, six at Heron Island in November, and one at Mon Repos in December.

Black-necked Stork. Near-threatened. 175 observations recorded across the region.

Black-tailed Nativehen. Observations included one at Lake Wivenhoe and one at Cove Road in Stanmore both in December.

Black-winged Petrel. One recorded on a Southport pelagic in January.

Blue-billed Duck. Near-threatened. Observations included one at Wappa Dam in January, one at Nelson Park on Alexandra Headlands in December, and one at Atkinsons Dam in February.

Blue-winged Kookaburra. Only a single observation south of Bundaberg and a single observation at the Maroochy River on the Yandina-Coolum Road in June.

Bridled Tern. Observations included 800 at Lady Elliot Island in February, 20 at Heron Island in November, and 12 at Lady Musgrave Island in November.

Broad-billed Sandpiper. Most observations recorded around Moreton Bay with high counts of 20 at the Port of Brisbane in January and 17 at the Manly Wader Roost in March.

Brolga. Observations of usually one or two birds widely scattered across the bioregion. Observations in Brisbane area included Griffin, Nathan Road Wetlands, Redcliffe Airport, and Tinchi Tamba Wetlands.

Brown Booby. High counts included 22 at Heron Island in August, 25 Lady Musgrave Island in October, 13 Lady Elliot Island in November, 20 at Joseph Banks Conservation Area in March, and 18 at Burnett Heads in June.

Brown Noddy. Observations included 2000 at Lady Elliot Island in February, 50 Lady Musgrave Island in November.

Brown Skua. In July observations of single birds recorded at Hervey Bay, Elliott Heads, and a Southport pelagic.

Brown Treecreeper. Multiple observations recorded of one to six at Jimna-Yabba Road Dam. Other observations included one at Elliot River SF in April and July, two at Wongi NP in May and August, and one Ringwood Road in July.

Brown-headed Honeyeater. Scattered observations of one to nine birds across the region between April and December with few observations north of Kingaroy.

Brush Bronzewing. One or two observed at Cooloola in Great Sandy NP on various dates.

Budgerigar. One recorded at Godshill in December.

Buff-breasted Sandpiper. Near-threatened. Accidental. The bird recorded at the Port of Brisbane in 2017 was observed from January to April in 2019.

Bulwer's Petrel. Accidental. Observations recorded on Southport pelagics in January and December.

Common Sandpiper. Observations recorded of almost all single birds mostly in the Brisbane and Moreton areas near the coast with one inland observation of one bird at Lake Barambah in March.

Cook's Petrel. Vulnerable. Accidental. Observations of one and three recorded on two Southport pelagics in October.

Crimson Chat. One observed at Lake Samsonvale in December.

Diamond Dove. One observed at Flagstone Creek Road in the Lockyer Valley in March.

Diamond Firetail. One or two birds observed at the Yabba Road Dam in Jimna from April to September, and three recorded at Kalpower in August through September.

Double-banded Plover. Most observations recorded around Moreton Bay with high counts of 54 near Wavebreak Island in July and 26 at Manly Wader Roost in May.

Dusky Woodswallow. High counts include 100 at Kalpower in August, 52 at Cooloola in the Great Sandy NP in May, and 47 at Widgee SF in June. Southeast records included 30 at Kobbie Creek in July and 25 at Gold Creek Reservoir in June.

Eastern Barn Owl. Observations decreased by almost half compared to 2018. Observations recorded across the region, but few were north of Noosa.

Eastern Grass Owl. Multiple observations throughout the year of one or two birds at Kedron Brook Wetlands. Other observations of single birds included Atkinsons Dam in June and July, five observations at Lake Samsonvale between April and December, and Elanda Point in March.

Eastern Ground Parrot. Multiple observations with a high count of 12 in May recorded at Cooloola in Great Sandy NP.

Eastern Rosella. Most observations of one or two birds recorded from the Scenic Rim, Southern Downs, and Gold Coast with a high count of 15 at Maine Range NP in July and few reports north of Brisbane.

Eastern Yellow Wagtail. Accidental. One recorded at Nathan Road Wetlands in October, and one to three recorded at Dowse Lagoon at Sandgate in November and December.

Fairy Gerygone. Only two locations recorded from the Sunshine Coast or further south including one birds recorded at Dularcha NP in June and one or two birds recorded in the Bunya Crossing area in February and September through December.

Fairy Prion. Observations included one on a Southport pelagic in June, one at The Spit at Southport in June, and 5 Point Lookout on Stradbroke Island in June.

Flesh-footed Shearwater. Near-threatened. Observations recorded on ten Southport pelagics between March and November with high counts of 6 in March and 8 in November.

Fluttering Shearwater. Records included one at Point Lookout on Stradbroke Island in June and one on Southport pelagic in March and 4 in April.

Freckled Duck. Most observations from the southern area of the bioregion with a high count of 41 at Atkinsons Dam in March. The most northerly observations were one or two at lake Alford in August through November.

Glossy Black Cockatoo. Over twice as many observations compared to 2018 with few were north of Noosa. High counts included 20 at Lamington NP in November, 11 at Mount Sampson in February, and ten at Goomburra NP in April.

Great Bowerbird. One reported to have been present for six years at Montville.

Great Frigatebird. Multiple observation recorded from Lady Elliot Island in January through February and October through November with the highest count being 40 in November.

Greater Sand Plover. Most observations of up to 10 birds recorded around Moreton Bay with high counts of 50 in November at King Island, and 45 in January and 29 in September at Manly Wader Roost.

Greater Sooty Owl. No observations recorded north of Gympie with most recorded at D'Anguilar NP and Lamington NP. Other locations with multiple observations included Bunya NP, Conondale NP, and Main Range NP. Observations also recorded at West Cooroy SF, Eumundi, Woondum NP, Tamborine NP, Murphys Creek, Bellthorpe NP, Bardon, and Mount Coot-tha.

Green Pygmy Goose. A single bird observed at Ewan Maddock Dam in May and June.

Grey Noddy. Accidental. One recorded at Moreton Bay off Wynnum in March.

Grey Plover. Most observations recorded of up to four birds, but high counts included 48 at Moreton Island in January, 40 at Boonooroo in January, and 20 at Inskip Point in March.

Grey-faced Petrel. Accidental. Observations of generally one or two, with a high count of 7 in March, recorded on 6 Southport pelagics in March, April, May and November.

Ground Cuckoo-shrike. Observations included two at Banool Road area of the Lockyer Valley in April, May, September and October; four at Bicks Road at South Burnett in June; three at Warrill View in August; and one at Biddaddaba in October.

Hoary-headed Grebe. Most observations recorded from the Lockyer Valley with a high count of 300 at Atkinsons Dam in April.

Horsfield's Bushlark. Observations included one at Lake Samsonvale in March, November, and December; one at Woorim on Bribie Island in August; one or two at Bundaberg Botanic Gardens in May; two at Gin Gin in June; one or two at Pacific Paradise in December; eight at Bryden in June and one in November; two at Crossdale in June; one at Borallon in January; and four at Atkinsons Dam in November.

Hutton's Shearwater. Endangered. Observed on seven Southport pelagics in March through October with the highest count being 22 in August. The Mooloolaba pelagic observed 50 in March and 29 in August. 18 recorded at Point Lookout on Stradbroke Island in February.

Kelp Gull. Accidental. One observed around the Wynnum and Wellington Point area in January.

Kermadec Petrel. Observations recorded on 13 Southport pelagics with a high count of 11 in March.

Large-tailed Nightjar. Observations included one at Cooloola in Great Sandy NP in January; one in Maroochy–Yandina Wetlands in January, September and November; two at Joseph Banks Conservation Park in March; one at Kalpowar SF in May and September; one at Baldwins Swamp in October; three at Rainbow Beach in August; and one at Inskip Point in December.

Lesser Crested Tern. Most observations recorded of only one or two birds, but high counts included 12 at Moreton Bay Marine Park in October, eight at Point Vernon in September, and six at Manly and King Island in June and July.

Lesser Frigatebird. Multiple observations recorded from Lady Elliot Island both in January and February with a high count of 20 and in October and November with a high count of 12. Other observations included ten at Noosa NP, one at Coolum, and one at Double Island Point all in March.

Little Curlew. Six observed at Atkinsons Dam in October through December.

Little Eagle. Most of the 85 observations in the bioregion were from the south-east as far north as Bundaberg.

Little Woodswallow. Observations included three at Tandora in June, three at Coolum in Great Sandy NP in December.

Long-tailed Jaeger. Accidental. Observations recorded on five Southport pelagics between October and December of usually only one or two, but five observed in October.

Long-toed Stint. One observed at the Port of Brisbane in January and March, and one recorded at G.J. Fuller Oval Lagoons in January, February, and December.

Marbled Frogmouth. Most observations of one to three birds recorded at Lamington NP and D'Aguiar NP.

Masked Booby. Four observed at Heron Island in August, and one recorded on the Mooloolaba pelagic in October.

Masked Woodswallow. 15 observations of one to six birds recorded across the region.

Matsudaira's Storm Petrel. Vulnerable. One observed on Southport pelagic in October.

Mottled Petrel. Near-threatened. Accidental. One observed on a Southport pelagic in October.

Musk Duck. Observations included one at Wongi Waterholes in January; two at Meandu Creek Dam in April; one to three at Lake Samsonvale in May through December; one or two at Lake McKenzie on Fraser Island in May, July, and August; one at Lake Lenthall in June and July, and three at Tandora in July.

Musk Lorikeet. Observations of generally one to five recorded throughout the year with a high count of 50 at Spicers Gap in August. Few observations recorded North of Bribie Island.

Northern Giant Petrel. Accidental. Observations included one at Point Lookout on Stradbroke Island in June, one at Tangalooma on Moreton Island in June, and 1 at Beacon Lighthouse on the Sunshine Coast in June.

Olive Whistler. Only seven observations of single birds recorded at Lamington NP.

Olive-backed Sunbird. 12 observations recorded from the Gladstone and Agnes Water areas, and one recorded at Moore Park in Bundaberg during December.

Oriental Plover. Ten observed at Wellington Point on 16 December.

Painted Buttonquail. Observations of generally one or two recorded from across the region, mostly south of Gympie with a high count of five in the Lockyer Valley in June.

Painted Honeyeater. Vulnerable. Observations of one or two recorded at Highfields Falls from September and October.

Parasitic Jaeger. Observations included single birds reported from Southport pelagics in March, November, and December; one at Point Danger in February, single birds at Currumbin and Southport Spit in March, and a single bird at Noosa in February.

Pectoral Sandpiper. Accidental. Observations included one at Dowse Lagoon in January, one at the Port of Brisbane in January, one at Dohles Rocks in January, one at Rubyanna Road in Bundaberg during February, one at Nathan Road Wetlands during September through December, one at Lake Samsonvale in December, and one at Cove Road in Stanmore during December.

Plum-headed Finch. The highest counts were 120 at Atkinsons Dam in the Lockyer Valley in March, 50 at Pacific Paradise on the Sunshine Coast in December, 47 at Priors Pocket in Moggill during December, 25 at Alberton on the Gold Coast in May, and nine at Lake Barambah in March.

Pomarine Jaeger. Observations of usually one to three birds recorded on eight Southport pelagics with a high count of seven in March, and no observations recorded from April through September.

Providence Petrel. Vulnerable. Observations included 70 on a Southport pelagic in October and five on a Mooloolaba pelagic in August.

Radjah Shelduck. Observations included one to four birds north of Tin Can Bay at various times with a high count of six at Elliot Heads in October and one to two at Greenbank in April.

Red Wattlebird. Most observations of one to two birds from the Scenic Rim and the Southern Downs with only four records north of the Greater Brisbane area. Northern-most observation recorded at Lake Awooga in June. The high counts included six at Goomburra NP in March and six at Main Range NP in April.

Red-backed Buttonquail. Observations included one or two at Atkinsons Dam in January and February, one or two at Lake Samsonvale in February and September through December, one at Oxley Creek Common in January and May, one at Kandanga Creek in March, one at Hawkesbury Road in Brisbane in June, one at Nathan Road Wetlands in October, and one at Fig Tree Pocket in November.

Red-backed Kingfisher. Observations included one at Takilberan in June, one at Kingaroy in September, and one at the Maroochy River in November.

Red-browed Treecreeper. Observations recorded across the south-east of the region with most from D'Aguilar NP and Lamington NP, and none recorded north of Conondale NP where two birds recorded in October.

Red-capped Robin. Observations included two at Eagleby Wetlands in June and one at Oxley Creek Common in November.

Red-chested Buttonquail. Observations included up to four at Lake Samsonvale in November and December, one at Joseph Banks Conservation Park in March, and three at Lake Dyer, Laidley in December.

Red-footed Booby. Single birds recorded on the Southport pelagic in January and March, and one observed at Lady Elliot Island in November.

Red-rumped Parrot. Most observations recorded at the University of Queensland Gatton campus and around the Lockyer Valley with a high count of 11 in June.

Red-tailed Black Cockatoo. Observations recorded from across the region with high counts including 40 at Moore Park in December, 37 at Blackbutt in January, and 23 at Helidon in March.

Red-tailed Tropicbird. Observations from Lady Elliot Island recorded mostly from September through November with a high count of eight in October.

Red-winged Parrot. Over two thirds of the observations recorded one to six birds in the South Burnett and few observations in the south-eastern area of the region.

Regent Honeyeater. Critically Endangered. Observations included a single bird at Flinders Conservation Estate in May and one or two at Springfield Lakes in June and July.

Roseate Tern. 200 recorded at Lady Elliot Island in November, and six observed at Lady Musgrave Island in November.

Rufous Scrubbird. Eight observations of one or two birds recorded between March and November at Lamington NP.

Sanderling. Observations included one in January at Elliot Heads, 13 in March and 30 in December at Inskip Point, and 122 in January at Moreton Island. No observations recorded from April through October.

Satin Flycatcher. Records increased from 7 to 49 with most being one or two birds from Brisbane or Moreton Bay in March through May, and October through November.

Scarlet Robin. Observations included one at Beenleigh in June, and one at Goomburra NP in March.

Shining Flycatcher. Observations recorded from coastal areas throughout the year with one or two birds common and a high count of four at Moore Park in Bundaberg during August.

Short-tailed Shearwater. Observations recorded on multiple Southport pelagics in March, April and September through December with high counts of 7 in April and 151 in November.

Shy Albatross. One recorded on Southport pelagic in October.

Sooty Tern. Multiple observations recorded on Southport pelagics throughout the year with a high count of 30 in June. Other observations included 20 at Lady Elliot Island in October, two at Lady Musgrave Island in November, one at Noosa NP in December, and 20 at the Maroochy River mouth in December.

Southern Emu-wren. Multiple observations of one to five recorded from Cooloola Way at Great Sandy NP.

Southern Giant Petrel. One observed at the Fraser Breaksea area off Hervey Bay in June.

Spiny-cheeked Honeyeater. Scattered observations recorded of mostly single birds with only one report north of Kingaroy. Closest observation to Brisbane recorded of one at Priors Pocket at Moggill in May.

Spotted Quail-thrush. Over 70% of observations were from the Brisbane area including most from Brisbane Forest Park.

Streaked Shearwater. Near-threatened. One in January and two in March observed on the Southport pelagic.

Stubble Quail. Over half the observations recorded at Lake Samsonvale with other observations at Atkinson Dam, Sunshine Coast, Lake Baramah, and Beechmont.

Superb Fruit Dove. Four observations of one or two birds at Cooloolabin Road, Wahpunga Park, West Cooroy, and Mary Cairncross on the Sunshine Coast in January, September, and December. Other observations included one at Banks Street Reserve in February, two at D'Aguiar NP in March, two at Lamington NP in April, one at Gold Creek Reservoir in August, and one at Blue Fig Creek in November.

Swift Parrot. Critically Endangered. Two observed at Springfield Lakes in June.

Tahiti Petrel. Near-threatened. Reports throughout the year from pelagic trips with high counts of 45 on the Southport pelagic in March and 27 on the Mooloolaba pelagic in November.

Turquoise Parrot. Observations included one to three at Highfields Falls in March and April, one at Canon Hill in April, one at Coombabah in April, two at Lake Samsonvale in March, and one at Dayboro in September.

Wandering Albatross. Vulnerable. One recorded on Southport pelagic in September.

Wandering Tattler. Observations recorded from coastal sites, Lady Elliot Island, and Heron Island with few observations from May through September. Highest counts included four at Point Vernon in March and six at Lady Elliot Island in November. Only south-east regional observations recorded were of single birds at Point Lookout on Stradbroke Island and Elephant Rock, both in November.

Western Gerygone. One observed at Flagstone Creek Road in Lockyer Valley during March.

White Tern. One observed on the Southport pelagic in March.

White-backed Swallow. Observations included two at Burnett Heads in May and one at Linville in August.

White-browed Woodswallow. Observations included five at Kingaroy in March and 40 in September; one at Wellington Point in August; 40 at Tinchi Tamba Wetlands in September; three at Moogerah Peaks NP in October; one at Dayboro in October, and one at Mount Mee in D'Aguilar NP during October.

White-eared Honeyeater. Observations include two at Kalpower Road in Bundaberg and one at Maidenwell both in September.

White-faced Storm Petrel. Single birds observed on Southport pelagics in May and October.

White-tailed Tropicbird. One recorded on the Southport pelagic in October.

White-winged Chough. Observations recorded across the region with the largest flock of 20 recorded at Maidenwell in August.

White-winged Tern. Most observations recorded from the Sunshine Coast with 400 at Maroochydore in April and 224 at Noosa spit in December. Other observations included a single bird at Bundaberg Botanic Gardens in February and December and three at Atkinsons Dam in March and May.

Wilson's Storm Petrel. Observations recorded on multiple Southport pelagics with a high count of 33 in April.

Wood Sandpiper. Observations included two at Yandina Wetlands in January and one in August, one at Garnet's Lagoon in March, one at Port of Brisbane in March, one at Kianawah Wetlands in October and November, one at Nathan Road Wetlands in October and November, one at Lake Samsonvale in December, and one at Sunshine Coast University in December.

Yellow Thornbill. Observations recorded across the region, but few were recorded north of Noosa.

Yellow-tufted Honeyeater. Observations recorded from across the region with high counts in June including 14 birds at Cordalba SF, 12 at Jimna-Yabba Road Dam, and 10 at Kingaham. Multiple observations recorded from Lake Samsonvale with the highest count of 8 in January. Bunyaville SF recorded a high count of 4 in January, February and August.

Zebra Finch. Multiple observations reported from Bundaberg throughout the year with a maximum count of nine in July. Eight observations recorded across the southern part of the region, including 40 at Mount Tarampa in August and 25 at Iredale in May.

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SPECIAL INTEREST GROUP and RESEARCH UPDATES

1. Bird banding in Queensland in 2018 and 2019

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Since 2006 three bird banding projects have been conducted in Queensland by the authors, with a number of other volunteers and contributors. These projects are supported by Birds Queensland who provide insurance cover for field activities and the Queensland Wader Study Group who support shorebird banding activities. The projects concern (1) the biology of the Black Swan, (2) the movements and site fidelity of migratory and resident shorebird species, and (3) the survival and productivity of a wide range of land bird species in a range of habitats across the state. A brief summary of the status of each project in 2018 and 2019 is presented here.

Breeding biology of Black Swan

The aims and methods of this project are described by Coleman (2019). Banding and survey visits were made in every month with 153 birds banded in 2018 and 110 birds in 2019, bringing the total banded to 838 birds. The Queensland study area (SEQ) extends from the Port of Brisbane down to the New South Wales Border. A second study area has been created in the ACT to compare subtropical and temperate breeding biology. Seventy-three birds were banded in that study area during 2019. Many local movements in SEQ were recorded during the two years with 1,001 encounters of banded individuals added to the database which now has 4,967 individual encounter records. Movements from all years of the study are represented in Figure 1. As in previous years non-breeding birds moved longitudinally along the coast between Toorbul in the north and Lennox Heads, NSW, in the south. However, most movements occurred within 1-10 km of the original banding site. The movement of a single cygnet from the Gold Coast to Victoria in 2013 remains unprecedented as no other records of this nature and distance have been made.

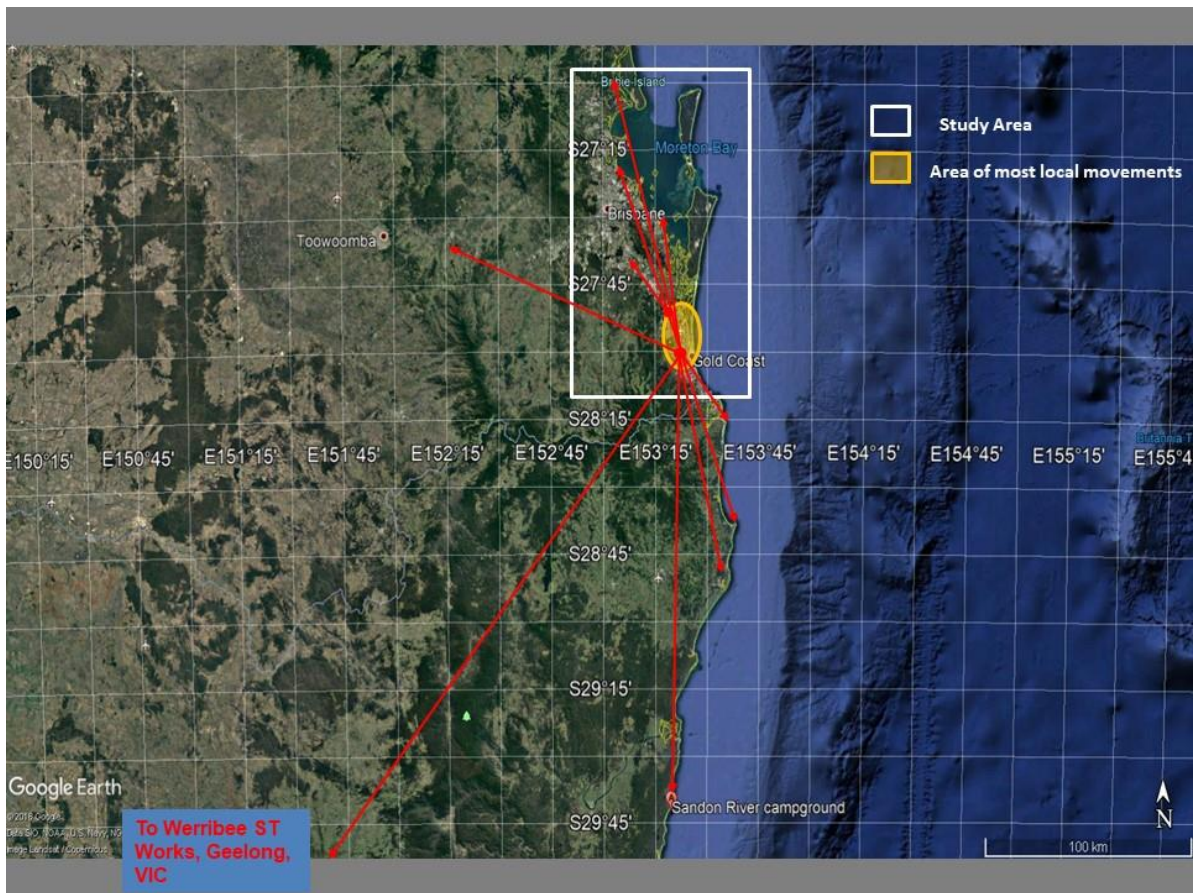


Figure 1. Recorded movements of Black Swans from 2006 to 2019

Figure 2 shows monthly counts in the area since the study began. Unlike 2014 when a large flock was regularly seen near Wynnum, no large flocks were recorded, although small flocks did occur along the coast throughout the study area which was unusual. The highest counts were recorded during the summer period and this corresponded with increasing numbers of birds (100+) using the Port of Brisbane Lake at those times.

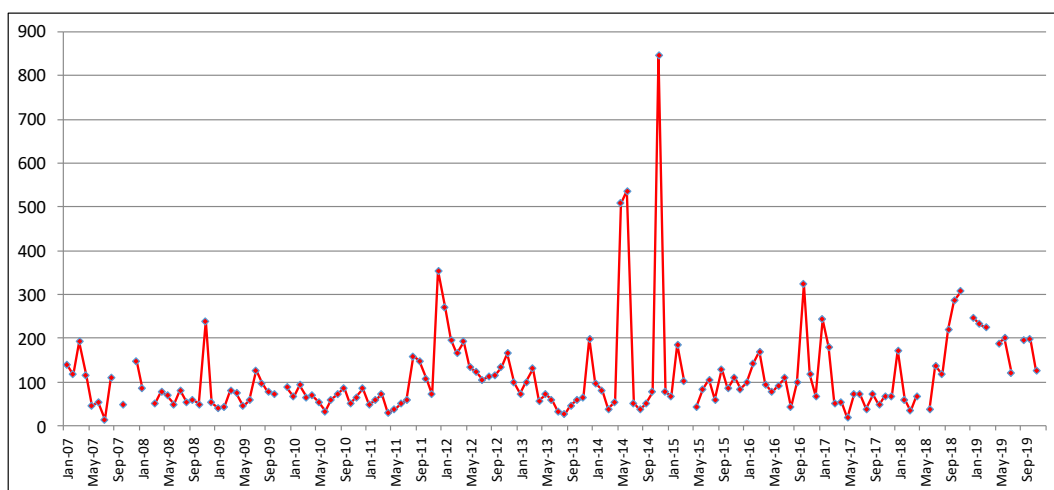


Figure 2. Monthly maximum counts of Black Swans recorded on survey visits

Sixty separate swan pairings were identified in 2019, and 62 in 2018, compared to 40 in 2017, 44 in 2016 and only 27 in 2015. Of these, 31 and 28 pairs were recorded breeding in 2018 and 2019 respectively, and 35 and 32 breeding attempts recorded (Figures 3 and 4). Of the 32 breeding attempts in 2019 only three (9%) failed to produce cygnets, compared to 31% in 2018, 19% in 2017, 32% in 2016, 28% in 2015 and 39% in 2014. In terms of number of breeding pairs and breeding attempts, the poorest year recorded to date was 2013. The two subsequent years, 2014 and 2015, showed a gradual improvement and 2016 and 2017 showed a return to the moderately high levels of breeding success recorded prior to 2012.

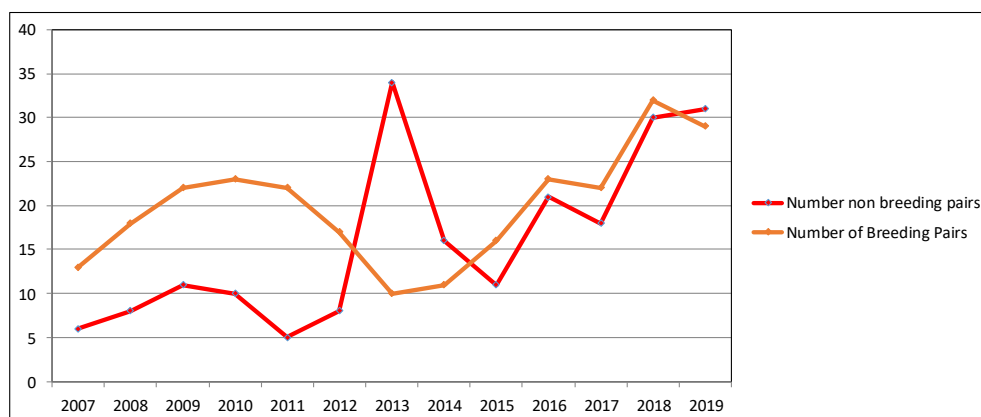


Figure 3. Number of breeding and non-breeding pairs in each year of the study

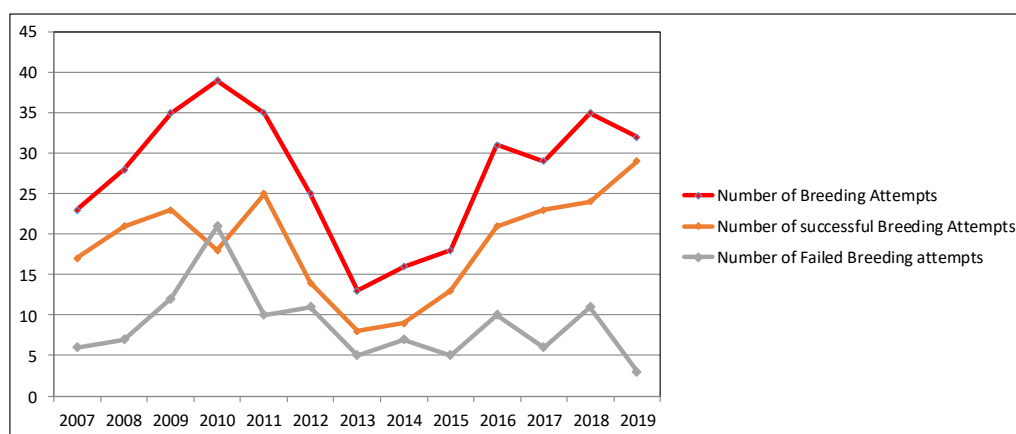


Figure 4. Number of breeding attempts recorded in each year of the study

Hatching success in 2019 was 3.11 cygnets per breeding attempt, which was the highest number recorded for this study. Rearing success was 2.59 cygnets reared per breeding attempt, again the highest rearing rate recorded to date. Figures 5 and 6 show the mean average hatching and rearing success per breeding attempt, respectively, for each year of the study. These graphs are updated annually so trends in hatching and rearing can be monitored. Future monthly monitoring efforts will continue by visiting the established sites to consistently maintain our data collection.

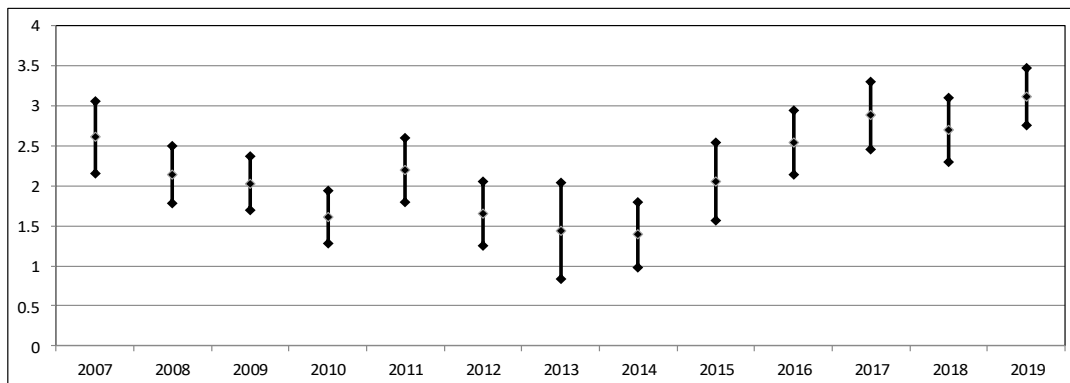


Figure 5. Mean average hatching success for Black Swan Pairs within the study area

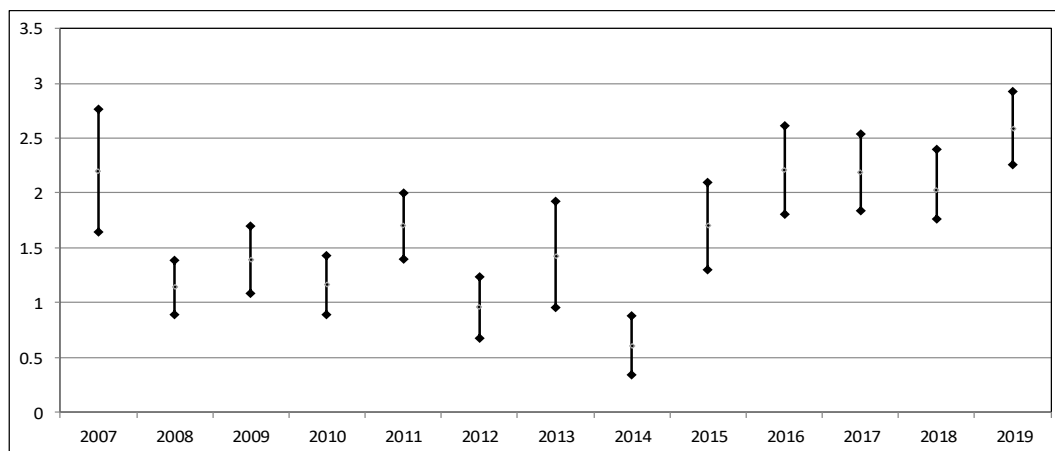


Figure 6. Mean average rearing success for Black Swan Pairs within the study area

Recent publications arising from this study are:

Coleman, J.T. 2019. Bird banding in Queensland in 2017. *Sunbird* 48 (1): 127-143.

Rees, E. C. Cao, L., Clausen, P., Coleman, J.T., Cornely, J., Einarsson, O., Ely, C.R., Kingsford, R.T., Ma, M., Mitchell, C.D., Nagy, s., Shimada, T., Snyder, J., Solovyeva, D.V., Tijssen, W., Vilina, Y.A., Radosław Włodarczyk, R. and Brides, K. 2019. Conservation status of the world's swan populations, *Cygnus* sp. and *Coscoroba* sp: a review of current trends and gaps in knowledge. *Wildfowl* (2019) Special Issue 5: 35–72

Acknowledgements

Gold Coast City Council provided access to their water bodies wherever public access was permitted, while Logan City Council provided access to Tygum Lagoon, parks in Beenleigh and Eagleby Wetlands. The Port of Brisbane have also provided regular access to their Visitor Centre Lake.

The Australian Bird and Bat Banding Scheme provided the metal bands used in this project and the authors are indebted to the various banders, and volunteers who assist with fieldwork every month. All activities were undertaken under Australian Bird and Bat Banding Society Permit 2337, Queensland DERM Scientific Permits WISP17052616, WISP16746415, WISP16744415. All activities were conducted and monitored under DPI Community Access Animal Ethics Approval CA2018-02-1159. The senior author is the registered scientific user, Number 254.

Body Condition, survival rates and movements in shorebirds

The aims and methods used in this study are described by Coleman (2019). The locations where shorebirds were caught in Moreton Bay are shown in Coleman (2019: Figure 3). In addition to the Moreton Bay study sites, additional focus in 2015 was on the Gladstone area (Fig. 7) as a joint project between the University of Queensland, Deakin University, and Queensland Wader Study Group. The aim was to determine habitat utilisation by migratory shorebirds. While no bird banding was undertaken in those locations during 2019, resightings of leg flags continue to be added to the leg flag database.



Figure 7. Shorebird banding locations in the Gladstone area

The banding and flagging of waders in 2018 and 2019 continued to focus on core sites in the southern part of Moreton Bay, allowing a range of the regular species to be captured for flagging and weighing. Despite a dedicated focus on catching Whimbrel and Far-Eastern Curlew to deploy Platform Terminal Transmitters (PTTs), a large number of birds across a wide range of species were caught and banded in the two-year period. Due to continuing public interference at the roost site it was decided in the best interest of the roosting shorebirds to maintain the suspension of cannon-net catching at Toorbul. Once this issue is resolved, cannon-net catching may be resumed at this site. The birds caught during 2018 and 2019, and all previous years of the study are shown in table 1 below.

Eight hundred and twenty-eight birds of 25 species were caught and leg flagged in 2018 and 2019 with a number of previously flagged birds also recaptured. Since 2006, 4,815 individually identifiable leg flags have been placed on shorebirds captured in Moreton Bay. Resightings of previously flagged birds through capture and direct observations continued to describe detailed movement patterns for Moreton Bay.

Table 1. Numbers of shorebirds captured and (recaptured) from 2006 to 2019 inclusive

Species	Banded 2006-2017	Banded 2018 & 2019	Total banded 2006-2019	Total retraps 2006-2019
Stone-curlew, Bush	137	45	182	16
Oystercatcher, Pied	80	4	84	13
Stilt, Pied	51	4	55	1
Avocet, Red-necked	1	0	1	0
Lapwing, Masked	19	2	21	0
Dotterel, Red-kneed	24	2	26	0
Golden-Plover, Pacific	71	25	96	6
Plover, Grey	6	1	7	0
Plover, Red-capped	23	11	34	3
Plover, Double-banded	7	0	7	0
Sandplover, Lesser	234	93	327	21
Sandplover, Greater	31	2	33	1
Dotterel, Black-fronted	18	5	23	1
Snipe, Latham's	0	3	3	0
Godwit, Black-tailed	3	2	5	0
Godwit, Bar-tailed	919	73	992	35
Whimbrel	140	4	144	1
Curlew, Far Eastern	31	6	37	1
Greenshank, Common	1	0	1	0
Tattler, Grey-tailed	593	279	872	88
Tattler, Wandering	1	0	1	0
Sandpiper, Terek	49	19	68	5
Turnstone, Ruddy	92	43	135	19
Knot, Great	314	19	333	42
Knot, Red	9	13	22	1
Stint, Red-necked	745	42	787	51
Sandpiper, Sharp-tailed	174	86	260	4
Sandpiper, Curlew	201	40	241	19
Sandpiper, Broad-billed	3	4	7	1
Tern, Caspian	0	1	1	0
Tern, Gull-billed	2	0	2	0
Tern, Crested	2	0	2	0
Tern, Little	2	0	2	1
Tern, Sooty	4	0	4	0
Totals	3,987	828	4,815	330

Foreign resightings of Moreton Bay banded birds were reported during the two years providing additional data on staging areas, and fidelity to these sites in different seasons. In 2019, four resightings of Grey-tailed Tattler and single observations of Bar-tailed Godwit, Ruddy Turnstone and Far-eastern Curlew were reported from staging sites in Japan. A single northward migrating Far-eastern Curlew was also resighted

in Hong Kong in 2019. Bar-tailed Godwit records (5) were also received from staging areas in South Korea. Nine birds returned to New Zealand rather than Australia for the non-breeding season and one Bar-tailed Godwit was resighted in the Pribilof Islands, Alaska, as it approached its breeding grounds.

A Great Knot and a Red Knot banded at Manly were sighted on the coast of South Korea and China, respectively. Two Red-necked Stint, two Curlew Sandpiper and a single Great Knot banded in Moreton Bay were resighted in Taiwan. Resightings of green flagged waders reported overseas in 2019 are shown in Figure 8 and these are consistent with resightings of flagged birds in the previous year. In addition to leg flag resightings, PTTs attached to Far Eastern Curlew, Whimbrel, Pacific Golden Plover, Bar-tailed Godwit, and Black-tailed Godwit using Moreton Bay in the non-breeding season provided numerous daily positions throughout the tidal cycle.

Data collected from the combination of resightings and the PTTs revealed the spatial requirements for local and migratory movements as well as identifying the diversity of habitat needed to maintain shorebird species under threat.

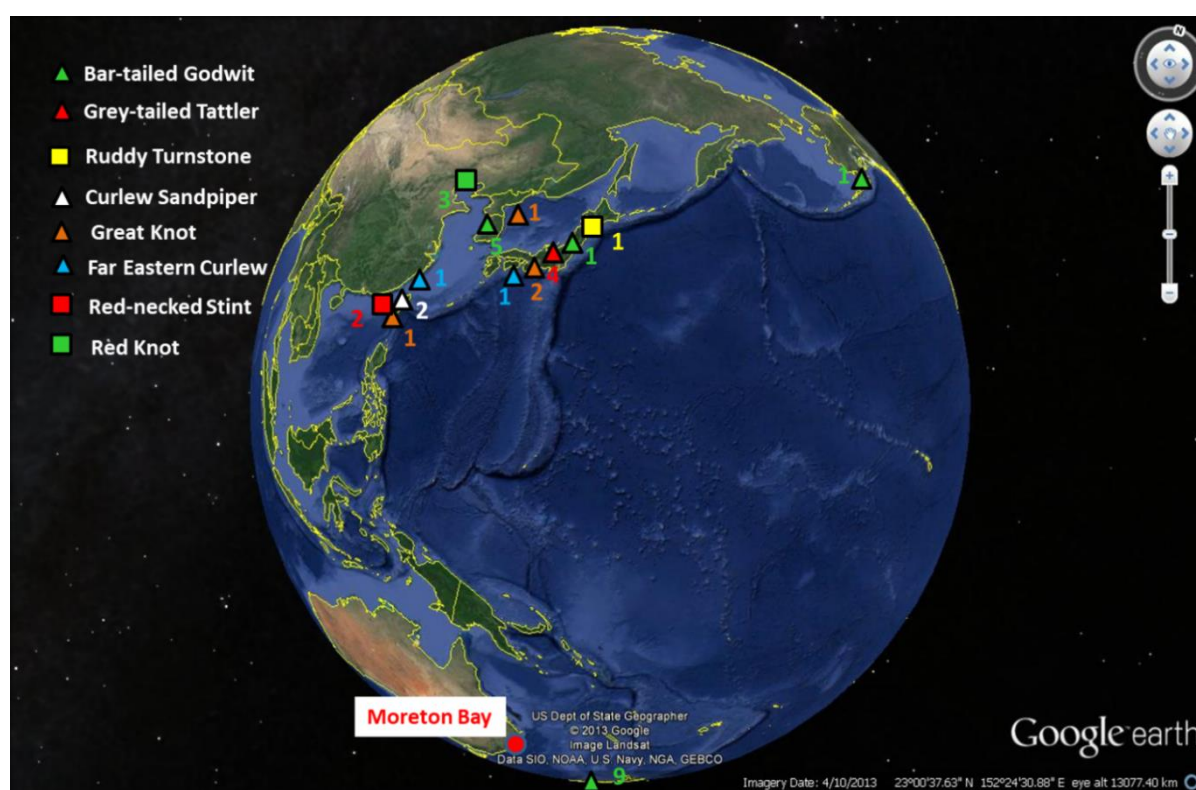


Figure 8. Overseas resightings of leg flagged shorebirds in 2019

In 2018 and 2019 there were 9,154 resightings of individually identifiable birds and to date, leg flags have generated a total of 26,734 individual resightings. Many birds with engraved leg flags were reported multiple times throughout the year. While a number of these resightings have been abroad and interstate, the majority involve repeated resightings of individuals within Moreton Bay. Satellite tracking results are also providing similar local movement data for less approachable species, increasing our knowledge of foraging patterns and utilisation of roosting sites. Some initial estimates of survival rates for annual cohort groups can now be calculated using these resightings.

The local data from leg flag resightings and PTTs continued to show that large numbers of returning birds exhibit a high degree of faithfulness to Moreton Bay. The data also showed that most species are extremely faithful to their roosting and feeding locations within Moreton Bay, both within and between

seasons. As sample sizes increase and more roost sites are sampled more comprehensive fidelity data can be presented for more species using Moreton Bay. As examples, the following maps (Figures 9-11) show the foraging ranges collected to date for two species fitted with PTTs. These examples demonstrate the value of complementing regular banding and flagging data with targeted use of emerging technologies for tracking (geolocation, satellite telemetry, GPS tracking).

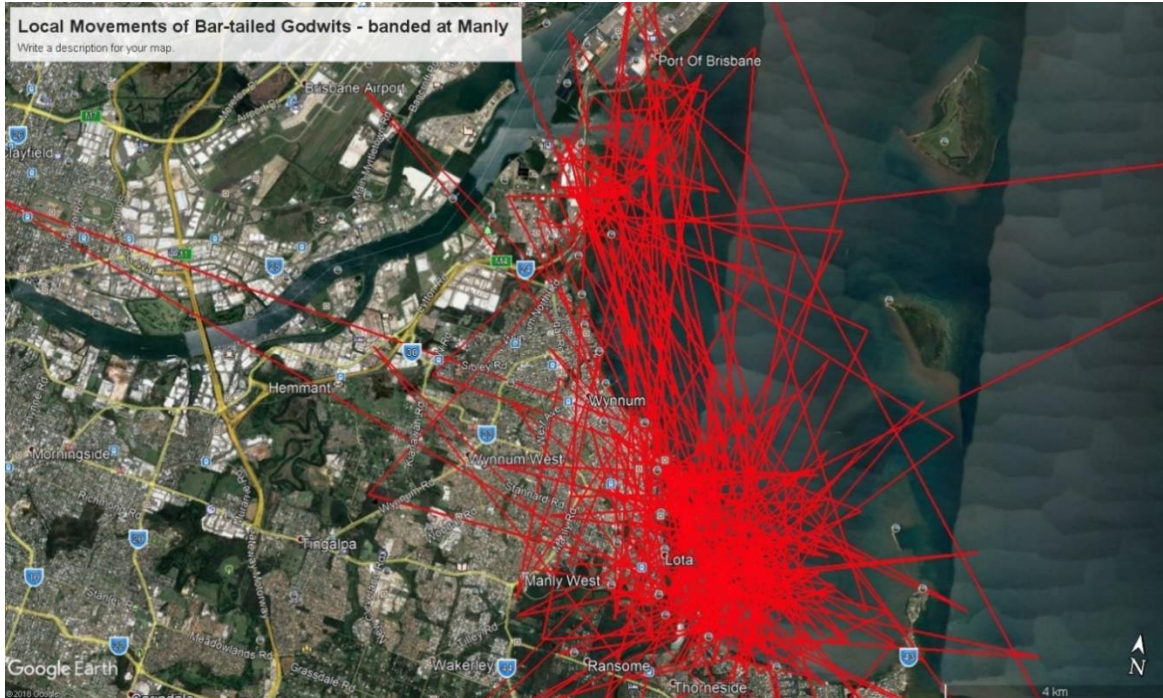


Figure 9. Local movements of Bar-tailed Godwit #64588, banded at Manly

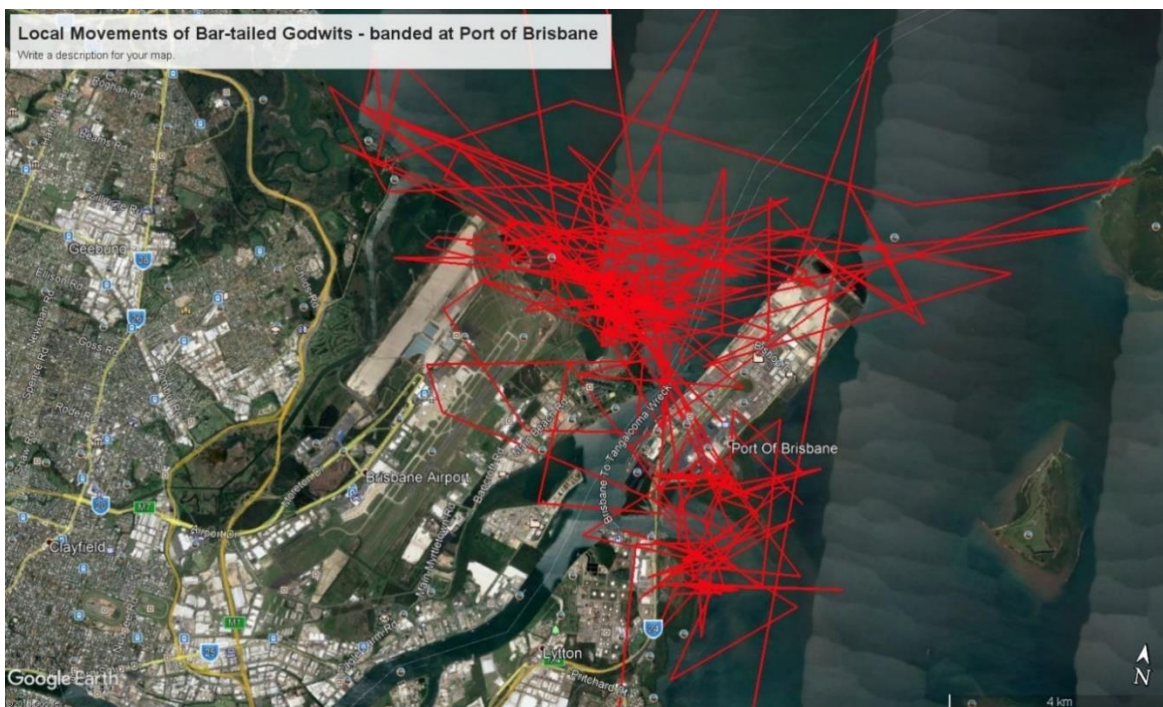


Figure 10. Local movements of Bar-tailed Godwit #64597, banded at the Port of Brisbane

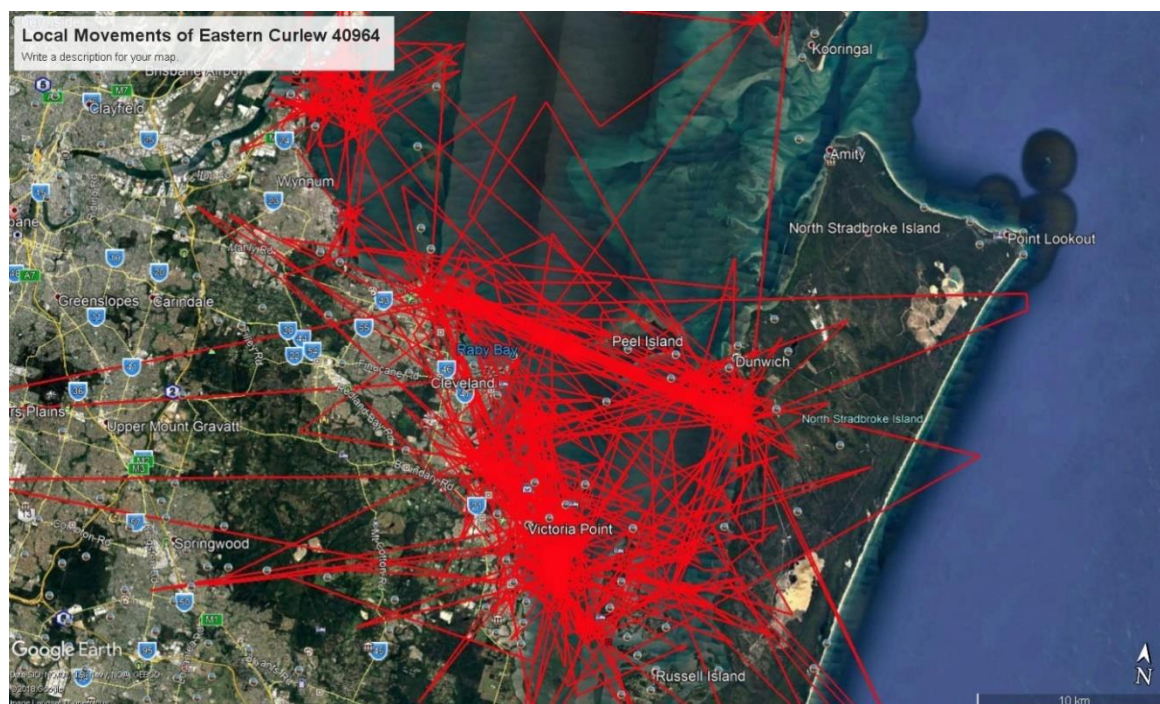


Figure 11. Local movements of Far Eastern Curlew #40964, banded at Wellington Point

During 2017 and 2018 five PTTs were deployed on Whimbrel, one on a bird at Wellington Point and four on birds at Toorbul. Five PTTs were deployed on Far Eastern Curlew, one on an individual at Toorbul, one on a bird at King Street, Thornlands and three on birds caught at Geoff Skinner Wetlands, Wellington Point. In 2019 a further four PTTs were fitted to Bar-tailed Godwit, two onto Black-tailed Godwit, with a further Whimbrel PTT fitted. A further three PTTs were deployed onto Far Eastern Curlew in 2019.

Two of the curlews and three of the returning Whimbrel provided full northward and southward migration traces, providing data on their migration routes, and ranging behaviour and stopover durations on staging, breeding and non-breeding grounds. In addition, two Bar-tailed godwits provided northward migration traces with one also providing a return migration path. These traces are summarised in Figures 12-14.

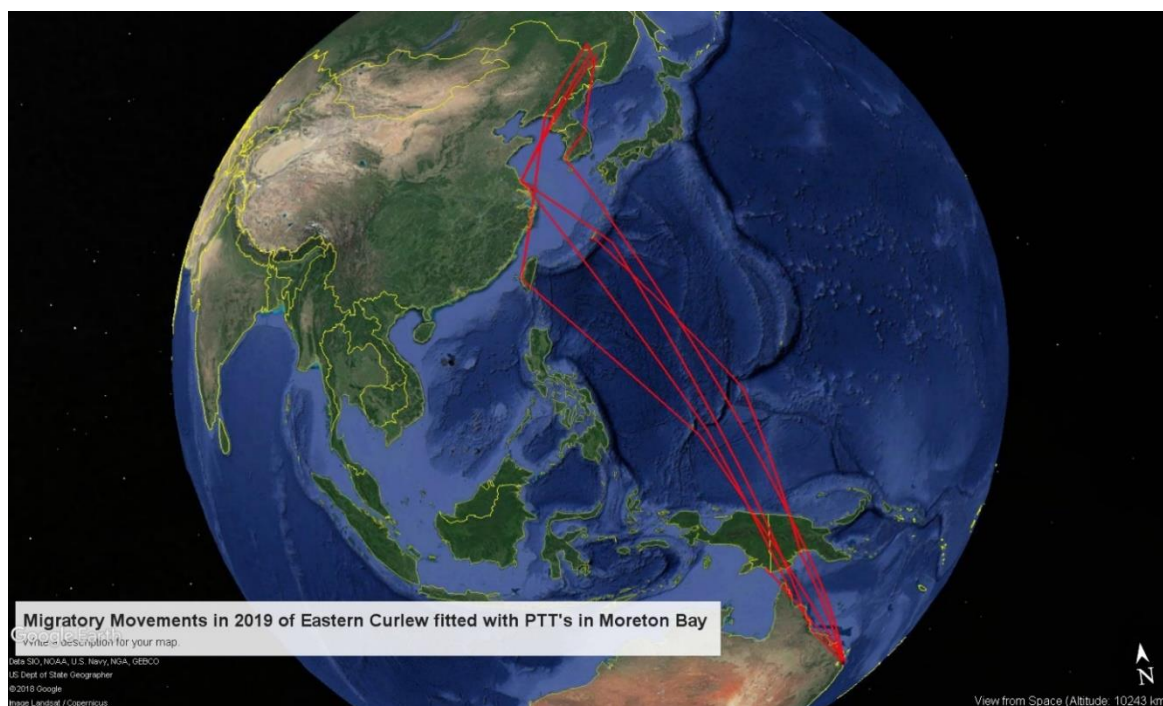


Figure 12. Northward and southward migration tracks for Far Eastern Curlew fitted with PTT's in Moreton Bay

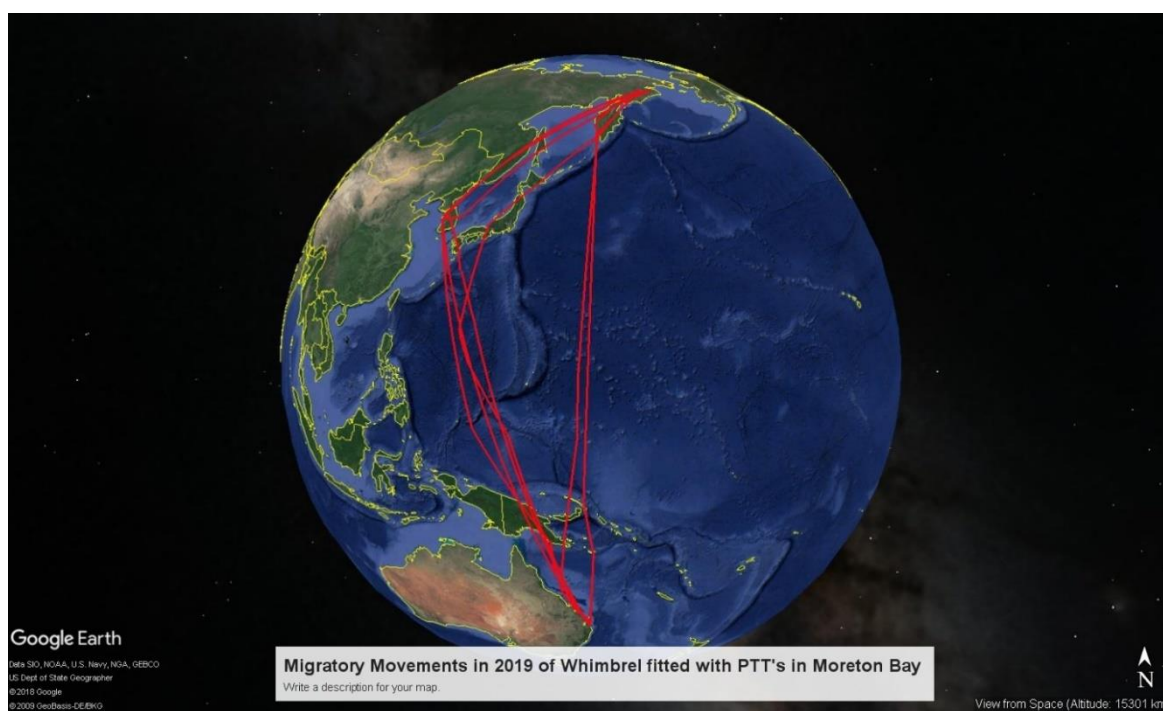


Figure 13. Northward and southward migration tracks for Whimbrel fitted with PTT's in Moreton Bay

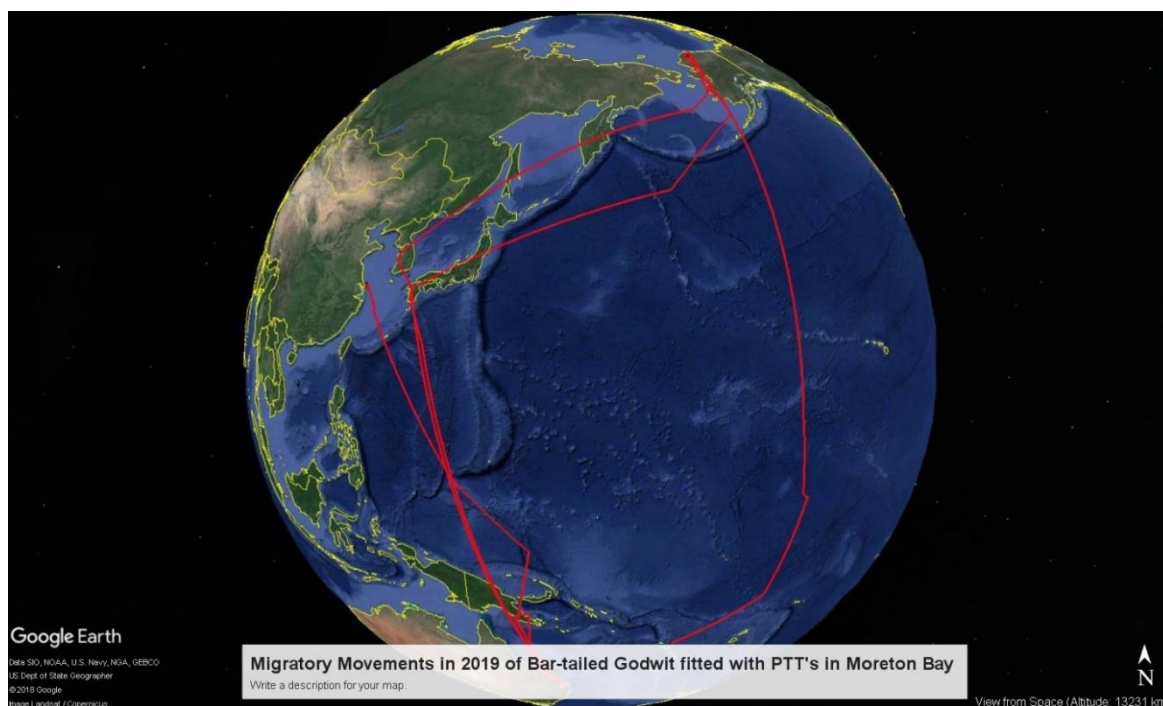


Figure 14. Northward and southward migration tracks for Bar-tailed Godwit fitted with PTT's in Moreton Bay

Recent publications arising from this study are:

Coleman, J.T. 2019a. Bird banding in Queensland in 2017. *Sunbird* 48 (1): 127-143.

Coleman, J. 2019b. Body condition, survival rates and movements in shorebirds. *Sunbird* 48: 130-135.

Coleman J., Milton, D., & Akutsuhit, H. 2018. The migration of Grey-tailed Tattler *Tringa brevipes* from Moreton Bay, south-east Queensland. *Stilt* 72: 2-8.

Acknowledgements

Queensland Wader Study Group support and fund all shorebird related activities. Redland Council, Gold Coast City Council, and Moreton Bay Regional Council, along with the Moreton Bay Marine Park EPA provided access to a number of shorebird banding locations in the Bay. The Port of Brisbane allowed access to certain areas in Fisherman Islands and helped with funding. Queensland Wader Study Group funded all wader banding activities. Redland Council also provide permission for banding of Bush Stone-curlews on Coochiemudlo and adjacent islands.

The Australian Bird and Bat Banding Scheme provided the metal bands used in this project and the authors are indebted to the many banders, and volunteers who assist with fieldwork throughout the year. All activities were undertaken under Australian Bird and Bat Banding Society Permit 2337, Queensland DERM Scientific Permits WISP17052616, WISP16746415, WISP16744415. All activities were conducted and monitored under DPI Community Access Animal Ethics Approval CA2018-02-1159. The senior author is the registered scientific user, Number 254.

Monitoring long term biological trends in common Australian birds

The aims and methods of this project are outlined in Coleman (2019), which includes a map showing all banding locations used in 2018 and 2019, apart from Mount Lewis in North Queensland. Ageing and/or sexing criteria have now been established for 201 species, an additional two species being added since 2017. All existing species accounts were also reviewed and refreshed with new data where possible. This information remains available in pdf format should researchers require access to this information for their own studies.

During 2018 and 2019, 9,626 new bird captures were made including many additional recaptures (Table 2). A total of 45,611 birds have been captured since 2006, comprising 34,722 birds banded and 10,889 recaptures. Habitats regularly surveyed include open eucalypt forest, tropical and sub-tropical rainforests, temperate rainforest, mangrove and freshwater wetlands.

Table 2. Numbers of birds banded and recaptured for this project since 2006. Total retraps represent the number of times individuals were recaptured during the period 2006-2019

Species	Banded 2006–2017	Banded 2018–2019	Total banded	Total retraps
Goose, Magpie	0	22	22	0
Duck, Plumed-whistling	1	16	17	0
Duck, Freckled	0	1	1	0
Duck, Pink-eared	1	2	3	0
Duck, Maned	67	0	67	63
Duck, Pacific-black	52	4	56	29
Teal, Chestnut	12	1	13	0
Hardhead	2	1	3	0
Brush-turkey, Australasian	14	10	24	58
Scrubfowl, Orange-footed	2	0	2	0
Quail, Brown	36	8	44	1
Quail, King	1	2	3	0
Ibis, Australian-white	2	2	4	1
Ibis, Straw-necked	6	0	6	0
Spoonbill, Royal	0	1	1	0
Heron, Striated	3	0	3	0
Egret, Cattle	1	0	1	0
Heron, White-faced	1	0	1	0
Egret, Little	1	0	1	0
Goshawk, Grey	0	1	1	0
Goshawk, Brown	5	1	6	0
Sparrowhawk, Collared	0	1	1	0
Rail, Buff-banded	5	0	5	0
Crake, Spotless	0	2	2	1
Swampfen, Purple	21	2	23	9
Moorhen, Dusky	12	1	13	0
Native-hen, Black-tailed	9	1	10	1

Species	Banded 2006– 2017	Banded 2018– 2019	Total banded	Total retraps
Coot, Eurasian	0	1	1	0
Button-quail, Black-breasted	0	4	4	0
Button-quail, Painted	4	0	4	0
Gull, Silver	50	10	60	1
Dove, Spotted	190	28	218	45
Cuckoo-dove, Brown	13	5	18	1
Dove, Emerald	73	44	117	90
Bronzewing, Common	11	6	17	2
Pigeon, Crested	77	33	110	31
Pigeon, Wonga	2	1	3	1
Dove, Diamond	61	1	62	0
Dove, Peaceful	278	120	398	138
Dove, Bar-shouldered	118	56	174	87
Fruit-dove, Wompoo	1	0	1	1
Fruit-dove, Superb	2	3	5	0
Fruit-dove, Rose-crowned	3	0	3	0
Coucal, Pheasant	0	1	1	0
Bronze-cuckoo, Horsefield's	11	4	15	0
Bronze-cuckoo, Shining	46	32	78	4
Bronze-cuckoo, Gould's	4	1	5	0
Bronze-cuckoo, Little	4	1	5	0
Cuckoo, Pallid	1	0	1	0
Cuckoo, Chestnut-breasted	3	0	3	0
Cuckoo, Fan-tailed	55	29	84	10
Cuckoo, Brush	12	5	17	1
Frogmouth, Tawny	2	0	2	0
Nightjar, Spotted	1	0	1	0
Nightjar, White-throated	1	0	1	0
Nightjar, Large-tailed	1	0	1	0
Owlet-nightjar, Australian	3	0	3	1
Needletail, White-throated	0	1	1	0
Dollarbird	1	0	1	0
Paradise-kingfisher, Buff-breasted	51	5	56	6
Kookaburra, Laughing	80	28	108	35
Kookaburra, Blue-winged	1	0	1	0
Kingfisher, Forest	17	8	25	5
Kingfisher, Collared	40	5	45	7
Kingfisher, Sacred	135	48	183	30
Kingfisher, Red-backed	1	0	1	0
Kingfisher, Yellow-billed	0	3	3	0
Kingfisher, Azure	69	34	103	42
Kingfisher, Little	8	9	17	2

Species	Banded 2006– 2017	Banded 2018– 2019	Total banded	Total retraps
Bee-eater, Rainbow	4	3	7	0
Falcon, Brown	1	0	1	0
Cockatoo, Yellow-tailed Black	1	0	1	0
Galah	32	3	35	12
Cockatoo, Major-Mitchell's	0	4	4	0
Corella, Long-billed	11	3	14	0
Corella, Little	69	25	94	0
Cockatoo, Sulphur-crested	65	23	88	6
King-parrot, Australian	28	4	32	3
Parrot, Red-winged	7	0	7	0
Parrot, Red-rumped	0	4	4	0
Bonnet, Blue	1	4	5	0
Parrot, Mulga	10	29	39	1
Rosella, Crimson	1	5	6	0
Rosella, Pale-headed	59	9	68	28
Ringneck, Australian	45	17	62	1
Parrot, Bourke's	24	11	35	3
Parrot, Blue-winged	1	0	1	0
Lorikeet, Rainbow	896	221	1117	117
Lorikeet, Scaly-breasted	53	12	65	1
Budgerigar	2	0	2	0
Pitta, Noisy	54	13	67	4
Catbird, Green	32	12	44	1
Catbird, Black-eared	4	0	4	0
Catbird, Spotted	0	13	13	1
Bowerbird, Tooth-billed	0	5	5	0
Bowerbird, Golden	0	3	3	0
Bowerbird, Regent	17	9	26	1
Bowerbird, Satin	21	7	28	10
Bowerbird, Spotted	66	12	78	2
Treecreeper, White-throated	31	20	51	25
Treecreeper, White-browed	14	2	16	1
Treecreeper, Brown	100	27	127	28
Fairy-wren, Lovely	11	5	16	2
Fairy-wren, Variegated	212	148	360	265
Fairy-wren, Superb	175	133	308	154
Fairy-wren, Splendid	133	11	144	7
Fairy-wren, Red-backed	209	124	333	150
Fairy-wren, White-winged	25	1	26	1
Honeyeater, Dusky	192	179	371	59
Honeyeater, Scarlet	339	140	479	2
Honeyeater, Green-backed	7	0	7	0

Species	Banded 2006– 2017	Banded 2018– 2019	Total banded	Total retraps
Spinebill, Eastern	106	97	203	31
Honeyeater, Pied	3	0	3	0
Honeyeater, Brown	1155	473	1628	358
Honeyeater, New-Holland	53	70	123	31
Honeyeater, White-cheeked	2	3	5	0
Honeyeater, White-streaked	0	2	2	0
Honeyeater, Striped	30	4	34	1
Honeyeater, Tawny-breasted	26	24	50	5
Friarbird, Little	24	6	30	0
Friarbird, Helmeted	0	1	1	0
Friarbird, Noisy	38	13	51	3
Honeyeater, Blue-faced	71	30	101	112
Honeyeater, Brown-headed	26	2	28	0
Honeyeater, White-throated	128	38	166	64
Honeyeater, White-naped	33	8	41	4
Chat, Crimson	5	0	5	0
Honeyeater, Spiny-cheeked	327	3	330	5
Honeyeater, Bridled	0	16	16	0
Honeyeater, Eungella	0	19	19	5
Honeyeater, Yellow-faced	459	198	657	145
Miner, Bell	6	1	7	0
Miner, Noisy	527	64	591	346
Miner, Yellow-throated	64	55	119	1
Honeyeater, White-fronted	2	0	2	0
Honeyeater, Yellow	0	10	10	5
Honeyeater, Mangrove	159	15	174	69
Honeyeater, Singing	241	41	282	15
Honeyeater, Grey-headed	22	2	24	1
Honeyeater, White-plumed	1150	306	1456	258
Honeyeater, Graceful	56	35	91	0
Honeyeater, Yellow-spotted	128	113	241	28
Honeyeater, Lewin's	761	377	1138	692
Pardalote, Spotted	44	17	61	1
Pardalote, Striated	56	6	62	13
Fernwren	0	3	3	1
Redthroat	1	0	1	0
Warbler, Speckled	11	2	13	7
Scrubwren, Atherton	0	20	20	5
Scrub-wren, White-browed	503	174	677	924
Scrub-wren, Yellow-throated	289	116	405	248
Scrub-wren, Large-billed	362	107	469	322
Scrub-wren, Tropical	96	54	150	15

Species	Banded 2006– 2017	Banded 2018– 2019	Total banded	Total retraps
Weebill	19	0	19	0
Gerygone, Brown	53	31	84	10
Gerygone, Mangrove	505	77	582	186
Gerygone, White-throated	13	7	20	3
Gerygone, Fairy	51	15	66	14
Thornbill, Mountain	0	10	10	0
Thornbill, Brown	144	41	185	61
Thornbill, Inland	58	9	67	11
Thornbill, Chestnut-rumped	109	32	141	5
Thornbill, Yellow-rumped	22	18	40	5
Thornbill, Yellow	10	9	19	2
Whiteface, Southern	11	3	14	3
Babbler, Grey-crowned	7	14	21	1
Babbler, Hall's	34	4	38	4
Babbler, Chestnut-crowned	55	10	65	14
Logrunner	30	10	40	8
Chowchilla	0	5	5	0
Whipbird, Eastern	115	46	161	100
Quail-thrush, Chestnut-breasted	3	0	3	0
Boatbill, Yellow-breasted	12	6	18	0
Woodswallow, White-breasted	13	2	15	0
Woodswallow, White-browed	3	0	3	0
Woodswallow, Black-faced	4	3	7	0
Woodswallow, Little	1	0	1	0
Butcherbird, Black	7	9	16	2
Butcherbird, Grey	63	9	72	25
Butcherbird, Pied	55	8	63	9
Magpie, Australian	65	24	89	112
Currawong, Pied	24	17	41	6
Cuckoo-shrike, Black-faced	9	3	12	0
Cuckoo-shrike, Barred	4	2	6	1
Cuckoo-shrike, White-bellied	0	1	1	0
Cicadabird, Common	5	0	5	0
Triller, White-winged	8	1	9	1
Triller, Varied	48	21	69	16
Sittella, Varied	18	6	24	0
Bellbird, Crested	7	4	11	0
Shrike-tit, Crested	0	1	1	0
Whistler, Grey	13	4	17	0
Whistler, Golden	472	197	669	326
Whistler, Rufous	313	72	385	127
Shrike-thrush, Bower's	0	10	10	0

Species	Banded 2006– 2017	Banded 2018– 2019	Total banded	Total retraps
Shrike-thrush, Little	489	190	679	408
Shrike-thrush, Grey	181	41	222	72
Figbird, Australasian	161	52	213	9
Oriole, Olive-backed	50	41	91	3
Oriole, Green	7	1	8	0
Drongo, Spangled	40	18	58	5
Wagtail, Willie	142	68	210	30
Fantail, Grey	467	192	659	98
Fantail, Rufous	446	210	656	131
Monarch, Spectacled	240	79	319	198
Monarch, Black-faced	21	12	33	3
Monarch, Black-winged	4	0	4	1
Monarch, White-eared	22	6	28	7
Monarch, Frill-necked	15	5	20	2
Lark, Magpie	36	7	43	26
Flycatcher, Leaden	37	26	63	3
Flycatcher, Shining	19	18	37	10
Flycatcher, Restless	4	3	7	0
Crow, Torresian	15	11	26	1
Crow, Little	1	0	1	0
Chough, White-winged	1	0	1	0
Apostlebird	5	3	8	0
Manucode, Trumpet	1	0	1	0
Riflebird, Paradise	4	3	7	0
Riflebird, Victoria's	0	3	3	0
Riflebird, Magnificent	22	9	31	5
Robin, Grey-headed	0	59	59	15
Robin, White-browed	3	2	5	1
Robin, White-faced	231	178	409	93
Robin, Pale-yellow	30	6	36	9
Robin, Eastern-yellow	786	249	1035	1025
Robin, Hooded	22	7	29	1
Flycatcher, Yellow-legged	0	1	1	0
Winter, Jacky	21	12	33	3
Robin, Rose	39	26	65	9
Robin, Red-capped	103	33	136	5
Scrub-robin, Northern	6	4	10	0
Swallow, Welcome	28	21	49	0
Martin, Fairy	0	18	18	0
Martin, Tree	6	11	17	0
Reed-warbler, Australian	85	107	192	58
Songlark, Rufous	9	0	9	1

Species	Banded 2006– 2017	Banded 2018– 2019	Total banded	Total retraps
Grassbird, Little	1	1	2	0
Grassbird, Tawny	292	94	386	150
Cisticola, Golden-headed	72	13	85	17
Silvereye	3470	1565	5035	1098
Starling, Metallic	3	1	4	0
Myna, Common	5	0	5	0
Thrush, Russet-tailed	56	21	77	19
Thrush, Bassian	37	7	44	5
Mistletoebird	105	51	156	11
Sunbird, Olive-backed	2	7	9	3
Sparrow, House	15	61	76	8
Finch, Red-browed	1847	691	2538	893
Finch, Plum-headed	77	1	78	1
Finch, Zebra	455	2	457	21
Finch, Double-barred	686	74	760	69
Mannikin, Chestnut-breasted	188	193	381	6
Pipit, Australian	3	0	3	1
Total	25096	9626	34722	10889

The many recaptures from a range of species assures that future survival analysis will be possible for many commonly caught species. To date annual survival estimates have been published for the White-faced Robin (Coleman *et al.* 2012) and Mangrove Gerygone (Coleman & Noske 2017), and other aspects of the biology of the Brown Honeyeater (Coleman *et al.* 2009), Eastern Yellow Robin (Coleman & Lloyd 20017) and Mangrove Gerygone (Coleman *et al.* 2019).

Comparisons between different habitats show significant differences with data from Kutini Payamu National Park on Cape York showing consistent catch rates, and survival rates for birds caught in this tropical rainforest habitat over a 28-year period. Similar stable trends have also been shown for higher altitude rainforest habitats in the Border Ranges National Park over the last 11 years. However, catch rates and juvenile proportions in the mulga habitat at Bowra shows significant variation with catch rates and productivity declining significantly over a number of drought years at this site with 2019 showing the lowest catch rates recorded.

Recent publications arising from this study are:

Coleman J.T., Macdonald S.H. & Smith H.J. 2009. Analysis of biometric variation in Brown Honeyeater *Lichmera indistincta* in South East Queensland. Sunbird 39: 39-48.

Coleman J.T, van Gessel, F.W. & Clayton M. 2012. Longevity and movements in the White-faced Robin (*Tregellesia leucops albobularis*) in Iron Range National Park, Cape York. Sunbird 42: 11-23.

Coleman J.T. & Noske R.A. 2017. Mangrove Gerygones *Gerygone levigaster* are short-lived compared to other small Australian passerines. Corella 41:1-7.

Coleman J.T. & Lloyd P. 2017. Using sexual dimorphism in morphometric traits to sex Eastern Yellow Robins *Eopsaltria australis* *Corella* 41: 15-19.

Coleman, J.T., Noske, R.A., Smith, B. & Mulyani, Y.A. 2019. Moulting timing and morphometrics of Mangrove Gerygones: a comparison of monsoon-tropical and subtropical populations. *Corella* 43: 106-113.

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2. Research update: Australian Sarus Cranes *Antigone a. gillae* and Brolgas *A. rubicunda*

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Plate 1. A (left), Brolga at Diamantina Lakes, Lake Eyre Basin (Graham Winterflood); B (right), Sarus Cranes, Atherton Tablelands (John D.A. Grant)

Introduction

Almost all records of Australian Sarus Crane *Antigone antigone gillae* (Plate 1B), and all known breeding sites, are in Queensland (Mirande & Harris 2019; Sundar *et al.* 2019). Based on four surveys over different areas of Queensland in October 2008 (National Waterbird Survey, Kingsford *et al.* 2012; Eastern Australian Waterbird Surveys, 2019; Scambler *et al.* 2020a; ECS unpubl. data), at least 13,780 Brolgas *A. rubicunda* (Plate 1A) are found in Queensland, approximately 14% of the maximum estimated national (and global) population of 100,000 (Mirande & Harris 2019). Unusually in such closely-related crane species, the two species are sympatric in northern Queensland, a fact that has inspired a number of interesting questions since Sarus Cranes were first formally identified in Australia in 1966 (Gill 1969; Archibald & Swengel 1987). Until recently, most knowledge of the Australian Sarus Crane dated from nearly thirty years ago (Marchant & Higgins 1993), and research on Brolgas focussed on the remnant threatened population of south-eastern Australia.

Two recent reviews have addressed the status of Sarus Cranes and Brolgas. Mirande & Harris (2019) gave a blueprint for crane research and conservation action for all the world's fifteen crane species, but a number of significant papers and project data were not available before the draft publication date. The latest *Action Plan for Australian Birds* (Garnett & Baker 2021) includes the most recent research on the Australian Sarus Crane.

The purpose of this review is to provide a summary of recent papers which have provided important data on the ecology of the Sarus Crane and Brolga in Australia, particularly Queensland. Secondly, it draws attention to some remaining knowledge gaps and new work in progress. The final section is a review of eBird data for Brolgas and Sarus Cranes, with suggestions for using eBird most effectively to support crane research and conservation.

Recent literature

In the last few years important contributions have been made to knowledge of Australian cranes, after a long period with limited progress. A major research focus has been on the populations of Brolgas and Sarus Cranes which congregate on the Atherton Tablelands in the dry, non-breeding season and are presumed to breed in the Gulf Plains. Techniques in genetic and spatial analyses and satellite tracking have been applied to Australian crane populations for the first time, with significant findings for both species.

To encourage readers to access research materials, papers made freely available online by publishers and authors are noted [F] in the Reference list, with links. Other papers cited may be available through searches, e.g., Google Scholar or ResearchGate.

- Jackson *et al.* (2016) recorded at least 3,870 Brolgas flying to roost in the Greater Mapoon area, western Cape York Peninsula (CYP), while conducting shorebird surveys in 2015. Significant sightings at Mapoon were made previously by the 2008 aerial National Waterbird Survey (Kingsford *et al.* 2012), though not referenced by Jackson *et al.* (2016).
- Nevard *et al.* (2018) found flocks of Brolgas and Sarus Cranes on the Atherton Tablelands feeding on crop stubble after harvest, but at times they fed on newly planted grains. Farmer attitudes were surveyed through questionnaires and interviews. Overall, farmers tolerated cranes but crop losses were concerning, and illegal persecution (poisoning) has occurred in the past. Many farmers were turning to perennial horticulture or tree crops which give much greater financial returns than do grains. This may reduce the number of cranes wintering in the area but may also increase damage (and the potential for conflict) on remaining annual crops.
- Miller *et al.* (2019) conducted genetic analyses of blood, tissue and feather samples from southern and northern populations of Brolgas, which provided evidence of limited gene flow between the populations. More work is indicated to explore the extent of breeding separation.
- Nevard *et al.* (2019) analysed spatial and temporal aspects of the foraging behaviour of Brolgas and Sarus Cranes wintering on the Atherton Tablelands. Some feeding sites were shared, but Sarus Cranes fed more in the central Tablelands on fertile volcanic soils, previously occupied by rainforest and wet sclerophyll forest, including the Atherton Tablelands Key Biodiversity Area (KBA, established based on early results of Scambler *et al.* 2020a: see below). Brolgas were more abundant on poorer soils to the north-west and south-west of the KBA. Sarus Cranes fed further away from roosts than Brolgas. Both species were considered adaptable and likely to seek new wintering areas if disadvantaged by land use changes on the Tablelands. See also Nevard (2019).
- Sundar *et al.* (2019) conducted surveys of both species in the Gulf Plains, immediately following the 2017 breeding season. Nesting was initiated by the first significant rainfall of the season in each catchment, and breeding success (adults with newly-fledged young) was the highest reported globally: 60% for Sarus Cranes and 50% for Brolgas. Breeding habitats often overlapped but Sarus Cranes preferred wetlands in wooded sites and Brolgas favoured more open grassland. Analysis of moulted feathers showed that in the breeding season, Sarus Cranes fed mostly on grasses while the Brolgas' diet included plant tubers and animal foods.
- Veltheim *et al.* (2019) used satellite transmitters to track eleven pre-fledged Brolga chicks, which moved 442 m on average, to and from night roost wetlands (range: 0 m–1964 m). The home range area of breeding Brolga pairs averaged 232 ha, and pairs with unfledged young used an average of 2.8 wetlands in the fragmented Victorian wetland landscape. The study recommended that buffers for building infrastructure including wind farms should take account of territory extent and movement corridors within each territory (see also Veltheim 2018).
- Nevard *et al.* (2020a) performed genetic analyses of blood samples and shed feathers and showed hybridisation between the two species occurs significantly more often than evident from field

observations. The evolutionary trajectory and conservation implications are still uncertain. Although long-suspected, migration between the Gulf Plains breeding grounds and the Atherton Tablelands wintering area was also proven for the first time by genetic analysis of feathers.

- Nevard *et al.* (2020b) conducted genetic analyses that supported the recognition of the Australian Sarus Crane as a distinct subspecies, possibly more closely related to the extinct Philippines Sarus Crane than to extant populations in Asia. This contradicted the former view that different populations of Sarus Crane in Asia and Australia were simply clinal forms.
- Scambler *et al.* (2020a) analysed 21 years of annual Birdlife Northern Queensland Crane Counts at communal night roosts on the Atherton Tablelands. Annual numbers were highly variable for both species, but the Australian Sarus Crane population was estimated to number at least 3,255, representing 19.5% of the estimated global population. The study showed that Sarus Cranes were mostly concentrated in the central, more fertile Tablelands while Brolgas roosted mostly in areas of poorer soils to the north-west and south-west of the KBA. Sarus Cranes tended to arrive much later at night roosts than Brolgas, and at shared roosts, groups of the two species usually mingled (rather than separating into different areas), which is unusual at mixed-species wintering crane roosts (e.g. Pae & Won 1994; Jia *et al.* 2019). The arrival of cranes in failing light affects identification and while night optics may help improve the reliability of identification, the authors provide a method to enable data on unidentified cranes to be used in population estimates.
- Scambler (2020) scrutinised the personal records of pioneer farmer-ornithologist Jim Bravery in the (former) Atherton Shire to reveal new information about Tablelands cranes. At least 1,000 Brolgas were apparently present by 1920, only decades after significant clearing for agriculture began on the Tablelands. Probably 1,500 cranes were present in the early 1970s, some 30% Sarus Cranes and 70% Brolgas. Average numbers are much the same today but the species balance has since reversed, with Sarus Cranes now greatly in the majority. The paper includes mapping of habitat change in woody wetlands south of Atherton, which was previously significant habitat for roosting Brolgas but has since been largely drained and cleared. This may have contributed to the changed species balance in what is now the KBA.
- Scambler *et al.* (2020b) reported the first observations of pairs of Australian Sarus Cranes apparently supporting three young ('triplets'). A review of clutch size in the Sarus Crane and Brolga suggests that successful clutches of three eggs (*vs* the normal two) are more likely to explain apparent 'triplets' than adoption of additional chicks.
- Dunne & Scambler (2020) described predation of eggs of an Australasian Grebe *Tachybaptus novaehollandiae* by a Brolga, representing the first report of egg predation by cranes in Australia.
- Veltheim *et al.* (2022) tracked local migration by 23 Brolgas of different age classes in the threatened south-eastern Brolga population, over two breeding and non-breeding seasons. Some Brolgas remained resident but in the non-breeding season some moved as far as 111 km from their breeding sites.

Knowledge gaps and current research

Research on a number of the above projects is ongoing in Queensland. The Gulf breeding study (Sundar *et al.* 2019; J.D.A. Grant unpubl. data) surveyed more areas of the Gulf in 2018, 2019 and 2021 and is ongoing. Using moulted feathers, Tim Nevard is expanding work on crane migration patterns between the Gulf Plains and the Tablelands, and is applying this technique to study the New Guinea Brolga population including possible migration to Australia. He is also studying potential past Sarus/Brolga introgression, and crane relationships with agricultural development in PNG. John Grant records annual recruitment in Atherton Tablelands Sarus Cranes (see Grant 2005) and is in the process of integrating this long-term (25-year) dataset with environmental data to tease apart the influences of variable rainfall and flooding regimes on breeding success. His records of landscape use by Sarus Cranes and Brolgas on the Atherton Tablelands also extend back for two decades and may allow an analysis of the effects of changing

land use. Elinor Scambler, Mary Barram, Margie Barram and Rebecca Enright are working on the history of significant Brolga flocking sites in Queensland and their current status.

Skye Davis has begun a PhD study through Macquarie University in collaboration with the University of New South Wales, entitled “Informing the conservation of Australia’s waterbirds from genetic connectivity analyses and eDNA”. For Brolgas, the study will examine genetic connectivity between northern and southern populations and explore the influence of current and future landscape features on gene flow. Genetic data will be obtained by employing a next-generation sequencing approach on DNA extracted from naturally-discarded feathers. Study results will be used to inform conservation plans, particularly for threatened southern Brolga populations. Brolga feather samples were collected previously for the Feather Map of Australia (ANSTO 2020; UNSW 2020) and Skye’s project is seeking more samples from Queensland, NT and WA. To contribute by collecting Brolga feathers, contact Skye (k.skye.davis@gmail.com) or Kate Brandis (kate.brandis@unsw.edu.au).

BirdLife Northern Queensland continues to conduct an Atherton Tablelands Crane Count each September. Wetland surveys including Brolgas are conducted by BirdLife Capricornia at Kinka Beach and by BirdLife Townsville at the Town Common and Wongaloo (Cromarty) wetlands. Research updates on Australian cranes are posted on the Australian Crane Network site, Ozcranes <http://ozcranes.net/>.

Key areas for conservation attention can be found in Mirande & Harris (2019) and Garnett *et al.* (2021). Some remaining knowledge gaps:

- Nests and eggs of Australian Sarus Cranes are virtually unknown; many features such as incubation period and time to fledging are based mostly on overseas data.
 - Diet studies for both species Australia-wide are minimal. Brolgas can tolerate saline water with a special gland (Hughes & Blackman 1973), but no study has systematically measured salinity in water and foods they actually use.
 - Characteristics of roost sites selected by Sarus Cranes, compared with Brolgas, on the Atherton Tablelands are not understood.
 - Brolgas have been recorded in Torres Strait but it is not known if they migrate to New Guinea
 - Sarus Crane breeding is strongly suspected on eastern CYP, e.g., at Rinyirru (Lakefield) National Park, but not yet proven.
 - Movements of large numbers of Brolgas in response to arid region rains and droughts (e.g., in the Lake Eyre Basin), are not understood.
 - Current status of Brolga breeding in the historically important Townsville/Ayr region is unknown
 - The number of Sarus Cranes remaining in the Gulf Plains or on CYP in the non-breeding season (rather than migrating to the Atherton Tablelands) is unknown.
 - There are two social models for Australian crane populations in the non-breeding season: to spread out widely across a region in pairs, family parties or small groups; or to concentrate in particular areas with foraging flocks and communal night roosts. Major Queensland flocking sites for Brolgas are largely undocumented, and the Atherton Tablelands is the only known flocking concentration of Australian Sarus Cranes.

Using eBird to support crane research and conservation

Recording personal surveys in eBird is valuable. Incidental volunteer records may not be the sole source of data, but they supplement detailed studies and indicate new areas for enquiry. Queensland eBird data for Brolgas and Sarus Cranes in 2018 were chosen to illustrate how eBird can best support crane research and conservation.

Brolga records

After removing duplicates, 914 Brolga records were contributed to eBird in 2018, of which 97% reported numbers. As above, the social structure of many crane populations in Australia is not well known, and group or flock size is useful information. Flock numbers also help to assess the importance of different locations and habitats as flocking sites which support concentrations of Brolgas in the non-breeding season. Observers can record multiple crane flocks while travelling long distances by entering GPS details for each flock recorded, or entering an accurate location name (e.g., 'Bromfield Swamp') which allows data users to infer the correct coordinates. Surveys that recorded all species totalled 786 (86% of records), but incidental records of cranes only (excluding other species) are also useful.

Compared with the known distribution of Brolgas in Queensland, eBird records for 2018 were highly skewed. Forty-three percent (394 records) were in the Brigalow Belt North (BBN) Bioregion, of which 284 were at the Townsville Town Common (72% of BBN records and 30% of all Queensland Brolga records for 2018). This reflects regular monthly surveys by BirdLife Townsville and multiple visits by individuals. The highest number recorded at the Town Common was 24 Brolgas. More than 58% of Queensland was drought-affected in 2018 (State of Queensland 2020). Large Brolga flocks were recorded at two drought-declared locations: 357 on fields along the Warrego River at Cunnamulla (Mulga Lands Bioregion) and 320 at Spoonbill Road, Clermont (BBN). Other high counts were recorded in the Gulf Plains, north of the 2018 drought zone: 500 at Karumba and 350 at the Bynoe River Crossing near Normanton.

Sarus Crane records

eBird volunteers contributed 210 unique Sarus Crane records in Queensland in 2018, with 68% on the Atherton Tablelands, mostly in the KBA, 25% in the Gulf Plains, and the remainder on CYP. Fourteen (6.7%) records were presence-only, mostly at Tablelands locations where a count would have been possible.

Unidentified cranes

Distinguishing Brolgas and Sarus Cranes can be difficult in poor light or in the distance; sometimes part or even all of a flock cannot be identified to species. This issue was recognised in 1997 for the BirdLife Northern Queensland annual Crane Count, which has always recorded Brolga, Sarus Crane, or Unidentified crane (Scambler *et al.* 2020a). In 2011 BirdLife introduced a new category 'Crane sp.' to accept unidentified crane records in Birddata, but it remained unused. Fortunately, the category also exists in eBird and is now being used to enter both current and historical records. To June 2021, 55 unique 'Crane sp.' records had been contributed to eBird. These ranged from a few birds to over 200, many in mixed flocks with Brolgas, Sarus Cranes or both. The largest mixed flock was of 300 cranes, 200 of which were unidentified and would not have been reported if identification to species were mandatory.

Significant sites

An accepted standard for a significant site, locality or region is that it regularly supports 1% or more of the national or global population of a species. However, where the population has an estimated range rather than a single figure, there are different methods to calculate the 1% threshold. In practice, Miranda & Harris (2019) allow 1% based on the minimum population estimate for a crane species. Wetlands International (2012) use the maximum of the estimated range (e.g., for RAMSAR site reviews such as Cape

Bowling Green: Driscoll et al. 2012), but for new or revised thresholds, they apply the geometric mean. To simplify the application of thresholds given these different international treatments, and bearing in mind that Sarus Cranes have a minimum of two threshold numbers, national and global, Scambler et al. (2020a) applied the geometric mean for all thresholds for both Australian crane species. All methods use rounding rules when calculating 1% thresholds.

What does this mean for eBird users? For Brolgas, the Australian population is treated as the global range: 50,000–100,000 (Mirande & Harris 2019). The global and Australian populations of Sarus Crane are estimated as 13,550–20,650, and 5,000–10,000 respectively (Mirande & Harris 2019). The various 1% thresholds are shown in Table 1.

Table 1. One percent (1%) population thresholds for Brolgas and Sarus Cranes

Species (populations)	Method of calculation		
	<i>Minimum</i> ¹	<i>Maximum</i> ²	<i>Geometric mean</i> ³
Brolga (global & national)	500	1000	710
Sarus Crane (global)	140	210	170
Sarus Crane (national)	50	100	70

¹Mirande & Harris (2019); ²Wetlands International (2012) WPES; ³Wetlands International (2012) new/ revised; Scambler *et al.* (2020a).

In 2018, only one Brolga record in Queensland (500 at Karumba) was $\geq 1\%$ of the global population, and only by the ‘minimum’ method (Mirande & Harris 2019). Of 196 Sarus Crane records which gave numbers, one Tablelands site in the KBA reported 325, globally significant by all methods, and a nearby site reported 200 on two occasions, globally significant by the ‘minimum’ and ‘geometric mean’ methods. Of the remaining 193 records, seven (ranging from 50 to 137 birds) were nationally significant by at least one method, four on the Tablelands and three near Normanton and Karumba in the Gulf Plains.

Conclusion

In summary, eBirders can best support crane research and conservation if they report numbers and use the ‘Crane sp.’ tool for unidentified cranes. In addition, it is important to recognise that a sighting of as few as 50 Sarus Cranes can be nationally significant, and 140 can be globally significant. For Brolgas, the heavily-skewed reporting from a few well-studied, popular sites suggests that they may sometimes be regarded as too common to inspire record-keeping. Due to knowledge gaps on the social structure of Queensland Brolgas, and on major flocking sites, eBirders should be encouraged to be ‘Brolga-conscious’ on their travels. Given the complexity of applying all three 1% threshold methods to determine ‘significant’ sightings, the Queensland Bird Report could adopt one explicit method for assessing Brolga and Sarus Crane records in the bioregions.



Plate 2. Brolgas in sorghum between Clermont and Mazeppa, a major Brolga flocking site in central Queensland (Bob and Olive McTrusty).

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Appendix 1. Abbreviations used in the volume

ANF	Artemis Nature Fund
AWC	Australian Wildlife Conservancy
AWE	Department of Agriculture, Water, and the Environment. Australian Government
BARC	Birdlife Australia Rarities Committee
BBN	Brigalow Belt North Bioregion
BBS	Brigalow Belt South Bioregion
BLI	BirdLife International
BLNQ	Birdlife Northern Queensland
BoM	Bureau of Meteorology
CHC	Channel Country including Simpson Strzelecki Dunefields Bioregion
CYP	Cape York Bioregion
CQC	Central Queensland Coast Bioregion
DEU	Desert Uplands Bioregion
EIU	Einasleigh Uplands Bioregion
GUP	Gulf Plains Bioregion
Ha	hectare
IBA	Important Bird Areas
IBRA	Interim Biogeographic Regionalisation for Australia, Version 7
KBA	Key Biodiversity Area
LSMU	The Land and Sea Management Unit
LGA	Local Government Area
MGD	Mitchell Grass Downs Bioregion
MUL	Mulga Lands Bioregion
NET	New England Tablelands and Nandewar bioregions
NP	National Park
NRM	National Resource Management
PNG	Papua New Guinea
NWH	North West Highlands Bioregion
QLD	Queensland
RAMSAR	Convention on Wetlands of International Importance
SEQ	South East Queensland Bioregion
SF	State Forest
TSRA	Torres Strait Regional Authority
STW	Sewage Treatment Works
TSI	Torres Strait Islands
TTCCP	Townsville Town Common Conservation Park
WET	Wet Tropics Bioregion

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