

## QUEENSLAND BIRD REPORT 2018-2019

### Introduction

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#### (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.

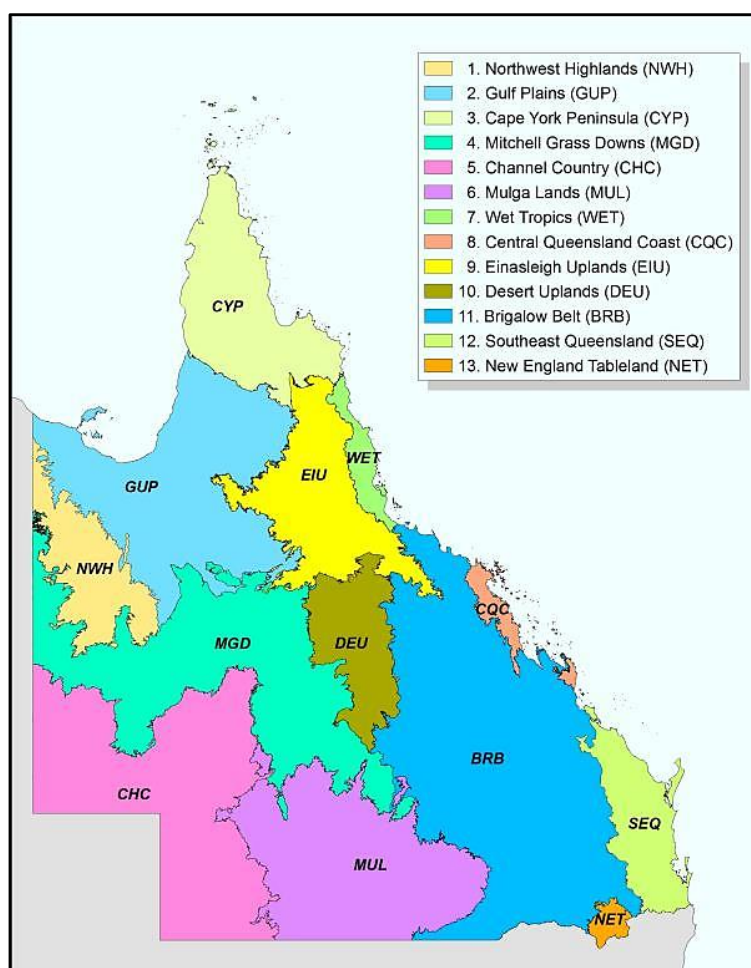


Figure 1. Map of Queensland, showing 13 of the 15 bioregions recognised in this report

**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).

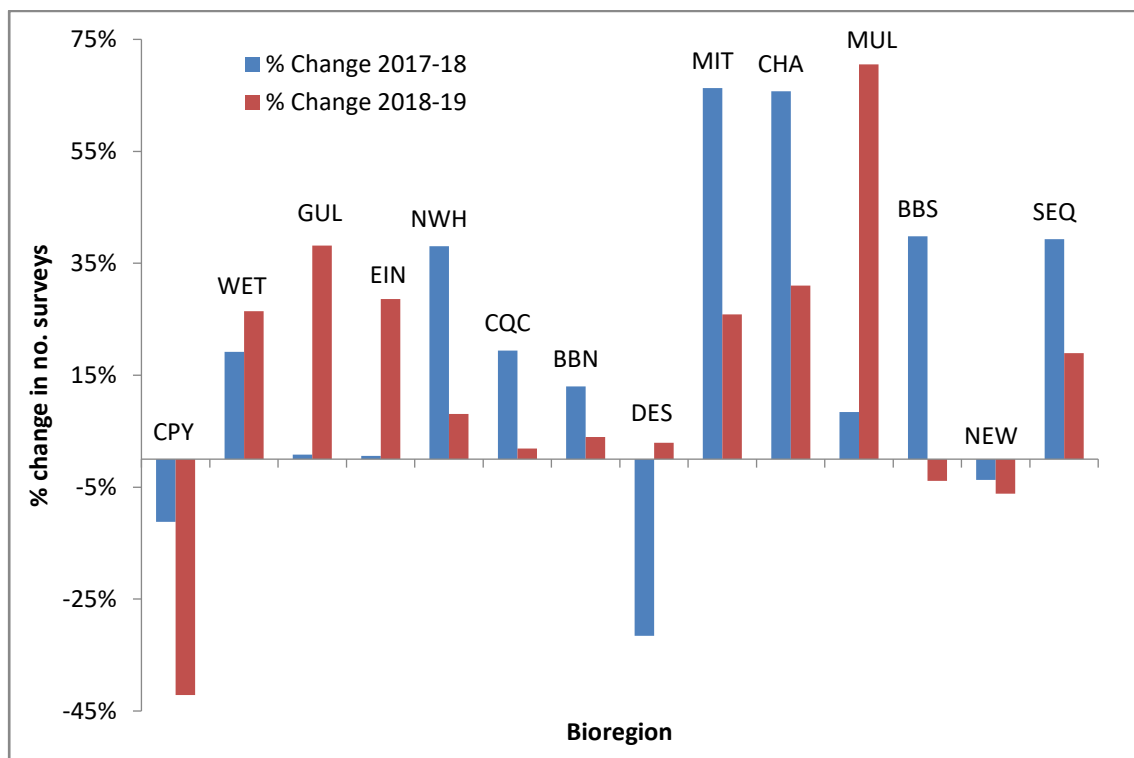


Figure 2. Changes in the percentage of surveys submitted in 2018 and 2019 for each bioregion relative to the previous year. See Table 1 for bioregion abbreviations.

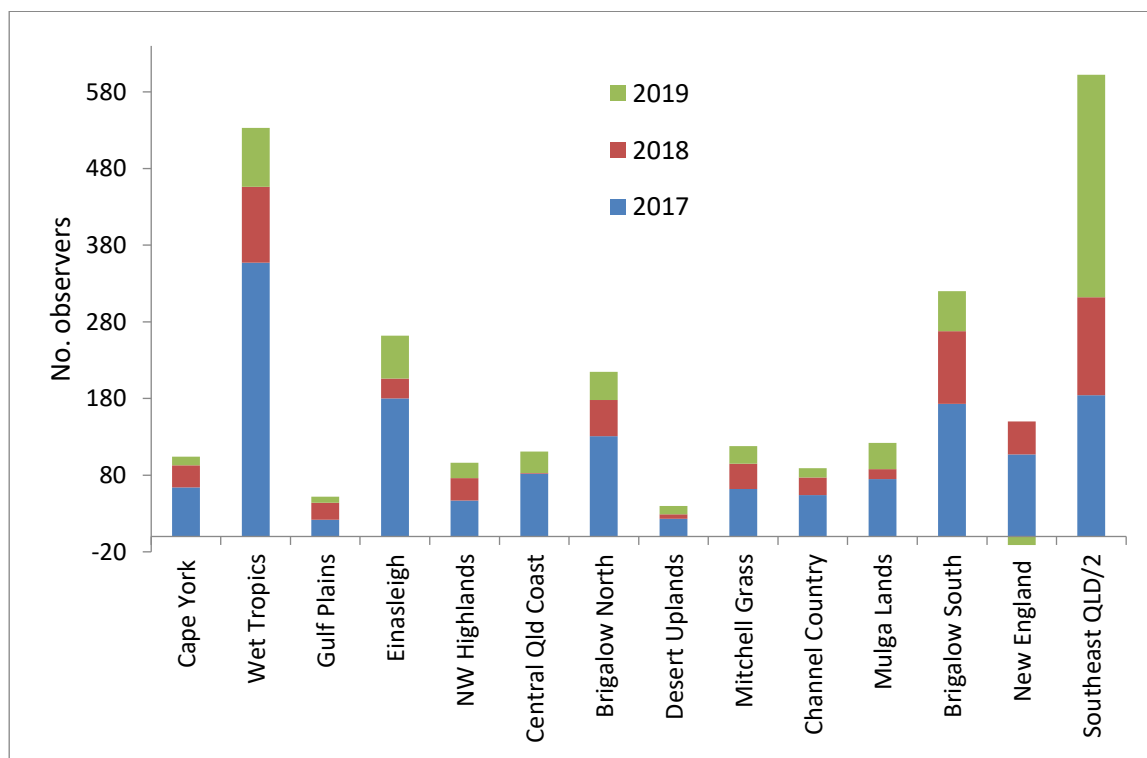


Figure 3. Incremental change in the number of observers in the three years of analysis (2017-2019). SEQ values halved to emphasise changes in other regions.

## **(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 Goomboorian.

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.