Corella, 2025, 49: 22-27

Observations of breeding, feeding and seasonal migration of Cattle Egret in south-west Western Australia

Marcus Singor

149a Bishopsgate Street, Carlisle WA 6101
marcussingor@gmail.com

Received: 3 December 2024
Accepted: 20 March 2025

Abstract. Field studies show that the Cattle Egret *Bubulcus ibis* in the south-west of Western Australia follows a similar seasonal migration pattern as those in the eastern states. The core feeding grounds outside the breeding season are pastures found around Alcoa Wellard Wetlands, Harvey, Bunbury, Denmark and Albany. Observations indicate that most of the population in the study area is absent from its rural feeding ranges during the breeding season (November-December). Cattle Egrets move seasonally to the only known breeding colony in south-western Western Australia at Mandurah and migrate up to 340 km to reach the colony. In 2022 and 2024 the number of active nests exceeded 60 pairs. Egrets forage on grasslands within a 20 km radius of the breeding colony and disperse southwards after the breeding season. The Cattle Egret population has increased in the past decade with sightings of flocks of up to 40-80 birds not unusual. The declining rainfall pattern in the south-west of Western Australia has the potential to impact on the food sources and distribution of the Cattle Egret.

Keywords: Cattle Egret; seasonal migration; distribution; climate change; colony composition

INTRODUCTION

The Cattle Egret *Bubulcus ibis* underwent a global range expansion during the 19th century, likely in response to habitat modification, such as woodland conversion to grassland, irrigation schemes, intensive agriculture and the growth of the cattle industry (Arendt 1988, Hollands 2016). The ability to cover large distances contributed to its global expansion. The Cattle Egret arrived in northern Australia from south-east Asia prior to the 1940s and established a large population in the Northern Territory (Hewitt 1960). The species seemed well established in northern Australia by 1948 (Jenkins 1959, McKilligan *et al*. 1993). It spread from there down the eastern coastline to Tasmania (Hewitt 1960, Hindwood 1971), into New Zealand and South Australia (Marchant and Higgins 1990).

The first definite record in Western Australia was a single bird seen in the horse paddock at Millstream Station, on the Fortescue River, in 1949 (Serventy 1976). In 1986-87 65 pairs were found breeding at the Lake Kununurra colony and 45 pairs in 1987-88 (Jaensch and Vervest 1989). This species was first observed in the south-west in 1952 at Three Springs, and in the following year at Norseman and Bunbury (Serventy 1976).

The Cattle Egret was classified by Johnstone and Storr (1998) as an irregular visitor and generally rare in the south-west of Western Australia. There were suggestions that it reached the south-west through migration, probably from the Northern Territory, arriving in April and departing in September or October (Jenkins and Ford 1960, Marchant and Higgins 1990). An irruption of Cattle Egrets into the lower south-west in 1959 resulted in many sightings but failed to establish a breeding population (Jenkins 1959, Jenkins and Ford 1960, Marchant and Higgins 1990).

Figure 1. *Cattle Egret in full courtship flush showing orange-rufous neck and mantle plumage and bright red bill (October 2024).*
Photo: Marcus Singor

This migratory pattern has been displaced by a Cattle Egret population that is well established in the south-west, largely sedentary, present year-round and engaged in local seasonal movement (eBird 2025, BirdLife 2025). The population in the lower south-west is slowly increasing and expanding in range (eBird 2025, BirdLife 2025).

In October and November 2005, Cattle Egrets in breeding plumage (Fig. 1) were seen in Mandurah near Pinjarra Road and the old Mandurah Road, indicating that they might be breeding locally (Rule 2006). Despite searches, no breeding site was found.

Observations of birds in breeding plumage at the Erskine Wetland date back to December 2016 (Turnbull 2016). My first

records are from 2017, when I observed a pair in full breeding plumage at the site (Singor 2018) (Fig. 1).

This study is based on the analysis of records in the eBird and BirdLife database and extensive records from local observers. A general update is provided on the present status of the Cattle Egret in the south-west and discusses seasonal migration, distribution and details of the sole breeding colony at the Erskine Wetland near Mandurah (Fig. 2).

METHODS

The Cattle Egret colony at Erskine, a suburb of Mandurah, Western Australia (32º33'03" S. 115º42'29" E.), was monitored on a regular basis during the breeding season from 2017 to 2024. A total of 37 surveys were conducted between 2017-2025 concentrated over the breeding season. The number of surveys conducted were July (2), August (4), September (6), October (6), November (7), December (2), January (4), February (1), March (1), April (1), May (2) and June (1). The colony was not monitored in 2020 and 2021. Breeding Data for those years was sourced from eBird records (eBird 2025).

Nests were counted at the breeding site. As breeding Little Egrets *Egretta garzetta* were interspersed with nesting Cattle Egrets, only those of the latter showing orange-rufous plumages were included as breeding pairs (Fig. 1). The surveys were conducted with binoculars and telescope. Nests visible around the perimeter of the colony were mapped to individual trees.

Regional sites identified with the highest concentration of Cattle Egret were selected and monitored by available volunteers. Information was gathered on seasonal movements by monitoring the presence of Cattle Egrets on their feeding grounds at Alcoa Wellard Wetlands, Harvey, Bunbury, Denmark and Albany (Fig. 2). The grasslands around Alcoa Wellard Wetlands were surveyed 181 times during 2018-2023 (Fig. 3). These grasslands are located along St Albans Road and Bertenshaw Road and were surveyed when travelling through the location.

The Bunbury region included the pastural lands in and around the city, the rural holdings east of Leschenault Inlet and Forrest Highway, including the Harvey water irrigation area, and the coastal range to Busselton. The Albany region covered the farming properties around town and outlying areas, east to Lake Pleasant View Nature Reserve, north to Porongrup National Park and west to Lake Powell Nature Reserve. The Denmark region covered the rural properties around town, near Ocean Beach and Morley Beach including the pastural regions west to Parry Inlet (35º01'11" S. 117º08'42" E.).

All records from the database from eBird and Birdlife (Birdata) between 2000 to 2024 were checked. Annual records were scrutinised as these show when Cattle Egrets were present or absent from their feeding ranges in the south-west.

RESULTS

Breeding

Mandurah, Erskine Wetland (32º33'03" S. 115º42'29" E.)

The Cattle Egret colony is located in the Erskine Wetland, which consists of a medium-sized lake with three, tree covered islands. Most birds breed on the southern island. A paperbark swamp extends to the south and forms part of the wetland. The colony is in the middle of an urban area and adjacent to the Peel Inlet.

Breeding season

The first individual birds arrived back at the colony around mid-September and nest building commenced from late September and early October. The main contingent arrived in October.

Cattle Egrets nested in paperbark trees *Melaleuca*, she-oaks *Casuarina* and eucalypts *Eucalyptu*s. Their nests were intermingled with breeding Little Egrets, and a few were next to Little Pied Cormorant *Microcarbo melanoleucos* nests. Cattle Egret were seen collecting nesting material throughout October, November and up to late December. Nesting material is added during incubation and even as late as three weeks into the nestling period (Marchant and Higgins 1990).

Cattle Egrets were present from mid-September to February. The number of active nests at the Erskine Wetland colony has increased over the years: Nov. 2017 (6), Oct. 2019 (17) (Turnbull 2019), Nov. 2020 (40) (Taylor 2020), Nov. 2022 (63), Nov. 2023 (37) and Nov. 2024 (61).

The estimated number of breeding pairs is on the conservative side as many nests were hidden in the top of paperbark trees or located in the middle of the island and could not be accurately surveyed. Another factor considered was that about 25% of first-year nesters retain white juvenile plumage or only partly acquire orange plumes of adult breeding birds (Marchant and Higgins 1990). Observations made around the perimeter of the colony showed two to three nestlings to a nest.

Colony composition

The breeding colony of Cattle Egrets at Erskine Wetland is located on the two southern islands in the wetland. The colony includes other breeding species; the maximum number of breeding pairs during the study period is shown in parentheses: Australasian Darter *Anhinga novaehollandiae* (11), Little Pied Cormorant (12), Little Black Cormorant *Phalacrocorax sulcirostris* (21), Great Egret *Ardea alba* (5), Little Egret (43) and Eastern Reef Egret *Egretta sacra* (1). Little Egrets arrived at the colony before the Cattle Egrets and were all sitting on nests by the time the latter arrived.

Predation

Predatory behaviour by the Purple Swamphen *Porphyrio porphyrio* was observed beneath the colony in December 2020. When the parent Egrets returned to feed their young, the young fought and struggled to get fed. This caused some young Little Egrets or Cattle Egrets to fall out of the nest. These young birds were flightless and as soon as they landed on the ground they were predated by Purple Swamphens. There were about a dozen Purple Swamphens patrolling the ground beneath the colony (Elson and Giblett 2021). Australian Raven *Corvus coronoides* were seen raiding the nests of the Egrets and taking unguarded young out of the nest.

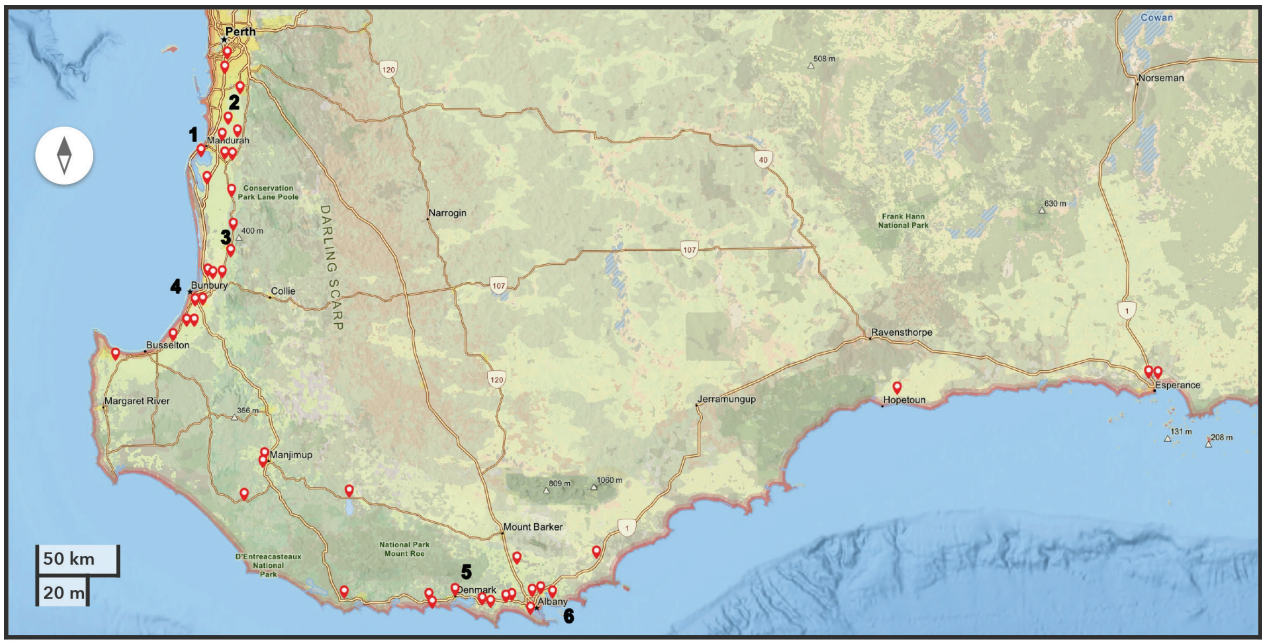

Figure 2. *Distribution of Cattle Egret sightings in south-west Western Australia. 1. Breeding colony at Erskine. Core non-breeding areas are at 2. Alcoa Wellard Wetlands; 3. Harvey region; 4. Bunbury region; 5. Denmark region; 6. Albany region.*

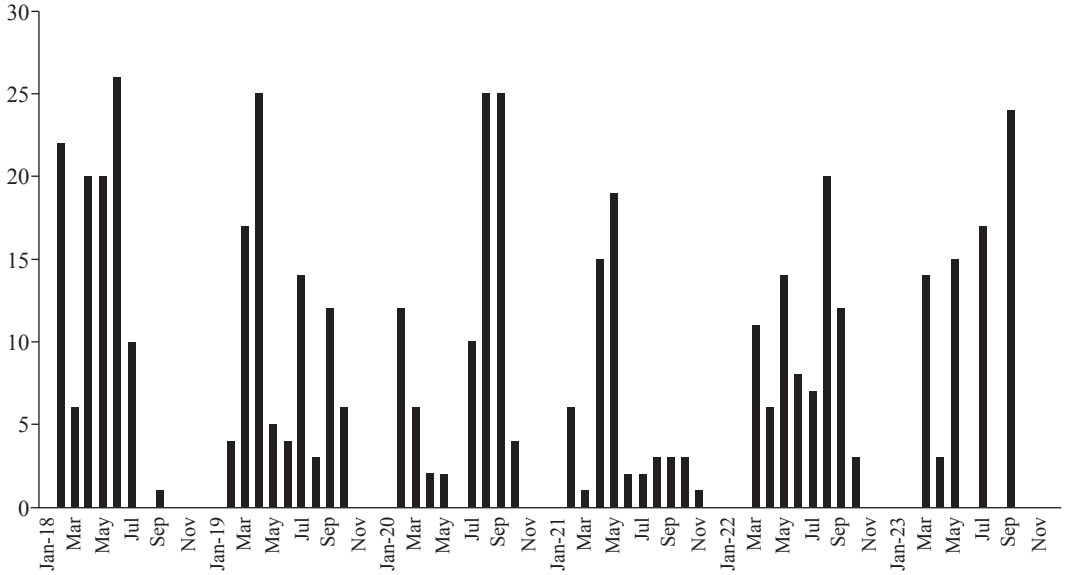

Figure 3. *Highest monthly counts of Cattle Egret around the Alcoa Wellard Wetlands (2018-2023). Note absence during breeding season.*

Dispersal outside breeding season

Alcoa Wellard Wetlands (32°18'26" S. 115°50'33" E.)

The Alcoa Wellard Wetlands are in the City of Rockingham. Cattle Egrets remained around the wetlands outside the breeding season and were seen along St Albans Road and Bertenshaw Road (Figs. 2, 3). The grasslands around the wetlands have been used for foraging since at least 2018. Birds were present in small numbers (5-20) from January to November and this varied between years (Fig. 3). They were mainly absent during the breeding season.

Erskine

During the breeding season, groups of Cattle Egrets foraged on the grasslands about 12 km to the east of Mandurah between Old Mandurah Road, Paterson Road and the Kwinana Freeway. Another foraging site was along Lakes Road, between Yangedi Road and Dirk Hartog Drive, Nambeelup. These sites are 12 km and 14 km from the breeding colony, respectively. Cattle Egrets foraged among a herd of cattle along Thompson Road, West Pinjarra, about 17 km south-east of the colony in late November 2024.

Bunbury

Cattle Egrets have been reported breeding at Australind Egret Swamp Nature Reserve (now called Morangarel Nature Reserve), north of the Bunbury Golf Club. In 2000-2001, two pairs nested in the paperbark trees (S. Elson, pers. comm.). There are few observations of Cattle Egrets around Bunbury during November and December. After the breeding season birds in breeding plumage were seen at the Eagle Wetland Reserve in February 2021 (A. Burdett, pers. comm.). Numbers have remained steady at 25-40 birds on the pastures around Bunbury between 2007-2024 (eBird). The distance between the breeding colony in the Mandurah area and the feeding grounds outside the breeding season at Bunbury, Vittoria, is 86 km.

Denmark

At Parry Beach Road, to the west of Denmark, ~ 60 to 80 birds were observed in May 2017 (J. Anderson, pers. comm.). Up to 20 Cattle Egrets are generally found in a paddock behind the WA College of Agricultural, Denmark (J. Anderson, pers. comm.). Thirty-five Cattle Egrets roosted in trees by the Denmark River in March 2021 (Morris 2021). There are few records over November and December (eBird). The distance between the breeding colony in Mandurah and the feeding grounds outside the breeding season at Parry Beach Road is 302 km.

Albany

In the annotated list of birds around Albany and Denmark (1981), the Cattle Egret was not listed as present (Garstone 1981). Bird surveys conducted in the early 2000s listed it as rare (A. Bondin, pers. comm.). This species is now found in Albany and the surrounding districts. Their numbers have increased from around 30-40 in 2017 to 60-80 in recent years with the range expanding eastwards. Birds in various stages of breeding plumage were observed in September, December, January and February. Most Cattle Egrets were absent around Albany during November and December (eBird), although there were sporadic sightings during the breeding months.

Cattle Egrets roost at Lake Seppings (Albany) and were recorded in 2022, 2023, 2024 and 2025 (J. Russell, pers. comm.). The roost locations varied around the lake perimeter. Departure and arrival times were at dawn and dusk (eBird 2025). Egrets at Lake Seppings, depending on waterlevels, first roosted on the reeds surrounding the lake before moving into their regular roosting trees. When water levels were high, they moved straight to their roost trees.

The largest number of Cattle Egrets was estimated at ~100 birds flying to roost at Lake Seppings in January 2024 (Varden 2024). The distance between the breeding colony in Mandurah and the feeding grounds outside the breeding season at Albany, Lower King, is 336 km.

Other incidental observations

There is a chain of wetland and lake reserves that runs north to south through the Perth metropolitan area that attract Cattle Egrets. The tall grass around the edges provides attractive foraging sites. Most sightings involve solitary birds.

On 30 July 2024, ~135 birds were sighted on a Byford farm, in a partially inundated paddock of long grass. They were moving in a line and flying over the birds in front of them chasing flushed insects (S. Elson, pers. comm.). All were in white plumage.

Harvey (33º04'10" S. 115º53'58" E.)

The Harvey water irrigation scheme covers a wide area along the base of the Darling Ranges. Most of the water is used to irrigate beef and dairy pastures and fodder crops, ideal habitat for Cattle Egrets. This area seems to be an important post-breeding stopover site and has high numbers over the autumn and winter months. Cattle Egrets have been sighted in flocks on farmland and irrigated paddocks outside of Harvey: February 2020 (47), June 2020 (60), June 2023 (55) and July 2024 (50) (B. Russell, pers. comm.).

Busselton (33º31'28" S. 115º31'55" E.)

There are infrequent Cattle Egret sightings from the Vasse-Wonnerup estuary. The pastures and wetlands around Stirling Estate wetlands, Shire of Capel, have reported up to 20 Cattle Egrets, mainly during March, April, July and August (eBird 2025).

Hopetoun (33º53'01" S. 120º13'05" E.)

Near Hopetoun, in the early 2000s, Cattle Egrets were seen along the Jerdacuttup River, south of Springdale Road, and in the paddocks on the west side (J. Tucker, pers. comm.). They have not been seen since (J. Tucker, pers. comm.).

Esperance (33º47'41" S. 121º56'48" E.)

The few sightings around Esperance come from the Lake Mullet Nature Reserve or west of Lake Warden (eBird 2025). 30+ Cattle Egrets were seen in July 2018 in a paddock with cattle near Mullet Lake, east of Esperance (S. Elson, pers. comm.). There are few recent sightings.

DISCUSSION

Studies in eastern Australia showed Cattle Egrets travelled considerable distances, such as from Australia to New Zealand (Hindwood 1971, McKilligan *et al*. 1993). This species is a partial migrant in eastern Australia; that is, it makes ‘regular seasonal movements‘ between breeding and winter ranges (McKilligan *et al*. 1993). There was a strong southward movement of Cattle Egrets after the breeding season to wintering sites in southern New South Wales, Victoria, Tasmania and New Zealand (Maddock and Geering 1993). The mean distance southward of wing-tagged birds was more than 600 km (Maddock and Geering 1993).

Migration started as soon as the birds had fledged. Many juveniles showed exploratory, nomadic behaviour moving around the area in which the colony is situated (Maddock and Geering 1993). This might explain the sightings of Cattle Egrets in wetlands around Perth after the breeding season. Adults leave the nesting colony area before nesting has finished (Maddock and Geering 1993). The return of banded Cattle Egrets confirmed annual migration to the natal heronry from distant parts of the wintering range (McKilligan *et al*. 1993). Tagged birds have been in the same winter ranges, after having been

Table 1

Cattle Egret breeding cycle at Erskine Wetlands near Mandurah during 2024-25 season.

Date	Comments
13 Sep. 2024	Water levels at the lake were very high, one Cattle Egret (CE) had arrived at colony in breeding plumage.
30 Sep. 2024	CE carrying nesting material, 2 CE present on South Island
20 Oct. 2024	Most CE sitting on nests, 52 active nests, possibly more in the middle of island. Some nest building still in progress. Nests on middle and south island.
6 Nov. 2024	CE pulling twigs from she-oaks for nests. Nestlings standing in nest, fully feathered and flapping wings. Three pairs of Australian White Ibis moved into colony.
22 Nov. 2024	CE still carrying nesting material, more nests on southern island. Feathered chicks standing in nests. Nestlings have pale yellow eyes and grey bill. Active nests 61 pairs.
15 Dec. 2024	An influx of a dozen new breeding pairs, which settled on southern fringe of colony. Some nestlings close to fledging and exploring their surroundings. Juveniles in the top of the trees waiting for adults to return which get mobbed.
27 Dec. 2024	New breeding birds sitting on nests on South Island. Many juveniles have fledged and are foraging in the tall grass beneath colony and along lake's edge. Some juveniles standing beside nest or scrambling through tree canopy and bushes. Fledged juveniles have orange-yellow coloured bill.
10 Jan. 2025	CE sitting on 5 occupied nests. Other nests have small, feathered nestlings standing in the nests. Most nests have three nestlings. Some fledged juveniles chasing after adults, begging for food. Not many adults still in breeding plumage. Large numbers of juveniles in trees, around lake edge and in grass under colony. Adults' breeding plumage is fading.
25 Jan. 2025	Small groups of 2-3 adults flying in to feed juveniles waiting in the top of the trees. Juveniles mob arriving parent birds. Most nests vacant, 3 pair still with small chicks.
11 Feb. 2025	Still three active CE nests with feathered nestlings close to fledging. Two nests have 2 nestlings, returning adults have faded breeding plumage. Rest of colony is deserted. Around 6 juveniles foraging in tall grass in centre of islands and around edge of lake.

recorded in the breeding colony for up to four consecutive years (Maddock and Geering 1993).

Cattle Egrets in south-east Queensland started nesting in October and finished in early March (McKilligan 2001). The breeding season in south-west Western Australia is similar in duration from October to February (Table 1).

Cattle Egrets maintain very localised feeding territories in their winter range (Maddock and Geering 1993). The same fidelity to feeding territories was observed in the Alcoa Wellard Wetlands and around Albany. The distance between the breeding colony in Mandurah and the nearest feeding grounds outside the breeding season is 30 km.

Nesting Cattle Egrets require a source of drinking water close to their heronry (McKilligan 2001). There was ample drinking water available around the Erskine Wetland colony.

The ground beneath the colony was littered with the remains of grasshoppers, a main food source in the breeding season (Marchant and Higgins 1990).

In the south-west, concentrations of Cattle Egrets occur outside the breeding season at sites such as the Alcoa Wellard Wetlands, Harvey, Bunbury, Denmark and Albany (Fig. 2). Their distribution matches the pastural zones. These grasslands are found on the Swan Coastal Plain and range from Perth to Busselton, extending to areas between Denmark and Albany.

The seasonal migration pattern corresponds with the eastern states pattern. This study shows that Cattle Egrets from the south-west leave their non-breeding grounds during October, are absent during November and December, and return at the end of the breeding season around late January-February. A few stragglers remain on the non-breeding grounds. The breeding season at Mandurah is concentrated over a short period. The bulk of the Egrets arrive in October with incubation starting a few weeks later. The possibility of some birds breeding at Albany and Bunbury has not been ruled out.

Threats

Since the 1970s, rainfall in the south-west has reduced by around 20%. According to predictions (Water Corporation 2024), the drying trend will continue with winter rainfall forecast to decrease by a further 15% by 2030. The projected drop in the number of deep low-pressure systems that produce winter rainfall in the south-west means much less rain for the region.

Rainfall is positively associated with pasture growth and the densities of the pasture-eating grasshoppers, locusts and crickets which form a major part of the Cattle Egrets diet (Marchant and Higgins 1990, McKilligan 2001). Low spring rainfall is associated with reduced adult breeding success (McKilligan *et al.* 1993). Reduced rainfall in the south-west of Western Australia has the potential to impact on the range and size of the Cattle Egret population.

Mandurah's outlying grasslands are being converted into housing estates and as the distance between the colony and foraging grounds gets longer, the current colony's location might not be sustainable.

Australian White Ibis *Threskiornis molucca* may pose a threat to the colony as they can rapidly increase in numbers and cause lower breeding performance and nest abandonment of other native waterbird species (Murray and Shaw 2006). This species has demonstrated the ability to rapidly colonize new sites (Kentish 1999). Ibises were first observed in the colony in November 2024 when there were six occupied nests.

This field study has shown the Cattle Egret population of south-west Western Australia undertakes seasonal migration from their non-breeding foraging sites to the breeding colony in Mandurah. The availability of pastural habitat between Denmark and Albany is facilitating the expansion eastwards as the population gradually increases.

ACKNOWLEDGMENTS

I acknowledge the contributions made by the following people: John Anderson, Anne and Fred Bondin, Alan Burdett, Ron Dibbins, Steve Elson, Colin Heap, Keith Morris, Bill Russell, Joe Russell, Kaylene Taylor, John Tucker (deceased), Ray Turnbull and Margot Oorebeek and members from the Albany Bird Group. I thank Kim W. Lowe for his constructive suggestions and critique of the draft manuscript and Walter Boles whose valuable comments improved to article.

REFERENCES

Arendt, W. J. (1988). Range expansion of the Cattle Egret (*Bubulcus ibis*) in the Greater Caribbean Basin. *Colonial Waterbirds* **11:** 252-262. https://doi.org/10.2307/1521007

BirdLife Australia (2025). Birdata Platform Extract (https://birdata.birdlife.org.au/). BirdLife Australia, Melbourne. Generated 22 February 2025.

eBird. (2025). eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: http://www.ebird.org. Accessed 22 February 2025.

Elson, S. and Giblett, L. (2021). Purple Swamphen predatory behaviour. *Western Australian Bird Notes* **178:** 41.

Garstone, R. (1981). Birds of Albany, an annotated checklist by Ray Garstone. Commonwealth Minister for Education 1981.

Hewitt, J.M. (1960). The Cattle Egret in Australia. *Emu*, **60**:, 99 – 102.

Hindwood, K.A. (1971). Notes on the Cattle Egret. *Australian Field Ornithology* **4**: 56-58.

Hollands, D. (2016). *Cranes, Herons and Storks of Australia*. Bloomings Books Pty Ltd.**,** Melbourne.

Jaensch, R.P. and Vervest, R.M. (1989). Breeding colonies of the Great Egret in Western Australia 1986-1988. Royal Australasian Ornithologists Union Report **33**.

Jenkins, C.F.H. (1959). The Cattle Egret in Western Australia. *The Western Australian Naturalist*. **7**:19-21

Jenkins, C.F.H. and Ford, J. (1960). The Cattle Egret and its symbionts in south-western Australia. *Emu* **60**: 245-249. doi: 10.1071/MU960245

Johnstone, R. E. and Storr, G. M. (1998). *Handbook of Western Australia Birds, Volume 1 – Non-Passerines (Emu to Dollarbird)*. Western Australian Museum, Perth.

Kentish, B. (1999). Breeding of Australian White Ibis, Straw-necked Ibis and Silver Gulls on winter swamp, Ballarat from 1990-1997. *Corella* **23**: 37-42.

Maddock, M. and Geering, D. (1993). Cattle Egret migration in south-eastern Australia and New Zealand: an update. *Notornis* **40**: 109-122.

Marchant, S. and Higgins, P. J. (eds) (1990). *Handbook of Australian, New Zealand and Antarctic birds. Vol.1. Ratites to Ducks*. Oxford University Press, Melbourne.

McKilligan, N. (2001). Population dynamics of the Cattle Egret (*Ardea ibis*) in south-east Queensland: a 20-year study. Emu **101:** 1-5.

McKilligan, N.G., Reimer, D.S., Seton, D.H.C., Davidson, D.H.C. and Willows, J.T. (1993). Survival and seasonal movements of the Cattle Egret in Eastern Australia. Emu **93:** 79-87.

Morris, K. (2021). eBird Checklist: https://ebird.org/ebird/view/checklist/S94019757. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: http://www.ebird.org. Accessed 23 February 2025).

Murray, N.J. and Shaw, P.P. (2006). Breeding biology of the Australian White Ibis *Threskiornis molucca* at an urban breeding colony, south-east Queensland. *Corella* **30**: 41-45.

Rule, D. (2006). Cattle Egrets at Ravenswood. *Western Australian Bird Notes* **117**: 16.

Serventy, D.L. and Whittell, H.M. (1976). *Birds of Western Australia*. 5th edition. University of Western Australia Press: Perth.

Singor, M. (2018). Cattle Egret breeding in Mandurah. *Western Australian Bird Notes* **165**: 23.

Taylor, K. (2020). eBird Checklist: https://ebird.org/ebird/view/checklist/S75675166. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: http://www.ebird.org. Accessed 22 October 2024.

Turnbull, R. (2016). eBird Checklist: https://ebird.org/ebird/view/checklist/S32957101. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: http://www.ebird.org. Accessed 22 October 2024.

Turnbull, R. (2019). eBird Checklist: https://ebird.org/ebird/view/checklist/S60730087. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: http://www.ebird.org. Accessed 22 October 2024.

Varden, J. (2024). eBird Checklist: https://ebird.org/ebird/view/checklist/S159685207. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: http://www.ebird.org. Accessed 9 November 2024.

Water Corporation, Climate and the South West (2024). https://www.watercorporation.com.au/Our-water/Climate-change-and-WA/Climate-and-the-South-West. Accessed 20 March 2025.