

Action Statement

Flora and Fauna Guarantee Act 1988

No. 120

Great Egret *Ardea alba*

Intermediate Egret *Ardea intermedia*

Little Egret *Egretta garzetta*

Description and distribution

Great, Little, Intermediate and Cattle Egrets are the four 'white egrets' that occur in Victoria (NRE 2000a). Great, Little and Intermediate Egrets utilise most wetland habitats throughout the continent. Their stronghold is suitable wetlands in the Murray-Darling Basin and river systems in the north of Australia. Cattle Egrets are not restricted to wetlands as are other egret species.

In Victoria egrets breed colonially (often with other species of waterbird), usually in freshwater wetlands containing trees, however Little Egrets and Great Egrets have been recorded using large cypresses in farmland for nesting (Greaves *pers. comm.*).

Great Egrets *Ardea alba* (Linnaeus 1758) are the largest of the three egrets, attaining a height of up to one metre. They are cosmopolitan in distribution, being found on most continents. In Australia they are found in all states, while in Victoria they occur in most wetland types from tidal flats to the margins of inland swamps and rivers (Emison *et. al.* 1987, NRE 2000a).

Intermediate Egrets *Ardea intermedia* (Wagler 1829) are slender white birds up to 70cm in height with a neck much shorter than that of the Great Egret. They are found from Africa to Japan, Asia, Australia and New Zealand. In Australia they occur mainly in the north and east. In Victoria, they are infrequently recorded and occur mainly in the west and north of the state in suitable wetlands.

Little Egrets *Egretta garzetta* (Linnaeus 1766) are the smallest of the three 'white egrets' and are up to 65cm in height. They have a similar world distribution to that of Intermediate Egrets although they also occur in western Europe.

Little Egrets inhabit mudflats, saltworks and shallow margins of tidal estuaries and inland rivers and lakes (Emison *et. al.* 1987). They are more often recorded on coastal and saline wetlands than are Intermediate or Great Egrets (NRE 2000c). The three species of egrets are widespread in Australia but overall their status is considered vulnerable outside the tropics (Maddock 2000). The long-term capacity of egrets to find suitable nest sites in Australia and their declining status have been highlighted by various workers (see Baxter and Fairweather 1994, Hafner *et al.* in prep.). Further information on egrets can be found in Serventy (1985), Marchant and Higgins (1990a, b, c), Pizzey (1997) and Maddock (2000).

Current conservation status

Great Egret

NRE (2000b).....Endangered (Vic.)

SAC (1994).....Threatened

CAMBA/JAMBA.....listed on Annex

Intermediate Egret

NRE (2000b).....Critically endangered (Vic.)

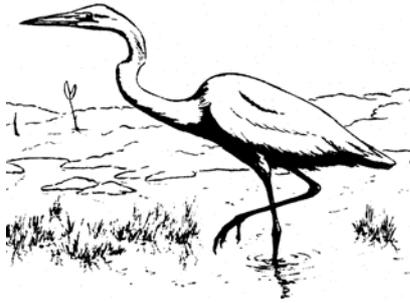
SAC (1996a).....Threatened

Little Egret

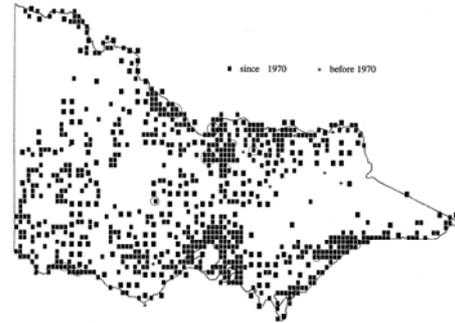
NRE (2000b).....Critically endangered (Vic.)

SAC (1996b).....Threatened

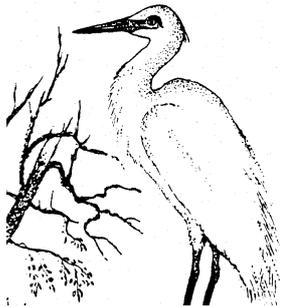
Great, Intermediate and Little Egrets are listed as threatened taxa under the **Flora and Fauna Guarantee Act 1988**.



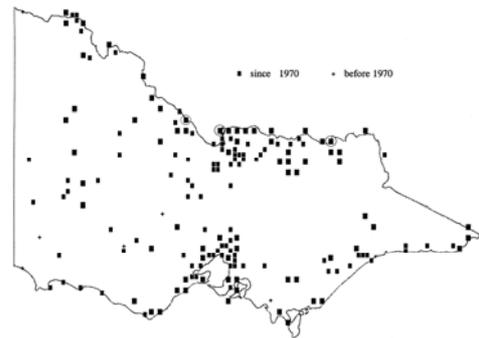
Great Egret *Ardea alba*
(illustration by Ralph Keller)



Great Egret distribution in Victoria



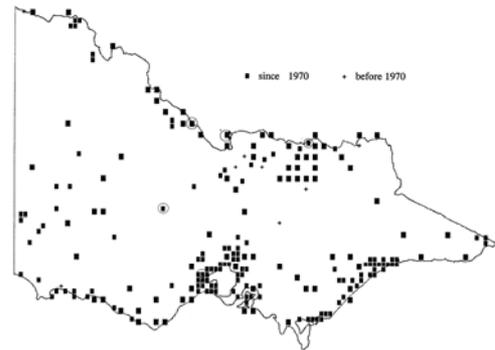
Intermediate Egret *Ardea intermedia*
(illustration by Susana Haffenden)



Intermediate Egret distribution in Victoria



Little Egret *Egretta garzetta*
(illustration by Jeremy Boot)



Little Egret distribution in Victoria
(Circled grids indicate breeding localities)

[Illustrations courtesy of *Birds Australia*; maps - *Atlas of Victorian Wildlife*, NRE 2000a]

Great Egrets are listed on both the Japan-Australia Migratory Bird Agreement (JAMBA) and the China-Australia Migratory Bird Agreement (CAMBA). Although Great, Intermediate and Little egrets are widely distributed throughout Victoria they occur only in low numbers in suitable habitat. Great Egrets are the most common of the three wetland-dependent egret species in Victoria. They do not use hypersaline wetlands, where suitable prey is absent. Breeding sites have not been documented across Australia and only 15 sites have been utilised for nesting in Victoria since 1970, although only three of these are used regularly (Corrick unpublished.). The only non-wetland site where

Great Egrets have been recorded breeding in Victoria is at Codrington in the south-west. The total Victorian population is estimated to be approximately 1 000 birds (SAC 1994).

Intermediate Egrets historically bred on wetlands along the Murray River in thousands in the 1930s (Ross 1933) but numbers such as this have not been recorded since in Victoria. In 1964 unspecified numbers of egrets (probably mainly Great) were recorded nesting at Black Swamp in Barmah Forest on the Murray River (NRE 2000c). The species is uncommon in the state with only 340 sightings recorded in the *Atlas of Victorian Wildlife* since 1970 (NRE 2000a). Some of these

records are likely to be due to mis-identifications, as Intermediate Egrets are difficult to identify. In 20 years of wetland survey since 1970 only 35 sightings were made of the species on 46 wetlands (NRE 2000c). There appear to be only two breeding sites now used by the species in the state and neither is secure. The total breeding population is likely to be less than 10 pairs for the state (O'Brien *unpub.- a*).

Little Egrets are also uncommon in Victoria with only 173 sightings made on 132 wetlands between the years 1974 and 1993 (NRE 2000c). There are only three sites where breeding has been recorded since 1970 and only one of these is used regularly. Fewer than 10 nests of Little Egrets have been recorded at any site in the last 20 years. Little Egrets are commonly recorded in saline wetlands in Victoria (NRE 2000c). These wetland types have been less severely impacted upon than freshwater wetlands. However, breeding by Little Egrets has only been recorded on freshwater wetlands and a single site in high cypresses surrounded by farmland near Geelong (Greaves *pers. comm.*).

Threats to egret habitat

A number of threats are common to all egret species in Victoria. The main impacts are manipulation of water regimes, drainage, modification and clearing of waterways, pollution and salinisation which may destroy nest trees. Habitat modification due to timber harvesting and disturbance associated with recreational activities may also potentially threaten the breeding and feeding habitat of egrets. Many natural wetlands used for feeding and breeding have been destroyed since European settlement and this is continuing (NRE 2000c). Birds may be disturbed by duck shooting activities if breeding extends into the duck season (Scott 1997).

The major threats facing egrets in Victoria relate to loss and fragmentation of feeding and breeding habitat and the alteration to natural flows of rivers and streams which have adversely affected breeding and feeding habitat.

The alteration to the natural flow regimes of rivers and streams has been listed as a potentially threatening process under the **Flora and Fauna Guarantee Act 1988** (SAC 1992). This process has led to increased summer flows and reduced winter flows in the Murray River in particular. In Victoria egrets (and other waterbirds) tend to breed in spring and early summer during suitable flood conditions when water remains in suitable wetlands at a stable level for at least four months (Briggs *et. al.* 1994), with the largest breeding events occurring in longer-lasting floods. Water regulation has severely impacted egret breeding by reducing floods, altering the seasonality of floods, reducing the frequency, duration and size of flood

flows, altering river levels and increasing the rate of fall of river levels (Pressey 1986, Scott 1997). The reduction in flood duration in particular is a major impediment to breeding and there are now much longer intervals between flood events than occurred naturally.

Egrets are thought to be dependent on a reliable food supply, natural seasonal flows of streams and the availability of suitable wetlands to trigger and sustain breeding in riparian habitats. The lack of major flooding in suitable wetlands for the required period can lead to abandonment of breeding sites. The absence of any major breeding events in the state for egrets since the 1930s implies that a major change has occurred in suitability of riverine habitats (NRE 2000c). Barmah Forest in particular is no longer a suitable breeding site for egrets.

Loss of habitat has been recognised as a major threatening process for fauna in the state. 'Habitat fragmentation as a threatening process for fauna in Victoria' has been listed as a potentially threatening process under the **Flora and Fauna Guarantee Act 1988** (SAC 1998). Egrets feed and breed in different wetland habitats. Shallow and deep freshwater wetlands with trees are used for nesting while feeding generally takes place away from nesting sites in open portions of similar wetlands (Baxter 1994, NRE 2000c, O'Brien *pers. obs.*). Shallow Freshwater Marshes (SFM) and Deep Freshwater Marshes (DFM), the two main habitat types for Great and Intermediate Egrets, have been drastically reduced in number and area in Victoria (NRE 2000c). Widespread drainage of these and other wetland types has been the main contributor to habitat loss for egrets in Victoria. For example 95% of Deep Freshwater Marshes have been lost in South Gippsland (Corrick 1981) while 30% of DFMs have been lost across the state (NRE 2000c).

Most contemporary breeding events by egrets have occurred in non-riverine wetlands such as Wallenjoe and Doctors Swamps near Shepparton (NRE 2000c, Corrick *pers. comm.*) and all have been on a much smaller scale than the irregular events in Barmah and Gunbower Forests. These non-riverine wetlands are probably now the main sites where egrets breed in the state.

In its final recommendations the Scientific Advisory Committee (SAC 1994; 1996a,b) has determined that Great and Little Egrets are:

- significantly prone to future threats which are likely to result in extinction, and
- very rare in terms of abundance or distribution.
- and that the Intermediate Egret is:
- in a demonstrable state of decline which is likely to result in extinction,

- significantly prone to future threats which are likely to result in extinction, and
- very rare in terms of abundance or distribution.

Major Conservation Objectives

Short term

- Secure sufficient environmental or natural flows at suitable times in Gunbower and Barmah forests to initiate three to five major egret breeding events (ie. thousands of birds) every 10 years;
- Monitor and manage egret populations in wetlands such as Wallenjoe, Doctors, Black and Dowdle Swamps to ensure that egrets breed successfully and can maintain a sustainable reproducing population;
- Ensure that wetland areas where egret species are known to occur are secured from environmental degradation and inappropriate disturbance; and

Long term

- Restore breeding sites in Gunbower and Barmah Forests so that nesting numbers are returned to those recorded in the 1930s (thousands of nests).
- Restore degraded wetland types preferred by egrets to reverse the trend of habitat modification and destruction, so that at least 5 000 egrets are regularly recorded in Victoria.

Management Issues

Egrets utilise both fresh and saline habitats, however, they show a marked preference for shallow and deep freshwater marshes, and, with the exception of Little Egrets, are least likely to be found on saline wetlands (NRE 2000c, O'Brien *unpubl. data. - a*).

Wetlands used by egrets for breeding are almost all on public land. Drainage and altered water regimes have had an adverse impact on these wetland sites. Clearly, any measures aimed at conserving egrets needs to be strongly oriented towards conserving and enhancing egret habitat on public land.

Gunbower and Barmah Forests have historically been the two main sites where most egret breeding has been recorded in Victoria (Pressey 1986, NRE 2000c). Both sites are declared waterbird habitat under the Ramsar Convention (IUCN 1998) and have been identified as nationally important wetlands by the Commonwealth Government (ANCA 1996). There is therefore a requirement to maintain and enhance such sites for their biodiversity values.

The Ramsar Conference in Brisbane in 1996 recognised the importance of sustainable water

management for Australian wetlands and a resolution was made recommending that provision be made for the maintenance of natural flow regimes for wetlands (Ramsar 1996).

Ecological issues

Colonial nesting waterbirds are important indicators of wetland health and function. They require certain conditions to breed successfully, including high water levels maintained for a reasonable time (at least 3-5 months), suitable food and live trees for nesting.

The trigger for waterbird breeding is thought to be a combination of photoperiod (ie. spring) and food availability in association with rising or stable water levels in suitable wetlands (Briggs *et al.* 1997, Lowe *pers. comm.*, Corrick *pers. comm.*). Water management of wetlands and streams is therefore a key issue for egret conservation.

Permanent flooding of treed areas has led to the loss of breeding habitat for egrets in NSW (Briggs *et al.* 1994, 1997) and there is evidence similar breeding habitat has been lost in Gunbower and Barmah Forests as a result of regulation of the Murray River (O'Brien *pers. obs.*).

Breeding success is likely to be adversely affected by rapid rises or falls in water levels and drying of wetlands before juveniles have gained independence (Magrath 1992). Bare ground below nests in these circumstances allows terrestrial predators access to nest sites and increases heat stress on eggs or young (Briggs *et al.* 1994).

Key aspects of the nesting requirements of Great, Little and Intermediate Egrets have been determined by various studies (eg. Briggs 1994, Briggs *et al.* 1993, 1997):

- Egrets do not breed in dead Red Gums;
- Egrets take longer than other waterbirds to start nesting following inundation of their breeding areas;
- Egrets will not breed unless their nest trees are inundated for several months;
- Treeless parts of wetlands can be flooded but nest trees should not be killed by permanent inundation.

Briggs *et al.* (1994, 1997), Briggs and Thornton (1995) and Leslie (2001) give clear recommendations for managing wetlands for breeding waterbirds in NSW that would be important when considering similar actions in Victoria. They indicate that mature live trees near open water are important nest sites. In Victorian wetlands, egrets use Red Gum saplings and mature trees and nest in flooded forest as well as in living trees around open areas within flooded forest (O'Brien *pers. obs.*). Egrets require sustained flood events to commence and complete a breeding cycle

(Leslie 2001). It is unknown whether the situation is similar for non-riverine wetlands, although stable water levels are likely to be involved.

The large breeding events by egrets recorded prior to and including the 1974-5 floods have not occurred again anywhere in Victoria (NRE 2000c). Drought years undoubtedly affect breeding incidence and success but the last major flood event of 2000-01 in the Murray River produced limited breeding by any egrets in Victoria. There has been fewer than 10 nests of Little and Intermediate Egret and no more than 200 nests of Great Egret recorded for the state (NRE 2000c).

Wider conservation issues

A range of other waterbirds also utilise deep freshwater marshes and shallow freshwater marshes, including other threatened species such as various ducks, bitterns, crakes and rails as well as the White-bellied Sea-Eagle *Haliaeetus leucogaster* (Corrick & Norman 1980, NRE 2000c).

Catchment management programs which address salinity mitigation and monitoring, and restoration of drained wetland areas, will contribute to arresting wetland degradation and reverse the decline of those wetland types favoured by the egrets in Victoria.

Previous Management Action

A number of Wildlife Reserves for the protection and management of wildlife have been gazetted (**Wildlife Act 1975, Crown Land Reserves Act 1978**). A significant percentage of these are wetland areas where egrets could occur, however, some are also open to hunting where disturbance takes place during open seasons.

In 1990/91 a wetland incentives scheme was initiated under the *Wetlands Conservation Program* (CFL 1988), and implemented for three years. Landholders could obtain assistance in the restoration, protection and management of wetlands on freehold land.

Advice, publications and field days have been carried out on managing and protecting wetlands specifically for farmers, local government officers, community members and wetland managers. A *Land for Wildlife Note* on managing freshwater wetlands for wildlife has been produced (CNR 1994).

Surveys and tagging programs for egrets (mainly Cattle Egrets) have been undertaken in NSW (Maddock *pers. comm.*) but only a single egret-specific survey has been done in Victoria (Corrick *unpubl.*).

A colonially breeding waterbird database is maintained as part of the *Wetlands Database* (NRE 2000c). This records all nesting events for

waterbird species (both marine and freshwater) that nest colonially, and keeps a history of various sites across the state. Records go back to the 1960s and sometimes earlier where information exists but the currency of the database depends on breeding events being reported.

The Vic-Group section of *Birds Australia* conducted a wetland waterbird survey in Victoria between 1987-92. This involved censusing all waterbirds at a large number of wetlands four times a year. *Birds Australia* have also recently completed the Murray-Darling Basin Waterbird project which has similar aims to the Victorian project.

The main wetlands where breeding traditionally occurred in Victoria are in forested public land in the north of the state. Environmental flows were introduced to Barmah Forest in 1998 in part to address the decline in waterbird use of this site (Anon. 1998, Lloyd 1999). From 1996-98 the Murray Water Entitlement Committee has been determining how to allocate Victoria's share of Murray Flows amongst all users (MWEC 1997). The breeding requirements of colonial waterbirds were a major factor in the development of environmental flow recommendations (Reed *pers. comm.*).

Intended Management Action

Habitat

1. Restore habitat in Crown wetlands/wildlife reserves where appropriate (targeting Barmah and Gunbower forest breeding sites). This will involve review of grazing licences and establishment of appropriate grazing regimes on public wetland areas containing breeding sites, continued implementation of the Code and forest management zones (Proposed Mid-Murray Forest Management Plan 2001) and possibly on-site works to maintain water levels during breeding events.

Responsibility: NRE (North West Region, Northern Irrigation Region, Forests Service), Parks Victoria

2. Protect existing water regimes in naturally occurring wetlands according to recognised guidelines (NRE 1996). Note that this may not be adequate for Barmah and Gunbower sites.

Responsibility: NRE (North West Region, Northern Irrigation Region), Parks Victoria, water authorities, Catchment Management Authorities

3. Liaise with Goulburn Murray Water and Catchment Management Authority steering committees to develop methods and operational plans to deliver environmental water provisions to Gunbower Forest. The outcome of any environmental flows to the

site should be monitored to determine the success or otherwise for egret breeding.

Responsibility: NRE (North West Region, Northern Irrigation Region), water authorities, Catchment Management Authorities

4. Continue to participate on relevant Murray Darling Basin Commission (MDBC) committees (water policy and environmental flows committees) with an aim to reach agreement with MDBC and NSW in regard to:

- increasing the Barmah-Millewa allocation by 50 GL (half each from Vic and NSW);
- management of the Barmah-Millewa allocation so that it can be saved up in storage until a suitable volume is reached for enhancing flood size and duration, and
- release of this water in a regime which provides conditions required for colonial waterbird breeding.

Responsibility: NRE (Catchment and Water Division)

5. Ensure that all public land management plans (Forest Management Plans, Parks Management Plans, Catchment Management Plans, etc) include:

- the identification and protection of breeding sites of colonially nesting waterbirds;
- the provision of environmental flows of sufficient size to sustain breeding, and
- current research findings and recommendations for egret breeding.

Responsibility: NRE (North West Region, Northern Irrigation Region, Forests Service), Parks Victoria, Catchment Management Authorities

Legislation

6. Complete gazettals of proposed Wildlife and Flora and Fauna Reserves.

Responsibility: NRE (Regions, Parks, Flora and Fauna Division)

7. Close wetlands or wetland sites where necessary for breeding waterbirds using the provisions (section 86) of the **Wildlife Act 1975**.

Responsibility: NRE (Regions, Parks, Flora and Fauna Division)

8. Continue to adhere to and support implementation of the MDBC cap on further diversions. This is critical in preventing a continuing decline in spring floods along the Murray and Darling Rivers.

Responsibility: NRE (Catchment and Water Division)

Survey and Monitoring

9. Continue to conduct annual Summer Waterfowl Counts with assistance from community groups. Increased emphasis should be placed on recording non-game species including egrets.

Responsibility: NRE (Regions, Parks, Flora and Fauna Division)

10. Conduct annual monitoring of known egret breeding habitat. Monitoring should be more frequent if breeding is detected. All records of egret breeding should be forwarded to the *Wetlands Database* (NRE 2000c). Special efforts should be made to gather detailed data on egret breeding during flood events. Monitoring should include an inventory of potential threats to those sites. (NRE NW)

Responsibility: NRE (Regions, Parks, Flora and Fauna Division)

11. Determine the existing population size of the three egret species in Victoria.

Responsibility: NRE (Regions, Parks, Flora and Fauna Division)

12. Alert bird groups, volunteer bird watchers and other naturalists to the current status of these egrets and encourage them to report all sightings, including as much detail as possible on habitat, possible threats, behaviour, etc. to the *Atlas of Victorian Wildlife*. (NRE NW)

Responsibility: NRE (Regions, Parks, Flora and Fauna Division)

Research

13. Encourage, facilitate and support research as follows:

- encourage studies that will identify how biodiversity in riparian and floodplain wetlands relates to water regimes. Floodplain and riparian woodlands are very important waterbird breeding habitat, and a better understanding of these areas is required if effective conservation measures are to be undertaken.
- determine the relationships between the biophysical processes of wetlands and water regimes. This would include topics such as:
 - productivity, biodiversity and carbon cycles of wetlands with different flood regimes, including the effects of full and partial drying and permanent water.
 - effects on the biophysical processes and biodiversity of rapid rises and falls of water levels.
- devise and support a study to determine how abundance and diversity of plants and animals can be influenced by applying different water

regimes to artificially inundated wetlands. This information should reveal what measures would promote better management of wetlands whose primary use is water storage, recreation, etc. (ie. not flora and fauna conservation).

- determine feeding areas used by breeding egrets (size, flooding cycle, distance to breed site, etc.).
- evaluate the effects of ponding water at a nesting-wetland rather than the current flow-through management (i.e. examine the value of small-scale works such as levees surrounding key wetland sites to pond water to prolong flooding - do the egrets still stay or do they abort the nesting attempt?)
- investigate the use of egret models as decoys to promote nesting at other potential breeding sites or to encourage egrets to breed a little earlier on a flood event.

Responsibility: NRE (Parks, Flora and Fauna Division)

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