

Crested Tern generally is less common, and the Fairy Tern varies seasonally, with large numbers being seen in the breeding period (late spring and summer).

The cormorants are probably the most prolific of the resident birds. The Little Black Cormorant is occasionally seen in flocks of over 1,000 as it dives on schools of fish in the lower reaches of the rivers as well as in the inlet and the estuary. But it is more frequently scattered in groups of 20 or so, roosting in trees, often interspersed with the Little Pied Cormorant and, less frequently, the Pied Cormorant and the Great Cormorant. The Darter is common and mostly frequents the lower reaches of the rivers, where it often nests in the bordering trees.

The White-faced Heron, the Great Egret, the Australian White Ibis, the Yellow-billed Spoonbill and the Little Egret are frequently seen in the shallows and along the edges of the rivers. The Rufous Night Heron is found in areas with good day-time cover and most commonly is seen in the late afternoon.

Coots, moorhens, rails and the like are generally found on or close to river banks, with the Buff-banded Rail being seen more often in the lower reaches, most often at low tide on exposed river banks. If you are lucky, it will be accompanied by a black, fluffy chick, but they are very furtive. The Eurasian Coot, the Dusky Moorhen and the Purple Swamphen are more frequently found further upstream or around freshwater lakes.

The Red-necked Stint, the Curlew Sandpiper, the Red-capped Plover, the Red-necked Avocet, the Bar-tailed Godwit, the Black-winged Stilt, the Common Greenshank, the Sharp-tailed Sandpiper, the Pied Oyster-catcher, the Grey Plover and the Common Sandpiper are relatively common. Most of these are migratory, so the numbers vary seasonally from none to very few or several hundreds or thousands in the shallows of the estuary and the inlet and the lakes and the wetlands. They are less common on the rivers, apart from the Common Sandpiper and the Common Greenshank, which are mostly solitary but occasionally seen in pairs.

Other common birds

The Whistling Kite and the Osprey both nest near the water and are often seen perched or flying over water on the lookout for fish. The Sacred Kingfisher (late spring and summer), the Welcome Swallow and the Tree Martin are also often seen, as are a number of other common bush birds.

Prepared by Robert Wroth, 1/05/07

Footnote:

The Canoe Trail Friends of Mandurah and Pinjarra Inc. has decided to help protect threatened migratory and residential wader birds by pursuing the establishment of a number of sanctuary zones in the Peel Inlet and the Harvey Estuary for water and shore birds.

3/09

CANOE CLUBS

- Mandurah Over 55s Canoe Club (Inc). The club paddles three times a week, mainly on the Peel Inlet and the rivers. For inquiries, send a stamped self-addressed envelope to: PO Box 5214, Falcon, WA 6210.
- Mandurah-Murray Vietnam Veterans Group. Members meet for a paddle on Thursday mornings at various locations in the Peel Region. All veterans and ex-service people are welcome. Contact Mick, m: 0417 984948 or website: www.mmvvg.asn.au.
- Mandurah Outrigger Canoe Club Inc. Competitive and recreational paddling for teams and individuals. Contact Colin, m: 0428 468 884 or website: www.mandurahoutriggers.blogspot.com.
- Mandurah Paddling Club Inc. Membership: competitive, recreational, social and junior recreational. Inquiries Paul, m: 0419 048467 or website: www.mandurah.canoe.org.au.

CANOE & KAYAK RETAIL & HIRE

For all your paddling needs:

call in and say hello to Wayne or Jenny at **KAYAKS 4~U**, the Paddlers Pitstop, Western Foreshore, Mandurah.
M: 0419 885 710 or website: www.kayaks4-u.com.

CANOEIST-FRIENDLY ACCOMMODATION

- Estuary Hideaway Cabins, 2151 Old Coast Road, Bouvard, on western foreshore of Harvey Estuary. M: 0407 838 061.
- Herron Point camping area, Herron Point Road (26km from Pinjarra) on eastern foreshore of Harvey Estuary.
- Pinjarrah Park & Country Camping, Williams Road, Pinjarra, on banks of Murray River, 3km from Pinjarra.
- Pinjarra Cabins & Caravan Park, 1716 Pinjarra Road, Pinjarra, 2km west of Pinjarra Post Office.
- Tathams Holiday Cottages and Caravan Park, 16 South Yunderup Road, South Yunderup. Ph: 9537 6844/m: 0407 192 327. Located on bank of Murray River.

CANOE GUIDE COMPANION A

Natural History

Compiled by

Canoe Trail Friends of
Mandurah & Pinjarra Inc.



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The Canoe Trail Friends of Mandurah & Pinjarra Inc. is a non-profit organisation run by volunteers who wish to promote the establishment and maintenance of recreational canoe trails on the waterways of the Peel Regional Park and to advocate awareness of and care for the natural environment.



Inquiries: send a **stamped** self-addressed envelope to: PO Box 3188, Mandurah East, WA 6210 or visit:

<http://canoetrailfriendsmandurahandpinjarra.blogspot.com>

CANOE TRAIL FRIENDS OF MANDURAH & PINJARRA INC.

Natural history of the Peel-Harvey Waterways

A supplement to the canoe trail guides produced by the Friends

Land and water

The Peel-Harvey waterways are, for the purposes of this supplement, the lower and mostly tidal reaches of the Murray, Serpentine and Harvey rivers and the Harvey Estuary and the Peel Inlet. The almost circular Peel Inlet is, on average, 0.9m deep and around 2.0m at its deepest. More than 50 per cent is less than 0.5m deep. The longer and narrower Harvey Estuary is up to 2.5m deep and averages about 1.0m. The system covers an area of 135 square kilometres and is 30 kilometres long and 12 kilometres across at its widest point. The river systems drain a combined catchment area of about 11,900 square kilometres and provide another 50 kilometres or more of flat-water paddling.

Prior to the Dawesville Channel (the Cut) being opened, the system had a very small tidal range and so there was very little flushing: what went in stayed in. With European settlement over the last 170 or so years, foreign and excessive nutrient inflow has destroyed the original Peel-Harvey ecosystem. A new one is establishing itself.

About 20,000 years ago, when the sea level was around 130m lower than it is today, the Murray River meandered its way across the shallow basin of the yet-to-form inlet, cut through the old dune system and flowed out across the coastal plain a further 50 kilometres or so to the ocean. The Harvey River flowed north and formed a relatively narrow, steep-sided valley before it joined the Murray. The Serpentine was not much more than a series of sometimes interconnected lakes.

The sea levels then rose rapidly, by geological standards, and flooded the lower reaches of the Murray and Harvey rivers. Sea level in the inlet 6,000 years ago was about two metres above the current level. During this period, the circular shape of the Peel Inlet was sculptured by wind and by the waves and currents of the shallow sea covering the area and a bay was formed against the headland of what is now Point Grey. Sea levels changed again and, around 4,000 years ago, stabilised at their current level and the inlet and the estuary developed their present size and shape. The main difference in physical dimensions is that, over the last 4,000 years, the inlet and the estuary have silted up considerably and today are, at best, only half their original depth.

Vegetation

The type of vegetation seen is dependent on several factors, the most obvious being soil type and water. The waterways paddled are generally saline, estuarine and tidal. This environment, and the cyclic (daily and annual) changes, obviously influences the vegetation. Soil type also varies and, on the western shore of the

Peel-Harvey, the more elevated yellow or brown sandy, limestone base (alkaline) soil is found. The eastern shore and the river banks are more complex, because they are lower and of a different base (no limestone). There is a mix of swampy or rich clayey soils and fertile alluvial flood-plain soils and the underlying poor, severely leached white sands usually present on the higher ground.

The vegetation growing closest to the water, usually at the water's edge, is salt and inundation tolerant. The most salt tolerant are the samphires, rushes and sedges, which are in constant—or at least daily—contact with the salt water at high tide. Bare-twigg rush, sea rush, and marsh club-rush, which has a triangular stem and dies off in summer, fringe the waterways. The various samphires and salt bushes (low or small shrubs from 0.3 to 2.0m tall with succulent blue-green or green to reddish stems and leaves) live at the water's edge and on the salt flats.

The flooded gum (moitch) can survive salt and inundation or seasonally swampy areas, but does better in areas where there is less salt. It prefers the richer and clayey soils of river banks, flood plains and depressions. The higher tides resulting from the opening of the Cut are having a deleterious effect on the moitch and possibly other eucalypts.

The saltwater (swamp) sheoak (goolee or cooli) and the saltwater paperbark (white, papery bark all the way to the smaller branches and twigs) are salt and inundation tolerant, but both are also showing the effects of increased tidal amplitude.

Jarrah, marri and tuart grow within easy viewing distance of the water, but usually on higher ground. The tuart, being confined to the limestone soils of the spearwood dune system, can be seen mostly on the eastern side of the Peel-Harvey, except where it is growing south of Point Grey and opposite Riverside Gardens. Marri and Jarrah are widespread in the area and often grow together on the more fertile soil, but the marri cannot tolerate the poorer soils where the jarrah flourishes. They both have underground lignotubers, which means they are able to regenerate readily after fire, unlike the tuart, which relies on protection from its bark to survive fire.

The common sheoak (condil); the stout paperbark (modong), a large paperbark which grows away from water but is visible due to its size; the freshwater paperbark (needle-shaped leaves and grey upper branches); and the golden wreath wattle (coojong) are usually found further away from the saline environment. However, the freshwater paperbark also grows at the water's edge and in swamps and periodically flooded areas, so it obviously can handle some exposure to salt.

Of the banksias, the holly-leaved banksia, the candle banksia (biara), the bull banksia (poolgarla) and the firewood banksia prefer to keep dry. The candle banksia may be found near areas which are waterlogged in winter, but it does not grow as close to them as does the swamp banksia. The Christmas tree (mooja) is found on sandy higher banks. Its seeds seem to be attractive to the Regent Parrot.

Spearwood (pondil) has, as the name suggests, multiple long, straight, thin upright branches and often grows in dense thickets. Along with the goolee, it is one of the most common trees/shrubs in the area. Another similarity is that both are killed by fire.

Swish bush (koweda); woolly bush; swamp cypress; harsh hakea, a small tree with prickly leaves; and forest or woody pear, also a small tree with prickly leaves, but with a much larger, woody fruit and white/pale yellow flowers with a strong perfume, are all present in various places around the waterways, but you have to look for them.

This diverse and relatively abundant vegetation provides a great habitat for a variety of native fauna. The old eucalypts are a tremendous asset, as they provide food and also shelter, nesting and resting sites for many birds, insects and marsupials. Others produce masses of flowers and seeds which attract birds, insects and small marsupials. Along the waterways, the paperbarks and eucalypts, because of their wide-angle branching habit, provide ideal nesting places for water birds. The goolee is host to mistletoe, which, when it flowers and seeds, attracts the mistletoe bird to the area.

Birds

Many birds can be seen in and around these waterways. Over 160 species are listed as having been seen in the area, but only the most common or easily seen are mentioned here. (For a full list of the birds of the area, see the Birds Australia Western Australia Inc. web site: www.birdswa.com.au). The numbers and the presence or absence of many species vary considerably not only due to international migration but also in response to seasonal conditions and the availability of alternative habitats; for example, inland lakes.

Water birds

Of the ducks, the Pacific Black Duck, the Grey Teal, the Wood Duck and the Australian Shelduck are the most common and, of these, the first three breed prolifically in the area. In late winter and spring, adults with their young frequently share the waterways with you. Clutches of from eight to 10 ducklings are quite common on the rivers.

Australian pelicans are, being so large, very obvious around the estuary, the inlet and the lower reaches of the rivers. There also are breeding colonies on some of the islands. Black swans are infrequent visitors to the rivers, but can be seen, often in large numbers (3,000 or more), on the estuary and the inlet in the shallow, weedy areas where they prefer to feed. Hoary-headed Grebes are similarly seen seasonally in large numbers on the estuary and the inlet, with fewer numbers on the rivers. But their presence is erratic, as they are not seen at all in some years.

Coastal waterways are always inhabited by the seemingly ubiquitous Silver Gull. However, the Caspian Tern, easily recognised because of its large size and red bill, is relatively common over the Harvey Estuary, the Peel Inlet and the lower reaches of the rivers. The