THE WHITE MANGROVES OF ANGLESEA ISLAND

In June, 1980, a group of eleven primary school children, under the guidance of Mr Kevin Kenneally, botanist from the State Herbarium, Mrs Lyn Clarke and Mr George Good, made a study of the white mangroves on, and adjacent to Anglesea Island in Leschenault Inlet.

The children were:-

Rodney Littlejohn Julie Bottegal	Adam Road School
Byron Palmer David Lang	Carey Park School
Craig Lindsay Richard Howe Margaret McKenzie Lisa Hunter	Bunbury Primary School
Stephanie Good	Bunbury Catholic College
Greg Todd	Boyanup School
Chris Papalia	Burekup School

The study covered five consecutive Mondays, involving a showing of slides and a lecture on mangroves by Mr Kenneally, who has written a book on Mangroves of W A and two excursions to Anglesea Island and adjacent areas, to study the mangroves and mangrove life. On the last two days, reference work was undertaken and notes compiled.

ANGLESEA ISLAND

Anglesea Island, more commonly known as Pig Island, lies in Leschenault Inlet, not far from the woodchip terminal. As a matter of fact, part of the island was resumed to carry a road to the terminal and to the nearby Koombana caravan park. A channel, cut to keep domestic animals off the island, is between the island and the road.

The island is approximately 400 metres long by about 100 metres wide. Mangroves line the southern side, and there is a dense clump on the western end. Succulent plants, mostly samphire, cover the rest of the island while a small stand of she oaks is on the north-east corner. Some of these are dead. The island is a haven for a variety of birds.

.../2.

BIRDS SIGHTED

NAME	NO.	BEHAVIOUR
Nankeen Night Heron	43	These were roosting in the mangrove clump. When disturbed, they rose and circled for a while, then settled on trees on the mainland. Later they returned to the island. Bird droppings among the mangroves indicated that they were frequently on the island.
Black Winged Stilts	21	Wading in the shallows near the island. Occasionally nade sharp yapping noises, like a puppy. When in flight their legs were extended.
Black Duck	8	Swimming near the island. They rose as the children approached, and landed on the water a short distance away.
Black Swan	4	On the water between the north side of the island and the mainland. Mostly they had their heads under their wings. Two swan skeletons were found on the island, but no indication as to what caused death.
Little Pied Cormorant	18	Only one on island, but numerous on the mainland. Mostly on trees with wings extended.
Darter	8	Sitting on trees on adjacent mainland. Wings extended.
White Egret	6	On mainland (north of island). Wading in shallows.
Osprey	1	Circling over island.
Silver Gull	24	Very common. None settled on the island, but many on jetties, the water or circling.
Silver Eyes	3	Darting among the mangrove branches.
Senegal Doves	12	In mangroves near caravan park.

.../3.

On the mainland, in a forest of mangroves, we noticed two nests, one an unformed platform nest made of sticks and twigs, and the other a well formed one made of twigs and horse hair. The first was probably that of a Senegal dove and the latter a willy wag tail.

OTHER WILD LIFE

On the mangrove trunks and pneumatophores we found numerous acorn barnacles, also manu univalves, probably aquatic snails. Mussels shells were also sighted. Small holes in the mud indicated worm activity and larger holes may have been made by crabs. Several crab skeletons and fish bodies were found. Spiders and spider's webs were common among the mangroves.

MANGROVES

Throughout the world there are some 60-70 species of mangrove of which there are only 17 in Western Australia. Mangroves line numerous stretches of the Western Australian coast, from Bunbury in the South West to the Northern Territory border in the north. The white mangrove, Avicennia Marina, is the one that grows on Anglesea Island. There is another small group of mangroves near Belvedere at the head of Leschenault Estuary. This stand is in danger of being wiped out because of a road close by. Mangroves are most common in bays, or well protected coastal areas. They grow in muddy conditions, and because of this, they have to develop an anchor system which will provide base for the tree to grow on. Some mangroves (not the white) develop a system of prop roots which help keep the tree upright. The white mangrove has a system of cable roots from which rise air-filled roots called pneumatophores.

Because of the muddy, tidal conditions in which they grow, many mangroves, including the white mangrove have seeds whcih germinate while still attached to the parent tree. These seedlings take root around the parent plant and are not easily moved by the current.

On our walk through the mangroves we noted the mass of rotting leaves under the trees. These leaves provide food for the trees as well as providing food for small creatures such as worms, insects and shellfish, When the tide comes in, so do crabs and small fish which feed on the other creatures and plants.

.../4.

The white mangroves that we saw grow up to 4 metres in height and cover an area about 4 metres in diameter. The bark is white and the leaves are dark green on the top and light green underneath. When we walked through the mangal we had to be careful not to trip over the roots or pneumatophores. All over the island, but mostly among the mangroves we found much litter - plastic bags, tins, bottles, thongs, pieces of timber, possibly from old jetties and occasional motor car tyres. Barnacles had attached themselves to a lot of this litter.

NOTES ON BIRDS

Nankeen Night Heron

This bird is found all around Australia, New Zealand, the Philippine Islands, New Guinea and the South West Pacific Islands. It hunts in swamps or shallow water, eating a large variety of animals and insects, crustaceans, fish and amphibians. It sometimes steals the eggs of other birds. The heron usually nests in trees that are in or near water. The nest is loosely built of sticks, usually in trees or bushes but sometimes on the ground in colonies with other water birds.

The Black Duck

The black duck is brown above with the feathers light brown on the edge. The underparts are also brown and the throat is white. The speculum is glossy green and the underwing is white. The face is light yellow or white with a black line running through the eye or a shorter one below. The bill is grey and the legs and feet are yellow-green. The eye is brown. Both male and female are similar in appearance.

They live in most fresh, brackish, and sometimes salt water, ranging throughout Australia, Indonesia, New Guinea, Polynesia and New Zealand.

The White Egret

The white Egret is a large white heron with a long bill and a naked face. Its neck is longer than its body. The egret feeds in shallow water or swamps, noving slowly and deliberately to catch creatures such as insects, crustaceans, fish, frogs, etc. It nests in colonies with others, but usually feeds alone.

.../5.

The White Egret (cont.)

The Egret is found all over the tropical and temperate regions of the world, including Australia, except for central Australia and the southern tip of Tasmania.

The Osprey

The Osprey is common along the coast adn offshore islands. It is rarely seen far inland. It is a member of the hawk family. Its large claws make it a natural fisherman. It is a medium-large hawk. The adult has a brown back and wings with white underparts. It has a black "necklace" that starts from behind the eye, down till level with the wing, then up again.

Pied Stilt

On Anglesea Island we saw numerous Pied stilts. They are coloured white underneath and white and black on the back. Its long legs and colour give it the name - pied stilt. It is also known as the black winged stilt or long shanks. In flight the stilt extends its legs out well beyond the tail. Its cry is like the yapping of a puppy.

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SAMPLES OF REPORTS

We recently had a visit from a leading expert on mangroves. He began with a talk on mangroves in Western Australia. He asked a few questions on what we knew.

Mr Kenneally showed us on a map of W.A. where the main places mangroves grow. The southernmost mangals of mangroves are in Bunbury on Anglesea Island. He then showed us slides he had taken. It showed the different colour of the leaves and fruit.

Many of the pictures were of pneumatophores which are roots that stick above the muddy surface. They do this to breathe oxygen. The main variety of mangrove in Bunbury is the white mangrove. This grows out the farthest of them and the closest to the shore line.

Mangroves do not like a lot of salt, though they do live in salt water.

I am looking forward with enthusiasm to the trip to Anglesea Island on Monday.

DAY 1

When we arrived, Mr Good was ready to row us across to Anglesea Island. The sea was high but calm. The weather humid with occasional showers.

Mrs Clarke took my group, and we were first on the isle. The first life we saw was a heron.

That day we sighted these birds:-

45 Nankeen Night Heron
3 White Egret
1 Black Cormorant
4 Pied Cormorant
1 White-faced Heron
12 Silver Gull
4 Black Swans
1 Black Bird (identity unknown)
26 Black Winged Stilts
5 Black Ducks
2 Bittern
1 Plover

While walking around we found the remains of a water bird and a crab. I enjoyed this trip very much. Looking forward to next week.

.../7.

DAY 2

We arrived at 8.45a.m. To our surprise we were not going to Anglesea Island. We were going to the north side of the inlet, to a place called McLeod Point. Here I took notes on Mangroves, and drew some sketches of the seedlings, leaves and the fruit.

While trudging through the mangal I came across a bird's nest. I sighted 7 in all that day. The mud was very thick in one part and I got stuck. I had a close look at the root system and noted approximately how many pneumatiphores were to one mangrove.

Byron, David and myself started after a bird call, and sighted the bird, but we were unable to identify it. On returning to the group I told Mrs Clarke about the bird. However it is still unidentified.

oOo

Our first excursion was to Anglesea Island which is in the Leschenault Inlet. While there we studied the abundance of bird life. All together we must have seen more than seventy birds. Some birds we saw were Nankeen Night Heron, Pied Cormorants, Silver Gulls, Black Ducks and many, many more. Also we studied the mangal (mangrove community) which is very thick on the island. In the middle of a large clump of mangroves is what we think used to be a large Pied Cormorant's nest. The second trip was to Pt. McLeod. Point McLeod is only about fifty metres away from the Koombana Bay Caravan Park. On this excursion we mostly studied the mangal. We saw two nests in the mangal. One was a roughly made nest of twigs which were only placed on the branch and the other being very well made from horse hair, twigs and lined with feathers. A strange whistle attracted our attention and a hunt was on. Rodney, Byron and myself started heading in the direction of the whistling. We did not get to see the bird, but I don't think we were far away from it.

oOo

It wasn't until we were on Anglesea Island that we disturbed a colony of Nankeen Night Heron. We counted forty of them and noted that they found alternative places to settle. When we left the island, we saw that they immediately returned to the mangal.

Next we noted eight Pied Stilts, which during out stay were always near pools of clear water. Their thin red legs were so hard to see with the glare of the water that their bodies seemed to float on air. When we tried to get closer the stilts took to the air, making a high pitched piping noise.

We saw two large white egrets wading. When in flight they hunched their necks in under their chests and extended their legs behind them.

During our stay four black ducks flew overhead and landed on the estuary.

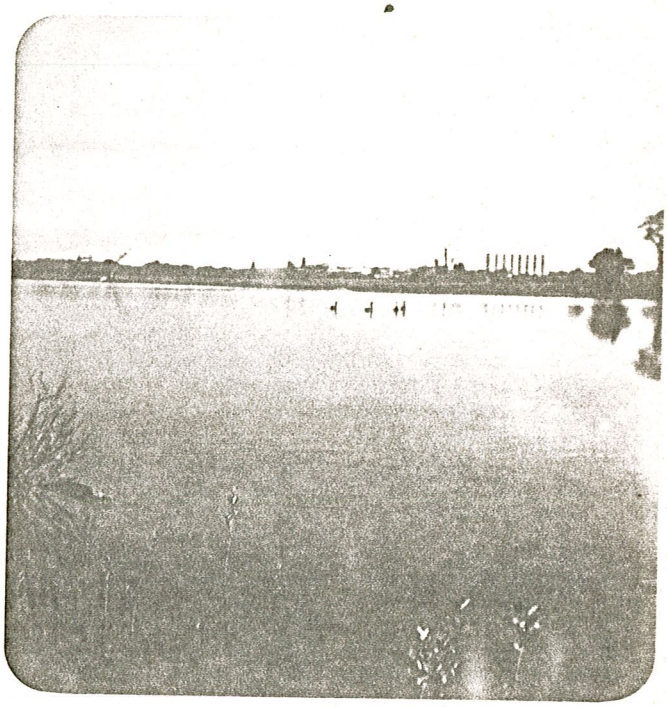
Some other birds we saw while on the island were; Little Pied Cormorants, four black swans, silver gull and some silver eyes.

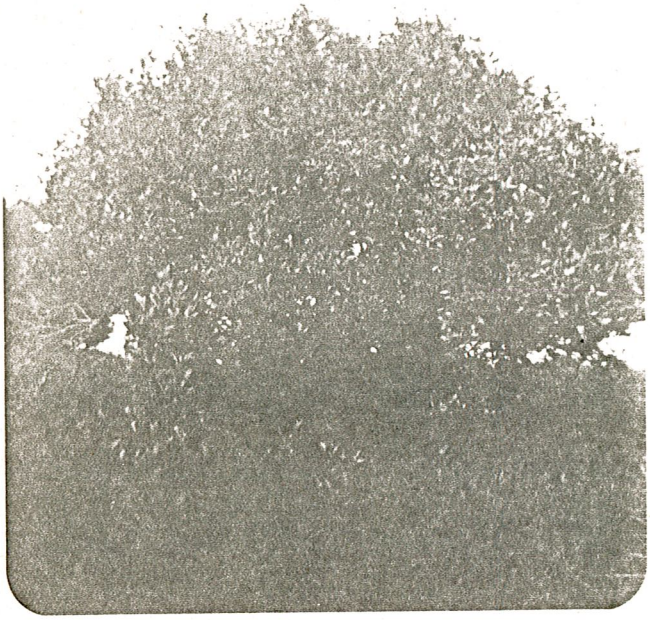
Pneumatophores are air breathing roots. These ones are about 30cm high.

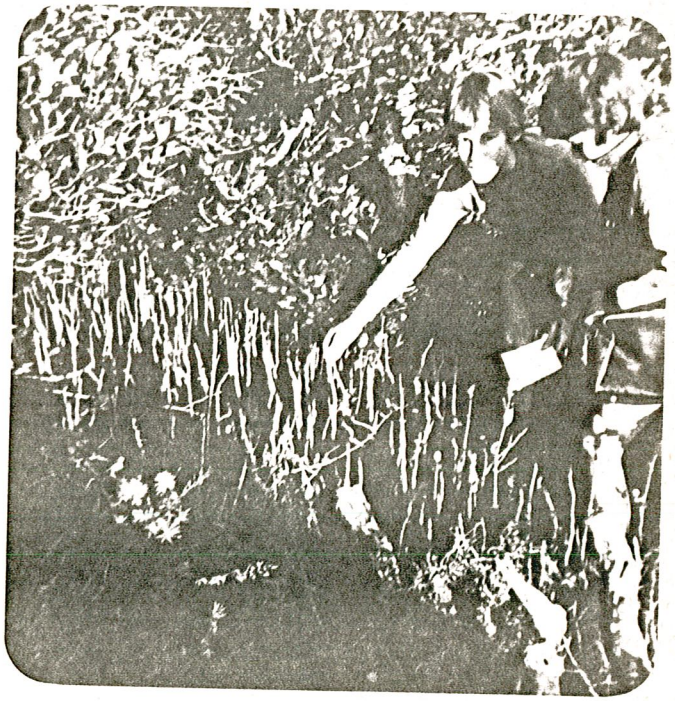
Seeds of white mangrove are slightly larger than olives. The seed opens and develops on the tree and is in plant form when it hits the ground.

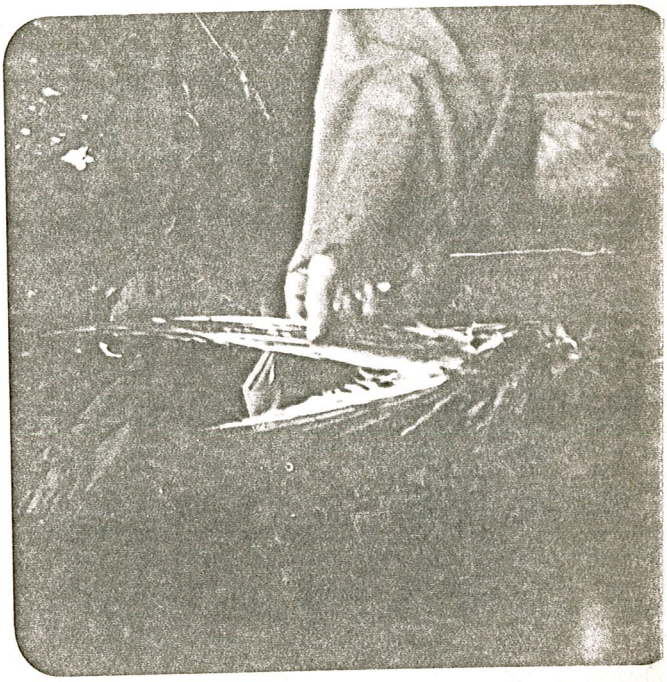
Small white mangrove
near water's edge.

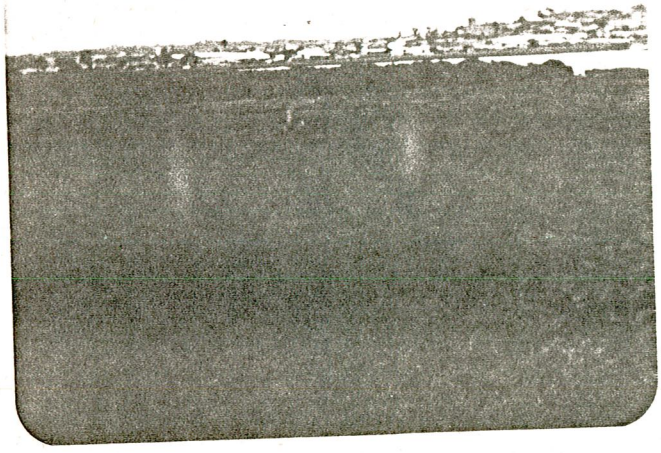
Skeleton of swan
found on island.











View from Pig Island,
looking to North-west.
Note swans on water.

Rushes in fore-
ground with fringe
of mangroves in
background.
Near Koombana
Caravan Park.

BACK ROW: Greg Todd, Julie Bottegal, Margaret McKenzie, Byron Palmer, Craig Lindsay, Rodney Littlejohn.

FRONT ROW: Richard Howe, Lisa Hunter, Stephanie Good, David Lang, Chris Papalia.

Chris, Greg, Richard, Margaret, Lisa & Craig standing in front of mangal, knee deep in samphire.

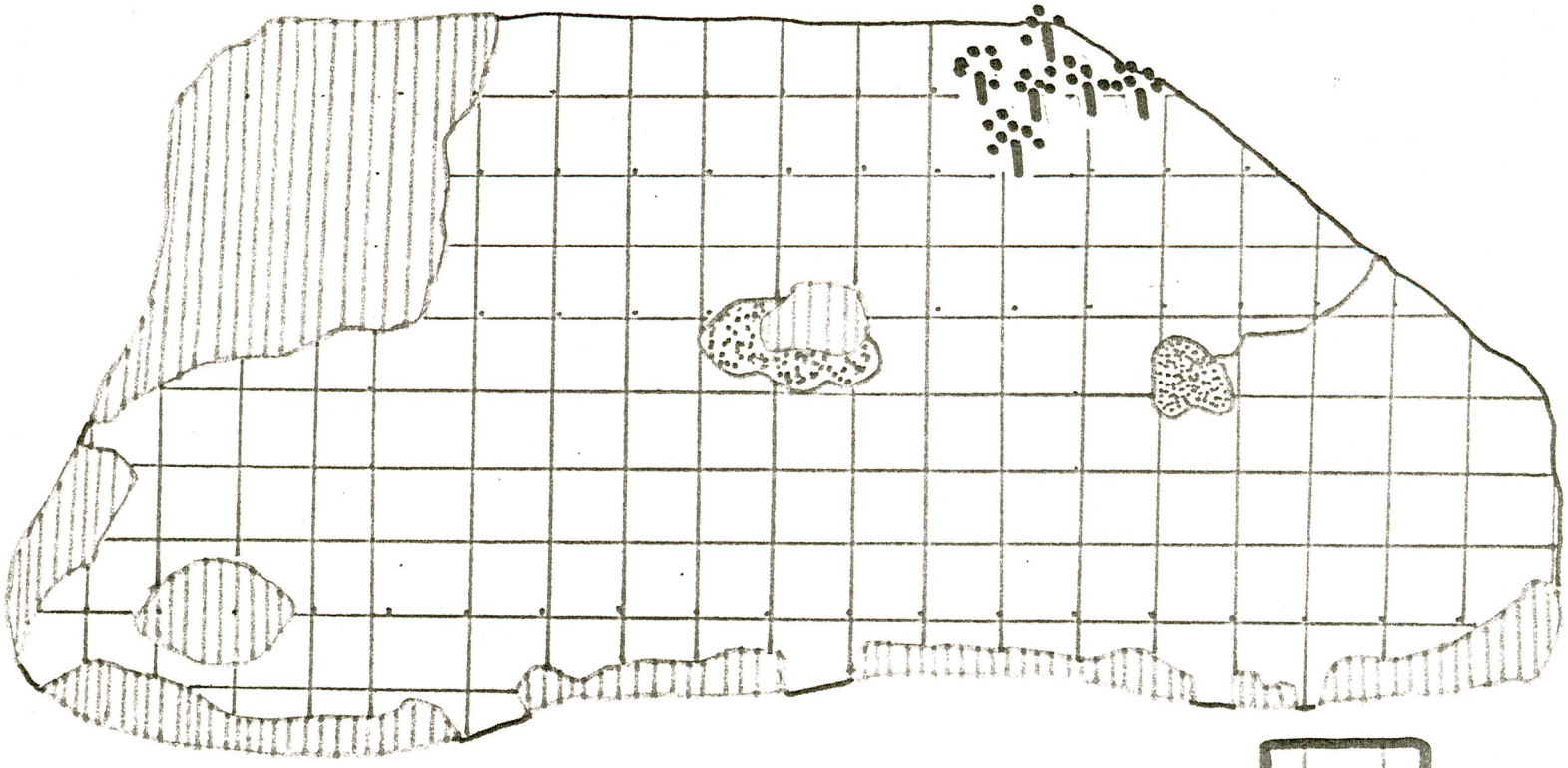
Dead fish found on island.

In rushes near Pt. McLeod. Here we found some tunnel-like nests.

She-oak on Anglesea Island. Mangroves in the background.

Small succulent
plants grow all
over the island.

Rushes on the north
shore. Some about 1
metre high. Water
underneath.



KEY

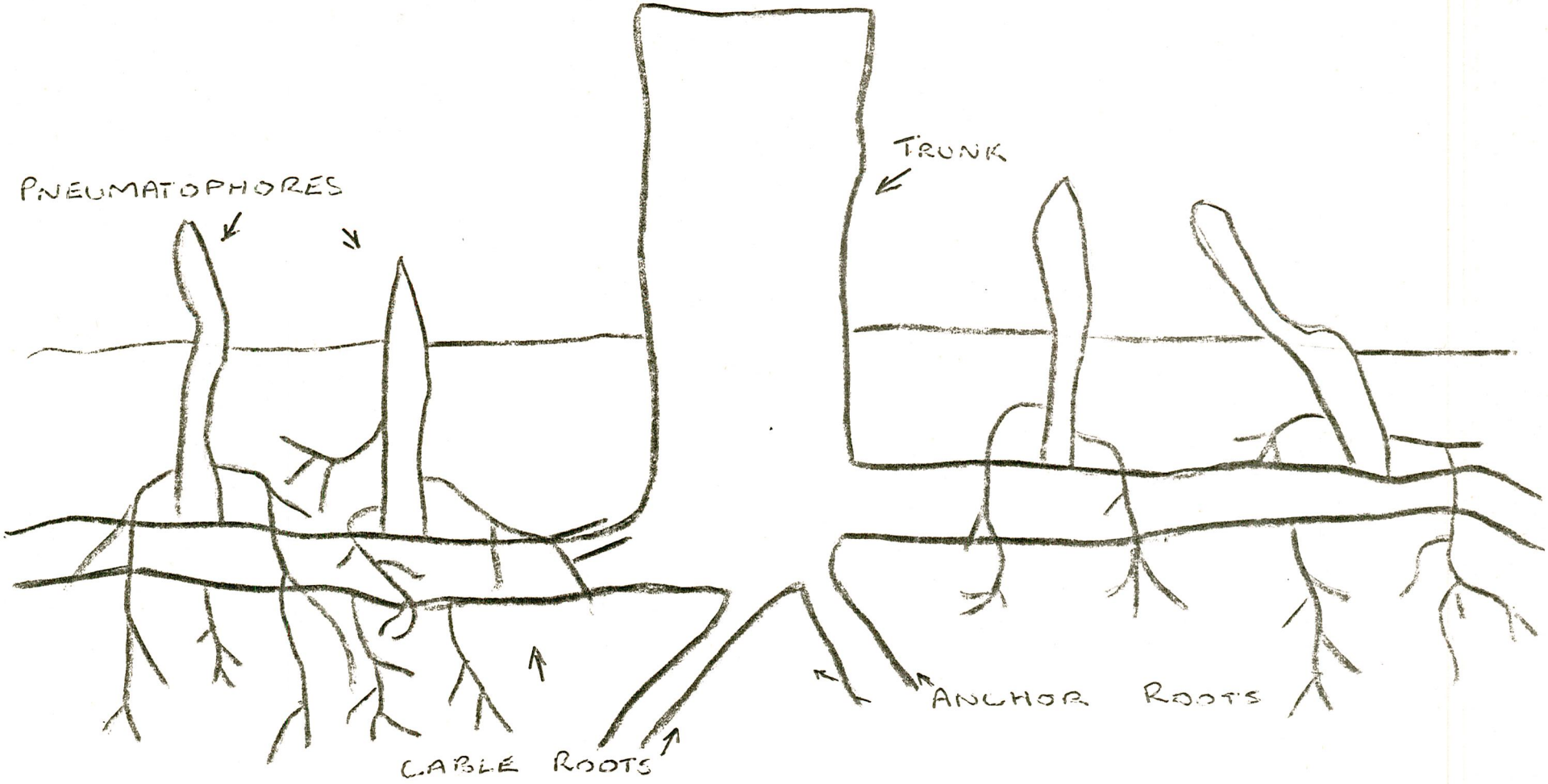
Ground Scrub

Natural Bush

Mangroves

Water

ANGLESEA ISLAND


PNEUMATOPHORES
TRUNK
CABLE ROOTS
ANCHOR ROOTS

A pair of ospreys with their nestlings in their large bulky nest, high above the ground. Ospreys are scattered around the Australian coast

ORDER ACCIPITRIFORMES birds of prey FAMILY PANDIONIDAE osprey

Silver gulls are the best-known seabirds in Australia. They are found on beaches, far inland and in city parks. These are on Flinders Island, Bass Strait

Black duck

Anas superciliosa

OTHER NAMES
Pacific black duck, wild duck, grey duck, blackie.

IDENTIFICATION
LENGTH: *Males 505–610 mm; females 470–585 mm.*
MALE: *Top of head, neck and back dark brown; feathers edged with lighter brown. Dark line from bill through eye with white or pale yellow above and below. Underparts brown; throat white. Speculum green; underwing white. Eye brown; bill lead-grey; legs yellow-green.*
FEMALE: *Little lighter than male.*
DUCKLING: *Top of head, neck and back dark grey or black; face yellow with black line through eye. Underparts yellow; yellow spots on back and rear edge of wing.*

VOICE
Female has loud raucous quack; male a loud courtship peep and hiss. Both sexes have drawn-out quack of one or two syllables.

NESTING
Breeding occurs when water areas are at their greatest and aquatic plants fully grown. In southern Australia breeds July–October; in tropics January–April; and in inland when rivers flood. Nests are well-woven cups or scrapes in the ground, in grass, reeds or tree holes. Eggs: seven to 13, usually eight to 10; shell smooth and glossy; white, sometimes with cream or green tinge; 58 × 41 mm.

DISTRIBUTION
Throughout Australia, but seldom in inland deserts. Fresh, brackish and sometimes salt water, but prefers deep freshwater swamps. Most common in south-east and south-west; nomadic. Also in New Guinea and adjacent islands to Macquarie in south, Chathams in east and Kermadecs in north. Also on Buru and Sula Islands in Moluccas, and Kangean, Lesser Sundas, Java, Celebes and in southern Sumatra.

EVERY COASTAL STREAM and lagoon, every brackish pool in a heath and every mountain lake and inland swamp has its quota of black ducks. They are probably the most numerous ducks in Australia and more widely distributed as a breeding species than any other.

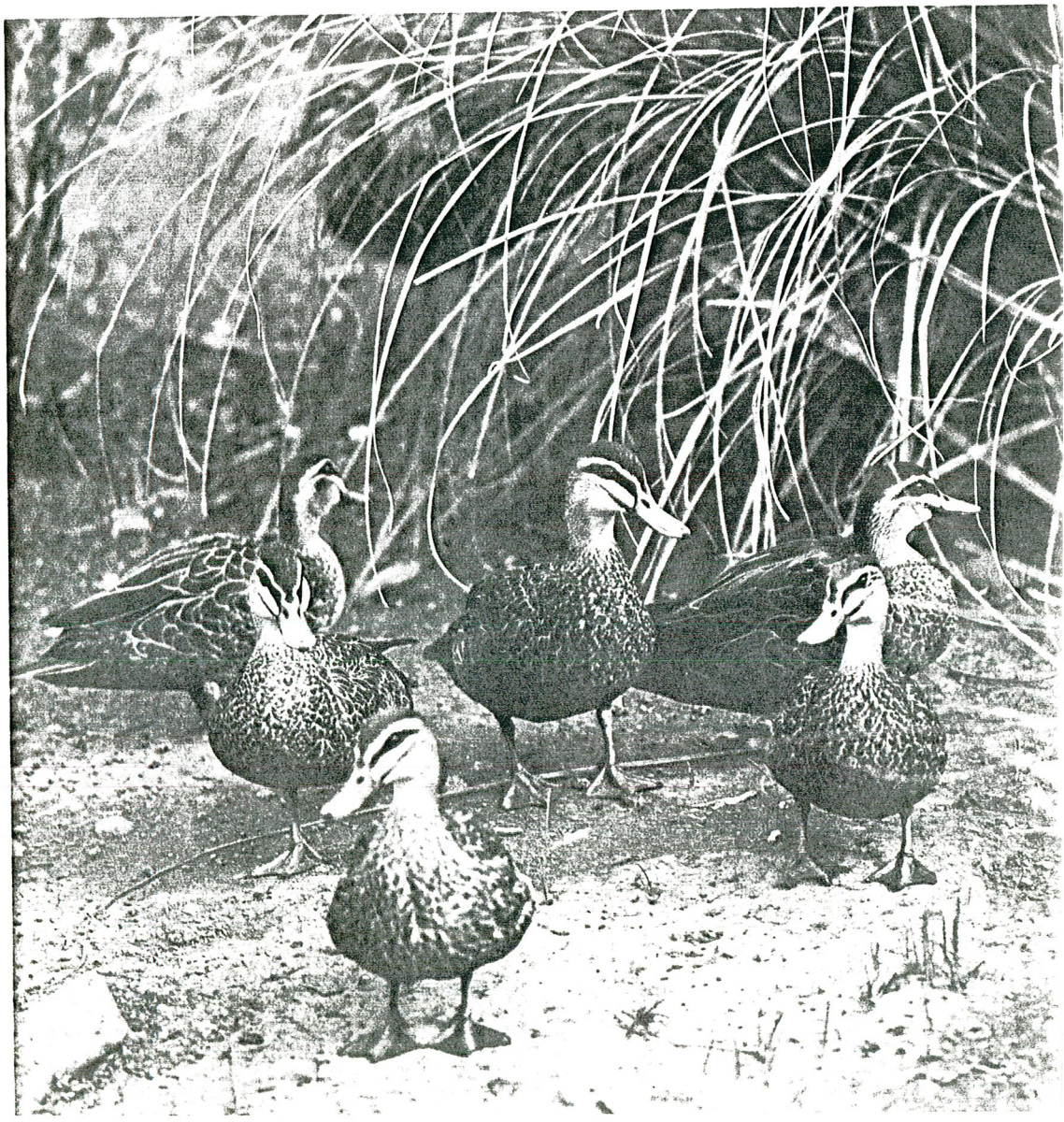
They can be found in any habitat, and look very similar to grey teal *Anas gibberifrons*, but do not perch so often on dead trees in the water. Black ducks are wary and alert and their flight is strong, swift and direct. When disturbed, they form a compact flock, gain height rapidly and generally leave the area. The grey teal, on the other hand, seems loath to leave, but usually circles or makes several passes and then settles on the other side of the swamp or pool. The black duck is not as nomadic as the grey teal.

A typical surface-feeding duck, the black duck takes its food from the water by dabbling, dredging and upending; it also strips seeds from emergent plants and growth along the edge of the water. About three-quarters of its food is plant material. It prefers to eat the larger seeds, but is capable of collecting and living on the smallest items. The most important seeds in its diet are from aquatic and ditch grasses like barnyard millet, water couch, summer grass and cultivated rice. The second most important seed sources are bog plants, nardoo, docks, smartweeds and sedges. The black duck also eats a diverse range of small creatures, but aquatic insects account for about half of its animal food. Other important items are crustaceans, yabbies, and fairy shrimps.

The black duck's breeding season is timed to occur when water areas are at their most extensive and aquatic plants are mature. Most breeding takes place in spring—July to October—in southern Australia, where the rains fall in winter. In the tropics, with summer rainfall, the bird breeds in autumn, January to April. In the inland, where rainfall is erratic, it breeds when the rivers flood.

The black duck builds its nest in a wide variety of situations. The nests range from scrapes in the ground to well-woven cups in grass or reeds, and are also found in tree holes, on stumps, in deserted nests of waterbirds or on the flat surfaces of staghorns. As with other dabbling ducks, when the clutch is laid, the male leaves the area and joins other males in flocks.

In some seasons black ducks visit irrigated rice fields in large numbers and farmers fear they do significant damage to crops. But studies have shown that overall losses caused by the bird are small; it is not an agricultural pest. It is the most popular game bird in Australia and in coastal districts makes up 80 per cent of the bag. It is well able to survive controlled hunting, but cannot maintain its numbers unless its habitat is preserved. It is already threatened by the drainage of swamps for agriculture and decreased flooding brought about by water conservation projects. More positive protection is now becoming essential.



Large egret *Egretta alba*

IS GRACEFUL EGRET IS often seen leaning slightly forwards with i neck—which is longer than its body—stretched out. It moves rather slowly and deliberately.

The diet of the large egret consists mainly of small aquatic animals ·h as insects, crustaceans, fish and amphibians, which it catches by iting quietly in shallow water, then darting its bill suddenly at the prey. The bird is usually seen alone beside rivers, lakes or dams.

The large egret occurs throughout the world. Like other closely re- ed egrets, it has beautiful, long nuptial plumes in the breeding ason. These plumes were formerly used as ornaments in ladies' hats —but the hunting of the birds for their feathers is now prohibited in most parts of the world.

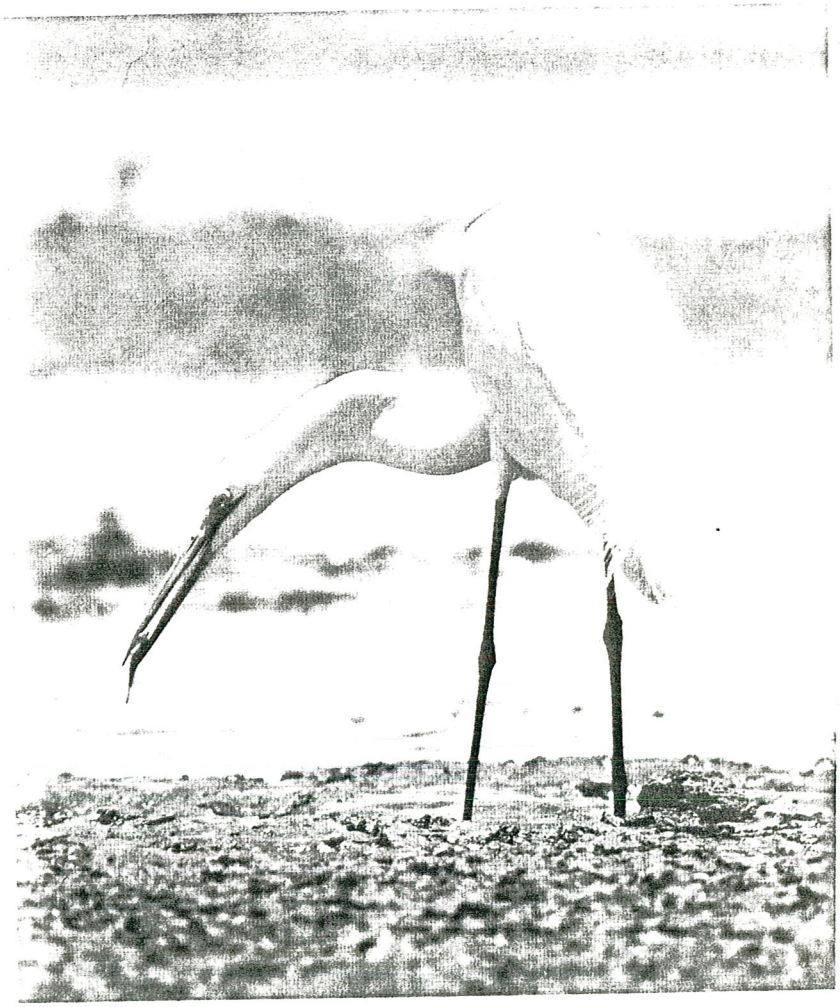
HER NAMES
Egret, great egret, great white egret, white egret, white crane.

ENTIFICATION
NGTH: *830 mm.*
ADULTS: *Sexes similar. General plumage white. Neck longer than body. In eeding plumage long white nuptial umes only on back and extending yond tail. Naked face blue-green, extending back in spur at gape. Eye yellow, red when courting; bill black d/or yellow; legs and feet brown to ick. In non-breeding plumage no iptial plumes; face yellow.*
IMMATURES: *Like non-breeding adults.*

ICE
w-pitched croak in alarm; at nest veral guttural calls.

NESTING
reeds throughout year, depending on ailability of food. Nest a platform of icks, in a tree, or sometimes in a reed bed at ground level. Usually in colonies with other waterbirds. Eggs: up to six, usually three or four; pale green-blue; 53 × 38 mm.

DISTRIBUTION
Lakes, swamps, estuaries, mangroves and dams; in tropical and warm temperate regions throughout the world.



The large egret waits quietly for prey to come within range of its long neck

'stilt' and 'longshanks'. Its legs appear disproportionately long in relation to the size of its body, particularly when an adult carefully folds them back to sit on the nest. In flight the legs extend well beyond the tail and are an aid to manoeuvring. The pied stilt—more commonly known outside Australia as the black-winged stilt—is found across most of the world. Whether all its various forms and colour combinations belong to one species or more is not clear.

In Australia, the pied stilt is common right across the continent. It is patchily distributed in the drier areas and it is only a rare visitor to Tasmania. It has considerably increased in parts of its range in the last 30 years. It was rarely seen around Sydney, for example, but now it is common in the area and nests there regularly.

Pied stilts inhabit swamplands and lake margins and estuarine areas. They do not regularly migrate, but they probably wander nomadically, depending on seasonal variations. They are strongly gregarious birds and build their nests close together around the edges of lakes but unlike the banded stilt, they do not form vast nesting colonies. Pied stilts breed from August to December, forming nests from depressions in the mud or on islands in a swamp amid damp vegetation. Sometimes they build up a structure in shallow water. Leaves and stalks of swamp vegetation, grasses and small twigs serve as nest lining. The usual clutch is four eggs.

Pied stilts wade in search of aquatic plants and animals to eat, but they rarely swim and their toes are only partially webbed. In this they are very different from their frequent associates the banded stilt and the red-necked avocet, which have webbed feet and swim often.

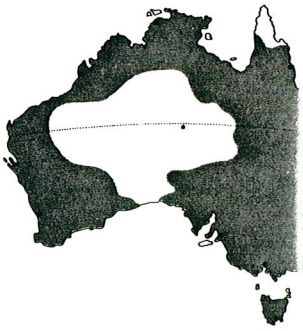
Black-winged stilt, white-headed stilt, stilt-bird, long-legged plover, longshanks, dog-bird.

IDENTIFICATION
LENGTH: *385 mm, including 60 mm bill.*
ADULTS: *Sexes similar. Back of head and nape black, separated from black back and wings by white collar. Rest of body white. Eye red; bill black; legs pink.*
IMMATURES: *Black on back of head and nape replaced by dull grey; dark grey patch around eyes; wings and back brown.*

VOICE
Single yelping, or puppy-like barking call, persistently repeated; higher-pitched piping notes in flight.

NESTING
Breeds August–December. Nest depression in mud at water's edge, or on an island in a swamp among damp vegetation, or at times a built-up structure in shallow water. Leaves and stalks of swamp plants, grasses and small twigs usually added for lining. Eggs: usually four; dull green or stone-coloured, heavily marked with spots and blotches of purple-brown, with underlying lavender lines; 45 × 29 mm.

Throughout mainland Australia wherever suitable habitat exists. Distribution patchy in drier centra areas. Rare visitor to Tasmania. A New Zealand, southern Europe, A and North America, and non-fores areas of Africa and South America



The pied stilt builds its nest mainly around the muddy edges of lakes, in water or amid the damp vegetation in swamps. Pied stilts often nest close together

a ocorax
holeucos

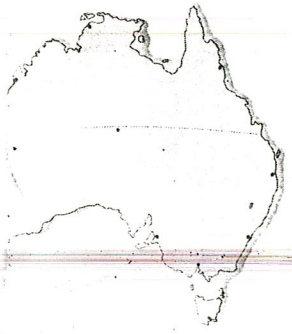
AMES
l , little black-and white
ant, little black-and-white shag,
ormorant.

CATION
10 mm.
S: Sexes similar. General plumage
above and white below. White frill
h above eye and beside crown.
s ite in most birds, black in a
a nd throat naked and yellow.
rown; bill mostly yellow with some
above; legs and feet black. In
n lumage a black tuft on
a nd white tufts on sides of
n.
TURES: *Black feathers on thighs*
bove eyes. Irregular brown patches
e. Bill yellow-brown.

ng and uk-uk-uk *calls on nest. Not*
n yet whether there is a sexual
in voice. Normally silent.

G
ds throughout year, depending on
lability of food. Nest a platform of
l debris, in trees, on bushes or
ound. Eggs: usually three to
blue or pale green, with limy
ing; 48 × 32 mm.

BUTION
ne or fresh water throughout
a. Also in eastern Indonesia,
Guinea, New Zealand, and on
ral south-west Pacific islands.



The extremely common little pied cormorant can be seen right around the coastline and wherever water is found inland

MOST ANY BODY OF WATER in Australia, large or small, marine or , is likely to have a population of little pied cormorants. ngle birds will be found in small creeks, pools and dams. Where od is plentiful, the cormorants form large flocks composed of hun- ds of birds. The little pied cormorant is most common in fresh r, but is also found in sheltered waters along the coast and at s even on offshore islands.

On inland waters these birds feed on yabbies and insects and, in rine waters, on a wide variety of crustaceans and small fish.

ike other cormorants, the little pied cormorant is adapted to hunt- prey underwater, where it swims with both feet together. At the rface it swims with alternating leg strokes. Its plumage is per- able to water, which helps to lower its buoyancy. After swimming akes the water out of its plumage and stands still, with wings ead, presumably to dry and sun them, and to help to control para- ites that may infest its skin.

When courting, the male cormorant advertises for a mate by call ing from a suitable nest site. After he has been chosen by a female, he gathers sticks and debris, which she builds into a platform nest. Both parents take turns at incubating; they warm the three to five oval eggs with their webbed feet.

For the two or three days after the chicks have hatched they are fed on a liquid from the tip of the adult's lower mandible. When they are older, they are fed on bits of predigested food, from the parent's throat, their heads inside the parent's bill.

The little pied cormorant has a short, stubby yellow bill. Unlike its larger relation, the pied cormorant *Phalacrocorax varius*, it does not have an orange-yellow spot in front of its eye. Another large black-and-white cormorant, the black-faced cormorant *Phalacrocorax fuscescens*, has a black face and bill.

Little pied cormorants are frequently found in association with little black cormorants *Phalacrocorax sulcirostris*. In coastal marine waters, however, the little pied species, with its black and white general plumage, is the more common of the two.