Department of Sustainability and Environment

Identifying age, sex and moult in Victorian Game Waterfowl

enhancing game management

A Victorian Government initiative

Victoria The Place To Be

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About the field guide

This field guide equips the waterfowl hunter with information to assist them in identifying the age, sex and moulting stages in harvested game ducks. This information can provide insight into a population's productivity, current status and recruitment from season to season.

All waterfowl hunters in Victoria must be competent in identifying different waterbird species. However, this guide is not intended to educate hunters on species identification, but rather to illustrate methods of determining age, sex and moult.

Enhancing Game Management Initiative

In 2006, the Victorian Government launched the 'Enhancing Game Management' initiative. This initiative aims to better manage our duck, deer and quail species, their habitats, and involve community groups in on-ground conservation works. This field guide is a product of the initiative.

Who is this guide for?

This field guide provides hunters with a quick reference guide to key traits in determining age, sex and moult of Victorian game waterfowl. It is compact and durable enough to carry with you in the field. For convenience, the majority of information is pictorial, so observe colours and patterns closely.

Why identify age, sex and moult

These aspects of waterfowl biology provide critical information on the productivity of populations, particularly recruitment from season to season. Identifying the timing of moult in game birds, provides important information on periods when harvesting should occur without affecting breeding.

Hunter bag surveys

Hunter bag surveys are undertaken by the Department of Sustainability and Environment (DSE) each duck season. These surveys provide wildlife managers with a snapshot of species, location, age & sex of waterfowl being harvested. This information, is important when determining season lengths and bag limits. Decisions using this information ensure that our waterfowl resources and hunting tradition will be sustained for future generations to enjoy.

Contents

Introduction

In determining the age and sex of a bird, it is important to understand the terminology used to describe the anatomy and the names of the feather groups on the wing. Pages 14–29 of this guide describe the plumage traits of each game species in determining age and sex. Use Figure 1 and 2 as a reference when identifying such traits.

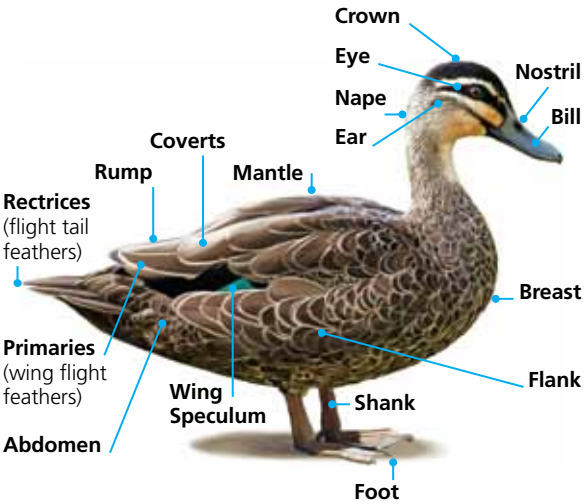


Figure 1 *The anatomy of a duck (example: adult Pacific Black Duck).*

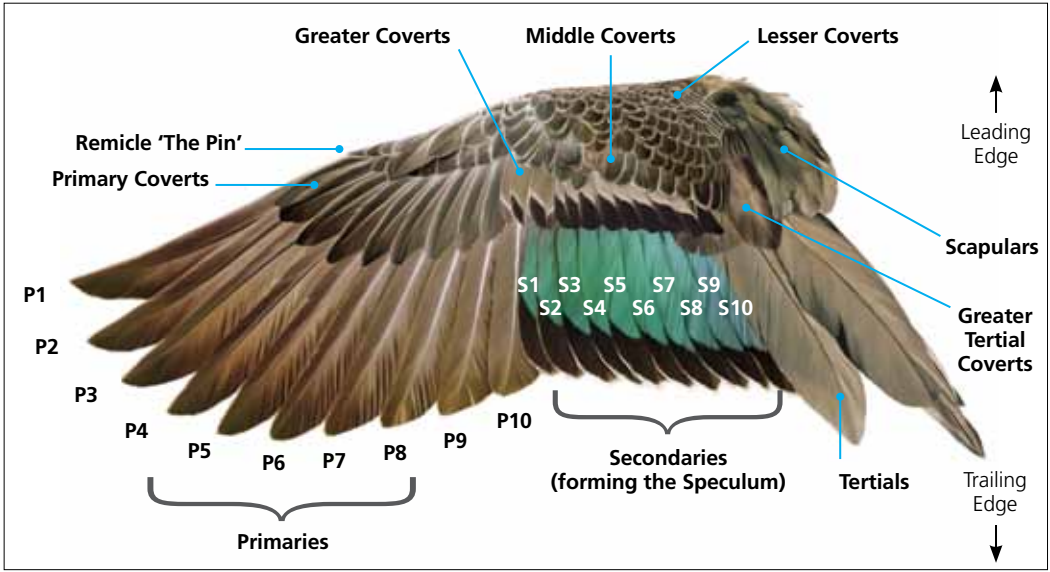


Figure 2 *Feathers of a duck wing (example: adult Pacific Black Duck). (adapted from Marchant and Higgins 1990).*

What is moult and why is it important?

Moult is the process of replacing worn feathers with new ones, or replacing them with more colourful feathers to make them more attractive to potential mates. Moulting occurs in response to a mixture of seasonal hormonal changes. During winter, ducks moult and replace their feathers at the same time. Ducks remain flightless during a portion of this time when they moult their wing feathers. It is important to avoid hunting during this period as ducks will be vulnerable as their flight is impaired and overharvesting could occur.

Figure 3 shows a simplistic overview of the phases within a moult cycle. A basic understanding of the moult cycle is useful in determining the age of waterfowl.

What is plumage?

Plumage describes colouration of a bird's feathers. Different moults give way to varying plumages. The first moult a duck undergoes as it matures from a chick is the ***first pre-basic*** moult. During this moult the juvenile duck replaces its downy feathers with fully formed body feathers. The bird is classified an immature bird upon completion of first pre-basic moult. Its new feathers are drab in colour and considered ***basic plumage***. In the early spring, just as the breeding season gets underway, a partial loss of feathers happens when male ducks put on their ***breeding plumage***. After breeding, the bird will undergo a full moult (wing and body) and revert back to its non-breeding basic plumage. This is when wing moult is most evident. (Note: not all game species exhibit characteristics of the full moult cycle).

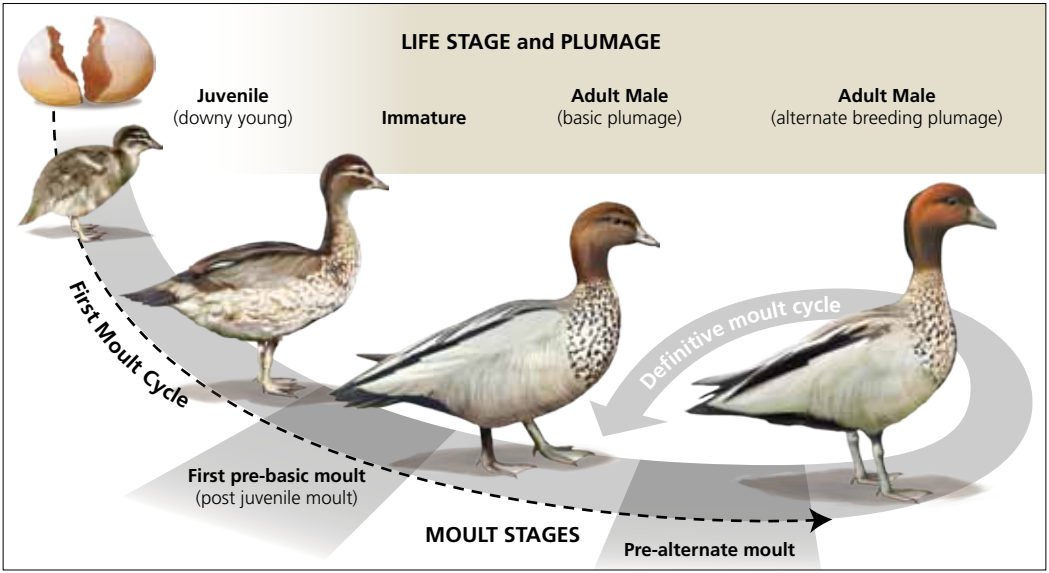


Figure 3 *Moult Cycle (example: Australian Wood Duck).*

Identifying moult in waterfowl

Once birds have reached maturity (4-6 months) they have undergone one complete cycle of moult. During the annual moult, waterfowl have a complete and simultaneous moult of their wing feathers (referred to as remige moult) which leaves them flightless for 2 to 4 weeks. This generally occurs after breeding, where the male reverts back to basic plumage and undergoes complete wing moult. If breeding occurs late in the season, wing moult may be still evident in harvested waterfowl. Figure 4 describes the phases within remige moult and what to look for in identifying moult in harvested waterfowl.

a) In the first stage of moult the primary flight feathers and most of the secondary feathers have been lost. Look for multiple loss of flight feathers.

b) Approximately 5 days into the remige moult, the flight feather tips emerge from their soft sheaths. Look for the presence of emerging feathers (or 'pin' feathers).

c) Approximately two weeks after the onset of remige moult, the soft sheaths begin to form the shaft of the flight feathers. (in harvested birds, this stage is often mistaken by the presence of shot damage).

d) Complete remige moult. The shafts of the flight feathers are fully formed and the bird is able to fly.

Figure 4 *Remige moult phases.*

Identifying the age of waterfowl

Waterfowl can be classified into three age groups; juvenile, immature and adult. Juveniles can be identified by the presence of a downy plumage. Immature birds (yearlings) are more difficult to identify. As they have undergone the first pre-basic moult, immature birds can retain some juvenile downy feathers and also take on adult plumage characteristics. Figure 5 shows generalised differences between adult and immature feathers that can be broadly applied to Victorian waterfowl.

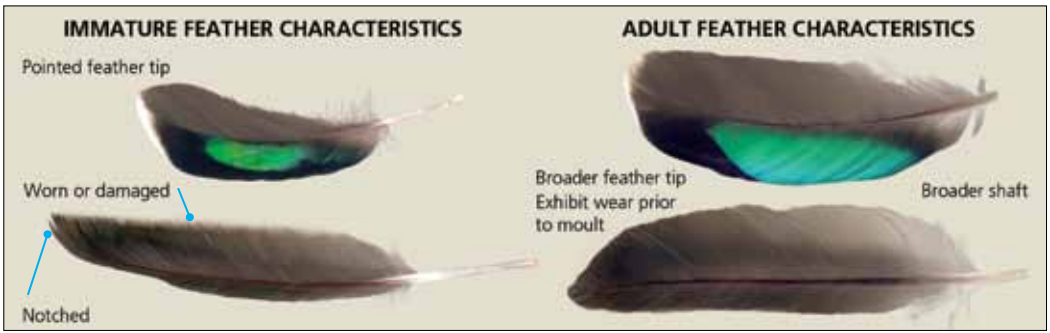


Figure 5 *Feather characteristics of immature and adult ducks (example: Pacific Black Duck flight feathers).*

Identifying the sex of waterfowl

The sex of game waterfowl can often be determined by behavioural traits (e.g. the female Grey Teal is the only sex to have a cackling 'laughing' call. However, difficulty can arise when determining the sex of harvested waterfowl, because behaviour cannot be observed. The sex of some species can be determined by examining plumage. A species is said to be ***'sexually dimorphic'*** if the female can be distinguished from the male by plumage or body features. (e.g. Australian Wood Duck). Where waterfowl exhibit no difference in external features, the species is said to be ***'sexually monomorphic'***. (e.g. Pacific Black Duck). One definitive way of determining the sex of monomorphic species is to examine birds genitals. This technique is referred to as a ***'cloacal examination'*** (Figure 6).

To examine the bird, the handler should place the bird on a solid surface with the breast facing up and the tail pointing away. The bird's genital tract and the digestive tract form a common external opening called the 'cloaca'. Locate the cloaca amongst the feathers with your fingers. The tail is then depressed with your forefingers and the thumbs placed on either side of the cloaca. The cloacal wall and genitals are exposed by separating your thumbs (Figure 6). At this point the male's penis will protrude if present (Hochbaum 1942). If a penis protrudes, the bird is a male; and if the genitals are less defined, the bird is female (Figure 7).

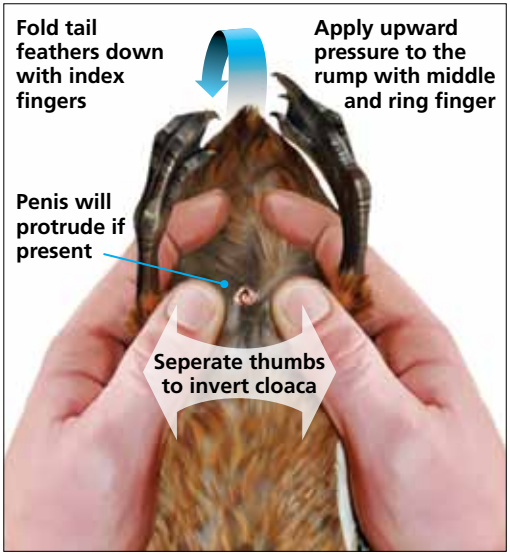


Figure 6 *Cloacal examination technique.*

Characteristics of the cloaca may also indicate the age of the bird. The penis is located on the left side of the cloacal wall in adult male birds and on the anterior side (towards the head) in immature male birds (Figure 7). The penis is large and enclosed within a sheath in adult birds and in immature birds, it is small and unsheathed. In adult females, the oviduct opens on the let side of the cloaca; and in immature females, the oviduct is covered by a membrane. In immature birds it is small and unsheathed. In adult females the oviduct opens on the left side of the cloaca. In immature females the oviduct is covered by a membrane. If a bursal sac (a large white sac) is present, then the bird is immature. Adult female birds do not possess a bursal sac.

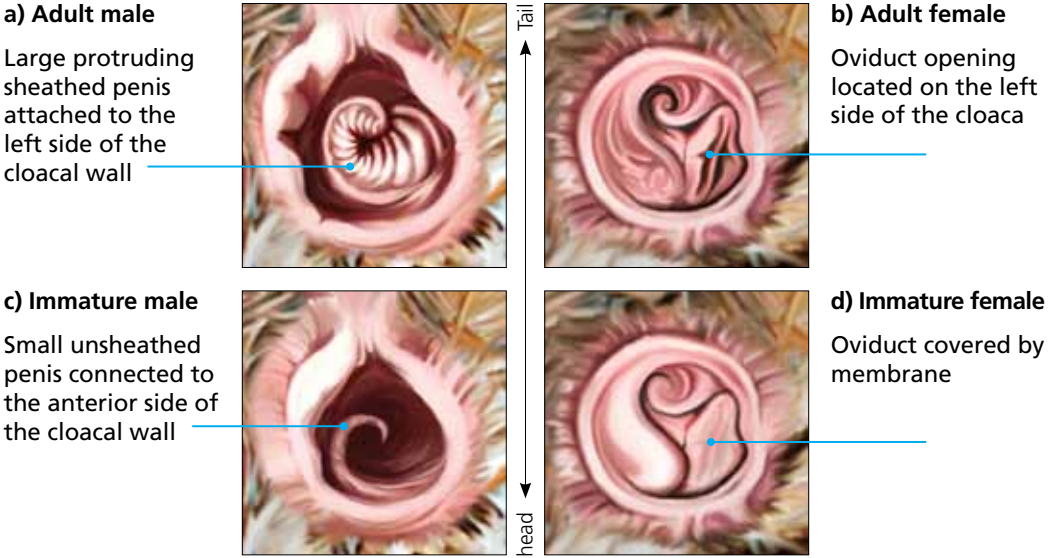
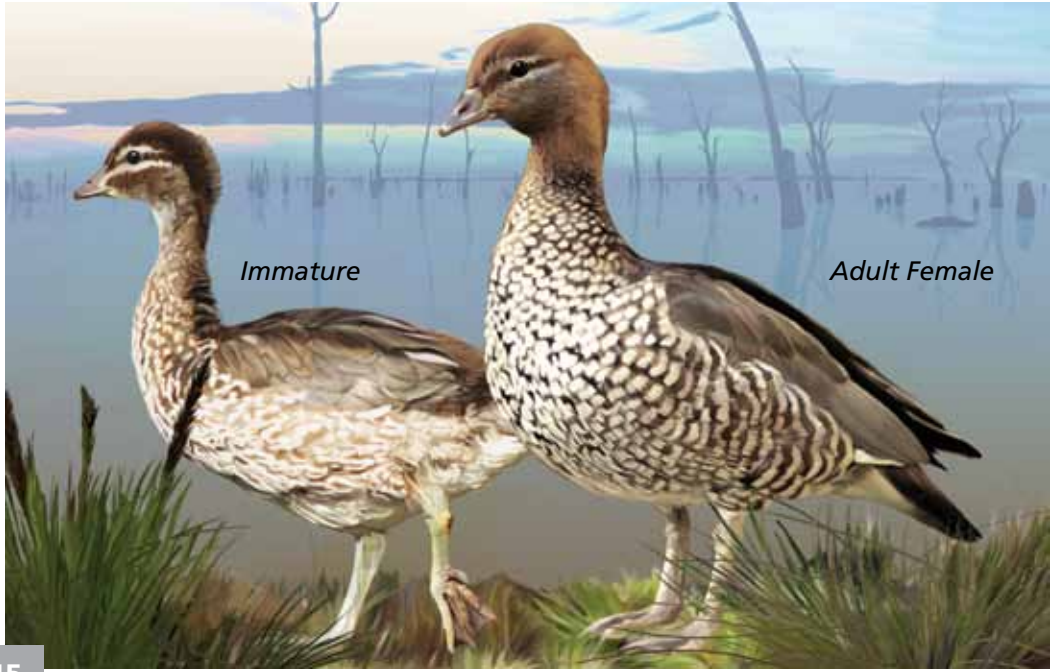


Figure 7 *Determining age and sex by cloacal features.*

Australian Wood Duck *(Chenonetta jubata)*

The Australian Wood Duck is a sexually dimorphic species, with the male and female exhibiting distinct plumage. The head and neck of the adult male is mostly dark brown with a row of elongate black feathers running down the back of the neck. Body feathers typically have broad black margins. Scapulars and upper wing-coverts are darker grey compared to the light grey of female birds. The upper breast of the male is grey mottled black-and-white with the lower breast and flanks grey with fine back baring. The female upper and lower breast plumage is white, mottled light brown.

Adult Male


Immature
Adult Female

Pacific Black Duck *(Anas superciliosa)*

The Pacific Black Duck is sexually monomorphic, requiring a cloacal examination to differentiate between the sexes. An adult bird has a uniform black crown, whereas an immature bird has a black to dark brown crown with fine cream striping.
An immature bird also has thicker cream margins on the trailing edge of the secondaries, and more distinct pale cream edging on the coverts (particularly along the trailing edge) (Figure 8).

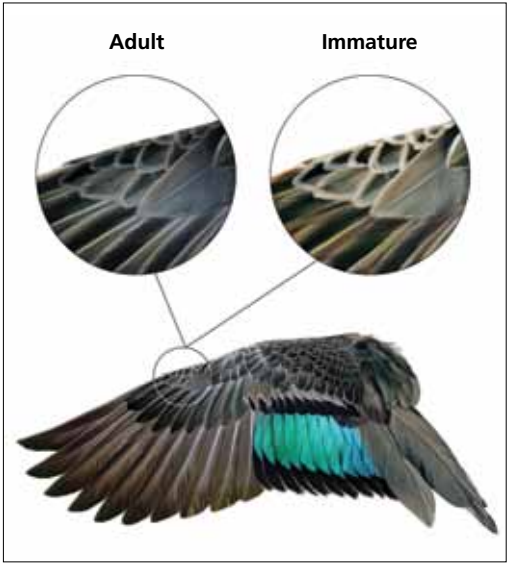
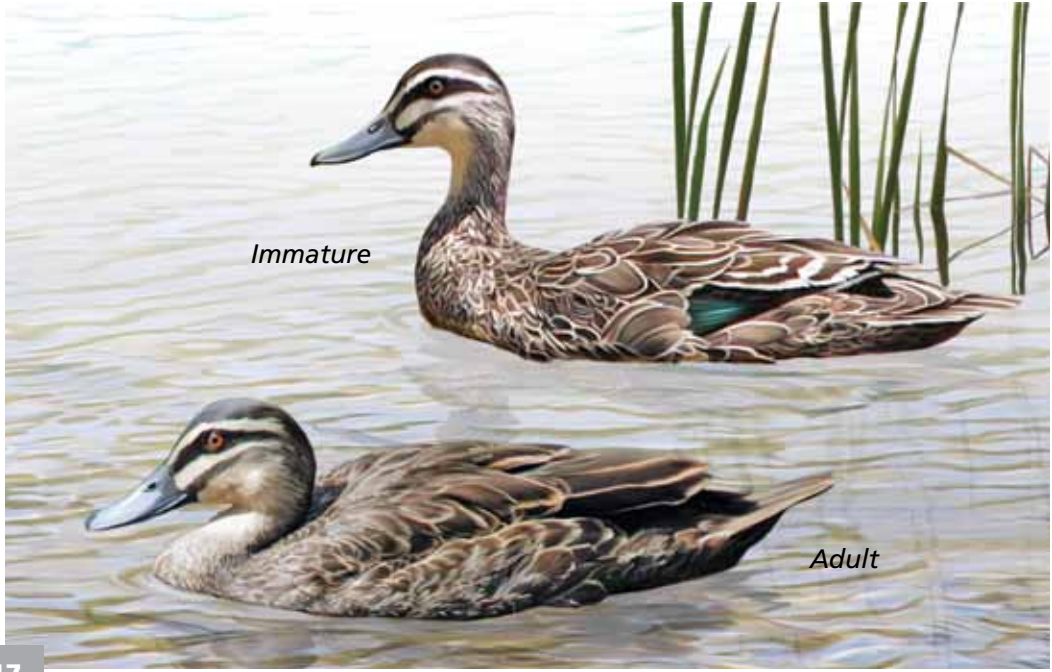


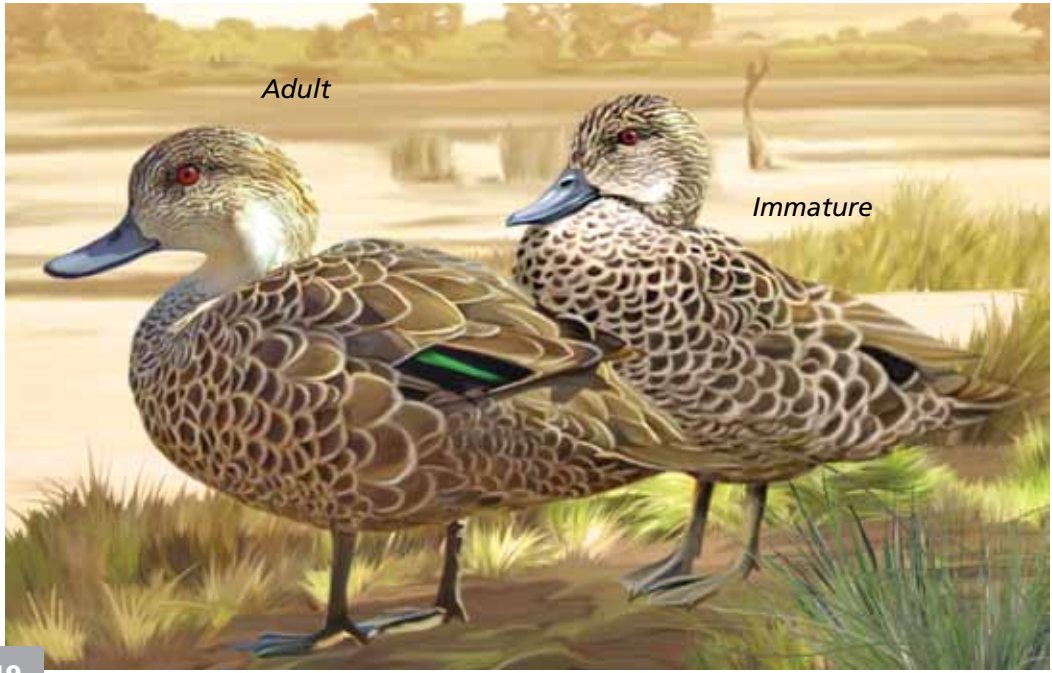
Figure 8 *Difference in leading edge feather margins.*


Immature
Adult

Grey Teal *(Anas gracilis)*

The Grey Teal is sexually monomorphic, requiring a cloacal examination to differentiate between the sexes. The Grey Teal is often confused with the female Chestnut Teal. The Grey Teal is lighter in colour than the female Chestnut Teal, particularly around the head and neck. The throat and upper fore-neck of the Grey Teal is off-white, whereas the female Chestnut Teal has a distinctive brown 'V' shaped patch on its throat near the bill (Figure 9). The body plumage in the Grey Teal is uniformly grey with a scaly or mottled pattern formed by pale edging to most body feathers. Immature birds exhibit broader cream edging on remiges and body feathers and are noticeably smaller than adult birds.

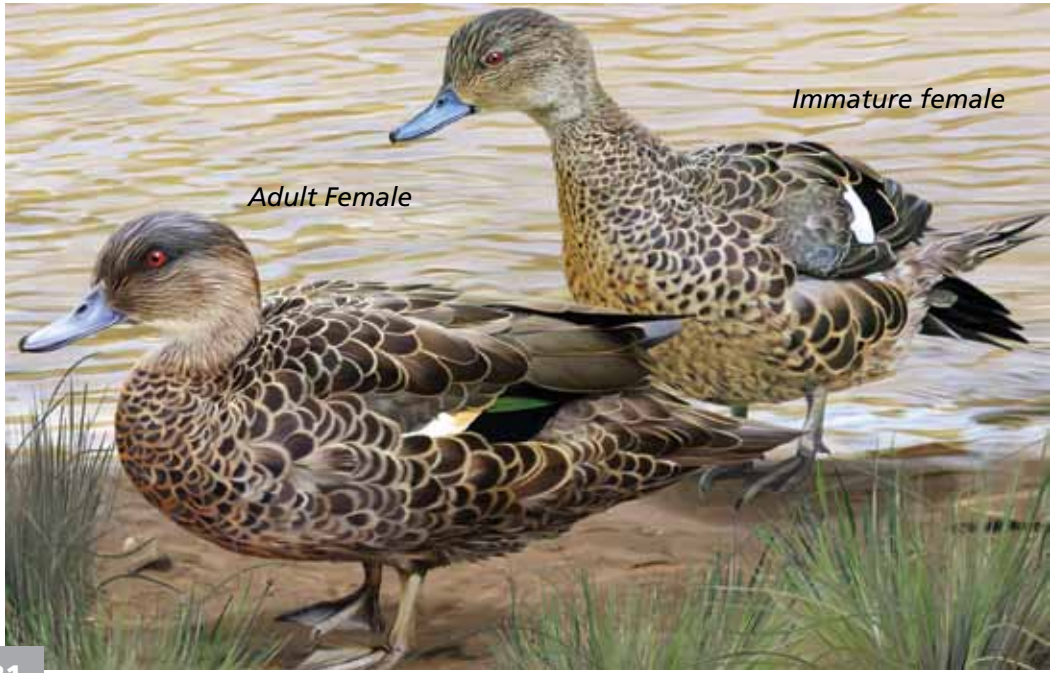
Figure 9 *Brown throat patch of female Chestnut Teal (right) compared to Grey Teal (left).*


Adult
Immature

Chestnut Teal *(Anas castanea)*

The Chestnut Teal is sexually dimorphic, with the male being distinguished by an iridescent bottle green head. The adult male Chestnut Teal has a white patch on the flank which can also be seen in flight. The lower neck, breast and abdomen is a rich chestnut; each feather with an obvious dark-brown blotch. An immature male does not have the rich chestnut plumage of the adult male, but can be identified by the developing dark crown and nape feathers. The adult female Chestnut Teal has similar plumage to the adult female Grey Teal, however the crown and nape are generally darker. An immature female has similar plumage to the adult female, with the secondary feathers displaying thicker, pale cream edging.

Figure 10 *Immature male (above) and adult male (below).*


Immature female
Adult Female

Hardhead *(Aythya australis)*

The Hardhead is sexually dimorphic, with the male being distinguished by the presence of a white eye. The adult female has similar plumage to the adult male, however the white patch below the breast is not as distinct. Immature birds are similar to the adult female but slightly paler, particularly on the chin and throat. Immature birds and adult females can be difficult to distinguish. Observe flight feathers for immature characteristics and undertake cloacal examination to inspect genitals for immature characteristics.

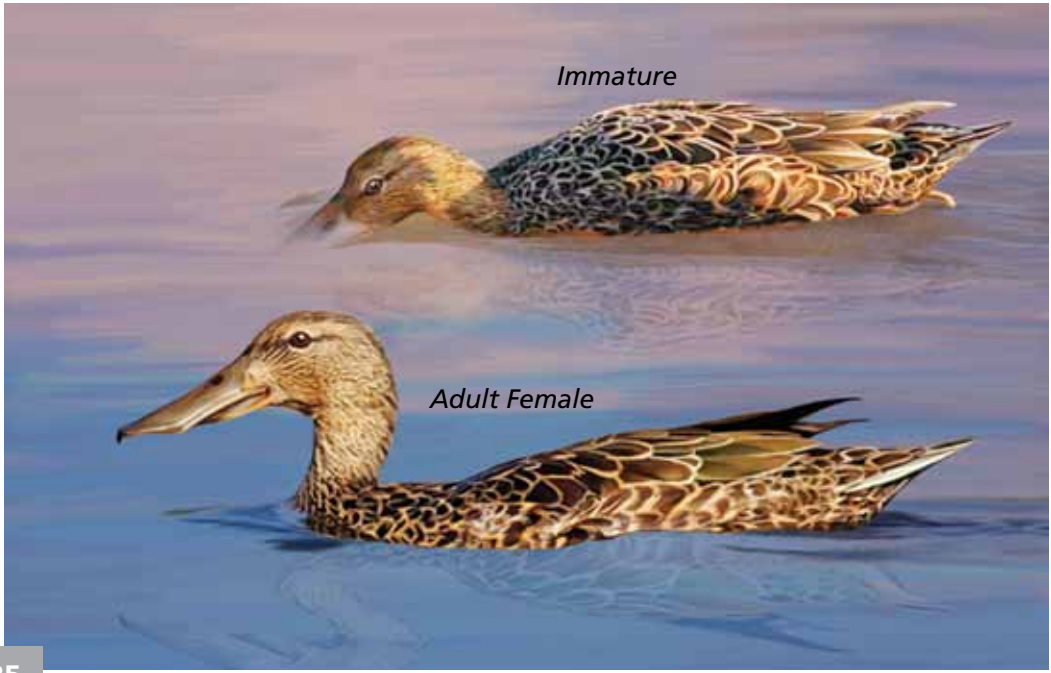
Adult Male


Immature
Adult Female

Australasian Shoveler *(Anas rhynchotis)*

The Australasian Shoveler is sexually dimorphic, with the male exhibiting more colourful plumage. The adult male has a blue-grey head and neck, white face crescent, black back, a white patch on the rump and a deep chestnut-coloured belly. Other distinguishing features of the male are that it has a yellow iris and bright yellow to orange legs and feet. The female is predominantly brown with a light chestnut-coloured belly. An immature bird is similar to the adult female, only paler on the breast and abdomen with finer dark markings. Immature birds can be difficult to determine, therefore examine flight feathers for immature characteristics.

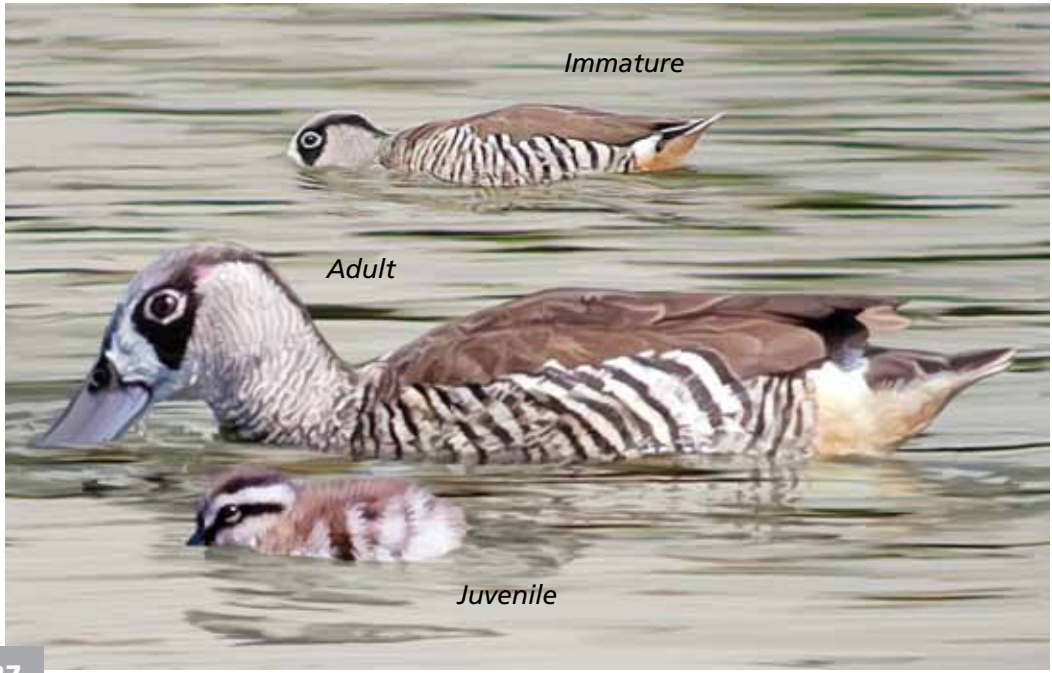
Adult Male


Immature
Adult Female

Pink-eared Duck *(Malacorhynchus membranaceus)*

The Pink-eared duck is sexually monomorphic, requiring a cloacal examination to differentiate between the sexes. Immature birds are similar to adults but lighter in colour and with fewer stripes, particularly on the breast and abdomen. Immature birds have not fully developed their adult plumage and do not display the pink marking behind the ear.

Adult


Immature
Adult
Juvenile

Australian Shelduck *(Tadorna tadornoides)*

Most commonly known as the Mountain Duck, the species is sexually dimorphic. The male's head and upper neck is black-brown, tinged iridescent green with a white neck-ring. The female and immature birds have a white ring around the eye and a white face patch between the bill and the nape.

Adult Male


Adult Female
Immature

Glossary

ANTERIOR – Located on or near the front of an organ. In the direction of the bird's head.

BODY FEATHERS – All feathers of a bird except the remiges and rectrices.

BURSAL SAC – A specialised organ involved in the regulation of a bird's immune system. The organ is active in young birds and decreases in size as the bird matures.

CLOACA – The opening that serves as the common opening for the intestinal, reproductive and urinary tracts.

COVERTS – Wing and tail feathers that cover the bases of primary and secondary feathers.

DIMORPHIC – Existing or occurring in two distinct forms. *See sexual dimorphism.*

EYESTRIPE – A stripe formed in the bird's plumage that runs through the eye.

IRIS – The coloured membrane in the eye surrounding the pupil.

MONOMORPHIC – Where the sex cannot be determined by external features. *See sexual monomorphism.*

MOULT – The process by which all birds periodically shed and replace their plumage.

PLUMAGE – A single generation of feathers brought about by a single moult.

PRIMARIES – The long stiff flight feathers of the wing and tail. Those on the wing are called remiges; those on the tail are called rectrices.

RECTRICES – Flight tail feathers

REMIGES – The flight feathers forming on the hind margin of the wing.

RUMP – The area between the rectrices and the back.

SCAPULARS – A group of feathers situated where the wing connects to the body.

SECONDARIES – Flight feathers connected to the ulna, including the tertials.

SEXUAL DIMORPHISM – Where there are distinct differences between males and females of the same species. Differences can be in colour, behaviour, or form. In ducks, the differences between sexes are usually related to plumage.

SEXUAL MONOMORPHISM – Whereby the sex of a duck cannot be determined by plumage characteristics (e.g. Pacific Black Duck male and female 'look' similar).

SPECULUM – A patch of distinctive colour on the wing.

SUPERCILIUM – A plumage feature most obvious on the Black Duck. It is a stripe that starts at the bill and continues above the eye (the eyebrow). Differs from the 'eyestripe' which is a stripe of contrasting colour that starts at the bill and runs through the eye.

TERTIALS – The feathers innermost to the secondaries.

ULNA – One of two bones in the forearm of the wing. The other bone is the radius.

UNDERPARTS – Collective term for the underside of a bird, excluding the head, wing neck and tail.

VENT – The area round the cloaca.

References

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Marchant, S. and Higgins, R. J. (coordinators), 1990. *Handbook of Australian, New Zealand and Antarctic Birds. Vol 1. Part A.* Oxford University Press, Sydney.

More Information

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Victorian Game Waterfowl

Wood Duck

Black Duck

Grey Teal

Chestnut Teal

Hardhead Duck

Blue Winged Shoveler

Pink-eared Duck

Mountain Duck

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