

Tropical Topics

An interpretive newsletter for the tourism industry



Cassowaries

Vol 1 No. 9 February 1993

Notes from the Editor

Participants in a Wet Tropics Community Attitudes Survey were asked the question 'What particular plant or animal do you associate with the Wet Tropics World Heritage area?' Of those surveyed, 37% nominated the cassowary. The decisiveness of the survey (ferns, which came second, polled only 14% of the votes) showed that the largest and most spectacular vertebrate of the Wet Tropic forests holds a special place for its fellow (human) inhabitants.

Unfortunately the cassowary is threatened. A 1988 CSIRO survey found that the population had declined and that the cassowary was a 'candidate for extinction'. Its official status at the moment is 'vulnerable'. This means that it is not presently considered endangered but is at risk because it exists in areas likely to experience changes which will in the near future threaten the survival of the species in the wild. With rapid deforestation in Papua New Guinea, it is particularly important that we in Australia protect this extraordinary bird from extinction.

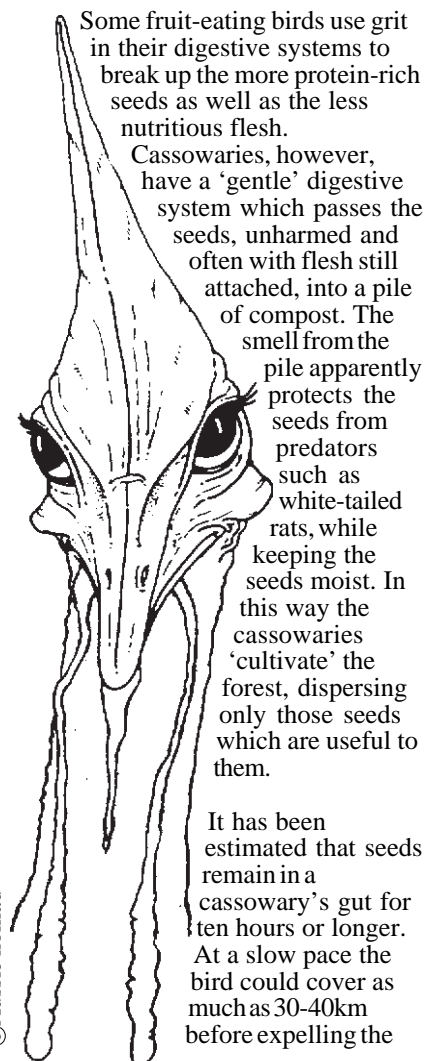
Cassowary quiz

How much do you know about cassowaries? Which of these statements are true and which are false? Answers on page 8.

- The male is smaller than the female.** The casque is not bone.
- The bird attacks with its feet.** The male incubates the eggs.
- Cassowaries sometimes kill and eat small animals.**

Gardeners of the forest

How did the mango trees get to the top of Mount Whitfield, in Cairns? In their natural home, India, monkeys and elephants eat the fruits and carry the heavy seeds to spots where they can germinate. Without these animals the trees could only migrate downhill as the force of gravity moved the fruits. How then did the seeds get to the top without the help of monkeys or elephants? Although flying foxes or bushwalkers may have been responsible, the cause was probably cassowaries.



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Some fruit-eating birds use grit in their digestive systems to break up the more protein-rich seeds as well as the less nutritious flesh.

Cassowaries, however, have a 'gentle' digestive system which passes the seeds, unharmed and often with flesh still attached, into a pile of compost. The smell from the pile apparently protects the seeds from predators such as white-tailed rats, while keeping the seeds moist. In this way the cassowaries 'cultivate' the forest, dispersing only those seeds which are useful to them.

It has been estimated that seeds remain in a cassowary's gut for ten hours or longer. At a slow pace the bird could cover as much as 30-40km before expelling the

seeds so, at the very least, it is likely to carry them a few kilometres. As many of the rainforest fruits are large they are unlikely to be moved far by any other animals, except, perhaps, flying foxes. It has been estimated that 70 to 100 species of plant depend almost entirely on the cassowary to disperse their seeds. This means that the bird plays a key part in the ecology of the rainforests of the Wet Tropics and there is growing concern that as cassowaries disappear the forests will lose many species of plants as well as the other animals which, in turn, depend on them.

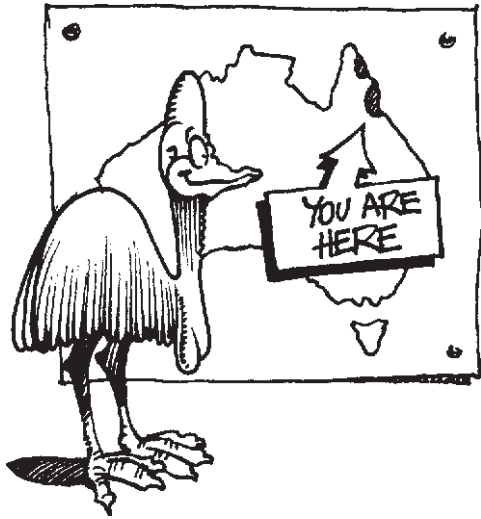
Tragic postscript

The last known cassowary on Mt Whitfield died, tragically, on 2 November 1996, when attacked by two dogs. Blue Arrow, as she was sometimes called, had earned a reputation for pursuing walkers on the Mt Whitfield track. Having been thoughtlessly fed by people she had come to associate humans with food and to demand it, with persistence, her large size adding weight to her argument.

Eventually Blue Arrow moved down the hill where she found more humans willing to feed her — she died with pieces of apple in her stomach. Thus encouraged to remain in the area, her death was almost inevitable, either on the road or, as it turned out, by dog attack.

W E T  T R O P I C S
W O R L D H E R I T A G E A R E A

Where are they? _____



Cassowaries are widely but patchily distributed in a narrow strip on the east coast between Townsville and the tip of Cape York. In the past they probably occurred in relatively high densities between the Russell and Murray Rivers but much of this land has been cleared for agriculture. There may now be fewer than 1500 cassowaries with concentrations at Mission Beach, Woopen Creek, Graham Range, Coquette Point and Wallaman Falls.

It has been suggested that different genetic populations may exist but the birds would have to be tested to verify this.

Cassowary homes

Cassowaries are associated with rainforest but many move into other habitats which are important sources of food at certain times of year. A mosaic of vegetation types may be the ideal habitat.

The birds tend to be solitary and operate within a home range which changes in size and shape according to season, food availability and whether the cassowary is caring for chicks or not. Female territories may be surrounded or overlapped by male territories through which the females are allowed to wander at will. On the other hand, males defend their territories from each other.

Generally adult cassowaries avoid each other. Although it is not unusual for several individuals from adjacent territories to visit an abundantly fruiting tree, they will manage to do so at different times. However, cassowaries have been known to congregate at times of food shortages, such as in the aftermath of Cyclone Winifred in 1986.

Food shortages occur in most years. There is a general pattern of peaks and troughs with weather acting as the main environmental trigger for flowering and fruiting. However, events such as cyclones can disrupt this pattern. Water is also very important. Cassowaries need to drink frequently and in areas of recent clearing have been observed crossing open paddocks to reach watering points. At Edmund Kennedy National Park 13 cassowary territories overlap at a swamp area, possibly the only permanent water source.



© Aussie nomad

Cassowary casualties _____

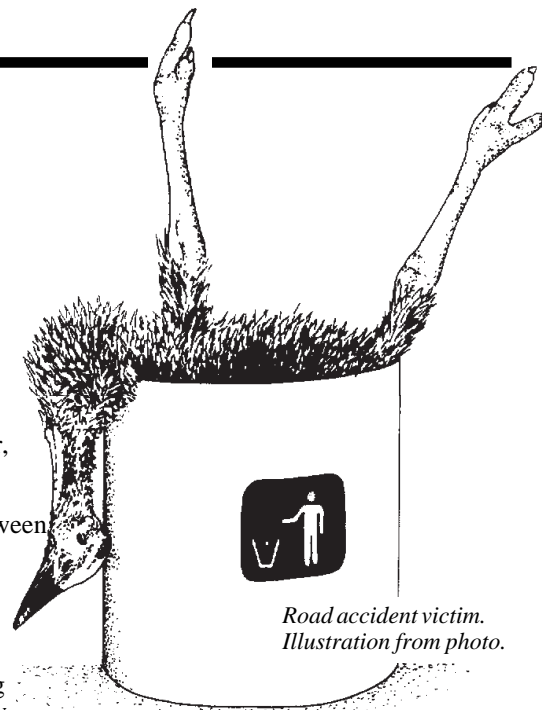
Natural predators of cassowaries include crocodiles, pythons, dingos, and native cats. However, the effects of these animals are minimal when compared with threats introduced over the last two hundred years.

Pigs are a big problem. They probably destroy nests and eggs but their worst effect is as competitors for food which could be catastrophic for the cassowaries during lean times. They also use and contaminate water sources. Dogs are a major risk. An adult cassowary could usually get the better of a single dog but young are at risk and even older birds succumb to packs of dogs. Dogs also chase the birds away from potential food sources in suburban areas.

A number of cassowaries are illegally shot each year. Some are killed because of unjustified fears for fruit crops. Others are shot through fear or, unbelievably, for fun.

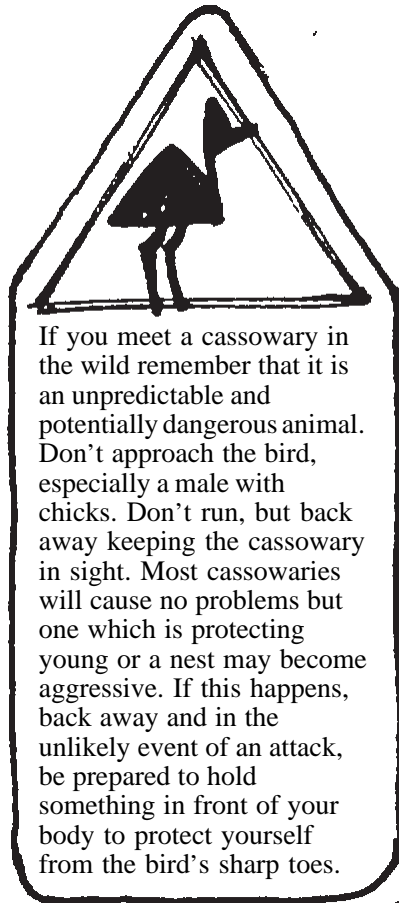
In a survey of 24 known cassowary deaths in the Mission Beach area between February 1986 and September 1988, only two were attributed to natural causes, namely disease. (There are growing concerns, however, that diseases are being spread to the birds from domestic animals.) Five were the victims of dog attacks and 17 died as a result of road accidents — the greatest single cause of death. Roads cut through their habitat making it necessary for the birds to travel across them when moving around looking for food. Unfortunately people often hand feed the birds from cars thereby attracting them to the roads sometimes with fatal results.

Through the efforts of the Community for Coastal and Cassowary Conservation (C4) at Mission Beach, road deaths have now been reduced to an average of two a year. Strategies include media releases and signs erected at current cassowary road crossings.

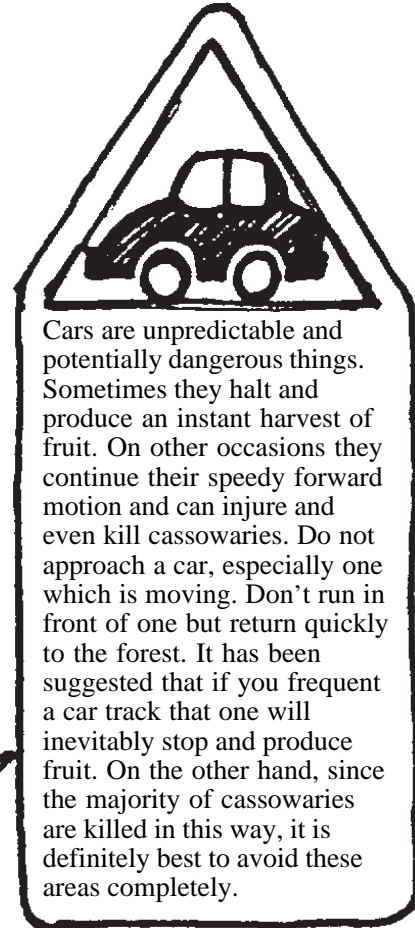


If you find an injured cassowary, please call the Far North Queensland Wildlife Rescue Association on Ph: 4053 4467

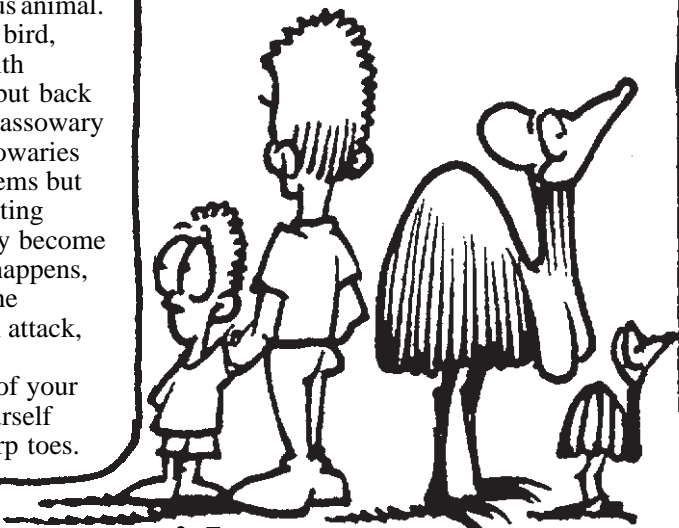
Beware



If you meet a cassowary in the wild remember that it is an unpredictable and potentially dangerous animal. Don't approach the bird, especially a male with chicks. Don't run, but back away keeping the cassowary in sight. Most cassowaries will cause no problems but one which is protecting young or a nest may become aggressive. If this happens, back away and in the unlikely event of an attack, be prepared to hold something in front of your body to protect yourself from the bird's sharp toes.



Cars are unpredictable and potentially dangerous things. Sometimes they halt and produce an instant harvest of fruit. On other occasions they continue their speedy forward motion and can injure and even kill cassowaries. Do not approach a car, especially one which is moving. Don't run in front of one but return quickly to the forest. It has been suggested that if you frequent a car track that one will inevitably stop and produce fruit. On the other hand, since the majority of cassowaries are killed in this way, it is definitely best to avoid these areas completely.



Cassowary corridors



The biggest threat of extinction comes not from direct actions of humans or other species but from loss of habitat. Any species which becomes isolated is vulnerable. An accident such as fire, drought or cyclone which devastates a local population is not a disaster if more animals can then repopulate the area but if they are isolated it could lead to permanent local extinctions. It is also important for populations to mix to maintain genetic diversity.

Human activity has had its greatest impact on cassowaries by isolating them in forest 'islands'. The most important thing we can do is to stop clearing and retain any remnant pockets of original vegetation. These often act as stepping stones enabling larger areas to be used. We can also plant corridors of vegetation linking these pockets of vegetation. We know that although cassowaries will cross open paddocks, they will more readily use vegetated corridors.

An information sheet on *Cassowary food plants for revegetation*, listing a number of important plants, is available from some Department of Environment offices. If you (or friends)

have a block of land which could be used by cassowaries you might like to grow some of these plants*. Please note, however, that cassowaries prefer the safe cover of weedy scrub to a neat well-mown plantation of young trees. Removing a protective cover in order to plant 'cassowary trees' could actually be more detrimental to the immediate well-being of the animals! It would be better to add to existing scrub than to remove it.

Cassowaries need a variety of plants

which fruit at different times of the year. Studies have shown that members of the Myrtaceae family provide about 30 percent of the cassowaries' food but these fruits are low in nutrients. On the other hand members of the Lauraceae family, though making up only 19 percent of the diet of the cassowaries studied, provide much more nutritious fruits and are very important. Lawyer vine can be vital in times of shortage and made up 11 percent of the food source of the birds studied.

**Even if you don't live in an area where cassowaries are likely to roam, consider native plants for your garden. Many will attract other birds and butterflies. There is a fascinating variety and planting them will help you learn much more about our native flora.*

Candid cassowary

The name cassowary comes from two Papuan words, *kasu* which means horned, and *weri* which means head. There are three species of cassowary in New Guinea, one of which is also found in Australia — *Casuarius casuarius*. The distinct Australian subspecies is known as *C.c. johnsonii* — the southern, or double wattled, cassowary. (Fossil records show that a dwarf cassowary also existed in Australia when conditions were moister.)

Family

The cassowary is a member of the ratite family, one of the most primitive groups of birds, which includes the flightless kiwi, emu, ostrich and rhea as well as extinct species such as the elephant bird of Madagascar. Cassowaries and emus are closely related. It is thought that they both evolved from forest-dwelling ancestors and that the strong running legs of the emu developed later.

Casque

The casque is not, as sometime stated, horny or bony or a protuberance from the skull, but a tough keratinous skin covering a core of firm, cellular foam-like material (similar in structure to styrofoam). It is longitudinally rigid but can be squeezed at the sides.

Elastic and resilient, the casque would certainly be a good shock absorber but opinions differ as to whether it is a crash helmet or an indicator of age and dominance. Those opposing the crash helmet theory point out that it only starts to develop in young birds of 18-24 months old which means they are without the casque at a stage when they are particularly prone to damage. In any case, if a cassowary was crashing casque first through the forest it would be unable to see where it was going! Casques can be bent, tilted or grooved, these characteristics helping to identify individuals.

Tails

Male birds have a slightly drooping 'tail' and females have none. However, it is difficult to tell the sexes apart.

Wings

The cassowary's wings are reduced to about six long quills which curve round the side of the body, probably serving to protect its body as it moves through rainforest vegetation.

Plumage

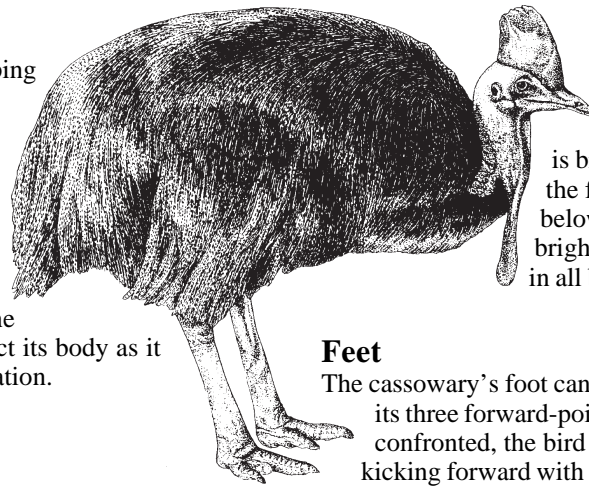
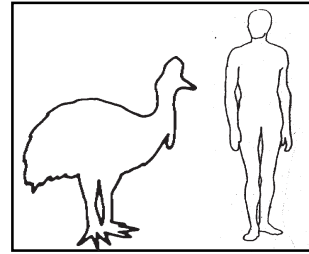
Unlike the plumage of most other birds, the cassowary's feathers have no barbs and very little down. Each feather is double, with a secondary shaft sprouting from the base. (Some birds — grebes, pheasants and some song birds — also have 'aftershafts'.) The result is a stout 'hairy' coat which may allow the bird to escape the clutches of 'wait-a-while' (lawyer cane) more easily than most! Unlike other birds the cassowary has no oil glands to groom and waterproof the feathers. Some feathers may provide a powder for this purpose, as is the case with pigeons.

Food

Apart from forest fruits, cassowaries also eat snails, insects, fungi, flowers and some dead animals. Captive birds have been fed live and dead mice and have been known to catch, kill and eat birds. Although a small part of their diet, these protein supplements may be important additions to low-nutrient fruits. At times of food shortages some birds eat earth — some droppings have contained nothing else. Captive birds have occasionally displayed a craving for it. Presumably it is a source of minerals.

Size

An adult cassowary can reach 1.8-2m in height although most are about 1.5m. Females are bigger than males. The largest on record weighed 85kg, making it Australia's largest land animal. Weights of 60kg are not unusual for females while males weigh in at 35kg.



Wattles

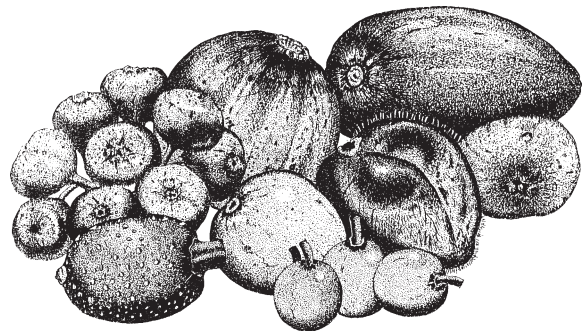
The naked skin around the cassowary's neck is bright blue and a pair of red wattles hang from the front. The blue on the back of the neck grades below to bright red at the nape. Females often have brighter neck wattles but the intensity of the colour in all birds changes with mood.

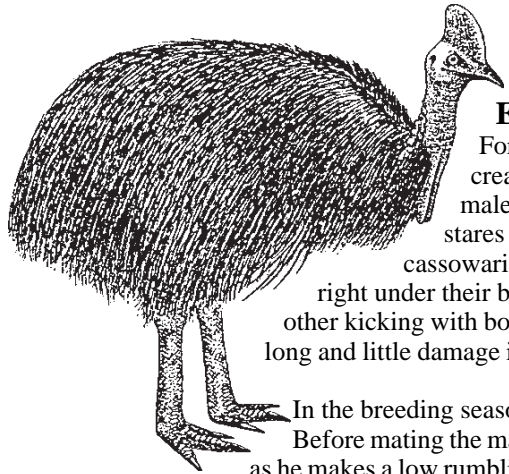
Feet

The cassowary's foot can be up to 180mm long with the middle one of its three forward-pointing toes reaching 120mm in length. When confronted, the bird can use them as a weapon, jumping up and kicking forward with both feet at once.

Voice

Cassowaries make a variety of noises. One may produce a rumbling when approached in the forest. Then, when threatened, it may stand upright with plumage raised to give as large an impression as possible and hiss in its throat. When it is very angry and/or about to attack it puts its head down with the bill pointing to the ground and produces a deep booming noise. At the same time the colourful skin inflates and its body trembles.

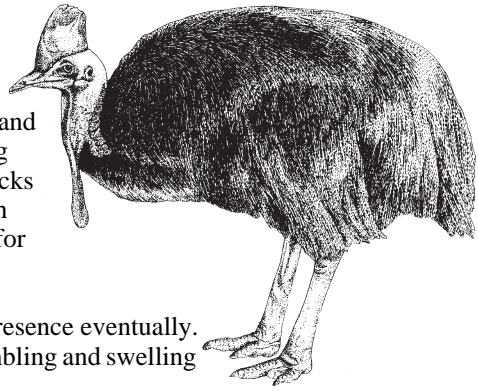




Encounters

For most of the year cassowaries are solitary creatures. If the dominant female encounters a male out of the mating season she stretches up and stares silently at him whereupon he flees. Fighting cassowaries raise their feathers and, bending their necks right under their bodies, roar loudly. They then charge at each other kicking with both feet. However, they do not usually fight for long and little damage is done.

In the breeding season the female usually tolerates the male's presence eventually. Before mating the male moves around the female, his throat trembling and swelling as he makes a low rumbling noise.



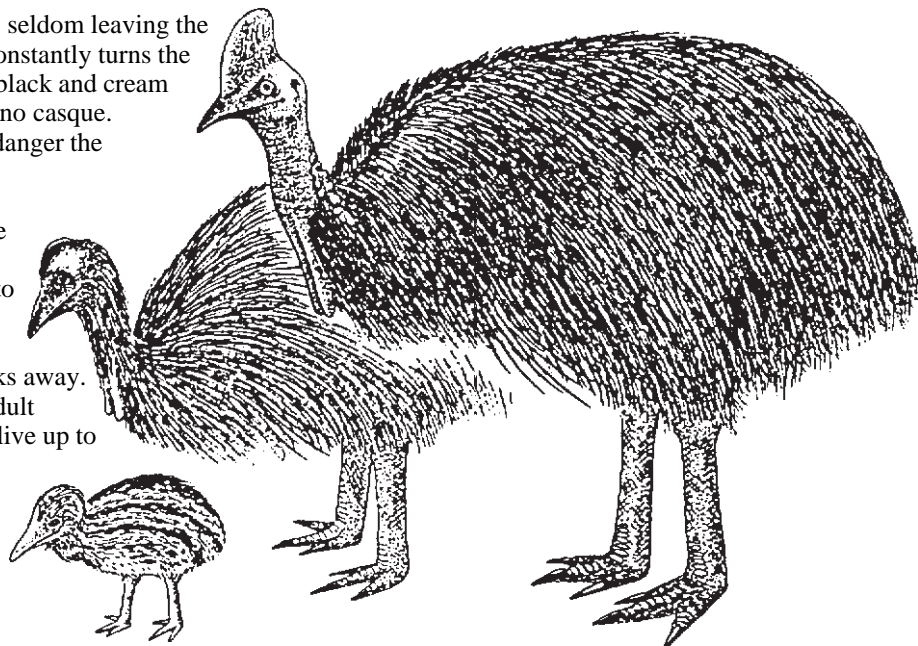
Nests

Clutches usually consist of about three to five eggs (up to eight have been recorded). Each egg weighs 500-600g (equal to about 10 domestic chicken's eggs) and is pale green with an uneven surface. The female deposits them in a scrape in the ground lined with grasses, leaves and ferns. Afterwards she departs, leaving the male to incubate the eggs and raise the chicks for a further nine months. The female may then mate with other males and lay more clutches. However, the male may also mate with more than one female so the eggs in one clutch may be the product of different mothers.

Chicks

The male sits on the eggs for about 50 days, seldom leaving the nest, except to drink, during that time. He constantly turns the eggs. The newly hatched chicks are striped black and cream with pale brown heads and tiny wattles but no casque. The male is very protective and in times of danger the chicks hide under his tail.

At about three to six months the stripes fade and by the first year the chicks are a dull brown. The skin around their necks begins to colour at about six to nine months. At this stage, the beginning of the new mating season (June-Oct), the male chases his chicks away. It will take them three years to acquire full adult plumage. Cassowaries have been known to live up to 40 years (in captivity) while there are unconfirmed reports of individuals reaching 60 in the wild.



The cassowary year

January — March

Adult males are seen with large young while females are solitary.

Birds roam extensively because food is scarce and eat almost anything they can find, including dried droppings.

April — June

This is still a difficult time for the birds. Adults begin courting in May/June and the young are evicted from the home range. This is a hazardous time for immature birds learning to fend for themselves in competition with intolerant breeding adults. Many juveniles die during this period.

July — September

Fruiting trees in the lowlands are producing reliable food — many favoured species are in full fruit at this time.

Eggs hatch during the maximum fruiting period. Males are very protective of their chicks and human contact should be avoided.

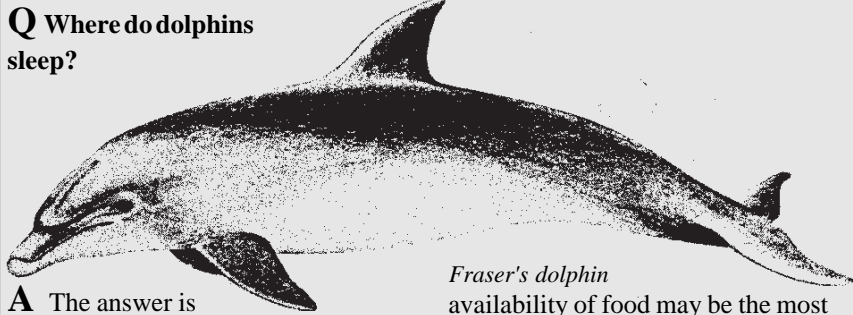
October — December

Males are moving around with their striped or brown young while the more colourful females make occasional appearances. There is no shortage of food. This is a very important period when birds build up reserves to cope with inevitable shortages in the new year.

Acknowledgments to the Community for Coastal and Cassowary Conservation (C4)

Questions & Answers

Q Where do dolphins sleep?



A The answer is not clear. The general opinion is that they 'catnap' on the surface of the water for short intervals, as whales do. Of five dolphins observed in a tank, three tended to take up the same positions at the surface each night, with eyes closed and tails drooping but moving slightly to keep the animals' blowholes above the surface. Two others swam together in a slow anticlockwise circle, surfacing to breathe at intervals. Dolphins have also been observed snoozing on the bottom, for as long as four minutes, coming up periodically to breathe - although it has been suggested that this happens only in conditions of low salinity (low specific gravity).

It is not known whether dolphins control their breathing or whether it is a reflex. If it is voluntary, do they lose consciousness during sleep but wake for each breath? The movement of their tails may be a reflex which lifts them to the surface to breathe. One researcher reported that dolphins he observed closed one eye at a time and suggested that only half of the brain sleeps at any time, allowing the dolphin to consciously surface to breathe. (It is doubtful if dolphins' brains are organised in this way, however.)

There have been few observations of wild dolphins sleeping. Patterns may vary between species and individuals and depend on circumstances. Research suggests that the

Fraser's dolphin availability of food may be the most important factor dictating activity patterns of these animals.

Q How do sea birds survive cyclones on sand cays? Do they bury in the sand?


A Despite popular folklore, they don't bury in the sand. Animals are sensitive to air pressure and many may move out ahead of a cyclone. Others are blown towards land and many end up in beach-side gardens. Those which survive return to the cays. The National Parks ranger at Rokeby phoned us in early January to report visits from frigate birds, silver gulls and bridled terns blown 150km inland from the Gulf by Cyclone Nina. Rokeby felt very coastal for a while, he reported!


Q How do you stop lorikeets from eating lychees, etc., short of stopping them with lead?


A It seems that lorikeets have been desperate for food this year and have been causing problems for lychee farmers. There is a solution - a net, known as bird-ban, which can cover trees. It can be ripped open to allow the picker access to the fruit and then closed again. Details from the Lychee Growers Association.


Facts and stats


on cassowaries


 Cassowaries are good swimmers and can cross deep rivers. It is also possible that cassowaries enter the water to go fishing. A nineteenth century scientist observed a Bennet's cassowary in New Guinea immersing itself in a river with its feathers spread. After 15 minutes it closed up its plumage and walked on to the bank. It then shook its feathers and ate several fish which dropped out! There is also one report of this happening at Mission Beach after Cyclone Winifred. It is quite possible that the cassowary's feathers resemble water weed in which the fish normally hide.

 **The first cassowary seen in Europe arrived in Amsterdam in 1597 having been given to a Dutch sea captain in Banda (Indonesia).**

 The last recorded human fatality in Australia was a 16-year-old boy near Mossman in 1926. While running away from a bird which he (and/or his dogs) had been trying to attack he tripped and fell. The cassowary ran over him, unfortunately severing his jugular vein with its foot. Deaths in New Guinea are more common.

 **CSIRO scientists studying cassowaries discovered that of the 78 plant species they found in cassowary droppings, 70 species germinated. It has been suggested this success may be because something in the cassowary's digestive system removes a germination-inhibitor or breaks the seed coat down.**

 In New Guinea cassowaries are used by some groups to settle disputes. Traditionally opposing parties settled arguments with 'races', or competitions which involved killing equivalent numbers of pigs until one side ran out of stock. In relatively recent years cassowaries were introduced as items with rarity value. (Over 40 cassowaries were killed at a race north of Mendi in 1974.) The value of a cassowary has been equated with eight pigs or one woman!

 **Cassowaries were a traditional food for Aborigines. Explorers with the Kennedy expedition of 1848 shot one and 'the flesh was eaten and found to be delicious; a single leg afforded more substantial food than 10 or 12 hungry men could dispose of at a single meal'.**

Tourist talk

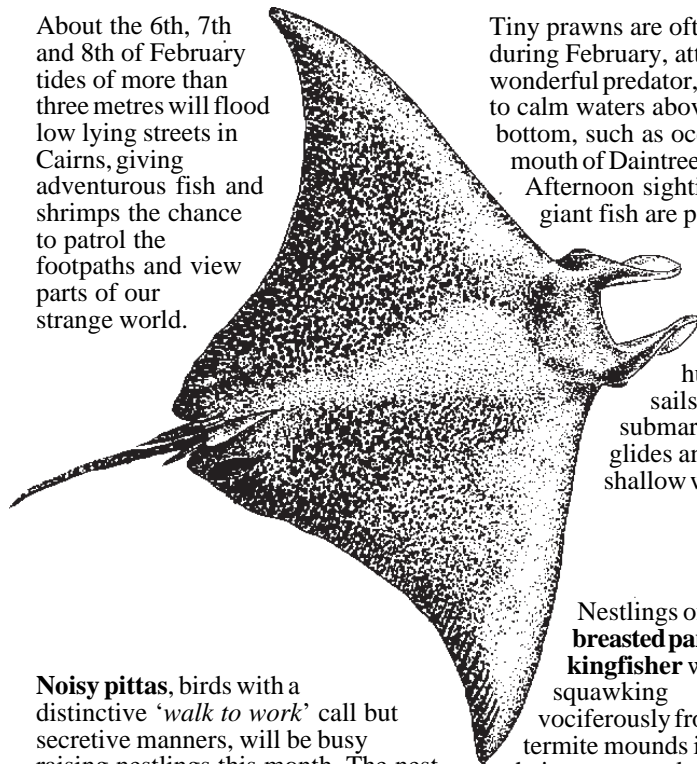
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male	männlich	osu	雄
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dogs	Hunde	inu	犬
road	StraÙe	doro	道路

Nature notes

A diary of natural events creates a pleasing journal which grows richer with the passage of time. Watching for the recurrence of an event after noting it in a previous year, and trying to understand what could have caused changes in timing, is intriguing.

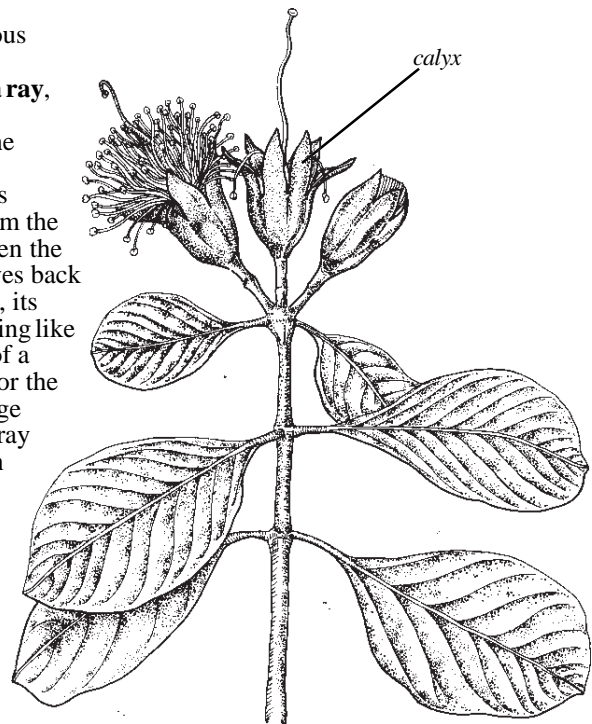
These notes are from the author's own notebook, or were offered by researchers and fellow naturalists. Readers will, inevitably, note variations between their observations and those appearing here. If you do not keep a nature diary perhaps this will inspire you to begin one.

About the 6th, 7th and 8th of February tides of more than three metres will flood low lying streets in Cairns, giving adventurous fish and shrimps the chance to patrol the footpaths and view parts of our strange world.

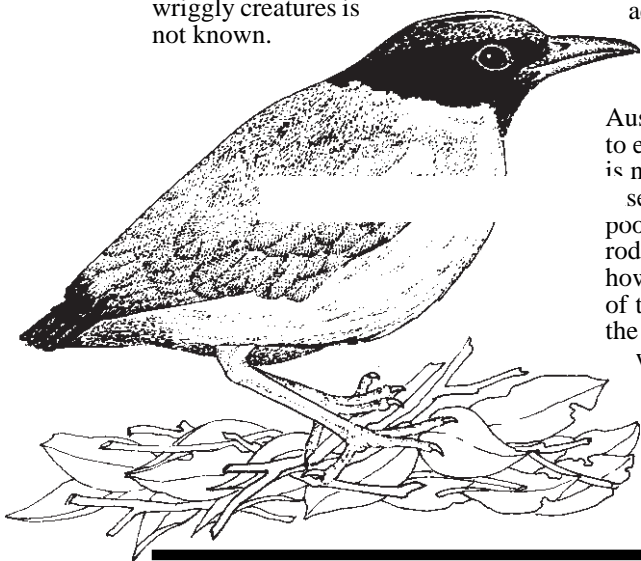


Tiny prawns are often numerous during February, attracting a wonderful predator, the **manta ray**, to calm waters above a sandy bottom, such as occur near the mouth of Daintree River.

Afternoon sightings of this giant fish are possible from the beach, when the manta roves back and forth, its wings rising like the fins of a huge shark or the sails of a strange submarine as the ray glides and swirls in shallow water.

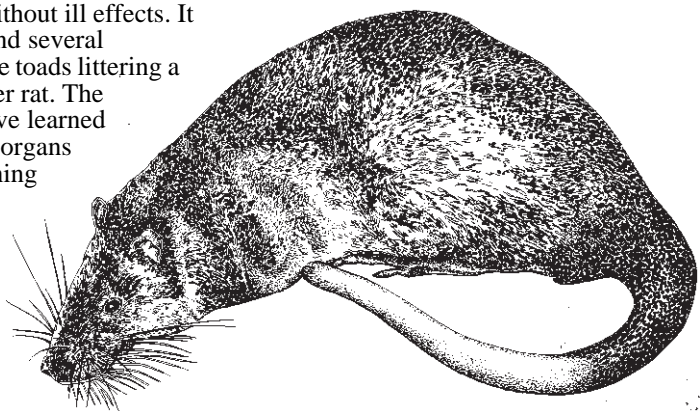


Noisy pittas, birds with a distinctive 'walk to work' call but secretive manners, will be busy raising nestlings this month. The nest is an igloo of sticks built between buttress roots in rainforest. The domed construction is sometimes supplied with a doormat of moss or dung, but young are successfully raised even when nests do not have this sophistication. In one photograph, by naturalists Clifford and Dawn Frith, an adult noisy pitta can be seen carrying a beakful of leeches to its nestlings, but how the parent bird subdued the wriggly creatures is not known.



Nestlings of the **buff-breasted paradise-kingfisher** will be squawking vociferously from within termite mounds in rainforest, urging their parents to keep up the food supply. Fledglings will emerge from the nursery now or early next month, gaining size and flying skills before setting off for New Guinea in April.

Water rats have been recorded mating in February near Cooper Creek, their pre-dawn activity being discovered because of a great deal of squealing accompanying the procedure. These handsome rats - predominantly carnivorous rather than vegetarian - are one of the few Australian animals which has learned to eat cane toads without ill effects. It is not unusual to find several sembowelled cane toads littering a pool used by a water rat. The rodent seems to have learned how to eat internal organs of the toad by opening the abdomen, without ingesting the skin toxins for which the toad is notorious.



The lovely, but short-lived, flowers of a mangrove known as the **red-flowered pornupan** will be scattering long red stamens on tidal waters. Flowering in this species frequently extends throughout the warmer months. This pornupan is considered to have the most handsome flower of all mangroves, with a mass of stamens each about four centimetres long. When these stamens fall, the large green calyx lobes spread out like a star, with a disc-like fruit developing in the middle. A member of the family Sonneratiaceae, this species is called *Sonneratia caseolaris*.

Bookshelf

Very little has been published on cassowaries although, of course, all Australian bird books mention them.

Reader's Digest Complete Book of Australian Birds

Reader's Digest Services Pty Ltd

This comprehensive bird book has a good page of information with coloured photos.

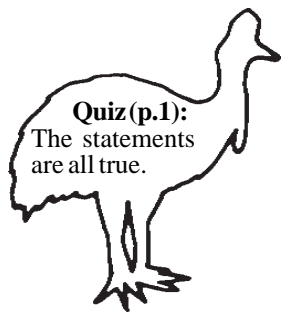
Australian Tropical Rainforests

L.J. Webb and J. Kikkawa (eds)
CSIRO (1990)

Chapter: *The Biological Web — Plant-Animal Interactions in the Rainforest*

R.E. Jones and F.H.J. Crome

The first part of this interesting chapter examines the relationship between plants and fruit-eating seed dispersers, including, of course, the cassowary. (The chapter then looks at pollination and leaf-eating animals.)



Quiz (p.1):
The statements are all true.

Cassowary Australia's endangered rainforest inhabitant

Christina Dwyer
Broad Books

This colour booklet covers much the same ground as this newsletter with more detail and colour photographs. It is written in a simple style which would make it particularly useful for children.

Cassowary contacts

A number of organisations have been set up to study cassowaries and assist in their conservation.

The Community for Coastal and Cassowary Conservation (C4)
PO Box 165
Mission Beach, QLD 4852
Tel: (07) 4068 7197
Fax: (07) 4068 7298
Email: c4@iig.com.au

Daintree Cassowary Care Group
PO Box 871
Mossman, QLD 4873
Tel: (07) 4098 9171

There are several places where you can find out more about cassowaries. The Community for Coastal and Cassowary Conservation (C4) runs the Environment Information Centre and Theatre at the Wet Tropics Information Centre, Porters Promenade, Mission Beach. It is not far from the town centre — follow the signs.

Also at Mission Beach, there are two interpretive walks at the Tam O'Shanter State Forest. One, at Lacey Creek, is a 1.1 km loop track from the carpark through cassowary habitat. There is trackside information and a cassowary information shelter. The other, at Licuala Park, is a 350m children's cassowary trail. Concrete cassowary footprints lead the children to a model nest with four (fake!) eggs. There is also a special children's brochure.



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