



Illustration, Sally Elmer

Identification - Adults

The Cane Toad (*Bufo marinus*) is an amphibian belonging to the family Bufonidae. This family contains many species throughout the world, none of which are native to Australia.

Cane Toads are characterised by a stout, squat body, heavier than that of most frogs. Adult lengths of 10-12 cm are common, but occasionally exceptionally large Cane Toads are found. These can be up to 25 cm long. The skin of the male is very rough and warty; the female, while still warty, is relatively smoother than the male.

Adult females are generally grey or brown with patches of yellow-brown. Males, in contrast, are usually a burnt orange-brown colour. A prominent bony ridge runs between the eyes and snout. Poison glands form a swollen mass behind each ear and these secrete a viscous white liquid when the animal is handled or bitten. This liquid contains bufotoxin, which is composed of many poisonous components but is primarily cardioactive (affecting the heart).

There are several native frogs that could be mistaken for adult Cane Toads. These are all brownish, stout-bodied animals and include species such as Ornate Burrowing Frogs (*Limnodynastes ornatus*), Snapping Frogs (*Cyclorana australis* and *C. novaehollandiae*) and Barred Frogs (*Mixophyes* spp.). These frogs do not have the prominent shoulder glands or the ridge between nostril and eye, which distinguishes the Cane Toad.

The Cane Toad also has a distinctive stance and hop. It sits upright in an almost vertical position and moves in a series of fast, short hops rather than long 'frog-like' leaps.

Another useful feature in distinguishing Cane Toads from frogs is their distinctive call. During breeding season males call with a continuous 'd-d-d-d-d-d-d-d-d-d ...', much like an old diesel boat motor. No native frog has a call like this.

Identification - Tadpoles and Juveniles

Identifying frog tadpoles from Cane Toad tadpoles (toadpoles) is usually fairly simple. Cane Toad tadpoles are small, usually no longer than 3.1 cm from mouth to tail tip, or 1.4 cm if just the head and body are measured. They are uniformly black or very dark grey in colour. Although a number of native frogs have dark tadpoles, these are usually much larger in size or, if they are about the same size, they are found in fast-flowing mountain rainforest streams (where Cane Toads are absent). If there is any doubt, the dark belly of the Cane Toad tadpole is diagnostic – the native species have pale or translucent bellies. In certain conditions of poor light or at night, Cane Toad tadpoles may appear relatively pale so it is best to view the animals in strong daylight. Cane Toad tadpoles further differ from most native species in that they often occur in massive numbers and frequently form dense aggregations in shallow water.

Cane Toad tadpoles metamorphose into juvenile toads that are very small, usually from 0.7 cm to 1 cm. Recent metamorphs are black

or dark grey, often with numerous small orange dots. Some young toads are superficially very similar to various native froglets (*Pseudophryne*, *Uperoleia* and *Crinia* species). Given the variability of young toads, it is simply not possible to provide a generalised, non-technical description of them at this stage of their life cycle. One should, however, suspect toads when very large numbers of small dark frogs are being encountered as they leave ponds, disturbed watercourses, or farm dams. Juvenile Cane Toads will also leave ponds and dams by day or night, whereas most native frogs emerge from the water and disperse only at night.

Young Cane Toads of about 2 cm in length are more readily identifiable as Cane Toads because the major diagnostic features of the adult are apparent:



Eggs and tadpoles of the Cane Toad

Illustration: Sybil Monteith

- (i) the large glands behind the eyes are now obvious;
- (ii) the prominent bony ridges around the eyes and sides of face are well-developed and impart a very square-headed profile; and
- (iii) the young toads are effectively just miniatures of the adults.

Always remember that identification of young toads is not easy and beware of simple descriptions. Given the degree of natural variation present in most animal populations, there will always be 'exceptions-

to-the-rule'. In any situation where the identity of an animal or animals is in doubt, try to obtain specimens or photographs of them for examination at the Queensland Museum. Verbal descriptions may not provide sufficient information for a determination to be made.

Biology

Although not native to Australia, the Cane Toad has one of the widest ranges of any living toad. Originating in Central and South America, the Cane Toad has been introduced into several Pacific Islands and Australia. Elsewhere it is called the Marine Toad, Giant Toad or American Toad.

Cane Toads live in a wide variety of habitats. Their distribution is restricted mainly by availability of water, which they require to breed. In arid regions, Cane Toads rely on waterholes, billabongs, irrigation canals and livestock watering dams to survive dry periods. During dry or cold seasons they remain inactive in shallow excavations beneath ground cover. Cattle hoof prints in soft mud at dam edges provide adequate shelter for Cane Toads and have facilitated their spread across northern Australia.

Cane Toads will eat almost any small creature that they can catch, but they have few predators in Australia. The Common Freshwater Snake or Keelback (*Tropidonophis mairii*) is the only Australian animal known to be able to regularly feed on whole Cane Toads without dying as a result. Even Keelbacks occasionally succumb to poisoning from eating Cane Toads. Other native animals, such as estuarine crocodiles, water rats, crows, kookaburras and species of ibis, are believed to feed on toads or their internal organs.

Cane Toad eggs are blackish in colour and are deposited in long jelly-like strings onto plants, rocks or debris in water. As many as 35,000 eggs may be produced by each female; Cane Toads have a very high breeding potential.

Embryos begin hatching within 48 hours. After several days the tadpoles begin feeding, the tail grows proportionately larger and hind limbs develop. Cane Toads usually begin breeding in their second summer when they are about 75 mm long.

Effects on man and the environment

Between 1935 and 1937, the Cane Toad was introduced into the cane fields of northern Queensland to combat insect pests, such as the French's cane grub and grey-back cane beetles.

Since that time they have spread south and west into areas where cane has never been grown (see map), and it is not certain how far they will spread within Australia. In some areas they occur in great numbers during the wet summer months. Moreton Island and some of the higher mountain ranges around Brisbane remain toad free.

It is imperative that people become aware of the potential hazard of coming into contact with toads. Dogs and cats may die after mouthing Cane Toads. Symptoms include profuse salivation,

twitching, vomiting, shallow breathing and collapse of the hind limbs. The eggs and tadpoles are also poisonous and can cause cardiac arrest and death.

Under stress, Cane Toads secrete poison onto the surface of their skin. If physically bashed or squeezed, this poison may shoot a short distance. Occasionally, when people attempt to kill a Cane Toad, poison enters the eyes or mouth. Because the poison can be absorbed into the system through mucous membranes without being swallowed, the mouth, eyes and nose should always be thoroughly washed if such contact with toad poison occurs.

Not only is the toad a hazard to man and of dubious benefit to the cane industry, scientific evidence now suggests that this imported animal represents a significant ecological threat to the Australian environment.

The proliferation of the species may have had consequences that were never foreseen at the time of its introduction. Experiments and observations indicate that a wide variety of native fauna are extremely susceptible to the many poisons in bufotoxin. These include avid frog-eaters, such as the Common Tree Snakes, Tiger Snakes and Red-bellied Black Snakes and the rare carnivorous marsupials, the quolls. In areas where toads appear, there has been a subsequent decline in populations of these types of native animals. More research in this field is vital.

Further Information

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September 2000

