# **ACT Wildlife Annual General Meeting 2 April 2023**

Presentation by Ian Fraser, ACT Wildlife patron

In accepting the invitation to speak briefly to you this afternoon, I am aware that yours is a stressful and, at times, even traumatic vocation. I am also aware that I can tell you nothing useful about what you do and how you do it, so instead I’m going to try to lighten things up a little by telling you some stories which I hope you’ve not already heard. And for me, the best source of interesting stories is always nature. In particular I’ve selected a few of the animals you’ve cared for as reported in the excellent Annual Report.

*Blue-faced Honeyeaters* are rare in Canberra (at least until recently) but are common west of here and abundant throughout the tropics, where they are often known as Bananabirds (not affectionately I fear). Their most obvious attribute is the lovely blue facial skin and that is the hook on which I’ll hang my first story. My first weird fact for the afternoon is that, despite the evidence of our eyes, there are *no* blue pigments in any known bird (or indeed in any known animal, other than a very few butterflies). Rather their feathers, which are really whitish, have numerous tiny bubbles in the barbules, each of exactly the diameter to reflect blue light and to absorb all the other colours. What we see are not blue feathers, but colourless feathers which reflect blue light to our eyes. If you were to take a red and a blue rosella feather (with permission of course) and soak them in a suitable solvent, the red feather would be drained of its colour but the blue would remain blue. If however you were to take those feathers and hit them with a hammer (here it’s a very good idea to use feathers that are no longer attached) the red would be unchanged, but the blue would revert to off-white as the bubbles were burst.

In the Blue-faced Honeyeater the blue skin is the result of layers of collagen fibres aligned to give exactly the same effect. This leads to the rabbit (or bilby?) hole of green birds, of which also very few, and none in Australia, have green pigments. In their case they have yellow pigments which are relatively easy to form from food, plus the ‘blue bubbles’ in the feathers which together give the green we seen in Eastern and young Crimson Rosellas, King Parrots and Superb Parrots for instance.

And a note – we should always remember that birds are the surviving dinosaurs. Not just distant relations but direct descendants of the main line of running carnivorous dinosaurs, the theropods.

*Pelicans* are common, widespread and familiar, but we know surprisingly little about their breeding. There are scattered breeding records from every state, though not the ACT. In NSW historical breeding records are spread from the Riverina to the Darling to the north coast, but every time it was just once and never repeated in that site. Compare this with most birds which breed in the same place every year. Twice in the 1960s colonies were established at Lake George, but hundreds of nests produced not a single chick. There are just two regular pelican breeding grounds in all of Australia, and just one is used annually, producing all the country’s new pelicans almost every year. This site comprises a few islands in the north of the Coorong (ie *Storm Boy* country), near the mouth of the Murray in South Australia. The other regular, but very occasional, site is in the Lake Eyre Basin, and in particular Lake Eyre itself, which can attract 100,00 or more breeding birds when the lake fills, perhaps only once every few decades. This represents maybe a third of all mature pelicans in Australia.

And how do they know it’s time to go there? This is an excellent question to which there is no definitive answer – this actually cheers me as it does us no harm to be reminded from time to time of the profundity of our ignorance, lest we get too arrogant, as is our wont. Another pelican serious oddity is the observation that every pelican chick on being fed goes into violent convulsions, during which for about a minutes it thrashes wildly, biting everything in sight including itself, then collapses for about 30 seconds, then resumes normality. I said ‘every chick’, but this isn’t quite true; where there are two chicks in the brood, only the first one displays this curious behaviour.

It's worth remembering that Canberra pelicans a) probably hatched on the Coorong, and b) could easily have travelled, soaring effortlessly, to Canberra via south-west WA, Kakadu and Tasmania.

*Turtle* or *tortoise*? This is actually decreasingly a question in Australia, as we move steadily away from the Australian tradition of saving ‘turtle’ for the great nomadic sea turtles, and ‘tortoise’ for everything else. Instead we are adopting the international convention of using ‘tortoise’ for the dryland, club-footed animals (not present in Australia) and ‘turtle’ for the rest. The shell, unique in vertebrates, is formed from ribs growing outwards from the spine and flattening and joining, covered in tough keratin scales. Turtles arose at the same time as the dinosaurs, 230 million years ago; both were around and highly successful for 170 million years before the non-bird dinosaurs vanished. 60 million years later though the amazing turtles are still thriving.

*Dragons* are seemingly the most ancient group of lizards; the oldest definite dragon fossil is 99m years old. No other lizard has those front fangs and flattened triangular side cutters which make handling a dragon a tricky matter. On more than one occasion I’ve been careless in handling one and been deservedly lacerated for it. Only tuataras (ancient New Zealand reptiles that are not lizards) have something similar. Dragons are actually less closely related to other lizards than snakes are – so are they really lizards at al? Beardies will lay two clutches of 20-30 eggs each season, a huge investment. Water dragons actually climb trees as well as they swim, but can hide underwater for up to two hours. Their diet includes frogs, tadpoles, ducklings, small mammals – and young water dragons.

And finally one of the most amazing stories in nature, the sonar of *microbats*. Cruising, a bat in your yard is emitting 10 ultrasonic calls a second to get a detailed 3D picture of its surrounds, but when an insect is detected, that goes up to *200* per second. At the same time it must temporarily deafen itself against its own loud call, 200 times a second, to hear the echo coming back! The echo is amplified in the ear, then vibrations are passed to the eardrum, where they are converted to vibrations in liquid in the inner ear, then finally converted to electrical impulses to send the information to the brain – again 200 times a second! From this information it can identify the wingbeat frequency of the moth or other insect, and thus probably identify it. Using this it can home in on a mosquito, trap it in a wingtip and thus transfer it to its mouth in flight.

But they don’t have it all their own way. There is a constant arms race with new defences and thus new weapons being evolved all the time. Some moths can detect the bat’s pulses from a distance and dive to safety; some bats have thus modified their sonar so the moths can no longer hear it. Other moths have special fuzzy wings which the bat can’t detect; in response some bats have modified their sonar so they *can* detect the fuzzy ones. Other moths send a sonar message which is the equivalent of the bright warning colours and patterns adopted by some unpalatable or toxic insects and frogs. They are deliberately advertising their presence to the bat, while warning that they are unpalatable or worse, and should be avoided. Yet others send a burst of clicks at a special frequency to jam the bat’s sonar.

When a bat swings upside down to roost, its leg tendons automatically lock to hold it in place; if it dies in its sleep they stay locked. And a bat, unlike a bird, can flap its wings independently of each other, giving amazing aerobatic abilities.

There are of course so many more stories I could have told, but that is the role of the story teller – to have enough stories in their pack that they don’t have to repeat the same ones. And nature provides an infinitely large pack for the purpose.

Thanks for your interest, and thank for all you do.

Ian Fraser