WILDLIFE DIARY

April 2017

Great Finds

Bush Curlew, *Burhinus grallarius*can hear calling around Birkdale.

Swamp Wallaby, *Wallabia bicolor* seen in Bayside parklands at Ransome.

POPULATION MATTERS

"The massive growth in the human population through the 20th century has had more impact on biodiversity than any other single factor."

–Sir David King, science advisor to the UK government.

World population clock
http://www.worldometers.info/world-population/

What is flowering

Early Flowering Black Wattle, *Acacia leiocalyx* (Domin) Pedley is a shrub or tree to 6 m high or sometimes more; bark slightly corrugated to fissured, flaky-fibrous. This acacia is now starting to flower. The flowers are pale yellow and densely packed into axillary spikes.

Silvereyes on the move

The Silvereye is a small bird with a conspicuous ring of white feathers around the eye, and belongs to a group of birds known as white-eyes. The Silvereye shows interesting plumage variations across its range. The grey back and olive-green head and wings are found in birds through the east, while western birds have a uniformly olive-green back.

Breeding birds of the east coast have yellow throats, pale buff flanks (side of the belly) and white on the undertail. Tasmanian birds have grey throats, chestnut flanks and yellow on the undertail. To complicate this, the birds in the east have regular migrations within Australia and may replace each other in their different areas for parts of the year. Birds in Western Australia have yellowish olive, rather than grey, backs.

In the south of their range, Silvereyes move north each autumn, and move back south in late winter to breed. Tasmanian Slivereyes often seen in the Redlands and Bayside area. Not bad for such a tiny little bird. http://www.birdsinbackyards.net/species/Zosterops-lateralis

Did You Know?

Did you know Australian marsupials can see in full colour, new research has found, making them the only other mammals apart from primates to do so. They also have short wavelength sensitive (SWS) cone cells that pick up ultraviolet or blue light; medium wavelength sensitive (MWS) cells that pick up colours along the middle of the light spectrum; and long wavelength sensitive (LWS) cells that pick up reds. Primates - including humans have SWS1, which has a huge variation in spectral sensitivity, allowing primates - including humans - to see a wide range of colours.

Did you know reptiles and birds have highly developed colour vision with four classes of cone cells including SWS1, SWS2, MWS and LWS.

Did you know the **Scarlet Honeyeater**, *Myzomela sanquinolenta* at about the beginning of winter moves down from the hills to lower areas and stays until about November? Resident birds in the north of its range, seasonally migratory in south, with movements associated with flowering of food plants. It is considered nomadic in some areas, following autumn - and winter-flowering plants. As the breeding season (July – January) approaches, males sing their pretty tinkling song of about six to eight notes, more often and more vigorously. Females utter a high-pitched chirp. She is not as colourful, lacking the scarlet and black that make the male bird one of our most exquisite honeyeaters.
http://www.birdsinbackyards.net/species/Myzomela-sanguinolenta

Great Walks

The Glider Reserve at Alexandra Hills is a great place to visit in the cooler months. A variety of species will be seen and heard.

WWW

Locals ask why koala bushland has been placed under urban footprint in regional plan
http://www.redlandcitybulletin.com.au/story/4449289/push-on-to-save-federal-government-koala-habitat/

Toondah harbour & political donations
https://tinyurl.com/jnbqqqk

The evolution of the eye

The overwhelming majority of life on our planet depends on the sun for energy. Because life is so tightly linked to the sun, it is no surprise that many organisms (excluding those that live in total darkness) have evolved the ability to detect and respond to light. Plants turn their leaves toward the sun. Single-celled algae, protists, and other microbes swim toward or away from light. But it is the animals, with our image-forming eyes, that have taken light detection to the next level.

96% of animal species have eyes. The first animal eyes did little but detect light—they helped to establish day/night cycles and coordinate behaviour—but more-complex eyes soon evolved. A predator who can see its prey from a distance, or a prey animal that can see the shadow of a predator approaching, has a clear survival advantage over those who can't. Even a slight improvement in image quality provides a significant survival advantage, allowing for the step-by-step evolution of increasingly complex eyes.

At its simplest, the eye incorporates three functions: 1. Light detection 2. Shading, in the form of dark pigment, for sensing the direction light is coming from 3. Connection to motor structures, for movement in response to light. In some organisms, all three of these functions are carried out by just one cell—the single-celled euglena is one example. It has a light-sensitive spot, pigment granules for shading, and motor cilia. This structure, however, isn't considered a true eye.

The most-basic structure that is widely accepted as an eye has just two cells: a photoreceptor that detects light, and a pigment cell that provides shading. The photoreceptor connects to ciliated cells, which engage to move the animal in response to light. The marine ragworm embryo (right) has a two-celled eye.

An eye with more photoreceptors has more power: it can detect variations in light intensity across its surface. A cup-shaped eye can better sense both the direction light is coming from and the movement of nearby objects. These improvements require only minor changes to the basic eye.

As animals evolved more-complex bodies and behaviors, the eye too became more complex. Eyes evolved connections to muscle cells rather than cells that moved by waving cilia. Neurons evolved that could process signals and coordinate behavior.

Later improvements included structures for better optics, such as lenses or mirrors that gather and focus light onto photoreceptors. Some eyes became spherical and evolved pupils that opened and closed to let in just the right amount of light for forming clear images. Muscles evolved to fine-tune focusing and to point the eye in different directions. Photoreceptors increased in number, providing more-detailed images (like adding pixels to a photograph).

Eyes most likely evolved from simple to complex through a gradual series of tiny steps. Piecing together the sequence of eye evolution is challenging, and we don't know the sequence of steps that led to every modern eye. But we do know that modern animal eyes come in many varieties, spanning a continuum from the simplest to the most complex. This demonstrates that all types of eyes are useful, and that eyes of intermediate complexity could also have formed as steps in the evolution of complex eyes.

Researchers at Lund University wanted to find out how long it might take for a complex eye to evolve. Starting with a flat, light-sensitive patch, they gradually made over 1,800 tiny improvements—forming a cup, constricting the opening, adding a lens—until they had a complex, image-forming eye. It is important to note that every tiny change these researchers made measurably improved image quality. The researchers concluded that these steps could have taken place in about 360,000 generations, or just a few hundred thousand years. 550 million years have passed since the formation of the oldest fossil eyes, enough time for complex eyes to have evolved more than 1,500 times. Source: http://learn.genetics.utah.edu/content/selection/eye/

Never doubt that a small, group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has. Margaret Mead.

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