The Natural News

Central North Field Naturalists Inc.

No. 70 ~ August 2018

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Book Review

Beginner's Guide to the Common Orchids of North West Tasmania by Ian Ferris and Philip Milner.
Reviewed by Martha McQueen
Photographs by Philip Milner

Written and photographed by Central North Field Naturalist members Ian Ferris and Philip Milner, this 36-page booklet provides the beginner with a clear and informative introduction to finding orchids in the wild. As one of those beginners, I appreciated the step-by-step approach to "improving knowledge and understanding of orchids" in the NW corner of Tasmania—identifying the common name and genus of orchids one finds.

As a novice, I found the information about how to use the guide, as well as the background on Tasmanian orchids, an excellent foundation and inspiration for future investigations. Since all but one are ground orchids, and not particularly obvious, one gains an appreciation of the care needed in searching them out and investigating them. The booklet continues with a section on "where to look" followed by "when to look", giving specific habitats to explore, and naming one particular orchid hot-spot.

Following the introductory material, the remainder of this guide proceeds with a particularly inviting and user-friendly layout, including a clear photo and accompanying information on each page, arranged by group.

I remember my excitement when I pulled up a "weed" in our garden—many years ago—and discovered it was actually a "potato orchid". So I was specially drawn to the page on potato orchids, where I learned that there are few species, that they are relatively common, and where to look to find one in future. Common or not, they are an exciting discovery!

I look forward to using this guide to extend my budding familiarity with the orchids around us and thereby contribute to their care and preservation in their natural environment.

Copies of the guide can be obtained at monthly walks; from Ian Ferris, Philip Milner, Patricia Ellison, Peter Lawrence or myself; or from Cradle Coast NRM in Burnie.
(Cover: Rabbit-ears *Thelymitra antennifera*)

Small helmet orchid *Corybas unguicularis*

Spotted sun orchid *Thelymitra ixioides*

Flying duck orchid *Caleana major*

Black-tongued Caladenia *Caladenia congesta*

Ladies tresses *Spiranthes australis*

Potato orchid *Gastrodea procera*

Rodenticides, reptiles and raptors
Ron Nagorcka

On 15 March 2017 a large 1.3 meter long tiger snake had its dinner in view of the kitchen sink window (see photo below). It happened when we were poisoning rats. Having just read Nick Mooney's excellent article about raptors being secondarily exposed to poison by eating dead or dying rats I wondered whether the snake might also be in danger from secondary exposure to the anti-coagulant rodenticide brodifacoum, the poison we had unfortunately used.

I emailed Nick about it and he in turn put me in touch with Simon Fearn (whose excellent little book '*Snakes of Tasmania*' I highly recommend). Simon thought the snake was probably safe—his experience and recent data suggest that reptiles are less susceptible to brodifacoum toxicity than birds or mammals. He shortly thereafter sent me a link to the following paper:

'Biologically significant residual persistence of brodifacoum in reptiles following invasive rodent eradication, Galápagos Islands, Ecuador.'

It concludes: "Rat eradication resulted in prolonged presence of the anticoagulant rodenticide brodifacoum in exposed lizards [through ingestion of fragments of bait or inverterbrates] likely significantly contributing to the deaths of secondarily exposed raptors up to at least 773 days after bait application.

This would suggest that our snake would not have been affected, but if a raptor were to eat it, they may still be in trouble through (in this case) tertiary exposure.

If you are resorting to rat control using poison (ah that we could eradicate!), it is best to avoid anything that 'kills in one feed' (e.g. brodifacoum), and choose 'first generation' anticoagulant rodenticides such as Ratsak Double Strength or Racumin which use slower acting alternatives. (Unfortunately I've found they are often not available in our local Northern Tasmania supermarkets.)

References:

https://d3n8a8pro7vhmx.cloudfront.net/landcaretas/pages/3353/attachments/original/1522120064/Risks_of_anticoagulant_rodenticides_to_Tasmania_raptors_-_Nick_Mooney_small.pdf?1522120064

file://2016,%2013,%2038,%20Campbell_brodifacoum%20persistence%20[5567].pdf

Tiger snake swallowing a dead rat possibly killed by the rodenticide brodifacoum.

The 20 cm long *Tropidurus albemarlensis* (above right) is the most widespread of the seven species of lava lizards found in the Galápagos. Some are found on only one island, others on two or more islands. Their colour patterns vary from island to island, as does their territorial defensive behaviour. Photos: S. Lloyd.

The lava lizards on Pinzon Island (Galápagos Islands, Ecuador) were exposed to brodifacoum during the rat eradication project. The observation that there was no population level poisoning suggested that reptiles are less susceptible to brodifacoum toxicity than mammals and birds. However, reptiles can have relatively high sublethal poison residues because they ingest fragments of bait or invertebrates that eat and degrade bait. These omnivorous lava lizards represent a significant proportion of the biomass on Pinzon Island—as on many of the Galápagos Islands—so the prolonged presence of residues in their systems poses a risk to predatory animals.

Lava lizards feed on insects and plant material. They are eaten by hawks, herons, snakes and mockingbirds.

Bassian Thrush Observation

Linda Barker

I was driving my 2 km long driveway through thick bush one night well after dark. It was around 10 30 pm and, from memory, during a colder month so it would have been dark for several hours. I had previously caught glimpses of Bassian Thrush darting into the undergrowth at night as I drove home, but on this occasion I stopped to observe a bird which did not disappear so quickly. The Bassian Thrush was obvious by its markings, so no doubt of the identity.

I watched the bird foraging much like a blackbird in the thick mulch of sheoak amongst the tussocks on the side of the track. The bird bobbed in and out of sight but seemed unperturbed in the headlights.

I have always assumed they were night foragers due to their big eyes and my frequent night time sightings. I remember thinking on this occasion that it must be a night bird as it was very active so long after dark.

The Bassian Thrush has large eyes and distinctive crescent-shaped markings. Photo: S. Lloyd

From the editor

Several CNFN members have chosen to receive an electronic version of *The Natural News*. For those members who wish to continue receiving a paper copy—never fear, a paper version will be available while I remain editor.

I have been editor of *The Natural News* for thirteen years. As with all my natural history publications, I aim to fill each issue with informative articles by members about a range of topics, and to illustrate the articles with relevant photos that reflect the beauty in the natural world around us.

A printed newsletter can be read anywhere: in bed, in the garden, in the car or in the bathroom. It can be used as a handy reference, shown to and discussed with others and passed on to friends and family. It serves as an advertisement for CNFN, a community group dedicated to the exploration and preservation of Tasmania's natural environment.

Longtime CNFN member from Melbourne and contributor to *TNN*, John Campbell, put it succinctly:

'I'm responding to the note in Disjunct e-news. My preference is to receive a printed copy and a digital copy of *The Natural News*. The latter would be useful for searching, but that is all. A printed copy wins in all other aspects for me.'

Post Script: John's article about Budj Bim is on the disjunctnaturalists website:

https://www.disjunctnaturalists.com/articles2/budj-bim.htm

Budj Bim is an extremely important cultural site and is currently being assessed for inclusion on the World Heritage List.

The Reedy Marsh Reserve

Text and photos by Sue Gebicki

I have been guilty of taking something very special for granted. Our property adjoins the Reedy Marsh Conservation Reserve, so for years I have been able to enjoy wandering into this part of the reserve at my leisure, through areas of melaleuca swamp, open forest with giant eucalypts and areas dominated by old banksias. No tracks, no people, no rubbish in my private bit of paradise, and occasional visits on our property from the inhabitants of that paradise, including a masked owl and quolls. There used to be devils, but unfortunately I have not seen any for a few years.

In 2016 I was contacted by a Reedy Marsh resident who informed me that the Parks and Wildlife Service (PWS) was planning to burn almost 1,200 hectares in the centre of the 3,869 ha Reedy Marsh Reserve. I obtained maps and information about forest types, topography, locations of significant flora and fauna from the thelist.tas.gov.au, my contact provided me with the burn plan provided by PWS and we set off to explore the area.

Most of the reserve is criss-crossed with tracks kept open by 4-wheel drivers, wood-hookers and people dumping rubbish. On a more positive note the only weed we found was a solitary *Pinus radiata.*

Our first trip on foot through the south-east corner started in relatively open forest, then up a south-east facing hill in wet forest through masses of ferns, tall native currant *Coprosma quadrifida* and some beautiful old eucalypts with plenty of hollows. The ground was thick with wet litter, with a huge range of fungi emerging everywhere and crawling with an abundance of small invertebrates including, under one particular rock, a nest of baby scorpions. The top of the hill opened out to more big eucalypts, mossy rocks and orchids.

We followed up with a drive around the boundary of the proposed burn, which had been cleared with heavy machinery in preparation. This took us through many different habitat types including *Eucalyptus ovata* forest; mixed *pomaderris-notelea-beyeria* forest; creeks with large areas of melaleuca swamp and the occasional *engaeus* (burrowing crayfish) chimney; and a good selection of big old trees with hollows. Our overall impression was a reserve containing a great range of habitats and biodiversity.

A misty morning at Brushy Lagoon

In June 2018 CNFN had a short field trip into the reserve south of Brushy Lagoon. We listed fungi, ground covers, orchids, shrubs and trees, which Anna Povey added to the Natural Values Atlas. In the centre of a track on a hill stood a proud little *engaeus* chimney, which sparked much discussion as to how a creature that needs access to water could be in what looked like a relatively waterless spot. Some rather wacky ideas emerged, but there may well have been more chimneys hidden in the nearby large patches of fishbone waterfern *Blechnum nudum*, an indication of wet areas.

In fact, there are many areas of wet forest in the reserve.

The Reedy Marsh Reserve Activity Assessment provided by the PWS includes a map showing the boundary of the area to be burnt, which is primarily in the centre of the reserve. The reasons given for the burn are strategic fuel reduction with some asset protection. This burn is not intended to achieve ecological benefits. The burn involves starting the fire around the perimeter with drip torches, then lighting the centre using the chemical Phos Chek Flash 21 dropped from the air.

The Reedy Marsh Conservation Area was gazetted in December 1998, under the Nature Conservation Act 2002. As such, it is to be maintained permanently in a natural state, and the purpose as stated in Schedule 1 is for "the protection and maintenance of natural and cultural values … and the sustainable use of the natural resources of that area of land including special species timber harvesting." There is, to date, no management plan.

Prescribed burning

Reading through research on prescribed burning, one conclusion that is frequently reported is that there has been relatively little research conducted into the ecological impacts of repeated low intensity burns in Tasmania. One of the most significant messages flowing from a study of the ecological effects of repeated low-intensity fire in a mixed eucalypt forest in the foothill forest in south-eastern Australia is that research of short-term effects can be misleading, given the longevity of forest ecosystems. However, there are some fairly consistent conclusions.

Nutrient losses from unburned ecosystems by erosion or leaching are usually low (De Bano et al. 1998). In contrast, nutrients may be lost from soils and biomass during and following fire by volatisation (vaporisation), convection (as particulates in smoke), leaching into groundwater and erosion. Fire may also increase nutrient cycling rates, and redistribute nutrients through the soil profile.

The re-establishment of the soil biota after fire varies from a few days to several years. For example, studies of repeated burning on fungi have found a simplification of fungi communities, loss of fungal community stratification in the soil profile and reduced mineralization rates. Ratkowski and Gates (2008) have found fire changes reflected in a fungal community more than 75 years after fire in wet sclerophyll *E. obliqua* forest.

A study into the role of fire and nutrient dynamics in Tasmanian forests by Macintosh et al. (2005) concluded that nutrient loss caused by frequent fire encouraged fire-tolerant vegetation adapted to lower soil nutrients, and this produced a feedback mechanism that caused further nutrient loss. The fire-tolerant vegetation is also more flammable and therefore likely to increase the fire risk.

Most studies confirmed that if burning is being used to maintain biodiversity it is preferable to create a patchwork of burnt and unburnt areas. This provides a refuge for local populations to re-establish.

Mainland observations of feral cats have found an increased incidence of predation on native wildlife following fire due to the increase in open areas and lack of vegetation cover.

Conclusion

The Reedy Marsh Conservation Reserve is a richly diverse area. Much of the surrounding forest—apart from the nearby Brushy Creek Reserve of 593 ha—has been logged, converted to plantations or cleared. In the absence of a management plan, and the looming threat of a rapidly changing climate, I think that this reserve is deserving of more thorough study and careful consideration of the consequences of any plans.

The burn has not yet been conducted.

References:

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Tulau, M.J. (2015) *Fire and Soils A review of the potential impacts of different fire regimes on soil erosion and sedimentation, nutrient and carbon cycling, and water quantity and quality.* Office of Environment and Heritage, Sydney

Sapphire J.M. McMullan-Fisher,. May T.W., Robinson R.M., Bell T.L., Lebel T., Catcheside P., York A. *Fungi and fire in Australian ecosystems: a review of current knowledge, management implications and research gaps and solutions* (viewed June 18, 2016)

T.D. Penman, M. Beukers, R.P. Kavanagh and M. Doherty *Are long unburnt eucalypt forest patches important for the conservation of plant species diversity*? (viewed March 31, 2017)

Victoria Department of Sustainability and Environment summary report (1984-1999) Research Report No. 57 December 2003 *Ecological Effects of repeated low-intensity fire in a mixed eucalypt forest in the foothill forest in south-eastern Australia.*

Tasmanian Parks and Wildlife Service PWS *Reserve Activity Assessment Northern Region Planned Burning Program* 2015/2016

FIRE ISSUE - We would like to include articles about the vexed topic of fire in the next edition of *The Natural News*.

If you would like to write an article about fire (or any other topic), please email articles to the editor by 30 October.

How Old?
Sarah Lloyd

It seems that hardly a week goes by without reports of fossil finds or molecular research that push back the known date of when different organisms first appeared on Earth.

Megachirella wachtleri

In 1999 an amateur archaeologist digging in a fossil-rich site in the Dolomites in northern Italy found a fossil of an ancient reptile, *Megachirella wachtleri.* The partial skeleton was less than 6 cm long and comprised part of its skull, plus ribs, spine and front limbs.

The fossil was examined using a 3D imaging technique called micro-CT. It is like a microscopic version of a hospital CT scan and allows very fine scale examination of the internal structure of objects without destroying them. In the case of fossils, features can be seen that are otherwise impossible to view because they are embedded in rock. The scan of the reptile fossil revealed anatomical features found only in squamates (snakes and lizards), including a 'kneecap' on its elbow and specific curves in its collarbone. This lead palaeontologists to calculate that the 240 million-year-old creature is not a direct relative of today's reptiles, but that they shared a common ancestor that was around approximately 252 million years ago before a mass extinction killed more than 90 percent of all species on Earth. It pushes back the origin of lizards 75 million years.

The popular belief is that lizard-like animals first appeared after the mass extinction. This latest research indicates that they predate and survived the mass extinction, took advantage of the lack of competition and diversified. The origin of the extraordinary diversity of reptiles has long baffled scientists; this one small fossil has shed light on this fascinating group of animals.

This legless lizard *Lerista labialis* lives mostly underground in sandy soils in Australia's drier regions.

Post Script: The latest findings in the International Union for the Conservation of Nature (IUCN) Red List confirm that the pressures driving bird declines are part of wider problems in the natural world and that 7% of Australia's reptiles are now threatened with extinction. Australia's reptiles evolved in isolation and represent almost 10% of the world's reptile fauna. (Birdlife International e-news 12 July 2018)

540 million year old footprints

The oldest footprints ever to be found are believed to have been left by an insect-like creature 540 million years ago.

The fossils from the Yangtze Gorges in Southern China were found between layers of rock dated to 551 and 541 million years old.

Before this discovery, the oldest footprints known were made between 530-540 million years ago. The latest prints date to the Ediacaran period, whose sparse fossil record is populated with soft-tissued creatures including worms and organisms that resembled tiny immobile bags. (The Ediacaran Period spans 94 million years from the end of the Cryogenian Period 635 million years ago (Mya), to the beginning of the Cambrian Period 541 Mya.)

The fossils are just a few millimetres wide

and were only seen after the rock slabs were tilted at different angles so the sunlight would illuminate any subtle traces left by ancient creatures.

The team found the marks comprise two rows of imprints that they believe were left by a creature scurrying along a riverbed at a time when life had not yet colonised dry land. The tracks also appear to be connected to burrows, suggesting the creatures periodically tunnelled down into the sediments, possibly to search for oxygen and feed on microbes.

The scientists are unsure whether the creature had many legs or just two, and whether it was a member of the arthropod group, which includes bumblebees and spiders, or annelids, which contains modern-day bristle worms. '*Unless the animal died and was preserved next to its footprints, it is hard to say who made the footprints*.'

Dinosaur dandruff

The oldest known case of dandruff has been identified in a small feathered dinosaur that roamed the Earth about 125 million years ago. The fossilised remains were recovered from rock formations in north-eastern China.

Palaeontologists found tiny flakes of fossilised skin on a crow-sized microraptor, a meat-eating dinosaur that had wings on all four of its limbs. Pieces of fossilised dandruff were also found on two other feathered dinosaurs, the two meter long beipiaosaurus and sinornithosaurus—both twice the size of microraptor—and a primitive bird known as confuciusornis.

The prehistoric skin flakes are the only evidence of how dinosaurs shed their skin. The material shows that rather than losing their outer layer in one piece or in large sheets, as is common with modern reptiles, the feathered dinosaurs adapted to shed their skin in tiny flakes suggesting that feathered dinosaurs evolved skin to cope with their plumage as far back as the middle Jurassic.

Images of the dandruff taken with a electron microscope show that the material is almost identical to that found on modern birds. Like human dandruff, the skin flakes are made of tough cells called corneocytes that are full of the protein keratin.

Modern birds have very fatty corneocytes that are loosely packed with keratin, a feature which helps the birds lose heat from the exertion of flying. However, it seems that the dinosaur dandruff cells lacked such fat, suggesting that the animals did not get as warm as modern birds, perhaps because they could not fly far, or failed to get airborne at all.

Many feathered dinosaurs were not good fliers so their plumage served other functions such as insulation, camouflage, and possibly—like modern birds—to attract members of the opposite sex.

Confuciusornis is a genus of crow-sized birds from the Early Cretaceous. It is the oldest known bird to have a beak and was named after the Chinese philosopher Confucius. It is one of the most abundant vertebrates found in the Yixian Formation, where several hundred specimens have been found. Photo: Eduard Solà CC BY-SA 3:0

Walks and other events

Bring food, water, clothes for all weather, hand lens, binoculars, note book and curiosity.

Saturday 18 August 2pm–4pm Celebrate Slime ~ National Science Week event with Sarah Lloyd. Town Hall Supper Room, 26 Lyall St. Westbury. Light refreshments provided.

Sunday 2 September ~ Narawntapu. Two walks, both approx 8–9 km. Philip Milner will lead a relatively easy walk to Archers Knob; Ian Ferris will lead a more strenuous walk along the fire-trail which follows the southern boundary of the park. More details in the e-news. All walkers to meet at 10.00 a.m. at the car park near the visitors' centre.

Sunday 7 October ~ Badger Range. Meet at Sheffield IGA supermarket car park at 10.00 a.m. To reach Kimberley's Lookout involves a climb of about 200 metres, including a few steep sections. Overall the climb is rated easy to moderate. Expect frogs and orchids. Leaders Martha and Rod McQueen 6393 2121.

Sunday 4 November ~ Gog Range. Meet at the Minnow Picnic Ground at 10.00 am. From the northwest: travel south through Sheffield on Claude Rd (C136), turn left on Paradise Rd (C137). The Minnow picnic ground is just before the bridge that crosses the Minnow River. From Deloraine/ Launceston: travel through Mole Creek and north on Union Bridge/Paradise Road (C137), cross the bridge; the picnic ground will be on your left.
Leader: Jim Nelson - jnelson@skymesh.com.au

Sunday 2 December ~ Narawntapu - Beachcombing on Bakers Beach to see the variety of marine creatures washed up by the tide. A chance to see Hooded Plovers, Pied Oystercatchers on the beach and Short-tailed Shearwaters or Albatross out to sea. Meet at 10.00 am at the car park at the visitors' centre. BBQ facilities are available for a late lunch. Leader: Sarah Lloyd

Sunday 6 January ~ Pine Lake and Rats Castle. A wonderful summer walk in the highlands to observe alpine plants and insects. Meet at 10.00 at the Pine Lake Nature Trail on Highlands Lake Road (A5) 17.6 km south of Golden Valley. We will walk to Pine Lake before heading 14.4 km south to the Rats Castle car park. Leader:

THE MONTHLY WALKS are an important part of field naturalist activities. We aim to cater for all levels of fitness and have outings that are within a reasonable distance for all local members. If you would like to lead a walk, suggest an interesting destination, or you would like CNFN members to visit your property to provide a species list, please email suggestions to either Sue Gebicki or Sarah Lloyd - details below.

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