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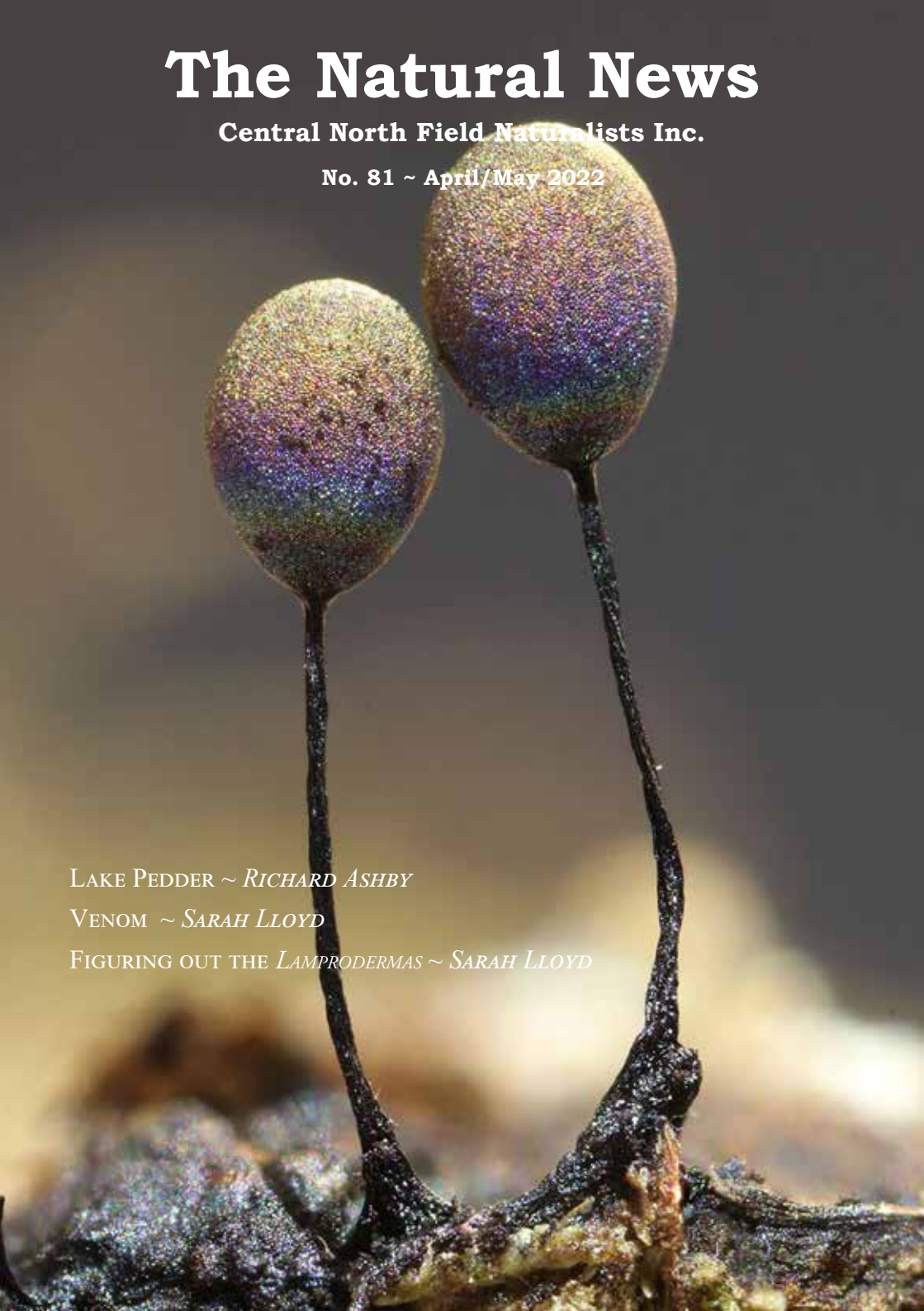

Lake Pedder

Richard Ashby

Even after 23 years of bird surveys for Birdlife Australia's second Atlas project and its natural progeny Birdata, the beautiful hinterland of Lake Pedder remains data-poor, as does much of South West Tasmania. Apart from the road into Gordon and Scotts Peak dams and to the thankfully-abandoned Franklin River dam site and walking tracks into Port Davey, the Arthur Ranges and Frenchmans Cap, this is essentially serious wilderness. Sturdy fishing boats ply the SW coast but must find infrequently favourable wind and sea conditions to deposit walkers/birders/botanists/biologists ashore and most of us can't afford to be chartering helicopters.

I am of sufficient vintage to have walked in to the old Lake Pedder —'Jewel of the South West'—twice before it was flooded in 1972 but can now, in my kayak, investigate all parts of the 'new, improved' version if I can find the time, stamina and somewhere to sleep. Being barely 50 years old, the lake's beaches are steep, made of coarse gravel and generally lack horizontal tops on which to pitch a tent. Google Map is useful here.

No other Birdata surveyor seems to have gone to the trouble of investigating the 50 kilometre southwest flank of Lake Pedder, easily accessible in any small boat in the right weather.

Pre-Cambrian quartzite is the dominant rockform and vegetation has to tolerate a hard-scrabble existence on the shallow, poor quality soils regularly sluiced by high rainfall.

Despite the existence in the southwest of splendid birds like Orange-bellied Parrots (OBPs), Ground Parrots, Southern Emu-wrens and Beautiful Firetails, the avifauna is somewhat sparse. Birdata demonstrates that 72 species (excluding OBPs) live on and around Lake Pedder and three more if you include Lake Gordon.

Crescent Honeyeaters seem to be ubiquitous with Yellow-throated Honeyeaters and Eastern Spinebills occupying bigger stands of timber. Olive Whistlers call from many thickets and the Black Currawong's cackling echoes over the hills. It is, to me, the iconic sound of wilderness in Tasmania, rather like loons in North America and curlews on European moorland. Green Rosellas, Grey Shrike-thrushes, Australian Pipits and Striated Field Wrens are all over the place but raptors are in short supply. Terminal peak, on the east end of the Frankland Range sports an east-facing cliff on which white guano spills off a very inaccessible ledge. A previous visit failed to throw up likely candidates but this time a Peregrine Falcon was heard squawking on nearby Mount Solitary. Suitable prey is so thin in the air that I am quite surprised that any bird-hunting raptor can make a go of it.

Welcome Swallows were about and nesting in mini caves where wave action had exposed quartzite abutments but, unlike Lake Gordon and other Hydro impoundments where drowned trees provide an abundance of suitable hollows, Tree Martins were not in evidence.

Even though Great Cormorants congregate at McPartlan Canal, where the top few metres of Lake Pedder spill into Lake Gordon, I saw only two birds on this occasion. A pair of Black Swans had chicks at Crumbledown (formerly a hill, now an island) and, surprisingly, a pair of Hoary-Headed Grebes at the same site were only the second sighting of the species on Lake Pedder in the near quarter of a century of Birdata/Atlas. Lean survey effort notwithstanding, perhaps 50 years is just long enough for underwater plant succession at the water's edge to host the invertebrates which form the

mainstay of small grebes' preferred diet. Most of the lake, even though relatively shallow, would be out of their diving range.

Since their introduction in Mount Field National Park in 1934 and in Hastings in 1945, Superb Lyrebirds have reached the eastern shores of Lake Gordon and someone has seen or heard one near McPartlan Canal.

Apart from a Southern Boobook at the Huon Campground, no nightbirds presented themselves on this visit but I have heard Tawny Frogmouths and Australian Owlet Nightjars in more heavily-vegetated, old growth parts of the SW.

I became heartily sick of the 30 km, non-wind-assisted paddle of the first day but chose a more direct 25 km return route with a workable breeze on the beam justifying the unfurling of the sail. On top of that a near 900 km round trip via the Central Highlands suggests I won't be doing it again for a while.

No other humans showed their faces in two days on Lake Pedder, not even a tinny on the horizon!

Tawny Frogmouths

Dawn cloud spilling off the Frankland Range at Lake Peddar. Photo: Richard Ashby

Venom
Sarah Lloyd

Collecting slime moulds might seem like a fairly innocuous past time, and I'm often thankful that we don't share our forest with big cats like mountain lions, or large herbivorous elephants. However, we do have some potential threats, the main ones being ticks in summer and leeches when the weather is wet. Both species inject substances that anaesthetise their victims so as to make them unaware of their presence while they sup on the victims' blood; they therefore qualify as venomous animals. Other venomous animals in the forest include snakes (few and far between in 2022) and countless ants, bees, wasps, bugs and spiders. What actually bit me in late January 2022 was never identified but it has left a lasting impression after weeks of intravenous and oral antibiotics and 'wound dressings' as a result of cellulitis. I can rule out a white-tailed spider bite, because on all accounts their bites are excruciatingly painful, and mine wasn't.

Most people have probably heard the old adage that you're never more than about 2 metres from a rat. Even more likely apparently, is that wherever you are in the world (except an Antarctic field station far from the ocean), be it forest, kitchen or garden, here or in Amazonia, you are unlikely ever to be out of sight of a venomous creature.

Several years ago I purchased a beautifully presented book 'VENOM the secrets of nature's deadliest weapon', and I've been meaning to delve into this fascinating topic ever since. A few weeks of contemplating the venomous animals with whom we share our habitat, plus instructions to keep my leg elevated and to take it easy, seemed like the perfect opportunity to tackle this complex subject.

Toxin, venom or poison?

A toxin is any toxic substance; it can be a poison or part of a venom. Venom (which is usually a cocktail of toxins) is broadly defined as a toxic secretion produced by specialised cells in one animal and delivered to another animal via a delivery mechanism (typically by a wound) that disrupts the physiological function, and is used either for defense, predation, feeding or competition.

A poison is a toxic substance that is passively transferred without a delivery mechanism or infliction of a wound, such as through ingestion, inhalation or absorption through the skin.

Blue-ringed Octopus contain lethal doses of tetrodotoxin (TTX) that acts as a poison or venom depending on the method of delivery.

Some substances can be both a venom and a poison depending on method of delivery. The blue-ringed octopus is found in the temperate waters of southern Australia, and is a familiar animal to those of us who have encountered them on field excursions to Penguin Shelf. They contain lethal doses of tetrodotoxin (TTX), a potent neurotoxin that is also found in puffer fish. If a large green sea turtle accidentally ingests a tiny blue-ringed octopus while grazing on sea grass it will be paralysed and drown (i.e. it is poisoned), however the

Although Tiger Snakes mostly use their venom to immobilise their prey, they were responsible for 17% of identified snakebite victims in Australia between 2005 and 2015 with four deaths confirmed from 119 envenomations. Their venom contains neurotoxins, coagulants, haemolysins, and mycotoxins that cause pain, tingling, numbness, sweating, breathing difficulties and paralysis.

Spiders are the most numerous venomous animals on the planet. Almost all produce venom, which is mostly used to immobilise their prey. Spider venoms are grouped into two broad categories: necrotic and neurotoxic. Necrotic venoms cause cell and tissue damage, resulting in inflammation, lesions and blisters. Neurotoxic venom affects the nervous system and disrupts signalling between neurons. Some spider venom contains both necrotic and neurotoxic components.

diminutive octopus can also deliver the TTX via a bite powerful enough to kill a human.

Venom and the associated anatomical and behavioural systems required for venom delivery are the oldest animal offensive weapons to have evolved on Earth. Cnidarians are the oldest lineage of venomous animals and have a fossil record dating back at least 600 million years. They get their name from their cnidae, the cell organelles that deliver their venom to victims. The kingdom Cnidaria includes over 11,000 aquatic species including familiar animals such as jellyfish, sea anemone and blue bottles.

Venom has evolved about 90 times in the animal kingdom and there are now more than 200,000 known venomous animals. They play many important ecological roles. They regulate the populations of prey species—without snakes and spiders, rats and insects would run amok—and they control insects that can potentially damage crops. For example, parasitoid wasps envenomate caterpillars, sap sucking bugs and/or beetle grubs that can reduce crop yields. Their venom alters the immune system or otherwise changes their prey so that it provides living meat for the developing wasp larvae.

Venom from the Gila Monster, a lizard from the southwestern USA, forms the basis of an anti-diabetes drug that saves countless lives and earns pharmaceutical companies millions of dollars each year.

Reference: Jenner, R. & Undheim (2017) *Venom The secrets of nature's deadliest weapon*. CSIRO Publishing, Melbourne.

Jellyfish belong to the phylum Cnidaria, the oldest lineage of venomous animals. They have thousands of stinging cells on their tentacles which each have a specialised structure called a nematocyst. When they brush against a potential predator, hair triggers on their tentacles cause harpoon-like barbs to propel venom (proteinaceous porins, neurotoxic peptides and bioactive lipids) into their victims. Venom is used to immobilise prey.

Parasitoid wasps are unique among venomous organisms because, in contrast to the common functions of venom of predation and defense, female parasitoid wasps use their venom to manipulate the metabolism, development and behaviour of their prey for reproductive purposes. There are between 150,000 and 600,000 species of parasitoid wasps and they parasitize all insect orders and several species of spiders.

Parasitoid wasp adults lay their eggs in or on the bodies of other insects and the wasp larvae develop in or on the bodies of their hosts. The primary function of the wasp venom is to induce temporary paralysis and stop the host's development. Parasitoid wasps have been studied closely because of their extensive use as biological control agents and the potential in the venom for drugs and insecticides.

Platypuses deliver their venom by stabbing. They have spurs on their back feet that are attached to the crural gland responsible for producing one of the most painful known venoms. Only the males have spurs, and venom is produced only in the breeding season suggesting its purpose is for territorial defence and for females.

Male Short-beaked Echidnas also have a spur connected to a crural gland on their hind legs that are also only active in the breeding season. However, echidnas cannot erect their spurs, and unlike the closely-related platypus, the crural glands don't have a venomous function. Instead, the secretions seem to be used for chemical communication.

Assassin bugs are predatory on other insects; some feed on the blood and tissue of birds and animals. African Red Spotted Assassin bugs not only inject a paralyzing and liquefying venom into prey, they also exude a smelly substance if stressed. If this fails, it sprays copious amounts of venom in a manner reminiscent of an elephant showering with its trunk. The native assassin bug *Gminatus australis* (above) is known to inflict a painful bite if handled.

Australia is home to the large ant genus Myrmecia, that includes some of the very few ant species that are dangerous to humans. The familiar Jack Jumper *Myrmecia pilosula* is probably the best known because its venom causes 90% of Australian ant allergies. In areas where it occurs (Tasmania and southern Australia) up to 3% of the population has developed an allergy to the venom and about half suffer anaphylactic reactions which can lead to death, albeit rarely.

In some south American cultures, the ritual administration of venom is used in initiation rites. Various species of ant are usually used because, unlike the Australian Myrmecia spp, their stings are painful but not generally dangerous. After their first menstruation, girls in an Amazonian tribe have to tolerate repeated bites by large termite raiding ants (*Neoponera commutata*) strung along their shaved forehead and torso. Boys in another tribe have to wear gloves full of bullet ants (*Paraponera clavata*) and endure for hours the excruciating pain, hallucinations and fever. The *Myrmecia esurians* (above) with its red legs, mandibles and gaster, is a Tasmanian endemic species with a mildly painful sting (personal observation).

Sorting out the *Lamprodermas*

Sarah Lloyd

Lamproderma is a genus of slime moulds characterised by the iridescent membrane surrounding the spore mass, i.e. the peridium. I have been collecting specimens at Black Sugarloaf since 2010, and now have close to 160 collections representing 5 species.

Years ago, I sent specimens to French *Lamproderma* expert, Marianne Meyer but she did not recognise the species and sent them to Spanish mycologist, Dr Gabriel Moreno. He identified *L. echinulatum*, whose type specimen was collected in Tasmania, but the other species have remained a mystery. In fact, it wasn't until fairly recently, that I realised I had two macroscopically similar species, *L* aff. *gracile* and *L.* 'obovoid', possibly an undescribed species. *Lamproderma* (not) *muscorum* is another species that is possibly new to science.

In order to separate the superficially similar species, I compiled a coloured plate with descriptions and micrographs of spores and other features.

In some cases, it was only when I looked at the internal structures that I could separate the superficially similar species. DNA sequencing will determine if they are different from their northern hemisphere 'twins'.

Two macroscopically very similar species *Lamproderma* aff. *gracile* (left) and *Lamproderma* 'obovoid' (right) are found on similar substrates, i.e. large well decayed eucalypt logs, usually covered in bryophytes, i.e. mosses and leafy liverworts.

Lamproderma echinulatum (left) and *L.* (not) *muscorum* (right) are also superficially similar, although the latter tends to be smaller and with a finer more intensely iridescent membrane surrounding the spore mass. Like the other *Lamproderma* species I find, they're usually collected from large well-decayed logs.

Walks and other events

All walks are scheduled for the first Sunday of the month unless otherwise stated. Meeting time is usually 10am. There are more details in the e-news.

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

June 5th – Balfour Track. Leader: Ian Ferris (0401434080)

July 3rd – Dial Range. Leader: Mary McConnell (0409900476)

August 7th – AGM – Banksia Centre, Port Sorell

September 4th – Don Reserve and Don Head. Leader: June Hilder ((0424350183)

In early April 2022, strong winds blew armadas of Pacific Blue Bottles (*Physalia utriculus*) into Bass Strait resulting in strandings along Victoria's southeast coast. Bluebottles resemble jellyfish but are actually siphonophores, colonial organisms composed of small individual animals called zooids. There are four zooids that depend on each other for survival and performing different functions, such as digestion (gastrozooids), reproduction (gonozooids) and hunting (dactylozooids). The last zooid, the pneumatophore, is a gas-filled float or sac that supports the other zooids and acts like a sail so the bluebottle is constrained to the ocean surface, moving at the mercy of the wind, waves and currents. Tentacles bear tiny, coiled, thread-like structures called nematocysts that trigger and inject venom on contact, stinging, paralyzing, and killing adult or larval squids and fishes. Photo: George Russell

https://en.wikipedia.org/wiki/Portuguese_man_o%27_war

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