



# SEGments



**Journal of the Scientific Expedition Group Inc.**

**Volume 42 No. 2 Sept 2026**

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The Scientific Expedition Group is a not-for-profit organisation which began in 1984. SEG undertakes several expeditions each year to record scientific information on wildlife and the environment in many parts of South Australia.

A major expedition to conduct a biodiversity survey occurs each year over two weeks. Scientific experts lead volunteers in surveying mammals, reptiles, invertebrates, vegetation, birds and physical geography. The data collected on each survey are archived with the relevant State scientific institutions to ensure they are available to anyone interested in our State's environment.

In addition to the major expedition, a number of trips for the Vulkathunha-Gammon Ranges Scientific Project are organised annually. A long term study of rainfall on the ranges and of water flow in arid-zone creeks is undertaken. All data are supplied to the Department for Environment and Water and to the Bureau of Meteorology and are available for analysis.

SEG conducts four-day biodiversity surveys at eight different sites each autumn and spring in the Heritage Area of scrub on "Minnawarra" farm near Myponga. Data collected are entered into the Biological Data Base of SA.

SEG also conducts mallee fowl monitoring in the Murraylands.

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SEGments is the authorised journal publication of the Scientific Expedition Group Inc., 55 Exchange Pl, Adelaide, SA 5000. It is published four times a year to promote articles about biodiversity, scientific exploration and ecological research.

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**Cover Photo :** Polar bear next to our ship in a pack ice covered Hinlopen Strait in Svalbard. Photo: Robbie Henderson

**Rear Cover Photo:** A Puffin on Latrabjarg Bird Cliffs at the western end of Iceland. Note the mud on the tip of its beak. In Iceland Puffins build burrows in the soil at cliff edges. Photo: Alun Thomas



# SEGments



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### EDITORIAL

Anyone in Australia who is interested in birds and mammals, including farmers, bird watchers and essentially anyone interested in the environment, is waiting to see how bird flu will develop in Australia. At the date of writing this editorial there are about 250 positive bird flu events in all States except the Northern territory and ACT. Nearly all events to date involve sea birds except for a raven and a peregrine. More recently several long nosed fur seal appear to have succumbed.

In my article in this issue I discuss the types of things governments are recommending and what to do if a sick or dead bird or animal is seen. More particularly for SEG I discuss what might happen if bird flu takes hold on the land. We may have to significantly change our animal trapping and handling techniques.

Things may not be the same as we have been used to for quite some time.

Since writing the bird flu article the Federal Government has prepared an internet page to provide the latest information on the spread of Bird Flu to wildlife. See:

[Bird flu \(avian influenza\) - DAFF](http://www.agriculture.gov.au/campaigns/birdflu/latest-data#event_data)

([www.agriculture.gov.au/campaigns/birdflu/latest-data#event\\_data](http://www.agriculture.gov.au/campaigns/birdflu/latest-data#event_data))

As has been reported earlier SEG decided not to have a major expedition in 2026 but we fully intend to do so in 2027. If any member knows of a region we can do an expedition based upon biodiversity next year please advise someone on the committee.

With regret we inform you that our Quartermaster for many years, Trent Porter, has decided to hang up his boots (or whatever a quartermaster hangs up at the end of their tenure). This can be a challenging role at times and we acknowledge and thank Trent for his commitment over the years and we will miss his skills and humour.

We are therefore looking for someone to step up and take this very important position in a SEG expedition. Trent has offered to be a mentor and supply his inimitable menus and voluminous lists to assist with the new quartermaster with the catering .

If you would like to take up this position or get further information please inform a member of the committee.

#### Vale Publisher

This will be the last issue which I will prepare and publish SEGments using the software package Microsoft Publisher. For no apparent reason the maintenance of this software is to cease at the end of September and in fact it will not be able to be used at all.

I have appealed in the past for suggestions as to what equivalent software might be available. I have selected software called Scribus. This software is said to be much more powerful than Publisher but from the testing work I have done it has a very steep learning curve to get to a sufficient level of proficiency to produce a acceptable edition of SEGments.

I do ask membership for several things to assist me.

First, if there are things you like about SEGments, and indeed you don't like please inform me so that we may get a new look and feel to the next edition. For instance is there a font which would make the text easier to read? Is a serif font easier to read?

Please email me and give me your thoughts.

Second, as usual, I am asking for contributions for your journal and that I receive the contributions early so that I have time to put this issue together and to the printers.

Specifically I would like all contributions by the middle of November for the December issue.

Alun Thomas  
alunulna@gmail.com

# SCIENTIFIC EXPEDITION FOUNDATION

## Graeme Oats

In 1993 Scientific Expedition Group Chairman Richard Willing suggested to the Committee that consideration be given to applying to the Federal Government to register a tax deductible gift fund. The committee agreed. In April 1993 Richard established with the Register of Environmental Organisations (REO) Canberra that SEG did qualify as a body that could apply for inclusion on the REO.

On 30<sup>th</sup> June 1993 I contacted the REO advising that SEG's Constitution required amendments to satisfy the eligibility criteria for SEG and its public fund to be registered and provided information to be clarified by the REO. The points raised were clarified on 12<sup>th</sup> July.

SEG members were circulated with information about the proposed application with amendments to the Constitution. At the AGM in 1994 members voted unanimously in favour of SEG being listed on the REO. Following a successful application to the SA Consumer of Business Affairs to amend the Constitution and application was sent to the REO dated 10<sup>th</sup> November 1994. On the 15 November 1994 Richard received a letter that SEG's application had been successful in meeting the criteria and requirements for admission to the Register.

This letter informed Richard that SEG and its public fund would be included in the next list of eligible applicants to be submitted to the Environment Minister and the Treasurer for their joint approval and SEG would be advised when that was known.

SEG received a letter dated 18<sup>th</sup> April 1995 advising that it's;

*"application dated 10 November 1994 for admission of Scientific Expedition Group and its public fund Scientific Expedition Foundation (SEF) to the REO was eligible to receive tax deductible donations under item 6.1.1 of the table in subsection 78(4) of the Income Tax Assessment Act 1936."*

The letter said that SEG's application had been jointly approved by the Minister for the Environment and the Treasurer who directed that the Department of the Environment, Sport and Territories to enter SEG and SEF on the REO on 10 April 1995 and gifts made to SEF from 10 April 1995 will be tax deductible.

Hence Scientific Expedition Foundation (SEF) was set up as a separate entity than the SEG Committee. The SEF was established to provide a funding base for major scientific projects. Donations over \$2 are tax deductible. SEF is managed by a committee of Trustees. The original Trustees were Dr. Richard Willing OAM, C Warren Bonython AO, Barbara Hardy AO and Graeme Oats.

In 2014 and it was agreed that a fifth Trustee be appointed. Emeritus Prof. Christopher Daniels agreed to join the Board of Trustees. Barbara had resigned reducing her volunteer positions and sadly Warren had passed away in 2012. Prof. Rob Morrison OAM and Dr. Bob Sharrad AM had agreed to fill these vacancies.

Alun Thomas was invited to join the Board of Trustees in 2021 and did so.

SEF funds come from a number of donations including a bequest from the will of Warren Bonython and some SEG members who make regular tax deductible donations. SEF funds are invested and as much as possible donations are made from investment income.

SEF receives requests from the various SEG expedition sub-committees to assist with managing expeditions and projects.

For instance:

- The Minnawarra Biodiversity Survey has requested and been granted a number of donations over the years to assist with the Minnawarra surveys totalling over \$6100 plus \$2939 for microchips.

- For the V-GRaSP project SEF has made several donations in total \$4169 to assist with the maintenance and procurement of instruments for this project.

- A donation to the Witjira Expedition of 2003 of \$2000 to assist with the running of complex logistics of the expedition in the far north of South Australia

In addition to these donations SEF has made grants to outside bodies which have aims similar to SEG.

In 2003 a donation of \$500 was made to the South Australian Museum Arachnology Section - to *"employ an assistant to finalise sorting of entomology specimens from the Gluepot Expedition to morphospecies, identify to family level and register specimens to enable rapid retrieval of these when required and to facilitate any future update regarding nomenclatural changes."* Quote from Letter from SAM David Hirst.

Again to the SA Museum, in 2015/16 a donation of \$5000 towards the publication of a book by James Smith "Wildlife of Greater Adelaide" was made. SEF received 100 copies of the book to sell which they did and almost recovered the donation.

In addition since 2018 SEF makes an annual grant through Nature Foundation called Nature Foundation Scientific Expedition Foundation - RL & GK Willing Grant. The grant provides up to \$2000 for one year to support an Honours student whose,

- Proposed research must advance the understanding of trends in the abundance and distribution of native populations of South Australian fauna and flora, or

- Advance understanding of the way soil, water, geology, or climate factors affect the abundance and distribution of native populations of South Australian fauna and flora.

This is a partnership between Nature Foundation and Scientific Expedition Foundation. The NF advertises the grant each year and prepares a short list of prospective candidates which is forwarded to the SEF Trustees. The Trustees decide which project should receive the grant. As a Trustee I will say that the prospective projects are always of a high standard and making a decision is by no means easy.

Although it is not a condition of a grant we have asked recipients to supply an article for SEGments about their projects.

Examples of the Nature Foundation Scientific Expedition Foundation - RL & GK Willing Grants are:

- Assessing the Impact of Habitat Availability and Preference for Little Penguins' Distribution by Larissa Iasiello, who was the recipient in 2018. See SEGments Volume 36 No 4, March 2021.

- Sociable Skinks – A Study Of Gidgee Skink Social Complexity by Sarah Barker, who was the 2020 Recipient. See SEGments Volume 36 No 4 March 2021.

- Conserving Rock-hole Biodiversity under Climate Change through Microcosm Experiments by Kantine Liu, who was the recipient in 2022. See SEGments 40 No 1 June 2024.

- Could livestock-associated soil microbes be affecting plant recruitment? By Rebecca Greening who was the recipient in 2023. See SEGments Volume 41 No 1 June 2024.

SEG encourages anybody who wishes to make a donation to SEG to make it through SEF to give it tax deductibility status. It should be noted that to receive tax deductibility status it is not permissible to specify where such a donation should be directed.

[gdoats@bigpond.net.au](mailto:gdoats@bigpond.net.au)

Donations to the Scientific Expedition Foundation can be made to:

A/C Name: Scientific Expedition Foundation

BSB: 105 078

A/c No.: 048828540

Donations of \$2 or more are tax deductible.

## ADVANCE NOTICE

### SEG Malleefowl Monitoring 2026

**Bakara Conservation Park, Peebinga Conservation Park and possibly Karte Conservation Park**

**Dates: 16 to 20 October 2026**

**Back up Dates: 20 to 24 November 2026 (In case of bad weather in October)**

The current proposal is :

- Drive up to Bakara on Friday afternoon and camp overnight.
- Do the Bakara sites on Saturday morning.
- Drive to Pinnaroo, Karte or Peebinga (campsite not yet chosen). Approx 170 km (2 + hours).
- Camp Saturday and Sunday nights.
- Survey the Peebinga sites on Sunday.
- Survey the Karte sites on Monday (if assistance is required)
- Drive home on Monday or Tuesday. Approx 250 km (3 + hours)

Attendees will be welcome at both or either of the survey sites although it is preferred that attendees commit to the whole time. It is proposed that attendees would be self-catering.

For more information refer to the SEG projects webpage.

Please register interest and availability for October or November with Helen Owens

([owensniejalke@iinet.net.au](mailto:owensniejalke@iinet.net.au))

# MINNAWARRA BIODIVERSITY PROJECT AUTUMN SURVEY 2026.

## Richard Willing

The 51<sup>st</sup> Minnowarra survey was held on 18<sup>th</sup> – 22<sup>nd</sup> April 2026 in almost ideal weather. There were a few light showers, mainly at night, and days were warm and sunny with a few clouds and light winds. There were sufficient volunteers to allow 3 groups of 4 persons operating, which meant that the traps were emptied more quickly. Our thanks go to Microchips Australia who donated an extra microchip reader allowing the third group to operate.

It was difficult to know how busy we were with 3 groups operating, until the final reckoning which showed that we were quite busy, although numbers were patchy. In 5 days we had 290 captures. Of these 170 were mammals new to these surveys, and 15 were recaptures from previous surveys.

The busiest sites were Site1 (NW next to swamp) and Site 2 (SW next to swamp). Each of them had about 60 captures each, with the other 6 sites numbering single digit captures.

The busiest animals were *Antechinus flavipes*. Male and female 71 new and 7 recaptures from previous surveys. Male *Antechinus* have a very short lifespan. They die before the end of the breeding season at about one year old, so we don't chip males since they will not be around at the next spring survey. We tried marking their fur with *Texta* instead of giving the males an ear punch, but the *Texta* was a failure, not being recognizable reliably after a day or two.

*Rattus* numbers were small compared to previous surveys. Only 30 were captured, more *R. fuscipes* than *R. lutreolus*, and one of our white-bellied *R. rattus*. In keeping with the then current mouse plague a few tiny *M. musculus* were caught.

The overall impression was that animals did not look as robust as usual, the numbers caught were smaller, there were fewer recaptures from previous surveys and many fewer revis-



Sam Furler and Fred Bartholamaeus recording and microchipping a capture .

its to baited Elliott traps. The animals had had a hard season with late rains inhibiting reproduction. The good news is that site 4 and 9 (both North) have become active again after 2 or 3 quiet seasons. Maybe a predator has moved on?

Many thanks to all the volunteers who helped make this a successful survey. The Spring survey will be in early October 2026.

[rwilling@gmail.com](mailto:rwilling@gmail.com)



Checking the pouch status of an Antechinus.



*The microchip reader generously donated by Microchips Australia.*

# AVIAN INFLUENZA H5

## Alun Thomas

Environmentalists are quite rightly seriously concerned that Avian Influenza, better known as “bird flu” could become endemic within our bird and mammal populations with disastrous results. As we well know, this disease has ravaged bird and mammal populations in other countries but until recently had not been recorded on the mainland of Australia and Tasmania.

Up until now the accepted logic was that, provided biosecurity was maintained at ports and airports, Australia was most likely to be affected by migratory birds arriving from the north and carrying bird flu to our region. With the enormous distances these birds fly then if they were ill with bird flu they might be expected to die before they reached Australia. This analysis appears to be no longer the case and it appears that the disease may be approaching Australia by the southern “back door”.

The Australian island in the far south of the Indian Ocean, Heard Island, between southern Africa and Australia has been seriously affected by bird flu with devastating effects reported on bird and elephant seal populations. It is possible that the disease was carried to Heard Islands by sea birds island hopping from southern Africa or elsewhere.

As we have heard in recent months the first birds which have now been found on Australian shores with bird flu have mainly been Giant Petrels. These birds are generally Southern Ocean flyers and if infected on Heard Island and with prevailing south westerly winds they could be carried to southern Australian coasts. This could particularly be the case if they are weakened by bird flu. We can only expect more ill arrivals and we need to be prepared.

More recently large numbers of Greater Crested Terns have been found dead with bird flu in offshore colonies. These birds do not have a range which extends to Heard Island. Although they mainly eat fish they do eat offal and as such they may be feeding upon dead petrels or even dead elephant seals.

Subsequently the bird flu appears to have spread to silver gulls, the ultimate scavengers on to the mainland but at the time of writing (mid-August) there does not appear to be any transfer to non-seabirds on the mainland. However long nosed fur seals and now reported as dying.

It is essential therefore that we heed the warnings and advice of PIRSA. Their advice is provided below.<sup>1</sup>

### What is Avian Influenza

*Avian influenza (AI), also known as 'bird flu', is a virus that causes high numbers of deaths in poultry, wild birds, and*

*some mammals. Occasional infections have been detected in humans.*

*The virus is classed into 2 types, depending on its severity in poultry:*

○ *Low pathogenicity avian influenza (LPAI) – less disease and can readily mutate into HPAI.*

○ *High pathogenicity avian influenza (HPAI) – more disease with mortality rates up to 100% possible.*

*LPAI can sometimes mutate into HPAI (this is called a spillover event). H5 bird flu is the abbreviated term for a highly contagious type of HPAI – H5N1 clade 2.3.4.4b – which has spread quickly around the world.*

*Overseas, H5 bird flu has caused severe disease and high death rates in poultry, wild birds and some mammals. Birds can spread the virus to each other through their saliva, poo and mucus from their noses and mouths. Healthy birds can catch it through contact with sick birds or contaminated water, food, soil or surfaces. Sometimes other animals become infected by eating sick or dead birds, or by being in close contact with them.*

*Human infection with bird flu is rare.*

*H5 bird flu is different to the H7 strain of bird flu that was recorded in poultry in Australia in 2024 and 2025. All outbreaks of H7 bird flu were successfully eradicated.*

### **Signs of H5 bird flu**

*H5 bird flu can be confused with many other diseases that have similar signs. The infection can also vary in severity with some animals appearing very sick and others showing no signs at all. Sometimes birds can die suddenly without warning.*

#### *Birds (pet or wild)*

- *can't stand, walk, or fly properly*
- *droopy or puffed-up appearance*
- *breathing problems (panting or sneezing)*
- *unusual head or neck posture*
- *sudden death (especially in large numbers)*

#### *Poultry (chickens, ducks, etc.)*

- *sudden drop in egg production*
- *lethargy or not eating/drinking*
- *swollen head or limbs*
- *bruising on comb, feet, or skin*
- *breathing issues or runny nose*
- *sudden death*

#### *Mammals (seals, cows, dogs, cats, etc.)*

- *weakness or tiredness*
- *trouble walking or breathing*
- *seizures, tremors or walking in circles*

- drooling or runny nose
- sudden illness or death

Early detection is critical and South Australians are encouraged to remain vigilant. If you see sick or dead birds or other animals, **do not** touch them.

**Avoid** contact. **Record** what you see. **Report** it to the Emergency Animal Disease Hotline on 1800 675 888.

All reports to the hotline are logged and triaged. Where there is a suspicion of H5 bird flu, teams are deployed to collect samples from the animal.

Avian influenza is a nationally notifiable disease.

If avian influenza is detected in Australia, it is declared as an emergency animal disease. Immediate actions will focus on its eradication and minimising the impact of any outbreak.

The types of mammals which are expected to catch bird flu are carnivores because they are likely to come upon carcasses of dead birds in the first instance along seashores where dead sea birds may wash up. Of specific concern are rats and especially *Rattus norvegicus* (brown rat) because research has shown that these rats are asymptomatic carriers. This research states:

*“The asymptomatic yet pathogenic nature of infection, combined with the global synanthropy of rats, underscores their potential role as cryptic reservoirs in viral maintenance and transmission”.*<sup>2</sup>

Any occurrence of H5 bird flu in Australia may well have a direct influence on SEG’s biodiversity surveys. We may be subject to additional conditions and restrictions in access to certain locations and handling some species. We will have to be very careful if we catch rats in traps or pitfalls. Although the research mentioned above was done with brown rats it is quite likely that similar asymptomatic carrier traits may be found in black rats (*Rattus rattus*) and the other *Rattus* species we catch on surveys, particularly at Minnowarra.

Similarly, although the *Antechinus flavipes* we regularly trap on our surveys at Minnowarra is a marsupial, it is a carnivore and has the potential to be infected and may be an asymptomatic carrier. No specific research appears to have been done on Australian marsupials but in North America the marsupial Virginia opossum has been found to be susceptible to the H5 virus.<sup>3</sup>

If bird flu does become established in Australia we are going to have to establish biosecurity protocols for handling the animals we catch.

SEG members may wish to be equipped by getting trained to contribute to the bird flu response.

See the SA Bird page:<sup>4</sup>

### **Training for birders**

To empower birders to contribute the state's bird flu response, the State Government has partnered with Conservation Council SA, Birds SA and BirdLife Australia to deliver a training program that contributes to South Australia's bird flu response.

The nation-leading training program has been co-designed with the 3 groups, combining the abundance of local expertise their members hold about wildlife in the coastal and wetland systems with current response plans.

Volunteers will be invited to sign up for the Bird Observers Network and receive specialised training to identify sick birds that may be showing signs associated with H5 bird flu in the wild and record and report observations to support the State Government's response.

The program also shares latest situational awareness, guidance and associated safety protocols with volunteers.

This collaboration will enhance the current surveillance network for H5 bird flu and strengthen the response through knowledge sharing and joining forces for a common purpose.

For more information

contact: [BirdObserversNetwork@sa.gov.au](mailto:BirdObserversNetwork@sa.gov.au)

We can only hope that our geographical isolation and strict protocols as well as vigilance along our shores protect us from this terrible scourge.

### References

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2. Viruses. 2025 Mar 29;17(4):495.
3. Emerging Infectious Diseases Volume 29, Number 12-December 2023
- 4 <https://www.birdflu.sa.gov.au/training>  
Extracted 26/07/2026

[alunulna@gmail.com](mailto:alunulna@gmail.com)



A Giant Petrel

# STURT'S DESERT PEA AT ARKAROOA, AUGUST 2026

Sarah Telfer

In late July 2026 Andrew and I spent a few days at Arkaroola Wilderness Sanctuary, the place where SEG carried out a biological survey two years ago (September 2024). To date, Arkaroola has received around 512 millimetres of rainfall for 2026 (as tracked by Willy Weather Arkaroola), significantly exceeding its usual long-term average due to heavy outback downpours earlier in the year – 100.6mm were recorded on February 8<sup>th</sup> 2026! According to the Bureau of Meteorology, Arkaroola recorded an annual rainfall total of 199.9 mm in 2024, which was approximately 78% of its historical average.

The wetter conditions have favoured the vegetation and we observed a number of plants which were not present during the 2024 survey, including many sightings of the spectacular Sturt's Desert Pea (*Swainsona formosa*).

## ***Taxonomy and naming***

Sturt's Desert Pea is a member of the pea family (Fabaceae). The original collection of the species was made in 1699 by William Dampier on Rosemary Island in the Dampier Archipelago where he collected a specimen from "a creeping vine that runs along the ground ... and the blossom like a bean blossom, but much larger and of a deep red colour looking very beautiful". This specimen is now housed in the Sherardian Herbarium, Oxford. The species was for many years included in the genus *Clianthus* which now thought to be only found in New Zealand.

Captain Charles Sturt noted the occurrence of *Swainsona formosa* in 1844 while exploring between Adelaide and central Australia. Captain Sturt's journal, *Narrative of an Expedition into Central Australia*, refers several times to the beauty of the desert pea in flower and the harsh nature of its habitat, and notes that beyond the Darling River:



Close-up of Sturt's Desert Pea (*Swainsona formosa*)

"we saw that beautiful flower the *Clianthus formosa* [sic] in splendid blossom on the plains. It was growing amid barrenness and decay, but its long runners were covered with flowers that gave a crimson tint to the ground".

The genus name *Swainsona* honours Isaac Swainson who was famous for his private botanical garden at Twickenham near London in the late 1700's. The specific name *formosa* is Latin for 'beautiful'. The original author of the species was the Scottish botanist, George Don (1798-1856).

#### ***Distribution and habitat***

The Sturt's Desert Pea is found across the drier, more arid parts of South Australia, as well as in Western Australia, Northern Territory, Queensland and New South Wales. It is a prostrate annual or short-lived perennial herb which spreads to 2 metres or more in area. It has hairy stems and leaves which make the plant appear grey-green. However, it is the bright red flowers with a large black 'dot' in the centre which make this species a show-stopper.

It grows in red sandy or loamy soils, near creek lines and on stony hills, sometimes in woodland and also on open

plains. It is well adapted to life as a desert plant and the small seeds have a long viability, being able to germinate after many years of being dormant. Seeds have a hard seed coat, which protects them from harsh arid environments until the next rainfall, but inhibits germination in normal domestic environments.

#### ***Use as emblem and icon***

Sturt's Desert Pea was adopted as South Australia's floral emblem in 1961 and its iconic status in Australia has made it a popular subject in artwork and photography. It appears in the logos of the South Australian National Parks and Wildlife Service, and also the associated volunteer umbrella organisation Friends of Parks and Nature, of which SEG is a member.

#### ***References***

DEW Seeds of SA website

Wikipedia

<https://flora.sa.gov.au/pdf/entry/22442>

<https://www.anbg.gov.au/emblems/sa.emblem.html>



Carpets of Sturt's Desert Pea at Arkaroola (for those who were on the SEG biological survey in 2024 this photo was taken in the vicinity of survey sites NUD-4 and ARK-9, several km south-east of Arkaroola Village).

# THINKING ABOUT TICKS

Bob Sharrad

Many of you will have attended our recent expeditions to southern Yorke Peninsula and may well have been bitten by ticks. Even if you weren't one of the afflicted or didn't volunteer for those adventures you may have heard of the ticks and their taste for human blood. In any case I thought it might be useful to describe these animals in some detail: their lifecycle, habitat, hosts, geographical distribution and whether they transmit diseases.

Ticks are Arachnids, the large group of Arthropods that includes spiders and mites. All have an exoskeleton and jointed legs. Our tick from southern Yorke Peninsula is the ornate kangaroo tick, *Amblyomma triguttatum triguttatum*, The repetition in the zoological name is because there are four subspecies (or should they be species?) of *A. triguttatum*.

They are:

- *Amblyomma triguttatum triguttatum* - QLD, northern NSW and WA and southern Yorke Peninsula
- *Amblyomma triguttatum queenslandicus*, - north QLD
- *Amblyomma triguttatum ornatissimus*, - central QLD
- *Amblyomma triguttatum rosei* – central Australia

If you were to search for information on the genus, *Amblyomma*, you would find that there are many species scattered over much of the world and that some of them are known to carry some quite nasty pathogens to people and to other animals. These include Lyme Disease, Rocky Mountain Spotted Fever and various Rickettsias. There are 18 species of *Amblyomma* in Australia many of which target reptiles rather

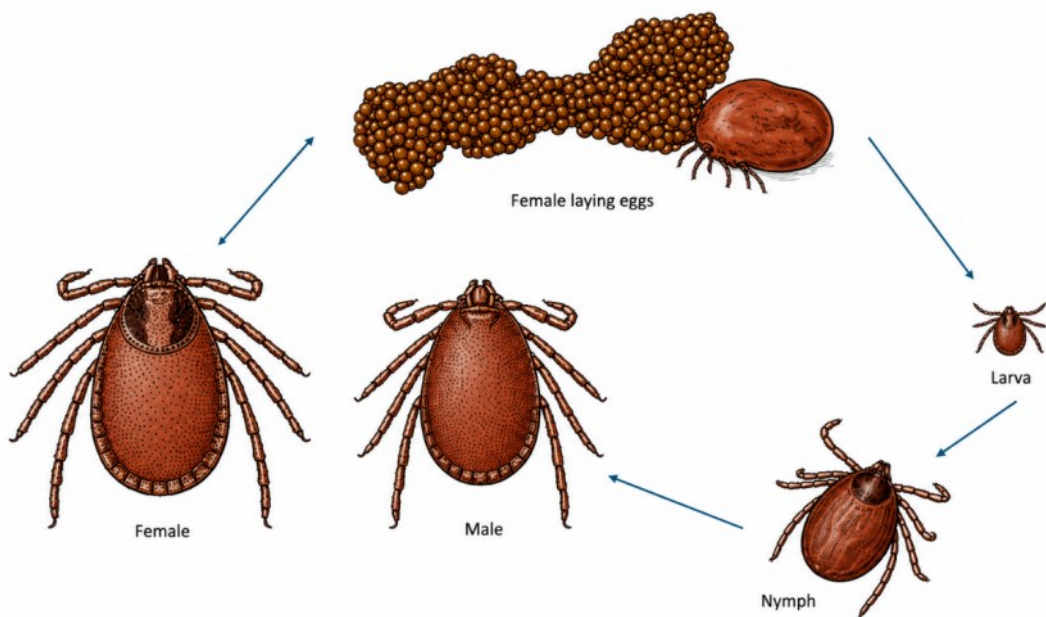


Adult male tick – *Amblyomma limbatum*

than mammals. The sleepy lizard is host to several such ticks, including the one pictured. You can see that ticks can be attractively ornamented.

Our ticks are three-host ticks. They have three active stages in their lifecycle: larvae, nymphs and adults. All of these, except the males which don't feed, engorge with blood and can increase greatly in volume and weight. Between each stage they spend time off the host mammal where they moult to the next stage and then seek a new host. At that time they are at greater risk as they slowly deplete their food reserves and risk predation by ants or other animals.

See the diagram on the below: There is one generation each year.



The Lifecycle of a Three-host Tick

You can see that the nymphs and adults have eight legs while the tiny larvae have six

The occurrence of the ornate kangaroo tick in southern Yorke peninsula is surprising in that its main population is found hundreds of kilometres away in QLD, northern NSW and WA. It seems that the tick was accidentally introduced to Innes National Park in the mid-1970s and has since thrived. No one knows how this occurred, but it was likely visitors who brought the ticks with them. Early studies found that it was pretty well confined to the park but since then it has become clear that it is spreading out from there. I believe that this spread will continue as the tick attacks a wide variety of mammals including people and dogs who could inadvertently take the tick elsewhere. Let's hope it doesn't get taken to Kangaroo Island with its ideal habitat and abundance of potential hosts.

While conducting the surveys of southern Yorke Peninsula we found other tick species on reptiles, most commonly the southern reptile tick, *Bothriocroton hydrosauri*, on sleepy lizards, *Tiliqua rugosa*. *B. hydrosauri* was also collected from: an eastern bearded dragon, *Pogona barbatata*; a yellow-faced whipsnake, *Demansia psammophis*; and, a tiger snake, *Notechis scutatus*. It is interesting that these abundant reptile ticks are very, very rarely found on mammals and the mammal tick doesn't bite the reptiles!

#### **Is *A. triguttatum triguttatum* really a problem?**

Tick bites can be nasty particularly if large female ticks are involved. Often the area of the wound can become swollen and may be painful for the tick injects secretions to help make blood ready to ingest. In some cases, the wound can become infected.

More worrying though is the fact that ticks can carry and transmit disease causing organisms. *A. triguttatum triguttatum* is known to be a vector of the bacterium *Coxiella burnetii* the agent which causes Q fever. Although people are

more likely to contract the disease in other ways but ticks can play a role.

Recent research has shown that *A. triguttatum triguttatum* can also harbour another potentially nasty bacterium, *Rickettsia gravesii*, one of the group that causes spotted fever.

The fact that the tick, which can carry some harmful disease causing organisms, seems to be spreading through Yorke Peninsula and could easily be taken elsewhere is a concern and requires further research and monitoring.

#### **Do the reptile ticks cause problems**

Those of you who have seen ticks in the ears sleepy lizards will no doubt be adamant that they must be causing damage to the host or at least great discomfort. It turns out that the two pictured here, *A. limbatum* and *B. hydrosauri*, are two of the most thoroughly studied wildlife ticks in the world thanks to a number of local biologists - in particular the late Professor Michael Bull of Flinders University. The researchers weren't able to show that the ticks adversely affected sleepy lizards. In fact they found that sleepy lizards often live to be over 30 years of age while being infected by ticks almost constantly. The infected lizards are also able to reproduce and produce healthy young. Of course in the wild the lizards are rarely covered in the parasites and when there are lots it is usually tiny larvae which sip up tiny meals and inject small amounts of salivary secretions. The ticks and their hosts have probably been together for millions of years. The lizards would have evolved means of coping with the ticks and the ticks would have evolved to moderate their impacts on the hosts.

*B. hydrosauri* has some concerning characteristics in that it does occasionally bite humans and it carries, among a range of blood parasites, a nasty bacterium. Yes, it's another Rickettsia – *Rickettsia honei*, which causes Flinders Island Spotted Fever in some people bitten by the tick. The

symptoms include fever and neurological problems. I was once bitten by such a tick and decided to leave it attached to see what happened. After a couple of days I had a severe headache so removed it. No spots or fever.

Of course the most studied and interesting feature of our two reptile ticks is their geographical distribution. Perhaps I should write something about that later?

*sharrads1@bigpond.com*



An adult male *Bothriocroton hydrosauri*

# IN SEARCH OF A THYLACINE !

David West

South Australia, and Adelaide University in particular, are often linked to scientific expeditioning through one name, that of Sir Douglas Mawson. Possibly the ideal scientific expeditioner, Mawson braved incredible risks in order to gain scientific knowledge.

Nearly seventy-five years on from his historic 1911-12 Antarctic expedition, we have formed a group concerned with just the things Mawson was concerned with - the quest for scientific knowledge in the field, via expeditions of an adventurous nature.

Many members of our group are young people, presently or just recently finished studying, some of us at Adelaide University. It is with us then, that the future of the group, and possibly scientific expeditioning, at least in South Australia, lies.

The group's aims are by now hopefully known (if not, they can be found elsewhere in this issue). A group of young expeditioners have had some thoughts on these aims, and some of their hopes and ideas are summarized here.

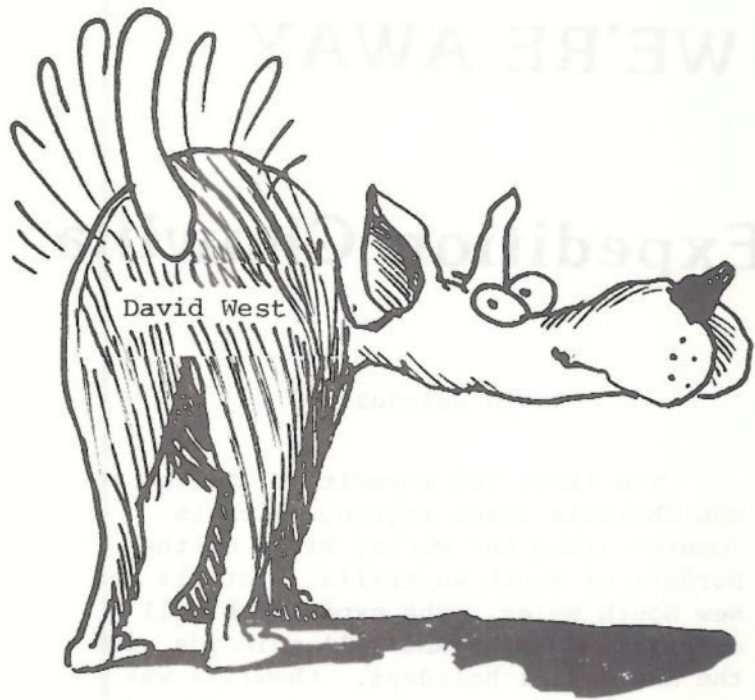
It was suggested that eventually the group should be aiming at two types of expeditions. The first type would be aimed at younger, or less experienced people, and would involve mainly training in field techniques, observation and expeditioning skills, as well as adventure skills. These would all be put to use during the expedition. That is, the expedition would have a broadly based but of an adventurous nature, possibly along the lines of 'Expedition Investigator'.

The second would probably be of longer duration, with more specific research aims, and having the adventure component inherent in the expedition. This would ideally involve scientific researchers and people experienced in expeditioning and field research. An example could possibly be a survey of the ecology of Lake Eyre in flood, or on a larger scale, an expedition to Heard Island to examine the changes since the ANARE station was removed.

It is certainly felt that there should be large degree of training involved in our expedition, from the lower levels of expedition and bush skills and field observation, to the logistics of planning and running a large expedition, to eventually leading such an expedition.

It is also hoped that there should be an increasing involvement from scientific, academic and government areas, with eventually a register of possible research projects being developed. In addition, some attempt to liaise with other organisations with similar ideals, for example Earthwatch, and local amateur scientific groups.

Finally, the ultimate dream would be low-level scientific observational format, that members of the group, whilst on an expedition, could make a major discovery of some form. Who knows - maybe we could capture a live Thylacine!



## EDITORS NOTE

This article is a reprint of an article written by David West and printed in the first issue of the Scientific Expedition Group journal of November 1984. It was in fact before this journal had a name. Unfortunately we haven't had an expedition to Heard Island (in fact the island is closed to all visitors) but in over 40 years we have had a number of interesting and challenging adventures.

# A VISIT TO ICELAND AND SVALBARD

Alun Thomas

In June this year Kathleen and I did a bus tour of Iceland and then a cruise around Svalbard.

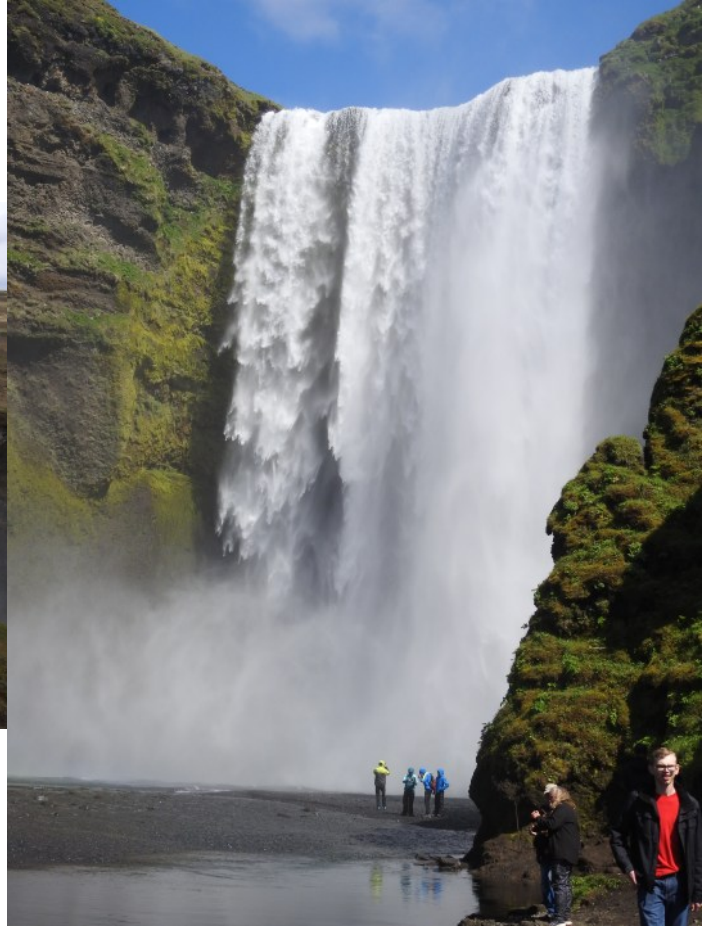
This article is a photo journal of some of the things we saw.



Iceland is particularly memorable for the number of waterfalls. Above is Gullfoss and the one on the right is Seljalandsfoss  
(Foss is Icelandic for waterfall.)

These falls have some of the greatest waterfall flows in the world. They are fed from glaciers on the central plateau of Iceland and hence are a creamy white colour. Waterfalls which are fed from rainfall and melting snow are clear.

The highest flow waterfalls in Iceland is the triple falls of Selvfoss, Dettifoss and Hafragilsfoss.



Puffins resting and nesting on Svalbard. Whereas on Iceland puffins nest by digging a burrow in soil on Svalbard there is a dearth of soil so puffins nest on cliff faces where they are safe from predating Arctic Foxes.



Brunnich's Guillemots nesting on area Alkefjellet Bird Cliffs where there are about 60 thousand pairs of birds nesting. The Guillemots do not build a nest but hold their egg with their stomachs on a narrow ledge against a cliff. Below, right. A Guillemot egg against a cliff face. Below, left. A polar bear resting on an ice floe on the pack ice north of the Svalbard Archipelago.





A walrus colony hauled out at Kapp Lee on Edge Island of the Svalbard Archipelago. Presumably if one has tusks as long as some of these walrus it is easier to lie on ones back.

While we watched a dominant male waddled or perhaps more accurately undulated down to the water for a swim and continued to scratch itself in the water.





Zodiac cruising at the foot of Monaco Glacier on Svalbard

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