SEGments

Journal of the Scientific Expedition Group Inc.
Volume 37 No. 3 December 2021

Scientific Expedition Group Inc.

Cover Photo: Large Duck Orchid or Flying Duck - *Caleana major.* Photo Sheryl Holliday

Rear Cover Photo: Cuckoo wasp. Photo Nicholas Birks

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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Contacts:
SEG Secretary: Michael Brown
PO. Box 501, Unley SA 5061

SEG email: scientificexpeditiongroup@gmail.com

SEG website: Http://www.scientificexpeditiongroup.org

Facebook Page: ScientificExpeditionGroup

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EDITORIAL

I start by thanking Helen Johnson for her magnificent work as Editor over more than 10 years. She has been a terrier searching out matters of scientific interest whether it has been by asking eminent scientists to write us articles for us or to study the topic and write articles herself. This work culminated in an excellent article in the most recent issue on the current state of renewable energy in South Australia. I hope Helen will continue to locate interesting material for further issues.

This is my first edition of SEGments as sole Editor since I worked on SEGments in the 1990's. Since then SEGments has grown into a significant journal with interesting scientific articles as well as continuing to report on SEG's activities. It will not continue on this course, however, without input from all members of the SEG community.

In my first Editorial in September 1995 I wrote:

> "It is my first and pleasant task as new Editor of SEGMENTS to thank Bobbie Rice for her sterling editing work over the years.
>
> At the Annual General Meeting Richard Willing asked if anyone was prepared to take over the editorship of SEGMENTS. I agreed to do the job but it cannot be done without the assistance of the membership of the group.
>
> Certainly I have accepted the job of getting the Journal in a form ready for printing but I cannot and will not be able to write all the articles for it. Please send me articles, snippets, drawings, photographs, comments and anything you would like to see included in your magazine."

In that Editorial I went on to describe how I wanted material to be sent to me. I asked for material to be supplied on a 3 ¼ " floppy disc. I hope no one does that today. I am not sure that my machine to read such discs still works. That was before email and a number of technical innovations. I prefer articles to be provided to me in electronic form but not in pdf format if possible. My layout software does not talk to pdf format. Photographs can be embedded into an article so I know their preferred placement but should also be supplied separately, if possible in jpeg format and of a size of at least 1Mb, so that we get good clarity in the finished product. In particular if you have a suitable picture for the cover it should be provided if possible in portrait format.

We have regular "bread and butter" articles on the Minnawarra Biodiversity Survey, the Vulkathunha - Gammon Ranges Scientific Project and the Mallee Fowl Project and of course the annual surveys when COVID 19 allows us to have these again. We know that members look forward to knowing how these projects are going but it is the scientific articles which add spice to the mix.

Alun Thomas

The cover of SEGments 11-2 September 1995

MAWSON'S OTHER DIARIES

Alun Thomas

Sir Douglas Mawson is well known for his scientific exploration in Antarctica during four expeditions from 1907 to 1931. He is less well known for his geological exploration in South Australia and elsewhere.

Mawson was born in England and came to Australia as an infant. He completed degrees in mining engineering and geology at the University of Sydney. In 1905 he was made a lecturer in petrology and mineralogy at the University of Adelaide.

Over the period 1905 to 1953 Mawson carried out many field trips into the Flinders and Gammon Ranges, to the North East, the Barrier Ranges and several trips elsewhere. All these trips are recorded in more than thirty field note books. Each note book records one or more trips and there are about seventy separate trips. All these field note books are held in the Mawson Centre at the South Australian Museum. The diaries are numbered according to Museum cataloguing as 30DM 1 to 32 and then a lowercase character a, b, etc. For instance Diary 30DM.1a records a trip to Mt Lofty in 1906, 30DM1.b records a trip to Kangaroo Island in 1907, Diary 30DM.1c records a trip to Broken Hill in 1907 and Diary 30DM.1d records a trip to Olary in September 1907.

The earliest diary in the collection relates to a trip Mawson made to the New Hebrides (now Vanuatu) in 1903 and the last is a trip in the Olary area in 1953 when Mawson was aged 71.

Over the last 16 years volunteers at the Mawson Centre at the South Australian Museum have transcribed the field notes into electronic form. The volunteers include the late Clive Wilson-Roberts and Tim Tolley and myself. Mawson's handwriting can be fairly described as poor to atrocious and this coupled with the fact that Mawson used many geological terms which are no longer in general use makes them harder for us to read and transcribe. Once transcribed the diaries are proof read with the assistance of Dr Jim Jago, a geologist, to get them as complete and accurate as possible. Sometimes he, however, does not know words and we have had to resort to early geology text books.

Place names are interesting in the diaries because particularly at the earlier times it appears that good maps were not available. Many times the place names are rendered phonetically and we have had to peruse maps of the general area to find the correct location and spelling.

Drawings, Photographs and Sections

One of Mawson's particular interests was the geological formation of the Flinders Ranges and as he travelled around he drew drawings, took photographs and measured sections and recorded them in the diaries to assist his interpretation of the topography.

One example of a section is described with an accompanying drawing in Diary 30DM 20.a in the Outalpa region near Olary:

"Section across Tillite series to base on Whey Whey Crk

A/ 100 yds (from car) coarse tillite

B/ 30 yds (over gully onto face) Grants [granites?] up to 30" long – some heavy carbonate up to 16" long

C/ 35 yds very steep – at top very large boulders

D/ 26 yds to quartzite band . strike 50° W of N dip 80° to N dip taken on sandstone inter bed

E/ 21 yds to sandstone band up to 6 ft thick lens – in series

F/ end tillite 100yds top hill - quartzite to south

G/ arcanite - fluvioglacial arkose ? – several great erratics on surface apparently weathered out of this

H/ arcanite - sandstone – softer at end

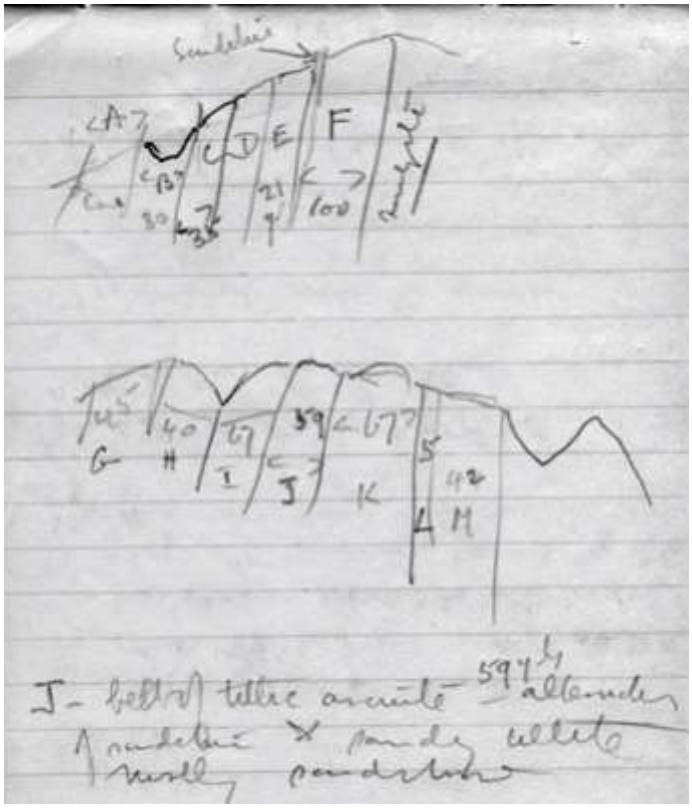
I/ 67 yds of Arcanite to till Dip 46° again 44°

J/ belt of tillite arcanite – 59 yds alternates of sandstone X sandy tillite mostly sandstone

K/ Tillite small erratics only patch of 67 yds more carbonate fragments judging by holes in it

L/ 5 yds sandstone

M/ 42 yds laminated fine sandy beds well laminated."



Drawing from Diary 30DM.20a with the letters in the drawing referring to the section descriptions above

Another example of a section is in Diary 30DM.5b in which part of a section near Mt Scott in the Flinders Ranges is described with an accompanying drawing.

"15. 50 yds to end purple rubble rock 1645 ft arrive at dense yellow dolomitic? Limestone just a little purplish comes in further on

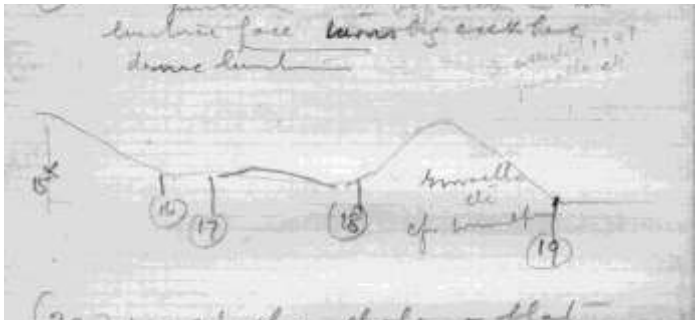
16. 120 yds further to end limestones solid limestone 1625ft

17. 60 yds down crk across strike only rubble at sides – evidently soft beds pac [?] choc slates under where arrives at choc beds 1620 ft choc shale

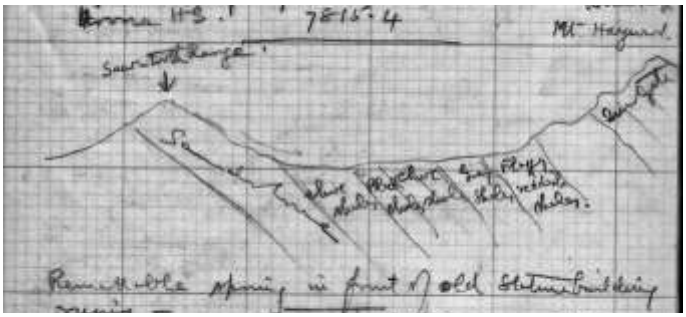
18. 354 yds across choc shales becoming sandy at top Lower part buckled dip at top 30° 1595 ft

19. 130yds to 1565 ft in creek at junction with big creek - the limestone face turns big creek here dense limestone → collected 1947 Girvanella etc

20. 190 yds choc shales – flat to dolomite? band about 5ft thick"



Another example of a section is in Diary 30DM.12a across the Aroona valley as shown in the drawing below.



A sketch by Mawson in Diary 30DM.12a in the Aroona valley area showing the different geological formations between Sawtooth range and Mt Hayward in the Aroona range.

The camera Mawson often carried to record the geology he was seeing was a quite heavy plate camera. There are over 2000 photographs in the collection and fortunately many are recorded with the date and location. The diaries often record "took photo" so we have been able to insert photographs into the approximately correct position in the transcribed diaries.

For instance in Diary 30DM.12c the following is recorded:

"**26th Aug [1941]**

Went down creek to contorted limestone seen yesterday. Photographed the contorted bed & took one of the cascade below. Now find that the calcareous beds are very much disturbed – apparently at time of deposition - few disturbances in number of bands. One belt 2 ft wide is intraformational conglomerate."

In this case the rock structure he saw has been recorded by a drawing and by a photograph.

The caption on the back of this photo is "Intraformational contortion Terowie Creek near Wittow Creek. Photo No 1852"

Drawing from Diary 30DM.12c 26th August 1941

All the horizontal measurements (in yards) were done by pacing distances out and altitudes (in feet) were done by aneroid barometer. Mawson often carried two barometers (Small Bar and Large Bar) to enable an average measurement of altitude. Altitudes were recorded several times a day at known places such as a campsite so that the relative heights could be determined.

Excursions with Students

Mawson each year took third year geology students on an up to two week excursion. In the early years there may have been only two or three students but by 1948 there were 17 students and staff and a bus was necessary.

From time to time the handwriting in the diaries changes and in general these notes are much more legible. Presumably the students did not want to incur the displeasure of their professor by being illegible.

Particularly in the early field trips when there was a female student it was appropriate to take a chaperone. On one trip in 1937 both my mother, Patricia, and her sister Jessica went as chaperones on a field trip to Carrieton, Oraparinna, Copley, Mt. Serle, Moro Springs, Warrilpa and Chase Range. (Diary 30DM 7b). The photos make it look like they were enjoying themselves.

Lunch in Creek 4m from Martins Well Stn. Barbara Warhurst, Jessica Mawson, Patricia Mawson, Walter Dallwitz. Photo No 1469

This diary also has a photo of the travellers sleeping near a shed in the Chase range.

Early morning Chase Range. Photo No. 1467

Interestingly the blankets with the wide dark bands on the furthest and nearest sleepers were from Mawson's Australian Antarctic Expedition of 1911-14 and in fact are now in the South Australian Museum.

Early Field Trips

Mawson had a particular interest in the Northern Flinders Ranges just to the north of where Arkaroola Resort now stands. His earliest trip there was in 1910 and is recorded in Diary 30DM.3a. On this trip the party assembled at Copley, arriving there by train. It is not recorded how they got to Mt Serle but after that they travelled by camel. The party consisted of Mawson, Harry Fabian, W B Greenwood; and A G Greenwood. The Greenwoods were from Mt Serle Station. Mawson describes them as "Mr W B Greenwood & his son A G Greenwood, old residents of the district and whose familiarity with the district and its mineral resources rendering them valuable companions" and Mawson describes Fabian as "the well known prospector who it will be remembered was unfortunately speared in the breast whilst in the Govt Employ on the NW prospecting expedition."

They passed Owieandana to get to Umberatana HS.

On the Mt Painter track near Owieandana. Fabian & 'Smiler' Greenwood. Photo No 386

At Umberatana Mawson records:

"Pulled in to Umberatana HS on upper series above till. Rode S to the Giant's Head where the necronite is situated. ¼ m away this dyke shows altered to be Cambrian. Nearer is chiast, schist, silicated limestone – actinolite & tremolite etc darwinite in one spec. The dyke varies in width from 25 to 80 yds. It has been a low temp cooling from highly aqueous magma – where fels [feldspar] strikes most is very cellular indic[ating] loss of liquid - tourmaline bunches in this area. Coarse pegmatite crosses here & in it are large sphenes? Up to 6" long. Away towards the western extremity is more solid less stinking [?] Poikilitic & graphitic tourmaline in regular bunches - for ret a fels quartz rock - much large graphic fels & quartz fels appears to be plug."

They went on to Yudnamutana north of Arkaroola where there was already a copper smelter which Mawson photographed.

Copper smelters Yudnamutana. Photo No 526

The diary then continues:

"27th [Oct 1910]

Went towards Yudnamutana to look at a corundum show where large pieces occur. Met small patch of corundum schist on the way – here got a crystal of corundum inside tourmaline. In central parts this is mica schist & embedded are large sapphires some having been got several lbs in weight. Tourmaline also in patches. Pseudomorphous patches also. Towards the sides are finer grain of schists with white corundum often in notable proportions. If corundum being mined in locality would be worth putting in trench to test this - Return met a band of boulder rock with quartz boulders only 1 or 2 yds back from corundum - this is embedded in igneous is ? with Yudnamutana quartzite. In creek further back came to very strong develop [development] of felsite reminds me of Gawler Range Rock and Moonta Rock.

Large dev of corundum schist again in creek. Def banded appears to be sed ? quartz alternating with feldspar mica rock & then corundum schist. Lot white corundum here – prob pay to work – took average sample on at least 6 ft - runs well up hill. Seen to promise 5%. Made up to Ironstone Ridge."

A little further towards Mt Painter Mawson records:

"28th [Oct 1910]

Made up hill to ironstone meeting it little beyond where left it yesterday - travelled towards Paynter [Mt Painter]. Very large and massive here – 30 - 40 ft of Barytes on S side (underneath if any) conts little iron minerals - Some ocherous bands - Little carnotite here. About ¼ m on come to uran [uraniferous] mica in the dense black rock. Met uran mica for about 100yds. Reef here appear to be quite 30ft wide - Intensely blue fluor spar in part of outcrop to E. The continuation of carnotite part is seen below cutting across the hills – said to contain much fluorspar below."

This diary has about 50 accompanying photographs.

On this field trip Mawson was interested in uranium ores. In a summary of the field trip written after his return Mawson wrote in the back of Diary 30DM.3a:

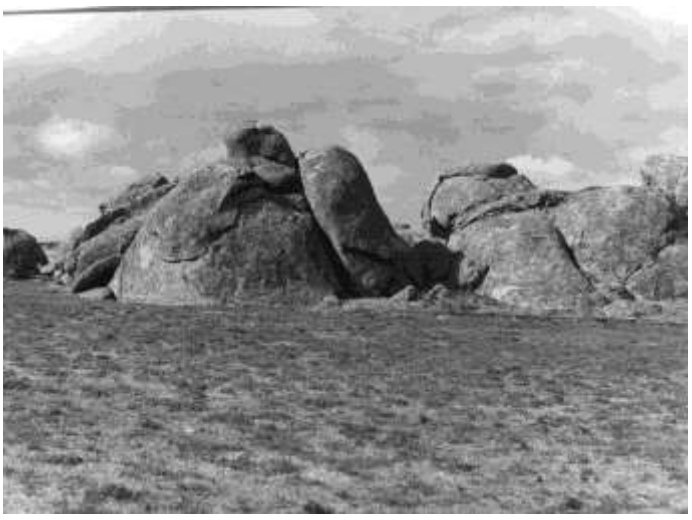
"The results of my recent journey have been in the highest degree satisfactory. … As regards the Uranium values the outcrop is on the whole low grade though richer patches are met with at intervals. Improvement may be expected below. The ore can be treated very inexpensively and this will offset the low grade character. So far as I am aware this is the most extensive uraniferous lode formation in the world. Its future will be largely controlled by the results of the assays now being made by the Mines Dept. In any case there is no reason for a speculative rush for so far as we are aware no uraniferous lodes lie outside the area held and in any case the ordinary prospect is likely to be collected sec with much mineral.

This occurrence of torbanite is of great interest mineralogically as it is a rare mineral. The best known locality is in connection with the outcrops of the pitchblende lodes of Cornwall. The mineral is known from no other locality in Australasia with the exception of a single specimen in the NSW Govt Surv. purported to have been collected at the Carcoar Cobalt mines. The value of this specimen has been discounted since recent search has not resulted in locating uraniferous ore in the locality stated. "

Mt Painter in distance seen over the Mt Gee Ridge. Taken from Radium Ridge 1910. Photo 387

Field Trips in the South East of SA

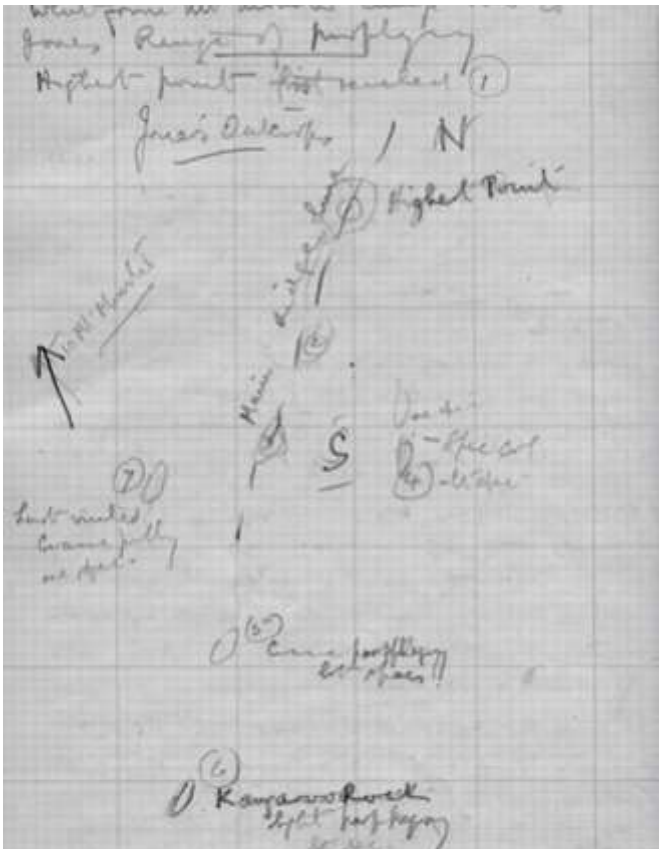
Other Diaries record Mawson's interest in granite outcrops particularly in the South East of South Australia. He visited local farmers to ask them if they had outcrops on their property and requested permission to see them and plot their positions and investigate their composition.



Granodiorite Taratap near Kingston SE. Photo No. D From Diary 30DM.10b Feb 1940

The "whale" outcrop at Tolmer's Rocks West of Tintinara.
Photo No. 1376. From Diary 30DM .10c Jan. 1941

Old house with a wall of solid granite – Patricia in photo.
Between Bennies Well & Cold & Wet. Coonalpyn district
Photo No. 1447 From Diary 30DM.10a Jan. 1938



Over three excursions from 1938 to 1941 Mawson recorded the locations of granite outcrops and observed their composition.

In relation to this drawing from Diary 30DM.10c Mawson states:

> **"4th Jan 1941**
> Went from Mt Monster Camp over to Jones Range of porphyry.
> Highest point first reached -1-
> Found the length of outcrops quite 2/3 mile. Many outcrops of the rock – main ones indicated diagrammatically above.
> Did not collect from 1, 2 & 3 as not specially remarkable - actually appeared to be rather like 5 & 7 but latter probably more definite character. Outcrops 4 & 6 are somewhat different from the rest. 4 has more base & less porphyritic xtals while 6 is light coloured rock with notable amount of tabular felspars.
> The outcrops are in part "tor" type – but tendency to elongation and cleavage in N & S direction. The nobby outcrops up to 20ft above nearby scrub – but the highest point of the ridge probably 50ft above the plain."

It can be seen from these diaries that Mawson recorded significant geological observations. His main aim was for his own research and preparation of scientific papers and this explains why he uses many abbreviations and the diaries are to other readers often indecipherable. At the same time, however, they are an interesting record of the times.

It is hoped that after the diaries have been edited they can be made available for others to explore the geology of South Australia that Mawson saw. At present notes are being prepared at Arkaroola for visitors to retrace some of the routes and see the features described by Mawson in Diary 30DM.3a.

alunulna@gmail.com

Thanks to Mark Pharaoh, Curator of the Mawson Collection for access to the diaries to prepare this article.

SCIENTIFIC EXPEDITION GROUP INC

CHAIRMAN'S REPORT 2021

SUMMARY

2021 has been another difficult year because of the ongoing COVID pandemic restrictions.

MAJOR EXPEDITION

We could not organise a major survey expedition but instead had a much smaller expedition to Geegeela Nature Reserve in the South East near Francis. This expedition was reported in SEGments for June this year. We did the work in conjunction with Nature Glenelg Trust and on behalf of Nature Foundation SA. Unfortunately it was a very cold week and few animals were caught. We are hoping to repeat this survey at a warmer time of year.

V-GRASP

The Vulkathunha – Gammon Ranges Scientific Project, to give it its full name has continued with the installation of telephone links to the pluviometers meaning that fewer expeditions are needed each year. Michelle and Gary Trethewey have done the vegetation photopoints and Chris Wright, Graham Blair and their team have continued checking and maintenance of the pluviometers and telemetry equipment.

MINNAWARRA BIODIVERSITY SURVEY

COVID restrictions have meant that it was difficult to have outside assistance at the autumn and spring surveys so Janet Furler and Richard Willing along with family and friends have done the surveys. We hope to be able to get back to member participation next year.

MALLEE FOWL MONITORING

As reported last year we have taken over management of 8 wildlife cameras in Bakara Conservation Park. We are trying to build up a core group of experienced camera managers so that the same people do not have to participate every time. The September camera checking was combined with the annual mound survey but in reality the mound survey should be done in November for best results. To save an extra trip we may have to change the camera checking months.

SEGMENTS

We have had sterling service from Helen Johnson for eleven years as editor but she has decided to retire from this position. I have taken the job temporarily but we are looking for someone who can chase up articles and prepare them for publication. I will continue to do the layout and publication.

WEBSITE

Michelle Trethewey has done a magnificent job getting the new website up and running and continuing to manage it. We also have a Facebook page and we are always looking for snippets of information about SEG activities to place into Facebook. If you have something interesting please pass them on to the Secretary.

COMMITTEE

It is with great regret I have to report that Richard Willing has decided to retire as President of SEG. Richard has provided great service since the formation of SEG, as Chairman for more than 20 years and then as President since then. I am hoping that he will continue as President Emeritus on the committee as Warren Bonython did before him. We need his wise counsel.

The committee has met regularly to manage the business of the group. Sarah Telfer has resigned from the committee. I thank her for her valuable work as secretary on the committee. We have obtained the service of Michael Brown as secretary. He is doing very well in the position. Unfortunately Leah Feuerherdt has moved to Queensland so she had to leave the committee.

The committee is now at least 3 members short and we would be grateful for members to join us on the committee. If you are interested the committee can co-opt without waiting for the next AGM for you to be elected.

I think it is time to be fairly blunt. The committee needs fresh blood to prevent SEG withering. We are hopeful for getting back to a full major expedition next year and we need young enthusiastic members to be on it and run it.

The challenge for 2022 is to get some rejuvenation.

athomas6@bigpond.net.au

VULKATHUNHA-GAMMON RANGES DATA RECOVERY TRIPS 2021

Garry Trethewey

One of SEG's projects is the Vulkathunha-Gammon Ranges hydrological project. It began in 1988, apocryphally after a casual observation during a car trip, to wit, “The Gammons vegetation looks very lush compared to the surrounding plains.” Since then, we have eight pluviometers (rain gauges) and a stream depth gauge at various places with varying topography in the ranges and on surrounding “station country”. Most of these are telemetered, allowing almost real-time observations from the comfort of your laptop. (*see below.) Along with the hydrology, there have been ongoing vegetation photopoints, and other related projects of varying duration - Yellow Foot Rock Wallaby monitoring, fox baiting, feral and native vertebrate counts, aquatic macro-invertebrate monitoring, intensive vegetation assessment pitfall trapping and more.

Painter's Baseline. Stone cairn erected by J. Painter in 1857 forming part of the baseline from which the initial survey of the Gammon Ranges commenced. Photo J Davill

The logistics and management of this project have changed over the years. In the early years had up to six trips per year seemingly randomly spaced to maintain equipment and hindered by less suitable vehicles and often impassable roads after rain. With a varying roster of people, cameras, and techniques, we now do two regular vegetation photopoint trips and one regular equipment maintenance trip a year, plus the occasional unplanned repair, e.g. after a lightning strike.

Below are reports of three data recovery trips for 2021 covering parts of the project.

Data recovery trip 14th to 18th May 2021. Report by Garry Trethewey

Expeditioners were Janet & Phil Davill, Graham Blair, Peter Baylis, Garry & Michelle Trethewey and Helen Johnson. The itinerary included the usual maintenance of pluvios within Vulkathunha-Gammon Ranges Park, vegetation photopoints and anything interesting & opportune. The station country pluvios were checked by Chris Wright and a team during late September and early October.

Description of the expedition

Phil, Janet and Helen stayed at Bob's camp to do Exclosure and Arcoona Bluff pluvios. One day they drove to Painter's Baseline to approach South Branch pluvio from the west.

Garry and Michelle as one party, and Graham and Peter as another, went to Upper Vandenberg. Due to timetabling, we had a whole relaxed day to do the three hour walk, so Michelle and I didn't use 'the short-cut', but took a longer route following the creek. It was the first time we'd done that and we discovered some pretty ground, including the usual bouldery creek flats, and some flat areas to the south.

Drought seems to have broken, leaving lots of casualties, notably *Callitris glaucophylla*, and a fresh crop of ephemerals and shrubs, lots of grass uneaten, and almost no tree recruitment. In 25km of walking over three days, the only vertebrates seen were birds - the largest being two crows - and two macropods, probably euros, disappearing at a distance. So, no goats, no Yellow Foot Rock Wallabies, no

Phil and Helen climbing Arcoona Bluff. Photo J. Davill

In a carpet of ptilotus, Phil and Helen walking to Arcoona South pluvio. Photo J Davill

emus or eagles, no reptiles at all (although it wasn't warm), a few small frogs under rocks at Wild Ass Waterhole, no tadpoles. The waterhole had a bit of water, with plenty of water weed, which I take to mean it had been there for some time. There was even water in a small pool next to our camp, and some in SAMBOT Waterhole.

Of concern, as well as the usual small rabbit scratchings and old poo piles, there were also two very purposeful rabbit holes, with dirt cleared in the last few days, since rain, within the 2015 fire recovery area.

Surface water (location, amount, quality)

Wild Ass waterhole

A pool 1/2km downstream from Wild Ass waterhole.

A small pool near Upper Vandenberg.

Small amount in Lower SAMBOT.

SAMBOT.

-- all very drinkable in our early bushwalking days, not so much in our old age.

Rainfall recordings. Report by Graham Blair

All rain gauges visited were checked for calibration, and the data downloaded. All equipment is operating well.

The rainfall volumes in the table over the page were recorded over the 8 month period since the previous data collection trip in Sep 2020.

These recordings represent an increase in rainfall compared with totals observed over the previous three years, no doubt influenced by the La Nina weather event that occurred over Eastern Australia during the recent summer.

Ctentophoris modestus in Gammon Ranges.
Photo Garry Trethewey

Site	Accumulated Rainfall since Sep 2020 (mm)
Plateau	173.0
Exclusion Enclosure	144.2
Sambot	164.4
South Branch	159.0
Arcoona Bluff	157.8

Evidence of localised runoff was observed in both Sambot and Wild Ass water-holes, yet no whole of catchment runoff was detected by the Stream Gauge in Arcoona Creek. An event on the 27 Jan 21 partially filled the pool where the Stream Gauge level sensors are located however the depth did not reach a level to indicate stream flow.

Vegetation data recovery trip 4th to 6th September 2021. Report by Garry Trethewey

This trip was the regular vegetation photopoint trip, which consists of Michelle and I walking 8km up Arcoona Creek (for placenames, see map below) with two nights worth of tent, sleeping bags, food & cooker, and the next day doing an 8km round trip to traverse photopoints on 'Gammon Plateau'.

Records from Arkaroola, 30km north east, show 132mm of rain this year, including 46mm one day in February, and 28mm in a week in March. http://www.bom.gov.au/climate/dwo/IDCJDW5004.latest.shtml

At Arcoona Creek, visually it seems the drought is well over, with plants growing, flowering and seeding, but it isn't what would be called a 'good year'. And the dead trees are still dead, many only now losing leaves and twigs, and some beginning to rot at ground level and fall over, so in many places the structure of the bush is changing. For example,

A typical Vegetation site photograph in the Gammons. Site 65, looking west, September 2021. Michelle Trethewey in photo. Photo G Trethewey

Janet and Phil calibrating the Arcoona Bluff pluvio. Photo H. Johnson

where vegetation previously occluded sightlines at about 10 meters, now a sightline extends well over 200 meters.

There are even more grasses than before, almost unbrowsed, except for an occasional dramatic chomp of a whole tussock. This contrasts with 'normal' years, when grasses other than spinifex and lemon grass are eaten down to ground level. Similarly perhaps, Rock Sida and *Dodonaea sp* are growing tall and straight, with an occasional plant smashed down, but uneaten. I believe both goats and euros do this, boys acting tough.

Before the drought *Eremophila subfloccosa* was only found to the south of the clay patch. Now it is found >500m west and 250m east of the clay patch. So it appears to be spreading, on both burnt and unburnt areas.

With the new growth, I would have expected insects, and so Golden Orb Weavers to proliferate, but only one small Golden Orb Weaver was seen.

After reading a paper explaining why the dragon *Ctenophoris decresii* is extinct north of Blinman (it is not), I've kept track of them in the Gammons. In the last year or so, the northern population of *C. decresii* has had its name changed to *C. modestus*. (For maps of *C. decresii* / *C. modestus* distribution, see https://docs.samuseum.sa.gov.au/9kmwratxz .) I photographed three female *C. modestus* spaced 300m and 2km apart, which I think represents a viable population.

On the last day, going back to the car, we explored a different route from usual. In Wild Ass Creek, in a comparatively lush green flat, we noticed a lot of large, single-sized, fresh macropod poo, and lots of browsed and smashed veg. I interpret this as a single well-fed but lonely male.

And we were excited to see a single Yellow Footed Rock Wallaby, the first we've seen live since 09/2018.

Other than that, the biggest vertebrate seen directly was a crow. Some echidna diggings and poos were seen, some fresh macropod poos, some smashed vertical shrubs, some grazed grass. No fresh goat poos, no sign of emus. Usually

Near summit on North Tusk Hill, May 2021. Photo G. Blair

there are some white eagle-poo squirts under a horizontal branch at the top of North Tusk, but currently there is no sign of eagles.

Surface water

Seeps - two small areas exposed, both big enough for a macropod or goat to drink from, but neither big enough to fill a 600ml drink bottle.

Woodcutter's Well - overflowing to form a pool 2cm deep, 20cm wide. That seems constant, irrespective of whether it's a drought or a 'good year'.

Wild Ass Waterhole - 10 litres in the bottom, with footprints in the mud, but I could not identify them.

SAMBOT - a metre or two deep, quite drinkable.

Grandfield - slightly damp mud.

Data recovery trip to Station Country 30th September to 4th October 2021. Report by Chris Wright

On Thursday 30th September Chris Wright, John and Peter Love drove up to Maynard's Well to start the calibration of the 4 station country pluviometers. After a quick stop in Copley we stayed at the Shearers Quarters, and on Friday morning worked on The Maynard's Well pluviometer, then on to Mocatoona. On Saturday we visited North Moolooloo and Pfitzner's Well pluvio. All equipment was in good order. The rainfall totals for 12 months since September 2020 are noted on the table below, and all data and field visit sheets have been passed on to Graham Blair.

Site	Accumulated Rainfall since Sep 2020 (mm)
Pfitzner's Well	187.6
Maynard's Well	191.4
Mocatoona	237.0
North Moolooloo	173.0

On Sunday the group visited Eddy Nichol's revegetation plot, a 1-hectare block of land that has been re-seeded and irrigated for the last 2 years using a solar powered pump on a fairly saline bore. The regrowth is astonishing, and very prickly. The use of saline water appears to be completely successful in promoting growth. Eddy is planning to expand the block to 2 hectares.

We drove on past Depot Springs Homestead, and turned south to camp at Finke Springs, and spent the rest of the day climbing Castle Rock (with permission from Eddy). This is a most interesting and isolated rock formation, in a much eroded Pound.

On Monday, 4th October we braved the holiday traffic and returned to Adelaide. A brief stop at Parachilna was surprising because, although there were many visitors around, the pub was closed and no sign of management people despite the potential trade. The old truck chassis is still there, and Peter Mussared (former Leigh Creek Manager) says that it used to be part of a wagon train, with a power take-off attachment so that the wagons could power themselves from the leading truck.

Access to photos and other records from trips

I (Garry) am trialling the idea of putting photos on Google Drive for a few months after each trip, so people can see things mentioned here. After they are removed, they are always available on request from garrytre@bigpond.com

https://drive.google.com/drive/folders/1S7othiALyi16L5pe5sUbHBzjJaQwmUln?usp=sharing

Currently:

-dragon01, 02, 03 are *Ctenophorus modestus*.

-PhotoPointPixForHelen-GRASP - These are images from this trip. All our photopoint images back to 1988 are in the custody of Biological Data Bases of South Australia (BDBSA) and will one day be accessible to the public.

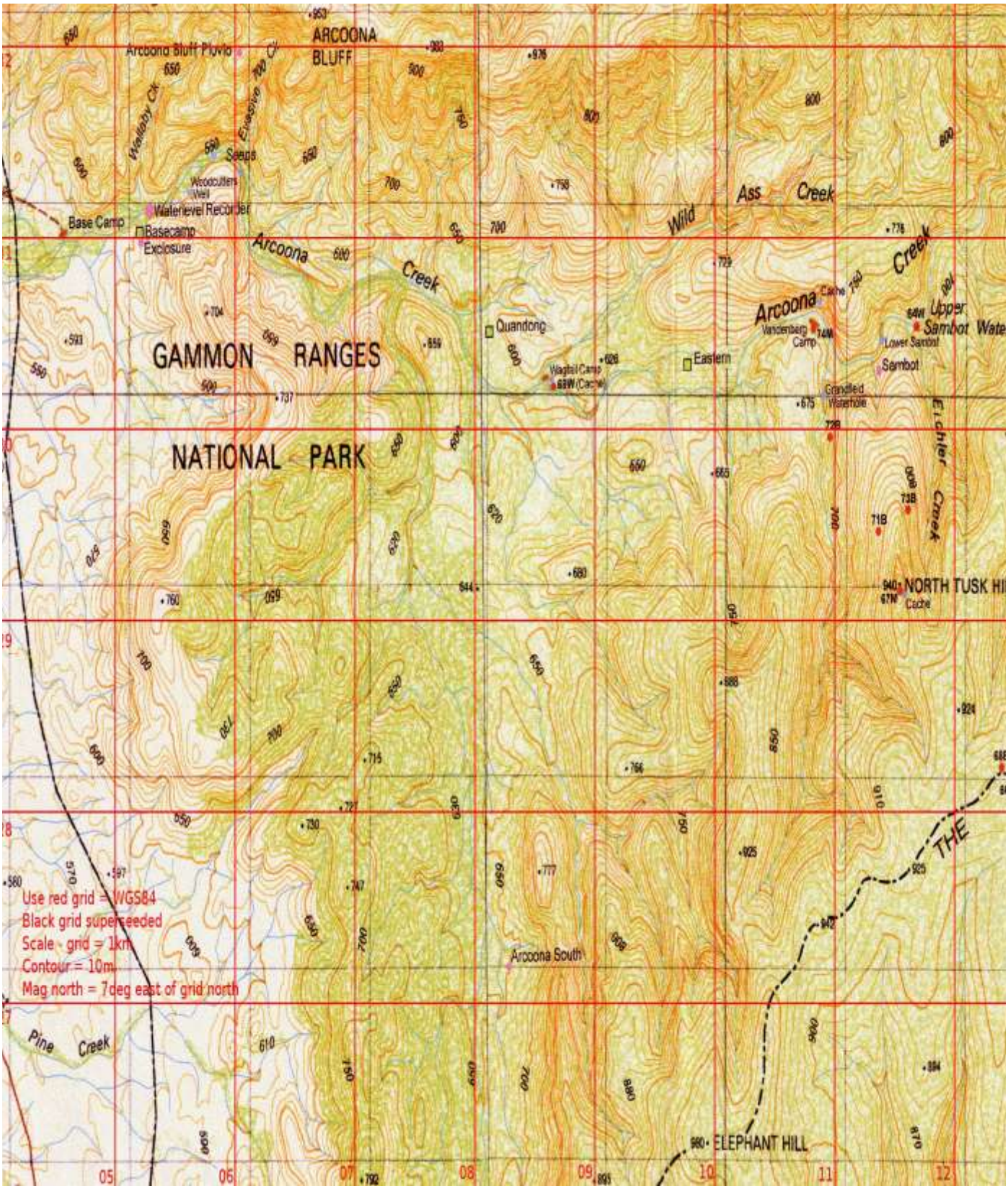
-Arkaroola-Survey638-Photopoints2009-2021. Since SEG's two Arkaroola expeditions, I've kept contact with Arkaroola, and I have been taking our photopoint photos, initially opportunistically, but now regularly,

*Now that DEW's WaterConnect website is updated for easier public access, my digest of rainfall and streamflow data has stopped working, and should be unnecessary. Go direct to https://www.waterconnect.sa.gov.au/Pages/Home.aspx Any feedback can be sent to them.

garrytre@bigpond.com

Below is a map to help with some of the placenames mentioned above. Wild Ass Waterhole is shown as Wagtail Camp. The Clay Patch extends 150m south from 71B. The Shortcut avoids creekbed trudging by going east southeast from The Seeps along the creeks above the word Arcoona to '600'.

The Portion of the Gammon Ranges in which the Vulkathunha—Gammon Ranges Project is carried out. SEG photopoints, pluviometers and the stream gauge are marked by red dots.



WILD IN HUTCHINSON PARK

Nicholas Birks

Hutchinson Park is a small park In the suburb of Norwood in South Australia. First Creek runs through the park on its way to the Torrens River. Fifteen big river red gums tower over the creek. A sparse cover of understory plants inhabit the areas of garden on the perimeter. Six still standing, dead black box trees form a remnant 'forest' that once grew rapidly to a height of 20 metres before suddenly dying for some unknown reason.

The final straw was a mass attack of longicorn beetle larvae which drilled oblique holes deep into the heartwood. Luckily the local council have left these dead trees standing because they contain some very interesting tenants, including native bees and wasps representing both ends of the food chain.

Common wasp-mimic bee, *Hyleoides concinna*

The common wasp-mimic bee, *Hyleoides concinna* is a masked bee. It is vividly coloured bright red and black and is about 13 mm long. It looks just like a wasp. It uses longicorn beetle holes in trees and builds a cellophane curtain across the entrance that allows the bee to push its way in and out as it services its offspring, while discouraging predators.

Cellophane curtain of the entrance to the nest of the common wasp-mimic bee

The blue banded bee, *Amegilla sp* has amazing directional mobility. It is the hummingbird of the bee world, behaving like a little electric drone, zipping through the shrubs, backwards and forwards, up and down. The blue banded bee is a buzz pollinator which is useful for many Australian wildflowers and shrubs. The high frequency vibration is enabled by their thoracic muscles. This is especially useful in tomato fertilization.

On warm sunny days tiny 5 mm metallic iridescent green cuckoo wasps glitter about the trunks of the dead trees. They start searching the bark at the base of a tree and work their way up the trunk to the top and then drop to the base again and again. They are searching for the nests of other wasps and bees to infiltrate. The cuckoo wasp is a Parasitoids from the family Chrysididae. They feed on their host's provisions, which may be spiders or grubs and then kill and eat their host. They are sinister little creatures, but stunningly beautiful.

Gasteruptiid Sp wasp

A small, thin waisted mud dauber wasp frequents Hutchinson Park and seems to specialize on *Eriophora sp*. garden orb weaver spiders. It builds mud nests under eaves and pergolas and under the bridge over the creek. Each mud chamber contains one or more spiders.

The common paper wasp, *Polistes humilis*, is also in the park. This colourful little wasp in the Vespidae family often builds a round nest constructed with six sided cells often in a window frame. Nests are also found in sheltered spots among

The common paper wasp, *Polistes humilis*, in flight

dense understorey shrubs. Their food consists of different butterfly larvae and small spiders. I have watched as they consume the eggs and newly hatched wanderer butterfly larvae.

A paper wasp consumes a small wanderer larvae while ignoring a more mature caterpillar which may be poisonous to it.

Orange Spider Wasp dragging a large Huntsman Spider towards its burial ground

The orange spider wasp, *Cryptocheilus bicolor*, is the largest wasp in the park and is a real specialist at capturing large huntsman spiders, Sparassidae family.

Huntsman spiders are also a favourite snack for boobook owls which frequent the park. The spider's jaws feature in the pellets the owls disgorge from their crop while sitting on the street lights at night.

The European wasp, *Vespula germanica,* was first introduced to Tasmania in 1959. Twenty years later they were to be found in every Southern state capital and continue to spread. They have been carried around the world in freight in the form of fertile queens. Every year a few nests appear in the park or in neighbouring domestic gardens. When the gum trees are in flower in autumn thousands of honey bees come to feed on the nectar and European wasps have a field day.

European wasp *Vespula germanica*

The bees become laden with the nectar and pollen and many crash to the ground or are ridden to the ground by the wasps. A wasp will dismember a bee on the ground and remove legs and head and take flight with the thorax, which is packed with high protein muscle.

This small parcel is delivered to the nest in a pretty straight line. To track a wasp nest position it is possible to feed the wasps with very small bits of lean meat. By sitting nearby and carefully watching the wasps take off, it is possible to get a line of sight on the nest. It is important to move the feeding location 50 metres or so and repeat the process to triangulate the position of the nest. When a nest is found report the location to the local council. In Norwood the removal is a free service. The European wasp is the most dangerous wasp to humans and pets and to much of our wildlife.

All the wasps and bees mentioned here will have some small part to play in fertilizing plants as they go about feeding on the flowers in order to supply their energy needs. The same can be said for other 2000 odd native bees plus butterflies, moths, ants and birds. It doesn't take much to loosen a bit of pollen so it floats away on the wind.

A swarm of honey bees occupying a bird nesting box

Swarms of honey bees abound in the spring. They are a constant threat to the nesting hollows in the trees or nest boxes at this time of year, not to mention roofs, chimneys and walls in our dwellings. Having a bee hive in a domestic garden can be undertaken as an interesting hobby but is not essential for the wellbeing of a garden.

wildflight@internode.on.net

SEG AGM SPEAKER

A Brief Review by Helen Owens

At this year's AGM we were fortunate enough to have Dr Mark Hutchinson present on

Discovering species - where they lurk and how to find them."

Mark gave us an in depth overview on the different ways new species are discovered and drew on his vast experience as Curator and now Honorary Curator at the SA Museum to provide real life discovery stories.

Mark explained how the majority of new species are not discovered in the field but back in the collection room where having specimens from a range of geographical areas allows comparison or how genetic work can be combined with morphological variations to provide a clearer picture of speciation.

He demonstrated how there are still some special occasions in the field when you get the WOW moment after laying your eyes on a complete misfit that just jumps out as something different, something special, something new!!

The members present where left with a clear understanding of how these discoveries are underpinned by specimens and well-kept collections, and how important taxonomic clarification is for conservation management.

With a growing focus on the ethics of collections, it is very important that we all understand why we do what we do, and see the value of how our hard work in the field is put to use to help protect species diversity and the environment.

A very entertaining, informative and captivating talk.

We thank Mark for his time to present at the AGM and for his long term commitment to the world of Herpetology and collections.

Dr Mark Hutchinson presenting his talk.

Photo Helen Owens

IT'S DUCK SEASON!

Sheryl Holliday

Right now is the time for hunting ducks. No not the feathery bird that quacks, I am talking about the Large Duck Orchid or Flying Duck - *Caleana major.*

These orchids are aptly named as the flowers resemble a duck. The single leaves are dark green and reddish, lance shaped and range from 4-12cm long by 4-8mm wide. The flowering stems can be from 15cm to 45cm tall, with the flowers being 2-3cm. In South Australia they flower from November to December and are rated as Vulnerable, according to the census of SA flowering plants. The ducks are found in the Southern Lofty region as well as 2 locations in the South East, possibly only 1 now as the site has become overgrown with shrubs. Caleana's occur in small colonies in white sands, usually in open *Eucalyptus baxteri* (Stringy Bark) forests, in full sun or semi shade. They also occur in the eastern states in greater numbers.

So why not get quacking with your camera, go bush and see if you can find some ducks!

windidchi@gmail.com

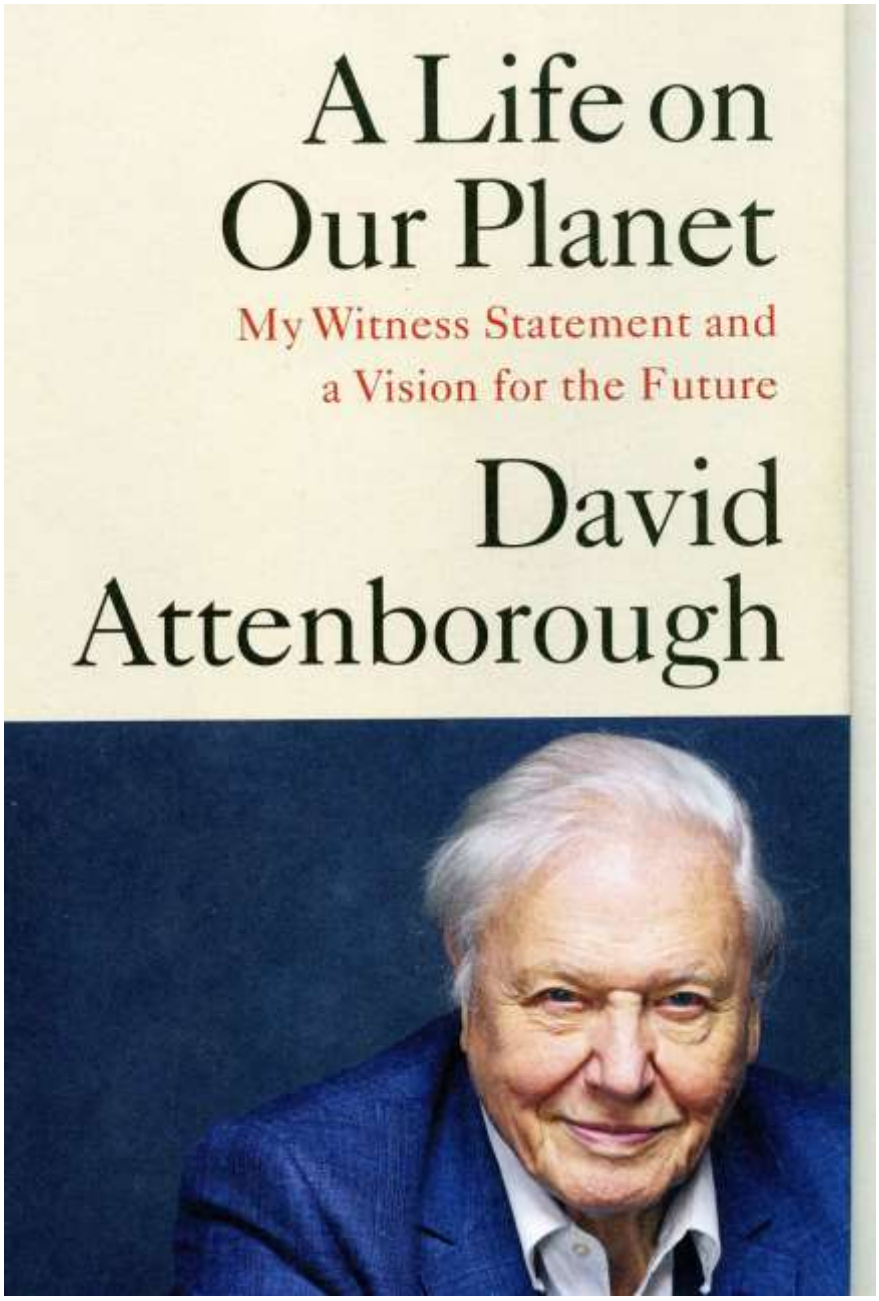
Large Duck Orchid or Flying Duck - *Caleana major.*

Photo Sheryl Holliday

A Life on our Planet By David Attenborough

A Review by John Love

The best television series I have seen is *Life on Earth*, thirteen one-hour episodes designed and presented by David Attenborough, outlining the development of life from the primitive to the most complex - us. Attenborough has done other series, before and since that one, all intended to promote public interest in the world around us. Increasing emphasis on conserving our natural resources characterises his later work, not only by television but also public speaking at gatherings such as the Glasgow climate change summit. His life work has made him acutely aware of the fragility of all our ecosystems and the possibility that we could turn our environment into a miserable place for the generations who will follow us.



Sir David begins his book with a visit to Pripyat in the Ukraine, 'a place of utter despair'. This is the city that had to be hurriedly abandoned when a reactor in a nuclear power plant exploded. From there he proceeds through perceived dangers and some unexpected remedies, to a challenge of hope.

The first part of the book is an outline sketch of his career, with retrospective comments on what he has witnessed. There is joy and wonder at the splendour of living organisms and apprehension about what the most intelligent organisms are doing to the rest. Then, concentrated in fifteen pages, are stark forecasts of some consequences that will follow 'if we continue living as we do at present'.

'A vision for the future' fills the second half of the book. Its basic thesis is that we will only avert disaster by restoring the balance of nature. The author outlines several courses of action, all inter-related. There are some surprises. For example, on the subject of over-population: countries with high standards of living have small families. If the rich countries help the poorer ones to raise their standards of living, the fear of a high death rate will fade, emancipated women will be able to decide how many children they want and they too will have smaller families. It is refreshing to read a discussion of this matter that is not all doom and gloom. As with his television series, Sir David is positive and optimistic.

A Life on our Planet. By David Attenborough. London, Witness Books, 2020, 372 p. ISBN 9781529108279.

jhlove@internode.on.net

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