

SEGments



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Scientific Expedition Group Inc.

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Cover Photo: Fairy Tern at the Coorong with a smallmouth hardyhead. Photograph Mark Ziembicki

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 of Environment Water and Natural Resources 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 annual mallee-fowl monitoring over a weekend in the Murraylands.

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SEGments



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GUEST EDITORIAL

Editor, Helen Johnson, asked if I would write an editorial for SEGments. That was some months ago and after “getting over” the initial shock I began to think about a topical topic. One of today’s buzz words is “Partnerships”.

As you may have read many times SEG began in August 1984 when two notable gentlemen, C. Warren Bonython AO and Dr Richard. L. Willing, fresh from the success of an expedition to Coffin Bay with the Australian and New Zealand Scientific Exploration Society, known as ANZSES, decided to “go it alone” here in SA. From those humble beginnings SEG has grown to become a much respected organisation, albeit not that widely known in the larger community.

Over the last 33 years SEG has formed many

partnerships, and is a well-known and respected institution in the halls and corridors of the SA Museum, parts of the huge DEWNR organisation, Nature Foundation SA, Conservation Council of SA, the SA Herpetology Group, Bureau of Meteorology and the Royal Geographical Society of SA.

SEG has through its program of annual bio-surveys formed lasting partnerships with field scientists who have given freely of their time. In recent years SEG has successfully partnered with the Nature Foundation of SA (NFSA) conducting bio surveys on properties owned by them at Hiltaba and Witchelina.

SEG has also formed partnerships with the owners of private conservation and wilderness parks conducting bio-surveys at Gluepot Reserve (Birdlife Australia - 2000), Boolcoomatta Reserve (Bush Heritage Australia - 2006), Arkaroola Wilderness Sanctuary (2009 and 2011), Warraweena Conservation Park (Wetlands and Wildlife - 1999) and Watervalley Wetlands (Wetlands & Wildlife - 2013).

In 1994 SEG formed and registered a Deductible Gift Fund namely, Scientific Expedition Foundation (SEF) through the Federal Government Department for the Environment & Energy and the office of Register of Environmental Organisations. Since that time many SEG members have given generously including a bequest from the Estate of C. W. Bonython.

The Trustees of SEF (Prof. Chris Daniels, Prof. Rob Morrison AOM, Dr. Bob Sharrad AM, Dr. Richard Willing and I) agreed last October to fund a \$1,500.00 annual scholarship to an Honours Student in conjunction with the Nature Foundation SA. Three of those Trustees are either currently or formerly Councillors of the NFSA, highlighting the principle of developing lasting partnerships.

SEG is very well placed to continue well into the 21st century having established these lasting partnerships and will continue to go from strength to strength doing what it does best, bringing like-minded people together and working side by side for the betterment of the environment of our diverse habitats.

Graeme Oats

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WILL THE FAIRY TALE END *HAPPILY EVER AFTER?*

Fiona Paton



Adult Fairy Terns at a breeding colony, January 2017. Note that two of the birds are colour banded, so that they can be identified as individual birds without recapturing them, as no two colour band combinations are the same. Photograph: Tom Hunt

Preamble

Once upon a time, when more water flowed down the Mighty Murray transforming dry plains into resplendent wetlands, there were a great many birds that called the Coorong their home. In the summertime, the sunny skies would be darkened by waders, as thousands upon thousands of stints and sandpipers flew in for the summer, fervently foraging on glistening mudflats abounding with food. The ducks and swans dined out on plants that flourished, and the pelicans and terns gorged on a bounty of fish, easily feeding their earnestly-growing chicks. The majestic Coorong was healthy and the birds welcomed each dawn with an eager flap of their wings, dancing in the shallows and basking in the sun as they went about their daily business.

However, there came a time when the Murray was not so mighty and the water stopped flowing, the plants stopped flourishing, the fish were not aplenty, and there were fewer and fewer birds. So much so, that the majestic Coorong was very sick, and no-one knew if she would ever get better.

Fairy Terns

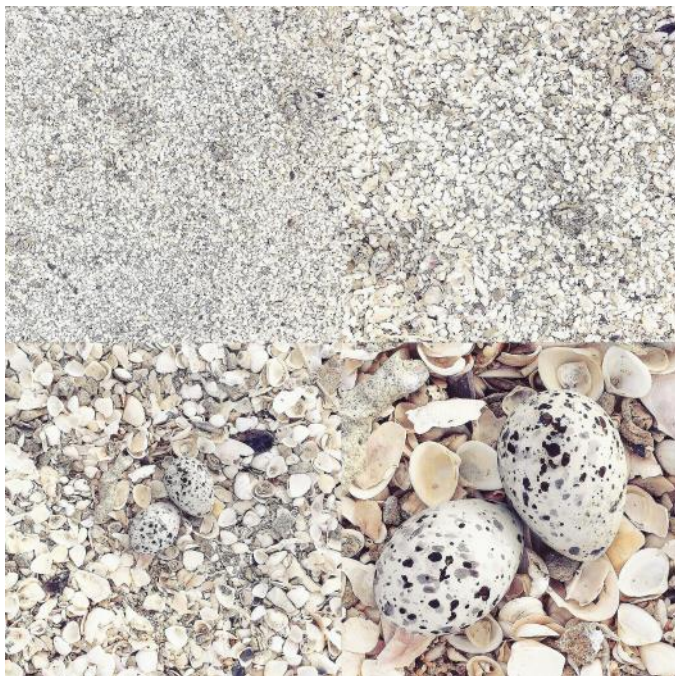
This is a tale of the Fairy Tern (*Sternula nereis nereis*), just one of the birds that depends on a healthy Coorong, a wetland of international importance, located at the end of the River Murray. The Fairy Tern is *Endangered* under the South Australian National Parks and Wildlife Act 1972, and listed as *Vulnerable* under the Australian Environment Protection and Biodiversity Conservation Act 1999 and by the International

Union for Conservation of Nature. Threats in the Coorong include predation of nests and nesting birds by foxes, disturbance by humans, dogs and vehicles (particularly near the Murray Mouth), and mismanagement of water levels in the Coorong, which is a very shallow lagoon.

The Fairy Tern is charismatic, with a white body, silver wings, a black head and striking orange legs and beak. They feed on the smallmouth hardyhead (*Atherinosoma microstoma*), a fish that is found in the Coorong, by plunging into shallow water from heights of up to five metres. Fairy Terns form breeding colonies in the Coorong over summer, predominantly on islands in the South Lagoon, where they create shallow scrapes amongst the sand and shell fragments, in which they hide their cryptic, speckled eggs.



A Fairy Tern egg and recently-hatched chick in a nest scrape, January 2017. Photograph: Tom Hunt



Can you spot the Fairy Tern eggs in these four photos? Their cryptic nature amongst the sandy shell grit serves to protect them from predation. Photograph: Tom Hunt

Changes in Abundances in the Coorong

Some thirty years ago, there were over 1300 Fairy Terns in the South Lagoon of the Coorong alone (this is about half of the Coorong area). Within 15 years, there were only a little more than 600 birds in the Coorong (North and South Lagoons combined), with this number crashing to 164 birds in the Coorong in summer 2011. Since then there has been some sort of recovery to around 400 birds (with most of these adult

birds), although a waterbird census of the Coorong in January 2017 showed a decline from previous years, with only 361 Fairy Terns observed. Eighty-five of these 361 birds were immatures (believed to be recruits from the summer 2015-16 breeding attempts), and about 1 year old (Fairy Terns first breed when 2 years old). Such a large cohort of immature birds is promising, particularly because mark-recapture models developed in 2015 indicated that juvenile survival rates were declining. However, it is concerning that adult abundances have decreased considerably this year.

Changes in Breeding in the Coorong

In addition to an annual census of the Fairy Tern population in the Coorong, a long-term banding program of Fairy Terns at their breeding colonies in the Coorong has been implemented since the late 1990s. This includes banding chicks and adults with a band that has a unique eight-digit number, and, for adults, with three colourbands as well. The colourband combinations are also unique, so that adults can be individually identified at a later date without having to recapture them. Colourbanding also results in informed members of the community reporting sightings of Fairy Terns, adding to our understanding of their movements throughout the year.

Breeding efforts were hampered during the Millennium drought, with low water levels resulting in salinity increases in the South Lagoon. The higher salinity levels breached the salinity tolerances of the smallmouth hardyhead, causing their numbers to decline dramatically. Consequently, Fairy Terns



Fiona Paton and Donna Belder trapping Fairy Terns in the southern Coorong, January 2017. Photograph: Casey O'Brien

shifted their distribution northwards; to around the Murray Mouth on Youngusband Peninsula, where salinities were lower and the smallmouth hardyhead occurred. However, without the protection that the breeding islands in the South Lagoon offered from ground predators, from 2007-2011 any breeding attempts of the Fairy Tern around the Murray Mouth were quashed by fox predation.

In summer 2016-17, there were two breeding colonies of Fairy Terns: the first on Youngusband Peninsula around the Murray Mouth and the second on an island in the South Lagoon. Throughout January, the Murray Mouth colony was disturbed and/or predated upon a couple of times, but 10 free-flying juveniles were observed in late January. In mid-January the second colony on the island in the South Lagoon had about 75 nests, with between one and three eggs in each. However, in early January, the barrages were closed, resulting in a 0.6m drop in water levels in the South Lagoon over the few ensuing weeks. Consequently, the island was reconnected to the mainland by late January and the colony was destroyed by foxes before any chicks were even hatched. A reconnaissance trip in early March to the South Lagoon in search of a late summer breeding colony brought no luck, and so this summer's breeding has been predominantly unsuccessful.

Solutions

If we are to provide good-quality habitat for the Fairy Tern in the Coorong, then the mismanagement of water levels in the Coorong must be addressed. We must ensure that falling water levels do not leave breeding colonies prey to foxes, and we must guarantee conditions that are suitable for the smallmouth hardyhead. Unfortunately, despite the alleged passing of the Millennium drought, there has been little recovery of the Fairy Tern. Similarly, when the Murray-Darling Basin Plan is fully implemented, there will still not be enough water for a healthy Coorong. Urgent action is required to nurture the Coorong back to good health, restoring at least some of her unique ecological character and majestic nature.

One solution is to construct a low barrier across the Coorong to maintain water levels in the South Lagoon during spring and into summer, thus avoiding the large fluctuations in water levels when the barrages are closed. This barrier would also have benefits for *Ruppia tuberosa*, the predominant aquatic plant of the South Lagoon, and flow-on effects for other species that depend on it.

Closing Remarks

The decreased abundance and struggling breeding attempts of the Fairy Tern over the past 20 years are causes for concern for the Fairy Tern population in the Coorong. Future work will include continuing the banding program and continually updating the mark-recapture model. Furthermore,

a population viability analysis (PVA) to assess the likelihood of the Fairy Tern population surviving in the Coorong into the future will be developed. We hope the research will promote enhanced management actions to safeguard the population and its recovery. In the end, one hopes that there is a favourable response to the ultimate fairy tale question, "Will they live happily ever after?"

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Editor's Note:

The Australian Government's Living Murray program has identified the Lower Lakes, Coorong and Murray Mouth region as an Icon Site based on its high ecological, cultural, recreational, heritage and economic values. SEGments' readers may not be aware that Australia has an International obligation to promote the conservation of the Coorong, Lake Alexandrina and Lake Albert Wetlands region, as it is a **Ramsar-listed Wetland of International Importance**. This tale of the Fairy Tern's conservation and management would suggest that we are currently failing to honour this obligation.



Map showing the distribution and abundance of Fairy Terns in the Coorong in January 2017 (counted as part of an annual waterbird census)

SURVEY REPORT: WITCHELINA EXPEDITION II

Darren Niejalke

In June 2016 SEGments (Vol. 32 No. 1), I reported on the incredible rains before and after our reconnaissance trip to Witchelina in April 2016. Well, those rains continued up to the days before, and during Witchelina Expedition II. Fifty three millimetres of rain was recorded at the Homestead in the days before we were planning to leave Adelaide and this pattern continued with another 30 mm during the 12 day survey (2016 was the wettest year since the 1970's –Figure 1). Rainfall imposes special challenges on expedition teams – the remote station tracks become impassable and pit traps flood with water. Nevertheless, our resilient and resourceful team of expeditioners prevailed against the challenges of mud, mosquitoes and a constantly dynamic expedition itinerary, to deliver on our commitment to advance the biological understanding of the ecosystems at Witchelina from 12th – 23rd September 2016.

Highlights for the survey include the very first Great Desert Slider (*Lerista desertorum*) ever recorded at Witchelina and the first Eastern Striped Skink (*Ctenotus spaldingi*) collected from the property for the South Australian Museum. Garry and Michelle Trethewey also discovered some excellent sub-fossil sites with remains of the Lesser and Greater Stick Nest Rat, Long-tailed Hopping Mouse, Western Barred Bandicoot, Gould's Mouse and others, providing evidence that these rare and extinct mammals occurred at Witchelina in the not too distant past (see the recent December SEGments article Vol.32 No. 3, by Graham Medlin for more detail).

Background

Expedition Witchelina is a joint project between the Nature Foundation SA, who own the property, and the Scientific Expedition Group. Expedition II was the second of a three stage plan to complete a comprehensive biological survey of

the whole 421,000 Ha property near Lyndhurst in Northern South Australia. The first survey in 2015 focussed on the southern section of the property near Pug Hut (with a backdrop of Termination Hill). This section of the reserve is mostly open gibber plains and linear sand dune country. Expedition II was based at the Old Station Homestead and focussed on the stony ranges in the northern section of the property. We also planned to include survey sites in the Mitchell grass plain country to the west, but the extensive rain made access impossible - these sites will be included in Expedition III.

There were two main objectives of the survey. Firstly, a series of Biological Survey of SA sites were established in a range of habitat types that represent each of the land systems that occur on Witchelina. The second objective was to revisit the Jessup survey sites established on the property by the Pastoral Unit of the Department of Environment Water and Natural Resources (DEWNR).

Biological Survey sites

The Biological Survey applied the standard methods established by the Department of Environment Water and Natural Resources (DEWNR) for their Biosurvey SA program. This method has been applied at thousands of locations across South Australia and uses a range of techniques, including pit, Elliot and funnel traps, plus other standardised efforts to describe the plants and animals in an area. This standardised approach collects baseline data and allows sites at Witchelina to be compared with other locations surveyed across the State.

The total number of observations that we recorded was much lower than Expedition I, but as shown in Table 1, the number of different species observed was surprisingly high – a huge

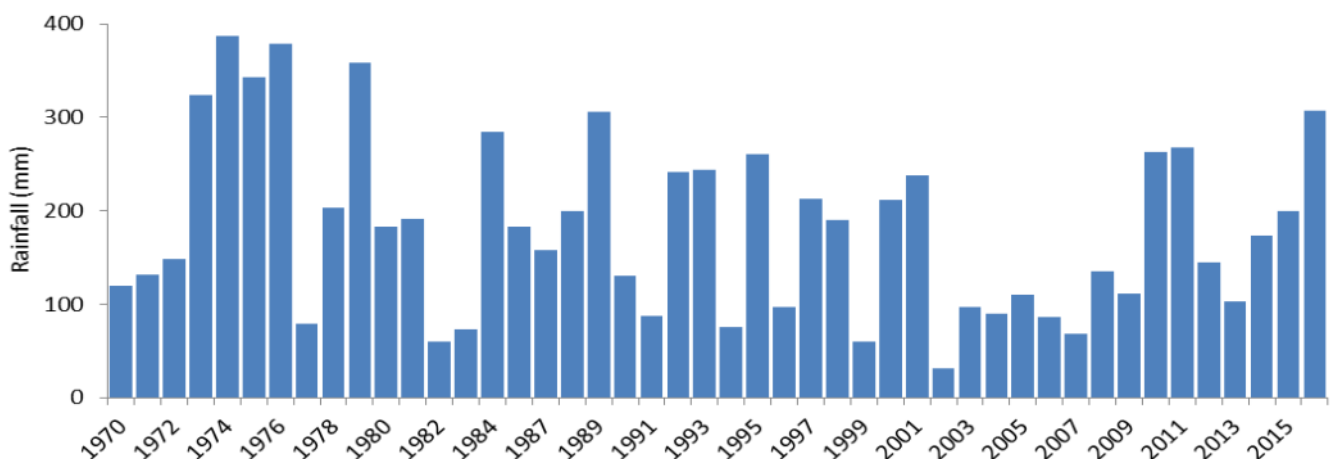


Figure 1: Summary of rainfall records collected at Marree weather station about 40 km north of Witchelina.



The first record of the Great Desert Slider (*Lerista desertorum*) ever observed at Witchelina during Expedition II. Photo courtesy of Robert Browne-Cooper, Atlas of Living Australia.

effort considering the cool and wet conditions we experienced. The number of reptile and mammal species was just slightly less than Expedition I, but we recorded nearly 50% more bird species during Expedition II compared to the previous survey. Nomadic species and birds of prey were in abundance. The Black Breasted Buzzard was a regular sighting by the team.

Despite the run of poor weather expeditioners spent a lot of time actively searching for opportunistic records, particularly at the old dump out the back of the Homestead. These efforts were thoroughly rewarded as more than twice as many mammal and reptile records were obtained by active searching than were captured in the traps. One of these, the Great Desert Slider (*Lerista desertorum*), was particularly significant as it was the first record of this species from Witchelina. Records of *L. desertorum* are widespread on the western side of the Stuart Highway, but there are only one or two records near Roxby Downs and Leigh Creek on the eastern side of the highway. We found several while raking amongst

Table 1: Number of species and total number of records (in brackets) collected during Witchelina Expedition I and Expedition II

	Witchelina I	Witchelina II
Mammals*	11(80)	9 (21)#
Birds	39	58
Reptiles	32 (421)	25 (109)
Amphibians	0(0)	2(2)
TOTAL	82 (540)	94 (122)

* includes introduced species
 # does not include sub fossil records

the leaf litter under acacia trees during a day trip north east of the Homestead near Lisbon Well.

Jessup Survey

The Jessup transect is a vegetation monitoring technique that has been used by DEWNR since the 1980’s to monitor and regulate total grazing pressure by sheep, cattle, goats, etc. on leasehold stations through the rangelands in SA. Several of these sites were established on Witchelina in 1999 when it was an operating pastoral station and Flinders University added 12 sites in 2014, soon after sheep and goats were removed. While the Jessup methods was designed to measure the impact of grazing, it is equally effective at measuring the response after sheep and goats have been removed by conservation organisations like the Nature Foundation SA. The Pastoral monitoring sites are invaluable for this purpose as records are available for the period dating back well before sheep and goats were removed. The Jessup method is also expertly designed with an ability to identify changes that may otherwise be concealed by fluctuations in rainfall between years. The method does this by collecting data on a select group of long lived plant species that are common throughout the region and it categorises these species as increasers and decreases. This method relies on the fact that herbivores (sheep, goats, kangaroos etc.) prefer particular species of plant. These species (decreasers) tend to disappear under heavy grazing pressure and the increasers become more abundant.

During Witchelina II our Jessup Science leaders scoured the length and breadth of the reserve to search for the 26 Jessup sites that have been surveyed in the past. In many cases the tracks on the old maps were non-existent on the ground and some long days of driving proved fruitless. Despite the challenges of the incessant rain, tremendous distances and rugged country (plus the odd bogged car), the Jessup science

team were able to locate and collect data from 14 of the 26 sites on the Reserve (we hope to pick up the remaining sites during Expedition III).

All the effort was worth it as the data collected by the Jessup team showed a marked increase in decreaser species at a majority of comparable sites and little change in the abundance of increasers. This demonstrates that the tremendous conservation efforts implemented by the Nature foundation SA are delivering the environmental outcomes they are chasing. The Foundation has removed all domestic stock and thousands of goats from the reserve since it was purchased in 2010. The extent of this effort is reflected by the fact that we did not observe a single goat during the many thousands of vehicle kilometres we covered during the 12 day expedition.

Summary

Another successful expedition by the Scientific Expedition Group. All thanks go to the multidexterous talents of expedition leader, Alun Thomas, our science coordinators, Margie Barnett, Justin Jay, Kelli-Jo Kovac, Stuart Pillman, Brian

Blaylock, Annette Vincent and Nick Birks and our quartermaster Trent Porter. The rainfall has continued over the summer months following Expedition II, providing the productive conditions that cause our arid ecosystems to boom. I look forward to expedition III.

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Populations of nomadic bird species, such as Budgerigar and Zebra Finch, have exploded at Witchelina. Photo Jarryd Holmes.



SEG "Mandala" at Witchelina constructed in an old tank stand outside the shearers dining room. Photograph Annette Vincent

ABUNDANCE OF *ANTECHINUS FLAVIPES* - MINNAWARRA BIODIVERSITY SURVEY

Kalki Gagliardi

Introduction

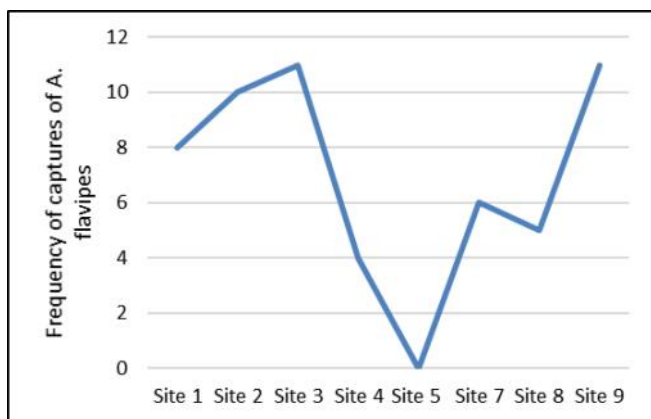
The *Antechinus flavipes* - also known as the Yellow-footed Antechinus (from *flavipes* meaning yellow-footed) was first described by George Robert Waterhouse in 1883. The *A. flavipes* can be found in Queensland, New South Wales, Victoria and South Australia.

The features can vary, however, the most general features are a pointed muzzle; short hair and a moderately long tail with a black tip; grey fur coloration with a white ring around the eyes; and broad feet of yellowish brown colour. Its body length is roughly 10-15 cm with a body weight of 30 grams. The animal is active during the day.

Data was collected on the abundance of *Antechinus flavipes* captured during two biodiversity surveys in autumn and spring in the Heritage area of scrub on "Minnawarra" farm near Myponga on the Southern Fleurieu Peninsula. The Minnawarra Biodiversity Project commenced in 2001 as part of the Scientific Expedition Group. The survey involves trapping and recording small mammals, reptiles, and frogs, at eight separate sites. Small mammals are identified weighed, sexed, marked and released. To keep track of these mammals that are caught, a microchip is implanted at the back of the neck, which allows it to be scanned by a microchip device.

Results

A comparison of the *Antechinus* species is compared for the spring 2015 data and autumn 2016 data. The total number of *Antechinus flavipes* captured in spring 2015 was 55 and in autumn 2016 was 133. The numbers captured at each of the eight sites are shown in Figure 1 for the spring survey and in Figure 2 for the autumn survey (the vertical scale is different for the two figures).



Total=55

Figure 1: Total number of *A. flavipes* captured for each site in spring 2015

Discussion

The data in Figures 1 and 2 shows that the abundance of *A. flavipes* differs during the seasons of spring and autumn (total captures 55 and 133 respectively). The total number of captures for the two surveys depends on the breeding cycle of



Total=133

Figure 2: Total number of *A. flavipes* captured for each site in autumn 2016

the southern *A. flavipes*; males being captured frequently in autumn, rarely in spring.

For the spring survey many of the captured female *A. flavipes* were carrying pouch young. There are no mature adult males captured during spring because the males usually die as a result of the prolonged and frenzied copulation over the two week mating season in August. During the autumn survey there were no captures of females with pouch young, and captured *A. flavipes* were both mature (mostly females) and immature (males, and females) individuals bred in the previous reproductive season.

Although the data does show a high abundance of the *flavipes* species, it is not consistent over the sites, being lower in some sites and higher in other sites. This could be due to the type of vegetation at each site. Sites 3 and 9 are further from creeklines, with more open undergrowth.

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Kalki has been coming to Minnawarra Biodiversity Surveys for several years, becoming competent in all aspects of what we do. She responded to our cry for help last spring to start 2 days early, before the weather system that stopped the state hit. That meant we got some results! This article was based on Kalki's report for her Bachelor of Science in Biodiversity and Conservation at Flinders University.

Janet Furler, Science Leader Minnawarra Biodiversity Project



TERN AusPlots – 2016 FIELD SEASON IN WA AND NT

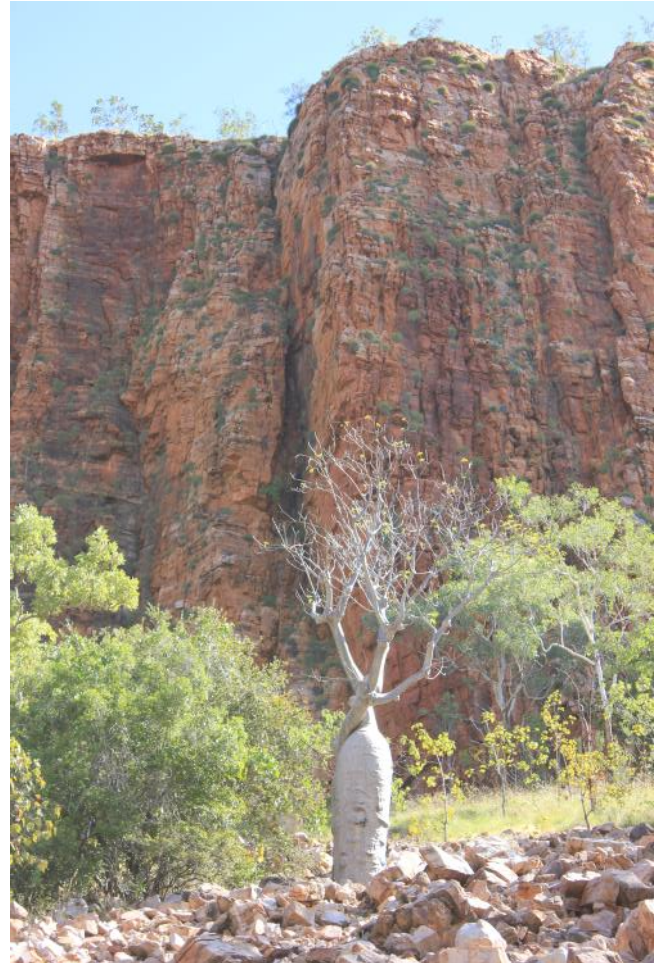
Christina Macdonald - Project Data Officer - TERN AusPlots Rangelands



The TERN AusPlots team had a successful 2016 field season establishing more long term monitoring sites throughout the Northern Territory and Western Australia. April and May were spent adding more sites to the Northern Australia Tropical Transect on pastoral properties along the Stuart Highway, Mataranka and finally in to the Pine Creek Bioregion, incorporating Kakadu National Park.

Road conditions in June were perfect to access the King Leopold Ranges via the Gibb River Road. We spent some time on El Questro Station and were fortunate to be flown into the remote Cockburn Range via helicopter thanks to the WA Department of Parks and Wildlife. Eight sites were established in the Bioregions of Central Kimberley, Victoria Bonaparte and Dampier Land. One final site was established on a newly proclaimed RAMSAR wetland site on the western edge of the Great Sandy Desert.

We returned to the Pilbara region in August to continue work in the Millstream-Chichester National Park and then further east to Newman.



Boab tree in the Kimberleys



Botanist Emrys Leitch recording the percentage plant species

September found us in the midst of a spectacular flowering event on Eurardy Reserve, a Bush Heritage site north of Geraldton.



Helicopter to the Cockburn Ranges



On the edge of the Great Sandy Desert

We covered a lot of ground in September, starting north of Kalgoorlie and completing the trip in the Stirling Ranges in some magnificent Jarrah and Banksia forests.

In total, around 4,500 voucher plant and matching DNA samples were collected, as were 1700 soil and 513 Metagenomic samples. This will all be made available for use by researchers and contributes to regional Herbarium collections.

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All vouchered plants are DNA sampled in the field



The fruit of our labour. Soil samples dried and boxed for storage at the TERN AusPlot facility

THE SEG TEAM AT WITCHELINA II SEPTEMBER 2016



From left: Nick Birks; Frances O'Leary; Alun Thomas; Garry Trethewy; Kathleen Cunningham; Michelle Trethewy; Michael Bennell; Heather Willans; Andrew Wurst; Bob Sharrad; John Love; Courtney Glover; Calypso Theunens; Jessica Swann; Natalie Newman; Helen Johnson; John Glover; Justin Jay; Darren Niejalke; Chris Banks; Trent Porter; Jenny Wilson; Margie Barnett; Warrick Porter; Jarryd Holmes; Annette Vincent; Brian Swann; Kevin Burrett.

Not in photo: Bob Newman, Julie Wright, Ric Williams, Trevor Brettig, Stuart Pillman, Carolyn Bishop; Naomi Ray; Dave, Kelly-Jo, Jack, Sam and Ruby Kovak; Brian Blaylock.

VALE COLIN BEER

Richard Willing and Jenny Neill

Colin Beer was one of SEG's great supporters. It was with great sadness that we learned of his death in July 2016.

The Beer family, headed by father and husband Colin, were strong supporters of the Scientific Expedition Group during its early days, and were involved in many of its activities. The inaugural meeting of SEG in 1984 was attended by Joan, Colin's wife, and their daughter Jennifer Neill. Colin was immediately involved with SEG with the mailing out of the very first SEGments.

Younger members of the Beer family were involved in several scientific expeditions, and Joan became Treasurer in 1986, supported by Colin, an accountant. During these years Colin and Jenny went on several trips to the Vulkathuna-Gammon Ranges to help install and maintain the pluviometers of the SEG V-Grasp Project. After Joan retired from the position of Treasurer in 1992, Colin became SEG's Honourary Auditor, a post he held for many years.

For their valuable work for SEG Colin and Joan were made Life Members of SEG.

Besides SEG Colin was involved with many other organisations

Colin and Joan joined The Field Naturalists Society in 1992 and very soon after Colin became the FNSSA Auditor. Later he relinquished that role and became their Treasurer in 1999 until 2012. They were actively involved in looking after the properties that the Field Naturalists owned in particular Manning Reserve at McLaren Flat, firstly removing weeds then installing some photopoints. In 2013 they were jointly

honoured with the FNSSA Nature Conservation medallion in recognition of their service to The Society in conserving the natural environment. During Colin's time on council it were instrumental in organising a fund (The Lirrabenda Fund) which supported students at University to fund their Honours and PhD projects. Colin remained on the organising body of the fund until 2015.

Not only was Colin involved with the conservation movement but in 1972 he was President of the 1836 group (which became the Young Trust) of The National Trust and while President the Trust recorded all the headstones in Walkerville Cemetery. Colin maintained his membership of the National Trust until his death.

In the 1980's Colin joined the Prospect Rotary Club and was President for a year in 1998 and was awarded a Paul Harris Fellow some years later. He never seemed to miss a meeting and he resigned in about 2013. While a member he participated in a trip to the Solomon Islands to build houses and helped with many fundraising activities.

Colin was deeply involved with Christ Church North Adelaide for nearly 30 years. He was on the Parish Council and was Peoples Warden from 1984 to 1997. Colin's particular expertise was in assisting in the management of the church's finances.

SEG pays tribute to a man whose stay on earth was dedicated to improving the world in so many ways. A quiet worker, he is missed by many, but his work continues, and has been of benefit to many more.



Colin at SEG's 30 Year
Barbecue in 2014

SEGments CONTENTS FOR THE YEARS 2012 to 2016

Copies of issues of SEGments may be obtained from our website

<http://www.communitywebs.org/ScientificExpeditionGroup>

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30 Years on - SEG's Birthday Coming Up	Richard Willing	March 2014
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A Kiwi's Experience on a SEG Biodiversity Survey at Witchelina Reserve, 2015	Sheila Grady	December 2015
A Morning with the Eucalypts	Richard Willing	March 2013
A Preview of Expedition Witchelina Part 2	Darren Niejalk	June 2016
A Road Trip in America II	Andrew Barr	March 2012
A Trip to Gluepot	Helen Johnson	December 2012
A Trip to the Edge of the Strzelecki Desert	Alun Thomas	December 2013
A Witchelina Much Visited	Kathy Sharrad	September 2016
Abundance of Fur Seal Pups on Kangaroo Island	Alun Thomas	March 2014
Analysis of Small Bones from an Old Owl Roost on Witchelina	Graham Medlin	December 2016
Arkaroola Reprieve (<i>Cardonocarpus pyramidalis</i>)	Garry Trethewey	March 2014
Australia's Feral Camels: amazingly adept arid animals	Leah Feuerherdt	September 2012
Birds of our Reserves and Open Spaces in Para Woodlands - Yaringa	Dragois Moise	June 2013
Birds of Sri Lanka	Photographs by Alun Thomas and Kathleen Cunningham	June 2016
Birdsville" (Bird surveys in Coorong and Lower Lakes)	Alastair Wood	March 2012
Book launch: Wildlife of Greater Adelaide		December 2016
Book Review "Poor Man River" and "Of Billabongs and Broken Dreams" by Alastair Wood	John Love	December 2013
Book Review "Shackleton's Heroes: The epic story of the men who kept the <i>Endurance</i> expedition alive" Wilson McOrist	Richard Willing	June 2016
Book Review "Where the Wild Things Were: Life, Death and Ecological Wreckage in a Land of Vanishing Predators" by William Stolzenburg	Andrew Barr	March 2012
Book Review: "Walking with Warren: during one half life" by Terry Krieg	Richard Willing	March 2014

Bunbury Conservation Reserve	Trevor Holdsworth	June 2013
Can Australia Afford the Dingo Fence?	Corey Bradshaw and Euan Ritchie	September 2012
Caves at Arkaroola	Garry Trethewey	March 2012
Chairman's Report 2012	Alun Thomas	September 2012
Chairman's Report 2013	Alun Thomas	September 2013
Chairman's Report 2014	Alun Thomas	September 2014
Chairman's Report 2015	Bob Sharrad	December 2015
Chairman's Report 2016	Bob Sharrad	December 2016
Data Management and <i>YOU</i> —Someone's Gotta Do It!!	Helen Owens	March 2016
Eating Out at Yadlakinna	Heather Willans and John Love	December 2015
Fire in the Gammons	Graham Blair	June 2016
First View of Witchelina	Alun Thomas	September 2015
Frahns Farm: An Opportunity to Reconstruct Habitat for Declining Woodland Birds	Fiona Paton	September 2016
Fungi – the Hidden Kingdom	Julia Haska	December 2015
Gluepot Reserve—A Reserve with a Difference	Duncan Mackenzie	September 2015
Guest Editorial: Vale Warren Bonython	Richard Willing	June 2012
Hiltaba Fauna Survey: April 2013	Peter Matejcic	September 2013
Hiltaba Mystery	John Love	June 2015
Hiltaba Mystery Solved	John Love	March 2016
Hiltaba Reserve 2013 Expedition (Results)	Greg Johnston	June 2014
Hiltaba Student Report: April 2013	Kate Matthews (reprinted from June 2013)	September 2013
Hiltaba Student Reports: April 2013	Contributions by Marina Louter, Kate Matthews, Annie Robertson, Bianca Staker and Scott Giacomini	June 2013
Hiltaba Survey	Greg Johnston	March 2013
Hollow Dependent Wildlife	James Smith	December 2013
Interview with Professor Corey Bradshaw	Helen Johnson	June 2012
It Takes a Village...	Kelli-Jo Kovac	December 2016
Jarryd Holmes—My Story	Jarryd Holmes	December 2016

Kangaroo Island Planting Festival	Helen Johnson	December 2012
Malleefowl Survey 2013	Kate Matthews	December 2013
Malleefowl—A Snapshot of a Special Bird and the Recovery Effort	Sharon Gillam	September 2016
Mawson’s Hut Replica in Hobart	Alun Thomas	September 2015
Member Survey on the Witchelina Expedition	Alun Thomas	March 2016
Minnawarra Biodiversity Project	Tom Hastie	June 2015
Minnawarra Biodiversity Survey – Autumn 2012	Janet Furler	June 2012
Minnawarra Biodiversity Survey – Spring 2012	Janet Furler	December 2012
Minnawarra Biodiversity Survey – Autumn 2013	Janet Furler	June 2013
Minnawarra Biodiversity Survey - Spring 2013	Janet Furler	December 2013
Minnawarra Biodiversity Survey - Autumn 2014	Janet Furler	June 2014
Minnawarra Biodiversity Survey - Spring 2014	Janet Furler	December 2014
Minnawarra Biodiversity Survey - Autumn 2015	Janet Furler	June 2015
Minnawarra Biodiversity Survey - Spring 2015	Janet Furler	March 2016
Minnawarra Biodiversity Survey - Autumn 2016	Richard Willing	June 2016
Minnawarra Biodiversity Survey - Spring 2016	Janet Furler	December 2016
Minnawarra Poplar Day	Janet Furler	March 2012
Minnawarra Poplar Project	Janet Furler	December 2012
Morella Survey 2013	John Love	March 2013
My Life as a Volunteer	Ric Williams	September 2013
Nangwarry 2014 “Through Fresh Eyes”	Felicity Small	December 2014
Notes from the Nullarbor	Contributions by Kevin Burrett, Helen Johnson, Jill Tugwell, Max Barr and Duncan Mackenzie	June 2012
October 2015 V-GRASP Trip.	Garry & Michelle Trethewey	December 2015
Photos from SEG’s 30 year Celebration Barbecue; Life Membership Presentation to Gina Breen		September 2014
Photos: Young ones working at Witchelina		December 2016
President’s Report: Warren Bonython	Richard Willing	March 2013
Pug Hut Revisited	John Love	December 2015
Quolls versus Rabbits in the Flinders Ranges	David Peacock	September 2015

Remote Malleefowl Monitoring	Henry Short	September 2012
Reptile and Amphibian Notes - Nangwarry Native Forest Region	Peter Matejcic	June 2014
Restoring Habitat for Glossy Black-Cockatoos in South Australia: planting a future for an endangered species.	Michael Barth	September 2014
Rover Rock Hole (Gammon Ranges)	Ray Sinclair-Wood	September 2012
Securing the Woodland Birds of the Mt Lofty Region: A matter of scale and commitment	David Paton	June 2013
SEG Celebrates 26 Years Work in the Vulkathunha-Gammon Ranges National Park	Contributions by Richard Willing, Nadine Brown, Simon Sherriff, David West, Jeff Smith, Amelia Smith and Graeme Oats	December 2014
SEG Expedition Freeling Plateau and the 1986 Linkwalk	John Waterhouse	December 2015
Small Mammals Make a Comeback in South Australian Outback: Dramatic recoveries linked to single-celled rabbit pathogen	Reece Pedler	September 2016
Student Reports from Arkaroola (2011)	Contributions by Kozel Carthew and Brittany Porter	March 2012
Survey Methods for Measuring Biodiversity at Witchelina, 2016	Courtney Glover	December 2016
TERN AusPlots - Who Are We?	Christina Pahl	June 2016
TGB Osborn Vegetation Reserve, Koonamore	Russ Sinclair	March 2013
The Arkuru's Rumbling Stomach	Ray Sinclair-Wood	March 2012
The Beauty and Magic of Flight	Duncan Mackenzie	December 2012
The Benefits of Citizen Science Projects in Research, Education and Community Engagement	Philip E.J. Roetman and Christopher B. Daniels	September 2014
The Bob Crocker Rescue	Ray Sinclair-Wood	June 2015
The Distribution of Pure Dingoes and Dingo-dog Hybrids in Australia	Danielle Stephens and Malcolm Kennedy	September 2012
The Fern Gorge Puzzle	Ray Sinclair-Wood	March 2015
The Geology of South Australia - A History	Terry Krieg	March 2015
The Nullarbor Expedition 2012	Helen Johnson	June 2012
The SEG Year in Pictures (2016)		December 2016
The Witchelina Biological Survey Phase 1	Bob Sharrad	March 2016
Vale Buntj Bonython	Richard Willing	June 2014
Visiting the Home of the Mountain Gorilla	Alun Thomas	March 2016
Vulkathunha Gammon Ranges Trip October 2012	Michelle Trethewey	December 2012
Vulkathunha Gammon Ranges (VGRaSP) Trip June 2014	Garry and Michelle Trethewey	September 2014

Vulkathunha-Gammon Ranges Data Recovery Trip	Garry Trethewey and Helen Johnson	September 2015
Vulkathunha-Gammon Ranges Data Recovery Trip	Garry Trethewey and Chris Wright	June 2016
Walking with Warren	Graeme Oats	June 2012
Water at Hiltaba	John Love	March 2014
Water for Nature	Natalie Stalenberg	September 2016
What We Did on Our Holiday	Garry Trethewey	December 2016
Why Would Anyone Take on thisTask?	Chris Wright	March 2015
Witchelina Biological Survey 2015	Greg Johnston	June 2015
Witchelina Bound	Calypso Theunens, Annette Vincent and Helen Johnson	December 2015
Witchelina Expedition Student Report	Calypso Theunens	December 2015
Wombat Health in the Murraylands	Wayne Boardman and Lucy Woolford	March 2014

The Minnawarra Biodiversity Survey

is on again!

Wednesday 19th April to Sunday 23rd April

The first week of the school holidays.

We would love to show anyone (8-80 years) who is curious about what might be rustling in the undergrowth. Visit for ½ a day or the whole time. Last time we saw bandicoots!

It is in Heritage Listed bush on a farm at Hindmarsh Tiers, near Myponga.

We have 8 sites which we check twice a day. They are set up with traps to catch the native marsupials and rats, as well as the frogs and lizards. We weigh and record the animals and reptiles we find and then let them go again.

For more information contact:

Janet on 0419 842 667 or thefurlers@gmail.com

Richard on 0408 807 517 or rwilling01@gmail.com

Visit SEG's website: <http://www.communitywebs.org/ScientificExpeditionGroup>



SCIENTIFIC EXPEDITION GROUP INC.
APPLICATION FOR MEMBERSHIP AND MEMBERSHIP
RENEWAL for 2016 —17

Membership is open to any persons, family or organisation interested in the following aims:

- * The promotion and running of expeditions of a scientific, cultural and adventurous nature.
- * The furthering of knowledge, understanding and appreciation of the natural environment.
- * Promotion of the values and philosophy of wilderness.
- * Enabling people to learn the skills required for planning and running expeditions, and to develop sound field techniques

SUBSCRIPTION RATES

Adult member -----	\$30.00
Concession cards/ student -----	\$20.00
Family membership -----	\$40.00
Corporate membership -----	\$40.00

Name.

Address

.....

Telephone (H) (W)

E-mail

Details of scientific, cultural, and adventuring or other relevant skill or interests you may be prepared to share with the group:

.....

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ELECTRONIC PAYMENT

If you have access to the internet, payment can be made using SEG's bank account at Bank of South Australia, details as follows:

Acc Name – Scientific Expedition Group Inc.

BSB - 105-086

Acc No. 330629440

Please use your last name if possible to identify your payment **AND** also advise us by email that you have made a payment to our bank account.

Email address – gdoats@bigpond.net.au

PLEASE NOTIFY ANY CHANGE OF POSTAL ADDRESS

Or send a cheque made out to Scientific Expedition Group Inc. with a photocopy of this page to:

The Secretary
Scientific Expedition Group Inc.
P.O. Box 501
Unley S.A. 5061



The Black-breasted Buzzard is about the fourth largest bird of prey in Australia. Witchelina is at the Southern end of it's range. It preys on reptiles and small mammals and is an expert nest robber of young birds. They are known to use stones to break emu eggs! It is a joy to watch in flight as it swings around the sky on wings with large white bulls eyes and steep dihedral. It has a short tail reminiscent of the African Bateleur. Photograph courtesy of Nick Birks