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EVENTS CALENDAR:
General meeting - 1st August 2013
AGM - 5th September 2013
Quiz Night - 11th October 2013

Need VOLUNTEERS?
What would you like to see in future BSSA newsletters?

Email us at: biolsocsa@gmail.com
Hi all,

I can’t help but feel nostalgic as I sit down to write my final ‘President Speaks’. I have held this position for almost 3 years now (I started out as joint president in September 2010) but as I am due to submit my thesis later this year, it is also time to submit my BSSA resignation. Still, the last three BSSA years have been fantastic fun, and I am privileged to have worked with such dedicated committee officers and supportive members. Thank you. We will also be saying farewell to 3 other long service committee members – Amanda McLean (3 years), Rebecca Kittel (3 years) and Tom Keen (2 years). Thank you all so much for your brilliant contributions to BSSA and we wish you all the best with wherever the future may take you. As a result, we have a number of vacancies on the committee. For further details please see page 6 or email biolsocsa@gmail.com with any questions.

Whilst the weather is cooling down, the BSSA calendar is certainly warming up! We have our joint meeting with NCSSA on Thursday August 1st to hear what is set to be a fantastic presentation on Citizen Science from Professor Chris Daniels. A month later we will have our AGM (Thursday September 5th) with Dr Phill Cassey from the Invasion Ecology Group at the University of Adelaide as our guest speaker. Then, be sure to clear your diaries for the evening of Friday October 11th, collect together a group of friends and make your way to the Unley Community Centre, to compete for some great prizes at the BSSA Annual Quiz night (or at the very least compete to avoid the wooden spoon)!

So, with a definite ‘see you later’ rather than a ‘goodbye’, I wish you all the best in to the future. Bec

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**BSSA CONGRATULATES the field grant recipients**

The Biology Society of South Australia (BSSA) sponsors an annual award program to support field research conducted in South Australia relating to the conservation of SA flora or fauna.

Congratulations to this year’s successful applicants, who were presented with their awards at the BSSA/NCSSA General Meeting on May 2nd 2013.

**Shaun Adams** ($620) – “Implications of isolation, climate change and altered fire regime on Kangaroo Island fauna over the past 10,000 years”

**Arlette Srour** ($1,340) – “Risk of Toxoplasma gondii infection in terrestrial wildlife on Kangaroo Island, South Australia”

We look forward to hearing from Shaun and Arlette about their research projects during the coming year, and thank NRMjobs for their generous donation towards the grant.
RESEARCH report

2012 Field Research Grant Recipient

Sarah Pearson

Who’s who from poo: gidgee skink ID using scat DNA

Sarah Pearson, PhD candidate, School of Biological Sciences, Flinders University of SA
Supervisors: Dr Mike Gardner, Prof Mike Bull

Scat (faecal) collection is a method of non-invasive DNA sampling commonly used for many animals, yet currently undeveloped for lizards. Among many other things, DNA derived from scats provides us with information relating to an animal’s sociality and genetic diversity. This project aimed to develop reliable field and laboratory protocols for obtaining gidgee skink (Egernia stokesii) DNA from their scats. Gidgee skinks are highly social lizards [1] (Fig. 1) that deposit scats in piles outside of the crevices in which they reside (Fig. 2), making them a perfect choice for this work! Representing a component of current PhD research investigating relationships between sociality and disease resistance within this lizard, it is expected that scat DNA will be used to identify unique individuals, assign them to a social group, identify their social network position, and quantify their genetic diversity. Further, the application of established protocols to other lizard species that, unlike the gidgee skink, are threatened is expected to maximise data available for conservation management decisions whilst minimising species disturbance.

Preliminary trials were conducted using blood and scat samples from captive gidgee skinks housed at Flinders University of SA. Scats were collected on a bi-weekly basis from ten independently housed gidgee skinks. Samples were collected with sterile tweezers, measured (mm), weighed (mg) and stored in one of two methods: frozen in a -20°C freezer or lightly sprayed with 90% ethanol and stored on silica beads. DNA was extracted from blood samples using established protocols [2], the sequences and genotypes derived from blood serving as a positive control.

Five scat DNA extraction methods were trialled: 1) QIAamp ® DNA Stool Mini Kit (QIAGEN ®, Catalogue 51504) 2) ISOLATE Fecal DNA Kit (Bioline ®, Catalogue BIO-52037), 3) Chelex ® 100 [3], 4) Chelex ® 100 without the boiling step [4], and 5) a modified Gentra ®Puregene ® (Gentra Systems) method [5]. In addition, a direct method was used where the scat sample was subjected to the DNA amplification process without DNA extraction, a method used in human forensics [6].

Figure 1: The highly social gidgee skinks lives in stable family groups within crevices among rocky outcrops across semi-arid Australia (Photo: Dale Burzacott)

Figure 2: Gidgee skinks deposit scats outside of the crevices in which they reside (Photo: Tessa Roberts)
Initially, mitochondrial DNA (mtDNA) was targeted in DNA amplification trials because mtDNA occurs in greater numbers in the cell than nuclear DNA (nuDNA). If mtDNA could not be amplified then targeting nuDNA was likely to be futile [7]. If mtDNA amplification was successful, then trials continued for nuDNA using a previously developed species specific genetic marker [8]. For nuDNA, a QIAGEN® Multiplex PCR Kit (QIAGEN®, Catalogue 206143) was used. A range of DNA dilutions were trialled, if none were successful in amplifying DNA then the storage and extraction combination was deemed unsuccessful for nuDNA.

So how did it go? We were able to amplify DNA from both frozen and dried captive gidgee skink scats. Both mtDNA and nuDNA were successfully amplified using DNA extracted using the QIAGEN® kit and the modified Gentra®Puregene® method; no other extraction methods were successful, nor was the direct method. A subset of two samples from the QIAGEN® kit and the modified Gentra®Puregene® were processed further to sequence mtDNA and derive genotypes from the nuDNA. Genotypes were based on seven variable genetic markers. In all samples, blood and scat sequences and genotypes matched. Preliminary trial results suggested: 1) dried storage as the most feasible due to field conditions and locations, 2) use of a modified Gentra®Puregene® method for extraction (although the QIAGEN® kit was also successful, it is the more expensive of the two methods), and 3) use of the existing protocol for mtDNA amplification and the QIAGEN® Multiplex PCR Kit for nuDNA amplification.

While lab work was going on, field work was being undertaken at three study sites near Hawker in the southern Flinders Ranges, SA. Capture-mark-recapture methods were used to sample wild gidgee skinks during their active season. In addition, sites were checked regularly for fresh scats; >400 scats were collected. We applied the preferred methods identified during the preliminary trial to scats sampled from these populations (for which we also had a blood sample as a positive control). Wild gidgee skink scat DNA was extracted using the modified Gentra®Puregene® method.

DNA amplification from wild scats was not as successful as DNA from captive scats. Whilst some amplification was achieved, results suggested inhibitors were present in the scats, reducing amplification success. Notably, diet differs between captive and wild gidgee skinks; captives are fed a mix of mix fruits/vegetables and reptile supplement whereas wild gidgee skinks are omnivorous. Wild adult gidgee skinks eat mainly plant matter; sub-adults eat mainly insects [9]. Scats from wild adults were used here; it is assumed they consisted largely of plant material. Diet differences suggest an inhibitor present in plant material may be limiting the capacity to amplify DNA from wild scats [10]. We are currently working on a post-extraction step to remove inhibitors. Once we have fine-tuned methods for wild scats a final step will be to apply these methods to scat samples sourced from pygmy bluetongue lizards (Tiliqua adelaidensis) and Slater’s skinks (Liopholis slateri). While not adopted during this work, future work on scat DNA will use three replicate DNA amplifications to mediate low DNA volume and quality issues common to scats and additional error checking protocols will be employed [7, 10, 11].

Please contact me direct if you would like more detail regarding any of the methods or for an update on wild scat trials. This work was part funded by the Biology Society of SA, the Nature Conservation Society of SA, and the Royal Society of SA. Thank you to those agencies for their support, to Diana Fusco for her work collecting captive gidgee scats and assistance in the lab, and to Shane Tobe for his recent advice with fine-tuning the process for wild scats. Appropriate scientific and ethics permits were obtained for all work.

sarah.pearson@flinders.edu.au
www.flinders.edu.au/people/sarah.pearson

We’d like to thank our outgoing committee members for all their hard work and dedication during their time with us. We had a blast working with you, and you will be missed. We wish you all the best in your future endeavours.

*Thank you* Rebecca West, Amanda McLean, Rebecca Kittel and Tom Keen!
**NEW committee member**

**FLINDERS UNIVERSITY UNDERGRAD REP**

Bonnie McCarthy

Hi there, I’m Bonnie and after working in banking for 4 years, I decided to do something completely different and pursue my passion for the environment and conservation by starting a Science degree in Biodiversity and Conservation at Flinders Uni. Now that I have finished the first year of my degree, I know that I made the right choice. I’ve recently joined the BSSA to get involved in local conservation activities, get some hands on experience and meet others with similar interests!
Reef ocean perch (Helicolenus percoides)

By Gretchen Grammer

Reef ocean perch (Helicolenus percoides) are a long-lived, benthic fish found in deeper waters along the continental shelf of southern Australia and New Zealand. Other common names include: red gurnard perch, Jock Stewart, coral cod, kuriarki, coral perch, ocean perch, red perch, red rock perch, red gurnard scorpionfish, and sea perch. They are frequently captured as bycatch from the southern rock lobster fishery in Australia, and there is a small commercial fishery for them along the coast of New South Wales.

Some quick, cool facts about reef ocean perch:

- Ocean perch are in the Sebastidae family and are closely related to scorpionfishes.
- Their spines are venomous and, to quote fishermen stuck by them, “They make grown men cry”.
- Their venom can be denatured by running the puncture wound under very hot water.
- Ocean perch live up to 40 years and their maximum length is only about 40 cm.
- They are viviparous – livebearers. This equates to internal fertilization and young that are born as free-swimming larvae at about 1 mm long.
- They live in depths up to 700 m but are more commonly found between 50 - 200m.
- They are quite tasty to eat!

Gretchen is a PhD student in the Marine Biology Program, Southern Seas Ecology Laboratories at The University of Adelaide. Her research is focused on the use of fish otoliths as a proxy to examine oceanographic processes in relation to climate variability.

For more information on Gretchen’s work:
http://www.adelaide.edu.au/directory/gretchen.grammer
Jade Ballantine, Social Environmental Scientist

The best thing about an Arts Degree is the breadth and flexibility to investigate various disciplines. Although I was pretty sure it would eventually lead me to a Law Degree and hopefully a gig wearing a cool wig and a cape in a really nice old building. WRONG! The problem with an Arts Degree is you might dabble in a major just because it seems ‘fun’ and ‘interesting’ and end up with a whole new career focus because of it. My Environmental Studies major did just that for me and I wasn’t the only one to get hooked. In my final year of Arts, the Flinders University of South Australia launched a brand new Bachelor Degree in Environmental Management which I was able to slot nicely into and eventually complete an Honours Degree.

I was attracted to the degree’s multidisciplinary approach, an important mix of social and earth sciences with some economics thrown in for good measure. This is the crux for me. The more study I did and the more environmental causes I became passionate about, the more I grew to understand that if I was to have real influence and effect, then I would need to have skills in all three of these disciplines. After fifteen years working in environmental management, I couldn’t be more grateful for this academic foundation – my Arts majors in English and Legal Studies would also be crucial for my professional development.

I managed to enter the world of local government during my honours year with my first job title as Industrial Pollution Prevention Officer. For four years I knocked on the door of some of the heaviest industry in South Australia located in and around the Port River and Barker Inlet Estuary asking to talk about the environment. It was a baptism of fire. I could write a whole book about this first professional work experience – there were guns, catastrophic oil spills, death threats, explosions and much more. At the time I wondered what the heck had I done but now I truly see that I could not have had a better initiation. I stayed in local government for six years working in climate change, coastal zone, water and waste management before getting my ‘dream’ position with the South Australian Environment Protection Authority. I authored two Codes of Practice and co-authored another before becoming the Manager of the Watershed Protection Office in the Adelaide Hills which looks after our water supply catchments. Adelaide unlike other capital cities in Australia has multi-land use catchments draining into our reservoirs – I always get a kick out of the media stories about drinking treated sewage or stormwater, if only they realised what happens now!
Although I was working in an area that was most satisfying and incredibly challenging, I had started a family and wanted more flexible working arrangements. I had long harboured a dream of having my own environmental management consulting business and freeing myself from the shackles of politics and the now you see it now you don’t funding merry go round. So I did. In 2009 I established Greenline Environmental Consulting. The business has been steadily building and the variety of clients and job requests has been truly amazing and professionally very stimulating, from community wind farm engagement in the Torres Strait Islands through to carbon foot printing and new kerbside waste management systems for Council’s. Fundamentally though my work has not changed since door knocking power stations and electroplaters, it has always been about education, information, relationship building and respect. Human interaction with the environment is complex and rarely are there black and white solutions. I love to see people decide to change something about themselves or their business not because they have been told that they have too but because they can now see why they would want to. A small but growing part of my business is to conduct ‘environmental underbelly’ tours of urban Adelaide looking at our water supply issues, stormwater management, planning and development, coastal zone management, remnant vegetation conservation and waste management. It is the most thrilling thing I do and as many of the tour participants report, “it’s like seeing the environment around me every day of the week for the first time!”

For more information on Jade and Greenline Environmental Consulting visit www.greenline-environmental.com or email greenline.enviro@gmail.com

CAREER SPOT


Bush Management Advisor - South East Region, Dept of Environment, Water & Natural Resources, $70-78k, Mt Gambier, SA Closing date 2 Aug 2013

Sustainable Communities Coordinator, South East Region, Dept of Environment, Water & Natural Resources, $60-63k, Mt Gambier, SA Closing date 2 Aug 2013

www.nrmjobs.com.au
 Citizen Science: Bringing Science into your back yard
Prof. Chris Daniels
Director of the Barbara Hardy Institute, Uni SA

Thurs 1st August 2013
Light refreshments from 5.45pm
Talk starts at 6.15pm

Benham Lecture Theatre
Benham Building
Adelaide University
Gate 9 Victoria Drive
Reproductive ecology of revegetation on Kangaroo Island

**Location:** Kangaroo Island (Cygnet Park Sanctuary).

**Contact:** John Butler: john.butler@adelaide.edu.au, 0409 524 300

**Activities:** Determine pollination rates of native plants within revegetation. Measure plant dimensions and floral abundance of plants within revegetation. Possibly move and/or water potted plants in the field.

**Dates:** Between 21 Sept and Oct 6, 2013

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Thick-billed Grasswren project

**Location:** Peculiar Knob, SA

**Contact:** Amy Slender: amy.slender@flinders.edu.au, 0420 619 363

**Activities:** Walking and helping to carry equipment as well as helping to mist net birds, we will also be performing surveys of habitat and other birds but this is not a requirement. This would be a good opportunity for people who would like to gain experience banding birds.

**Dates:** 29th Aug till the 17th Sep (registrations close 24th July).

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Adelaide Dolphin Sanctuary Action Group

Become a volunteer with DEWNR at the ADS and help protect the Port River Dolphins

No previous experience is required, but medium or long term commitment is needed

08 82400193
adelaidedolphinsanctuary@sa.gov.au
www.environment.sa.gov.au

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Lowly Greenhood Orchid Field Trip

**Location:** Mt Bryan and Yakka

**Contact:** Erica Rees, 0408 812 677

**Activities:** Conducting a full walk-through survey/count of the Lowly Greenhood orchids at all the following sites: Two general areas in the Hallett/Mt Bryan/Peppermint Gully region, consisting of 4 private properties and adjacent roadsides – on **Saturday July 27**. A private Heritage Agreement property near Yakka - on **Sunday July 28**.

All field trips are carried out under the auspices, supervision and insurance provisions of the organisations offering the work, not the Biology Society. It is your responsibility to check with the organisation and determine the arrangements you need to make for insurance, liability etc.
Land based Humpback whale survey

**Location:** Murdudun or Mina’s block, approximately 50km north of Broome and 8km south of James Price Point, on the Kimberley Coast, WA.

**Contact:** kimberleywhaleresearch@hotmail.com, 0408 999 742

**Activities:** We are looking for volunteers to assist with the 2013 survey. The research will be conducted for a four hour period each day from 8 July – 15 September (the peak migration period). Volunteers will carry out a number of roles, including observing, recording data and plotting the position of whales on an Apple Ipad™ application. No previous experience in fauna surveys is required. However, to ensure a high standard of scientific rigour, volunteers are required to undergo training in the survey methods and we ask that volunteers spend at least two weeks with us. Whilst helping out with the survey, volunteers will be camping on site. Volunteers will be required to contribute to daily camp duties as well as the scientific data collection. The camp is located near the beach. It is a great place to go exploring and has a lovely, communal vibe.

Oceans Campus South Africa

**Location:** Mossel Bay, South Africa.

**Contact:** research@oceans-campus.com , 083 560 7615

**Activities:** The campus offers numerous internship and volunteer opportunities, but feel that our internships in the fields of marine research, wildlife conservation and wildlife film making would represent the best match to students in the School of Earth and Environmental Sciences. Although no previous experience is required in any of our programs, graduates and students do benefit from having a theoretical background to begin with.

Volunteer in Madagascar

Azafady is a registered charity who, with the help of volunteers from around the world, steps off the beaten track to respond to the directly expressed and urgent needs of some of the most marginalised communities and most threatened environments in the world. Based in south east Madagascar Azafady has a broad range of environmental, humanitarian and sustainable livelihoods projects working alongside local communities, offering interns an unforgettable experience and the chance to work on the frontline of an international grassroots organisation.

info@madagascar.co.uk

www.madagascar.co.uk

Arid Recovery external bettong release

**Activities:** Arid Recovery are looking for voluntary assistance in the following areas – cage trapping, bettong processing, shooting, checking foothold traps, AR perimeter fence checks

**Dates:** Trapping and release will occur around the end of June and into July, but could potentially go into August.

**Contact:** Anni Walsh: 0433 248 627 sam.secker@aridrecovery.org.au

www.aridrecovery.org.au

All field trips are carried out under the auspices, supervision and insurance provisions of the organisations offering the work, not the Biology Society. It is your responsibility to check with the organisation and determine the arrangements you need to make for insurance, liability etc.
Predator Interactions in Tasmania

Location: northwest Tasmania
Contact: Gini Andersen: predator.dynamics1@gmail.com

Activities: The aim of this project is to investigate competitive interactions between Tasmanian devils, spotted-tailed quolls and feral cats to understand if and how devils suppress populations of quolls and cats. We will be GPS collaring and radio-tracking devils, quolls and feral cats. We will also conduct a couple of infrared camera surveys. Volunteers will assist with setting and cleaning traps, scribing and radio tracking. Accommodation and food will be provided while in the field.

Volunteers will be required to cover their own accommodation and other expenses before and after fieldwork. Volunteers must be able to commit for at least two weeks and hold a current first aid certificate and current driver’s license. Volunteers should also be reasonably fit, as radio tracking will involve walking long distances.

Dates: 2 people required between the 3rd of September and the 9th of December.

Environmental education volunteers

Location: AWC Yookamurra Wildlife Sanctuary, SA Murraylands
Contact: Noel Riessen: yookamurra@australianwildlife.org, 08 8562 5011

Activities: AWC’s Yookamurra Wildlife Sanctuary in the SA Murraylands, located only 2 hours drive from Adelaide, is home to Bilbies, Woylies, Numbats and other endangered mammals. It also runs a dedicated school education program teaching the next generation about native wildlife and the importance of conservation. Camps include Mallee Ecology Walks, Nocturnal Tours to see the reintroduced mammals and other science activities within the 1100ha feral predator-free area. Bookings are still available for school camps in Terms 3 and 4 and we are looking for volunteers interested in assisting with the environmental education program in late July-August.

Brush-tailed mulgara

Location: Newhaven, NT
Contact: Jenny Molyneux: jenny.molyneux@cdu.edu.au or 0407 364 806

I am currently looking for 2 volunteers for my PhD research work on brush-tailed mulgara (Dasycercus blythi) at Newhaven Sanctuary, NT. The project is looking at the effect of fire management on population dynamics and spatial ecology.

Activities: Work will include: Pitfall and Elliot trapping across Newhaven Sanctuary, Animal handling (training will be provided if needed), Vegetation Surveys, Insect surveys, Conducting spooling/chemi-tagging trials on mulgara, Attaching GPS transmitters to mulgara. Work will be predominantly conducted during early mornings and late afternoons/ nights allowing for some free time during the day. Volunteers will be required to sleep in swags/ mozzie domes (which can be provided) but will have access to kitchen and bathroom facilities. Fieldwork will run from Saturday, 3rd August until Friday, 16th August 2013. All expenses, including travel, food and accommodation, will be covered (ex. Alice Springs).

This project will be conducting similar field trips every 3 months until August 2014, so if you are interested but are unable to make it this August please contact Jenny to discuss future volunteer opportunities.

Dates: 3/8/13 to 16/8/13

All field trips are carried out under the auspices, supervision and insurance provisions of the organisations offering the work, not the Biology Society. It is your responsibility to check with the organisation and determine the arrangements you need to make for insurance, liability etc.
NRM Action Grants for 2013-14

Do you have a good idea that will help improve community awareness and participation in natural resources management? The Adelaide and Mount Lofty Ranges Natural Resources Management Board is offering community grants of up to $5,000 and school grants up to $1,500 for activities that support sustainable communities and build community capacity to better manage our natural resources. Schools, pre-schools, community groups, individuals and small businesses are encouraged to apply. Applications close on Friday 9 August 2013.


Invasive Animals CRC Photography Competition

http://www.invasiveanimals.com/feral-photos/

2013 South Australian State Coastal Conference

You are invited to participate in the inaugural SA Coastal Conference (SACC). The conference is to be held from 30 September to 1 October 2013 at SARDI’s Aquatic Sciences Research Centre, West Beach, South Australia.


For on-going conservation opportunities with various organisations, visit the BSSA website: www.biologysocietysa.com/
Membership Form

Name:
Address:
State: Postcode:
Telephone:
Email:

Annual Membership $10 (March to February)
New membership: 
Renewal: 

Payment Method:
Cheque
EFT Transfer
Account number 020515840 BSB 105120
Bank SA (include name as reference).

How would you like to receive your quarterly
BSSA newsletter?
Emailed: 
Posted to above address: 

Please send this membership form
along with the $10 membership fee to:
BSSA Membership Officer
c/o School of Earth and Environmental Sciences
Benham Building
The University of Adelaide
SA 5005
OR
Alternatively you can complete this form online and
pay via EFT transfer.
Please see the BSSA website for more details.

For more information:
To find out more about Biology Society activities, membership, advertising for
volunteers or volunteering...

visit: www.biologysocietysa.com

email: biolsoca@gmail.com

facebook:
Biology Society of South Australia

Snail mail:
The Biology Society of South Australia (BSSA)
c/o School of Earth and Environmental Sciences
Benham Building
The University of Adelaide
SA 5005
Phone: 08 8303 7140
Fax: 08 8303 6222

BSSA membership entitles you to 10% off at:

Native GROWTH HOLDINGS
www.nativegrowth.com.au

www.biologysocietysa.com
What is the Biology Society of South Australia (BSSA)?

BSSA works to develop and maintain contact between like-minded people with an interest in field biology and the conservation of natural resources in South Australia through:

- Advertising requests for fieldwork volunteers from research students, ecologists and conservation organisations;
- Supporting biological and environmental research through an annual Field Research Grant;

AND

- Organising quarterly meetings to provide opportunities for networking.

General Meetings

BSSA meets four times per year on the first Thursday night of March, May, August and September. Meetings are held at the University of Adelaide, North Tce Campus. At each meeting an invited speaker presents on their topic of expertise and BSSA provides drinks and nibbles to give members an opportunity to network. Please see the BSSA website for upcoming speakers.

Quiz Night

Each October, BSSA holds a general knowledge quiz night and silent auction to raise funds to support the Field Research Grant in the following year. This event is proudly supported by a diverse group of South Australian business sponsors and NRMjobs.com.au.

Please visit the website for details of the next quiz night: www.biologysocietyasa.com

Membership

Membership is open to anyone with an interest in field biology. The membership fee is $10 per annum.

Membership Benefits

- Weekly emails with the latest volunteering opportunities
- Email updates on local ecological issues and events
- Opportunity to apply for the Field Research Grant
- Quarterly newsletter
- Network with practising field biologists through meetings and social events
- 10% off at Native Growth Holdings