tern
Ecosystem Research Infrastructure

Summary of TERN Plots for the Yalata and Fowlers Bay Conservation Park Bush Blitz, South Australia

November 2021

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Contributions

This document was prepared by TERN based at The University of Adelaide.

Photographs presented in this report were contributed by TERN staff. Photographs may be available for use, please contact TERN tern@adelaide.edu.au

Front cover photograph: Yalata and Fowlers Bay Conservation Park Bush Blitz (credit: TERN).

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For more information

TERN provides researchers with access to field and sensor data representing key attributes of Australia's terrestrial ecosystems. The data are gathered with the use of survey tools, remote sensing and sensors such as those for soil moisture, acoustics, flux and phenology. Related soil and vegetation samples are also collected by TERN for researcher use.

Key operating partners:

Co-investment:

Acknowledgments

TERN gratefully acknowledges the staff from the Bush Blitz team for their assistance and support during the project and for facilitating access to the properties. Thank you to the volunteers who helped collect, curate and process the data and samples. Lastly, many thanks to the staff from South Australian Herbarium for undertaking the plant identifications.

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The fieldwork presented in this report was conducted under a South Australia Government permit to undertake scientific research. Permit number: Y26200-14

Contents

Introduction

TERN is an Australian Government NCRIS-funded environmental monitoring project. TERN is national research infrastructure, collecting long-term ecosystem data and samples from around Australia using highly instrumented monitoring sites, field surveys and remote-sensing techniques such as drones and satellites. TERN shares these data to enable Australia's world-leading research on climate, biodiversity, and soil.

Through its surveillance monitoring program, TERN aims to ensure every terrestrial ecosystem in Australia is represented in the sample and data libraries, so that environmental change across all systems can be monitored. Over the past 12 years, TERN's Ecosystem Surveillance platform has been collecting soil and vegetation data and samples from over 950 monitoring plots across the Australian continent (Figure 1) using standardised field survey protocols. The protocols were co-created with the assistance of state and territory experts, representatives of the federal environment department and academic experts from across the country. The protocols were published in a step-by-step instructional manual in 2012 (White *et al.*), which provides the surveyor with all the information required to implement the protocol to the specified standard. The manual is readily available to download from the TERN website. Further information on the rationale for the method is available in Sparrow *et al.* (2020).

This report provides a snapshot of the data collected by TERN on Yalata and Fowlers Bay Conservation Park Bush Blitz, South Australia. Also included in this report is how to access the data, descriptions of data types, panorama photos and examples of research using TERN data. Plots in Yalata and Fowlers Bay Conservation Park Bush Blitz were first surveyed by TERN in 2021. The surveys collected vegetation and soil, data and samples following the AusPlots Rangelands methodology, with 4 plots completed. A summary of the data is also included in this report.

Figure 1 shows the TERN plot network nationally with Yalata and Fowlers Bay Conservation Park Bush Blitz highlighted.

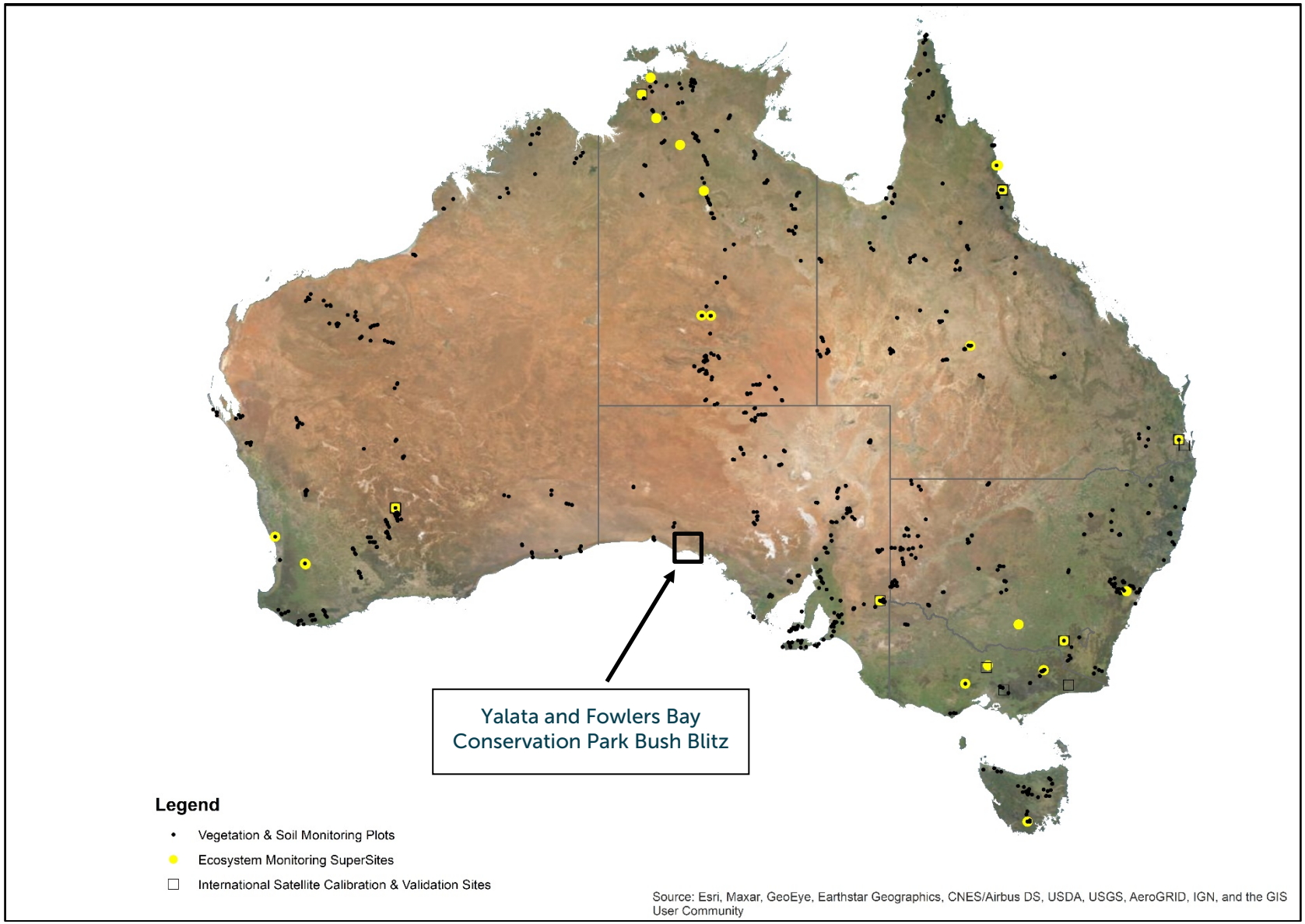

Figure 1. TERN plot network

Regional Context

The Australian continent is divided into 89 distinct bioregions. These regions are classified on the basis of landform, geology, climate and native vegetation characteristics. TERN operates within this regional framework and the plots in Yalata and Fowlers Bay Conservation Park Bush Blitz are in the Eyre Yorke Block (EYB) and Nullarbor (NUL) Bioregions. The nearest TERN plots are to the west on Yalata Indigenous Protected Area, also in the Nullarbor (NUL) Bioregion and to the north in the Great Victoria Desert (GVD) Bioregion) (Figure 2).

Figure 3 shows the locations of the plots for the Yalata and Fowlers Bay Conservation Park Bush Blitz.

Additional information on elevation, mean annual temperature and rainfall within the region are also included (Figures 4, 5 and 6 respectively).

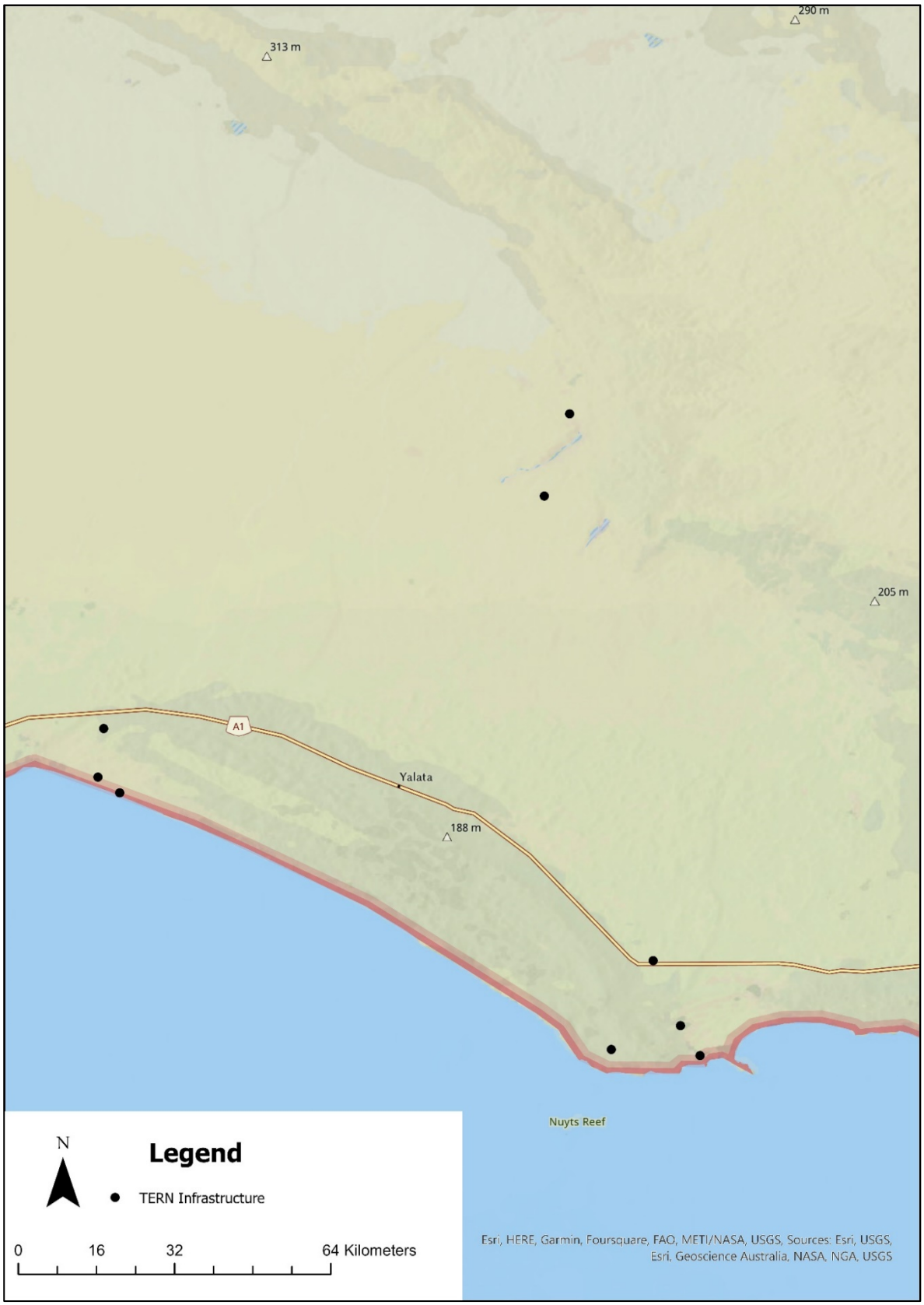

Figure 2. TERN plot locations close to the Yalata and Fowlers Bay Conservation Park Bush Blitz, South Australia

Figure 3. TERN plot locations in Yalata and Fowlers Bay Conservation Park Bush Blitz , South Australia

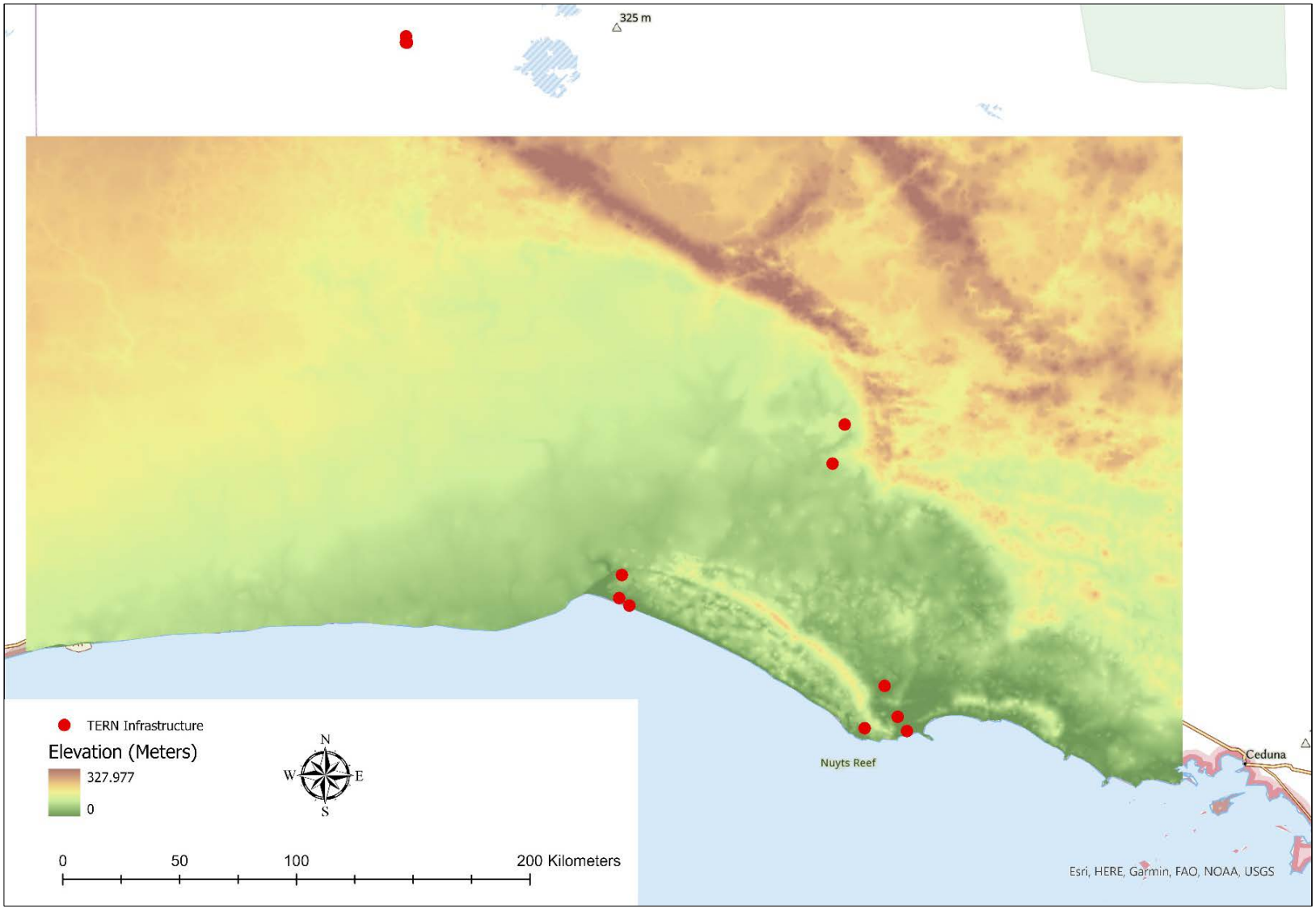

Figure 4. Elevation, South Australia

Data from: Harwood, Tom; Ota, Noboru; Perry, Justin; Williams, Kristen; Harman, Ian; Ferrier, Simon (2014): Selected 9sec gridded National climate change variables for biodiversity modelling: 1990, 2050, 2070, 2090; GFDL and ACCESS1.0; RCP 4.5, 8.5. v1. CSIRO. Data Collection

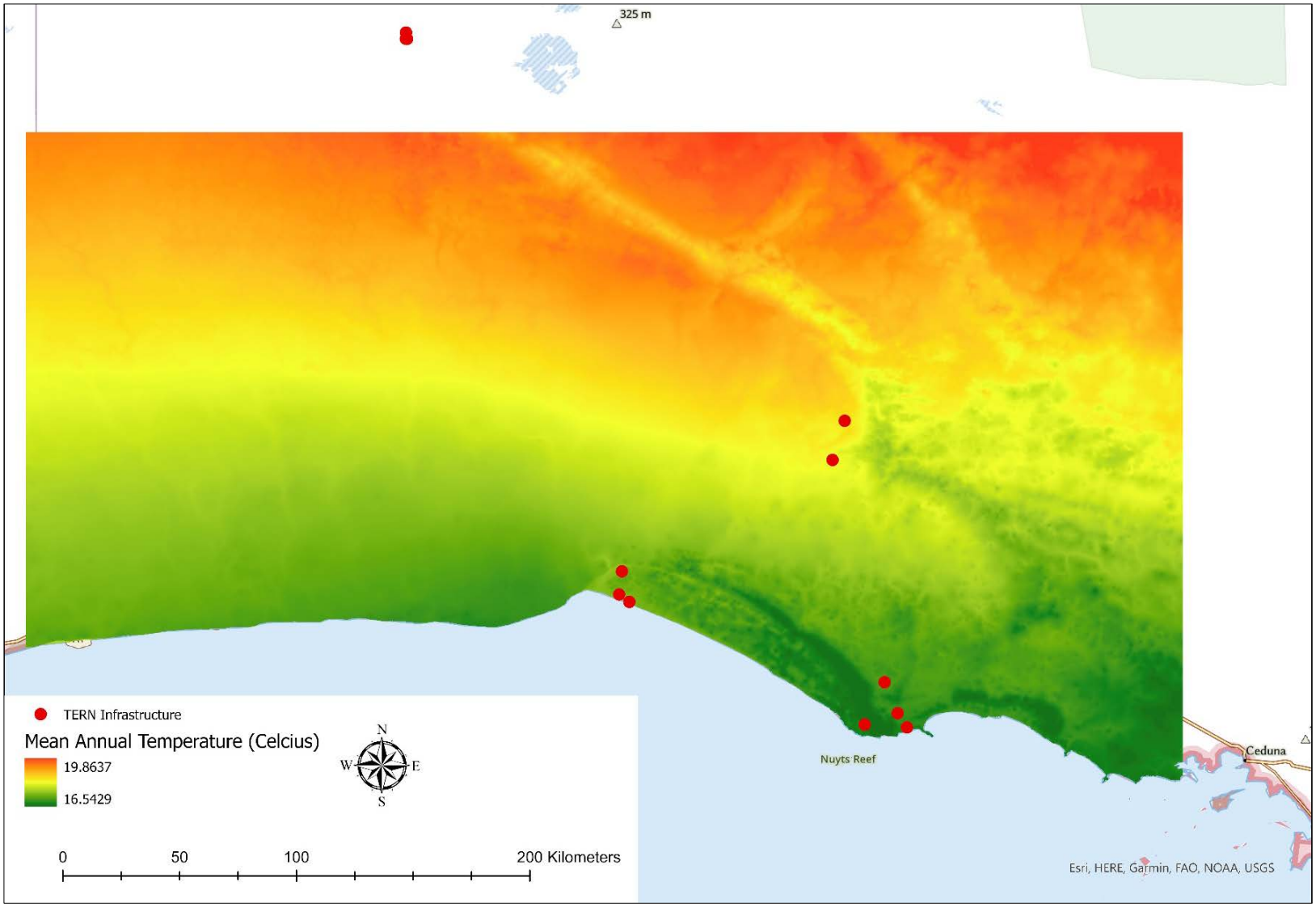

Figure 5. Mean annual temperature, South Australia

Data from: Harwood, Tom; Ota, Noboru; Perry, Justin; Williams, Kristen; Harman, Ian; Ferrier, Simon (2014): Selected 9sec gridded National climate change variables for biodiversity modelling: 1990, 2050, 2070, 2090; GFDL and ACCESS1.0; RCP 4.5, 8.5. v1. CSIRO. Data Collection.

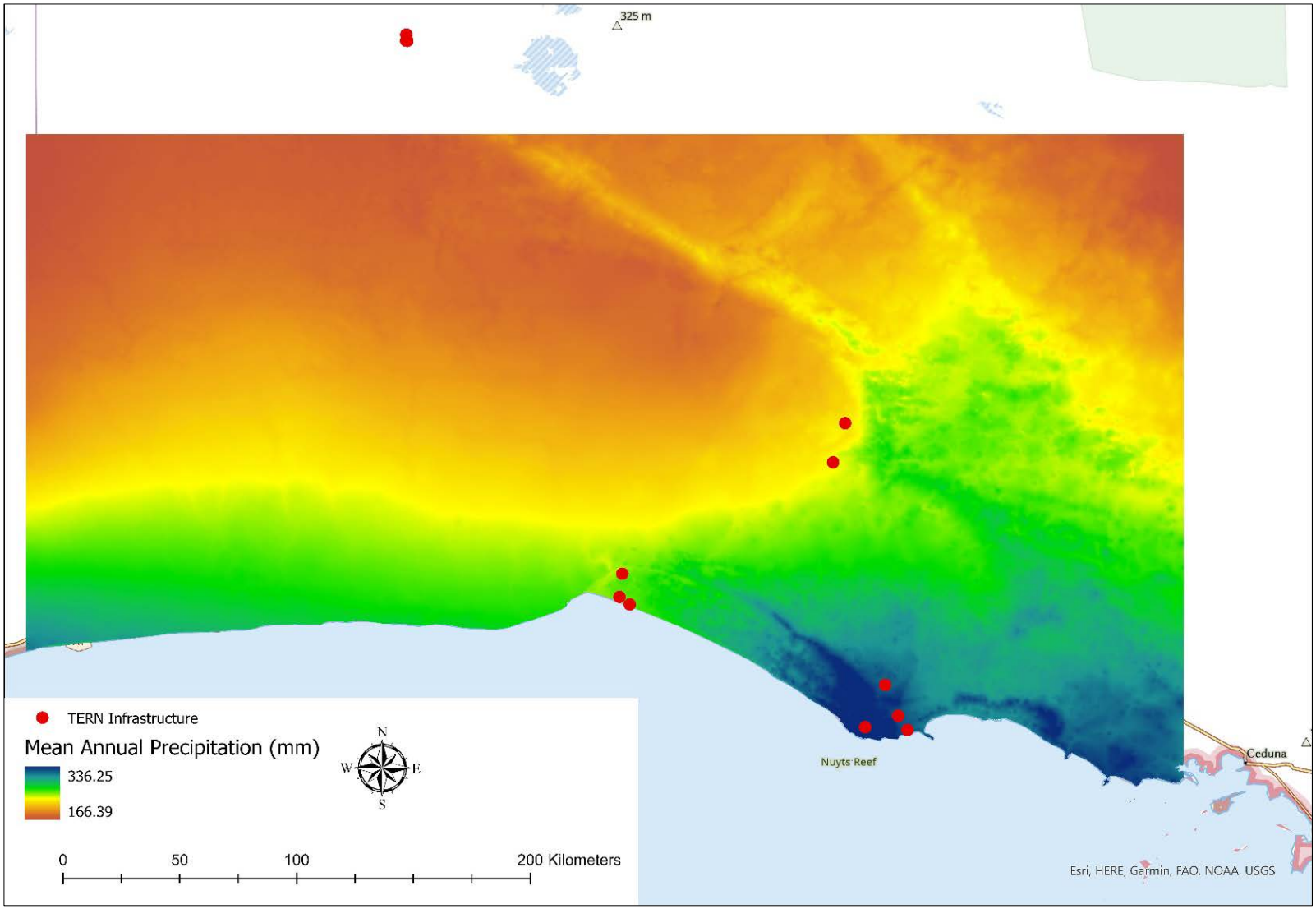

Figure 6. Mean annual precipitation, South Australia

Climate Data from: Harwood, Tom; Ota, Noboru; Perry, Justin; Williams, Kristen; Harman, Ian; Ferrier, Simon (2014): Selected 9sec gridded National climate change variables for biodiversity modelling: 1990, 2050, 2070, 2090; GFDL and ACCESS1.0; RCP 4.5, 8.5. v1. CSIRO. Data Collection.

Accessing the data and samples

TERN surveillance monitoring data are available using the ausplotsR package for use in R Statistical software (https://github.com/ternaustralia/ausplotsR). ausplotsR provides a suite of tools to facilitate access and preliminary analysis of TERN plot-based data and samples, and provides the most up to date data stream. EcoPlots is TERN's new plot-based ecological data repository which amalgamates data from different sources to enable integrated searches and access based on different jurisdictions, observation themes, observed properties, projects/programs and temporal extent - see https://ecoplots.tern.org.au/

Tens of thousands of soil samples, soil metagenomic samples, plant voucher specimens and plant genetic material are now openly available to interested researchers. Soil samples are held by TERN's Ecosystem Surveillance platform at the University of Adelaide. Plant samples collected by TERN are contributed to commonwealth, state and regional herbaria across Australia, with some samples stored by TERN's Ecosystem Surveillance platform.

To discuss opportunities to use our samples or how TERN data could contribute to your ecological research or management please contact tern@adelaide.edu.au, or download a specimen loan application form.

Point intercept data

The point intercept method is a straightforward method that is repeatable and requires little instruction to produce reliable plot information. It provides accurate benchmark data at each plot including substrate type and cover; as well as species structural information. The latter includes growth form, height and cover with population vertical structure. The information produced at each plot can be compared spatially to indicate plot differences, and temporally to indicate change over time. Additionally, the cover data collected at each plot can be used to validate cover data obtained through remote sensing techniques.

Plot description information

Contextual information is also collected at each plot. This includes measures of slope and aspect, surface strew and lithology along with information on the grazing and fire history of the plot. The plot location is also recorded with a differential GPS and the plot corners and centres (with landholder permission) marked with a star picket.

Structural summary

Detailed structural summary information is also collected at each plot. When combined with the height and cover information from the point intercept data it enables the creation of a plot structural description compatible with a NVIS level 5 description.

Leaf area index (LAI)

In plots where a mid and/or upper canopy is present a measure of leaf area is recorded. The tool used is an LAI-2200 and it captures LAI measurements in a range of canopies using one or two sensors attached to a single data logger (LI-COR 1990). The LAI data has a range of potential application such as studies of canopy growth, canopy productivity, woodland vigour, canopy fuel load, modelling insect defoliation, remote sensing, and the global carbon cycle.

Basal area

Basal area measurements are collected across plots where trees taller than 2m occur. Basal area measurements provide information useful for calculating biomass and carbon levels and for structural and productivity studies. Measurements utilise a tool called a basal wedge to obtain a rapid estimate of plot, and occasionally species basal area. Use of the basal wedge may be superseded by further improvements to the three-dimensional photo point method and development of algorithms to provide information on vegetation community structure.

Plant collections

Samples available on request.

Each species that is found within the plot has an herbarium grade sample taken. These voucher specimens have all been formally identified by the relevant regional herbarium. This material is then lodged with either the applicable herbarium or at the TERN sample storage facility in Adelaide.

Leaf tissue samples

Samples available on request.

The herbarium samples also have leaf tissue samples taken. This involves placing leaf samples from each species into a synthetic bag and drying them on silica desiccant. All dominant species have an extra four replicate samples collected from different individuals of the same species located across the plot. These samples are available for use on application to TERN at the University of Adelaide. Samples can be used for a range of genetic and isotopic applications.

Soil classification

Samples available on request.

Description and information on soil properties are sparse across the rangeland regions of Australia. The plot descriptions and soil characterisations collected using the TERN methods will contribute a great deal to providing information in this substantial gap. The data collected can also be used to increase the reliability of the Soil and Landscape Grid of Australia, produced by TERN and consistent with the Global Soil Map specifications. Analyses of the collected samples will greatly enhance the level of knowledge (e.g. nutrient and carbon levels) and hence understanding of Australian soils and how they will respond to climate change and various management options.

Soil meta barcoding samples

Samples available on request.

Metagenomics is the study of genetic material recovered directly from environmental samples. Soil metagenomics provides the opportunity to understand what organisms are present at survey plots and provides an indication of their abundance. All of the TERN plots have soil meta barcoding samples collected at each visit, and these are available for researchers to utilise. Currently there is a project underway to determine if these samples are likely to be useful to detect fauna occurring at these plots.

Soil bulk density

The soil bulk density (BD) is the weight of dry soil divided by the total soil volume. The total soil volume is the combined volume of solids and pores which may contain air or water, or both. The average values of air, water and solids in the sample are easily measured and are a useful indication of a soils physical condition. Soil test results are most often presented either as a percentage of soil (e.g. % organic carbon) or as a weight per unit of soil (e.g. nitrogen, mg/kg). As bulk density is a measure of soil weight in a given volume, it provides a useful conversion from these units to volumetric measures (g/m^3). This allows any soil properties obtained from physical, chemical or biological analysis to be converted to volumetric measures.

3D photo panorama

The TERN survey method uses a three-dimensional method for photographing the plot. This involves taking three 360-degree panoramas in a triangular pattern. This allows the creation of a 3D model of the vegetation within the plot which can be used to monitor change over time, track plot condition as well as providing a unique, fast measurement of basal area and biomass. Photo panoramas for a selection of the plots are shown in Figures 7 to 10 below.

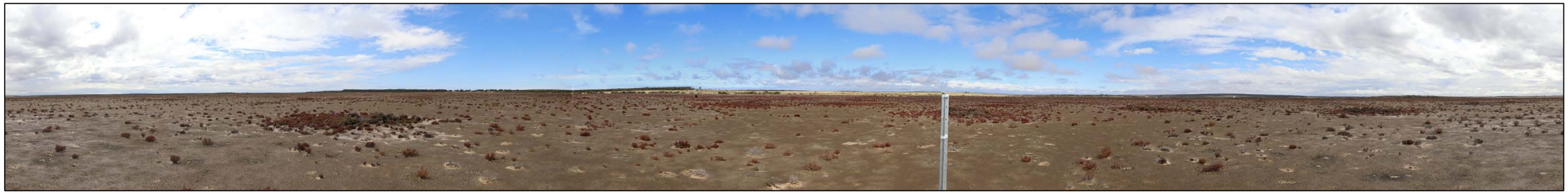

Figure 7. Plot panorama SAAEYB0034

Figure 8. Plot panorama SAAEYB0035

Figure 9. Plot panorama SAAEYB0036

Figure 10. Plot panorama SAANUL0005

Research using TERN Data from Yalata and Fowlers Bay Conservation Park Bush Blitz

The TERN AusPlots Survey Method was developed out of a need for consistent, national scale ecological data and surveillance monitoring. In May 2023, TERN has established over 950 survey plots across the nation. The data and samples collected from these surveys are being used in a range of ways to allow comparisons across the state and the continent. Some of the projects that have made use of the data and samples from Yalata and Fowlers Bay Conservation Park Bush Blitz are listed below.

Example projects and collections

Soil and Landscape Grid of Australia

Lead research organisation: CSIRO (Commonwealth Scientific and Industrial Research Organisation), TERN

The TERN Soil and Landscape Grid of Australia provides relevant, consistent, comprehensive, nation-wide data in an easily-accessible format. The datasets are a first approximation (version 1) of national scale maps designed to be updated and improved over time as resources, new data and improved methods and technologies become available. Soil chemistry and bulk density data from all of the Rangelands Method plots are helping to improve the mapping. TERN has now published a reliable Australian Soil Classification map using these data.

Herbarium Collections

The TERN plot surveillance program works very closely with state and national herbaria to help augment their collections to enable research and to better understand species distributions. Located in valuable areas of native vegetation, the plant collections from Yalata and Fowlers Bay Conservation Park have been eagerly accepted by the South Australia and National Herbaria. These specimens are currently being professionally mounted and preserved and will form a permanent part of their collection, which is available to botanical researchers globally to support ongoing research.

Other Potential Uses for TERN Data

- Assessing vegetation change using the AusPlots methodology as both a baseline and a continued surveillance monitoring tool
- Detecting the impact of invasive species based on soil and vegetation data
- Ground-truthing satellite derived vegetation and soil data
- Soil carbon analysis using the soil bulk density samples
- Mapping soil phosphorus, nitrogen and other nutrients using soil pit and sub-plot samples
- Assessing fuel loading using the basal area and leaf area data
- Use of the leaf tissue samples for genetic and isotopic analysis

For more information

More information on the AusPlots method can be found on the TERN website tern.org.au

For more information regarding the ecosystem monitoring conducted by TERN presented in this report, contact TERN at the University of Adelaide team directly via email tern@adelaide.edu.au

Further Reading

An extensive list of publications that have arisen from TERN data is available from the TERN website www.tern.org.au/research-publications/

Key documents listed:

Sparrow, B.D., Foulkes, J.N., Wardle, G.M., Leitch, E.J., Caddy-Retalic, S., van Leeuwen, S.J., Tokmakoff, A., Thurgate, N.Y., Guerin, G.R., Lowe, A.J. (2020) A vegetation and soil survey method for surveillance monitoring of rangeland environments. Frontiers in Ecology and Evolution. DOI:10.3389/fevo.2020.00157

White A., Sparrow B., Leitch E., Foulkes J., Flitton R., Lowe A.J. and Caddy-Retalic S. (2012) AusPlots Rangelands Survey Protocols Manual. The University of Adelaide Press, Adelaide DOI:10.3389/fevo.2020.00157

Appendices

Appendix 1. Summary of TERN data and samples from Yalata and Fowlers Bay Conservation Park Bush Blitz

AusPlots data and samples	Count
Total collections	181
Total leaf tissue samples	276
Total number of soil samples	95
Total weight of soil (kg)	95
Number of plots with bulk density data	3
Number of bulk density samples	9
Number of plots with basal wedge	2
Total metagenomic samples	36
Total metagenomic weight (kg)	18

Appendix 2. Plot locations

Plot name	Date	Location	Latitude	Longitude
SAAEYB0034	23-Nov-21	Private Land. 10.8km north west Fowler's Bay Township. 128km west north west of Ceduna.	-31.939275	132.338303
SAAEYB0035	24-Nov-21	Wagunyah Conservation Park. 139km west north west of Ceduna.	-31.98308	132.21106
SAAEYB0036	25-Nov-21	Fowler's Bay Conservation Park, 5.9km west south west of Fowler's Bay. 124km west north west of Ceduna.	-31.9942	132.37427
SAANUL0005	23-Nov-21	Yalata Indigenous Protected Area 7.7km south east of Nundroo.	-31.82004	132.28799

Appendix 3. Point intercept data

Plot name	Date	Herbarium ID	Common name	Growth form	Approx. % cover
SAAEYB0034	23-Nov-21	*Tecticornia halocnemoides subsp. halocnemoides*		Chenopod	3.27
SAAEYB0034	23-Nov-21	*Tecticornia pruinosa*		Chenopod	0.10
SAAEYB0035	24-Nov-21	*Eucalyptus calcareana*	Nundroo gum	Tree Mallee	14.36
SAAEYB0035	24-Nov-21	*Melaleuca pauperiflora* subsp. *mutica*		Shrub	12.77
SAAEYB0035	24-Nov-21	*Eucalyptus gracilis*	Red Mallee	Tree Mallee	9.60
SAAEYB0035	24-Nov-21	*Moss*		Bryophyte	5.54
SAAEYB0035	24-Nov-21	*Geijera linearifolia*	Oilbush	Shrub	4.95
SAAEYB0035	24-Nov-21	*Rhagodia crassifolia*	Fleshy Saltbush	Chenopod	2.38
SAAEYB0035	24-Nov-21	*Carpobrotus rossii*	Karkalla	Forb	2.28
SAAEYB0035	24-Nov-21	*Eucalyptus calcareana*	Nundroo gum	Forb	1.58
SAAEYB0035	24-Nov-21	*Eucalyptus oleosa* subsp. *ampliata*		Tree Mallee	1.29
SAAEYB0035	24-Nov-21	*Eucalyptus oleosa* subsp. *ampliata*		Tree Mallee	1.29
SAAEYB0036	25-Nov-21	*Tecticornia moniliformis*	Ruby Glasswort	Chenopod	8.81
SAAEYB0036	25-Nov-21	*Hemichroa diandra*		Chenopod	2.67
SAAEYB0036	25-Nov-21	*Tecticornia pruinosa*		Chenopod	2.57
SAAEYB0036	25-Nov-21	*Frankenia sessilis*	Small-leaf Seaheath	Forb	2.08
SAAEYB0036	25-Nov-21	*Maireana oppositifolia*	Heathy Bluebush	Chenopod	1.68
SAANUL0005	23-Nov-21	*Austrostipa puberula*	Fine-hairy Spear-grass	Tussock grass	17.13
SAANUL0005	23-Nov-21	*Austrostipa eremophila*	Desert Spear-grass	Tussock grass	4.06
SAANUL0005	23-Nov-21	*Sida spodochroma*	Limestone Sida	Forb	0.79
SAANUL0005	23-Nov-21	*Rytidosperma*		Tussock grass	0.59

** denotes introduced species*

Appendix 4. Substrate

Plot name	Date	Substrate	Approx. % substrate
SAAEYB0034	23-Nov-21	Cryptogam	71.68
SAAEYB0034	23-Nov-21	Bare ground	26.83
SAAEYB0034	23-Nov-21	Leaf litter	1.49
SAAEYB0035	24-Nov-21	Leaf litter	75.64
SAAEYB0035	24-Nov-21	Bare ground	17.03
SAAEYB0035	24-Nov-21	Coarse woody debris	1.19
SAAEYB0035	24-Nov-21	Cryptogam	0.59
SAAEYB0036	25-Nov-21	Bare ground	73.47
SAAEYB0036	25-Nov-21	Leaf litter	15.45
SAAEYB0036	25-Nov-21	Cryptogam	8.91
SAANUL0005	23-Nov-21	Cryptogam	64.65
SAANUL0005	23-Nov-21	Leaf litter	22.67
SAANUL0005	23-Nov-21	Bare ground	12.57
SAANUL0005	23-Nov-21	Gravel	0.10

Appendix 5. Structural summary

Plot name	Date	Structural description
SAAEYB0034	23-Nov-21	*Tecticornia halocnemoides* subsp. *halocnemoides/ Tecticornia pruinosa* (0.3m) low open samphire shrubland.
SAAEYB0035	24-Nov-21	*Eucalyptus calcareana / Eucalyptus gracilis, Eucalyptus oleosa* subsp. *ampliata* mixed mallee woodland (8m) with mixed mid storey of *Melaleuca pauperiflora* subsp. *mutica* (2m), *Geijera linearifolia* (1.8m), *Santalum acuminatum* (1.8). Upper ground storey of *Atriplex paludosa* subsp. *cordata* (0.4m), lower ground storey of *Carpobrotus rossii* (0.1m), *Maireana* sp. and *Frankenia pauciflora*.
SAAEYB0036	25-Nov-21	*Tecticornia moniliformis* (0.3m) samphire shrubland with *Hemichroa diandra* (0.3), *Tecticornia pruinosa, Frankenia sessilis* and other forbs.
SAANUL0005	23-Nov-21	*Austrostipa puberula /Austrostipa eremophila* (0.05-0.3m) low open tussock grassland with scattered *Rytidosperma* sp. and *Sida spodochroma*. Very few shrubs present, mainly *Maireana rohrlachii* and *Atriplex stipitata*. Extensive cryptogamic crust on the surface.

Appendix 6. Soil classification

Plot name	Upper depth (m)	Lower depth (m)	Horizon	Texture	Colour when moist	ph.	EC (dS/m)	Effervescence
SAANUL0005	0	0.03	A11	Clay loam	7.5YR34	8	0.25	Highly calcareous
SAANUL0005	0.03	0.1	A12	Clay loam	7.5YR44	8	0.16	Very highly calcareous
SAANUL0005	0.1	0.2	B21	Clay loam	5YR44	9	0.15	Very highly calcareous
SAANUL0005	0.2	0.3	B21	Clay loam	5YR44	9	0.16	Very highly calcareous
SAANUL0005	0.3	0.5	B22	Clay loam	5YR56	9	0.31	Very highly calcareous
SAANUL0005	0.5	0.6	B23	Clay loam	5YR56	9	0.47	Very highly calcareous
SAANUL0005	0.6	0.65	NC	Not Collected	NC			Not Collected

Appendix 7. Bulk density

Plot name	Sample depth (m)	Fine earth weight (g)	Fine earth bulk density (g/cm^3)
SAANUL0005	0-10	251.1	1.2
SAANUL0005	10-20	248.3	1.19
SAANUL0005	20-30	256.6	1.23

Appendix 8. Plant collection

Plot name	Date	Herbarium determination	Common name	Introduced species
SAAEYB0034	23-Nov-21	*Hornungia procumbens*	Oval Purse	
SAAEYB0034	23-Nov-21	*Salicornia*		
SAAEYB0034	23-Nov-21	*Senecio glossanthus*	Slender Groundsel	
SAAEYB0034	23-Nov-21	*Senecio spanomerus*		
SAAEYB0034	23-Nov-21	*Tecticornia halocnemoides* subsp. *halocnemoides*		
SAAEYB0034	23-Nov-21	*Tecticornia pruinosa*		
SAAEYB0034	23-Nov-21	*Triglochin nana*		
SAAEYB0035	24-Nov-21	*Acacia anceps*		
SAAEYB0035	24-Nov-21	*Acacia oswaldii*	Boree	
SAAEYB0035	24-Nov-21	*Amyema melaleucae*		
SAAEYB0035	24-Nov-21	*Atriplex paludosa* subsp. *cordata*		
SAAEYB0035	24-Nov-21	*Austrostipa acrociliata*	Graceful Spear-grass	
SAAEYB0035	24-Nov-21	*Carpobrotus rossii*	Karkalla	
SAAEYB0035	24-Nov-21	*Carrichtera annua*	Ward's Weed	*Carrichtera annua*
SAAEYB0035	24-Nov-21	*Crassula colligata* subsp. *lamprosperma*		
SAAEYB0035	24-Nov-21	*Disphyma crassifolium* subsp. *clavellatum*	Jellybeans	
SAAEYB0035	24-Nov-21	*Enchylaena tomentosa* var. *tomentosa*		
SAAEYB0035	24-Nov-21	*Eremophila deserti*	Turkey-bush	
SAAEYB0035	24-Nov-21	*Eucalyptus calcareana*	Nundroo gum	
SAAEYB0035	24-Nov-21	*Eucalyptus gracilis*	Red Mallee	
SAAEYB0035	24-Nov-21	*Eucalyptus oleosa* subsp. *ampliata*		
SAAEYB0035	24-Nov-21	*Exocarpos aphyllus*	Current Bush	
SAAEYB0035	24-Nov-21	*Frankenia pauciflora*	Australian Sea-heath	
SAAEYB0035	24-Nov-21	*Geijera linearifolia*	Oilbush	
SAAEYB0035	24-Nov-21	*Lachnagrostis aemula*	Tumbling Blowngrass	
SAAEYB0035	24-Nov-21	*Melaleuca pauperiflora* subsp. *mutica*		
SAAEYB0035	24-Nov-21	*Moss*		
SAAEYB0035	24-Nov-21	*Pittosporum angustifolium*		
SAAEYB0035	24-Nov-21	*Rhagodia crassifolia*	Fleshy Saltbush	
SAAEYB0035	24-Nov-21	*Roepera*		
SAAEYB0035	24-Nov-21	*Rostraria cristata*	Annual Cat's Tail	*Rostraria cristata*
SAAEYB0035	24-Nov-21	*Santalum acuminatum*	Quandong	
SAAEYB0035	24-Nov-21	*Schismus barbatus*	Arabian Grass	*Schismus barbatus*
SAAEYB0035	24-Nov-21	*Sclerolaena uniflora*	Two-spined Copperburr	
SAAEYB0035	24-Nov-21	*Senecio glossanthus*	Slender Groundsel	
SAAEYB0035	24-Nov-21	*Tetragonia implexicoma*	Bower Spinach	
SAAEYB0035	24-Nov-21	*Threlkeldia diffusa*	Coast Bonefruit	
SAAEYB0035	24-Nov-21	*Triglochin nana*		
SAAEYB0036	25-Nov-21	*Atriplex paludosa* subsp. *cordata*		
SAAEYB0036	25-Nov-21	*Austrostipa vickeryana*	Vickery's Spear-grass	
SAAEYB0036	25-Nov-21	*Carpobrotus rossii*	Karkalla	
SAAEYB0036	25-Nov-21	*Disphyma crassifolium* subsp. *clavellatum*	Jellybeans	
SAAEYB0036	25-Nov-21	*Eremophila deserti*	Turkey-bush	
SAAEYB0036	25-Nov-21	*Eriochlamys behrii*	Woolly Mantle	
SAAEYB0036	25-Nov-21	*Frankenia sessilis*	Small-leaf Seaheath	

Plot name	Date	Herbarium determination	Common name	Introduced species
SAAEYB0036	25-Nov-21	*Hemichroa diandra*		
SAAEYB0036	25-Nov-21	*Isotoma scapigera*	Long-scaped Isotome	
SAAEYB0036	25-Nov-21	*Kippistia suaedifolia*	Fleshy Minuria	
SAAEYB0036	25-Nov-21	*Lawrencia squamata*	Thorny Lawrencia	
SAAEYB0036	25-Nov-21	*Maireana oppositifolia*	Heathy Bluebush	
SAAEYB0036	25-Nov-21	*Moraea setifolia*	Thread Iris	*Moraea setifolia*
SAAEYB0036	25-Nov-21	*Samolus repens*	Creeping Brookweed	
SAAEYB0036	25-Nov-21	*Senecio spanomerus*		
SAAEYB0036	25-Nov-21	*Tecticornia halocnemoides* subsp. *halocnemoides*		
SAAEYB0036	25-Nov-21	*Tecticornia moniliformis*	Ruby Glasswort	
SAAEYB0036	25-Nov-21	*Tecticornia pruinosa*		
SAAEYB0036	25-Nov-21	*Triglochin nana*		
SAAEYB0036	25-Nov-21	*Wilsonia humilis*	Silky Wilsonia	
SAANUL0005	23-Nov-21	*Angianthus conocephalus*		
SAANUL0005	23-Nov-21	*Atriplex stipitata*	Bitter Saltbush	
SAANUL0005	23-Nov-21	*Austrostipa eremophila*	Desert Spear-grass	
SAANUL0005	23-Nov-21	*Austrostipa puberula*	Fine-hairy Spear-grass	
SAANUL0005	23-Nov-21	*Brachyscome ciliaris* var. *ciliaris*		
SAANUL0005	23-Nov-21	*Carrichtera annua*	Ward's Weed	*Carrichtera annua*
SAANUL0005	23-Nov-21	*Convolvulus angustissimus*		
SAANUL0005	23-Nov-21	*Euphorbia multifaria*		
SAANUL0005	23-Nov-21	*Goodenia pinnatifida*	Cut-leaf Goodenia	
SAANUL0005	23-Nov-21	*Maireana rohrlachii*	Rohrlach's Bluebush	
SAANUL0005	23-Nov-21	*Marrubium vulgare*	Hoarhound	*Marrubium vulgare*
SAANUL0005	23-Nov-21	*Reichardia tingitana*	False Sow-thistle	
SAANUL0005	23-Nov-21	*Roepera aurantiaca* subsp. *aurantiaca*		
SAANUL0005	23-Nov-21	*Rytidosperma*		
SAANUL0005	23-Nov-21	*Schenkia australis*	Spike Centaury	
SAANUL0005	23-Nov-21	*Sida spodochroma*	Limestone Sida	
SAANUL0005	23-Nov-21	*Sonchus oleraceus*	Annual Sowthistle	*Sonchus oleraceus*
SAANUL0005	23-Nov-21	*Vittadinia gracilis*	Woolly New Holland Daisy	
SAANUL0005	23-Nov-21	*Wahlenbergia capillaris*		

**Denotes introduced species*

We at TERN acknowledge the traditional owners and their custodianship of the lands on which TERN operates. We pay our respects to their ancestors and their descendants, who continue cultural and spiritual connections to country.

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