

TGB Osborn Vegetation Reserve

Quadrat metadata v2.0, 2025

Data collected in quadrats available from TERN.

There are data from 30 quadrats in the TGB Osborn Vegetation Reserve, varying in size and duration of measurements, several of which are shown in the Reserve map (Figure 1). They range in size from large quadrats (100 x100 m), one 60 x80m, to intermediate (10 x10 m) to small (1x1m and irregular). Most quadrats are inside the reserve but some lie adjacent outside the fenced area.

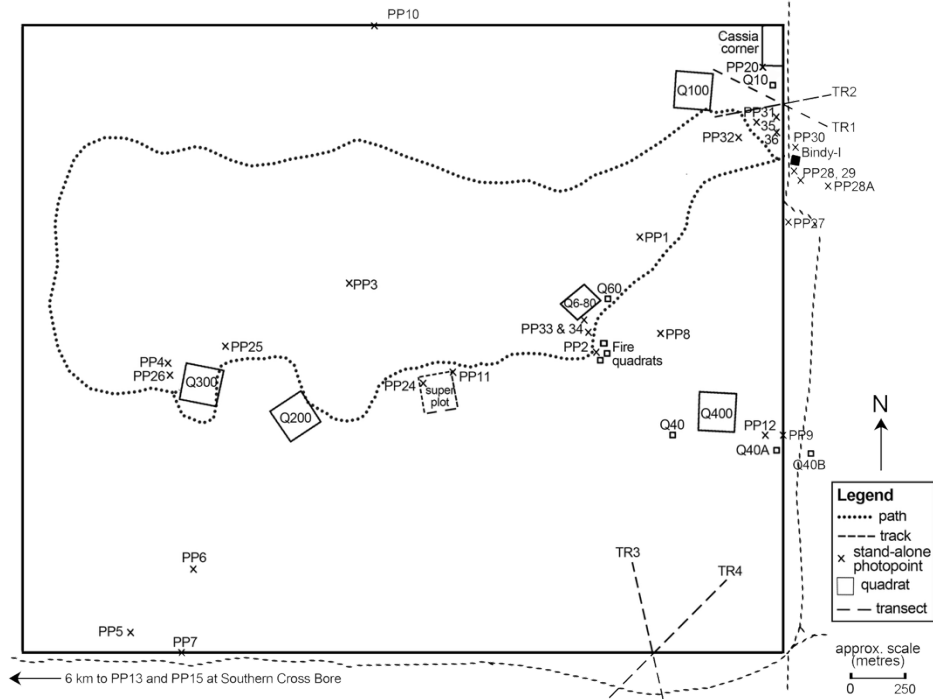


Figure 1: Sketch map of the type and distribution of measurements at the TGB Osborn Vegetation Reserve. Not all photopoint positions are shown, and the scale is approximate. Bindy-I is the field laboratory. The map is derived from Osborn *et al.*, 1935, Hall *et al.*, 1964, Crisp, unpublished map, 1972, lists of georeferences for many of the locations, and Google maps.

Reserve coordinates: NE corner: -32.10834° 139.35187°, SE corner: -32.12459° 139.35141°, SW corner: -32.12401° 139.32794°, NW corner: -32.10767° 139.32858°.

1 Summary of quadrats in the TERN Data Discovery Portal (TDDP) with dates of availability.

A. Four large 100x100m quadrats and one large rectangular quadrat. Data for all of these are available until 2012 or 2013.

100x100m: Q100 (1926-2014), Q200 (1926-2013), Q300 (1926-2012), Q400 (1926-2013)

6-x8-m: Q6-80 (1927-2012)

A **50x50m** quadrat Q50B (1996-2014) was set up outside the Reserve in 1996, south of the southwest corner.

B. Eight intermediate 10x10m quadrats, and two small 1x1m quadrats. Data for four of the 10x10m quadrats are available until 2014.

10x10m: Q10A (1926-2014), Q10B (1927-1930), Q30 (1926-1931), Q40 (1926-1931), Q40A (1926-2014), Q40B (1926-2014), Q40C (1996-2014), Q60 (1927-1931)

1x1m: Q01 (1926-1931), Q02 (1926-1931)

C. Fourteen irregularly shaped quadrats—established to record the emergence of seedlings after deliberately set fires in 1928—are assumed to be the equivalent of 8-m² each. This estimate remains to be corrected. Data for four of these is available until 2012.

QFE (1929), QFR2 (1928-2012), QFR4 (1931-2012), QFR6 (1928-2012), QFRA (1929-1931), QFRA1 (1929-2012), QFRB (1929-1931), QFRB1 (1929-1931), QFRC (1929-1930), QFRC1 (1929-1930), QFRD (1929-1930), QFRD1 (1929-1930), QFRE (1929-1930), QFRE1 (1929-1930).

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2 Geolocations

Not all quadrats have a recorded geolocation at the time of this version, but where it is present the georeference to one corner is included in the data file, or refer to the locations file [TGB Osborn Georeferences 250414](#) available in the resource material for the collection.

3 Data records

The data from the quadrats is presented in three different files:

- (a) the abundance (numbers) of individuals of species within the quadrat,
- (b) a selection of species measured within the quadrat (subplot), and
- (c) individual plant locations within the quadrats.

Abundance data of each species encountered in each quadrat are available for all quadrats for the dates shown in section 1 of this file, while sub-samples of physical measurements per plant and individual plant locations are only available for some quadrats (Table 1).

Table 1: Availability of data for quadrat vegetation measurements.

quadrat type	quadrat ID	files		
		(a) abundance	(b) subplot measurements	(c) individual locations
large	Q100	x	x	-
	Q200	x	x	-
	Q300	x	x	-
	Q400	x	x	-
	Q6-80	x	x	-
	Q50B	x	x	x
intermediate	Q10A	x	x	x
	Q10B	x	-	x
	Q30	x	x	x
	Q40	x	-	x
	Q40A	x	x	x
	Q40B	x	x	x
	Q40C	x	-	x
	Q60	x	-	x
small	Q01	x	-	x
	Q02	x	x	x
Fire quadrats	QFR2	x	x	x
	QFR4	x	x	-
	QFR6	x	x	x
	QFRA	x	-	-
	QFRA1	x	x	x
	QFRB	x	-	-
	QFRB1	x	-	x
	QFRC	x	x	-
	QFRC1	x	-	x
	QFRD	x	-	-
	QFRD1	x	-	-
	QFRE	x	-	x
	QFRE1	x	x	x

3.1 File format

Data are entered species by species within each quadrat for each measurement date. When a 'visit' lasts more than one day, the data are not aggregated. Visits are at most 4 days long.

Each entry has a species name.

(a) individual abundance file

This data set contains a record of the number of individuals of each species found in each quadrat on each occasion. All species recorded in this file were alive at the time of measurement. Quadrat size is included (m²).

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(b) subplot measurement file

This data set contains the physical measurements of species within an undefined but uniquely identified area of each quadrat on each occasion. The subplot identifiers are not sequential or repeated, more likely reflecting effort to avoid duplication in the field.

(c) individual occurrence file

This data set contains each species found in an intermediate quadrat (with the exception of Q50B) and their position against the western and southern boundary of each quadrat, together with physical measurements of some of the plants. Only the smaller quadrats are represented in this file (see Table 1).

4 Background to the methods

4.1 Quadrat history

4.1.1 Large quadrats

Vegetation monitoring (species abundance and plant measurements) of large trees and shrubs is undertaken on the large quadrats. The quadrats were originally measured annually or more frequently. The corners of each 20x20m square within the quadrat are marked by tall (~1.5m) stakes, stakes of intermediate size at 10m intervals, the 5m intervals marked by smaller stakes. In the 198-s the quadrats were resurveyed and the position of the stakes adjusted. The present stakes are estimated to be accurate to +/-3cm or better. The coordinates of plants recorded before the resurveying were corrected, to be compatible with positions subsequently recorded.

4.1.2 Intermediate quadrats

Vegetation monitoring (species abundance and plant measurements) of smaller (than those in the large quadrats) trees and shrubs was undertaken on intermediate quadrats (10x10 m and smaller). Q10A, Q4-A and Q4-B were joined in 1996 by Q4-C. Quadrats were originally measured annually or more frequently. In the 1950s large tree branches and litter were dumped on bare areas in quadrats Q10A and Q4-A, which had shown negligible regeneration up to that point.

Many of the intermediate quadrats and the small quadrats included here (Q01 and Q02) were only recorded until 1931, when the permanent technical officer (T. Paltridge) ended his term at the TGB Osborn Vegetation Reserve.

4.1.3 Fire quadrats

A series of 'fire quadrats' were marked out to record the emergence of seedlings after deliberately set fires in 1928. They are labelled with an FR alpha in their name. Four have been recorded to 2012, namely QFR2, QFR4, QFR6, and QFRA1. The quadrats are irregularly shaped.

4.2 Measurements

At present there is a somewhat arbitrary selection of species recorded, but on the large quadrats it includes all trees and large woody shrubs, but not *Atriplex*, which are only counted. The smaller shrubs including *Lycium australe*, *Maireana astrotriche*, *M. sedifolia*, *M. pyramidata*, *Nitraria billardierei*, and *Rhagodia* spp are recorded, but not shorter lived spp. (see Appendix A).

Dead plants are usually only recorded if they are clearly defined or if there was a live plant recorded previously which is now clearly present but dead. Standing dead trees are recorded, even if no longer identifiable.

Where many small seedlings occur, it may be impossible to map each individual accurately. In this case, the number occurring close to a designated position is recorded, together with a measurement of the size or sizes of the individual plants. The number is recorded in the field notes column in the data sheet.

4.2.1 Large quadrats

Usually 30, 50 or 100m tapes are used and the origin is defined as the southwestern corner. A 100m tape is run right across one of the large quadrats, used to define the edges of 5 squares in one row. Tapes must run from west to east, south to north, so that the numbers increase with distance away from the origin in the southwestern corner. Usually it is best to lay tapes around a 20x20m square, then subdivide this into 5m strips.

All trees, and the larger woody shrubs are recorded. Originally all *Atriplex* were mapped but as numbers increased this was abandoned, and these were simply counted. The data for *Atriplex* are not available

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through the TERN Data Discovery Portal after 1952, despite being published in Lawley et al., 2013. Hopefully this will be rectified in the next version of the data set.

Note: although the methods outlined below suggest all plants encountered are measured, this is not reflected in the TERN data sheets where only some of the plants show such records. If this is required it will be necessary to investigate records available at the University of Adelaide.

- For each quadrat visit, the observer records the quadrat identifier, the visit date and the names of the observers on the field data sheet.
- The observer subdivides the quadrat into 20x20 m sub-quadrats by stretching fabric tapes between large steel stakes which mark the corners of each 20x20 m square. These 20x20 squares are again subdivided into 5x20m strips by stretching fabric tapes between the smaller stakes marking the 5m, 10m or 15m marks, along the edges of the 20x20m squares (Figure 2).
- For each tree and large woody shrub, the following observations are then carried out in the 5x20m strips, and recorded on a field data sheet:
 - Plant height is determined using a steel measuring tape, or if greater than about 2m, by using a 5m surveying staff.
 - The crown diameters in North-South and East-West directions are determined using a steel measuring tape.
 - The species name is recorded referring to the Census of South Australian Plants, Algae and Fungi (2024).
- the following two steps appear to be for field use only as these data are not in the TERN data sets.
 - The location is recorded using x & y coordinates, referring to distance marks on the boundary measuring tapes and to the quadrat coordinates marked on tags attached to each 20x20m square stake.
 - The position of each measured plant is compared with the position of the same plant on the chart card from the previous visit and then drawn on the chart card of the current visit.
- The observer records if the plant is dead or alive.
- If more than one plant is encountered in one location, which can be the case for small seedlings, the total number of plants occurring at this location is recorded together with the average height and crown widths.
- When observations for a 5x20m strip are completed, the tapes are moved to mark the boundaries of the next 5x20m strip within the square, and the next set of observations is undertaken.
- This process is repeated until all the 20x20m sub-quadrats are monitored.
- Numerical data are recorded on field data sheets.

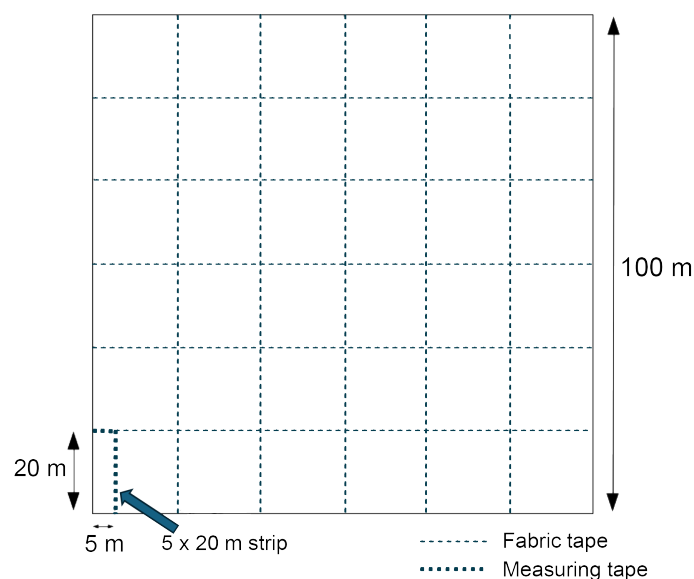


Figure 2: Layout of the 100 x 100 m vegetation quadrats

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4.2.2 Intermediate quadrats

Although these methods suggest the physical attributes of all plants encountered are measured, only some of the plants have such records in the data provided to TERN. If this is required it will be necessary to investigate records available at the University of Adelaide.

- For each quadrat visit, the observer records the quadrat identifier, the visit date and the names of the observers on the field data sheet.
- The observer subdivides the quadrat into $1 \times X$ m strips (where X is the length of the respective quadrat) by stretching fabric tapes between steel stakes which mark 1 m intervals along the quadrat boundaries (Figure 3). The quadrat coordinates are marked on the boundary measuring tapes and on tags attached to each boundary stake.

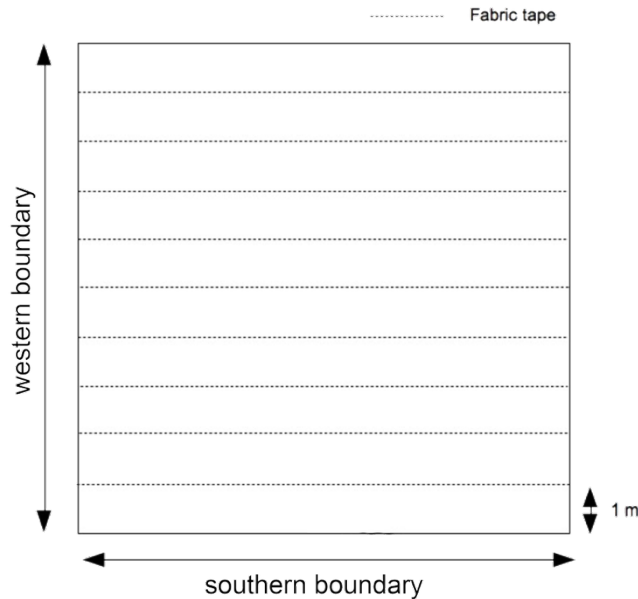


Figure 3: Layout of the intermediate vegetation quadrats.

- The following observations are carried out for all trees and most perennial smaller shrubs and recorded on a field data sheet:
 - The species name of each individual encountered is recorded referring to the Census of South Australian Plants, Algae and Fungi (2024).
 - The position along the western (X) and southern boundaries (Y) of each plant is recorded. Distances are usually measured from the fabric tapes bounding the strip using a steel tape.
 - The crown diameters in North-South and East-West directions are determined using a steel measuring tape (cm).
 - The height (cm) of each individual encountered is determined using a steel measuring tape, or if greater than about 2 m, by using a 5m surveying staff.
 - The observer records if the plant is dead or alive.
 - If more than one plant is encountered in one location, which can be the case for small seedlings, the total number of plants occurring at this location is recorded together with the average height and crown widths.
- When observations for a $1 \times X$ m strip are completed, the tapes are moved to mark the boundaries of the next $1 \times X$ m strip within the square, and the next set of observations is undertaken.
- This process is repeated until all of the $1 \times X$ m strips are monitored.

4.2.3 Fire quadrats

The measurements for these quadrats follow the methods outlined in sections 4.2.1 and 4.2.2

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5 Reference

Census of South Australian plants, algae and fungi: Vascular plants (2024). V.6.- – 14 Sep. 2024. Editors: Lang, P.J., Kellermann, J., Hammer, T.A & Waycott, M. (State Herbarium of South Australia: Adelaide, South Australia.) < <https://know.ourplants.org/census/> >

6 Change log for the quadrat data records collection

version, year	editor	features
V1, 2008-2014	Russell Sinclair	digitised field data sheets and computer records delivered to the AEKOS TERN portal. added required V1 metadata in the AEKOS portal
V2, 2025	Alison Specht	Digitised existing files, splitting them into synchronous categories, removing duplications and correcting errors to comply with FAIR standards. Aligned vocabularies with the TERN vocabularies, updated species names and created comprehensive metadata. Locations verified with David Ladd.

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Appendix A: species occurrence in each file type

Scientific name	quadrat abundance	quadrat individual	quadrat subplot
Abutilon sp. Mill.	x	x	-
Acacia aneura F.Muell. ex Benth.	x	x	x
Acacia burkittii F.Muell. ex Benth.	x	x	x
Alectryon oleifolius (Desf.) S.T.Reynolds	x	x	x
Atriplex acutibractea R.H.Anderson	x	x	x
Atriplex angulata Benth.	x	x	-
Atriplex eardleyae Aellen	x	x	-
Atriplex sp. L.	x	x	x
Atriplex spongiosa F.Muell.	x	x	x
Atriplex stipitata Benth.	x	x	x
Atriplex vesicaria Heward ex Benth.	x	x	x
Austrostipa scabra (Lindl.) S.W.L.Jacobs & J.Everett	x	x	-
Austrostipa sp. S.W.L.Jacobs & J.Everett	x	x	x
Blennodia R.Br. sp.	x	-	-
Boerhavia L. sp.	x	x	-
Brachyscome lineariloba (DC.) Druce	x	x	-
Bromus rubens L.	x	x	-
Calandrinia Kunth. sp.	x	x	-
Calotis hispidula (F.Muell.) F.Muell.	x	x	-
Casuarina pauper F.Muell. ex L.A.S.Johnson	x	x	x
Chenopodium gaudichaudianum (Moq.) Paul G.Wilson	x	x	-
Convolvulus L. sp.	x	x	-
Crassula L. sp.	x	x	-
Cucumis L. sp.	x	x	-
Danthonia DC. sp.	x	x	-
Dissocarpus paradoxus (R.Br.) F.Muell. ex Ulbr.	x	x	x
Dodonaea viscosa subsp. angustissima (DC.) J.G.West	x	-	-
Dysphania cristata (F.Muell.) Mosyakin & Clemants	x	x	-
Enchylaena tomentosa R.Br.	x	x	x
Eremophila longifolia (R.Br.) F.Muell.	x	x	x
Eremophila scoparia (R.Br.) F.Muell.	x	x	x
Eremophila sturtii R.Br.	x	x	x
Eriochiton sclerolaenoides (F.Muell.) A.J.Scott	x	x	x
Erodiophyllum elderi F.Muell.	x	x	x
Erodium botrys (Cav.) Bertol.	x	x	-
Erodium cicutarium (L.) L'Hér.	x	x	-
Erodium cygnorum Nees	x	x	x
Erodium L'Hér. sp.	x	x	-
Euphorbia drummondii Boiss.	x	x	-
Euphorbia sp. L.	x	x	-
Geococcus J.Drumm. ex Harv.	x	x	-
Gnephosis tenuissima Cass.	x	x	-
Goodenia Sm.	x	x	-
Helichrysum Mill.	x	x	-
Heliotropium sp. L.	x	x	-
Isoetopsis graminifolia Turcz.	x	x	-
Lophocolea (Dumort.) Dumort.	x	x	-
Lotus australis Andrews	x	x	-
Lycium australe F.Muell.	x	x	x
Maireana astrotricha (L.A.S.Johnson) Paul G.Wilson	x	-	-
Maireana brevifolia (R.Br.) Paul G.Wilson	x	x	-
Maireana erioclada (Benth.) Paul G.Wilson	x	x	x
Maireana excavata (J.M.Black) Paul G.Wilson	x	x	-
Maireana georgei (Diels) Paul G.Wilson	x	x	x
Maireana pyramidata (Benth.) Paul G.Wilson	x	x	x
Maireana sedifolia (F.Muell.) Paul G.Wilson	x	x	x
Maireana sp. Patience (C.P.Campbell 1052) WA Herbarium	x	x	x
Maireana trichoptera (J.M.Black) Paul G.Wilson	x	x	x
Maireana triptera (Benth.) Paul G.Wilson	x	-	x

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Scientific name	quadrat abundance	quadrat individual	quadrat subplot
Menkea sp. Lehm.	x	-	-
Millotia muelleri (Sond.) P.S.Short	x	x	-
Myoporum platycarpum R.Br.	x	x	x
Nitraria billardierei DC.	x	x	x
Olearia pimeleoides (DC.) Benth.	x	x	-
Omphalolappula concava (F.Muell.) Brand	x	x	-
Oxalis corniculata L.	x	x	-
Plagiobothrys Fisch. & C.A.Mey. sp.	x	x	x
Ptilotus obovatus	x	x	-
Rhagodia sp. R.Br.	x	x	x
Rhagodia spinescens R. Br.	x	x	x
Rhagodia spinescens R. Br.	x	x	x
Rhagodia ulicina (Gand.) Paul G.Wilson	x	x	x
Rhodanthe moschata (A.Cunn. ex DC.) Paul G.Wilson	x	x	-
Rhodanthe sp. Lindl.	x	x	x
Riccia sp.	x	x	-
Roepera ammophila (F.Muell.) Beier & Thulin	x	x	-
Roepera aurantiaca	x	x	-
Roepera billardierei (DC.) G.Don	x	x	-
Roepera ovata (Ewart & Jean White) Beier & Thulin	x	x	-
Roepera prismatotheca (F.Muell.) Beier & Thulin	x	x	-
Roepera sp. A.Juss.	x	x	x
Salsola kali L.	x	x	x
Santalum sp. L.	x	x	-
Schismus P.Beauv.	x	x	x
Sclerolaena obliquicuspis (R.H.Anderson) Ulbr.	x	x	-
Sclerolaena patenticuspis (R.H.Anderson) Ulbr.	x	x	-
Sclerolaena R.Br. sp.	x	x	x
Senecio magnificus F.Muell.	x	x	-
Senna artemisioides subsp. x coriacea (Benth.) Randell	x	x	x
Senna artemisioides subsp. x petiolaris Randell	x	x	x
Sida corrugata Lindl.	x	x	-
Sida L. sp.	x	x	x
Siloxerus multiflorus Nees	x	x	-
Stenopetalum lineare R.Br. ex DC.	x	x	-
Templetonia egena (F.Muell.) Benth.	x	x	-
Tetragonia sp. L.	x	x	-
Tribulus sp. L	x	x	-