DELINEATION of IMPORTANT HABITATS of THREATENED PLANT SPECIES in SOUTH-EASTERN NEW SOUTH WALES

RESEARCH REPORT
to the
Australian Heritage Commission

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December 1990

Rutidosis leptorhynchoides F. Muell. Family: Asteraceae

Conservation Status: Endangered (Code 3ECa/NV/55C 62x 63 64x 67x)

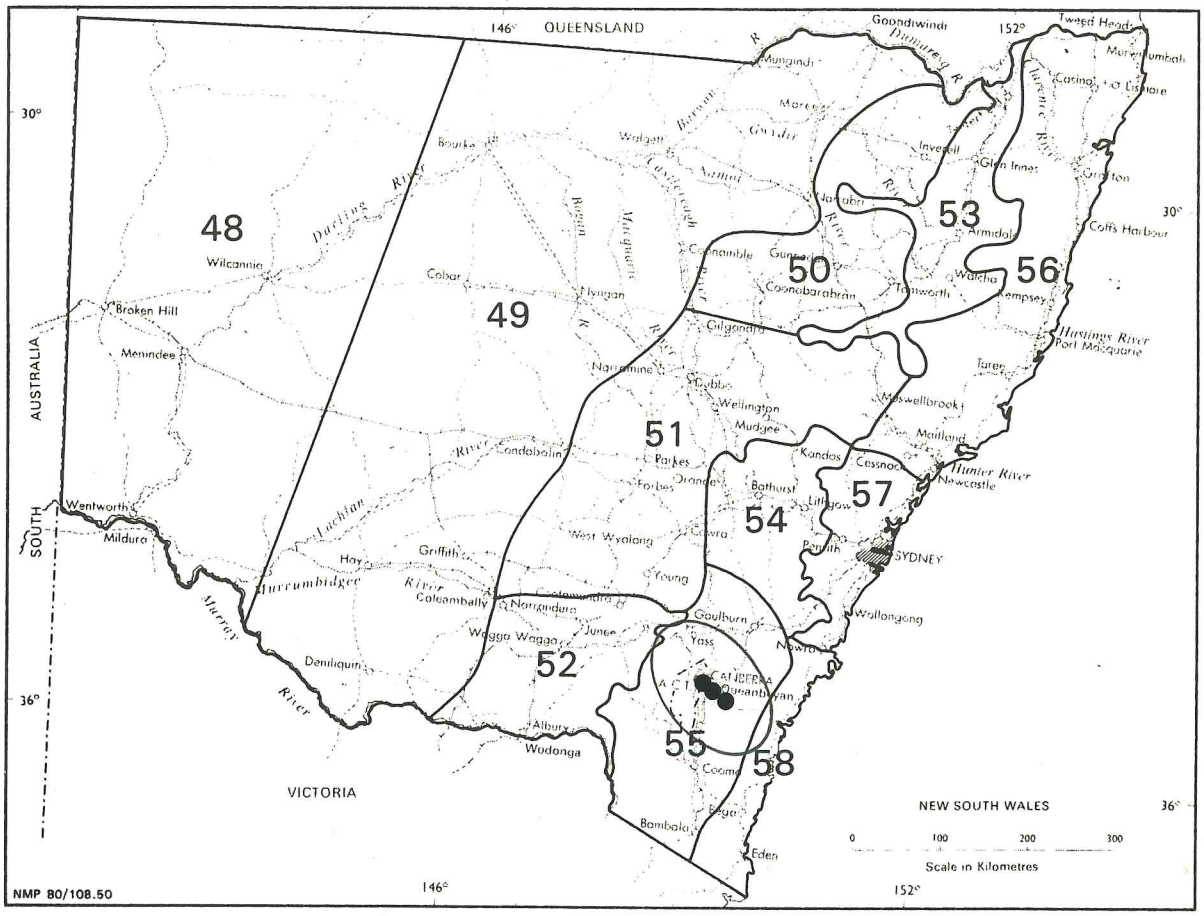
Rutidosis leptorhynchoides in flower.

Description

Slender to bushy erect perennial herb 25-35 cm high, branched mainly from the base and upper stems. During late autumn the flowering stems die-back and by early winter the plants develop a dense crown of clustered rosettes of longer (to 5 cm) softer leaves than the stem leaves which are not formed until the following spring and summer. *Stem leaves* are narrow, channelled, 1-2.5 cm long, the edges rolled under concealing the lower surface. *Flowers* are bright-yellow, densely clustered in convex buttons about 2 cm in diameter, surrounded at the base by a cup of broad overlapping brown bracts with light papery edges and broad green stalks.

Flowering: Somewhat sporadic between November and April but mainly December to February.

Distribution of Rutidosis leptorhynchoides in NSW



A Rutidosis plant in late autumn showing the newly-developed basal tufts of overwintering leaves and the dead stems of the previous seasons growth.

Distribution

This species has a disjunct distribution with a northern occurrence in the Canberra-Queanbeyan area of the ACT and New South Wales and a southern occurrence in areas west of Melbourne in Victoria.

The largest surviving populations (a few thousand plants) occur in central Canberra where the main stronghold of the species is on Stirling Ridge and some adjacent lower slopes just south of Lake Burley Griffin. Other smaller populations surviving in the Canberra area occur on the lower north-western slopes of Capital Hill between Capital Circle and State Circle, on the eastern and western slopes of Red Hill and on undeveloped land at Barton.

In the Queanbeyan area of New South Wales the species was, until relatively recently, known only from a small area on the north-western side of the Queanbeyan rubbish tip where there are between 1,500 and 2,000 plants. Within the last three years three new small populations totalling several hundred plants have been found. One of these was on the lower western slopes of Mt Jerrabomberra, one to the south of the Queanbeyan tip and the other on the Queanbeyan-Captains Flat road about 20 km direct south-east of Queanbeyan. This latter site represents a significant range extension for the species in the Canberra-Queanbeyan region. The three new sites and the original Queanbeyan site are detailed in this report.

In Victoria *R. leptorhynchoides* is now known only from 5 sites, 1 with a critically low number of plants. All the sites are within railway reserves close to the city of Melbourne. Most of the remaining populations, totalling about 1000 plants, lie between Little River and Laverton (south-west of Melbourne), while an extremely small colony of about 11 plants is found near St Albans, north-west of Melbourne, and is not considered a viable population. The species was previously much more plentiful and the largest populations appear to have been centred immediately west and north-west of Melbourne on the Keilor Plains, where the populations discussed above survive. It is now presumed extinct in other recorded localities such as Nangeela (near Casterton) in the far west, Ararat and Craigie (near Maryborough) and Newry (near Maffra) in the south-east (Scarlett, 1979).

Habitat Summary

Within the Canberra-Queanbeyan area the remaining populations are concentrated in the more open areas of *Eucalyptus* woodland with a grassy understorey dominated by *Themeda triandra*. It grows in undulating terrain on sites where the grass and herb cover is relatively low, these sites usually occurring on low rises with shallow red-brown clay-loam soils with a low moisture status. Kendal and Wittmark (1984) suggest that the present habitat of *R. leptorhynchoides* within the ACT may represent only the limits of its former habitat range and that it may have once been much more widespread in the adjacent true treeless grasslands, most of which have now been utilised for urban development.

In Victoria the species is mainly confined to open *Themeda triandra* grassland on flat to undulating basalt plains with red-brown clay-loam soils.

Threats Summary

The three newly discovered populations in the Queanbeyan area are unfortunately all threatened. The first has been deliberately badly damaged through the removal of topsoil to allow urban development to proceed. The second is under imminent threat from urban/recreational development and the third is along a roadside which is likely to be damaged by vehicles and weed invasion.

Leigh *et al.* (1984) report that grazing and the associated introduction of pasture and weed species and the application of superphosphate appear to have resulted in the decline of this formerly fairly widespread and relatively common grassland species in both Victoria and in the ACT. They also reported that it clearly cannot survive intensive grazing, extensive site disturbance or strong competition from other herbaceous species. Scarlett (1979) reported that annual or biennial summer burning does not appear to damage the plants and may be beneficial by maintaining an open cover of vegetation. This may be the reason why the species has survived in the one district on railway reserves which are burnt

frequently, but has not been able to maintain itself on roadside reserves which are rarely burnt.

Briggs and Leigh (1985) reported that the Canberra population has been reduced in size through urban development and construction of Lake Burley Griffin and the remaining plants are under greatest threat from competition from exotic grasses and forbs and also from other native grassland species in the absence of fire. Kendal and Wittmark (1984) suggest that much of the woodland habitat which is now occupied by *R. leptorhynchoides* may be a man-induced sub-climax open forest/woodland community which unless regularly thinned may become too dense to allow *Rutidosis* to persist. They suggest that this species may not have originally occupied these areas but may have colonised these areas following earlier clearing and grazing. Thus increasing canopy density and hence shading may be an additional longer term threat to the species in the habitats presently occupied in the ACT. Briggs and Leigh (1985) reported that mowing of recreational areas and further alienation of habitat for building have been other serious threats to the species in the past.

Reservation

Only one population of 1,500-2,000 plants is formally reserved. This occurs within the Queanbeyan Nature Reserve (ca. 2.5ha) which was specifically proclaimed for its protection.

Cultivation

The species is not particularly showy but can be grown readily from seed and also from cuttings and might be useful in rockeries. A total of 129 plants originating from 11 individuals are now in cultivation in the Australian National Botanic Gardens, Canberra (M. Richardson, pers. comm.).

Recommendations

The four New South Wales sites have been nominated for inclusion on the Register of the National Estate. Two of the sites (Stirling Ridge and Red Hill) in the A.C.T. are now on the Register and are discussed in Briggs and Leigh (1985).

As discussed in Briggs and Leigh (1985) a major matter which must still be tackled is a more detailed study of the species ecology and the subsequent formulation of an appropriate management programme which will ensure the long term survival of the species on its current sites. Such a study should consider those topics of research outlined by Kendal and Wittmark (1984). The most important of these is to establish an appropriate fire regime which will periodically reduce competition from other grassland

species, the control of competition from weeds and other exotic grasses and studies to ascertain whether shading will become a problem at some sites and therefore whether a thinning programme for the eucalypt overstorey will need to be instigated.

An overall conservation plan for the surviving Canberra populations needs to be formulated and action taken to ensure that appropriate areas are afforded long-term formal protection.

SITE DETAILS

Site 1 - Queanbeyan Nature Reserve

Latitude and Longitude: 35° 21' 50", 149° 11' 45".

Altitude: 600 m.

Location: Reserve area immediately east of the Queanbeyan-Cooma railway line and between the Queanbeyan Racecourse and the Queanbeyan rubbish tip. The nominated site is bounded by straight lines joining the Canberra 1:25,000 map sheet 8727-111-N grid reference points 99358435-99408443-99708435-99708427. (See map page 172).

Looking south across the western end of Site 1 towards the Queanbeyan rubbish tip.

Land Status: Queanbeyan Nature Reserve.
Area: 1.5 ha.
Population: An estimated 1,500-2,000 plants including numerous seedlings and young plants colonising previously disturbed areas.

Numerous plants of *Rutidosis* which have re-colonised a previously disturbed area within the reserve. The photo was taken in early spring before stem elongation.

Habitat

Soil: Skeletal red-brown clay-loam.
Substrate: Broken sediments.
Topography: Low ridge in undulating terrain.
Aspect: Predominantly west but also north-west and north.
Vegetation: On the margins of *Eucalyptus blakelyi* woodland in grassland dominated by *Themeda triandra*, *Danthonia* sp., *Stipa* sp. and the forbs *Helichrysum apiculatum*, *Helichrysum* sp. and scattered shrubs of *Acacia genistifolia*.

Looking east across the reserve. The *Rutidosis* population is concentrated in the open grassy area in the foreground but scattered plants also occur in the more open areas of the *Eucalyptus blakelyi* woodland at the eastern end of the reserve.

Threats: Now that the Queanbeyan Nature Reserve has been proclaimed the site is not under immediate threat. However, an appropriate fire regime needs to be implemented to ensure that *Rutidosis* plants are not out-competed by other species. Plans by the Queanbeyan Council to develop a showground and playing fields adjacent to the reserve could increase visitation pressure and associated trampling damage in the future.

Recommendations: Development of a management plan for the Queanbeyan Nature Reserve and regular site monitoring by the New South Wales National Parks and Wildlife Service is required. If the surrounding area is developed then the reserve should be appropriately fenced to reduce visitation pressures.

Survey Dates: February 1984, October 1987 and 28/3/88.

Voucher Specimens: Not collected.

Site 2 - Letchworth

Latitude and Longitude: 35° 22' 10", 149° 11' 50".

Altitude: 610 m.

Location: The main population is about 250 m north-west of the intersection of Tharwa Road and the Mt Jerrabomberra Road and is centred on the Canberra 1:25,000 map sheet 8727-111-N grid reference point 99638383.

Land Status: Crown land, some of which is owned by the Department of Housing and some possibly by the Lands Department (C. Kinross, pers. comm.).

Area: Core area of 300 m^2 with scattered plants over about 2 ha.

Population: Core population of 400 plants with about another 50 sparsely scattered plants.

Habitat

Soil: Shallow red-brown clay loam.

Substrate: Sediments.

Topography: Near crest of low rise in undulating terrain.

Aspect: South-east.

Vegetation: Degraded native grassland, presumably once eucalypt woodland.

Threats: The site has been cleared of its woodland overstorey and has been subjected to domestic stock grazing which has generally degraded the habitat by encouraging the establishment of several weed species. Where the soils are shallowest weed growth has been restricted and the *Rutidosis* has been able to compete and persist.

Recommendations: Efforts should be made to retain as open space some of the area supporting the *Rutidosis*, including the core area. With the removal of grazing and appropriate management the density of the population may increase in those areas where there are presently only scattered plants. The core area is to be nominated for inclusion on the Register of the National Estate.

Survey Date: 28/3/88.

Voucher Specimen: Not collected.

Site 3 - Queanbeyan-Captains Flat Road

Latitude and Longitude: 35° 27' 40", 149° 25' 40".

Altitude: 760 m.

Location: Road verge 24.7 km from the Kings Highway on the Captains Flat road. The site corresponds with the Hoskinstown 1:25,000 map sheet 8727-II-S grid reference point 201730. (See map page 173).

Looking north-west across the small section of road verge supporting *Rutidosis* at Site 3. A small strip of native grassland persists between the fence line and the scraped area of the verge. The *Rutidosis* does not extend into the adjacent grazed paddocks.

Land Status: Road reserve.

Area: 400 m^2.

Population: 100 mature plants on the north-east road verge and 50 mature plants on the south-west road verge.

Habitat

Soil: Red gritty clay-loam with quartzite pebbles.

Substrate: Sandstone/mudstone sediments.

Topography: Low rise in undulating terrain.

Aspect: North-east and south-west.

Vegetation: Remnant native grassland including *Poa sieberiana, Leptorhynchos squamateus, Vittadinia muelleri, Helichrysum apiculatum, H. semipapposum, Calocephalus citreus, Convolvulus erubescens,* and *Eragrostis trachycarpa*. There is site invasion by the exotic grasses *Phalaris aquatica* and *Paspalum dilatatum*.

Threats: The very narrow remnant strip of native grassland at this site is highly vulnerable to weed invasion. At the time of the survey significant physical damage to the north-western verge had occurred through vehicles driving onto the verge and through trampling by travelling/wandering cattle. By its nature, the site is also vulnerable to activities associated with roadworks.

Recommendations: The local council should be advised by the Australian Heritage Commission of this occurrence to ensure the site is not affected by roadworks. The erection of additional guide posts along this small section of road should deter vehicles from driving on the verge.

Survey Date: 24/8/89 and 2/3/90.

Voucher Specimens: J.D.B. Numbers 2531 and 2532.

Site 4 - Mt Jerrabomberra

Latitude and Longitude: (range) 35° 22' 20", 149° 12' 00" to 35° 22' 29", 149° 12' 15".

Altitude: 615-630 m.

Location: Lower south-western slopes of Mt Jerrabomberra in a narrow band centred largely just below the 620 m contour interval and extending 1.6 km from the southern boundary of the cemetery to about 700 m south-east of the "Poplars" Homestead. The largest concentration of plants was centred on the Tuggeranong 1:25,000 map sheet 8727-III-S grid reference point 997825. (See map pages 172 and 174).

Land Status: Private Freehold. The core population is on land now zoned as Residential whilst the rest of the population is on land currently zoned as Rural.

Area: About two-thirds of the population was concentrated in an area of about 0.1 ha and the rest of the population is sparsely scattered over an area of about 8 ha.

Population: 200 mature plants grew in the major concentration and between 100 and 150 mature plants were scattered over the rest of the area.

Habitat

Soil: Pale-brown clay-loam.

Substrate: Metamorphosed sediments.

Topography: Gentle lower slope of hill.

Aspect: Predominantly south-west but extending to west and south.

Vegetation: *Eucalyptus bridgesiana - E. blakelyi - E. melliodora* woodland with a grassy understorey including *Helichrysum apiculatum, H. semipapposum, Busaria spinosa*, *Themeda triandra, Poa sieberiana, Bothriochloa macra, Vittadinia* sp., *Wahlenbergia* sp. and *Lomandra* sp.

Looking south-east across some of the Rutidosis habitat at the northern end of Site 4 (to the south of the Queanbeyan cemetery). (Photo: M. Calkovics)

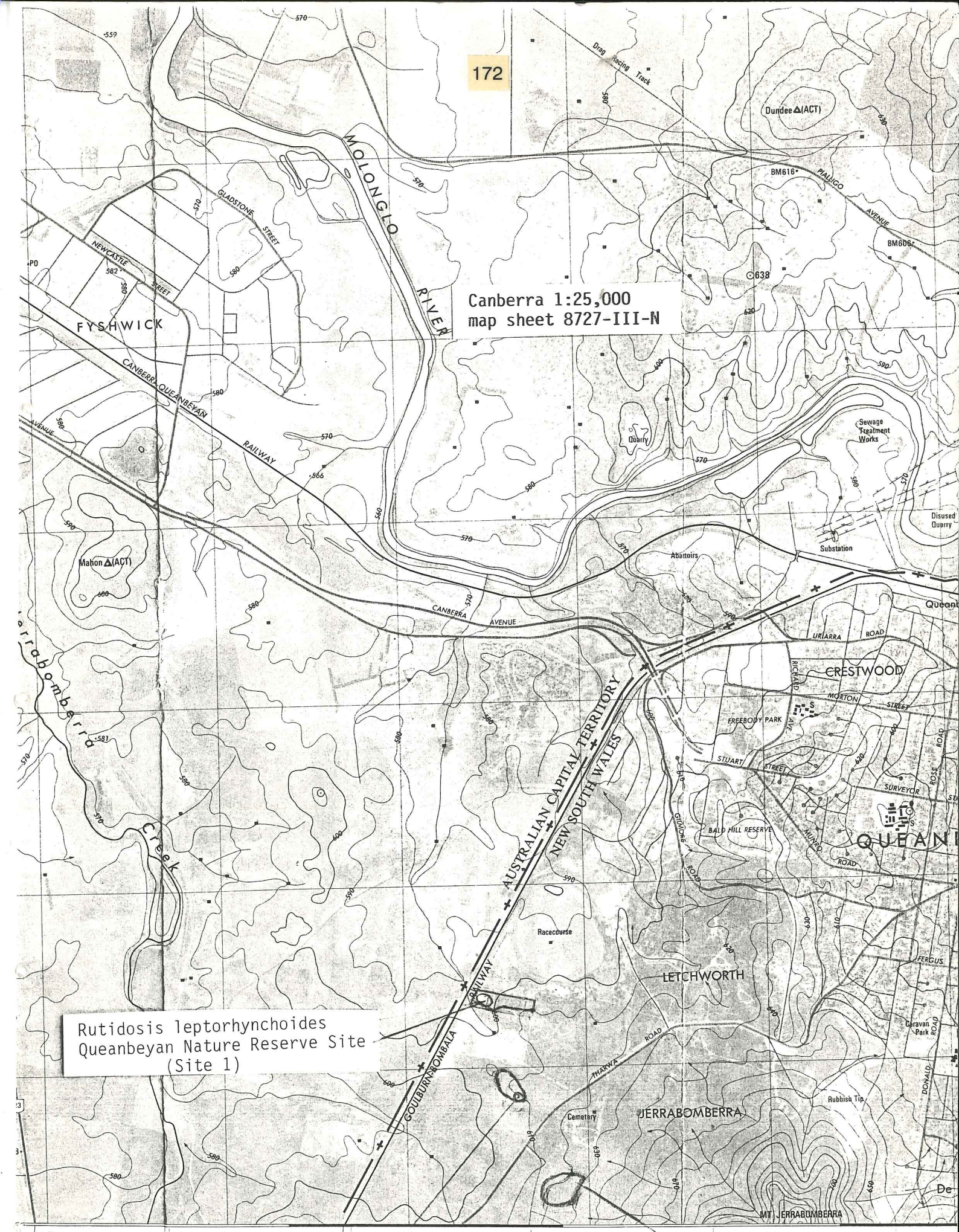
Threats: The entire population at this site is threatened with destruction by the Jerrabomberra Heights Estate Housing Development. Over half the population is within Stage 1 of that development and its habitat there has already been severely damaged through the removal of topsoil. The rest of the population is on Stages 2 and 3 of the Development. The re-zoning of this area from Rural to Residential has been the subject of successful action in the New South Wales Land and Environment Court to have this zoning revoked. The future of this area is presently uncertain but there is little doubt that pressure to develop the area will continue. The Developer has expressed little interest in trying to preserve this species.

Looking south-east across the southern part of Site 4 towards where the core of the *Rutidosis* population was located. Removal of the topsoil over an extensive area by the Housing Developer has now destroyed most of the *Rutidosis* and its habitat at Site 4. (Photo: M. Calkovics).

Recommendations: Efforts by the New South Wales National Parks and Wildlife Service and others to have the remaining area supporting the *Rutidosis* protected from development should continue. The Mt Jerrabomberra site has been ungrazed for a long time and was one of the most weed-free *Rutidosis* sites known. This site is within an area already nominated by M. Calkovics (pers. comm.) for inclusion on the Register of the National Estate and thus it is not proposed to submit a separate nomination for this area.

Survey Dates: 19/4/87 and 28/3/88.

Voucher Specimens: J.D.B. and M. Calkovics Nos. 2245, 2246 and 2248.

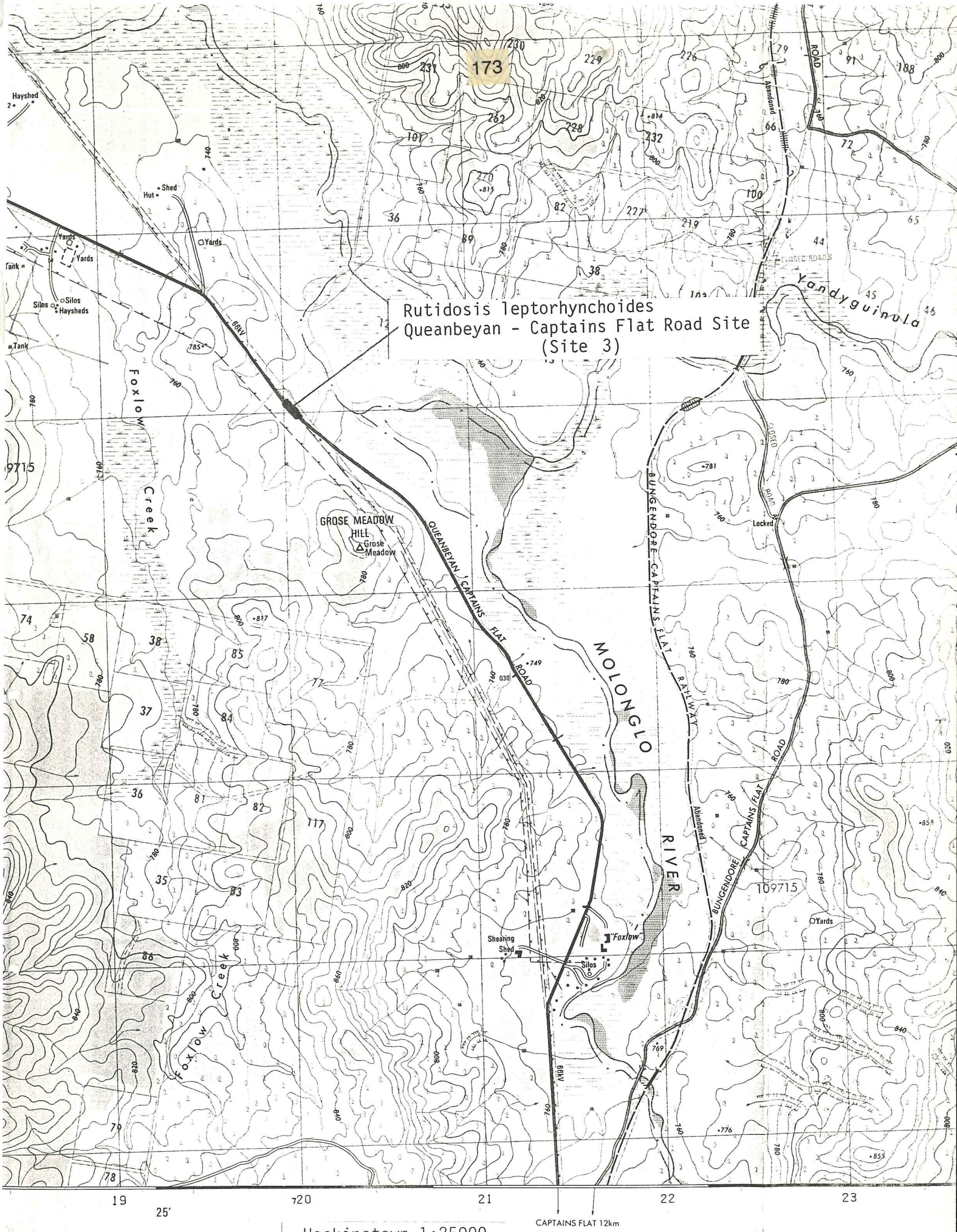


Rutidosis leptorhynchoides
Queanbeyan Nature Reserve Site
(Site 1)

Rutidosis leptorhynchoides
Letchworth Site
(Site 2)

Rutidosis leptorhynchoides
Mt. Jerrabomberra Site
(Site 4)

Rutidosis leptorhynchoides
Queanbeyan - Captains Flat Road Site
(Site 3)



Hoskinstown 1:25000
map sheet 8727-II-S

RAINFALL
Annual Average 633mm
mm 350 300 250 200

Breakwater
Bathymetric depths in metres; jetty and wharf
Wreck exposed; Anchorage; Slipway
Reef; Rock shelf

Dense timber; Medium timber
Scattered timber; Forest, Coniferous or pine
Orchard, plantation or vineyard; Windbreak
Mangrove; Scrub

FIRST EDITION 1:

nt Road.