RESULTS OF THE SEARCH FOR THE POTOROO IN SOUTH WEST AND SOUTH COAST OF WESTERN AUSTRALIA 1975/76

BY

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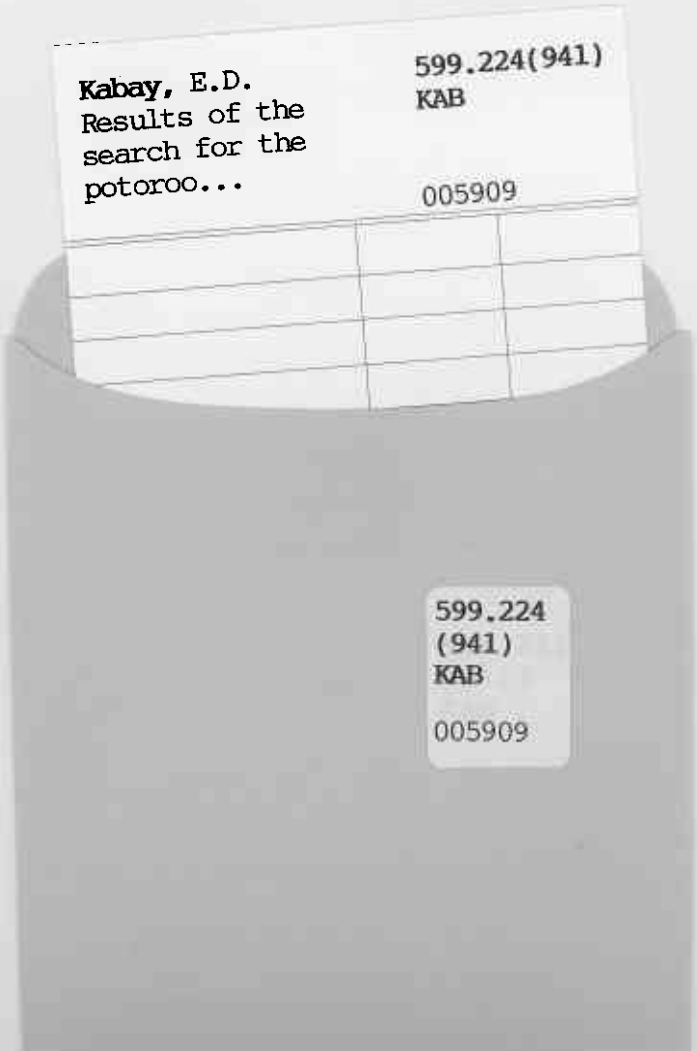
(With Technical Assistance
of M. Onus)

"And no one has a right to say that no water babies exist, till they have seen no water babies existing, which is quite a different thing, mind, from not seeing water babies....."

(Charles Kingsley, "The Water Babies").



C O N T E N T S

SECTION 1

INTRODUCTION

One of the consequences of the increased general awareness that the Planet Earth is a closed system is a concern for the need for conservation. Within Australia this has manifested itself in the public interest in conservation of the native wildlife. Much of this interest has been directed towards increasing the protection of the large kangaroo. This increased interest led to the setting up of the House of Representative Select Committee on Wildlife Conservation. Inter alia, this committee recommended the need for a survey of the nation's wildlife populations.

In response to this recommendation the Standing Committee for the council of Nature Conservation Ministers set up a "Working Group on Macropod Habitat" to report to it on the "Status of Kangaroos and Wallabies in Australia". This report (Burbidge 1976) examined the status of all Australian macropods and the adequacy of conservation measures already taken to ensure their survival. It noted that there were 12 species with no known mainland populations that would require immediate habitat reservation if rediscovered. Most of these species, if rediscovered, were most likely to be found in remote areas where they would not be immediately endangered by habitat distruction. However, the working group noted that within this group of species ".....there are two species and a subspecies, the main range of which was in areas of intensive agricultural and grazing use and a search should be made for these without delay."

They are:

1) Macropus greyi (Toolache)

2) Potorous platyops (Broad - faced Potoroo)

3) Potorous tridactylus gilberti (Gilbert's Potoroo)

This report was adopted by the Standing Committee in June, 1974.

In 1974 a program of Wildlife Policy Investigations was initiated by the Department of Environment to commission research into the biology, ecology and habitat requirements of Australian fauna and flora with particular reference to the development of management strategies for their conservation. This was in response to the recommendations of the Select Committee. The program subsequently developed into the Natural Environmental Investigation and Surveys (NEIS) program and became the responsibility of the Australian National Parks and Wildlife Service.

In the light of specific recommendations of the Working Group regarding the two Potoroos in Western Australia the State Department of Fisheries and Wildlife applied for funds from the NEIS program to finance a search for them.

Finance was made available for 6 months and subsequently for a further 12 months - 18 months in total. During the first six months the search was limited to P. t. gilberti which was thought to have the greater chance of survival. With the extension of the program the search was broadened to include P. playtops.

ANS commenced the project on 23rd April, 1975 and went to 13th February, 1976 when he left the Department to join the National Parks Authority. E.D.K. finished the search which was funded till the 23rd October, 1976.

Various arrangements of the species and sub-species of the genus Potorous have been proposed, Broom 1896, Courtney 1963, Finlayson 1938, Gould 1873, Higgins and Petterd 1883, Iredale and Troughton 1934, Johnston and Sharman 1976, Kerr 1792, Hope 1969, Ride 1970, Tate 1948, Thomas 1888. In this report we follow Ride (1970) and recognise P. tridactylus gilberti as a valid sub-species, although we believe the arrangement of Johnston and Sharman (1976) may prove to be more realistic.

SECTION 2

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PAST AND PRESENT DISTRIBUTION OF THE GENUS POTORUS

A) Potorous platyops

Butler and Merrilees (1973) have reviewed the present knowledge on the distribution of this species. The earliest known specimen was part of a collection offered to the Western Australian Government in 1839 by the German collector Preiss. Unfortunately there is no locality data for this material. Preiss seldom recorded precise locality information which is understandable as he purchased most of his specimens. It is known that Preiss collected from a number of locations in the south west of the state, including all the areas where subsequent specimens were taken by other collectors (Glauert 1950, 1959).

John Gilbert, who collected for John Gould, obtained specimens from two localities. Unlike Preiss, Gilbert was most particular in recording locality data. His first specimen, the type, was collected in 1842 from "Walyema Swamps, Victoria W.A." (now known as Walyormouring Lake, Oak Park). The second from "Albany - King George's Sound" in 1843.

George Masters of Sydney made two collecting trips to southern W.A. for the Australian Museum. The first in 1866 was "in the vicinity of King George's Sound...." (Glauert 1950), when one specimen was obtained. The second (1869) was to "King George's Sound and Salt River", Salt River= Palinup River, where three individuals were collected. Masters' collection included dry country species e.g. Onychogalea lunata and Bettongia lesueur as well as Potorous tridactylus which is thought to have inhabited regions of high precipitation (see Section 3). Thus the records are of little value to determination of precise localities or habitats from which P. playtops came.

In 1874 and 1875 the National Museum of Victoria received 5 specimens (C6769 to C6773) from dealers. However the only locality data associated with these specimens was "West Australia" (Ride 1970).

Glauert (1933 p.783) reported that a specimen of this species reached the London Zoo (1908) from Margaret River. Subsequent investigation by Calaby (1971) suggest that this was erroneous and that the specimen was probably a juvenile quokka (Setonix brachyurus) with which it can readily be confused (Ride 1970). However the possibility that it was P. t. gilberti can not be ignored. The locality is well outside that recorded for P. platyops, but sub-fossil remains of P. t. gilberti are abundant in the Margaret River area (see below).

Sub-fossil material has been recovered from the following localities in Western Australia (Butler and Merilees 1971)

1) Bremer Bay sand dunes.

2) Moore River, Dongara coastal region.

(Hastings Cave, Wedges Cave, Smithies Cave, Weelawadgi Cave).

3) North West Cape in Cave No. CR6. (doubtful identification)

4) South Central Nullarbor region, Webbs Cave; Cave deposits near Madura, Eucla and Koonalda.

A. Baynes (pers. comm) doubts that much of it is recent. Butler and Merrilees (1971) reported radiocarbon dates of 620± 90 years B.P. on wood and 1190± 80 years B.P. on rodent bones from the Bremer Bay deposit. In view of these widely divergent dates and the presence of fox, rabbit and sheep bones in the same deposit, no definite age can be attributed to the P. platyops remains.

Sub-fossil material is also known from South Australia and Kangaroo Island. (see Butler and Merrilees 1973 for a summary). In conclusion it would seem that P. platyops was at sometime widely distributed across the coastal area of southern Australia from South Australia as far west as the vicinity of Albany, in Western Australia, and also through the Western Australian wheatbelt, possibly as far north as the North West Cape: it appears that it did not enter the forest block of the South West. This extensive range may have shrunk considerably before the advent of European man.

B) Potorous tridactylus

This species and the very similar P. apicalis are widespread in eastern Australia and Tasmania. Their distribution has been recently reviewed by Johnston (1973). Johnston regards P. apicalis as a subspecies of P. tridactylus, the former being restricted to Tasmania and some islands in the Bass Strait and the latter to the mainland.

Hope (1968) noted that in eastern Australia the locations of existing populations of Potorous all fell in areas of 76 cm or more average rainfall per annum.

The subspecies was first collected by Gilbert in 1840 at "King George's Sound ". There is little information on his movements during his 2 week stay except that he reached the Gordon Plains near Cranbrook, 70 miles inland (Whittle 1942).

Glauert (1950) reported that Masters collected it on both his expeditions to King George's Sound between 1866 and 1869 (see above) but no other modern records exist.

Sub-fossil remains are plentiful in cave deposits between Cape Naturalist and Cape Leeuwin, some in surface deposits.

They have been recorded coming from:

Devils lair (Baynes et al 1975)

Harley's Cave (Merrilees 1968)

Mammoth Cave (Merrilees 1968)

Strongs Cave (Cook 1963)

Cave No. 3 (Possible: Archer and Baynes 1972)

A review of the Palaeontological collection in the W.A. Museum showed that the following additional caves have P. tridactylus gilberti deposits occurring in them:

Boranup Cave

Brides Cave

Calgardup Cave

Cave AU 12 (near Jewel Cave)

"Cave" 1½ miles West of Leroy's Cave

Deepdene Cave

Dingo Cave (Arumvale)

Easter Cave

Giants Cave

Golgotha Cave

Labyrinth Cave

"Lloyds Dig"

Moondyne Cave

Museum Cave

New Cave (2) Near Augusta

Ngilgi Cave Yallingup

Bone material in the caves is thought to have been derived from one or both of two mechanisms.

i) Introduction by predators - e.g. man or Sarcophilus (e.g. Devils Lair)

ii) Passively falling into the cave through solution pipes (e.g. Strongs Cave).

In addition to these cave deposits a bone fragment of this species has been recently picked up in a sand dune in the Broke Inlet to Windy Harbour region at Fish creek. (Pemberton 1:250,000 Map S1 50-10 Grid ref. 695 428. W.A.M. palaeontological coll.)

In summary it would seem that P. t. gilberti inhabited the extreme south west of Western Australia from the vicinity of Albany to the Leeuwin Naturaliste ridge.

SECTION 3

REVIEW OF HABITAT REQUIREMENTS OF P. TRIDACTYLUS AND P. APICALIS

In order to concentrate the search for Potoroos in likely habitats, as much data as possible was gathered on their ecological requirements from published accounts and ANS spent 2 weeks in Victoria to study Potoroo habitats.

Kirkpatrick (1966) reported P. tridactylus from rain forest margins in the Warwick district of Queensland. In a general survey of the marsupials of New South Wales, Marlow (1958) recorded it from "Rain forest, scleropyll forest and woodland" mostly along the coast and the eastern slopes of the Darling range. Troughton (1957) states that it was sometimes common in the low scrub along coastal rivers near Sydney.

Calaby (1966) records a population of P. tridactylus in north eastern New South Wales as inhabitating the tall woodland adjacent to rain forest with an understory of tall, dense, tussocky grasses. Another population was found in 200 hectares of regrowth eucalypt woodland adjoining cleared paddocks. The understory consisted of tall dense Poa sp. tussocks. Both areas had not been burnt for some time and were lightly grazed by cattle. Calaby also records the animal being found in an area of dense Poa sp. tussocks under Acacia sp. regrowth on the edge of Eucalyptus sp. dominated wet scherophyll forest along a creek.

Seebeck (1968) reported Victorian Potoroos in dry healthy forest with Acacias, ti-trees, paperbarks and grass trees forming a dense impenetrable scrub understory. He also found them in green damp forest with thick scrubby undergrowth and noted that they tended to be found in areas where the soil was light and sandy, particularly near the coast. Another Victorian account (Anon 1974) reported that one species (not named) occurred in wet forest while another (not named) inhabited the margins of dense heath where it abutted coastal woodland and the coastal woodland itself.

The greatest quantity of information derives from Tasmania and refers to P. apicalis. Johnston (Johnston 1973, Johnston and Sharman 1976) trapped animals in dense thickets. Heinsohn (1968) reported a population in Western Tasmania occupying only the dense heaths with an overstory of scattered eucalyps on sandy coastal plains. The heaths usually contained thickets of Acacia spp. and ridges while dense thickets of Melaleuca spp. and Leptospermum spp. occurred in wet or swampy areas. He also located a population on land that had been cleared less than 13 years earlier but which was allowed to revert to bush.

Guiler (1959) Kitchener (1967, 1973) and Buchmann (pers. comm). all report Tasmanian P. apicalis prefer dry sclerophyll forest with a thick scrubby understory.

Hope (1969) found Potoroos in coastal ti-tree thickets, dry sclerophyll

forest and on the slopes of high mountains (e.g. Mt. Wellington) in eastern Tasmania. In western Tasmania she collected them in thick scrub in woodland surrounded by well established farm land. She reports that the type locality of P. a. rufus consists of rain forest and tussock ridgeland. On the Bass Strait islands where Potoroos survive they occur in densly vegetated areas.

In summary Potoroos have been recorded from a wide variety of Eucalypt forests including rain forest, wet and dry sclerophyll forests and woodlands. They have also been reported from heathlands. However almost all reports emphasise that they inhabit areas with a very dense undergrowth, be it heathland, scrubland or tussock grassland. This agrees with the impression gained by ANS when he examined habitats in East Gippsland.

Many workers have reported that in areas where Potoroos live, many well worn tunnels can be seen in the thick vegetation and Buckmann (pers. comm.) says that they can not be trapped if the traps are not set in these tunnels.

Guiler (1958, 1971) and Kitchener (1967) reported that the Tasmanian Potoroo was strictly nocturnal - a fact that Calaby (1966) agrees with. Calaby noted that the animals could only be flushed with dogs or when just about to be stepped upon.

Guiler (1958) noted that the animals dug small irregular holes in the ground or vegetation when feeding. These are very similar to bandicoot diggings. (Johnston 1973). Though omniverous in captivity (Guiler 1971, Seebeck 1968, Dempster 1965) their diet in the wild in Tasmania mainly consists of subterranian fungi for which they dig (Guiler 1971).

Breeding seems to be continuous in Tasmanian animals (Guiler 1958, 1969, Hughes 1962, 1964). Animals have been known to live for up to 7 years both in the field and laboratory - (Guilder and Kitchener 1967, Guiler 1957, Flower 1931).

Potoroo densities appear to be relatively low. Thus Kitchener (1973) reported home ranges for adult male Potoroos in Tasmania of about 20 ha. with females occupying about 5 ha. Adults tended to be fairly sedentary, (Kitchener 1967). However both Guiler (1958) and Kitchener (1973) reported transient individuals that moved over fairly long distances. There is no territory in terms of an area that is defended. Guiler added that, although home ranges overlapped, population densities were relatively low.

Initial reports have suggested that Potoroos can survive fierce bush fires both in Tasmania and on the mainland of eastern Australia. (Newsome et al. 1975, Recher et al. 1973, Helmsley 1967). Helmsley (1967) suggested that this was because Potoroos tended to occupy the wetter areas that escaped severe damage while their primary diet, subterranian fungi were not eliminated by fire. However effects of regular low intensity fires on Potoroos is unknown.

Potoroos make diurnal nests constructed of dry grass with no definite structure but which is hollow within (Kershaw 1946, Guiler 1958). Guiler (1958) suggests that they may be constructed by females during breeding time.

As an aid to the identification of potentially suitable habitats in Western Australia ANS visited Victoria between May 20 and May 31st 1975, to study P. tridactylus habitat requirements. He was also able to observe the trapping methods used by the Victorian Division of Fisheries and Wildlife.

On May 21, ANS studied a captive potoroo at the Arthur Rylah Institute in Melbourne and from May 22 to May 30 accompanied Mr. John Seebeck (who has several years experience working on Potoroos in Victoria) and other officers of the Victorian Division of Fisheries and Wildlife on a survey expedition to the Cann River, East Gippsland in south-east Victoria.

Although the purpose of the expedition was not merely the capture of Potoroos, the trapping methods used were those normally used to capture Potoroos and Mr. Seebeck took great trouble to point out features of the wide variety of habitats encountered that he had found were important to the suitability of each habitat to Potoroos. He also showed ANS 4 precise locations at which Potoroos had been obtained in East Gippsland.

No Potoroos were captured, nevertheless a good insight into the habitat requirements and trapping methods for Potoroos was obtained.

Detailed ecological data on the rare Western Australia sub species is usually lacking due to the fact that the early collectors rarely recorded such data. In fact even precise locality data was rarely recorded. However, Gilbert was an exception. He usually gave precise ecological and locality data with his specimens. The following is from Gilbert's notebook in the British Museum of Natural History per E. Slater, CSIRO Wildlife Research, (pers comm) and describes the habitat of P.t.gilberti "This little animal may be said to be the constant companion of the S. brachyurus, inhabiting with them the dense thickets of spearwood and rank vegetation and surrounding swamps or small running streams; the natives capture it by treading down the sticks and forming a long narrow passage through the thicket, a portion of them remaining in this clear space with their spears, while others of the natives particularly the old men and women, go back and walk through the thicket, and by beating the bush and making a yelling noise, drive the affrighted animals before them, and as they run over the cleared space, the natives in readiness spear them, in this way a large tribe of natives will often kill immense numbers in a few hours, I cannot learn that this species has ever been seen in any other part of the Colony but King George's Sound."

Gilbert could not obtain as much ecological information on P. playtops. In the same notebook he writes:

"This little kangaroo is one from the Walyemara collection, some natives to whom I showed the specimen say it is about half grown. All I could glean of its habits was that it was killed in a thicket surrounding one of the salt lagoons of the interior".

Taking into account the information available on the distribution of capture specimens and subfossil material, the habitat requirements and general ecology of P. tridactylus and P. apicalis in eastern Australia, the following broad scheme was adopted when identifying areas suitable for trapping.

P.t. gilberti. The search was confined to the south-west forest block, especially in areas of high rainfall. Thick vegetation which had not been burned for upwards of 10 years (and which bore no evidence of severe

fires) adjacent to swamps and creeks was sought, especially where Quokkas were present or where there were tunnels in the vegetation. Dense coastal heathland between Busselton and Albany was examined and skeletal material gathered from sand blows in this area.

P. platyops. The search was concentrated in the area east of Albany, the Bremer Bay district and some islands off the south coast. Areas in the wheatbelt were not examined as there has been widespread alienation of natural vegetation. Furthermore the Western Australian Museum has undertaken extensive surveys of the larger reserves in the wheatbelt.

SECTION 4

RESULTS OF THE SEARCH FOR THE POTOROO IN W.A.

METHODS

Two general approaches were used.

a) A publicity campaign seeking information from the public.

b) Field work involving:

i) Following up reports derived from the publicity campaign.

ii) Systematically searching areas within the known former ranges where it was thought that the habitat might still be suitable for Potoroos.

During this searching program two methods were used.

1) Trapping for Potoroos.

2) Searching for evidence of Potoroos.

A) Publicity

Two types of publicity campaigns were employed - A general broad based one and a more specific one. The first one was aimed at the general public and was used during the initial stages of the search. The second was aimed at groups of people who were thought to have a general interest in either natural history or district events and was employed during the latter stages of the search. In addition attempts were made for long term publicity.

During the first program copies of a sheet illustrating and describing Potoroos and the simplest means of differentiating from superficially similar animals that live in the same areas (i.e. Quokka Setonix brachyurus; Woylie Bettongia penicillata; and short-nosed Bandicoot Isoodon obesulus) were produced (See Figure 1). Approximately 1750 copies were distributed for public display in the following situations or by the following organisations:

1) All branches of the Department of Fisheries and Wildlife in the S/W.

2) All branches of the Forests Department in the S/W.

3) All Police Stations in the S/W.

FIGURE I

HAVE YOU SEEN A POTOROO ?

Two species of Potoroo (or Rat-Kangaroo) have been recorded from the south-west of Western Australia. They are GILBERT'S POTOROO, known from near Albany and the BROAD-FACED POTOROO, known from near Goomalling (a doubtful record from the Albany district also exists). However, neither species has been seen this century. The Department of Fisheries and Wildlife has initiated a search for these animals so that, if they do still exist, necessary steps can be taken to ensure their survival.

We would like your help, please!

WHAT ARE POTOROOS? Potoroos are the smallest of the kangaroo family. They are about the size of a rabbit and weigh up to three pounds. Gilbert's Potoroo is dark brown; the Broad-faced Potoroo is thought to be a pale sandy or grey colour. They have short ears and relatively short, sparsely haired tails (see illustration).

Potoroos could easily be confused with:-

1. BANDICOOTS (see illustration) but ...
   - A. The fur of Potoroos feels soft.
     The fur of Bandicoots feels harsh.
   - B. The tails of potoroos are almost as long as their bodies.
     The tails of Bandicoots are much shorter than their bodies.
   - C. The lower jaws of Potoroos contain only one pair of large incisors which are separated from the first cheek teeth by a wide gap.
     The lower jaws of Bandicoots contain three pairs of small incisors and a canine tooth occupies the space between them and the first cheek teeth.
   - D. The first cheek teeth of Potoroos are very large and of a characteristic shape, quite unlike those of Bandicoots (see illustration).

2. QUOKKAS (see illustration) but ...
   - A. Potoroos are much smaller (up to 3 lbs.) than Quokkas which weigh up to 7 lbs.
   - B. The feet of Potoroos are slender and covered in short fur.
     The feet of Quokkas are more robust and covered in longer fur.
   - C. Gilbert's Potordo has a long, pointed face.
     Quokkas have short broad faces.
   - D. The Broad-faced Potoroo is thought to be a pale sandy or grey colour.
     Quokkas are usually dark brown.

3. WOYLIES (see illustration)

   Woylies are of similar size and build to Potoroos and they have similar dental characters but they can at once be distinguished by their tails; the tails of Woylies have a distinctive brush or crest of black hair near the tip.

   As we have very little informtion about the distribution of Woylies we would also welcome any records you have.

   They are known to live in the Tutanning Wildlife Sanctuary, east of Pingelly, in the Dryandra State Forest near Narrogin, and in the Tone/Perup River area, east of Manjimup.

WHAT TO DO If you think you have seen a Potoroo (or a Woylie) please let us know. Information can be sent in an envelope marked "POTOROOS" to:-

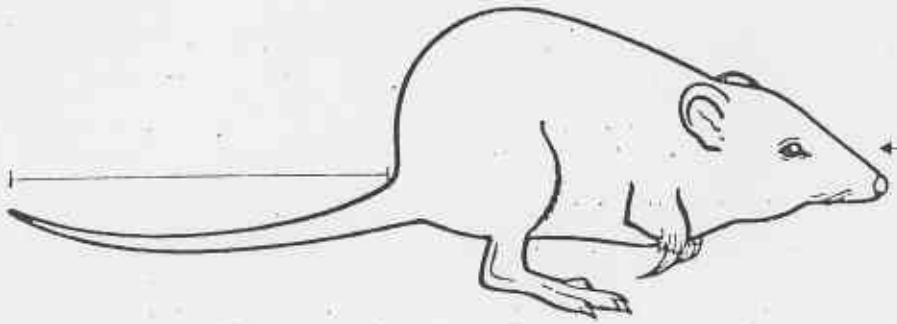
The Department of Fisheries and Wildlife,
P.O. Box 51,
WANNEROO, W.A. 6065.

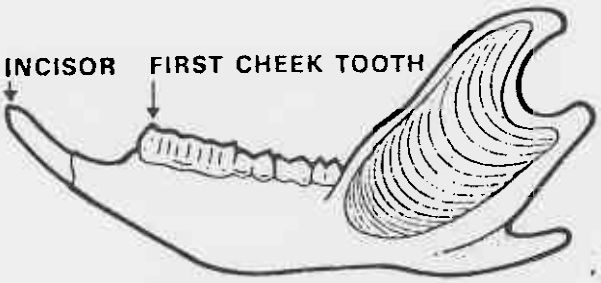
It would assist us if you include the following details:-

1. Your name, address and telephone number.
2. Where you saw the animal (e.g. nearest town).
3. In what habitat you saw it (e.g. forest, swamp, farmland, etc.).
4. When you last saw one.
5. Was it alive or dead?
6. The features that made you think it was a Potoroo (or a Woylie).

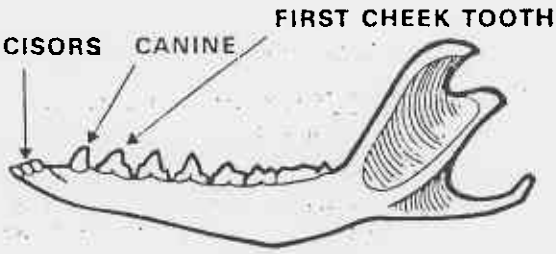
If you catch a Potoroo (or a Woylie) alive or find one dead you can 'phone us, reverse charges, at Perth 91 1555. Dead animals should be kept in a safe place, preferably frozen if they are fresh. When 'phoning please ask for Ms Kaby Dr Burbidge, or Mr McKenzie.

FIGURE I (cont'd)



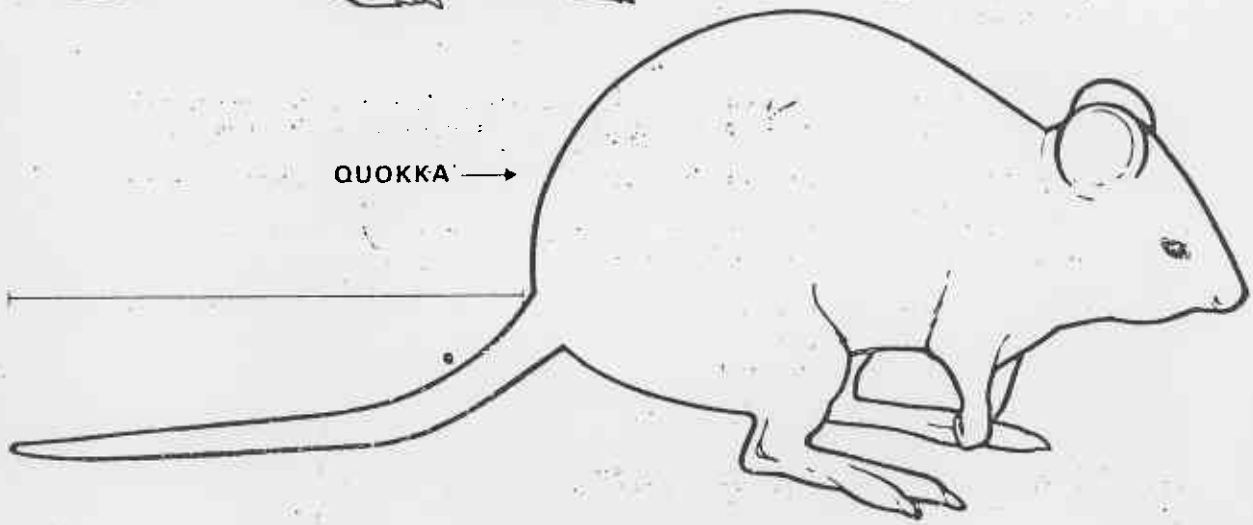


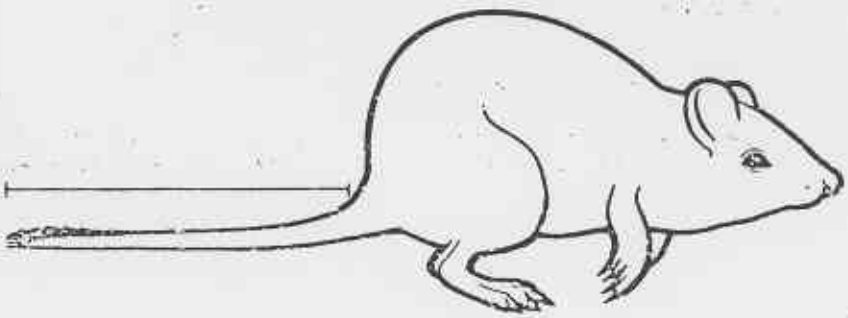
JAW OF POTOROO (OR WOYLIE)



JAW OF BANDICOOT

(Both are diagramatic)





4) All Shire Council Offices in the S/W.

5) All Secondary Schools in the S/W.

6) All branches, mills etc., of Bunnings Pty. Ltd., in the S/W.

7) All branches of Millars Pty. Ltd. in the S/W.

8) Through the Farmers' Union of W.A.

9) Through the Country Women's Association of W.A.

Copies were sent to all people requesting information on Potoroos following press reports and to those people who might have been able to offer information.

As well, articles on the Potoroo search have been published in the newspapers with State wide distribution.

The "Sunday Times" published two reports on the programme including a photograph of a mounted specimen from N.S.W. in the W.A. Museum.

The "West Australian" published one report including a reproduction of the illustration of a Potoroo from the information sheet (Figure 1). Several reports were published by local papers, school news letters and the official publications of the Farmers' Union and the Country Women's Association.

The A.B.C. approached ANS regarding the possibility of filming a report for the programme "This Day To-night". The Department of Agriculture also approached EDK regarding filming a report for the Agriculture half hour which is telecast from Bunbury. Neither of these ventures materialized.

The "Daily News" published an article at the end of the Potoroo search briefly stating that though no Potoroos were located, several new populations of mainland quokkas were found.

The second type of campaign was started by distributing detailed information to District Wildlife Officers. These officers have a detailed knowledge of their districts and a great awareness of the various people and organisations in their areas which together would be of help in the search. With this information they would be able to more fully inform the districts honary wildlife officers, local schools, natural history organisations, tourist offices, employment groups and local newspapers of the search for the Potoroo. This detailed information was sent to the following Wildlife Districts which are all in areas where Potoroos may have survived.

Albany

Busselton

Manjimup

Waroona

Moora

Wongan Hills

Pingelly

Esperance

Articles on the Potoroo were written for the various State natural history papers such as S.W.A.N.S. and the W.A. Naturalist Club monthly newsheet.

Attempts were made to write to local newspapers informing them of any important result that was found during a search in their district. This was especially successful in regard to the Albany District where "The Albany Advertiser" - published 4 articles either on the Potoroo or in the results of searches carried on in the district i.e. the searches carried on at Bald Island and in the Two Peoples Bay Reserve.

Towards the end of search a long term publicity campaign was initiated to maintain public awareness of the Potoroo plight even after the 'official' search had ceased. This was attempted in three ways. The first was to arrange for a 'Potoroo display' to be set up in the W.A. Museum in Perth and at its branch in Albany. It was planned to have the display incorporated in the Museum's educational programme as well. The second was to arrange for the W.A. Zoological Gardens to obtain Potoroos from Tasmania. The Zoo would display them along with the other macropods in their collection. The display would give information in regard to the search being made for them and would be incorporated in the Zoo's educational programme. The final way was to have the Potoroo publicity sheet regularly distributed to people who obtained duck shooting and fishing licences from the Department. This was aimed at not only informing them of the Department activities at discovering the two species but also make them aware of the conservational role of the Department.

By these methods it was hoped that there would be a general increase in the public's awareness of not only the efforts being made to relocate the Potoroo in Western Australia, but to draw attention to the State's rare and endangered wildlife. Unfortunately the organisations concerned have yet to implement these measures.

B) Field Work

Follow up of report of "Potoroo sightings":

As a direct response to the publicity campaign 35 - 40 members of the public contacted either EDK or ANS to report sightings of animals they thought to be Potoroos. Almost all were found to be Bandicoots or Quokkas. Some could have been Potoroos but these sightings date back to 1930 or earlier.

In some cases it was impossible to reach a firm conclusion on the identity of mammals reported.

It had been expected that we would receive many reports from people who had seen Bandicoots and misidentified them as Potoroos. However, it seems that the data given on the information sheet enabled many people to identify the animals they saw successfully. Most reports concerning misidentified Bandicoots followed press reports where less data was given.

Systematic Search:

Trapping technique

To obtain an idea what trapping technique to use to rediscover the Potoroo in W.A. an analysis was made of how Potoroos were found on the Eastern States mainland.

Prior to 1961 Potoroos were thought to be extinct in Victoria. However in 1961 a Potoroo was caught in a rabbit trap. Seebeck (pers. com.) reports that potoroos have been caught in dingo traps as well and several populations have been located through road kills. Cage trapping during either general mammal surveys or deliberate Potoroo hunting is the other method by which populations have been discovered.

In N.S.W. Potoroos have recently been found during routine survey work using wire cage traps which were placed along narrow runways in dense cover areas (Johnston - Director NSW National Parks and Wildlife Service pers. comm). Newsome et. al 1975 reported that dingo scat analysis and foot prints were used as indicators of the presence and relative number of Potoroos in a particular area. Dead specimens have also been picked up. In Queensland a number of records have been road kills according to the Queensland Museum (Seebeck pers. comm). Calaby (1966) reports that Potoroos were found by "walking through the area usually with dogs". Road kills and rabbit traps were the source of other animals.

In this current program 50 to 70 cage traps (17cm x 17cm x 50cm) belonging to the W.A. Department of Fisheries and Wildlife were the main apparatus used in the attempt to trap Potoroos. Where the vegetation was suitable, spring loaded snares were also used. In both cases the traps and snares were set in tunnels or run ways that were found at a particular trapping area. The traps were baited with a universal bait based on peanut paste or apple. Other workers have caught Potoroos in the Eastern States using similar traps and bait.

Usually up to 5 groups of 10 or more traps were used in each location spaced about 40m apart, depending upon the particular area. If the area 'looked' interesting traps were set for a period of at least 5 to 6 consecutive nights. To obtain an idea of the trapping effort both the total number of trap nights and the period over which they were set is given for each survey.

Johnston (1973) used a different trapping technique. 40 to 50 traps were set approximately 30m apart in lines of 10 in dense undergrowth. If no Potoroos were caught in 2 nights the traps were shifted.

Searching technique

During each survey as many sites as possible were explored in the hope of finding evidence of Potoroos. Items looked for included: Fur (both in twigs and in the scats or pellets of predators). The microscopic structure of P. tridactylus fur from Victoria has been illustrated and described by Brunner

& Coman (1974). A sample of fur from a specimen of P.t. gilberti in the W.A. Museum has been prepared for use in comparative studies.

Scats were usually collected in areas remote from human habitation. Fur found in scats were prepared for analysis according to Brunner and Coman (1974).

Bones (from scats or pellets of predators and from caves and sand dunes). All skeletal material encountered in the field were retained for identification by the W.A. Museum.

Faecal Material The ground in tunnels going through thick vegetation and in surrounding areas wherever Potoroos might occur were searched for faecal material. Potoroo scats are bluntly fusiform in shape, 0.75 to 1.5cm. long, dark brown to black in colour, the texture smooth, but the surface may have a "bubbly" appearance, depending on the diet. (Buchmann pers. comm).

Footprints Any area of soft sand or mud in areas where Potoroos might occur were searched for footprints.

Road Kills All dead animals beside roads were examined and identified. Where identification could not be made the kill was taken to the W.A. Museum for identification.

Diggings Unfortunately Bandicoot (I. obsesulus) diggings are fairly similar to Potoroos diggings (Johnston 1973) Seebeck (pers. comm). However with practice the diggings of these two species can be distinguished. (Seebeck pers. comm.) Buchmann (pers. comm) describes their diggings as " .....irregular to more or less crescentic up to 25cm deep". Nests were also looked for. These are "simple hollows in vegetation and moulded to the body arched over the grass etc." (Buchmann pers. comm).

RESULTS

Specimen numbers prefixed "M" are registration numbers of specimens deposited in the Western Australian Museum.

SURVEY NO. 1

Location

Muddy Lake 11km S of Bunbury 33°27'S 115°38'E

Dates

10.6.75 to 12.6.75

Locality description

A small lake surrounded by swamp lying between coastal dunes and Jarrah/ Peppermint (Eucalyptus marginata/Agonis flexuosa) forest. The dunes and forest were grazed as was one section of swamp. The swamp was vegetated largely by grasses, sedges and rushes but contained dense thickets of Viminaria juncea (Papilionaceae) to 3m and Phebalium anceps (Rutaceae) to 2m and was bordered on its eastern side by dense thickets of Jacksonia spp (Papilionaceae) to 3m.

Trap Effort

150 cage trap nights over 3 nights.

Mammals recorded

Macropus fuliginosus commonly seen in the forest and emerging on adjacent paddocks at night.

Macropus irma frequently seen in the forest

Setonix brachyurus skeletal material recovered from swamp where tunnels and faeces were common. No live animals were seen or trapped on this occasion but were seen by EDK and ANS on 4.2.76.

Trichosurus vulpecula Trapped and released. Skeletal material recovered from swamp margin.

Rattus rattus Several trapped in swamp (M13860-1)

Oryctolagus cuniculus Abundant in forest margin. One trapped at entrance to burrow.

Vulpes vulpes Several scats presumably of this species were recovered.

Comments

The area was examined following a report of a Potoroo like mammal having been killed by dogs three years previously. The report probably related to a young quokka. No evidence of Potoroos was found but the swamp apparently contains a dense population of quokkas. The area deserves a more detailed survey with a view to reservation.

SURVEY NO. 2

Location 1

Creek crossing Mowen Road east of its junction with Stoats Road, 33° 56' 45" S. 115° 38' 00" E.

Dates

6.6.75 to 17.6.75

Locality Description

Dense thickets of Acacia spp. and Agonis spp. to 3m in creek bed bordered by Jarrah/Marri (E. marginata/E. calophylla) forest. The forest had been burnt about one year previously, but the creekbed had not been burnt.

Trap effort

50 cage trap nights over 1 night. 10 snare nights over 1 night.

Mammals recorded

M. fuliginosus and M. irma were commonly seen in surrounding forest areas.

S. brachyurus abundant tunnels and faeces. Three animals snared and released.

Location 2

St. John's Brook north of Mowen Road. 33° 56' 40" S. 115° 41' 15" E.

Dates

13.6.75 to 16.6.75

Locality description

Jarrah/Marri forest bordering the brook had been burnt about 1 year previously but extensive thickets of Gastrolobiom bilobum (Papilionaceae) along the brook were not burnt.

Trap effort

250 cage trap nights over 4 nights.

Mammals recorded

M. fuliginosus and M. irma were common

T. vulpecula 1 trapped and released. Others seen with spotlight.

Hydromys chrysogaster 1 trapped adjacent to brook. (M. 13859)

Chalinolubus gouldii hand caught at 33° 56' 00", 115° 30' 30" E on 4.2.76 (M. 14529 - 30) (See Survey No. 12)

Comments

Most of the forest had been burnt, however some swampy areas along creeks remained intact. Trapping this area was a response to a report from Mr. Aub Chugg of Dunnsborough that he had sighted what he believed to be Woylies (Bettongia penicillata) or Potoroos in there prior to the fire. No evidence of either species was found.

SURVEY NO. 3

Location 1

Mt. Gardner, Two Peoples Bay Reserve 35° 00' S 118° 11' E

Dates

7.5.75 to 9.5.75 (exploratory only)
1.7.75 to 8.7.75

Locality Description

a) Mt. Gardner, consisting of precambrian granitic gneiss, forms a headland on the south coast. Except on large areas of bare rock it carries a shallow soil derived from the parent rock and supports a heathland typical of the south coast. However, there are many steep gullies that contain extremely thick vegetation of trees shrubs and sedges.

b) Immediately behind the beach at the south end of Two Peoples Bay is a low lying wet area dominated by Agonia flexuosa with a dense undergrowth of sedges and shrubs. The old ranger's residence is located within this area.

Trap Effort

180 cage trap nights over 4 nights. Traps were distributed evenly between Robinson's gulley, West gulley and near the old ranger's residence.

Mammals recorded

M. fuliginosus was common throughout the area.

S. brachyurus Tunnels and faeces were located in many gullies and in dense heathland bordering the gullies. Also around the old ranger's residence.

Isoodon obesulus Trapped and released near old rangers residence.

Pseudocheirus peregrinus Seen with spotlights in dense Agonis flexuosa near old rangers residence.

H. chryrogaster one trapped beside old rangers residence (M 13940)

Rattus fuscipes Commonly trapped in all areas.

Comments

The survival of the noisy scrub bird Atrichornis clamosus in the dense vegetation of the gullies, the proximity to Albany where P. tridactylus was recorded by Gilbert and Masters and the abundant evidence of dense S. brachyurus populations all suggest that this would be a likely location for remnant populations of Potoroos to survive. The area was re-visited (see Survey 15).

Location 2

North of Mount Many Peaks 34° 51' S 118° 16' E

Dates

5.7.75 to 7.7.75

Locality description

The trapping location was in a long strip of woodland about 200m wide dominated by Eucalyptus megacarpa with Trymalium spathulatum and Chorilaena quercifolia as common understory species. There were frequent clumps of Agonis flexuosa. The strip is bordered to the north by paperbarks, (Melaleuca spp) in a shallow depression and runs east, west eventually connecting with the Whychinicup River. The surrounding area is covered by a dense heath. A track connecting Homestead Road to Whychinicup runs parallel to and north of this strip.

Trap efforts

130 cage trap nights over 3 nights
60 snare nights over 3 nights

Mammals recorded

M. fuliginosus was seen in the heathland and tracks and faeces were found in the woodland.

S. brachyurus One animal seen and many tunnels and faeces found. Quokkas apparently inhabited the woodland but ventured into the adjacent heathland.

I. obesulus Trapped and released.

P. peregrinus one disturbed from its nest in Agonis flexuosa.

R. fuscipes commonly trapped (M13942-3).

Comments

This most interesting area towards the extreme eastern limit of the distribution of S. brachyurus would be well worth a detailed survey in conjunction with Mt. Many Peaks itself. The area is undisturbed and could harbour either Western Australian species of Potoroo as well as many other interesting species.

SURVEY NO. 4

Location

Northumberland Road near junction with Break Road south of Rocky Gulley.
34° 50' S 117° 03' E.

Dates

21.7.75 to 27.7.75

Locality description

Jarrah/Marri forest, unburned for at least six years with a small creek bed densely vegetated by rushes and shrubs, especially Hakea spp. Understory in the forest was rich in Proteaceae and Myrtaceae.

Trap effort

170 cage trap nights for 5 nights.

Mammals recorded

R. fuscipes (M 13944-6)

Eptesicus pumilus (M 13947) shot.

Comments

Except in a few areas (eg. the above) this forest has been severely altered by a combination of logging, control burning and die-back disease (Phythophthora cinnamomi). Sections of the forest least affected appear to be those close to the scattered granite peaks eg. Mt. Lindsay and Mt. Romanel that occur in this region.

SURVEY NO. 5

Location

Denbarker. 5km east of Denbarker road bridge over Mitchell River
34° 50' 117° 27' E

Dates

28.7.75 to 30.7.75
11.8.75 to 20.8.75

Locality Description

A large dense swampy area dominated by Kunzea spp and Agonis spp (Myrtaceae) to 3m tall, a large part of which showed very few signs of fire. Surrounding forest was dominated by Jarrah (E. marginata) and Marri (E. calophylla) which had not been burned for 4 to 5 years but which showed signs of fire damage and die-back disease.

Trap effort

450 cage trap nights over 9 nights
180 snare nights over 9 nights
180 medium Elliot trap nights over 9 nights
180 break back trap nights over 9 nights

Mammals recorded

M. fuliginosus seen in surrounding forest

M. irma seen in surrounding forest

S. brachyurus 6 trapped or snared (M13934-9)

I. obesulus 7 trapped

R. fuscipes commonly trapped (M13920-2, M13924-9)

R. rattus one trapped

Mus musculus two trapped (13931-2)

Felis cattus trapped (M13933)

Comments

This swamp supported a dense population of Quokka besides several other mammal species. It is within 50km of Albany and would appear to conform with Gilbert's description of the type of swamp in which he recorded Potoroos. The swamp was extensively trapped and it may not support a Potoroo colony. Table 1 indicates how trapping success varied with time, emphasising that a period of familiarization with traps was required by quokkas and, less so by bandicoots before they were captured.

TABLE 1

DATE	12/8	13/8	14/8	15/8	16/8	17/8	18/8	19/8	20/8
SPECIES									
S. brachyurus						1	2	1	2
I. obesulus			1	1	2	2	1		
R. fuscipes	3	2	4	2	1	3	3	5	2
R. rattus							1		
M. musculus							1		

During this survey a collection of subfossil bones was recovered from sand dunes in William Bay National Park (35°01'S 117°11'E). They included S. brachyurus, I. obesulus and P. peregrinus, rodents, birds and reptiles. The collection is deposited in the Palaeontological collection in the W.A. Museum, (Catalogue No. 75-7-1 to 75-7-10). Although none were charred, the degree to which most bones were broken suggests that they have represented an aboriginal midden and not just a "sand blow" collection.

In view of Gilberts ascertian that Aboriginals in the Albany area obtained Potoroos and Quokkas in the same swamps while hunting, the abundance of Quokka remains and absence of Potoroo remains would suggest that if this were a midden, Aboriginals hunted Quokka in a habitat not shared by Potoroos in this area.

SURVEY NO. 6

Location

Lake Walyormouring 31°09'S, 116°52'E

Both ANS and EDK visited this area, the type locality of P. platyops, to become aquainted with the type of habitats in which P. platyops had lived. The area is largely cleared for agriculture but a small area of natural vegetation and the lake forms a game reserve. Salt encroachment has killed much of the vegetation immediately surrounding the lake. Vegetation adjacent to the lake is an open woodland of Eucalyptus spp and Casuarina spp however exotic species dominate most of the understory. To the north of the lake is a patch of shrub mallee.

It is most unlikely that P. platyops survives in the area now. No trapping was undertaken.

SURVEY NO. 7

Location

Shannon Block State Forest No. 41 34°36'S 116°25'S

Dates

10.9.75 to 19.9.75
1.10.75 to 9.10.75

Locality description

Karri (E. diversicolor) forest with some adjacent areas of Jarrah/Marri (E. marginata/E. calophylla) forest. Much of the Karri had been clear-felled and consisted of regeneration of various ages. The majority of the virgin Karri had just been clearfelled at the time of the first visit leaving a narrow strip or stream reserve along a small creek, Fish Creek. The creek area was densely vegetated by the rush Lepidosperma effusum. The area included one section of virgin karri forest intact except that it had been burned regularly, the last time about five years previously. The dominant understory species in the Karri was the wattle (Acacia decipiens).

Trap effort

Approx. 700 cage trap nights over 15 nights.

Mammals recorded

M. fuliginosus regularly seen

R. fuscipes commonly trapped and released.

V. vulpes one seen.

Comments

In late July or early August 1975 an animal wounded during logging operations in the virgin Karri forest alongside Fish Creek was captured and examined by a Forest Department officer and several fallers before being released. ANS gathered descriptions from the Forest officer and three fallers. Mr. Per Christensen of the Forests Department Manjimup also interviewed the men.

Of the descriptions given the most detailed was that of the Forest Officer who handled the animal. The other men only observed it. It was said to be approximately rabbit sized with soft brown fur. The lower incisors were prominent and "the same as a Kangaroo". It had lost its tail in the accident. The men were subsequently shown a captive bandicoot, I. obesulus, which they said differed in the much harsher texture of the hair and the longer more pointed facial profile.

Apparently other animals similar in size to the captured one were seen by these people in this area but they agreed they had not seen any before elsewhere. Since most of these people were interviewed separately and their accounts agreed closely except that some had observed it more closely than others, there appears to be some substance to the account.

Of the three mammals besides P. t. gilberti that it could have been, I. obesulus appears to be unlikely on account of its teeth and the comments made when one was shown to the men; S. brachyurus is too large unless they captured a very young one, but they told of seeing other similar animals to the captured one and no animals the size of S. brachyurus. B. penicillala is not known to occur in Karri forests (P.Christensen pers. comm.) The tail, the most diagnostic field character destinguishing B. penicillata from P.t. gilberti was unfortunately not seen.

Besides these two visits, the area was revisited at a different season (Survey 13) and trapped by the Forests Department. Despite this effort put into the area only I. obesulus and R. fuscipes were captured.

SURVEY NO. 8

Location 1

Quaalup, Fitzgerald River National Park 34°17'10" S 119°23'20" E.

Dates

15.10.75 to 21.10.75

Locality description. 1.

A section of the eastern side of the Gairdner river valley. The valley bottom consists of deep alluvial deposits and typically carries a woodland of Swamp Yate, Eucalyptus occidentalis over thicket dominated by Acacia spp. There has been some clearing associated with a homestead built in 1858, however this has mostly reverted to natural vegetation.

The valley walls consist of steep laterite slopes frequently developing into breakaways, but covered by a shallow sand layer on more gentle slopes. The vegetation is heathland Myrtaceous and Papilionaceous plants. Typical of the area are Banksia coccinea and Hakea victoriae.

Trap effort

128 cage trap nights over 5 nights.

Mammals recorded

M. fuliginosus commonly seen

R. fuscipes commonly captured.

M. musculus In homestead

F. catus Several heard at night round homestead. One shot.

O. cuniculus - Common

Comments

This area, only 12km north from the Hunter River where subfossil remains of P. platyops were reported by Butler and Merrilees (1971) was visited following reports of strange mammal footprints received from Mr. G. Keen and because it contained a diversity of vegetation types. The footprints were shown to be of R. fuscipes.

Location 2

Intersection of the Boondalup River and No. 2 Vermin Proof Fence, Fitzgerald River National Park. 34°12'10"S 119°30'40"E.

Dates

15.10.75 to 21.10.75.

Locality description

This small creek which only flows following heavy rain runs in a shallow valley densely vegetated by a variety of shrub Mallee species over thick

patches of grass, sedge and small shrubs. The adjacent country is low heathland and scattered mallee clumps on shallow sand over laterite.

Trap effort

120 cage trap nights over 5 nights in the valley.
60 cage trap nights over 5 nights in the heathland.

Mammals recorded

M. fuliginosus frequent tracks, occasionally seen.

R. fuscipes commonly trapped in the valley.

Comments

See Survey 10.

SURVEY NO. 9

Location 1

Tributary of the Quaal, a creek running from West Mt. Barren to the Gairdner River at Quaalup. Fitzgerald River National Park 34°14'40"S 119°23'50"E.

Dates

28.11.75 to 5.12.75

Locality description. 1.

A dry valley running south. On the east side laterite outcrops on the surface. On the west side laterite is overlaid by shallow sands, deepest in the valley bottom. At the head of the valley Banksia coccinea, B. baxteri and occasional Lambertia inermis form thickets to 3m. On the east side shrub mallee forms a dense thicket to 3m while in the valley bottom and on the west side dense heathland, principally of Proteaceous (e.g. Hakea spp.) and Myrtaceous (e.g. Melaleuca spp.) plants provides thick cover to 1.5m high.

Trap effort

120 cage trap nights over 5 nights. Distributed evenly over the three principal vegetation type.

Mammals recorded

M. fuliginosus seen frequently

R. fuscipes frequently trapped except in the mallee

Location 2

Alongside No. 2 Vermin Proof Fence between Mt. Bland and West Mt. Barren, Fitzgerald River National Park.

Dates

28.11.75 to 5.12.75

Locality description

Dense thickets to 3m on shallow sand over laterite.
Vegetation dominated by Hakea victoriae.

Mammals recorded

M. fuliginosus tracks frequent - none seen

R. fuscipes two trapped

Location 3

No. 2 Vermin Proof Fence about 1km N. of Boondalup River, Fitzgerald River National Park.

Dates

26.11.75 to 5.12.75

Locality Description

Dense mallee shrubland in small depression. Similar to Boondalup River (Survey 8) but with more extensive mallee and less dense undergrowth.

Mammals recorded

M. fuliginosus skeletal material found and tracks frequent 1 seen.

Comments

See Survey 10.

SURVEY 10

Location 1

South-west end of unnamed lake 5 km, 220° from the mouth of Fitzgerald River.

Dates

16.12.75 to 20.12.175.

Locality description

A number of distinctive habitats occurred in this area -

(a) A fringe of Paperbarks, Melaleuca pauciflora, backed by dense thicket dominated by Acacia species grew adjacent to the lake.

(b) Heathland on deep sands, interspersed by isolated shrub mallees (principally Eucalytus tetraptera and E.tetragona). The heathland was mostly of mixed species composition but one large dense thicket of Calothamnus spp. was a prominent features.

(c) A valley running east and supporting a woodland of Swamp Yate, E. occidentalis separated the heathland from -

(d) A tree mallee stand of E. platypus which extends as a more or less monospecific community for two to three km to the north and west on laterite.

Trap effort

Cage traps as follows -

Area (a) 51 trap nights over 3 nights in the Acacia thicket
Area (b) 60 trap nights over 3 nights.
Area (c) 30 trap nights over 3 nights.
Area (d) 30 trap nights over 3 nights, half in Calothamnus spp. thicket half in mixed species heathland.

Mammals recorded

M. fuliginosus regularly seen except in E.platypus

Macropus eugenii One femur recovered from Sea Eagle (Haliaetus leucogaster) nest 2 km, 210° from the mouth of the Fitzgerald River.

Location 2

1 km west of Location 1, Survey 8.

Date

21.12.75 to 22.12.75.

Locality Description

Dense thickets of B.baxteri, B. coccinea and L.inermis on sands over laterite.

Trap effort

45 cage trap nights over 1 night.

Mammals recorded

M.fuliginosus frequent tracks on road through the area

Tarsipes spenseri One juvenile caught by hand in Banksia thicket

R. fuscipes three trapped in Lambertia thicket.

In the Lambertia there were many conical diggings similar to those made by bandicoots, I.obesulus.

Comments on Surveys 8,9 and 10

Fitzgerald River National Park contains a wide variety of habitats from open sand plain heath with scattered shrub mallees to woodlands dominated by E. occidentalis. Many of the habitat types are very extensive and widespread, while others are confined to small areas under special conditions, e.g. Acacia thickets alongside rivers and lake margins.

Most of the thicket types of habitat were trapped in during these three surveys. Special attention was given to the area around West Mt.Barren following reports of small hopping mammals (A.A. Burbidge pers. comm.) Nevertheless very few mammals, beside R.fuscipes and M. fuliginosus were recorded.

SURVEY NO. 11

Location

Darling Scarp in 32°05' S; 116° 02' E.

Dates

8.12.75 to 11.12.75

Locality description

On top of the scarp the vegetation was low open forest of Jarrah (E. marginata) with a closed/open heath understory to 0,5m (in Canning 601 or 212 blocks). Along a creek going down the scarp, Agonis sp and grasses formed a closed heath (in Canning 466). Traps were also laid in a "swampy area" adjacent and just north of Mills Road opposite the Wildlife Park. The ground was damp and the area supported a closed heath to 0.5m.

Trap effort

180 cage trap nights over 3 nights.

Mammals recorded

R. rattus

R. fuscipes

T. vulpecula

Dasyurus geoffroii

I. obesulus

Comment

Advice was received that a Woylie (B.penicillata) had been found on Mills Road Gosnells. Subsequent enquiries revealed that several Woylies escaped from the privately owned Wildlife Sanctuary. Though no Woylies or Potoroos were found, the area has a very interesting mammal fauna. Being so close to Perth it makes the area even more unusual. At the present time, the vegetation is fairly undisturbed due to the fact that a 4-wheel drive vehicle is required for access. Efforts should be made to keep this area in its present state.

SURVEY NO. 12

Location

South West of W.A.

Dates

4.2.76 to 10.2.76

Mammal recorded

a) Sand Dunes: Pick up material

William Bay National Park 35°01'S; 117°11'E

S. brachyurus 76.4.18

M. fuliginosus 76.4.17

R. rattus M14531

b) Fresh Specimens

M. irma Side of road. M14521
33°15'20"S, 119° 44'50"E

T. vulpecula Side of road. M14522
34°47'20"S 118°16'50"E

I. obesulus Picked up live, on Granite Peak;
34°47'00"S, 116° 42'10" E. M14528

C. gouldii

Hand caught M14529-30 33°56'00"S, 115° 30'30"E

Comments

When ANS left to work for the W.A. National Parks Authority, a trip was planned to help brief EDK, on what had been done previously. Sites that had been examined by ANS were visited. No trapping was done, but several sand dunes were examined and as usual various road kills inspected. All localities surveyed by ANS except that of Survey No.4 were visited.

SURVEY NO. 13

Location

Shannon Block - State Forest No. 41 34°36'S, 116°25'E

Dates

19.2.76 to 27.2.76

Trap effort

360 cage trap nights over 8 days.

Mammals recorded

R. fuscipes trapped M14503 - 14516

I. obseulus trapped

M14517 - 14520; M14830

This species seems to have a seasonal cycle of trapability None were caught during Survey 7, which was carried out during Autumn. There was evidence of breeding in February 1976 as one of the females had a joey.

M. irma Picked up on side of road. 33°39'00"S; 116°01'30"

M. fuliginosus Pick ups.

M14524/5, bush, 34°26'30" S; 116°46'00"E
M14526, road, 34°26'10" S; 116°40'00"E
M14527, road, 34°27'40" S; 116°49'30"E

Comments

The Shannon area was revisited during a different season to see if the unidentified animal could be recaptured. The same area as before was retrapped (See Survey No. 7)

Though the area has received a fairly intensive trapping effort, the identity of the animal remains unknown. This lack of success could be due to two factors.

(i) The density and/or characteristics of the animal are so low and/or different that the trapping methods currently being employed are inadequate to trap it.

(ii) The logging program has so disturbed the area that the animal no longer exists in the area. If this is so then what is said later in this section on the effects of forestry management on the Potoroo Search is relevant.

SURVEY NO. 14

Location

Augusta Area

1) Sussex Loc. 4156, 34°16'30"S, 115°19"00"E

2) Sussex Loc. 826, 34°17'09"S, 115°15'40"E

3) Sussex Loc. 2979, 34°15'15"S, 115°14'45"E

Dates

12.3.76 to 22.3.76

Locality description

1) Closed heath of Banksia sp. to 2.0m;

2) Swamp (wet) surrounded by closed heath to 1.0m;

3) Closed heath of Melaleuca sp. to 1.5;

Trap effort

Total: 410 cage traps nights - 4 to 9 days.

Mammals recorded

R. fuscipes trapped in area (1) M14744-8

R. rattus trapped area (1) and (2) M14749 - 8, M14754

I. obesulus trapped area (1) and (3)

M. fuliginosus Pick up, bush. M14757.
34°15'15" S; 115°14'45"E.

The following bones were collected in the sand dunes between Ledge Point and Black Point, adjacent to Sussex Loc. 448, 574, 575, 576, 367 and 704.

S. brachyurus

H. chrysogaster

Rattus tunneyi

R. fuscipes

I. obsesulus

P. peregrinus

D. geoffroii

V. vulpes

O. cuniculus

various birds, lizards and snakes

These are catalogued in the palaeontological collection - W.A. Museum under 76.4.41 cf.

Comments

The museum has a record of a quokka (S. brachyurus) coming from this area in 1963.

As well quokka bone fragments are found in the coastal blow outs East of Augusta between the Scott River and the coast (Butler 1969). Potoroo skeletal remains have also been found in the surface deposits of caves between Cape Naturaliste and Cape Leeuwin, especially those south of Margaret River. (See Section 7). No trapping has previously been carried out in the area.

The coastal sand dunes in the area are a rich source of bones from many species. In addition to those listed above, Butler (1969) has found bones of Sarcophilus sp. M. fuliginosus, and B. penicillata. The fossil egg of the "Scott River" animal has also been found in the same deposit (Butler 1969).

Not much work has been carried out on these deposits and more surveys are required to fully describe the fauna in them and to obtain data on their age and method of deposition. As the area is receiving more recreational (mini bikes) and grazing pressures as time goes on, the deposits could be extensively damaged.

It is reasonably probable, due to the disturbance caused by the cattle and frequent fires, that no Potoroos will be found in this general area - though there are some areas that have'nt been burnt for some time.

SURVEY NO. 15

Location

Two People Bay Nature Reserve

Trapping carried out in Robinson's, Pizzy, R10 and Gardner Gullies and southern end of the western boundary of the Reserve.

Dates

23.4.76 to 2.5.76

Locality Description

See Survey No. 3

Trap effort

360 cage trap night over 4-9 nights

Mammals recorded

R. fuscipes trapped M14774 to M14781

S. brachyurus trapped 2 juveniles both released. Caught in Robinson's gulley.

1 juvenile had the following measurements.

Pes. = 81.3 mm

Leg = 112.9 mm

Body weight = 1.26kg

This is the first time that quokkas have been trapped on the reserve.

M. musculus small Elliot M14793

Antechinus flavipes trapped small Elliot - released

The following species were obtained in the sand dunes located in the reserve.

Antechinus apicalis

I. obesulus

T. vulpecula

P. peregrinus

S. brachyurus

M. irma

R. fuscipes

O. cuniculus

Unidentified fish, snail, lizard and bird.

The collection is in the W.A. Museum

Palaeantological Collection catalogued under 76.6.1 to 76.6.9

Comments

Further effort should be made in this area. Population levels could be so low that this could effect their trapability. The area is an ideal Potoroo habitat. (See Section 4).

SURVEY NO. 16

Location

South Coast Islands

Bald (34°55'S, 118°28'E)

Mondrain (24°08'S, 122°15'E)

North Twin Peaks (33°59'S 122°50'E)

Corbett (34°07'S 121°59'E)

Wilson (34°08'S 122°00'E)

South Twin Peaks (34°01'S, 122°49'E)

Dates

29.5.76 to 3.6.76 Trapping Bald Island

5.6.76 to 7.6.76 " Mondrain Island

8.6.76 to 11.6.76 " Nth. Twin Peaks Island

5.6.76 3hr. visit to Corbett and Wilson Island

11.6.76 1hr. visit to South Twin Peaks Island

Locality Description

The vegetation of the islands have been described in detail by Storr (1965) and Willis (1954). No fires have occurred on the islands since these reports were written. The reasons why each of these islands were visited were as follows:

Bald Island: An unconfirmed record of a bandicoot and bandicoot diggings (Storr 1965) occurring on this island and the superficial similarities between bandicoots and Potoroos prompted the visit to this island. As well, no trapping had been carried out on the island. If the Potoroo existed on this island it could either be P.t. gilberti or P. platyops as both were found near King George South, Albany (See Section 2).

Mondrain Island (Recherche Archipelago (R.A.)) This island is large and has very dense vegetation on it. No extensive trapping had been carried out on the island. If Potoroos were found on any of the R.A. islands they most likely would be P. platyops. Rock wallabies (Petrogale pencillata) are known from this island.

North Twin Peaks Island (R.A.) For the same reasons as above. Tammars (M. eugenii) are known from this island.

Corbet Island (R.A.) Unconfirmed reports of small wallaby prompted the visit. As well it had never been visited by a scientific team.

Wilson Island (R.A.) As for Corbet.
Rock wallabies (P. penicillata) are known from here.

South Twin Peaks Islands (R.A.) Adjacent to North Twin Peaks and suitable enough to perhaps have Potoroos on.

Traps were set in thickets in areas near the various camp sites on the islands.

Trapping effort

,0 cages
40 Medium Elliots
40 Break Backs

All traps were put out during the first day of arrival except on Bald Is. where they were put out the following day. Each island had 360 cage trap nights, over 3 nights.

Mammals recorded

Bald Is:

S. brachyurus
specimen trapped M14808. Large number of quokkas were seen and a number of skulls were picked up.

Neophoca cinerea

A skull was picked up. M14810 - a number of individuals were seen on Bald Is. and on the rocks off the island.
No other signs of any other mammals were found.

Mondrain Is:

Petrogale penicillata
A large number were seen. Two were shot. Adult male and female M14802, M14801. Skeletal material was collected.

R. fuscipes (Bush rat) - trapped M14782 to M14792.

Wilson Is:

P. penicillata
Two specimens were shot M14794, M14796
Adult male and female. Skeletal material was picked up.
M14797 to M14800. No other mammals were seen.

Corbet Is:

No sign of mammals, though particles thought to be rat or mouse faecal pellets were seen.

South Twin Peaks Is:

No sign of mammals seen.

North Twin Peaks Is:

R. fuscipes
Trapped M14758 to M14773. First record of this species for the island.

No evidence of R. rattus reported to be present by Willis (1959)

M. eugenii
2 Adult males shot (M14806/7)
Skeletal Material M14803/5

Comments

Unlike the islands off the West Coast of Western Australia, those off the South Coast have been rarely visited by either scientific teams or fishermen. They were however used extensively during the early 19th century by sealers.

Some of the South Coast Islands have populations of marsupials which are either absent or rare on the adjacent mainland (Storr 1965, Willis 1954). As (i) Potoroos are found on the larger islands in the Bass Strait (Hope 1969), (ii) the W.A. Islands in general tend to preserve their fauna more efficiently than does the adjacent mainland and (iii) as both P. platyops and P. tridactylus bone material have been found along the South Coast of W.A. (See Section 2) it was thought that either one or both species of Potoroos could still exist in one of these South Coast Islands.

Due to complex nature of the trip and the general interest of the South Coast Islands additional personnel came on the survey. These were Dr. A.A. Burbidge, Dr. A.N. Start, Mr. N.L. McKenzie, Mr. W.K. Youngson and Mr. A. Hopkins. All were from the Wildlife Research Centre except Dr. A.N. Start who was from the National Parks Authority.

Further trips to the islands of the Archipelago are warranted to ascertain the mammal fauna of these islands. There are specimens of Bandicoot (I. obesulus) from Daw Is. in the W.A. Museum (Glauert 1957) and Goodsell et al. (1976) reported that they found Pseudomys albocinereus (Ashy-Grey mouse) on Woody Island.

SURVEY NO. 17

Location

Area between Warren and Donnelly Rivers.

Dates

27.5.76 to 31.5.76

Mammals recorded

M. fuliginosus
Many seen in the low heathlands to the West of Brooke Inlet.

Bone material found in Yeagerup Sand Dunes:

B. penicillata

S. brachyurus

I. obesulus (Bandicoot)

M. fuliginosus (Western Grey)

This collection is in the W.A. Museum palaeantological section and catalogued as 76.6-10 to 76.6-15.

Comments

The area bounded by Vasse Highway to the North, Warren and Donnelly Rivers to the East and West and the South coast is one with few roads and is fairly inaccessible. The area around Brooke Inlet into which the Sannon River flows is of similar nature. A explanatory trip was organised to search for any suitable Potoroo habitats. The W.A. Museum has a pick up bone specimen of P.t.gilberti collected in the sand dunes West of the Cliff Point area (250,000 Map, Pemberton Sl 50-10, Grid Ref. 695 428) No trapping was done but sand dunes were looked at. The area West of Brooke Inlet has been affected by Cattle. However, the area east of the Inlet contains areas of dense vegetation especially along Woolbale Road. This area should be looked at carefully though no obvious signs of Potoroos were seen during the present trip.

SURVEY NO. 18

Location

Walpole area.

1) Valley of the Giants Road: 34°58'12"S; 116°53'07"E.

2) Cotton Creek; 34°56'25"S; 116°49'37"E

3) Brainy Cut-off Road; 34°38'05"S; 116°49'37"E

4) North Road; 34°56'28"S; 116°48'00"E

5) Circular Pool Road; 34°56'28"S; 116°48'00"E

Dates

16.6.76 to 25.6.76

Locality description

1) Tall woodland of Red Tingle

(E. jacksonii) with closed understory - Undulating country

2) Closed forest with an open/closed understory. Along creek.

3) Tall open forest - woodland with a open/closed understory. Along creek.

4) Closed heathland. Flat sandplain country in a slight depression.

5) Closed heathland.

Trap efforts

Equally space between sites. 250 cage trap nights over 5 days at each site.

Mammals recorded

R. fuscipes Trapped - M14811 to M14827 - All areas.

R. rattus Trapped at (1) M14828

I. obesulus Trapped at (3) M14829.

H. chrysogaster Trapped at (5)

M. fuliginosus Seen on the coastal heathlands.

The following bone material was collected in the coastal sand blow outs.

P. peregrinus

S. brachyurus

I. obesulus

M. fuliginosus

O. cuniculus

Unidentified bird, lizard, fish and artifacts.

These bones are in the Palaentological collection - W.A. Museum catalogued as 76.6.46 to 76.6.56.

Comments

ANS reported that a quokka skull had been recently found in the Walpole-Nornalup National Park (M14583). In addition no previous trapping had been carried out in the park at all. The Forest Department has carried out a mammal survey to the North of the Park in Soho Block. There are many thickets in the Karri and Tingle forest. As well dense thickets line the Inlet. Fires tend to be less frequent than in State Forests due to National Park policy. Along the coast at Point Nuyts and Banksia Camp there are sand gullies with very dense vegetation in them. In this trip they were only slightly explored. In all the area requires further investigation.

SURVEY NO. 19

Location

Fitzgerald River National Park

Trapping Sites:

1) Along Gairdner Road; 8 km N.W. from Quaalup H/S. 34° 14'S. 119° 19'E.

2) Intersection of Colletts and Gairdner Roads. 34° 13'S. 119° 18'E.

3) Around salt lake adjacent to Colletts Road. 34° 12'S. 119° 24'E.

4) Along West Mt. Barren Track north of West Mt. Barren.
34°13'00"S; 119°23'40"E

Sand dunes Bremer Bay 250,000 (Sl 50-12)
Grid Ref: 244756; 34°22'S; 119°24'E

Dates

16.7.76 to 22.7.76

Locality description

1) Flat sandy - plain country low shrubland.

2) Side of a small flat hill and adjacent to a fresh (Osmotic Pressure = 82m Osmols/kg) water seepage. - Low shrubland.

3) Around a salt lake. Open wood land of paperbark trees with open heath of bullrushes in the understory. The water was extremely salty (Osmotic Pressure = 1680m Osmols/kg)
34°10'40"S 119°23'50"E

4) Closed heath/scrub of Banksia spp. Side of a slight sandstone ridge.

Mammals recorded

M. musculus Trapped, Elliot trap around area (3) M14832.

R. fuscipes Trapped area (1) and (4) - M14833-5

I. obesulus Trapped, released area (4). Females caught either had enlarged teats or small young.

M. irma One sighted at night near Quaalup H/S

M. fuliginosus Several seen in the Park.

O. cuniculus Several shot near Quaalup H/S

The following bones were collected from the sand dunes.

M. irma

M. fuliginosus

Lizards, birds and artifacts.

These are in the Palaeantological collection (W.A. Museum) and catalogued from 76.6.46 to 76.6.56.

Comments

Information was received from the local National Parks Rangers - Mr. J. Hill and Mr. G. Keen - of small hopping animals. It was reported to Mr. J. Hill that such animals were seen at Location No. 1652 near Jerramungup. Mr. Keen himself had seen a similar animal at Quaalup Homestead. In addition, a survey of the W.A. Museum mammal records reported that a Woylie (B. penicillata) had been found 16 miles East of Jerramungup. Mr. March of the A.P.B., Department of Agriculture, Jerramungup had also received reports of similar animals at Locations 12120 and 1619 on Lands and Survey map 434/80 and 1620 on map 419/80. There reports were also investigated.

Mr. G. Keen has reported that there are several places in the Park where there is very thick vegetation. Further efforts should be made to fully document the fauna of the Park. P. platyops could be in the Park.

As the vegetation contains poison plants (Oxylobium and Gastrolobium spp) sheep have not been allowed to roam freely in the native bush. The consequence of this is that the vegetation is relatively unaffected by grazing pressures. Though rabbits are only limited to small areas of the Park, they may have been more plentiful before. These animals could have affected the survival of P. platyops.

SURVEY NO. 20

Location

1) Shannon Basin along Snake Gully Creek in Westcliffe Forest Block. 34°37'30"S; 116°19'40"E.

2) Mt. Many Peaks. Reserve Nos. 29883 and 25865 34°53'S. 118°17'E.

3) Two Peoples Bay Reserve sand dunes. 34°58'S. 118°07'E.

4) Sand dunes south of Plantagenent Loc. 4130 35°01'S. 117°02'E.

5) Sand blow out at Boat Harbour east of Reserve 7723. 35°02'S. 117°04'E.

6) Sand blow out south of Plantagenent Loc. 4348 and 1km east of Norman's Beach. 34°54'S; 118°13'E.

Dates

1) 10.8.76 to 14.8.76

2) to 5) 15.8.76 to 20.8.76

Locality description

1) Along Snake Gully Creek in Westcliffe block near where the sighting was made.

Tall woodland of Karri (E. diversicolor). Low woodland of Casuarina sp. and Karri Wattle (Acacia pentadeniq) with a closed heath and tussock grassland understory.

Trap effort

1) 60 cage trap nights over 3 days.

Mammals recorded

Site 1) R. fuscipes

Site 3) Bones of:

D. geoffroii

I. obesulus

P. peregrinus

T. vulpecula

M. fuliginosus

S. brachyurus

R. fuscipes

Site 4) Bone Of:

P. peregrinus

M. fuliginosus

S. brachyurus

Canis familiaris

R. fuscipes

Site 5) Bones of:

S. brachyurus

Site 6) Bones of:

S. brachyurus

Bones are in the Palaentological collection (W.A. Museum) catalogued under 76.

Comments

This trip was made to follow up a report of a sighting of a 'Potoroo like creature' in the Shannon Basin near to where the other sightings had been made (See Survey 7 and 13). The visual sighting of the animal was made along Deeside Road, about 13km South West of the previous sighting.

As well two exploratory trips were to be made - one to the Mt. Manypeaks area and the other to the Two Peoples Bay Reserve.

As bandicoot diggings were common in the Shannon area, the sighting could have been one of these. However, being so near to the other area makes the sighting very interesting. The Shannon Basin in all is a very interesting area.

Comments on the other areas visited are as follows:-

Reserve 33842

This area which surrounds Boat Harbour has had cattle in it but it does contain large areas of very dense vegetation (closed heathlands). The reserve should be looked at very closely. Signs of quokkas were found.

Stirling and Porongurup National Parks

These are very interesting reserves and contain many densely vegetated gullies. However the dominant vegetation types are markedly different.. The Porongurup National Park is dominated by Karri (E. diversicolor) which is not present in the Stirling Range National Park. A fresh skull of a quokka has recently been collected in the Stirling ranges and lodged in the W.A. Museum. Further investigation of the fauna found in the parks should be made.

Mt. Many Peaks

A two day hike was made into the area. Rain made detailed observations difficult. However, the following is a summary of the area. The vegetation in the Waychinicup River catchment

area 29883 is extremely dense (See Survey No. 3). The area at the base, sides and gullies of Mt. Many Peaks (25865) is also very dense. The area does'nt seem to have burnt for some time.

The following were found:

i) Rabbit faeces

ii) Possum faeces

iii) Large and medium sized macropod faeces

iv) Bandicoot - diggings and faeces

v) Tunnels in the dense vegetation

vi) Quokka faeces

This area is extremely interesting and deserves further investigation before a fire goes through it. It would be better to investigate it during the summer when the conditions are more amenable.

SURVEY NO. 21

Location

Area between Cape Naturaliste and Cape Leeuwin

Comments

A large number of the caves in the area contain bones attributable to P.t. gilberti (See Section 2). These bones are frequently located in the surface deposites.

Shortridge (1910) reported that the natives of the Margaret River area called the Potoroo, "Wurrark".

These facts would indicate that, though no live specimens of P. t. gilberti were known to have been collected from this area, Potoroos did inhabit the area just prior to when European man came into the district. With the help of Mr. R. Hart of the University of W.A. Speleological Club E.D.K. visited a few of the areas.

The following caves where Potoroo remains have been collected were visited:

Calgardup

Brides

Mammoth

Giants

Nannup (Devil's Lair)

The area has been extensively logged. As this was carried out before the Forest Act of 1918, the logging techniques used greatly affected the forests.

However, some of the untouched areas along the coast of this area between the two capes are thickly vegetated and could contain Potoroo populations.

CONCLUSIONS

Potorous tridactylus gilberti

This species apparently occurred from the vicinity of King George's Sound (where specimens were collected by Gilbert and Masters during the 19th Century) to the Leeuwin-Naturaliste Ridge (where it is well represented as sub-fossil material in cave deposits). Baynes (pers. comm) has suggested that it was restricted to areas of dependable summer rainfall. This would be in keeping with both the available data on its former distribution and the ecological requirements of other races from eastern Australia.

The only habitat notes on P.t. gilberti are those of Gilbert himself who recorded that "this little animal may be said to be the constant companion" of Setonix brachyurus and that it inhabited "thickets of spearwood and rank vegetation surrounding swamps or small running streams". He detailed how the Aboriginals "often kill immense numbers in a few hours". (unpublished manuscript in Gilbert's handwriting).

There is no record of the vegetation types in which these swamps occurred, however since there is no wet sclerophyll forest in the immediate vicinity of King George's Sound, it must be presumed that they were in dry sclerophyll forest or coastal heathland.

On the Leeuwin-Naturaliste Ridge there is a wide variety of vegetation types from coastal heath through scrub and woodland to dry sclerophyll forest with some relict patches of wet sclerophyll forest. Caves are mostly not associated with swampy vegetation. Thus P.t. gilberti occurred in forests, woodlands or heathlands in this area anyway.

During the survey mammal bones were collected from coastal sand dunes at several points between Cape Leeuwin and Two Peoples Bay. In almost all cases remains of S. brachyurus outnumbered all other species and material from several hundred individuals was recovered. Other remains represented a wide range of mammal species commonly including rodents. However, no material referable to P.t. gilberti was found.

These sand dunes are all in coastal heathlands. Although S. brachyurus was not found by us in this habitat except at Two Peoples Bay and (subsequently) at Walpole, many elderly people remember it as a common animal in the coastal heathlands prior to the early 1930's.

The present range of S. brachyurus is far greater than the supposed former range of P.t. gilberti so that it would appear that the habitat requirements of P.t. gilberti were more restrictive than those of S. brachyurus. In the location Gilbert worked, the habitat was obviously suitable to both species, however we suggest that P.t. gilberti did not inhabit coastal heathlands even though S. brachyurus did so.

Therefore, in the vicinity of King George's Sound P.t. gilberti probably inhabited swampy areas of thick vegetation within the dry sclerophyll forests; whether it also occurred in the wet sclerophyll forests to the west is conjectural. There is no evidence to suggest that it did so, although other races from eastern Australia occur in wet sclerophyll forest.

Nevertheless, the possibility can not be discounted that the animal caught and carefully observed by a Forests Department Officer, and observed less carefully by timber workers in Shannon Block, part of the Shannon basin, in virgin Karri forest, was a potoroo.

The forests officers description of the large macropod type lower incisors and the insistence by the workers that it did not look like a bandicoot I. obesulus (that was later shown to them) suggests that it was not I. obesulus.

The description given could fit either a Woylie, Bettongia penicillata or a young S. brachyurus. The tail is the most distinctive external feature distinguishing P.t. gilberti from B. penicillata. The captured animal had lost its tail, however, P. Christensen (pers. comm) considers the presence of B. penicillata in wet sclerophyll forest to be most unlikely. The size of the animal would seem to indicate that it was far too small to be S. brachyurus unless it was a very young animal. However, the tree fellers said that they had seen others, all about the same size.

The animal was caught while clear felling a coupe of virgin Karri forest. All adjacent Karri had been felled in the past and consisted of young

regeneration. There was some mixed Jarrah/Marri forest adjacent to the Karri. A small stream, Fish Creek, ran close to the point of capture. The stream bed contained dense swampy vegetation, principally the rush Lepidosperma effusum. A 100m strip either side of the creek was left uncut as a "stream reserve".

By the time ANS had heard of the animal, felling operations were almost complete and despite heavy trapping efforts on two survey trips along the creek and in adjacent forest areas, no further evidence of the animal was obtained.

Clearly the numbers of P.t. gilberti have been greatly reduced since the time Gilbert and Masters visited King George's Sound. Whether or not P.t. gilberti is now extinct is impossible to say. Recent years have seen the apparent comeback of S. brachyurus on the mainland of south western Australia As recently as 1970, Ride wrote "Until the mid-1930's the Quokka was a very common animal in the south west where it occurred in swampy thickets; Quokka-shooting was even a familiar sport. Today, it is rare on the mainland where it is only known with certainty in a few swampy valleys in the Darling Range close to Perth".

Today S. brachyurus is common in suitable habitats along the Darling Range and in the swamps of the south west to as far east as Waychinicup. In part the realization that the Quokka is so common and widespread, stems from a knowledge of its habitat and the ability to identify the tunnels and droppings that are so abundant in "Quokka swamps", for Quokkas themselves are rarely seen unless trapped.

However, there are widespread reports by oldtimers that in the early 1930's there was an enormous decline in the numbers of Quokkas, possibly associated with disease (White 1952). For a long time they were thought to have died out in many areas and to be very scarce elsewhere. Only on Bald Island and Rottnest Island did they remain abundant. However, they must have survived in small numbers throughout their present range.

The table below shows the dates of acquisition of specimens of S. brachyurus handed into the western Australian Museum. Of the 26 specimens listed, 14 (54%) were handed in between 1929 and 1935. None were handed in for 21 years between 1936 and 1956 inclusive. Since then acquisitions have become more frequent.

Date	Location
1913	Lake Muir
1921	Big Grove - King George Sound
1928	Uralla; Capel river
1929	Newlands
1929	Karridale
1929	"
1930	Holyoake via Pinjarra
1930	Mundaring - Forest Reserve (4 animals)
1930	Mundaring Weir
1930	Collier Burn via Collie
1930	Newlands (2 animals at different months)
1931	Group 75 Karridale
1931	Charkerup (near Albany)
1933	" " " (2 animals)
1933	Karridale (2 animals at different months)

Date	Location
1934	Wellington Weir
1935	Torbay Albany
1957	Long Swamp via Byford (several were caught there)
1962	Nannup
1965	Cowaramup
1967	26 Mile Peg. Albany Highway
1969	Two Peoples Bay Reserve
1970	Armadale
1970	Stirling Ranges
1972	Walpole
1972	Two Peoples Bay Nature Reserve

It is possible that P.t. gilberti underwent a major decline alongside S. brachyurus in the 1930's and that either it became extinct, or its numbers were drastically reduced and remain at a very low level, possibly in only a few isolated remnant populations. Several oldtimers living along the south coast remember the "miniature kangaroo" which they occasionally saw while "wallaby" (quokka) hunting or which they occasionally caught in rabbit traps. The "miniature kangaroos" were about the same size as the "boodies" (bandicoots) but had very soft fur. All the people who talked of the "miniature kangaroos" believed that they died out with the "wallabies" in the early 1930's.

Why no P.t. gilberti were handed into the museum if the above were true, remains problematical. However, S. brachyurus lives in dense colonies in the swamps, where as P. tridactylus in eastern Australia occurs at fairly low densities. If the same were the case for P.t. gilberti, this could be an explanation. Nevertheless, it contradicts Gilbert's statement that the Aboriginals were able to kill vast numbers in a swamp.

Failure to capture any P.t. gilberti during the survey could be associated with several factors -

1) It may be extinct.

2) It may occur in specialised habitats that were not investigated. This is probably doubtful, as a wide range of habitats were trapped, usually bearing in mind Gilbert's assertion that it lived alongside S. brachyurus in thickets or around streams or swamps.

3) It may now be restricted to a few isolated locations that were not investigated.

4) Trapping techniques may not have been suitable. However, the traps used were larger than those employed in Victoria and the bait was very similar. Nevertheless, if P.t. gilberti has a specialised diet e.g. sub-terranian fungi, it may not have found the bait attractive. Snares were not used extensively, although they were fairly effective when used to capture S. brachyurus. Many of the habitats were unsuited to snaring and snares usually killed whatever mammals they caught. It is noteworthy the Mr. D. Smith trapped intensively for over four months on Flinders Island before capturing the first of four Potoroos (Johnston 1973) yet at Corbago, N.S.W. 46 Potoroos were captured in 175 trap nights between 29th August, 1968 and 2nd September, 1968.

The decline in P.t. gilberti could also be associated with any of several factors or a combination of those factors.

1) Disease has already been discussed.

2) Competition with feral animals such as rabbits or predation by feral animals such as cats or foxes. Rabbits were seldom found in quokka swamps. They normally inhabit cleared land, particularly the margins of cleared land in the south west although they are abundant in some coastal heathlands. However, both cats and foxes are numerous. In eastern Australia Potoroos have survived despite these predators, but it is in Tasmania where foxes are absent that Potoroos are most common and widespread.

3) Alienation of land both by clearing of bush and by draining of swamps has been widespread in the south west. Nevertheless, there are still large tracts of forest and extensive swamps. There has been less clearing of coastal heathland but repeated burning and heavy grazing of stock has altered much of this country. Alienation of land has certainly reduced the area of natural vegetation, but it has not eliminated the bush.

4) Management of natural vegetation could have had a very heavy impact on species with restricted habitat requirements. The most important aspects of management relate to utilization of the forests for timber production and the greatest impacts are felling operations and burning techniques. The root rot disease, known locally as Jarrah dieback, caused by the pathogenic fungus Phythopthora cinammomi is causing great changes in the environment within Jarrah forests but it has probably not had a major impact of the habitats that are thought to be suitable to Potoroos i.e. swampy vegetation and thickets of the south coastal area.

Timber extraction techniques have varied in manner with the timber species being extracted an in time with the degree of control over operations by Government through the Forests Department. Thus Jarrah (Eucalyptus marginata), the dominant species in dry sclerophyll forests has long been selectively cut while Karri, (E. diversicolor) is clear felled and the operation followed by an intense fire to promote regeneration. The difference in extraction technique are a result of different regeneration requirements.

Prior to 1918 there was no government control of logging activities. Clear felling was normal but no efforts were made to induce regeneration. During this period severe damage was caused especially along the Leeuwin-Naturaliste Ridge. This could have had an adverse effect on any P.t. gilberti populations in the area.

Recently a woodchip industry based on the wet sclerophyll forest has been established. This will result in an accelerated cutting rate of virgin forest and could seriously threaten any surviving populations of P.t. gilberti within the woodchip licence area. The Forests Department has introduced a system of stream reserves and other conservation measures to try to lessen the impact of timber

extraction. However, their effectiveness remains very doubtful for many species, particularly terrestrial mammals. (see Marri Woodchip Project. Environmental impact statement. Forests Department, Perth, and Recher 1975).

The second major influence on the forests of the south west is the controlled burning undertaken by the Forests Department.

The history of fire control in Western Australian State Forests has changed over the years. Until 1965 the emphasis was on fire exclusion and heavy reliance was placed on firebreaks. One commonly adopted method was to build roads either side of and parallel to streams and to burn out this area between the roads including the stream margins.

Subsequent to the distastrous fires at Dwellingup in 1965 the policy changed towards regular reduction of combustable litter by low intensity prescribed burns within the forest. Most state forests are now burned at intervals of between 4 and 8 years. The interval depends in part of the rate of litter accumulation and thus forest type. With this regime swamps and damp creek margins may only burn once in every two or three fires.

Bearing in mind Gilbert's statement regarding the presence of P. tridactylus in swamps and stream margins, this early burning practice could have had severe effects on the species. It is also worth considering whether the recent comeback of S. brachyurus may be related to the change in burning policy.

There has been much argument on the effects of regular burning on native mammal populations and it would appear that there is no simple generalization. For example, Christensen and Kimber (1975) summarised one study by stating "no one prescribed burning regime will encourage maximum population levels of all the mammal species in an ecosystem". During their studies they found that Macropus fuliginosus and M. irma were most commonly observed on areas burnt one year previously. Their abundance (particularly M. fuliginosus) decreased with age of vegetation since last burning. In the case of Rattus fuscipes they suggest that fire effects were short term. They studied two swamp inhabiting mammals S. brachyurus and A. flavipes.

They found that population levels of A. flavipes remained very low in swamps thirty years old or less, but were high in older swamps. However, S. brachyurus return rapidly to the swamp after burning but probably use it only for feeding for the first year, and are permanently resident in it after five years. S. brachyurus is able to utilize the fresh growth for food, provided it has suitable cover within a reasonable distance (Christensen and Kimber (opp. cit.) suggested that in one case they travelled 800m from cover to a freshly burnt swamp to feed.) Nothing is known of the fire effects on sub-terranian fungi, if that forms a major diet of P.t. gilberti or of any other food source it may utilize.

In conclusion it would appear that P.t. gilberti inhabited swampy vegetation in areas of dependable summer rainfall along the south coast of Western Australia. It has not be

recorded since 1869 and may be extinct. It may have survived in fair numbers until the 1930's but if it still exists, it is probably in small numbers or in isolated populations. We believe modern forestry practice may pose a serious threat to any surviving populations.

The present potential range of P.t. gilberti is from Two Peoples Bay westwards to the Leeuwin-Naturaliste Ridge in a narrow strip along the south coast, but extending throughout the wet sclerophyll forest.

We still believe that it may survive and suggest that the most probable areas are in the vicinity of Two Peoples Bay, particularly Mt. Gardiner and Mt. Manypeaks, remaining virgin Karri Forest particularly where the topography has lessened the frequency of fire or where swamps exist, and finally in swampy areas within the forest from Broke Inlet westwards to the Scott River. It could still survive in small populations in swamps outside these areas, e.g. the Denbarker swamp.

Mt. Gardiner is reserved. Mt. Manypeaks is remote. The area from Broke Inlet to the Scott River is proposed National Park. Thus we feel that any surviving populations in these areas are relatively secure. However, we are gravely concerned about the future of any populations that may be surviving in the wet sclerophyll forests.

Potorous platyops

Although P. platyops has a very wide distribution in the sub-fossil record from South Australia to Bremer Bay on the south coast of Western Australia and from the west coast of Western Australia north of Perth, much of the material is old and there is no evidence that it inhabited the whole of this range at the time of European settlement. (Baynes pers. comm.) For example Lundelius (1960) who made a deep excavation in Wedges Cave recorded P. platyops from many layers but not in the top foot.

It is difficult to ascertain the extent of its range during European times. The type specimen from Lake Walyormouring near Goomalling and the records of Gilbert and Masters from the vicinity of King George's Sound or the country to the east or north east of that area suggest that it inhabited south western Australia to the north and east of the forest block. Much of this land is now cleared for wheat cultivation.

Equally little is known of its habitat or habits. There is no precise data associated with any specimens except that from Lake Walyormouring about which Gilbert wrote "All I could glean of its habits was that it was killed in a thicket surrounding one of the salt lagoons of the interior". (Unpublished manuscript in Gilbert's handwriting).

Almost all the land in the vicinity of the lake locality is cleared. The reserve centred on the lake is so small and so much altered that it is very improbable that the species has survived there.

Our search for this animal was centred on the south coast of Western Australia from Mt. Manypeaks to the Fitzgerald River and to some island off the south coast. The reasons were that it is only along the south

coast that extensive tracts of natural vegetation persist in areas known to have supported the species in the recent past. The islands were visited because experience has shown that several small macropods have survived on off shore islands around Western Australia when their mainland populations have been severely diminished or exterminated. e.g. Lagostrophus hirsutus and Bettongia lesueur on Bernier and Dorre Islands P. penicillata on Wilson Island, Recherche Archipelago.

Comments made under P.t. gilberti relating to possible reasons why we were unsuccessful in attempts to trap that species apply equally to P. platyops.

Although no evidence of the continued existance of any populations of this species was gathered there are still large tracts of land between Mt. Manypeaks and the Fitzgerald River which might support the species but which we were unable to survey.

Furthermore, there are very large areas of relatively undisturbed land east of Fitzgerald River including Cape Arid National Park and the Nuyts Wilderness area which could support it.

If the assumption that P. platyops inhabited the wheat belt are valid, the primary cause of its decline and disappearance over this area would be habitat destruction. However, along the south coast other factors must be considered. These could include any, or a combination of some or all of this following.

1) Disease

2) Competition with feral animals such as rabbits or predation by feral predators.

3) Disruption of the habitat by factors such as fire which may have brought about a change in the structure or composition of vegetation associations that provided a habitat for P. platyops.

In summary, no evidence of the continued existence of P. platyops was obtained. It is considered that this animals probably inhabited part or all of the wheat belt and that its habitat has been destroyed in this area. However, there is reason to believe that it also occurred along the south coast for an unknown distance east of King George's Sound. There are still extensive tracts of relatively undisturbed vegetation between King George's Sound and Israelite Bay which could conceivably provide suitable habitats. Much of this land is reserved and or remote and should populations survive in such areas they may be relatively secure.

SECTION 5

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