

FLORA and FAUNA SURVEY of COMPARTMENTS 94 & 95, BROTHER STATE FOREST.

-prepared by Robert M. Kooyman, [FA- flora and fauna] Northern Rivers Region. 24 /12/97.

Results of field surveys are provided as field diary notes, data sheets, and species lists, with scheduled and target species records provided as AMG co-ordinants. Maps provide details of sample sites, playback locations, harp trap locations, sonar detection sites, species records and distributions, and extent and location of the various transects and traverses undertaken.

Introduction:

Flora and Fauna Surveys were conducted by Kooyman, [8-12/12/97, and 15-18/12/97], with Harvey, K. and Douglas, N. et al [SFNSW], assisting with integrated fauna features searches, and the general and target species fauna surveys, over the same period.

As part of the core survey team Robyn Herklots, and Nicole Harvey assisted with surveys of all fauna groups.

Detailed analysis of recorded microchiropteran bat calls was conducted by Noel Douglas and Nicole Harvey.

Consulting Botanist, Mr Andrew Benwell assisted with taxonomic clarification of a number of collected specimens.

General Description of Survey Area:

The two compartments cover an area of 549 hectares, with the proposed net loggable area adjusted to approx. 520 hectares, after deletion of [mapped] deferred forest types, Old-growth, fauna corridors, and the standard riparian and other exclusions.

Geology appears to be dominated by two main elements: the variously eroded granites, and the [volcanic] sediments and conglomerates from the main [Great-Dividing] range. Granite derived soils are mostly brown, to yellow-brown sandy clay loams, with sandy alluvium evident in creeks. There are areas of deeper brown earths [possible granodiorites - hornfels] in a number of areas along the main range, particularly in association with the higher peaks. These areas are generally dominated by New England Blackbutt, Ft163.

Altitudinal range varies from 1210m. to 870m. Slope classes vary from almost flat to moderate in the north of cmpt.94, to moderate to steep in the remainder.

The vegetation of the area is generally illustrated by the forest type map [SFNSW], except for the rainforest patch referred to above. **Species lists for forest types, and a composite list for the area have been compiled, and are appended to this report as field notes.** These provide an indicative sample of the various habitats, floristic alliances, forest types, transitional boundaries and overlaps.

The sequence of forest types largely follows the altitudinal, topographical, and soil gradients, and variations. Ft.163 [*E. andrewsii* subsp. *campanulata*, with *E. laevopinea*, *E. brunnea*, *E. obliqua*, *E. radiata*] occurs on the higher peaks and slopes in association with the granite derived soils, and extends onto the volcanic sediments, creating diffuse type boundaries with Ft.168,152,161,&122. All these types have predominantly grassy understoreys. Shrub layers are generally poorly developed. Some areas of regrowth are dominated by *Eucalyptus laevopinea*, with *E. brunnea*, *E. obliqua* and *E. amplifolia* [sometimes dominant] on the lower slopes and creek flats. Rainforest, [Ft.3] occurs as

one small patch in the NE corner of cmpt.95, and as part of the sparse understorey on some southern slopes, and associated drainage lines.

Along the creeks, there are several distinct riparian alliances including Ft. 161 [with *Leptospermum* spp. along the creek banks], and Ft. 152 [with *Acacia irrorata* in gully lines].

Small areas of Ft. 122, with *E.cameroni*, *E.caliginosa*[poss.], *E.obliqua*, *E.laevopinea*, *E.radiata*, occur in cmpt.94.

Flora survey methodology: Plant species recorded from each forest type [and habitat] were listed, and frequency of occurrence and stratum [canopy, sub-canopy] indicated. Walked traverses were mapped. [See field notes attached.]

Particular attention was directed to locating and recording the distribution and numbers of ROTAP plant species [Briggs and Leigh, 1995 Revised], and Schedules 1&2 [NSW Threatened Species Act, 1995] plant [and animal] species.

Botanical references used for study: Harden, G.J. Flora of NSW. vol. 1-4.

Flora of Australia. CSIRO. ABRS-Canberra.

Flora of SEQld. vol. 1-3, Stanley and Ross.

Eucalypts. Brooker and Kleinig. vol. 1.

Orchids of Aust. Nicholls.

NEFBS - results, various reports.

Sig. Plants of Glen Innes M.A., and EIS - SFNSW.

Fauna survey methodology: Includes application of the pre-logging / roading survey design forming part of the updated Threatened Species Protocol [8/9/97], incidental records collected during flora survey and habitat assessments, as well as the results of integrated koala transect surveys, and includes -:

1. walked spotlight transects, one kilometre long [minimum], 100 watt light, [with dimmers fitted].

minimum 10 minute listen at start and finish.

2. call playback for target species. Nocturnal -: powerful owl, masked owl, sooty owl, yellow bellied glider, koala, squirrel glider.

Diurnal -: eg. Bush Thick-knee.

Calls are started after a substantial listening period and played briefly at low volume.

This is done to avoid disrupting localised activity of the target or other species which may respond, [or be disturbed], and to maximise knowledge of actual habitat use, rather than gaining responses from further afield, [at least initially]. Louder playback calls are then initiated if no clear response is heard.

3. transect and incidental scat collection and identification. - results of predator, and [remaining unidentified] non-predator scat analysis provided by Barbara Triggs. Scat transects were integrated into all other traverse and transect samples.

4. track identification on sandy or soft sections of roads, tracks and creek areas.

5. extended listening time for calls, [variable sample length, and dependent on conditions], targetting all playback target species listed above, and including other seasonally variable species where appropriate.

6. harp trapping and sonar detection for bat species.

7. frog surveys - creek transects, habitat searches, and call playback and recording.

8. search for all other features listed in the Threatened Species Protocol Survey Design while applying the above flora and fauna surveys. [this will be supplemented by the SFO while marking out and supervising harvesting operations].

9. hair-tube sampling - no hair-tube sampling was undertaken on this survey, thus potentially under sampling for a number of terrestrial and arboreal species, eg. tiger quoll, long-nosed potoroo, brush-tailed phascogale. Conservation protocols should be applied for these species, to ameliorate potential impacts of proposed operations

10. one of us, [Kooyman], camps out in the survey area every night, moving from site to site, [habitat to habitat] during the course of the survey. This provides a substantial increase in; listening time, incidental and opportunistic scheduled species records, diurnal and nocturnal survey effort, and overall survey time/effort.

Rare, Threatened, or Significant Plants recorded in Brother SF. cmpts. 94&95.

One plant, seen and collected on several occasions during the survey, will be sent to the NSW Herbarium for identification and / or comment on taxonomy. Possible -

Boraginaceae: *Heliotropium* spp. The collected specimens appear to have some affinity with *H. sp. A*, however no fertile material was collected.

Results of Fauna Surveys:

1. **Glossy Black Cockatoo** [*Calyptorhynchus lathami*] - sch.2, this species was located in both the surveyed compartments by calls and sightings. Suitable habitat is widespread throughout the area. At the time of survey, feeding activity was apparently concentrated on the lower slopes and flats toward, and on, the creek-lines, with groups of upto six birds. Application of the Conservation Protocol and retention of any feed trees or nest sites located during the mark-up phase should assist this species.

2. **Square tailed Kite** [*Lophoictinia isura*] - sch.2, not recorded on this survey, but is regarded as likely to use the larger river valleys, flood plains, and woodlands of the area.

3. **Red Goshawk** [*Erythrorhynchus radiatus*] - sch.1, not recorded on this survey, but there are records for this species from the Clarence and Richmond River valleys and associated forests. This species is thought to favour the higher nutrient / higher productivity tall open forests and riparian vegetation of the larger river valleys, where prey species are abundant. However, it extends up to 1000 metres in altitude in suitable forest.[Debus et al,1991]

4. **Bush Thick-knee** [*Burhinus grallarius*] - sch.1, not seen or heard on this survey. There is suitable habitat in the survey area, and historic records for this species on the tablelands, however there are no recent records in proximity to the survey area. Searches for this species were incorporated into the general flora traverses in suitable habitat, which equates with almost the whole area. Playback sampling was undertaken at sites in the compartments, and one of us [Kooyman] camped in suitable habitat over the two week survey to extend available listening time.

5. **Regent Honey-eater** [*Xanthomyza phrygia*]- sch.1, not recorded on this survey. Nectar resources were limited at the time of survey to - *Eucalyptus radiata*, and several specimens of *E. amplifolia*.

6. **Swift Parrot** [*Lathamus discolor*] - sch.2, not recorded on this survey. The nectar resource was limited to just a few species during the survey time, and it is likely this [mainland overwintering] species has moved south to Tasmania for the breeding season.

7. **Powerful owl** [*Ninox strenua*] - sch.2, this species was recorded calling on two occasions on the same night during this survey, in cmpt.94, in Ft.163. Playback and listening was conducted for this species over the whole of the survey period, with one record from playback response adjacent to cmpt. 94, and the other from unprompted calling, in cmpt.94

8. **Masked owl** [*Tyto novaehollandiae*] - sch.2, not recorded during this survey. Suitable habitat for this species occurs over much of the survey area, ie. the dry, open forest types with a grassy understorey.

9. **Torquiose Parrot** [*Neophema pulchella*] - sch.2, not recorded this survey.

10. **Brush-tailed Rock Wallaby** [*Petrogale penicellata*] - sch.2. This species was not observed during the course of the survey, [nor are there any historic records], and no scats collected could be attributed to this species. Potential habitat for brush-tailed rock wallaby was located south of the survey area, [in the Henry River catchment], where there are areas of steep rocky terrain. The survey area proper lacks suitable habitat [for this species].

11. **Tiger Quoll** [*Dasyurus maculatus*] - sch.2, suitable habitat occurs in the area [particularly the higher altitude and moist areas of the main range] however the species was not recorded during this survey. This may reflect the lack of survey effort [no hair-tubing or trapping was undertaken], rather than a true indication of presence or absence in what is 'known habitat', [see previous records nearby]. Searches of rocky areas suitable for latrine sites or den areas were integrated into the general flora and fauna surveys, and the transect based 'integrated fauna features' and target species surveys. None were located, however these searches will be supplemented by SFO habitat and 'fauna features' searches during mark up stage of operations. Given the likely occurrence of this species in the harvestable area, and known records from nearby, SFO should be aware of the likely presence of latrine and den sites in the area.

12. **Yellow bellied Glider** [*Petaurus australis*] - sch.2, this species was recorded on several occasions on this survey in the northern and western areas of cmpt. 94. Yellow-bellied gliders are very mobile and can cover large areas, depending on the availability of feeding resources, so the SFO should look for V-notch and other incisions during mark-up and supervision stages of operations over the whole of the area, and in particular the areas with gum-barked trees. These are significant records for this species as there are [apparently] no previous records for this species in Brother SF.

13. **Squirrel Glider** [*Petaurus norfolcensis*] - sch.2. Not recorded on this survey. No response to playback calls. Habitat is generally suitable, particularly the drier, open forest habitat.

14. **Koala** [*Phascolarctos cinereus*] - sch.2, - Results of Koala surveys indicate that no evidence of Koala activity was found in the survey area. No scats or other indications of

this species were located during the survey, either during random traverses, along transect lines, or as a result of other target species surveys.

15. Rufous Bettong [*Aepyprymnus rufescens*] - sch.2. Recorded during this survey from footprints in mud in cmpt.95. Generally good to excellent habitat throughout the dry, grassy, open forest in the survey area. A range of non predator scats were collected, not all have been identified. Spotlighting and scat records indicate a very low strike rate for CWR terrestrial mammals. This is likely to be an indication of the impact of the fire and grazing history, and the presence of feral predators, [fox and cat].

16. Brush tailed Phascogale [*Phascogale tapoatofa*] - sch.2, not recorded this survey but the area has some good dry woodland /open forest habitat. No hair-tubing or trapping was undertaken on this survey, thus effectively undersampling for a species which is otherwise difficult to detect, and which seems restricted to areas closer to the coast. No previous records for the survey area.

20. Microchiropteran Bats - [Survey Protocol requires a minimum of two harp traps for two nights per. 200ha in suitable habitat]. In this case extra Anabat Sonar sites were established to provide a more comprehensive sample of the microchiropteran bats of the study area. Overall, a six night sample was conducted, with records for [poss.] seven species confirmed, including two [2], schedule 2 species. [see maps and data sheets]

Kerivoula papuensis -sch.2, one harp-trap capture.

Scoteanax rueppellii - sch.2, [one] sonar record.

Chalinolobus morio - [five] sonar records.

Scotorepens orion - [twenty-seven] sonar records.

Vespadelus pumilus - [two] sonar records and [one] harp-trap capture.

Vespadelus regulus - [thirteen] sonar records, and [one] harp-trap capture.

Vespadelus darlingtoni - [five] sonar records.

Bat work was done by Noel Douglas and Nicole Harvey. Sonar calls were recorded directly onto laptop computer and later analysed and then compared to library calls by Douglas and N. Harvey. This work is then reviewed and verified [where necessary] by SFNSW Research Division - Brad Law. Sonar calls are ascribed file names and are retained for future reference or verification. A comprehensive library of calls for the NE of NSW is not yet available, limiting our ability in some cases to ascribe species names to recorded calls. We are currently expanding our call library and this situation should steadily improve to the limits of the technology,[and with all survey calls retained for future review.]

No mine shafts were detected in the mapped harvestable area. No caves were detected. Any such sites located during operations should be buffered from proposed operations to ameliorate potential impacts on potential roost / maternity / torpor sites.

Harp trapping for *Kerivoula papuensis* and *Myotis adversus* in suitable habitat, [flyways and larger pools along rainforest creeks], resulted in one capture of *Kerivoula papuensis*, and nil captures of *Myotis adversus*.

Structural and floristic data, general site descriptions, and photographs of *Kerivoula papuensis* capture site [harp-trap location and habitat] have been recorded/taken, [and

appended to this report], with a view to contributing to longer term research of this species, and its habitat, in the management area. [This is a significant 'new' record for *Kerivoula papuensis* in Brother SF and may also be the first record of this species in the old Glen Innes Forestry District.]

21. Frog species - Transect and habitat based surveys were conducted at a number of sites, and habitat assessments and searches were integrated into the other surveys. [see survey sheets and maps for details] The weather was cool to cold, with rain, at the start of the survey, becoming dry and warm to hot, in the second week. Species of frog recorded during survey include -: *Litoria peronii*, *Litoria chloris*, *Litoria revelata*, *Litoria pearsoniana*, *Litoria lesueuri*, *Lechriodus fletcheri*, *Limnodynastes peronii*, *Limnodynastes dumerilii*, *Pseudophryne coriacea*, *Crinia signifera*.

27. Hastings River Mouse [*Pseudomys oralis*] sch. 1 - not recorded this survey. Some potential habitat in the south-western section of cmpt.95. Small mammal trapping was conducted in suitable habitat which was restricted to several areas of Ft. 152, & 161, with grassy/sedge understorey, and close to a soak or creek/rocky area. Grazing and fire history are likely to be major factors in determining this species presence or absence in areas of what appears to be suitable habitat.

BROTHER S.F. CMPTS: 94 & 95

SURVEY EFFORT (DISTANCES IN KMS.)

*times to quote to min. res

DEPARTMENT	SPOTLIGHT SAMPLE		FLORA & FAUNA (random survey)	INTEGRATED KATA TRANSECT. includes scat transects....	BAT SAMPLE		FROG SAMPLE GENERAL	TARLETT 599 transect...	CALL PLAYBACK NO. OF SITES	SCATS		DIURNAL BIRDS	SEASONALITY CONSTRAINTS YQ/NO.
	WALKED	DRIVEN			HARP	ANABAT				Prod.	Other		
94 242ha	6.0kms (2.5k shared)	5.0kms	6.0kms.	2.0kms	✓ 1x2x1	✓ (5)	✓	✓	6 4x1 2x2	✓	✓	✓	Yes, in part. (owls, diurnal birds,
95 307ha	5.5kms (2.5k shared)	2.5kms.	5.5kms	2.2kms.	-	(5) ✓ Driven & site sample.	✓	✓	4 2x1 2x2	✓	✓	✓	

* Full Moon Sample
(2nd week)
* some rain
* one windy night
(abandoned survey)

85

R.M. Kooyman, 88

Brown S.F.

94/95

Flora & Fauna

Traverse

89

90

92

91

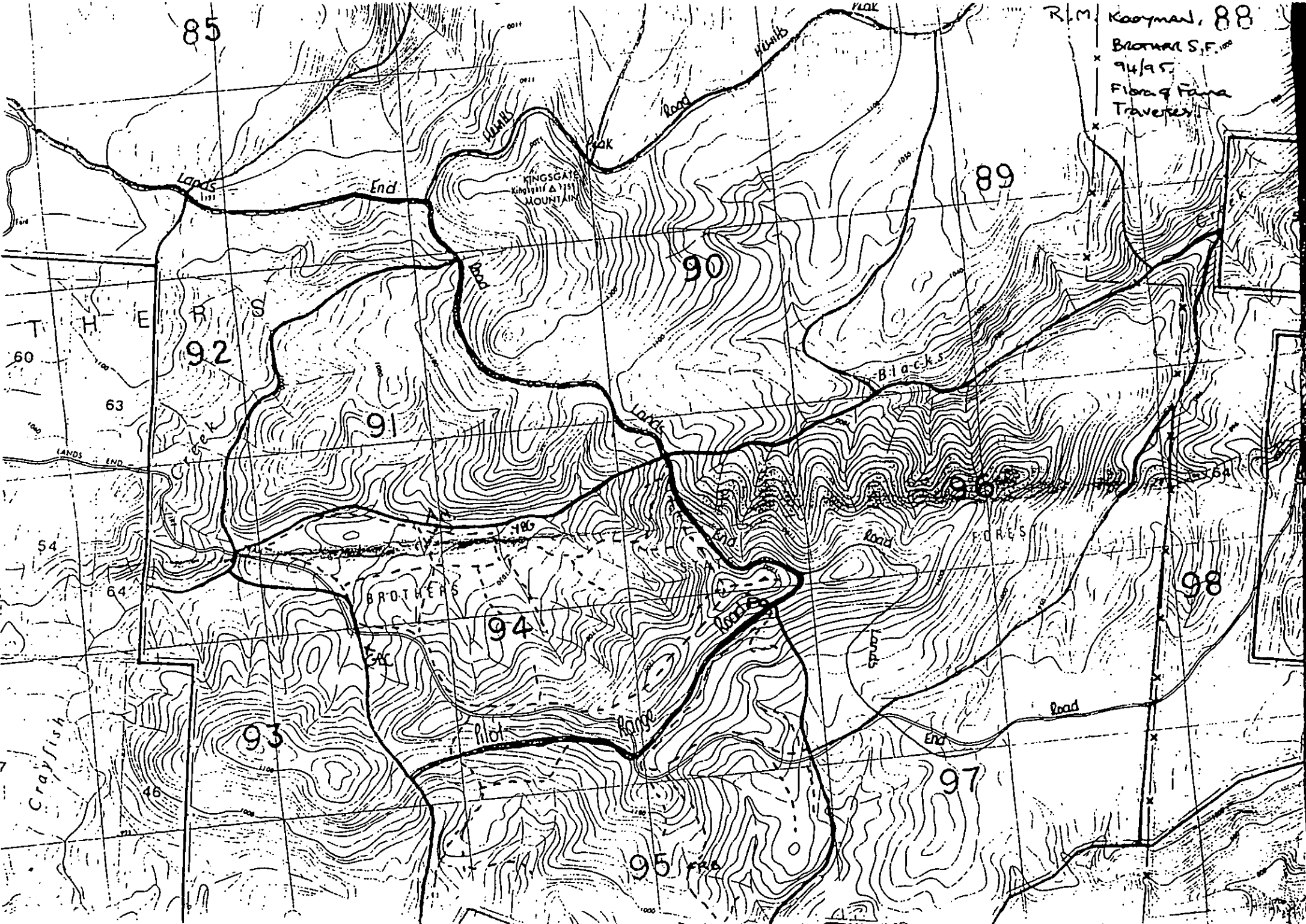
94

93

95

97

98



Carino District Northern RIVERS REGION
Reporting of Scheduled - Fauna Sightings

BLOTHAR S.F. Cnpts. 94 & 95.

observer: Robert Keayman

[illegible]

NB: *
Non
Fauna
Record

AMG's

2. Night Time Surveys
3. Follow-up Clearance Inspection
4. Rejects Inspection
5. Regeneration Inspection
6. Road Line, Dump Sites Inspection
7. Timber Assessment

ALL NORTHINGS

WITH 99 WAVE

PREFIX 66.

ALL $N\bar{S}$ WITH

~~00, 01~~ 00, 01 HAVE

PREFIX 67

7. Marking Boundaries, Filter Sites or Conservation Areas
8. Reports from Log Skaller
9. Head Disposal Burning
10. Harvesting Planning
11. Other FLORA & FAUNA.

Casino District
Reporting of Schedule 12 Fauna Sightings

Douglas & N. Harvey.

	Date	State Forest	Cpt No.	Type of Inspection (*)	Species of Fauna Sighted	Description of Fauna Sighted - eg adult, juvenile, breeding female, call only etc	AMG Reference all	General Comments (eg at log dump, road side, Forest Type etc)
1	9.12	Brother	95		Greater Glider	Sight	4.12.700-4600.900	
2	9.12	Brother	94		"	"	4.12.700-4600.900	
3	9.12	Brother	95		"	"	4.12.500-4600.600	
4	9.12	Brother	94		"	"	4.12.600-4600.600	
5	9.12	Brother	94		"	"	4.12.200-6600.450	
6	12	Brother	95		"	"	4.12.300-6600.250	
7	4.12	Brother	95		"	"	4.12.850-6600.100	
8	9.12	Brother	94		"	"	4.12.700-6600.300	
9	9.12	Brother	94		"	"	4.12.500-6600.200	
10	9.12	Brother	95		"	"	4.12.200-6600.300	
11	9.12	Brother	95		"	"	4.12.200-6600.200	
	11.12	Brother	94				4.12.700-6600.250	
12	11.12	Brother	94		"	"	4.12.900-6600.450	
13	"	"	"		"	"	4.11.700-6600.1050	
14	"	"	"		"	"	4.11.850-6600.700	
15	"	"	"		"	"	4.12.500-6600.500	
16	"	"	"		"	"	4.12.650-6600.500	
17	"	"	"		"	"	4.12.900-6600.600	
18	"	"	"		"	"	4.13.050-6600.700	
19	"	"	"		"	"	4.13.150-6600.800	
20	"	"	"		"	"	66	
21	15.12	Brother	95		"	"	4.12.020-6600.200	
22	"	"	"		"	"	4.12.025-6600.200	
23	"	"	"		"	"	4.12.100-6600.150	
24	"	"	"		"	"	4.12.250-6600.250	
25	"	"	"		"	"	4.12.500-6600.300	
	16.12	Brother	94		Glossy Black Cockatoo	Sighted.	4.11.950-6600.150	

16.12 Brother 94

Keriboulia Papuensis
Caught in trap.

4.10.800-6600.1500

9.12 Brother 95

→ Scaevola ruerpellii
(*) Type of Inspection

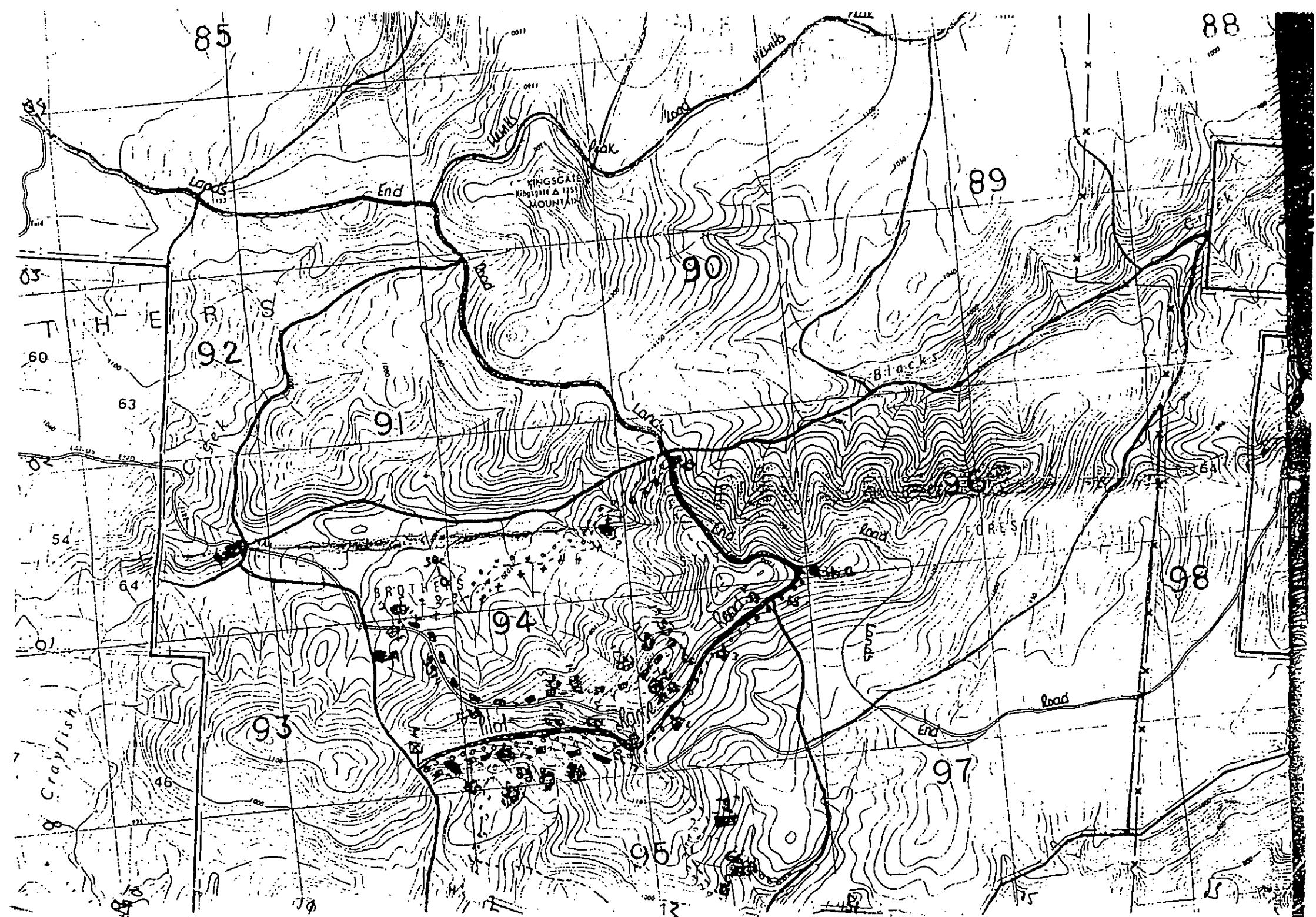
4.13.050-6600.1950
1661

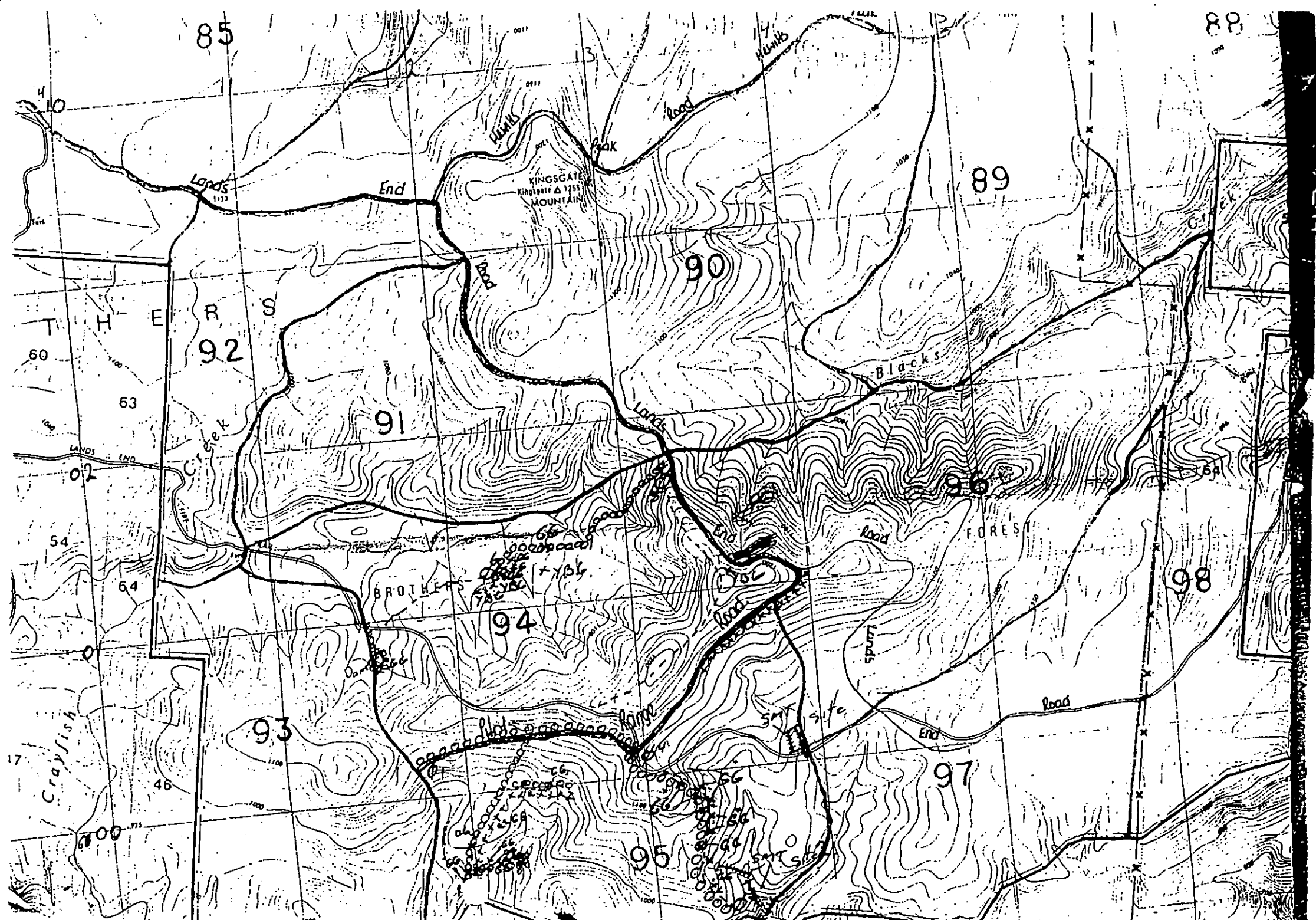
1. Night Time Surveys
2. Follow-up Clearance Inspection
3. Rejects Inspection
4. Regeneration Inspection
5. Road Line, Dump Sites Inspection
6. Timber Assessment

7. Marking Boundaries, Filter Strips or Conservation Areas
8. Reports from Log Faller
9. Head Disposal Burning
10. Harvesting Planning
11. Other

Map 1.D. for large scale
NB: 66 - for all ANG's.

() <u>Type of Inspection</u>	
1. Night Time Surveys	7. Marking Boundaries, Filter Strips or
2. Follow-up Clearance Inspection	Conservation Areas
3. Rejects Inspection	8. Reports from Log Faller
4. Regeneration Inspection	9. Head Disposal Burning
5. Road Line, Dump Sites Inspection	10. Harvesting Planning
6. Timber Assessment	11. Other





Braker S.F.
Rainforest - Fr. 3.

Rodriguez Kanyan
Cmpt. 94/95. C 95. 12/97
Caldcluvia altissima....

- c/c Doryphora saepefrax (o-c)
- c/sc Schizomeria ovata (vo-o)
- c/sc Callicarpa serratifolia (o-c).
- c/c Caldcluvia paniculata (o-c)
- sc/c Daphnandra sp. A (o-c)
- sc/ Hymenoparum flavum (vo-o)
- Trema aspera (o-vo)
- Solanum aviculare ^{fr. 283} (vo-a)
- Parietaria debilis (vo-o)
- sc/c Acacia irrorata (var. irrorata?) (o-c)
- sc. Quistisima verdanii (vo-o)
- sc/c Endiandra sieberi (vo)
- sc. Cryptocarya rigida (o).
- sc/c Acmena smithii (o-vo)
- sc. Denhamia celastroides (o-vo).
- sc. Elaeocarpus reticulatus (o-vo).
- Natolepis longifolia (o).
- sc/c Orites excelsa (vo-o)
- sc. Tasmanian utripida (vo-o).
- sc. Hedyscarya angustifolia (vo-o)
- Caprosma ^{fr. 283} quadrifida (o-c)
- sc/c Rapanea ^{fr. 283} howittiana (o-vo).
- sc. R. variabilis (o).
- sc. Claoxylon anstrale (vo).
- sc. Aristotelia australasica (o).
- sc. Bachelmonia angustifolia (o) exalt.
- Diospyros australis (vo).

- Clematis aristata (o-c)
- Piptorhiza maerei (vo-o)
- Cissus hypoglauca (o-c)
- Marsdenia coccinea (o)
- Hubertia scandens (o-c).
- Cephalarchia cephalobotrys (o)
- Palmaria scandens (o)
- Pandanus pandanus (o)
- Morinda javanica (vo).
- Lantreopsis ^{fr. 283} decanposita (o-vo).
- Dicksonia antarctica (vo-o)
- Blechnum cartilagineum (o-c)
- Microsorum ^{fr. 283} scandens (vo-?)
- Dawsonia superba (vo-c).
- Pyramia rupestris (o-)
- Gymnarchus anceps (o-vo).
- Lomandra longifolia (o-c).
- Microsorum ^{fr. 283} (vo-o)
- Dendrobium pygmaeum (vo).
- D. speciosum (vo-)
- D. acuminatum (vo-)

Cmpts. 94 & 95.

- C. Eucalyptus andrewsii ssp. campanulata (o-vc)
 C. E. laevapetala (vo-
 C. E. satyria (r)
 C. E. acmenoides (vr)
 C. E. (subgenus) viminalis (vo-e).
 C. E. to v amplifolia (r-va).
 C. E. muricata. obliqua (vo-).
 C. E. brunnea (o-
 Oxylobium illicifolium (o).
 Correa (sp) ^(mildew) reflexa (r-vo).
 cc. Allocasuarina littoralis (vo-r) charit.
 Maytenus bibracteata (o-vo)
 ii. Acacia (sp) ulicifolia (o-
 sc/c Acacia irrorata v. irrorata (o-
 sc/ Bradychiton populneus (r-vo)
 sc. Allocasuarina torulosa (o-c)
 Bursaria spinosa (vo-o)
 Elaeocarpus reticulatus (vo-r)
 Geranium sp. potentillioides (o)
 Notelva longifolia (vo-o).
 Indigofera sp. australis (o).
 sc. Rapanea ^{sp.} haughtiana? (vo-e)
 Cryptocarya rigida (o-vo)
 Leucopayan lanceolatus (o-c)
 Ozothamnus diosmifolium (o-)
 Dyckiaea sp. repens (vo-
 Senecio amygdalifolius (vo-
 Senecio sp. minimus (o-vo)
 Pityopsis sambucifolia (o) ^(narrow leaf) ^(broad leaf) ^{form...}
 Lomelia siliifolia (c-o).
 Pratia sp. purpurea (o-
 Geranium potentillioides (o-
 Phyllanthus sp. gunnii (o-
 Brachycome sp. not-anglia (vo-
 Oxalis sp. (o-
 Phyllanthus sp. (o-
 Leptospermum ^{sp.} polygalifolium (r-o).

- Glycine clandestina (o-c)
 Smilax amardis (o)
 Hibbertia scandens (o-c)
 Eucalyptus latifolia (o-
 Rubus parvifolius (o).
 Clematis aristata (o-vo).
 Zehneria cunninghamii (vo-e).
 Hardenbergia violacea (o-vo).
 Bittardiera sp. procumbens (vo)
 Kennedyia rubicunda (o).
 Brunniella australis (o).
 Genoplesium sp. (vo-o).
 Dendrobium speciosum (r).
 Poa sieberiana (c-vc)
 Imperata cylindrica (o-ec).
 Gahnia sieberiana? (o-vo)
 G. melanocarpa (o-
 Lepidosperma sp. (o-
 Lomandra longifolia (o-c).
 Dianella caerulea ^{var.} (o-vo)
 Lomandra ^{sp.} ^{filifera} ^{multiflora} (vo-o). ^{var. caerulea}
 * Wahlenbergia sp. (vo).
 * Goodenia ^{sp.} ^{acalophylla} (r-o)
 Calochortus ^{sp.} ^{lutea} (o-vc)
 Pteridium esculentum (o-vc).
 Cyathea australis (o-
 Adiantum hispidulum (o-
 Blechnum cartilagineum (o-vo).
 Plantago sp. debilis (o-vo).
 Plectranthus parviflorus (vo-o).
 Viola hederacea (o).
 Gahnia sp. prostrata (o)
 Pinetia sp. ligustrina (vo)
 Wikstroemia indica (?
 Ozothamnus rufescens (vo-o)
 Solanum sp. prinophyllum (vo-o)
 Capriaria sp. quadrifida (c-vo)
 Helichrysum ^{sp.} ^{elatium} (o)
 Zieria sp. smithii (o-vo).
 Hakea sp. eriantha (r-vo).
 Goodenia sp. bellidifolia (vo-
 Persoonia sericea (o).
 Gormia ^{sp.} ^{sp.}

Brother 94/95.

Composite Species List.

2.

Karyn
12/27

Boerhaavia
Cynoglossum - sp.? *australe* (o-).?

Pericaria sp.

Trachypogon sp.? check x

Centella asiatica (o-

Logania (*albiflora*)? check... (R)

Commelina cyanea (vo-)

Arcitena sp. *acuminata* (vo-) creek

Richardia sp. (o).

Petrophile sp. *canescens* (R-

C. asula sp. *sieberiana* (c)

Hypericum sp. (vo) *caeruleum*.

Verbena sp. *rigida* (o-vo) *radialis*.

Ajuga sp. *australis* (vo-

Acacia filicifolia (vo-o).

Scaevola scoparia (vo-o).

Acacia brachyfolia (R-o) (check... *myrtifolia*).

Ranunculus sp. *lappaceus* (o)

Solanum sp.

Banksia integrifolia subsp. A (markum). (vo).

C. stans *ternstroemii* (o).

Cumera *ericinum* (a)

Cynoglossum (sp.?) *caeruleum* (vo-o)

Epacris microphylla var. *microphylla* (R-vo) check...

Gonocarpus humilis (vo)

G. *tenuoides* (vo) check...

Launifera stipitata (R).

Dillwynia (*phylicoides*) (vo-

Helichrysum (sp. *scarpoides*...) (R).

Maytens silvestris (R).

Persoonia oleoides (R-vo).

Gnaphalium sp. *gymnocephalum* (o) check! ✓

Pomadouris sp. (*laugera*) (R) check specimens.....

Hybanthus monopetalus (vo-o).

Daviesia latifolia (R-c) NW Capt. 94 - common.

Gonocarpus tetraeneus (o).

Sorghum leiocladum (o).

Anyena pedatum (o)

Lepidosperma sp.

Cymbopogon (*refractus*) (vo-o) check

Galium sp. *aspera*. (vo-1).

Schoenus apogonum (vo).

Aphanopetalum venosum (vo-r).

Doodia aspera (vo-o) rocky sites..

Stichurus lobatus (R-vo).

Acianthus exsertus (vo-o).

Chionocheila pallida (vo-r).

Optimonia imbecilis (R-o).

Persoonia straminea (vo).

Tylosiaca paniculata (R).

Pilea falcata var. *falcata* (R-vo).

Hydrocotyle sp. ...? check...

Pomax umbellata (R-vo).

Senecio sp. (E. p.) (vo-r).

Stackhousia monogyna (o)

Cirsium vulgare (R-)

Thysanotus grandifolius (R) sp. check-

Goodenia sp. [specimen. R-o].

Doodia media (o) creek.

Goodia lotifolia (vo-c).

Pindan linifolia var. *linifolia* (a).

Eucalyptus caliginosa (?) New England Riverbanks not collected / check!

c/r. *Leptanthus confertus* (vo-r) creek - cliff no...

Austrocynoglossum latifolium (vo) creek...

Monotoca scoparia (R).

Pterosaria sp.

Galium sp. *aff. biifolium* (o-vo).

Lobelia gibbosa? (o-vo) check sp

Carex longibractea (vo-)

Veronica pleibia (o-c).

Acacia sp. *unsergold* check - *boxcane* *novae-zelandiae* (R-o) creek...

Bossia neo-anglica (R-o).

Gonocarpus *halimifolius* - check - *Halargis heterophylla* (o) creek.

Dipodium sp. *punctatum* (vo-c). ✓

Dillwynia phyllacanth

Hebertia riperia (o-r).

Fr. 163

open/grassy

Brother S.F.

Red-top sample

add other species ... down here

Robert Kooyman

12/97

C. *Eucalyptus andrewsii*
var. *campanulata* (Vc) -

C. E. *laevigata* (Vo).

C. E. *obliqua* (R)

C. E. *brunnea* (R)

sc/c E. *radicata* (Vo).

Lomandra ciliatolia (Vo-o).

Wahlenbergia sp.

Galium sp. *binifolium* (o-vol).

Ranunculus lapaceus (o).

Fabaceae:

Geonim potestellides (o).

Hakea eriantha (Vo-R).

Indigofera australis (Vo).

Leucopogon lanceolatus (Vo-o)
var. *lanceolatus*.

Poa stolonata (Vc)

Lepidosperma

Lomandra longifolia (o)

Imperata cylindrica var. *major* (Vo-o)

Calochortus dubius (Vo-o).

Pteris exultans (Vo-o)

Glycine clandestina (o).

Hardenbergia violacea (Vo-o).

Hibbertia scandens (Vo-o).

Smilax australis (Vo-o).

Rubus parvifolius (Vo-o).

Dermolium sp. *lanceus* (Vo-o)

Cymbopogon refractus (Vo-)

Diarella canaliculata (Vo-
var.

... see general species list for down here additions → Forest type transitions ...

Brotter S.F. Capt. 94/15 Flores & Fain
Surveys.

Robert Kooyman
12/97.

* *Kerivoula papuensis* —: capture site ... Capt. 93/4. ~~at~~ to (94. boundary....
Harp trap located in creek / flyway.
... part Crayfish Crk. catchment.... now into Henry River. Dry / open forest / grassy understorey...

C. Eucalyptus amplifolia var. (c)

C. E. brunnea (o-c)

C. E. obliqua (o-v)

c/sc *E. radicata* (vo-

C. E. viridula (r-?)

Guaphalium gymnocephalum (o-v).

(*Albocercaria tarulosa* (o-c)

sc. *Acacia* sp. *fimbriata* (o)

Leptospermum sp. *polygalifolium* (c-o) creek...
soaks...

Capraea quadrifida (o-v)

Leucopogon lanceolatus var. *lanceolatus* (vo-o).

Crassula sp. *sieberiana*? (vo-o) check...

Oxalis sp. (o).

Viola hederacea (o).

Gesnerium potentillioides (o)

(*Jussiaea orientalis* (vo-o).

Gonocarpus (tenuoides) (vo-

Plectranthus parviflorus (o-v).

Pratia purpurea (o).

Maytenus silvestris (e).

Centella asiatica (vo-)

Galium biniifolium (vo).

G. propinquum (vo-

Backus sp. check specimen...

Solanum prinophyllum (vo-)

(*Helichrysum*) *Ozothamnus rufescens* (vo).o).

Lomatia silaifolia (vo-o).

Verbena sp. (vo).

Daviesia latifolia (e)

Pteris exultans (o-c)

Poa sieberiana (c-v)

Lomandra longifolia (o-c)

Optunia imbecillia (o-c).

Imperata cylindrica var. *majus* (o-v).

Adiantum formosum (vo).

Dianella caerulea var. (vo).

Glycine clandestina (o).

Smilax australis (o-v).

Entolasia stricta (o-v).

Calochortus dubius (vo-o).

Anisema sp. *alternatum* (o) check.

Hardenbergia violacea (o).

Rubus parvifolius (o)

Geitophorum cyaneum (e).

Clematis aristata (r).

site: site ht. 30-45m.

Dry, open forest, shrub-line partly
formed along creek... regular fire...
... occasional growth of *Leptospermum* sp. in
moist soak areas....

* Photograph: habitat & capture site..
taken.

Superb Lyre-bird

Mtn. Larkshet (*Crinium rufella*)

pieb Currawong

scaly-breasted larkshet

brown cuckoo-dove

finch bird

* Glossy-Black Cuckoo

channel-billed Cuckoo

laughing kookaburra

satin bower-bird

1 sh-bird.

Choughs (grasses).

Willy wagtail

red-breasted finch

superb wren

Aust. Hobby

swift/musk larkshet

Scarlet Robin

Bram flycatcher

Rufous whistler

White-throated tree-creeper.

Boobook owl

Tawny Frogmouth

* Powerful owl

(Pearly face) Whiptail wallaby

Eastern-gray Kangaroo

Common brush-tail possum.

Red-necked wallaby

Swamp wallaby

* Rufous Batting - (prob.) Footprints
Wallaroo

Greater Glider

Sugar Glider

* Yellow-bellied Glider

Chalcidodroma maculosa

Vespertilio darlingtonii

* *Scoteseops rueppellii*

Scoteseops arian

Vespertilio sp. pusillus

* *Korivionta papuensis*

Vespertilio regulus

Litoria peronii

Limnodynastes peronii

L. *dumerillii*.

Crinia signifera

Pseudophryne coriacea

Litoria fletcheri

Litoria revelata

Litoria lesueuri

Litoria chloris

*