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Geocrinia Recovery Team

Annual Report 1992

by Grant Wardell-Johnson
for the Geocrinia Recovery Team

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Geocrinia Recovery Team : annual report, 1992 / by Grant Wardell-Johnson

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DEPARTMENT OF ENVIRONMENT AND CONSERVATION

December 1992

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Progress Report

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WESTERN AUSTRALIA

Recovery Plan for *Geocrinia vitellina* and *G. alba*.

Progress has been made during 1992 on each of the Recovery actions stipulated in the recovery plan and listed below a copy of the revised plan following the July meeting of the team is attached.

A consultant biologist (Don Driscoll) has been engaged to complete distribution mapping of *G. vitellina*, to establish a monitoring program, to carry out genetic studies and to establish research program on fire responses. His progress report is attached as appendix 1.

Tony Annels and Chris Vellios have been engaged in biogeographical survey work within the range of the two species to determine appropriate sites for translocation. A progress report is attached as appendix 3. Ian Wheeler has been liaising and assessing attitudes of the land holders within the range of *G. alba*. His progress report is attached as appendix 4.

Geocrinia vitellina

1. Survey of Riparian Habitat.

   The range of *G. vitellina* has been searched extensively by Don Driscoll. Two new populations have been found (6 in total) both within the known range of the species. No *G, vitellina* have been found south of the Blackwood River, west of Wendy Road (GV1), east of crinia creek (GV2) or north of Denny Rd, with the exception of the known population on Spearwood creek (GV1).

2. Land Tenure Changes

   No action to date.

3. Fire Management and Research

   Two experiments have been established in CALM's planned fuel reduction burning program to examine responses of individuals following fire (see attached appendix 1).

4. Habitat Protection

   District liaison with APB id continuing and communications plan being used to address volunteer control programs.

5. Public Information

   Communications plan drafted (appendix 2).

6. Population monitoring

before the next recovery team meeting. (see appendix 4). District staff are involved in the planned fencing program.

5. Public Information

A communications plan has been drafted which includes a frog recovery kit (appendix 2). Dale Roberts has provided Kim Williams with a tape of the frogs of the area and notes on biology and conservation for use in a frog recovery kit. Considerable media coverage has been given to the species and the recovery plan and team during 1992. For example Grant Wardell-Johnson has run a University of W.A. extension course called FROGSFROGSFROGS. has been involved in a television program on Australia's Endangered Fauna and been involved with Kim Williams in several newspaper releases. Grant has also delivered four seminars on progress on the recovery plan.

6. Population Monitoring

Thirteen plots (2 x 20 m parallel transects) have been established in *G. alba* habitat. Six have been surveyed twice, three once and four have not been surveyed (except for an estimate of the density of calling males at the time of location of the sites). Several monitoring plots have still to be established (during 1993) (see appendix 1).

In addition regular pitfall trapping at the edges of the habitat has demonstrated that *G. alba* is capable of moving beyond its riparian habitat.

7. Genetic Studies

Genetic material has been collected from 14 *G. alba* populations from a total of 300 individuals. This material will be analysed early in 1993.

8. Translocations

A floristic and soil survey has been carried out in the domain of both species to determine suitable translocation sites. 11 of the quadrats include *G. alba.*

Each population includes at least one monitoring site (2 x 20 m parallel transects). Nine sites have been established, all of which have been surveyed on four occasions during 1992. In addition regular pitfall trapping at the edges of the habitat has demonstrated that both species are capable of moving out of riparian habitat.

7. Genetic Studies

Genetic material has been collected from all 6 populations of *G. vitellina* (250 individual animals) to be analysed in early 1993.

8. Translocations

A floristic and soil survey has been carried out in the domain of both *G. alba* and *G. vitellina* to include both riparian sites where other species occur and also where they do not appear to occur to determine suitable sites for translocation (see appendix 3). six of the quadrats include *G. vitellina.*

Geocrinia alba

1. Survey of riparian habitat

The range of *G. alba* has been searched extensively by don Driscoll (Public land) and Ian Wheeler (Private land), A total of 38 populations are now known. Thus 15 new populations of *G. alba* have been discovered, 3 on public land and 12 on private land. Thus has been an extension of 11 previously mapped populations, 5 on public land and 6 on private land. Some of the new populations represent large increases in the overall numbers of calling males. In addition a range extension of about 2 km to the north has also been confirmed. However a range contraction of about 2 km in the south has been bought about by the apparent extension of GA 20. In addition Ian Wheeler has estimated that with current deterioration rates at least seven populations will disappear within two to three years (apendix 4). Only minor survey work is now required to complete distribution mapping of this species.

2. Land Tenure Ranges

An area previously in Boranup State Forest containing two populations of *G. alba* has now been gazetted as National Park. There is no action to date on other action items.

3. Fire Management and Research

As *G. vitellina*; although additional sites in both private and public land are also being monitored for fire response of individual animals.

4. Habitat Protection

Contact has been made between all land holders likely to have populations of *G. alba.* Contracts of agreements between CALM and private land holders are being drafted and examined for their suitability. It is anticipated that the first fences will be in the ground

Appendix 1

The *Geocrinia rosea* Complex

Population and Disturbance Research

Don Driscoll

Research Report

December 18 1992

INTRODUCTION

This research is being carried out both as consulting scientist to the recovery team and as part of my Phd. research with the Department of Zoology at the University of Western Australia. The first field season is now almost complete, having spent 100 nights in the swamps since August. In this report I provide a summary of the research performed to date and the outlook for next season. No data will be presented here as it is yet to be collated and interpreted.

IMPACT OF FIRE ON *Geocrinia*

Objective: To determine the impact of fire on the members of the *G. rosea* complex. This will allow fire to be managed in a way that will enhance the survival of the endangered *G. alba* and *G. vitellina*.

Two experiments have been set up using CALMs'planned fuel reduction burns, one with *G. lutea* near Walpole, the other with *G. rosea* in the Shannon National Park. Both are designed with six paired plots, a pair consisting of a control that will not be burned and an experimental plot that will be. Each plot has two, twenty metre transects which are parallel to each other and five metres apart.

The *G. lutea* experimental plots were burned in November. I had estimated the number of calling males at each site on three occasions before the burn, and have surveyed twice after the burn. Surveys of the number of calling males will continue throughout the next two breeding seasons as an estimate of population size.

Two hundred individual calling males have been monitored at these sites during the season by marking the position of their burrow and checking them at regular intervals. This technique is providing useful data on the success of males in attracting females and the mortality rates of eggs and tadpoles, and may prove to be an essential method for determining the impact of the fire.

Burning has not yet commenced in the *G. rosea* experiment. All sites have been surveyed six times which will provide an accurate estimate of the number of calling males to be compared with next years surveys. I anticipate collecting biological data from this species next season.

In order compare the impact of fire on *G. rosea* and *G. lutea* to *G. alba* and *G. vitellina*, the correlation between time since the last fire and population size will be investigated for all four species. In addition, any fires in *G. alba* or *G. vitellina* swamps will be monitored and biological data obtained to compare with the results of the above two experiments. Currently I have four plots on private property where the landowner is planning to burn two *G. alba* swamps. Any impact detected on this property will be crucial to enabling management of all *G. alba* and *G. vitellina* populations.

POPULATION RESEARCH

Distribution

Objective: To determine the complete distribution of *G. alba* and *G. vitellina*. Knowing where each population is in relation to every other population is essential to interpreting the genetic data (discussed below) and understanding any relationship between the survival of individual populations and the survival of the species. It is also useful in detecting range expansions or contractions, observations which are central to predicting the probability of survival of the species.

I have mapped the distribution of *G. alba* on public land and searched a number of private properties, in conjunction with work

carried out by Ian Wheeler. I found five new populations on crown land, rediscovered a population suspected of being extinct (GA25b) and found eight new populations on private property. The results of this work are presented by I. Wheeler in a separate report.

I have searched extensively for *G. vitellina* and have found two new populations, both within the known range of the species (Fig. 1). I have also mapped the precise distribution of these frogs in their known populations as the first step in determining whether the area used by the frogs for breeding varies from year to year. No *G. vitellina* were found south of the Blackwood River, west of Wendy Rd (GV4), east of Crinia Creek (GV2) or north of Denny Rd, with the exception of the known population in Spearwood Creek. I plan to search all swamps again next season, and to search the area between the eastern edge of the range of *G. alba* and the western extreme of *G. vitellina* more thoroughly

Genetic studies

Objective: To determine the genetic structure of populations of the four species in the *G. rosea* complex. This may provide insight into the amount of movement between breeding populations, will enable informed decisions to be made regarding translocations and will enhance our understanding of both the frogs evolution and evolutionary processes in general.

This was a major part of this seasons work. I have collected genetic material from 14 *G. alba* populations and all six of the *G. vitellina* populations. This includes samples from a total of 300 *G. alba* individuals, 250 *G. vitellina*, 30 *G. lutea* and 30 *G. rosea*. These samples will be analysed early next year. I plan to collect more genetic material for *G. lutea* and *G. rosea* next year, to compare the genetic structuring in these common species with the endangered *G. alba* and *G. vitellina*. This may be useful in understanding the reason for the restricted distribution of the latter species.

Movement Studies

Objective: To determine the amount of movement between populations. This will permit us to estimate the probability that an area of suitable habitat may be colonized and aid the interpretation of the genetic data.

I investigated movement of *G. alba* and *G. vitellina* this season using pitfall traps alongside breeding sites. Forty four pit traps, with 240m of drift fence were placed at each of two *G. alba* and two *G. vitellina* sites. Pits were placed on alternate sides of the fence so that direction of movement could be detected. The traps were opened for two nights each month, beginning in August. Two *G. alba* and three *G. vitellina* were trapped in August and September, all five of which were moving into the swamp from surrounding Jarrah forest. No frogs have been detected moving out of the swamp. I will continue to run the traps each month to see if they do leave the swamp after the breeding season.

I plan to put pit traps and drift fence between adjacent breeding sites early next year to enhance our understanding of movement between populations.

Population Monitoring

Objective: To detect fluctuations in population size of *G. alba* and *G. vitellina*. This will assist in predicting the probability of survival of individual populations.

Density: To determine the density of calling males in preferred breeding sites, nine plots (2x20m parallel transects) have been put into *G. vitellina* swamps. These have been surveyed on four occasions. Thirteen plots have been put into *G. alba* swamps, six of which have been surveyed twice, three have been surveyed once, and four have not been surveyed, although an estimate of the density of calling males was made at the time the sites were located. More *G. alba* plots will be put in at the start of next season and all sites will be surveyed monthly to determine the best time to make subsequent surveys.

Total number of calling males: This parameter has been estimated for each population by comparing knowledge of density

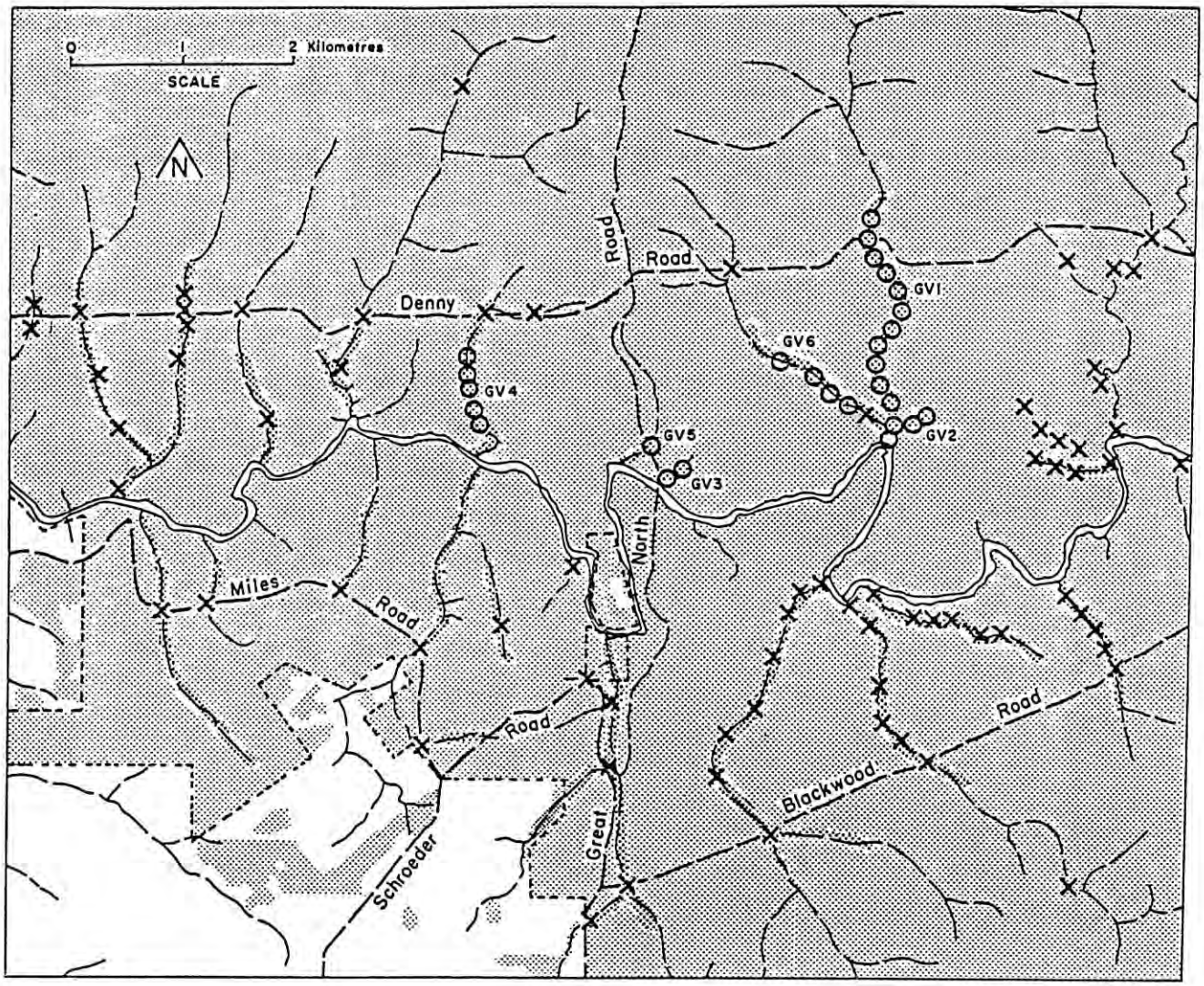
with the approximate area in which the frogs occur. While these estimates are not very accurate, they permit many populations to be monitored and will allow major changes in the number of calling males to be detected.

Estimating total population size: The number of calling males needs to be calibrated to estimate total population size. This season I have investigated variation in the number of males calling throughout the night. This involved surveying four *G. vitellina* plots at two to four hourly intervals from before dusk to after dawn, repeated on three nights. The results of this suggest that surveying at any time between dusk and dawn will give comparable results. I will carry out further investigations into calibration next year, including determining the number of females present and any turnover of males and females in the swamp throughout the breeding season.

Population stability

Objective: To determine the causes of fluctuations in population size by monitoring reproductive success and survival of eggs to the froglet stage. This is important as it will allow the probability of extinction of individual populations to be estimated.

In addition to long term monitoring of populations to detect size fluctuations, a detailed knowledge of the frogs biology can allow the potential for fluctuations in abundance to be estimated. I plan to investigate rates of egg deposition and egg survival next year.



KEY

- O Existing populations in Nov. 1992.
- \+ Previous populations inaudible in 1992.
- × Surveyed sites with no record of Geocrinia.
- Remnant riparian habitat worthy of survey on private property in Jan. 1990.
- Remnant riparian habitat worthy of survey on public land in Jan. 1990.
- Other native vegetation on private and public land.
- Boundary between major areas of private and public land.
- Highway.
- Minor road.
- Stream.

Fig. 1 1992 Geocrinia vitellina distribution

appendix 2

DRAFT COMMUNICATIONS PLAN
GEOCRINIA RECOVERY PLAN

Background

Geocrinia vitellina and *Geocrinia alba* are species of threatened frog fauna found only in a small number of locations on state forest and private property in the Margaret River area. Discovered in 1983 both species are vulnerable to extinction through local disturbances such as clearing, grazing, weed invasion, fire and changes to the hydrology of the sites.

A Recovery Plan has been produced and a Recovery Team formed to oversee the conservation of these species over a 10 year period.

A critical factor in achieving the aims of the Recovery Plan is the cooperation and support of the community and landholders in the local area and their recognition of the value of frog conservation to the well being of the environment. This can be achieved through a planned and structured approach to communicating and disseminating information about the project.

Issues

- Dependence on private property owners to manage their land in a manner sympathetic to the aims of the Recovery Plan for Geocrinia alba.

- The long term nature of the Recovery Plan and commitment required to achieve its aims.

- Potential questioning by the public of the cost and value of the Recovery Plan and the conservation of frogs in general.

- Need for increased information concerning the biology and habitat requirements of the species and thus ability to authoritatively answer simple questions.

-

Strategic Implications for the Recovery Team

If the Recovery Plan is not successful:
- Likely extinction of the species - Geocrinia alba and an increase in the likelihood of extinction of G. vitellina.

If the Communications Plan is not successful:
- Potential to alienate local landholders with regard to; support for the Recovery Plan and co-operation with the Recovery Team. This may lead to a general decline in the support and co-operation for and with the management actions of the key organisations involved.

- If landholders become alienated there is potential that the remaining suitable habitat on their properties may be cleared thereby ensuring frogs populations will not be found there.

- Potential to jeopardise future success in gaining outside funding for conservation projects and federal funding in general for CALM .

Key Messages

1) - Both species are classified as threatened fauna, being the only frogs contained on the Threatened Fauna Species List in WA.
ie: Same unfortunate status as that given to Numbats, Western Swamp Tortoise, Noisy Scrub Bird, Chuditch and other high profile endangered fauna.

2) - Both species have very restricted distributions. Within this the area of suitable habitat is extremely small and is likely to be further reduced if the public do not understand and assist in the conservation of these species.

3) - Geocrinia alba has reduced in number since its discovery. It is possible that we are watching G.alba disappear into extinction.

4) - Action is needed now before it is too late and there are many simple things that people, landholders, everyone can do to help.

5) - The aim of the Recovery Plan is to ensure that there is no further decline in the number of populations of both species and to increase the number and conservation security of habitat sites.

6) - Both species are of immense scientific interest as examples of the process of speciation and the evolution of species diversity in the south west of WA and Australia. They question conventional scientific theory concerning speciation across major continental barriers. eg Nullarbor Plain

Sub Messages

7) - All native species in WA are protected under the Wildlife Cons Act, including these two species of frogs. They are not to be collected or trapped from the wild.

8) - These animals occur in very fragile environments and are difficult to trap. Any attempt to do so would create considerable damage to their environment.
NB even walking around the swamps potentially damages habitat and squashes burrows.

9) - Species Recovery Plans and Recovery Teams are a nationally developed approach to conserving species in need of special attention.
(Expand as required.)

10) - Both species were only discovered a short time ago - less than 10 years.

11) - Both species have very unusual breeding biologies which require a select set of suitable conditions. Areas with the right conditions are uncommon and this restricts the amount of suitable habitat available.

12) - Captive breeding is not a viable alternative. It is unnecessary and costly since the frog egg-masses could be collected from the wild and transported to suitable habitat elsewhere.

13) - Frogs perform many valuable roles in ecosystems. Their function as an indicator of the health of the environment and the level of biodiversity is familiar to most people.

14) - The importance and conservation value of these two species is recognised at both the national level by the federal government (ANPWS) and at the state level by CALM. These organisations are committing considerable effort, time and funds over a long (10 yr) period to achieve the conservation of these species.

15) - If the goals of the Recovery Plan can be achieved, there is likely to be a number of spin-off benefits to the people of Margaret River. These benefits may include;

- a possible eco-tourism attraction for the district,
- the opportunity for small scale employment of contractors,
- the local purchase of materials,
- and the wider promotion of the " special chararcter/features " of Margaret River through media promotion of the frogs and Recovery Plan .

16) - The implementation of the Recovery Plan provides an opportunity for organisations represented in the Recovery Team to build stronger links with the Margaret River community and the farming segment in particular.

Target Audiences

1) Landholders with known frog populations.
2) Other landholders with potential habitat areas.
3) Land Conservation District Committee
4) Margaret River Shire as a landholder with potential habitat areas.
5) Local School Teachers.
6) Local Residents in the Margaret River Shire, especially town people.
7) Blackwood River and State Forest users - especially recreationists(organised and nebulous), and the unruly element.
8) Conservation aware and supportive groups and individuals eg: Leeuwin Cons Group, Service Clubs.
9) Perth News Media.
10) Other Media Outlets - Landscope, Calm News, Threatened Sp Newsletter etc.
11) Local Media.
12) CALM staff in the Busselton District and Central Forest Region.

Message - Audience Matrix

Audiences	Message 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1) Landholders with known frog populations.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2) Other landholders with potential habitat areas.	x	x	x	x	x	x	x		x	x	x	x		x		
3) LCDC's	x	x	x	x	x	x			x	x	x	x	x	x	x	
4) MR Shire-landholder with potential habitat	x	x	x	x	x	x			x	x	x	x	x	x	x	x
5) Local School Teachers.	x	x	x	x	x	x	x		x	x	x	x	x			x
6) Local Residents especially town people.	x	x	x	x	x	x	x		x		x	x	x	x	x	
7) Blackwood River / SF users - esp recreationists	x	x		x							x		x	x		
8) Conservation groups,people, Service Clubs.	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x
9) Perth News Media.	x	x	x	x	x	x			x	x	x	x	x	x		
10) Other Media Resources - Landscope,etc	x	x	x	x	x	x			x	x	x	x	x	x		
11) Local Media	x	x	x	x	x	x			x	x	x	x	x	x	x	x
12) CALM staff in the Bsn District and CFR	x	x	x	x	x	x			x	x	x	x	x	x	x	x

Communications Objectives and Strategies

1) - To attain wide community awareness and acceptance of the value of conserving Geocrinia species in the Margaret River area .

This will be achieved by:

- *Proactively and regularly submitting articles to the local media outlets including Aug MR Mail, Bsn MR Times, ABC radio - country hour + Bunbury talk back, GWN TV coverage.*
- *Utilising local community news outlets such as the notice boards in supermarkets, and key community meeting places (Witchcliffe shop ?)*
- *Where feasible use community events (eg: local agricultural shows etc) as a venue to distribute Recovery Plan information.*

2) - To encourage landholders in the Geocrinia belt to maintain or preferably improve the quality of the habitat provided by the creek systems on their properties.

This will be achieved by:

- *personally contacting landholders and providing them with verbal and written (Recovery Kit) information.*
- *cultivating a supportive and positive relationship with key landholders.*
- *Addressing LCDC's and landholder groups about appropriate management of their properties for Geocrinia species.*
- *providing prompt and favourable response to requests from landholders with known populations for assistance, advice etc.*
-

3) - To ensure that Blackwood River users are aware of the implications of escaped camping fires on the habitat and thus survival of G. vittellina. ie Don't light fires

This will be achieved by:

- *adequate signage in the field of appropriate recreational behaviour.*
- *promotion and enforcement of appropriate behaviour during organised events in and adjoining the habitat areas.*
- *signage in the field: " Special Fauna Zone" .*

4) - To ensure the local media is kept informed and their interest maintained over the life of the project. That all media articles are positive, clear, accurate and relevant towards the plan and team.

This will be achieved by:

- *Proactively and regularly submitting articles to the local media outlets including Aug MR Mail, Bsn MR Times, ABC radio - country hour + Bunbury talk back, GWN TV coverage.*
- *Preparing a list of topics/angles/potential media stories about the project, the team and conservation work from which media coverage could be gained.*
- *Have a selection of suitable photographs (B&W) on hand to complement media releases*
- *Monitor and evaluated media success with the aim of reviewing media strategies as required.*

5) - To provide opportunities to Perth and other media outlets to cover the project and the role of recovery plans and conservation programs in WA.

ie: Emphasise joint effort approaches
locals + CALM,
UWA + CALM,
State + Fed Govts.

This will be achieved by:

- *being aware of the media opportunities presented by the Recovery Plan.*
- *Being proactive with regard to informing Perth media of significant events and achievements in the implementation of the Recovery Plan.*
-

6) - To encourage local teachers in the Margaret River area to incorporate the plight of the Geocrinia species and the conservation efforts into their class curricula.

This will be achieved by:

- *providing information and suggestions to teachers as to ways of incorporating the aims of the Recovery Plan into their curricula through the use of special projects, competitions, field studies, guest speaker talks, propagating plants for revegetation programs etc.*
- *Identify key teachers who are interested in the project and provide opportunities for them to participate in a volunteer role as a means of developing enthusiasm for the project.*

7) - To ensure local conservation groups and service clubs are aware and supportive of what the Recovery Team is trying to achieve . To provide opportunity for them to become actively involved through volunteerism etc.

This will be achieved by:

- *Identifying and establishing contact with the relevant groups.*
- *Raising awareness through the provision of guest speakers, supply of information, etc*
- *Identifing opportunities and tasks where volunteers could be effectively used.*

8) - To ensure landholders with known populations are kept informed, and motivate/maintain their support and cooperation (especially with regard to access). Encourage landholders to be proactive in their promotion of the plan.

This will be achieved by:

- *personally contacting landholders and providing them with verbal and written (Recovery Kit and Newsletter) information.*
- *Providing prompt and favourable response to requests from landholders with known populations for assistance, advice etc.*

9) - To maximise positive interaction between CALM and the community through the implementation of the Recovery Plan.

This will be achieved by:

- *Ensuring all staff involved with public contact are skilled in public liaison techniques and are familiar with the Objectives and Messages of this Communications Plan.*
- *Regularly reviewing the public contact program and coordinating responses and /or problems arising.*

10) - To provide in a readily accessible form explanatory information about the Geocrinia species, the Recovery Plan and Team, and conservation work undertaken by the Team and Agencies involved.

This will be achieved by:

- *the development of a " Recovery Kit" , containing accurate, relevant, accessible and interesting information about the frogs, plan and team.*
- *the regular production (biannual ?) of a " Geocrinia Gazette ??? Newsletter" for wide distribution amongst the local community, landholders etc, to report on progress with the Recovery Plan.*
-

11) - To ensure CALM staff in the Busselton District are kept informed and familiar with the key messages of this plan and the departments support for the Recovery Plan.

This will be achieved by:

- *An annual briefing session for all staff on the progress of the Recovery Plan.*
- *Provision of opportunity's for staff to participate on a voluntary basis in the field work.*

Media Objectives

- Need to be both proactive and responsive to maintain regular media interest, but balance that against the long term nature of the project to ensure that media and the public does not become bored or disinterested.

- Need to position the Recovery Team, make people aware of what our objectives are, what our expertise is, what we are doing and why.

- Need to provide media with concise, understandable and usable information which can be conveyed to the public in words that convey the seriousness and commitment to the project and which will produce the maximum impact.

- Need to maintain just one information source for media contact.

Evaluation

Methodolgy to be developed in conjunction with CALM's Corporate Relations Branch.

Potential Products Required

Recovery Kit - consisting of:
- tape of calls of SW frogs.
- booklet - descriptions,diagrams/photos of animals, habitat, life history, role of recovery plan and team, management of areas, how farmers can help manage land

Newsletter - 2 Issues per year : one after the breeding season reporting on what was achieved in the field during the last few months, the other in July/Aug reporting on results of last season and what will be undertaken in the field in the coming season.

School Packages/Poster Competition
NB: Prizes to be copies of book "Frogs of WA" ie from the museum
NB could **donate** a copy of this + other frog references to the **Local Library**

Speakers Kit ??

B&W photos - good quality prints &/or negatives to give to print media to accompany stories

Field Signage - with regard to G.vittellina site and canoeists/recreationist on the Blackwood River + Hut Pool ?? users. "Special Conservation Zone"

Shopping Centre/ local Ag show Display??

Notice Board ie: could sponsor/provide a notice board in the supermarket that was for exclusive use for frog news and offer space to green groups and/or those actively involved with the plan for promoting environmental aspects/activities around MR.

Frog Fund Sponsorship/donation boxes

Frog Friends Club - kids club??

Frog Friends Products - ie: a saleable frog kit containing ;??? T-shirts, hats, badges, copies of frog calls, kids colouring book/story book or whatever as a souvenir

Training and approving tour operators to lead tours to the frog areas

appendix 3

Biogeographical survey of the domain of *Geocrinia alba* and *G. vitellina*: Floristic and soil attributes

G. Wardell-Johnson Dec. 1992

Introduction

Don Driscolls pitfall trapping has demonstrated that *Geocrinias* are capable of moving more widely in the landscape than previously thought. This suggests that they may also be more capable of colonising suitable habitat than previously assumed (eg. Wardell-Johnson and Roberts 1991). Other work has hypothesised broad scale differences between creek systems (Wardell-Johnson and Roberts 1993) but has not provided detailed soils data for creeks where they do not occur. Are these frogs capable of persisting in a broader range of sites than their current distribution or are there fine scale differences between creek systems which render them unsuitable? Are their differences in upland sites which influence the suitability of creek systems for these species?

Aim

1. To determine whether sites with either species of *Geocrinia* can be differentiated from apparently similar sites without these species.
2. To examine *Geocrinia* sites in a regional context.
3. To provide a regional survey of frog fauna.
4. To determine suitable sites for translocation.

Methods

Sites representing the range of breeding sites of *G. alba* and *G. vitellina* which include intact adjacent upland vegetation were chosen. Similar sites within the domain of these species but without either species were also assessed. Paired 20 m x 20 m quadrats were established in all sites with each quadrat also including a 10 m x 10 m subplot. All quadrats are located in the field by steel picket at the centre point and by steel droppers at all corners. The field position of each is determined accurately and shown on tie sheets. This report is accompanied by a map showing the locations of all quadrats.

Vascular plants were assessed at each quadrat. Soil samples were taken for physical and chemical analysis. Floristic assessment and collection of soil samples from upland sites is complete. Remaining samples from riparian sites are to be completed during February 1993.

80 quadrats were established, including 40 in riparian habitat during 1992. Of the quadrats in riparian sites, 11 included *G. alba* and 6 include *G. vitellina*. 23 quadrats in riparian sites include neither species.

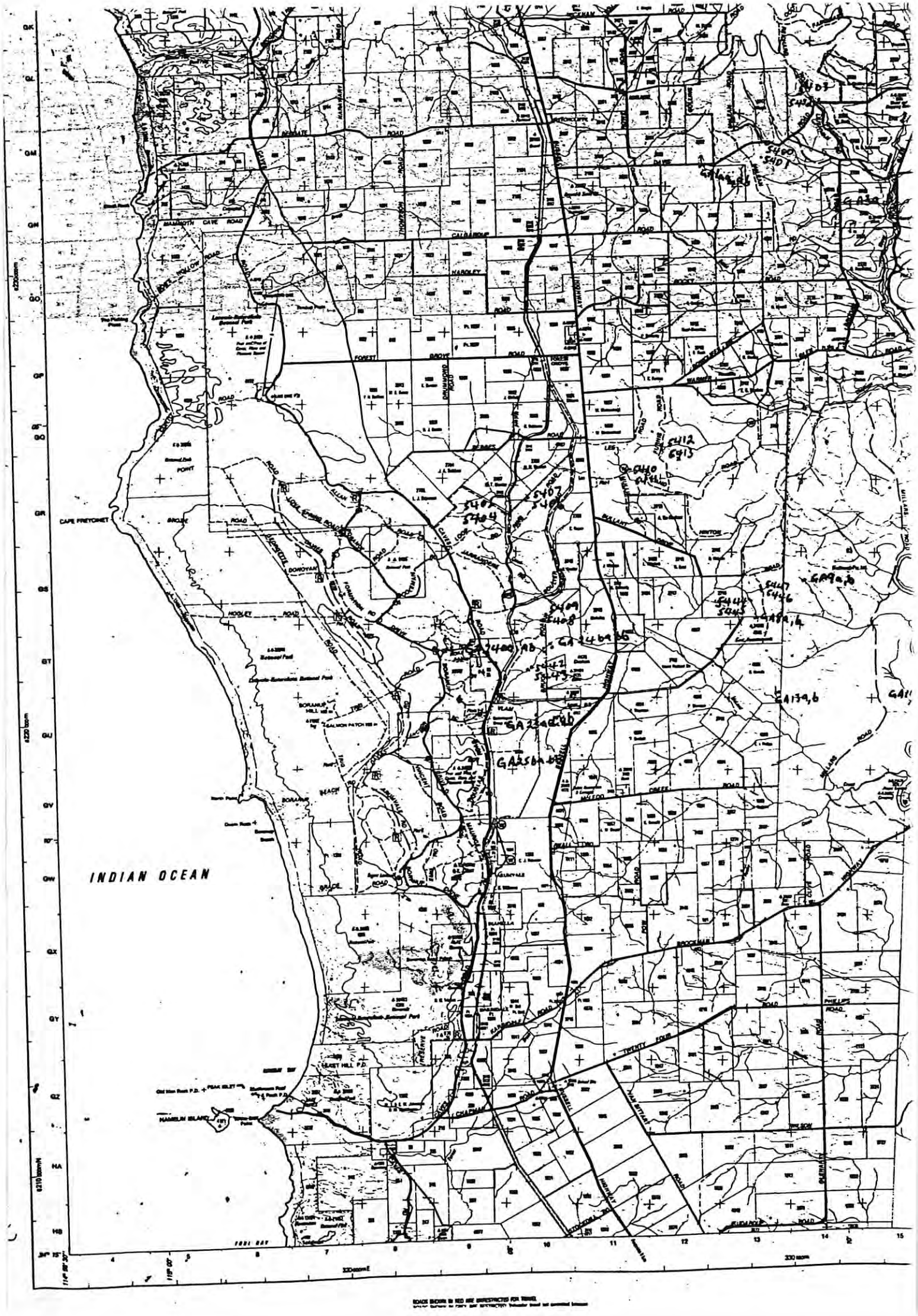
This survey fits within the framework of a broader floristic survey of the Darling Botanical District. Other work has been completed in the Drummond Subdistrict at Boranup, on the Scott Plains and an area between Walpole, Albany and Mt Barker. This is apparently the first quadrat based floristic survey in the Blackwood Plateau.

Several interesting collections have been made including *Opercularia* sp., *Schizea* sp., *Hydrocotyle* sp., *Loxocarya* sp., and *Lepidosperma* sp. Several outlying populations of the Warren endemic *Reedia spathaceae* were also located. A future progress report will include a thorough assessment of soils, landforms and floristics as a means of deciding on translocation sites and the assessment of the regional biogeographical significance of the area.

References

Wardell-Johnson, G. and Roberts, J. D. (1991). The survival status of the *Geocrinia rosea* (Anura: Myobatrachidae) complex in riparian corridors: biogeographical implications. Pp. 167-175 in *Nature Conservation 2: The Role of Corridors* ed by D. A. Saunders and R. J. Hobbs. Surrey Beatty and Sons: Sydney.

Wardell-Johnson, G. and Roberts, J. D. (1993). Biogeograhic barriers in a subdued landscape: the distribution of the *Geocrinia rosea* (Anura: Myobatrachidae) complex in south-western Australia. *J. Biogeog.* (in press)


INDIAN OCEAN
CAPE FREYCINET
MAMMOTH CAVE ROAD
FORESTIER ROAD
HOOLEY ROAD
BRUNY ISLAND
GA 7a,b
GA 24a,b,6
GA 25a,b
GA 22a,c,d
GA 13a,b,6
GA 9a,b
GA 1a,b,4
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SUSSEX LAND DISTRICT

appendix 4

DISTRIBUTION MAPPING AND LAND HOLDER LIAISON IN THE DOMAIN OF

GEOCRINIA ALBA

1 9 9 2

1.0 AIMS OF THE PROJECT

1 To survey all the riparian habitat within the Witchliffe/Karridale areas for any populations of *Geocrinia alba*.

2 To liaise with landholders, making them aware of the aims and potential benefits of the frog recovery plan.

2.0 AREA COVERED

The area comprised three major tributaries of the Blackwood River, Rushy, Mcleod, Chapman creeks, and smaller tributaries which spread over many properties. (see map 2.0)

3.0 IMPLEMENTATION

Initially aerial photos and landsat (TM) imagery were used to determine an overview of the survey area. From these, riparian habitat was mapped for habitat assessment and *Geocrinia* presence. Assessment of the suitability of habitat was made at the time of each property visit.

i In areas deemed suitable.

A A vegetation assessment using the following keys was used to record how vegetation had been affected by current land use.

0 - Natural - undisturbed
1 - Light grazing
2 - Limited disturbance
3 - Extensive modification - understorey removed - overstorey intact.
4 - Complete clearing
5 - High disturbance (dam-mine)
6 - Re-afforestation

B Length and width of creek.

C Current Land Use (using the following key)

0 - Natural
1 - Dairy
2 - Beef
3 - Vineyard
4 - Hobbyfarm
5 - Sheep
6 - Tourism
7 - Plantation
8 - Buffalo

D Potential Land Use Plans (using following key)

1 - Fence
2 - Re-vegetate/regenerate
3 - Leave as is
4 - Clear
5 - Dam
6 - Drain
7 - Roadworks
8 - Viticulture
9 - Burn

E Vegetation Width (using following key)

1 - Bush
2 - half cleared, half pasture
3 - Parkland clearing
4 - Total clearing

After the initial liaison work with landholders Areas likely to include *Geocrinia alba* were censused.

Positive distribution records were then recorded on an area map (see map 3.0). Profiles containing data collected were later drawn up for those properties where *Geocrinia alba* was present.

4.0 COMMENTS ON METHOD

Gaining farmers' permission to carry out censusing on their properties was often difficult due to absentee owners and the farmers irregular working hours.

Contact with most landholders has been made and the majority of properties surveyed. Ground surveys revealed that many of the creek systems that appeared suitable from the landsat imagery and aerial photos proved to be unable to support populations of *Geocrinia*

This was largely due to stock intrusion, and that areas had been subject to clearing and draining since the photos had been taken.

5.0 RESULTS

81 potential locations were investigated, with vegetation assessments made on 31 suitable locations.

In excess of 80 censusing hours were completed. The following is a summary of major findings.

1. Evidence of the ability of water buffalo to drastically alter riparian habitats in a very short time (less than 12 months).

2. *Geocrinia alba* site 20 (see map 3.0) was previously the southern most occurrence of *Geocrinia alba* . This population has apparently become extinct with no males calling in the 1992 breeding season. There have been no obvious changes within the habitat so the reason for their disappearance is not easy to ascertain.

3. 15 new populations of *Geocrinia alba* have been discovered.
3 occurring in state forest and 12 on private land.
(see maps 3.0 & 3.1)

4. There are also 11 extensions of previously mapped existing populations.
6 on private land.
5 in state forest.

5. Some of the new population finds represent large increases in the overall number of calling males.

CONCLUSIONS

Although new population finds on private land are good the problem of maintaining these areas of riparian habitat needs to be urgently addressed.

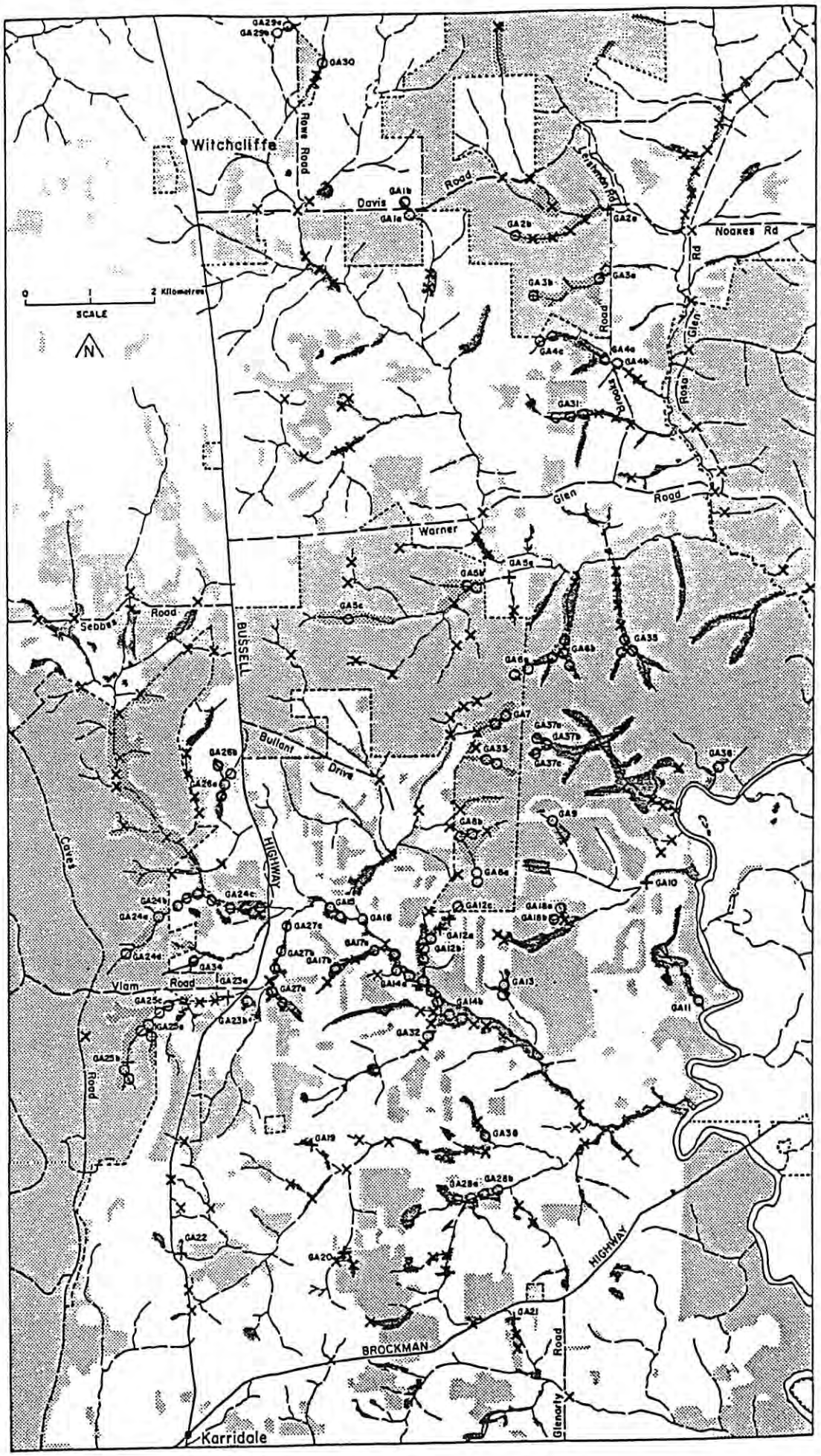
Since the last census in 1991 one creekline has been drained, one completely cleared and on many properties riparian habitats are showing signs of rapid deterioration as an effect of current land use. I would estimate that with current deterioration rates and threats from draining and clearing, within 2-3 years the following seven populations will disappear. **GA.25c, GA.23b, GA.15,16,17, GA 13, GA 29b.** (see map 3.0)

If these riparian habitats were excluded from stock intrusion I believe there would be an increase in overall numbers of calling males as the vegetation recovers.

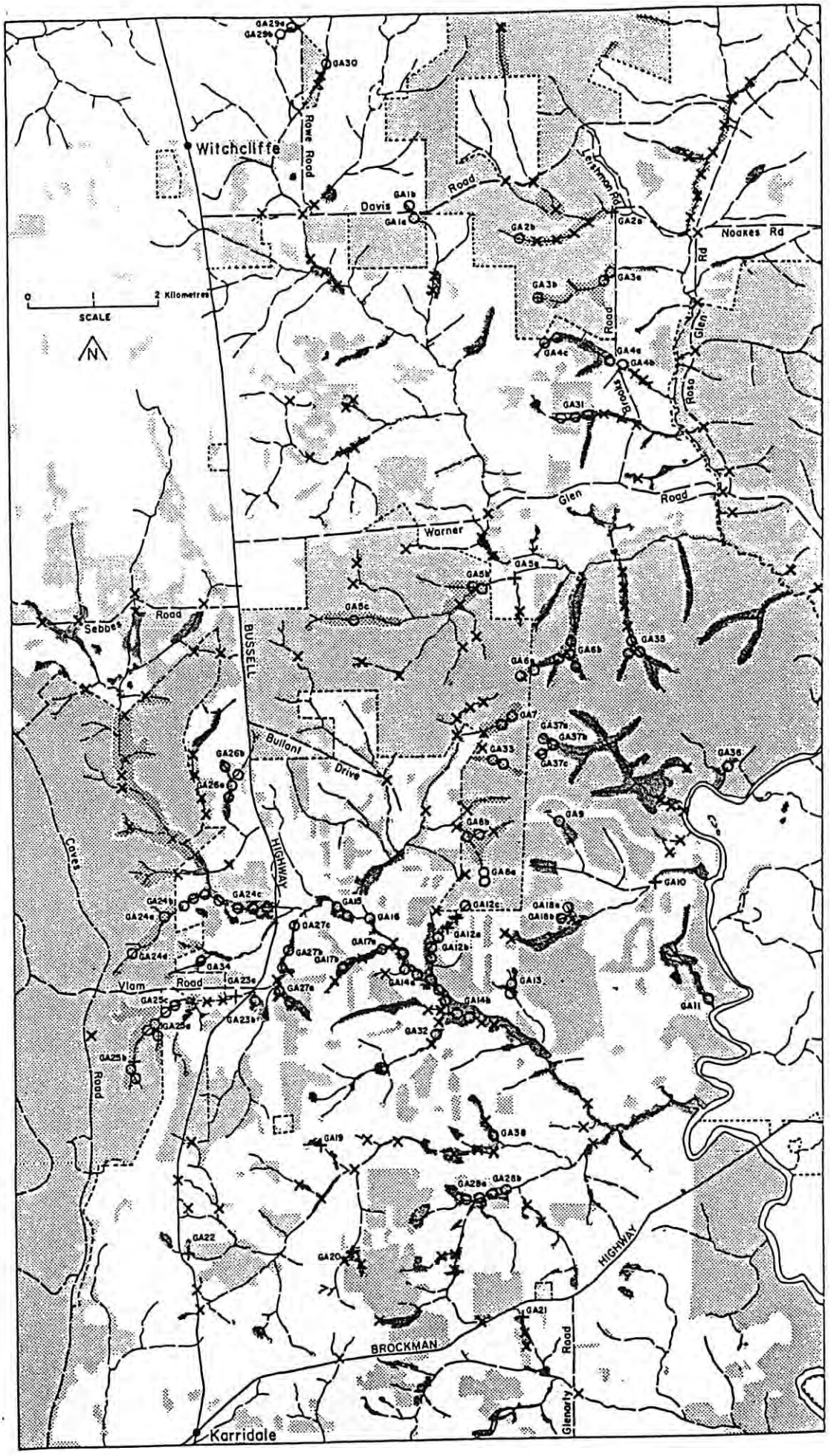
A rough estimation of the fencing required to protect the habitat of *Geocrinia alba* is 34 687M. Although this appears to be a significant amount of fencing, in reality it may be much less. if landholders agree to conserve some of the bush along their creek systems fences can join onto existing fence line thus drastically reducing the total amount of fencing required.

Contractual agreements between C.A.L.M. and private landholders are being drafted and examined for their suitability for this particular project. Documents from C.A.L.M., West Aust, Dept AG, West Aust, Natural Heritage Conservation Trust, Vic are being assessed.

IAN WHEELER DEC 1992



3·1 1992 Geocrinia alba distribution



2·0 Major creek systems

3·0 1991 Geocrinia alba distribution

Site #	Land Tenure	Loc#	Years present	Years absent	Pop. size	Size ASH	Per. ASH	Animal Type
GV1	STATE FOREST		83,85-92		>1000	7.3		0
GV2	STATE FOREST		83,85-92		50	.64		0
GV3	STATE FOREST		83,85-92		40	.55		0
GV4	STATE FOREST		83,85-91		>50	6.5		0
GV5	STATE FOREST		91,92		>100	.67		0
GV6	STATE FOREST		92		>100	1.3		0
GA1a	STATE FOREST		83,88-92		>10	1.0		
GA1b	PRIVATE	2802	91,92		7	2.1	705	2
GA2a	STATE FOREST		83	85,90-92	0			0
GA2b	STATE FOREST		92		4	.71		0
GA3a	STATE FOREST		83,85,91,92	90		1.0		0
GA3b	STATE FOREST		92		10	.50		0
GA4a	PRIVATE	2780	91,92		>30	.78	2866	0
GA4b	PRIVATE	2779	85,88,91,92	90	1	1.0	1433	1
GA4c	PRIVATE	2780	92		20	1.5		
GA5a	PRIVATE	2760	88	91,92	0	2.9	1091	1
GA5b	STATE FOREST		92	91	<5	.65		0
GA5c	STATE FOREST		92		20-30	.51		0
GA6a	PRIVATE	83	91,92		1	53		0
GA6b	PRIVATE	83	92		>100	1.84		0
GA7	STATE FOREST		91,92		30	1.5		0
GA8a	CROWN LAND		91,92		100	1.5		0
GA8b	STATE FOREST		92		20-30	3.0		0
GA9	PRIVATE	83	89,91,92		7	6.5	1637	0
GA10	PRIVATE	83	83,85	88,91	0	7.0	1790	0
GA11	PRIVATE	83	83,85,91,92		15	58.9	5182	0
GA12a	PRIVATE	4588	89,91,92		>50	3.3	1909	2
GA12b	PRIVATE	4590	91,92		>10	2.5		0
GA12c	CROWN LAND		92		5	.5		0
GA13	PRIVATE	4588	91,92		30	2.4	1595	2
GA14a	PRIVATE	4590	91,92		4	6.7	4446	0
GA14b	PRIVATE	2719	92	91	>10	8.2		5
GA15	PRIVATE	2718	91,92		>50	3.7	2050	1
GA16	PRIVATE	2718	91,92		2	2.8	608	1
GA17a	PRIVATE	2718	91,92		20	.6		1

GA17b	PRIVATE	4109	91,92		6-10	1.8		5
GA18a	PRIVATE	83	92		10	3.1		
GA18b	PRIVATE	83	92		130	.5		
GA19	PRIVATE	1959	89	91		1.2	565	5
GA20	PRIVATE	3143	91	92		1.8	603	0
GA21	PRIVATE	1538	83	85,88,91,92		3.6	1234	5
GA22	PRIVATE	3926	83	85,88,91,92		1.5	705	1
GA23a	PRIVATE	4471	83,85	91,92		0	0	2
GA23b	PRIVATE	1965	91,92		3	.2	608	5
GA24a	STATE FOREST		83,88,91,92		30	2.4		0
GA24b	PRIVATE	4470	91,92	89	>30	7.5	3829	0
GA24c	PRIVATE	2710	92		>30	7.0		0
GA24d	STATE FOREST		92		2	1.0		0
GA25A	STATE FOREST				40	7.6		0
GA25b	STATE FOREST				10	1.4		0
GA25c	PRIVATE	4471	92		6	32.5		5
GA26a	PRIVATE	1564	91,92		6-10	1.6	2069	0
GA26b	PRIVATE	3749	92		>5	.99		0
GA27a	PRIVATE	4591	92		15-20	3.3		0
GA27b	PRIVATE	4109	92		3-5	3.5		5
GA27c	PRIVATE	4109	92		10	.50		5
GA28a	PRIVATE	2262	92		4	5.0		2
GA28b	PRIVATE	3187	92		7	1.4		0
GA29A	PRIVATE	3146	92		10	.96		0
GA29b	PRIVATE	2815	92		4	.37		2
GA30	PRIVATE	3072	92		2	.80		0
GA31	PRIVATE	2776	92		>10	1.7		0
GA32	PRIVATE	2719	92		1	.50		5
GA33	STATE FOREST		92		15	1.0		0
GA34	PRIVATE	4470	92		50-100	1.5		
GA35	PRIVATE	83	92		50-100	1.9		0
GA36	PRIVATE	83	92		10-20	1.1		0
GA37a	PRIVATE	83	92		10	.9		0
GA37b	PRIVATE	83	92		40	.9		0
GA37c	PRIVATE	83	92		10	.9		0
GA38	PRIVATE	1963	92		2	2.6		5