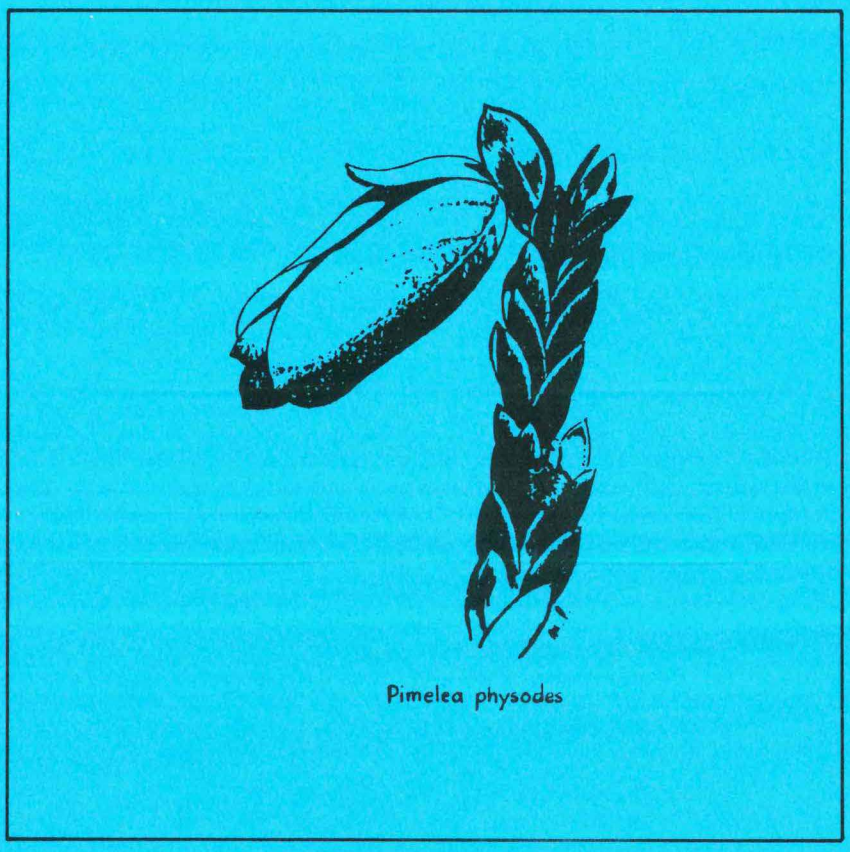
AN INTRODUCTORY GUIDE FOR A CASE STUDY ON FIRE MANAGEMENT IN THE FITZGERALD RIVER NATIONAL PARK



National Fire Management Workshop

Busselton

Western Australia

October 12-16 1987

1.0 Location, Size and Tenure

The Fitzgerald River National Park of 244,677 ha lies along the central south coast of Western Australia, between the towns of Bremer Bay and Hopetoun along the coast, and Jerramungup and Ravensthorpe inland (Figure 1). It consists of'A' Class Reserves No. 3173 and No. 31738, vested in the National Parks and Nature Conservation Authority.

It is registered as an International Biosphere Reserve with the United Nations Educational Scientific and Cultural Organization(UNESCO), one of only two so designated in Western Australia.

Excluded is an enclave on the south west corner of the park, consisting of privately owned land, Locations 1293 to 1305 inclusive, Reserve 32666 Government Requirements, and Reserve 5085 Water.

The park extends to the low water mark.

A current proposal to extend the park by approximately 51 000 ha on the Northern Boundary has been approved by Western Australian Government.

2. Topography and Soils

The park lies within Swanland of Jutson (1950) and the South Coast Drainage System of Bettenay and Mulcahy (1972). The Stirling fault separates the Fitzgerald area into Archean granitoide and greenstone plains to the north, and quartzite and phillitic schist peaks and ridges, spongolite gorges and limestone dunes in the southern portion (Figure. 2.1., 2.2.) The peaks, which rise from 300 to 450 metres above sea level, include West, Middle and East Mount Barren, Mount Bland, Woolbernup Hill and the Whoogarup and Eyre Ranges, with Thumb Peak rising to 457 metres. The coastline is steep and rugged. There is an extensive wave cut platform about 60 metres above sea level.

Coastal dunes, limestone, sandplains, rivers, swamps and granite outcrops are common, as are spongolite occurrences. All rivers are saline with flows generally small during winter/spring.

3.0 Climate

The climate is typically Mediterranean, with cool wet winters and hot dry summers. Rainfall reaches 650 mm per annum in coastal areas and decreases to 500 mm inland. Dry rain shadow areas occur. Most rainfall occurs in the winter but occasional light falls and thunderstorms are experienced in other seasons.

The weather is controlled by the east-west movement of sub polar depressions with associated cold fronts throughout the year and troughs during summer. Generally the depressions move past the state at approximately seven day intervals. Days without wind are uncommon.

4.0. Vegetation, Flora and Fauna

Beard (1972) recognized two vegetation systems, the Quaalup and Barren Range, within the Eyre Botanical District, covering most of the park. The area is dominated by very open mallee, mallee and shrubland. Heath tends to be more common in exposed coastal areas, while woodlands are mainly on greenstone, along rivers or in swamps. The quartzite ranges and spongolite support a large number of species.

Aplin and Newbey (1987) identified 12 major plant communities.

The two year Biological Survey 1985-87 (Newbey and Chapman, 1987) recorded 1 748 native and 99 introduced plant taxa. The native taxa represent 19% of Western Australian known plant spp (named and unnamed) and 42% of the known species for the South West Botanical Province. Numbers of species contained in this park is equivalent to approximately half of the flora of South Australia. The area is one of the two nodes of species richness in south-western Australia with a high proportion of endemic, geographically restricted and rare species. The flora is typical of the Eyre Botanical District, but it also contains some elements of the wetter forest flora and the drier Goldfields flora.

The vertebrate fauna of the park is presently known to include 21 species of native mammals (5 gazetted rare and endangered), 175 species of birds (4 gazetted rare and in need of special protection), 41 species of reptiles and 11 species of frogs. The fauna richness is greater than any other Conservation Reserve in the south west of Western Australia and may be due to the following factors:

(a) The size of the reserve which encompassess enormous diversity of habitat;

(b) the lack of widespread habitat degradation, minimal known dieback (*Phytophthora cinnamomi*) infection and limited history of grazing; and

(c) the geographical location of this park at an apparent faunal interzone which is indicated by the co-existence of some semi-arid species and some wet adapted species.

5.0 Legislation Affecting Management

Legal Responsibilities

Management of Conservation reserves in W.A. is to be undertaken according to approved management plans. These plans are developed through a planning process which includes widespread public consultation. In the case of National Parks, management plans shall be designed to allow members of the public to recreate, consistent with the proper maintenance and restoration of the natural environment (i.e. the protection of indigenous flora and fauna and the preservation of any features of historic, archaeological or scientific interest). In both the preparation and implementation of management plans, departmental staff must comply with the various Acts and legislation which impinge on operations. These are:

5.1 Acts administered by this Department

Conservation and Land Management Act, 1984
Timber Industries Regulations Act, 1926
Wildlife Conservation Act, 1950

5.2 Acts under which the Department has specific responsibilities are:

Bush Fires Act 1954
Land Tax Assessment Act, 1976
Mining Act, 1978

5.3 Other State Acts which affect the Department's land management responsibilities include:

Aboriginal Heritage Act, 1972
Aerial Spraying Control Act, 1966
Agriculture and Related Resources Protection Act, 1976
Agriculture Protection Board Act 1950
Beekeepers Act, 1963
Control of Vehicles (Off-road Areas) Act, 1978
Country Areas Water Supply Act, 1947
Environmental Protection Act, 1986
Fisheries Act, 1905
Land Act, 1933
Local Government Act, 1960
Main Roads Act, 1930
Mining Act, 1978
Public Works Act, 1902
Rights in water and Irrigation Act, 1914
Soil and Land Conservation Act, 1945
State Energy Commission Act, 1979

State Planning Commission Act, 1985
Water Authority Act, 1984

(There are a number of relevant Commonwealth Acts as well).

To date, few management plans have been completed. Where no formal management plan exists, interim management guidelines are applied. These ensure minimum disturbance and maximum protection of biota and landforms pending completion of the formal plan.

6.0 Overall Management Objectives

The objectives for the management of National Parks are laid out in Section 56 (1)(c) of the Conservation and Land Management Act (1984):

> "... to fulfil so much of the demand for recreation by members of the public as is consistent with the proper maintenance and restoration of the natural environment, the protection of indigenous flora and fauna and the preservation of archaeological, historic or scientific interest ...."

Basically, the purpose of a National Park is to provide opportunities for recreation in natural surroundings and to conserve elements of the biophysical and cultural environment represented in the park. Recreational activities must be managed to minimize conflicts between the different types and to ensure that they do not jeopardize the long-term conservation objectives.

6.1 Management Objectives

The following objectives are likely to be adopted for the Fitzgerald River National Park when a management plan for the area is prepared:

1. To provide opportunities for recreation in the park, consistent with maintaining the environmental values of the park and the quality of recreational experience.

2. To promote educational opportunities in the park and to provide for the proper use and management of the scientific and educational resources of the park.

3. To conserve rare fauna present in the park.

4. To conserve rare flora occurring in the park.

5. To conserve any identified, restricted assemblages of fauna and/or flora present in the park.

6. To conserve the (representative) sample of the regional biota found in the park.

7. To conserve the landscape features of the park.

8. To protect the lives and property of visitors and Departmental staff without degrading other values of the park.

9. To minimise detrimental effects of the park on neighbouring lands.

10. To conserve the archaeological, cultural, historical and scientific values of the park.

6.2 Department fire management objectives

The fire management objectives of the Department of Conservation and Land Management are:

1. To protect community and environmental values on lands managed by CALM from damage or destruction by wildfire.

2. To use fire as a management tool to achieve land management objectives, in accordance with designated land use priorities.

   Policies for fire management are detailed separately in an attached document

7.0 History and Activities which Influence Current Management

7.1 Historical Notes

West, Middle and East Mount Barren, three prominent features in the park, were named by Mathew Flinders in 1802. In 1841 Eyre traversed the park and recorded the presence of aborigines at Culham Inlet.

The nomenclature was basically completed by the Surveyor J.S. Roe, who visited the area in 1847.

The Overland telegraph Line which ran parallel to the coast was completed in 1877, and remained in use until 1927.

In 1902 the Number Two Rabbit Proof Fence was constructed, traversing the western portion of the park. It was maintained until 1955.

Botanical collecting in the park commenced in 1829 and continues to the present day.

Grazing occurred along the Phillips, Fitzgerald and Hamersley Rivers.

Mining activities in the park have been mainly exploratory. These reached their peak in 1969-70 when about 31 200 ha or 13% of the park was pegged for mineral exploration. Actual mining operations for copper occurred at West River from 1908 to 1909 and the quarrying of spongolite at Twertup Creek from 1965 to 1978. Exploratory shafts have been sunk at Naendip for copper and Coppermine Creek for manganese.

There are three resident National Park Rangers who attend to the day to day operations in the park. They are responsible to professional management staff at Albany.

On-site management personnel has only been present for approximately ten years.

7.2 Existing Use

Recreation occurs mainly in the coastal sections of the park and is generally associated with fishing. The other main vehicle based activity occurs on both ends of the park with tourist drives used by both the general public and tour operators. Some bushwalking occurs along the coast and the rivers. Visitor numbers are seasonal and peak at holiday times. User groups include the local people, city people and interstate and overseas tourists.

Most visitors seek the coastal and scenic resources of the park. West Mount Barren and the Eyre Range are the only significant attractions that are not on the coast.

Most visitors drive through the extreme east and west portions of the park. Others visit more specifically to fish from beaches or rocky head-

lands; such use is distributed along the whole coastline.Many camp overnight at coastal sites.

There are two developed walk trails - one up East Mount Barren and one up West Mount Barren.

Most roads and recreation sites were largely in place prior to a management presence.

Many roads in the park are unsurfaced and subject to bad erosion so a major upgrading program is underway to provide safety and prevent the spread of dieback.

A conservation group, the Fitzgerald River National Park Association has an active interest in the park and the surrounding unvested lands. Their headquarters is at Twertup in an old reconstructed house adjacent to the now abandoned spongolite quarry. Established in 1981, this is now used as a field study centre. The group has also received significant funding through the National Estate Grants Program to facilitate a biological survey. It commenced in June 1985 and was completed in July 1987.

8.0 Adjacent Land Use and Requirements for Protection of Life and Property Values

8.1 Agriculture

Abutting the park or the extensions to the park are significant areas cleared for agriculture. Most of this land is already developed, with minimal new-land clearing now occurring. The major new-land clearing occurred between 1960 and 1975. Sheep, cattle and grain cropping are the major agricultural activities.

8.2 Mining

The Fitzgerald River National Park is mineral rich. Its location could be termed as being on the southern end of the Goldfields. No mining is presently permitted. A number of applications for Exploration Licences are current; decisions on these hinge on the outcome of the current Bailey Committee Report which investigated mining on conservation lands.

Mining leases are current adjacent to the north west corner of the park and in a large section of Philips River Goldfield to the north eastern boundary.

8.3 Townships

Four townships occur within 20 km of the park:

Bremer Bay - a retirement and coastal holiday resort occurs on the south west corner of the park.

Jerramungup - an agricultural based centre on the north west corner of the park.

Ravensthorpe - an agricultural and mining based centre on the north east corner of the park.

Hopetoun - a retirement and coastal holiday resort on the south east corner of the park.

9. Other Factors Influencing Fire Management

9.1 Rare Fauna

The significance of the Fitzgerald River National Park for fauna conservation has been previously discussed. Based on present knowledge it is the only conservation reserve in the south west of Western Australia where a relatively complete fauna occurs on one piece of land managed by one authority. Elsewhere in the south-west, the species occur with a patchy distribution over many of the small parks and reserves.

Five species of gazetted rare and endangered native mammals occur: Dibbler, (*Parantechinus apicalis*) Heath Mouse, (*Pseudomys shortridgei*) Red-tailed Wambenger, (*Phascogale calura*) Tammar (*Macropus eugenii*) and Western Mouse (*Pseudomys occidentalis*).

Five species of gazetted rare and endangered native birds occur: Ground Parrot, Brown Bristlebird, Western Whipbird, Peregrine Falcon and Red-eared Firetail Finch.

One species of gazetted rare reptile: Carpet Python.

9.2 Rare Flora

The significance of the reserve for flora conservation has been previously mentioned. The most important land forms for the plant taxa are those on quartzite and spongolite.

This reserve contains the following flora -

* 14 species gazetted rare and in need of special protection
* 204 species considered rare and endangered, ie less than 1000 plants known in conservation reserves or few populations (203 confined to this park)
* 75 species endemic to the Park
* 38 species almost confined to the park (80-99% of known populations)
* 25 species are outliers (more than 150 km from other known populations)
* 192 unnamed taxa.

Most of the important plant taxa are woody perennials. Some 65% of the recorded species may sucker after fire and the other 35% regenerate from seed. It is considered that a 15 year fire rotation would not deleteriously affect the flora (Newbey pers. comm.).

Further details about rare flora and fauna habitat, distribution and fire relationships are contained in Newbey and Chapman (1987). This 2 year

survey revealed that 41.6% of the plant taxa appear to have population of more than 1 000 individuals and a surprising 28.4% have populations of less than 50.

9.3 Dieback

Dieback (*Phytophthora cinnamomi*) has the potential to permanently degrade the conservation and aesthetic values of this park. The disease is present in all south coast National Parks with the infections being extensive in the Stirling Range National Park and Cape Le Grand National Park. Many nature reserves are also infected. The biology of the disease has been well documented. Some 900 species of plants that occur on the South Coast are susceptible to the disease.

In 1986 a Dieback Policy for the South Coast Region was developed and approved by CALM. In line with this policy, road closures have occurred and upgrading of existing access continues. No new access is proposed.

There are three known infections in or surrounding the park:

* one on the South Coast Highway in the headwaters of the Hamersley River;
* one approximately 6 km long, on the north end of the Bell Track; and
* one on the Hopetoun-Ravensthorpe Road, adjacent to the start of the south eastern access into the park.

The impact of the current infection is extremely high, with the loss of most species. Aerial photographs have been taken of parts of the park and sampling continues.

The implementation of the Dieback Policy for the South Coast has met with some opposition from local and visiting users, specifically where access to the coast is affected.

9.4 The Bush Fires Act, 1954

The Bush Fires Act, although administered by a Board, has its powers implemented by the local authorities.

Section 34(c) relates specifically to conservation lands, whereby a fire management program must have the endorsement of the relevant local authorities before the administering department gains some control over fire protection activities.

A summary of the Bush Fires Act is attached.

10.0 Fire History

Records show that large areas of the park have been burnt by wildfires in the past 40 years. These have apparently been the result of a variety of causes including lightning strikes within the park and escapes from private property burns. A lightning-caused wildfire burnt about 14 000 ha in January 1985.

Fuel reduction burning has been limited to small areas within the dual fire break system surrounding the park. Recently, wind driven fire strips ignited from aircraft have been tested as a means of creating fuel reduced buffers.

11.0 Resources Currently Available to CALM for Fire Management

The Department of Conservation and Land Management has limited resources in this area.

3 National Park Rangers
3 light fire units (450 lts)
1 heavy duty fire unit (3000lt)

Staff assistance is available at Albany, some 200 km west. Assistance is given also by a Bush Fire Liaison Officer based in Albany who currently works through twelve local authorities.

Two local authorities are also involved in the park. Their potentially available resources are:

Jerramungup Shire -
1 Chief Fire Control Officer
3 Fire Control Officers
3 Bushfire Brigades, 9 light units

Ravensthorpe Shire -
1 Chief Fire Control Officer
3 Fire Control Officers
3 Bushfire Brigades - 9 light units

Back up technical plant and expertise is available through the Department's Fire Protection Branch, with the major plant item being an aircraft capable of dropping incendiary capsules for prescribed burning.

CONCLUSION

The Fitzgerald River National Park is one of the most important conservation reserves in Western Australia. There are many factors which could contribute to degradation of this area. These include the spread of dieback, frequent wildfires and disturbance of vegetation on fragile coastal dunes. Similarly there are many management options that could assist to preserve its current apparent pristine condition.

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FIGURES

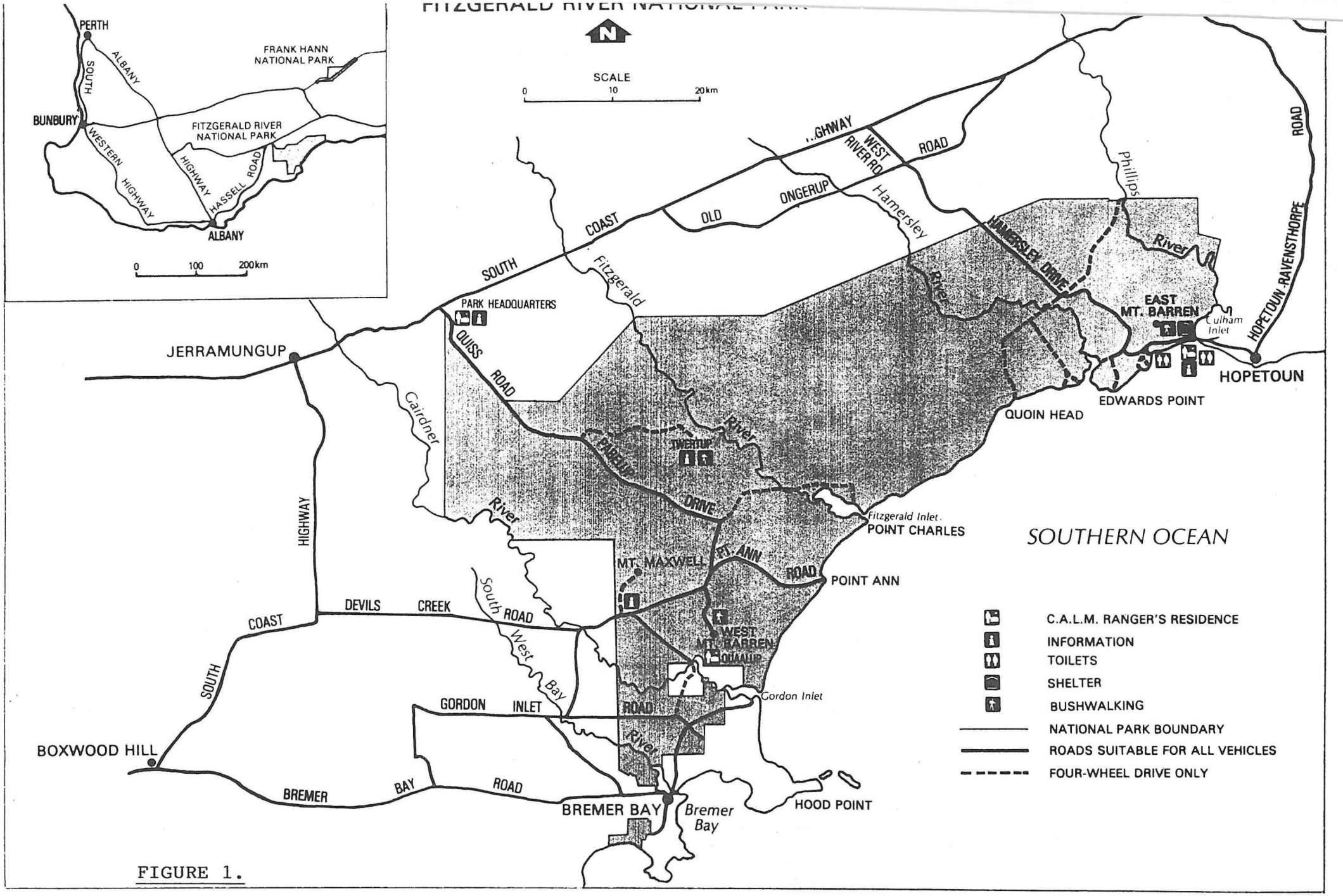
PERTH
BUNBURY
ALBANY
SOUTH WESTERN HIGHWAY
ALBANY HIGHWAY
HASSELL ROAD
FRANK HANN NATIONAL PARK
FITZGERALD RIVER NATIONAL PARK
0 100 200km
N
SCALE
0 10 20km
COAST ROAD
OLD COAST ROAD
ONGERUP
WEST RIVER RD
HAMERSLEY DRIVE
Phillips River
Hamersley River
ROAD
EAST MT. BARREN
Culham Inlet
HOPETOUN-RAVENSTHORPE ROAD
HOPETOUN
EDWARDS POINT
QUOIN HEAD
PARK HEADQUARTERS
QUISS ROAD
JERRAMUNGUP
Fitzgerald River
Gairdner River
TWERTUP
FITZGERALD DRIVE
Fitzgerald Inlet
POINT CHARLES
SOUTHERN OCEAN
MT. MAXWELL
POINT ANN ROAD
POINT ANN
HIGHWAY
DEVILS CREEK ROAD
South West Bay
WEST MT. BARREN
Gordon Inlet
GORDON INLET ROAD
BOXWOOD HILL
SOUTH COAST HIGHWAY
BREMER BAY ROAD
BREMER BAY
Bremer Bay
HOOD POINT
C.A.L.M. RANGER'S RESIDENCE
INFORMATION
TOILETS
SHELTER
BUSHWALKING
NATIONAL PARK BOUNDARY
ROADS SUITABLE FOR ALL VEHICLES
FOUR-WHEEL DRIVE ONLY

FIGURE 1.

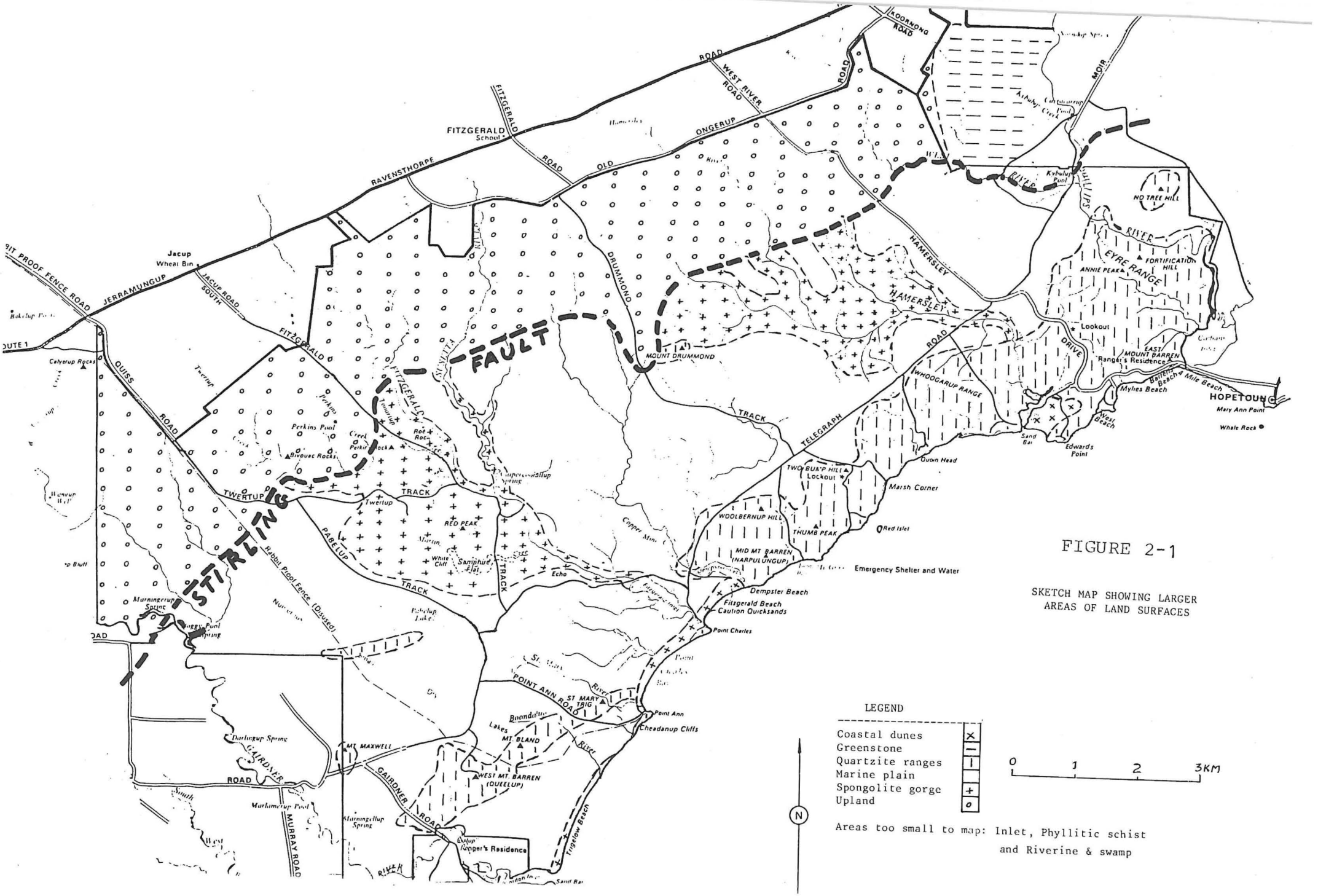

FIGURE 2-1

SKETCH MAP SHOWING LARGER AREAS OF LAND SURFACES

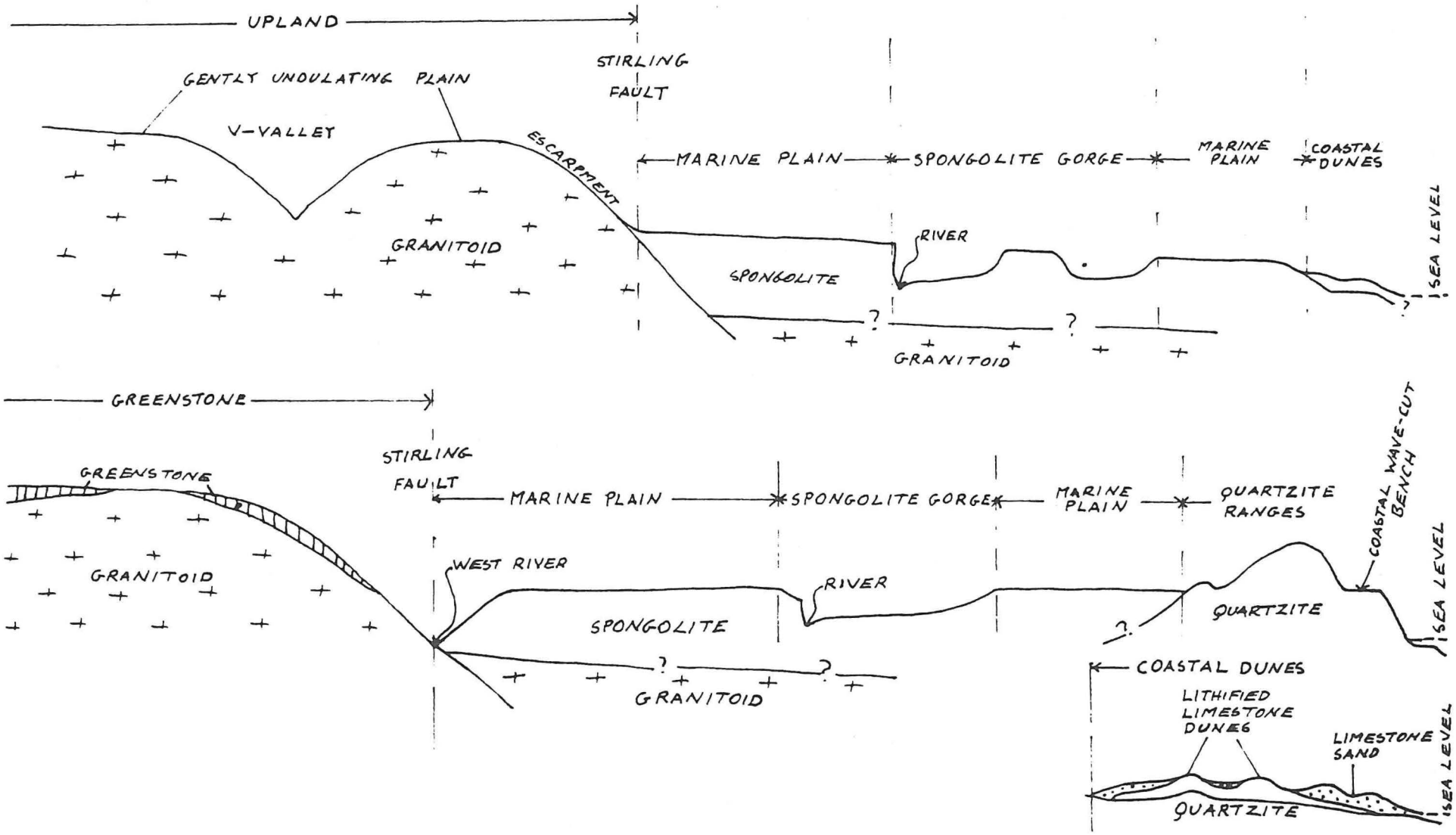

FIGURE 2-2 Cross-section showing relationships of land surfaces.

(from Newbey and Chapman 1987)