ENHANCING BIODIVERSITY HOTSPOTS ALONG WESTERN QUEENSLAND STOCK ROUTES

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Australian Government

Queensland Government

Southern Gulf Catchments

Queensland Murray Darling Committee

desert channels QUEENSLAND

South West NRM

Cover photos
Top left: A black-shouldered kite (*Elanus axillaris*)
Top right: Major Mitchell's cockatoos (*Lophochroa leadbeateri*)
Centre: A drover moving cattle
Bottom left: A yakka skink (*Egernia rugosa*)
Bottom right: A Euro, or common wallaroo (*Macropus robustus*)

(All photos were taken by B. Walsh)

Executive summary

The Stock Route Network (SRN) of western Queensland has significant economic value for pastoralists, and has significant habitat for biodiversity. The network covers a range of habitats that stretch from the border with New South Wales to the Gulf of Carpentaria, which in turn support a variety of biodiversity that include many conservation priorities for Queensland. However, a number of threats to the SRN, compounded by a lack of knowledge about the conservation priorities, are compromising the management of this resource.

In order to improve the management of the natural values of the SRN, this project sought to identify some of the biodiversity hotspots on the stock routes of western Queensland, and provide recommendations for their management in order to achieve the greatest conservation benefits.

To achieve these objectives, the project partners (Southern Gulf Catchments Ltd., Desert Channels Queensland Inc., South West NRM Ltd., Queensland Murray Darling Committee Inc., and the Department of Environment and Resource Management) were supported by funds from the Australian Government to map and identify potential sites, carry out field visits to verify values and threats, and to make management recommendation for identified biodiversity hotspots.

This project identified 47 biodiversity hotspots as well as other sites of high nature conservation or geological value, and sites that require further research. For each biodiversity hotspot the biological values were identified (including the presence of priority species), as well as the threats, current management, and recommended management actions.

The condition of the biodiversity hotspots and stock routes were comparable to the management of the station or protected area they adjoin or traverse, and many were in good condition. However, common threats were habitat degradation from weeds, competition/predation by introduced animals, inappropriate fire regime, damage to springs by feral pigs, and overgrazing by stock in some areas.

Mitigating the threats to these biodiversity hotspots will require: an increased awareness of the values and management needs of these sites amongst the local stakeholders; a focus of management on the recommended actions; and increased coordination amongst stakeholders to make the greatest conservation gains with limited resources.

The recommendations in this report can be used to help focus the work programmes of relevant stakeholders, as well as leverage for the funding required to conserve these biodiversity hotspots.

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Introduction

Queensland's Stock Route Network (SRN) is a web of stock routes, roads and reserves for travelling stock that covers most of the State. This network is a rich inherited legacy that has far greater benefits than just the movement of livestock, which was and still is their primary role.

The stock routes were formally recognised between the 1860s and 1890s, although human usage of these routes goes back much earlier. Aboriginal trade routes had traditionally followed the best hunting trails and permanent watering sites, so it is little wonder that indigenous knowledge was sought to survey for pastoral settlement and movement of livestock when the stock routes were established. This pragmatic approach resulted in the retention of some of our best biodiversity sites throughout the SRN of western Queensland, including dry season water holes which are the refugia for aquatic life in a land of pulsing seasons.

As this network stretches from the Queensland border with New South Wales to the Gulf of Carpentaria, it supports a diverse range of threatened species and habitats from springs of the Great Artesian Basin, to Brigalow woodlands, to the tropical rivers of the Gulf country. Further evidence of the biodiversity value of the stock routes, their connectivity, and remnant vegetation, is illustrated by the number of National Parks and Conservation Reserves that either have stock routes connecting with the park, or dissecting them completely (such as Diamantina National Park and Hell Hole Gorge). In total, this amounts to 28 National Parks and two Bush Heritage Conservation Reserves in the four Natural Resource Management (NRM) regions of Western Queensland. There are also 55 declared State Forests which are in some way connected to stock routes.

Under the *Land Protection (Pest and Stock Route Management) Act 2002*, the administration of the SRN is shared between local Government and the Department of Environment and Resource Management (DERM) (formerly the Department of Natural Resources and Water and the Environmental Protection Agency). Local government is responsible for day-to-day management, while DERM is responsible for providing the framework of legislation and policy for stock route management and support for local governments. As not all of the SRN is currently used to move stock, stock routes are classified into either active (primary, secondary and minor) and in-active.

The values of the SRN of western Queensland are under threat from multiple pressures that include inappropriate grazing regimes, feral animals and weeds. Due to the vast scale of the area, and high costs of management, current management of the stock routes is highly fragmented. Additionally, a low appreciation of the multiple assets of the SRN has limited the willingness of managers to protect their values.

It is not possible to manage this entire network equally due to its scale, nor would that be necessary because of the habitat fragmentation across the landscape from a history of human impacts. However, by identifying biodiversity hotspots, and recommendations for their management, it would be possible to direct management of the SRN to conserving the most significant biodiversity values while maintaining the primary purpose of the network, which is the movement of stock

In order to achieve this, this project was initiated by a consortium consisting of DERM, the four Natural Resource Management bodies of Western Queensland – Southern Gulf Catchments (SGC), Desert Channels Queensland (DCQ), South West

NRM (SWNRM), and Queensland Murray Darling Committee (QMDC) – and funded by the Australian Government.

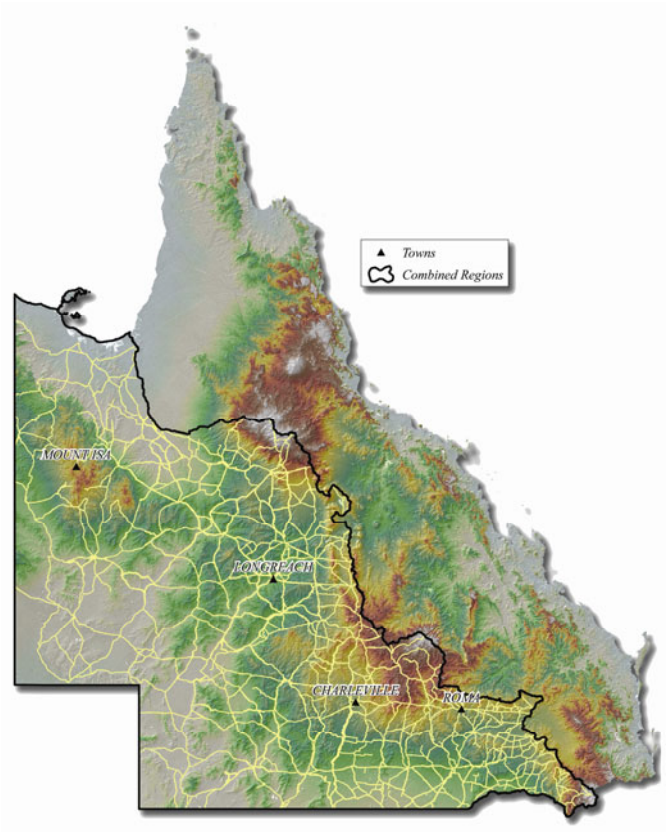
Project objectives

The primary objectives of this project were to identify biodiversity hotspots on the SRN of western Queensland, and suggest recommended actions to address any threats to these sites.

Project area

The SRN of western Queensland covers approximately 1,844,000 hectares (i.e. 57% of Queensland or 83% of the State's stock route network), and includes about 75,000 kilometres of stock routes (Map 1). In comparison, all of Britain and Ireland would fit into this project area three times. This area is made up of four NRM regions:

- The Southern Gulf region (managed by Southern Gulf catchments Ltd.),
- The Desert Channels region (managed by Desert Channels Queensland Inc.),
- The South West region (managed by South West NRM Ltd.), and
- The Border Rivers Maranoa-Balonne region (managed by the Queensland Murray Darling Committee Inc.).



Map 1. The Stock Route Network of western Queensland.

Project methodology

In order to achieve the objectives of identifying biodiversity hotspots and recommended management actions over a vast geographic area, and within the timeframe of April 2008 – May 2009, the project followed three major steps.

1. Prioritisation of sites, using the 'Back on Track species prioritisation framework' and using maps that overlayed multiple values,
2. Field visits, to confirm the values and threats to each site, and
3. Selection of biodiversity hotspots, using specific criteria.

1. Prioritisation of sites

The 'Back on Track species prioritisation framework'

The project used DERM's 'Back on Track species prioritisation framework' as the basis for identifying potential biodiversity hotspots, because this framework identifies where invested resources can make the greatest gains in conserving Queensland's threatened species.

The 'Back on Track species prioritisation framework' prioritises Queensland's native species (marine, terrestrial and aquatic species of flora and fauna) to guide conservation, management and recovery. Species are prioritised using multiple criteria to allow the identification of those that are in trouble or decline, but which have the greatest chance of recovery. As 'Back on Track' assess all species regardless of their current conservation listing, species identified as priorities within the project area include those listed under the *Environment Protection and Biodiversity Conservation Act 1999*, Queensland's *Nature Conservation Act 1992*, and species not listed under either Act (Appendix 1).

Both 'Back on Track' and this project are encouraging a multi-species approach to make the most of management resources. 'Back on Track' encourages focussing on the common threats of multiple priority species, and this project aimed to identify biodiversity hotspots (i.e. sites of multiple species). By using known records of where priority species are found on the SRN of western Queensland, this project has identified biodiversity hotspots where management actions will achieve the greatest conservation benefits.

Map production

To identify potential biodiversity hotspots, maps were produced that overlayed multiple values.

Firstly, a combined map was produced using ArcGIS for the entire area with the various regional boundaries delineated. This was overlayed with an updated stock routes shape file, and buffered to one kilometre each side for the purposes of connectivity and linkages in the landscape. The timeframe to complete this extended from May to August 2008 due to delays in obtaining updated shape files and security clearances.

The records of 'Back on Track' priority species (Appendix 1), from the DERM WildNet database, was then overlayed on top of the map layer of the stock routes.

Additional data such as the location of national parks, state forests, conservation reserves, Non-Government Organisations (NGO) conservation holdings (such as Bush Heritage), wetlands, regional ecosystems, and bio-regions were also added to the map overlays. A concerted effort was made to engage key people personally rather than by correspondence, to explain the project and defuse any misconceptions as to its purpose.

Engaging with knowledgeable people from the different regions was an invaluable source of information. This resulted in historical recollection, identification of additional biodiversity sites, and on-ground knowledge of the greatest threats such as feral animals and weeds, with the potential to impact on the biodiversity.

Finally, all this information was collated, and due to the scale of the project, compiled into topographical map books at a scale 1:250,000 for each region. This created a soundly based foundation from which to launch on-ground site inspections and determine potential biodiversity hotspots.

2. Field visits

From August 2008 – March 2009 the potential biodiversity hotspots identified on the maps were checked in the field. These field trips involved driving approximately 80,000 kilometres of stock route.

There were two purposes of the field visits: Firstly, to collect data on potential sites; and secondly, to meet and communicate with stock route officers and adjacent landholders in order to gather local knowledge and engage them in the project.

At each site, data was gathered to confirm the priority species, other biological values, and threats present, and any current management (Appendix 2). Where possible, attempts were made to camp at sites in order to maximise the time spent at potential biodiversity hotspots and the data collected on each site.

Threats to biodiversity were documented at all sites. However, site inspections took into account other activities in the area of concern, e.g. soil erosion. Some threats are still not well known such as fire regime for different species, and the advancement of cane toads.

Drought was still dominant throughout most of the western area at the time of commencement, and conditions and access were hot and dusty, particularly in the Gulf. This was dramatically reversed by the onset of an exceptional monsoonal wet season which saw most of the Gulf and further south inundated with flood waters during the term of this project.

3. Selection of biodiversity hotspots

In order to select biodiversity hotspots, the project's advisory group (made up of representatives of the project's partners) developed a list of criteria against which the sites visited could be assessed. These criteria were:

1. The presence of (multiple) priority species, and their abundance.
2. The physical constraints: adjoining land use, knowledge of the threats, and the ability to manage the threats (on-ground).
3. The social constraints (level of engagement): cooperation of land manager in the area, and the opportunity for cooperative management.
4. Active vs. inactive stock routes (despite receiving little use by travelling stock, inactive stock routes may be more heavily grazed than active routes, either under permit, because they are not fenced or because they are being grazed unlawfully).
5. Connectivity to adjoining habitat (such as links to national parks, nature refuges and voluntary conservation agreements).
6. The shape and size of regional ecosystems (REs), and the percentage of the stock route site that is mapped as REs.

The format of this report

This report presents the biodiversity hotspots identified by this project, and recommendations for their management. As this information has been gathered to improve the management of biodiversity on the SRN of western Queensland, the target audience for this report are the stock route managers, be they local government, State government, or adjoining landholders. However, this report will also be of use to all involved and/or interested in the conservation of biodiversity on stock routes.

To facilitate the presentation of this information, this report is divided into the four NRM regions that comprise western Queensland (i.e. Southern Gulf, Desert Channels, South West, and Border Rivers Maranoa-Balonne). Each regional chapter begins with a table listing the biodiversity hotspots and the local government area in which they are located. The rest of each regional chapter expands on each biodiversity hotspot describing their biodiversity values, threats, current management and recommended actions. Where the conservation status of other species are mentioned (such as Rare and Vulnerable), these are as listed under the *Nature Conservation Act 1992.*

The report ends with two appendices. Appendix one is a list of the priority species used by this project (as identified through the 'Back on Track species prioritisation framework'). Appendix two is a copy of the data sheet used for field visits, for when information needs to be gathered on additional potential biodiversity hotspots.