A Conceptual and Operational Understanding of Social Resilience in a Primary Resource Industry

– Insights for optimizing social and environmental outcomes in the management of Queensland's commercial fishing industry

Thesis submitted by

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THESIS ABSTRACT

Resource-protection policies are frequently implemented without prior knowledge of the likely social and economic outcomes. The consequences of these management strategies can, however, severely erode the ability of resource-users to cope and prosper. The conflict, political turmoil and lack of compliance that are often associated with changes in resource policies can seriously undermine their conservation goals. Design and implementation of policies that are capable of achieving both conservation goals and social and economic sustainability require a better understanding of how resource-users respond to policy change and adapt.

Resilience theory provides a useful framework to examine the ability of resource-users to cope and adapt to changes in resource policy. Holling introduced the concept of resilience to the sustainability sciences in 1973 as a means to better understand how ecological systems can persist in the face of change. This has provided the foundation for a shift towards the resilience-based management of natural resources and the social systems that depend on them. Despite theoretical advances, however, our conceptual and practical knowledge of the social dimensions of socio-ecological systems remains limited. In this study, I aim to improve our understanding of several aspects of social resilience using the commercial fishing industry in North Queensland as a case study.

A conceptual model of social resilience to policy change is developed in the first part of the thesis as a precursor to an operational model. In developing the model, the level of dependency on the resource and a fisher's perception of policy change were identified as potentially important influences on social resilience. The model depicts the key characteristics of, and the linkages that are likely to exist between, social resilience, resource dependency and policy perception. The model was developed using a novel combination of resilience and social science theory.

The conceptual model is tested for its applicability to a primary resource industry in the second part of the thesis. Survey scales are developed to quantify social resilience, resource dependency and policy perception, and to examine the relationships between them. One hundred commercial fishers and their families from five coastal communities (Cooktown, Port Douglas, Innisfail, Townsville and Bowen) are quantitatively and qualitatively surveyed. This 'mixed-method' approach provides an opportunity to combine the benefit of quantitative techniques, which condense data in order to better see patterns, with qualitative techniques, which enhance data to see key aspects of phenomena more clearly.

The response of commercial fishers to changes in fisheries policy was found to comprise four components. These were characterised as (i) a fisher's perception of the risk associated with a change in policy, (ii) their ability to plan, learn and reorganise, (iii) their proximity to the threshold of coping, and (iv) their level of interest in change. These components were found to be strongly influenced by resource dependency and policy perception.

A fisher's perception of the risk associated with policy change was found to be significantly correlated with the level of attachment to the fishing industry and the level of employability (measures of social resource dependency) as well as by a negative perception of policy change. A fisher's perception of the ability to plan, learn and reorganise correlated with the business size and approach (measures of economic resource dependency). A fisher's perception of their ability to cope is strongly related to their level of attachment to the occupation and employability, the business size and approach and the perception of policy change. In contrast, the level of interest in change was not observed to be significantly correlated with any aspect of resource dependency or perception of policy change.

Qualitative data revealed key mechanisms for the influence of resource dependence and policy perception on social resilience. Fishers that are especially dependent on the fisheries resource are limited in the flexibility with which they can approach policy change. Dependent fishers were characterised by a strong attachment to their occupation, older age, few transferable skills, a business approach that was 'lifestyle-oriented' and rarely involved employing others. These fishers can be limited through their attitude, employability, family, financial situation and capacity to develop innovative solutions. Fishers who are

meaningfully involved in the decision-making process are more likely to be resilient to policy change because they are more likely to understand and trust the need for change, and because they feel some control over their future.

An operational model of social resilience for resource industries such as the commercial fishing industry is developed on the basis of these results. The model provides insight as to what determines the resilience of socio-ecological systems, generally. It suggests that the nature of the relationship with the resource can influence the ability of resource-users to cope and adapt. Policy design and implementation are also found to have a significant role in maintaining system resilience.

This information is important for the management of socio-ecological systems. To successfully navigate through policy-change transitions, resource-users require flexibility (or low resource dependency) and a positive perception of policy change. This is especially true of the commercial fishing industry in North Queensland. This study has developed methods to measure these qualities, thus giving resource managers the ability to assess social resilience prior to the implementation of conservation initiatives. Understanding the influence of these qualities provides resource managers with knowledge of the important system properties that require management. This knowledge can underpin progressive management approaches aimed at more effective and equitable resource protection. For example, managers could use the approaches developed in this study to identify resource-users with a strong level of dependency on the resource. The resilience of these users could be increased prior to a policy change through assistance to develop skills to plan and reorganise, or to build capacity for alternative employment. Managing the perception of policy change is another important consideration. Resource managers may benefit from increasing the quality of communication with resource-users or by providing opportunities and incentives for resource-users to participate in policy design and decision-making processes. Improved knowledge of the linkages between people and the environment, and new tools such as those developed in this study, better position resource managers to meet the challenge of managing for resilient socio-ecological systems.

Statement of Sources

Declaration

This thesis is entirely my own work except where stated specifically. This work has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is provided.

Nadine Marshall

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Table of Contents

C

List of Tables

List of Figures

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